Proceedings of the

PUBLIC HEALTH CONFERENCE ON RECORDS AND STATISTICS

-11th NATIONAL MEETING-

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE

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National Center for Health Statistics
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Foreword

The 11th National Meeting of the Public Health Conference on Records and Statistics excited more than usual interest—an excitement that emanated from the newness and urgency of some of the topics under discussion. At the same time, many of the perennial concerns took on added significance in the light of new developments. Therefore, the National Center for Health Statistics takes great pleasure in presenting these proceedings in the belief that the ideas brought out during 5 days of intensive discussion will have enduring value for work on health problems not only in America but also in other countries.

These proceedings contain in full the formal addresses and papers. The gist of the discussions and the sense of the meeting for the 12 workshops are reported in the workshop summaries. The summaries are the joint product of the respective chairmen and NCHS supporting staff members.

Particular thanks are due the speakers and the workshop directors for the stimulation and guidance they provided. Grateful acknowledgment is accorded the NCHS staff for the difficult job of preparing the proceedings for publication.

Oswald K. Sagen, Ph. D.
Assistant Director
National Center for Health Statistics

IN MEMORIAM

Robert J. Mooney, Michigan
1920–64

Doris L. Duxbury, Michigan
1908–64

Thomas P. Lesesne, Jr., South Carolina
1909–66

Harold Jacobziner, M.D., New York City
1901–66

Vito J. Giacalone, New York City
1911–66

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FIRST
GENERAL
SESSION

Call to Order

Dr. Forrest E. Linder, *Director, National Center for Health Statistics, U.S. Public Health Service*

I am very happy on this occasion to welcome all of you to this 11th National Meeting of the Public Health Conference on Records and Statistics.

As is implied by the 11th, this is a group of meetings which has been going on for a number of years. Each year the interest grows as well as the importance of the work that the working groups and the plenary sessions do here. I think the attendance at this particular meeting is the largest that we have ever had and indicates tremendous interest throughout the country, the capital, and the universities in the problems which we will be discussing this week.

I have looked over the program in some detail as I assume most of you have done now. I think that you will see that it is going to be a very good program and we are going to have a week of profitable and interesting discussions of the problems with which we are all concerned.

The working sessions and the plenary sessions are directed at problems that are current in these days. I know that the people who are discussing these problems at each of the different meetings will assure that there will be a fruitful outcome.

I expressed to the registrars who were meeting Saturday my feeling that the winds of change are blowing in the field of vital records and statistics. Things are certainly in a transitional period. Many things are moving rapidly toward results which we can just now barely see.

This morning we have several speakers on the program—four speakers, as a matter of fact—who are intimately and personally concerned with the direction of change and some of the innovations that are entering our field. We are very fortunate to get this group of people who are definitely involved with these new developments in our field.

I want to proceed without delay to hear what these speakers have to tell us about forthcoming developments in our field of work, so I will introduce our first speaker.

We are happy to have with us this morning as the keynote speaker to open our conference Dr. Leo Gehrig, who is Deputy Surgeon General of the Public Health Service. We are very fortunate to get Dr. Gehrig. It is quite easy to get the Surgeon General or the Deputy Surgeon General to agree to appear and talk to us at a meeting of this kind—that is, to get them to agree to appear several months before they actually have to do it. But the commitments that flood in on these officials at this top level are such that very often, while they wish to be with us, some demanding commitment comes in at a late moment and they are not able to attend.

I thought this might happen in the case of Dr. Gehrig because he has been traveling extensively in the past few months. We have seen very little of him around the Public Health Service. He is involved with some very major and important problems. But, happily, he is here this morning, and we will be able to hear the words he can bring us.

Dr. Gehrig is from the University of Minnesota, having obtained his academic degrees and his medical degree at that institution. He then started his professional career in the field of thoracic surgery and had a number of important positions in this field. Then later he was coaxed over into the area of medical care administration and, I believe about 1957, joined the Public Health Service's Bureau of Medical Services.

He was with that Bureau for a number of years. In his last position, he was Chief of the Bureau of Medical Services and was there until November of last year when he was appointed the Deputy Surgeon General.

In the position of Deputy Surgeon General, he is the Surgeon General in charge of the Bureau of the Public Health Service in which the National Center for Health Statistics is located. So we have many relations with him, and he has many opportunities to aid us in developing our work program.

Without further word, let me present to you Dr. Gehrig who will give us the keynote word for this meeting.

Keynote Address

Dr. Leo J. Gehrig, *Deputy Surgeon General, U.S. Public Health Service*

I know that Dr. Stewart, who is in California this morning, would like very much to be with you, but I am kind of glad he is gone. It gives me the opportunity to speak to you.

Certainly in greeting you on behalf of the Surgeon General, I would want you to be assured that the Public Health Service and the Department of Health, Education, and Welfare are greatly interested in these biennial meetings. Let me tell you why.

The American public health system has its roots in every community, in every State. Washington may propose, but the country usually disposes. In our thinking and planning here in Washington, we do our best to consider the judgments and purposes of others. But we are keenly aware that the people and the problems are out there, where you are.

Therefore we depend heavily upon you—in State and local governments, in voluntary health agencies, professional associations, business groups, and others who are on the firing line. Federal programs, which help to shape State and local programs in health, must themselves be shaped by the needs of communities, families, individuals. These needs differ greatly over the stretch of our country. Therefore a health program must consider national needs, yet be flexible enough to meet specific community issues.

For this reason it is most important that we plan, execute, and evaluate programs together.

I use the words "vital information" and so on rather freely. But let me give you an example, if you will let me use this free interpretation, of one of my earlier experiences.

I had the opportunity to be in charge of the tuberculosis and chest program in Alaska while it was still a Territory. I recall someone had established a system there because we had to hospitalize most patients in the "Lower 48." This was a system which provided that each month the physician had to submit a written record of what the patient was doing and what the future plans were.

I think many physicians looked upon this as purely a requested justification for the bill that usually accompanied this report. In fact it had many useful purposes from my point of view. It gave us an opportunity to advise families when surgery was considered; it gave us an opportunity to plan ahead for new admissions following the discharge of a patient. But I always remember the case of a fellow by the name of Carl Ericson. I never met the man. He apparently was an old Scandinavian fisherman. I would guess that he was probably in his early sixties, and he had had chronic pulmonary tuberculosis over many years and had been hospitalized in this particular institution in the "Lower 48" for about 4 years.

He had minimum respiratory capacity. So there really wasn't much that one could do for Carl except hospitalize him. Yet his poor physician each month had to write this report which usually included what his temperature was doing, what his sed rate was doing, possibly his blood count, what was planned ahead, how he did during the month, and so on. Obviously Carl just lived from month to month. He had good chronic tuberculosis with good change. But on this given month I got a letter. It said "Dear Dr. Gehrig: Hebrews, Chapter 13, Verse 8. Sincerely" and the doctor signed his name.

Not being too familiar with this reference I got some help, and we looked it up. It went something like this: "Jesus Christ, the same yesterday, the same today, and yea, forever."

He gave me the information, and I think he did a very good evaluation of the purpose of the report.

I would say this sameness, however, is not exactly what we see in the area of public health today. This morning, we shall take a look at public health as it is shaping up today and tomorrow—right now and say over the next 10 years.

I am using the President's message of March 1 to the Congress on recent health and education achievements and current goals as a general reference point. More particularly, I shall use medicare and comprehensive health planning to exemplify what the immediate future holds for health officials. Our program this morning—and much of your work during the week—is centered around the health program that is now before the country.

A considerable part of this program was enacted in 1965. Bills covering other proposals are now before Congress, and yet other bills will be introduced. Most important in their near-term impact, of course, are the medicare provisions of the 1965 Social Security Amendments. Those of you who work with vital records are very familiar with one aspect of this program—the proof-of-age regulations associated with these amendments. On July 1—only 12 days from now—assistance in paying for hospital costs will become available to over 19 million Americans aged 65 and over. Help in paying for physicians' and other medical services also will become available to this group. Later on, the hospital insurance will include services in extended-care facilities.

These are dramatic developments. What will be the impact of these profound changes on our health system? Will we have enough manpower and enough facilities to provide these services?

To set these problems in context, it is important to remember that none of them is new. Not one of them has been created by medicare. We have been living with shortages or threatened shortages of manpower and facilities for many years. We have long recognized the need for upgrading the quality of care and for assuring equal access to care.

In fact, as the Surgeon General pointed out at the White House Conference on Medicare last week, the effect of the new legislation has been very positive. It has brought these longstanding problems into sharp focus. It is hastening their resolution.

The supply and distribution of hospital facilities in the United States have been greatly strengthened over the past two decades by the Hill-Burton program, which has brought hospital service within reach of millions of people for whom it was once almost inaccessible. This program is moving ahead. In 1965 and 1966, a total of 60,000 new hospital beds and 90,000 new nursing home beds will be added to the national resource. Legislation recommended by the President and introduced this year is designed to attack on a major scale the problem of obsolescence in hospitals—a need which is particularly critical in our larger cities.

In recent months, we have devoted much attention to problems of hospital occupancy and the probable effect of medicare on occupancy rates. Patients over 65 years of age now use about 25 percent of the Nation's hospital beds. We anticipate that medicare may increase by 20 percent the use of hospital beds by the aged; this is considered a maximum figure. Even taking this high estimate, the overall increase would only amount to a 5-percent increase in total occupancy.

Average utilization of adult hospital beds across the country ranges between 80 and 85 percent. Thus, for the country as a whole, we would expect that hospitals in general will be able to accommodate the impact of medicare without experiencing critical problems. There may be localized trouble spots, however. We have identified some 90 counties, containing less than 3 percent of the total population, where occupancy rates are normally in excess of 90 percent. In these areas, where the occupancy situation may be tight, we and our allies in the American Hospital Association and the American Medical Association are urging the local medical community to encourage interhospital cooperation on admission policies, orderly scheduling of admissions, establishment of clinical priorities, and careful utilization review.

Striking progress has been made in the past few months in helping hospitals attain the standards of care required for certification as providers of medicare services and in achieving compliance with title VI of the Civil Rights Act—two essentials for participation in medicare. As we stand today, less than 2 weeks from the liftoff of the program, we are highly optimistic that hospital benefits will in fact be available on July 1 for an overwhelming majority of those entitled to them. This condition will be a great tribute to governmental officials at all levels and to the hospital and medical professions whose determination to make medicare work has been translated into effective action.

With respect to health manpower supplies, the Congress has enacted three major pieces of legislation in the past 3 years, all with the vigorous support of the Administration. These are the Health Professions Educational Assistance Act of 1963, its amendments in 1965, and the Nurse Training Act of 1964. Another important bill, the Allied Health Professions Act, is now pending in the Congress. Partly as a result of this activity, 8 new medical schools will open within the next 2 years and 16 existing schools will increase their training capacity. The 885 additional places thus provided will increase medical school graduations by more than 10 percent. This program, of course, has a substantially delayed impact on medical care, since it will be a number of years before its products are ready to assume their full professional responsibilities. Nevertheless, this, together with similar progress in other health disciplines, is most heartening.

We must continue and strengthen these programs in the years ahead, so that our capacity to educate health manpower may catch up with the growth in demand for medical service. We must take steps to attract and retain health personnel. And there is an urgent need for making more efficient use of the manpower we have—a problem that is being approached nationally through such efforts as the heart disease, cancer and stroke program and locally by hospitals, group practice associations, and others.

I shall not go into detail concerning the manpower situation in other health occupations. Mr. Pond will discuss why we are trying to rethink the functions to be performed by the various kinds of trained people that collectively make up the health team—by the professionals, the technicians, and members of the allied health occupations.

But I would say this. I think this is one of our most important areas, because today it is recognized by an awful lot of us that highly trained people are being utilized in ways that are truly wasteful and are carrying out work that could be done by many others. We must reexamine what we consider to be the prerogatives and responsibilities of the more traditional health worker.

This morning Dr. Kelsey will be discussing how the computer and other new technologies are and can be used in health-related activities, and he will touch upon their significance in alleviating the manpower shortage.

Someone was mentioning, not long ago, that one of the new hospitals was built with a nurse's station with monitoring device, television, interroom communication, and so on. Little Billy was admitted at age 4 for his first hospitalization, and his mother left him. It got toward evening, and the nurse in her station was looking through the television. She noticed Billy was beginning to nod so she flicked the control and said, "Billy, would you like a glass of milk before you go to sleep?" He looked up quickly and found there was nobody in the room.

She waited. He didn't say anything. She said, "Billy, would you like a glass of milk before you go to sleep?" By that time he recognized where it came from, and he said, "No, thank you, wall." I guess everything has two sides.

Moving on to the enlarged challenges which we would have to meet under comprehensive health planning, let me emphasize that the rapid changes that are now taking place heap enlarged responsibilities on health planners, administrators, and evaluators. These changes make it much more important that they receive timely, factual information related to their needs and that they use that information. Obviously, the statistician grows in importance, since he produces so much of the massive information that constitutes the foundation of the public health structure.

You know, of course, that there is a manpower shortage in vital and health statistics, as well as among people competent to maintain the vital records that are so important for evidentiary purposes and as sources of fundamental demographic and health data. I am told that half the directors of vital statistics will have vacated their positions in the next 10 years. On the statistical side, the 14 schools of public health which were then accredited by the American Public Health Association graduated 147 statisticians during 1961–64, a rate of 37 per year. Some of these graduates took employment outside the United States. Clearly, many more, drawn from many sources, will be needed to replenish the country's estimated total of about 2,000 health statisticians.

The need for health statisticians exists at local, as well as State and Federal, levels. City health departments increased from 265 to 354 between 1957 and 1964, while single-county health departments increased from 787 to 927. Such local jurisdictions are bound to need more health personnel, including statisticians.

So much for the immediate future, with its present needs and impending responsibilities. What about tomorrow?

Legislation, entitled the "Comprehensive Health Planning and Public Health Services Amendments of 1966," was introduced on March 2 which would bring about a fundamental change in Federal-State-local relations in the health sphere. The scope of the proposed act is indicated by its opening "Findings and Declaration of Purpose":

> The Congress declares that fulfillment of our national purpose depends on promoting and assuring the highest level of health attainable for every person, in an environment which contributes positively to healthful individual and family living; that attainment of this goal depends on an effective partnership, involving close intergovernmental collaboration, official and voluntary efforts, and participation of individuals and organizations; and that Federal financial assistance must be directed to support the marshaling of all health resources—national, State, and local—to assure comprehensive health services of high quality for every person.

As I stated in testimony concerning this proposal, public health programs should find "the ultimate focus . . . in the local communities where services and people meet." There, I continued, we should concentrate "on the people of the community, not on disease entities." We should continue our attacks on the diseases that afflict people, but should not compartmentalize our approach by setting up relatively small, earmarked, categorical grants having limited objectives. Not competition, but cooperation should be encouraged in the interest of using health funds effectively.

Categorical grant programs have done much to strengthen State and local health competency in fields of increasing priority. But this progress has been achieved at the cost of flexibility in developing broadly conceived programs tailored to community needs. The comprehensive health planning bill would fundamentally alter the relationship among health programs. To participate in its benefits, each State would designate a responsible health planning agency and develop an advisory group representing State and local agencies, nongovernmental organizations and groups concerned with health, and consumers of health services. This council would help to assure that the administration of health programs is responsive to need.

Some have called this proposal the "partnership-for-health bill." It moves a great distance toward realizing the concept of cooperative Federal, State, local, and private effort that for so long has been a primary goal of the country's public health movement. State and local governments would have enlarged responsibilities, as the following statement in the bill makes clear:

> . . . the Congress finds comprehensive planning for health services, health manpower, and health facilities is essential at every level of government; that desirable administration requires strengthening the leadership and capacities of State health agencies; and that support of health service provided in their communities should be broadened and made more flexible.

An interesting feature of the bill is its provision allowing assignment of personnel for periods of up to 2 years in either direction between States and the Department of Health, Education, and Welfare, with full protection of salaries and benefits. This arrangement closely follows provisions in the Elementary and Secondary Education Act of 1965. I think this would provide for an increasingly productive cross-fertilization of thinking by permitting both Federal people in State Governments and State people in the Federal Government, on limited tours of duty.

The cooperation between all levels of government—a cooperation that includes the public—constitutes an example of that "creative Federalism" to which President Johnson has frequently referred over the last 2 years.

Another development of this eventful year has been the submission by the President of Reorganization Plan No. 3 of 1966, which would authorize reorganization of the Public Health Service. This plan was transmitted to Congress on April 25. It will become effective before the end of this week, if no formal objection is raised by either the Senate or the House of Representatives. The plan gives to the Secretary of the Department the authority to reorganize the Service and to coordinate health functions throughout the Department, now and in the future. It thus provides the same kind of flexibility in Federal health administration that is the objective of the partnership-for-health bill at the State level.

Thus, the entire complex of public health and medicine is in a period of explosive growth and dynamic change. We are responding to greatly increased demands for service. Part of our response is to expand our existing resources—in terms of manpower, facilities, and knowledge—and to develop new resources. Another part is to devise new patterns of operation and collaboration to make more effective use of the resources we have.

The keynote of many of our new activities is planning—envisioning goals, determining intermediate objectives, trying out methods of achieving them, and keeping flexible enough to redirect our efforts as circumstances may require. And for planning to be meaningful, in health as in all other enterprises, it must rest upon a solid base of information.

Therefore, it seems to me that we have entered an era of tremendous challenge to health statisticians. Yours are the skills that can tell us where we stand, where the needs are, where we are progressing, where we need to do better. Without a constant flow of reliable data, designed, collected, and interpreted with maximum relevance to program need, we are planning and operating in a vacuum, and in this day and age we can ill afford to be flying blind.

As a matter of fact, there was a psychiatrist who, I think, was experiencing all of the frustrations of flying blind with a young patient named Reginald. Reginald would not eat. His parents became concerned and dragged him into the psychiatrist's office. The psychiatrist had to do something with the kid right now. He didn't know too much about him. His first effort was to offer him a choice of goodies to eat. The kid kept screaming and refused everything. Finally he said in frustration, "What do you want?" Reginald said, "Worms." The psychiatrist turned to his nurse and said, "Get him some worms." In a few moments, the nurse came in with a plate of worms.

Reginald took one look and screamed again. The psychiatrist said, "What is the matter?" He said, "I like them fried." The psychiatrist told the nurse, "Fry them."

The next thing, she came back with a plate of fried worms. Reginald screamed again. "What is the matter now?" Reginald said, "I only want one worm." The psychiatrist said, "Okay, bring back one worm on a plate."

The nurse brought back one worm. He looked and screamed again. The psychiatrist said, "What now?" Reginald said, "I want you to eat half first." The psychiatrist screwed up all his courage, picked up the worm, and took half. He put the rest back on the plate and offered it to Reginald.

He screamed again. The psychiatrist said, "What now?" Reginald said, "You ate my half."

We need a basis in fact, and I think it is important that the statistician be in close and constant communication with the highest levels in which planning takes place, State by State, locality by locality. It is important that you and your profession be innovators in the design of your work, anticipating needs and developing the means of fulfilling them. I think that future health services require of statisticians, as they do of physicians, health administrators, and others, that courage and the imagination to examine traditional ways of doing things, to discard those which no longer serve efficiently in the new context, and to explore new ways that promise a better yield.

We in the Public Health Service wish you a most productive meeting, and we look forward to many more years of close collaboration with you individually and with your organization.

Dr. Linder. Thank you very much, Dr. Gehrig. I think you can see what is confronting us when I speak of the fact that winds of change are blowing.

Dr. Gehrig has certainly outlined many of the things that are now imminent in the developing change in the pattern of work that we are engaged in and the new things that may be coming.

Dr. Gehrig tells me that, unhappily, he will not be able to stay with us throughout the morning program because he has to get back to that desk and see what has been accumulating over the weekend. We are glad to have him here as long as he can stay, with the understanding that perhaps he will have to slip out a little later in the morning.

I think we should pay particular attention to what he said about planning. Planning certainly is the coming thing in public health, and it is certainly the one thing which is going to make a real important impact on the activities of the health statistician, the registrar, and the health statistics organizations in the Public Health Service and in all the public health units throughout the country.

While there are many new directions of development in public health statistics, I think that all of us are fully aware that the roots of our profession and the roots of our interest go back many years and are really based in the vital statistics system and in the vital records on which these statistics are based.

But this traditional area for our work, this area in which our whole profession was in fact born, is not a static area either. There are changes and developments in the vital statistics field which are important and which have wide-ranging scope.

This morning Dr. Wishik, who is associate dean for academic affairs and professor of maternal and child health at the Graduate School of Public Health, University of Pittsburgh, will develop for us some explorations in vital statistics in the modern setting.

We know that he will be able to point out to us some of the ways in which this most fundamental area of our work is now beginning to be changed and to be developed under the impact of modern health programs, modern techniques, and modern interests.

Explorations in Vital Statistics in the Modern Scene

Dr. Samuel M. Wishik, *Associate Dean for Academic Affairs, Graduate School of Public Health, University of Pittsburgh*

As a nonstatistician, speaking to this audience of experts, I should like to make a point that the word "explorations" in the title of my talk does not make me an explorer. The difference is that an explorer is supposed to go into uncharted areas, whereas explorations can be made by the person himself who just happens not to have been there before.

I am not claiming to be an intrepid explorer. On the contrary, I am making these explorations with much trepidation. So I ask you not to infer essential newness in the ideas that I shall present. I do hope that you will feel that I have selected items from a large list of possibilities, not necessarily because of newness but because they do have a high level of interest and perhaps also challenge.

I shall try to present my remarks in two portions, first the *content of vital statistics,* and secondly the techniques or *technology* involved. I shall organize the material on *content* around four concepts: the concepts of a gradient, of specificity, of equivalence, and of dynamism.

CONTENT OF VITAL STATISTICS

A Gradient

The first one, the concept of a gradient, is the one which long ago caused emphasis to be changed from a focus on mortality to a concern for the amount of morbidity. For example, a term long in use is the case-fatality rate, not merely the deaths but the total number of cases of typhoid fever.

Then in the past decade and longer, attention has been shifting from severe morbidity to minor morbidity, not satisfied with the clear diagnosis of typhoid but recognizing the mild salmonella group and also having to look at any case of diarrhea as having possible relevance.

From minor morbidity which usually still called for a specific diagnosis or syndrome, we now feel the necessity of moving into vaguer collections of symptoms. For example, it is well known that congenital malformation can be produced by a very mild attack of German measles. And it is warranted to assume that very mild attacks of other, as yet unnamed, syndromes may cause severe congenital malformations in the fetus. Unless attention is focused on symptoms rather than defined syndromes, one may miss some of the possibilities.

There is still another step to take and that is into the prodromal events, the things that are *almost* symptoms or what I like to call the "near misses." For example, in the pathogenesis of accidents, there may be no basic distinction between the child who is poisoned by taking medicine out of his grandmother's purse and the child who is about to remove the medicine and is stopped just in time. In a sense, the latter, too, may be part of the true case fatality rate.

There is a natural gradient from the norm to death, because nature abhors a vacuum; and I think statisticians do, too. Unless we look at the entire range of this gradient, we do not have the full denominator and may not have the denominator that is needed for prevention.

For example, the possible unfavorable outcomes of pregnancy can be more or less ranked from complete infertility at the bottom of a hypothetical ladder, through early interruptions of pregnancy, up through later interruptions, and so on. It is hoped that improved prenatal care will move the outcome up the ladder. But there is no assurance that it will move to the top of the ladder, which is normal survival. It may move from one rung only to the next higher one. An imperceptible unfavorable outcome, such as a very early unrecognized spontaneous abortion, could become an identifiable casualty. Paradoxically, the improvement of prenatal care might worsen the statistics.

In order to have the complete picture of the gradient, the next step—the one that statisticians have also given attention to—is the question of positive health, the meaning of wellness. For some years, I have been working with a set of scales along six or seven parameters. This gives combinations of values rather than a single number. This profile of connecting points on the scales gives implications concerning health status in a physical sense or a nonphysical sense. There are few statistical methods at the present time for studying such profiles. Perhaps the mathematics of completely irregular forms may help.

Some time ago, I tried to study the spontaneous movements of newborn babies to see if, in three dimensions, we could learn something about neurologic patterns and possible cerebral abnormality. The mathematicians could not help us to analyze our observations. Just this past week I learned that choreographers, who put the designs of their dances down on paper so that someone else can replicate them, are beginning to look at mathematics and the computers to try to write their choreography in more exactly reproducible form.

Specificity

By talking this way about my first concept of a gradient, I think you can see that I have eliminated much of the distinction that might have existed between vital statistics and health statistics. My second concept is the one of specificity. More specific or cruder types of indexes can be used. For each purpose, there may be an optimum point along the crude-to-specific parameter.

For example, working in Pakistan on a population problem, we were trying to develop indexes for measuring the effectiveness of a family planning program in lowering the birth rate. In sample household surveys, the crudest index would be the number of births that had occurred over the total number of households. If there is a reasonably consistent average number of women who are eligible to have births in a household, this crude index may be sufficient.

On the other hand, one could range from there through several steps of increasing refinement until one arrived at the specific index of the number of high-order births among the number of high-parity women. In Pakistan, we were not quite sure, and still are not, at which optimum point the investment would give the highest returns.

The more specific index is not necessarily better. Sometimes there may be great value in crude approaches. A system of *triage,* which the U.S. Army used, is one that we might use more than we do. The data or population would be divided into definitely "yes," definitely "no," and others. This would give clues to program priorities. The definitely "yes" permits focus on the high risk, vulnerable, or more susceptible ones. The category of "other," not definitely "yes" or not definitely "no," tells us where still to look, where to be less intensive but still alert.

Another less specific step than the triage is the concept of the *threshold,* where it becomes merely a matter of yes or no, above or below. For example, if one merely measures all interrupted pregnancies without a finer breakdown as to duration of gestation, this would be an acceptance of the threshold concept.

Nevertheless, it may be that the desirable objective is to move toward the ultimate goal of the highest possible specificity of completeness. If so, how can this be done? This conference is giving attention this week to the registration areas for divorces and marriages, which still have not completely covered this country.

The registration area concept can be developed for many other things in the years ahead. Beyond establishing minimum criteria for joining the registration area, how to develop adjustment coefficients for incompleteness in the area is a major challenge. For example, with respect to unreported fetal deaths in hospitals, sample studies of all hospital admissions aim at learning the total extent of fetal deaths.

The third step in this extension of the registration area concept is to establish preregistration adjustment coefficients in regions that have not yet joined the registration area. The objective of these last two steps is to look into the future, as Dr. Gehrig suggested, and see if the present inadequate data can in some way be placed along a continuum together with the more complete data that one hopes some day in the future to be able to obtain.

Adaptations and modifications of data in forms other than registration areas constitute another alternative. A well-known example that is particularly fitting in the international field is the method of trying to find gross clues to causes of death in other ways than through routine reporting of all deaths. Through nonmedical reporting on the nature of the death, the person who died with severe fulminating diarrhea is labeled cholera, the one who died with high fever and chills is labeled malaria, and the person who died with severe cough and spitting of blood is labeled tuberculosis. For many purposes, this might not be too far off from data that would have been obtained by medical reporting in such parts of the world.

I do not have time here to talk about geographic specificity, but this in itself is also a challenge. A commonly used unit in urban surveys is the city block. But is a city block the most logical and homogeneous unit? This assumes that the people on all four sides of the rectangle are related to each other across the back fences, whereas it is much more likely that they relate to each other across both sides of a street. Even this may be true only on side streets. One side of the boulevard is far removed from the other by streams of traffic. And perhaps with the development of the four-way stoplight, with the all-walk-all-red sign, it may be the intersection that is the most appropriate place for focusing the geographic unit.

Equivalence

My third concept is that of equivalence, which is another word for the weighting of factors. With respect to mortality of premature babies, for example, the survival chances are most closely related to birth weight. Adjusting hospital statistics with values based on survival chances among small prematures as compared with large prematures would give more meaningful comparability in time and place. The method is also applicable to evaluation of program effectiveness. For example, if there had been different rates of acceptance of immunization according to certain characteristics of the population, a campaign would get more "credit" for successful smallpox vaccinations among the more resistant groups than among the less difficult ones.

Dynamism

The fourth concept I have called dynamism, which focuses on mobility or movement and is not in a judgmental sense the noun of the word "dynamic." I can use as an example of this the problem of taking a pregnancy life history. With allowances for the notorious inaccuracy of the woman's recall in retrospective interviews, included in the pregnancy life history are such factors as parity, spacing, age, complications, and others. These factors have been studied in progressive degrees of sophistication: first, the single factor, whether it is parity or age alone related to mortality; second, the combination of factors, age plus parity; and third, the classification by groups of factors in a somewhat different way.

For example, if five women each had had four pregnancies, there could be at least five different patterns to their pregnancy history, as follows:

One woman had her births between the ages of 20 and 35 and fairly equally spaced. This woman, we might say, had a reasonable starting age for her pregnancies, regular spacing, and early completion.

The second woman had her four children between the ages of 20 and 26. She had a reasonable starting age, close spacing, and early completion.

The third had her four children between 15 and 20. She had a very early starting age, very close spacing, and very early completion of childbearing.

The fourth woman had her four children between 35 and 45. She had a late starting age, close spacing, and late completion.

The last woman in my hypothetical series had her four children between the ages of 20 and 45. She had a reasonable starting age, wide spacing, and very late completion.

We have to develop new mathematical systems to handle data on such different patterns. The stochastic model is one technique that is being used.

The reason I use the word "dynamism" is to try to remind ourselves that it is not merely the last previous "episode" in a history that we are interested in—such as the experience of the last previous pregnancy; or, if you are studying population mobility, the last place of residence; or, if you are studying marriage and divorce, it is not merely the last marriage—but the life history of each one of these things in patterns of number of episodes, durations, intervals, age, and so forth. This concept puts study populations into cohorts and presents another challenge to improve longitudinal types of analysis.

TECHNOLOGY

I shall say a few words about technique—perhaps the more appropriate word is technology, the application of newer technology to vital and health statistics.

One of the concepts of technique that I would like to emphasize is that of *surveillance.* A health officer, for example, could select two maternity hospitals and ask them to keep reporting on congenital malformations, just such a system as the Pan American Health Organization is trying to organize throughout the Americas. A health officer could have several active private practitioners report regularly on the "disease of the week," and he would quickly recognize that there are diseases of the week that go through his community. The surveillance system assumes the establishment of statistical thresholds of "acceptable" levels of accidents, poisoning, or the diseases that are being monitored. The idea of surveillance is not new. Very few places, however, are practicing it in a statistically sound manner.

We have given the best technology that we know how to the computerized analysis of data; whereas, in many ways in the collection of the data in the first place we are still in a horse-and-buggy era. Concentrated effort must aim to introduce technology into *data collection,* over and beyond simple old fashioned interviews, whether by telephone, or by mail, or personally.

For example, in studies on pregnancy, we recognized the inadequacies of the usual monthly recall of the woman's experiences during her prenatal period and established a maximum acceptable recall period of 1 day. This required interviewing the woman every 24 hours. For this, we had to devise a question-asking instrument which we put into her home. She answered the questions each day. If she did not answer promptly, the instrument moved the paper so that there was a blank, with no chance of her reporting delayed recall data. Such a device permits moving the data quickly from the respondent to the computer.

For some years, we have tried unsuccessfully to have a central telephone receiver which receives data from the respondents if they have the right kind of attachment to their telephone. But I do not think it will be very long before there will be "instant data" by the combination of such devices, the universal birth number, and various types of record linkage.

I would like to add just one more suggestion on technology, and this is that of *dynamic visualization.* A good many years ago I tried to encourage epidemiologists who were studying urban epidemics to set up their maps of a city with pinpoints of the new cases each day or week, photograph the maps in time sequence, and then put them onto motion picture film to see if we could visually identify ameboid or other movements of the epidemic which could not be analyzed mathematically or captured in any other way.

Now we can be much more sophisticated than that. We can use the computer to give us visual flow. Just as Times Square in New York has those big electric signs with all kinds of moving figures on them, we ought to be able to computerize our data so that we can sit in front of a viewing screen, see motion, and in this way draw dynamic meaning from the material.

Such a technique could measure many things. For example, in trying to motivate a community or a society to a changed practice, we recognize that you do not have to reach everyone—you do not have to reach 100 percent of them—but you utilize "diffusion." Those whom you reach spread the word to others. But we do not know where the diffusion lines are. We do not know how to make the seeding of the community so strategic that the most effective lines of diffusion will be followed.

In the United States, it is paradoxical that despite the most advanced technology there is need for adaptations which may be very similar to those that are naturally called upon in underdeveloped parts of the world. We have complete registration areas for some things, but for others this country is still an incomplete or underdeveloped registration area.

Some of these concepts that I have given you are obviously ready for application; some of them are matters for research. I shall not try to distinguish between them, but let you decide how you are using them and how you might do so.

Dr. LINDER. I believe, Professor Wishik, that I would express the opinion of this audience if we were to bestow upon you the title of "explorer" and not merely one who indulges in exploration.

We might even think it appropriate to associate you as an explorer with Project Mohole, which I believe is the proper name of the project that is under development for drilling a hole many thousands of feet down into the earth's crust. I think we might associate you with this project, because your explorations have not been just surface observations but have been comments in depth. You touched upon fundamental concepts and fundamental principles that are indeed very profound in representing what we should do in the field of vital and health statistics.

Another area for exploration and adventure is opening up in the field of scientific information systems. Here, when we talk about scientific information or scientific communication, we are not talking about public relations systems in the conventional meaning of those words; but we are talking about the question of how the enormous quantity of scientific information which has developed in the research programs of the health fraternity is effectively communicated to people who are not immediately concerned with each individual project. And this question of scientific communication has become so important and so demanding of a solution, if we are to gain the full product from the investment that is being made in research, that the Surgeon General has appointed Dr. Kelsey as a special assistant to his office to explore the problems and to encourage programs and practices which relate to the exchange of scientific information.

We have Dr. F. Ellis Kelsey with us this morning to tell us something of this program of scientific information systems and, particularly, how it relates to health statistics as a part of that program.

Information Systems for Tomorrow's Health Programs

Dr. F. Ellis Kelsey,* *Special Assistant to the Surgeon General for Scientific Information, U.S. Public Health Service*

The general theme of this opening session is "Today and Tomorrow in Public Health." My topic was given to me as "Information Systems for Tomorrow's Health Programs."

One particular aspect of this seems to bubble up at every discussion. I refer to the need for information about what is happening, medically speaking, to individuals or to particular groups of individuals—those who smoke, those who use prenatal care services, those who are over 65, and so on. In theory at least, full use of modern methods of handling information should make possible a kind of health intelligence system, or continuing health census, which would allow for getting answers to these kinds of questions, answers which are vital for effiicient health systems planning and development as well as for good personal health services.

As Dr. Gehrig emphasized, health care services, facilities, resources, and personnel are all in short supply today. Three action courses suggest themselves:

1. Reduce the demand for health services by promoting good health through preventive medicine and earlier diagnosis.
2. Duplicate and reduplicate the kinds of facilities and resources, including personnel, that we have today.
3. Finally, increase the effective supply of health services by figuring out more efficient ways and means for using the available facilities and resources through increased productivity.

All three action courses must be pursued to the limit if we are to match demand with supply. But it is the third, increased productivity, that I commend for your attention today. Visualize, if you will, the kind of an information collection or bank I mentioned a moment ago—a total information bank, containing the vital statistics and previous medical history of all U.S. residents, in full detail, and with a capability, almost certainly computer-based, for answering both general and specific questions reliably, fully, and promptly.

Such a national resource would have three major kinds of benefits. It would:

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*Deceased, November 15, 1966.

1. Provide a kind of research tool for uncovering new patterns of events. Such is now possible only by setting up very expensive *ad hoc* surveys, and we usually seem to forget to collect data on what later turns out to be a critical parameter.
2. Permit better medical care through more informed judgments of physicians as they are confronted with the problem-solving situation each patient represents.
3. Provide selectively the precise factual information needed by all professional health workers to help them learn to solve each of their workaday problems. Thus, a sufficient medical information system would give us a truly effective device for undergraduate, graduate, and continuing education for all of the health professions.

I referred to this information file as a bank. With this, as with all banks, we can get out only what we put in it. And so we come to the first trap.

This next section of my presentation might be entitled "The Payoff Function" or "What's in It for Me?"

The acronym GIGO—garbage-in-garbage-out—is a short phrase to remind us that computers are not data-purifiers but only idiots which remember everything, even wrong things. And so we must consider the counterfeit currency that will be deposited in the bank.

Reliable, adequate, and prompt input and how to accomplish it. Here we can learn a lesson from the Social Security Administration. Its system depends heavily on fast death notices. Otherwise, the benefit checks continue to be issued; and checks once issued are likely to be cashed. But the Nation's undertakers—or rather morticians—are very prompt to notify the SSA of individual deaths. Their burial fees are often at stake. This is their payoff.

Health information system inputs. The patient has an obvious stake in having his personal health history always accessible to his physician, including his physician-of-the-moment. The physician has an obvious stake in having a reliable and substantial record of his patient's medical history rapidly available to help him in his diagnosis and choice of therapy decisionmaking. The hospital has an obvious stake in having a good medical record system for its patients, both for more efficient individual patient care and as a source of summary statistics about what is going on in that hospital. The Government—Federal, State, and local—has an obvious stake in quick reliable analyses of the state of disease and the quality, quantity, and use of medical care systems, facilities, and resources, including personnel. It is a much more obvious stake as a result of recent congressional acceptance of public responsibility for seeing to it that, altogether, our health care systems meet the continually rising expectations of all of the public. Thus, there are payoff benefits for all concerned.

I mentioned earlier that such a national health data bank would almost certainly be computer-based. This next section might well be entitled "Render Unto Caesar That Which Is Caesar's" or "Let's Exploit Machines Rather Than People," the use of machines in place of muscular energy, both animal and human.

The information revolution in which we now find ourselves may well have a greater impact on human affairs—and human satisfactions—than the Industrial Revolution. Modern information technology is the invention that has given rise to a host of new necessities, including the general demand for better health care and for better health information systems. We hear, more and more often, plaintive and highly derogatory comparisons between our health information systems and the airlines' ticket reservation system or the Internal Revenue Service's uncanny ability to keep track of our income.

Automation of various *parts* of our health care and health information systems is now old hat. You are familiar, I am sure, with many of these. As one example, the National Library of Medicine has begun to apply these modern tools for the production of *Index Medicus* and for its biweekly *Current Catalog.* These applications are important in themselves, but they are even more important because of the new literature searching services that the automated file of descriptors and bibliographic data make possible. From here it is a relatively short step to highly personalized search services which will have the effect of a very large number of personal servant librarians searching through the literature for you and bringing you just the right articles, reports, and reviews.

The Food and Drug Administration is well along the road to providing a computer-based mechanism for the rapid exposure of new information about drug hazards through its adverse drug reaction reporting program. The major problem remaining here is the quality, and nonrepresentativeness, of the input data.

The Kaiser-Permanente group offers concrete evidences of both economic and technical feasibility for the systematic automation of medical information handling. Briefly, this is based on a facility for gathering a wide variety of medical data from individual medical outpatients, before they ever see the physician. Automation is heavily relied on, not only to decrease costs but also, since a goodly part of the examination is on-line with the computer, to direct certain modifications in the routine of the examinations according to the results being obtained. The computer is also used to prepare a succinct, readable report to the physician the first time he is confronted with the patient. As a result, the physician time required for each patient is only 15 minutes and no followup appointment is necessary with half of the patients. In addition, the computer is so instructed that it flags those clear and present medical conditions which require immediate attendance by the physician.

This system is providing for the accumulation of very large amounts of personal medical data on over 40,000 individuals each year. A carefully structured 10-year evaluation program is now in its second year. We can look forward with confidence to substantive answers to many pertinent questions of a cost-benefit nature, answers which will take the place of the present guesses or hopes we are now forced to resort to in medical care systems planning and designing.

The automated hospital information system developed at the Children's Hospital of Akron, Ohio, offers evidences now that automation costs for hospital information systems can be controlled. The Massachusetts General Hospital project is impressive in a technical sense. We have, in fact, remote consoles for both input and output, on-line systems for simultaneous access to the computer by many users, optical readers, and photocomposition devices, along with some very sophisticated computer instruction programs. In addition to the applications I have mentioned, there are many other such projects underway; each has its own special accent, but altogether they offer an impressive glimmering of the future.

These glimmerings are not going unnoticed. The President has made clear charge to the Department of Health, Education, and Welfare for the full-scale development of new technology, systems, and concepts in the provision of health services.

The Report of the National Commission on Technology, Automation, and Economic Progress said:

> The tasks that lie ahead include not only the implementation of the programs recently passed, but a broader effort to achieve the following goals: (1) fuller access to diagnostic and patient care facilities by all groups in the population; (2) broader and bolder use of the computer and other new health technologies; (3) increased spread and use of health statistics, information, and indices; and (4) new programs for training health manpower.

So far I have outlined the heart of a total health information system, mentioned some of the projects which are developing a deeper understanding of the component subsystems, listed some of the kinds of benefits that will come from such a total system, and indicated the general intent to push ahead in this important area.

Now, we come to a section that might be called "How Do We Get From Here to There?" Two roadways seem to be open to the Public Health Service. The first of these is to continue to support Research and Development projects and programs in information handling that originate from the need to do something about a particular situation, to help us cope with an immediate problem. Examples of these might be cited: "What are we going to do with this pile of medical records?" "How can we keep down the costs in our hospital or, at least, keep them from rising so fast?" "What can we do about the underutilization of these health facilities?" "How can we reduce the paper work for our nurses?" "How can we reduce medication errors in this hospital?" "What is the real need for more intensive care units in this locality?"

For the most part these represent short-term decisions in that they involve the more efficient allocation of existing resources or, at best, the making of marginal changes in them. Eventually, solutions to these kinds of problems will result in an efficient overall system; in the language of operations research or systems analysis, this is the optimization of subsystems approach. We can quite easily continue to support the development and wider use of the Kaiser-Permanente kind of automation and hope to gain, ultimately, the larger benefits that can come from hooking these subsystems together.

The second roadway to the future is to hook together now the present medical data banks of vital statistics and add personal health histories in depth. Thus, we could construct the heart of a total health information system and get the answers we need—reliably, fully, and quickly.

Costs, in time and in money, would be substantial. A preliminary conceptual analysis and system design, with certain arbitrary but reasonable assumptions and constraints and considered for a 10-year phasing period each year, would include amortization of setup costs and the cost of obtaining and coding a core medical history for the entire population.

A preliminary study, now in process, is beginning to structure an outline of the major benefits to be expected from a total system. Briefly, these include:

1. Timely statistical analyses and reviews which would have an important bearing on epidemiological warnings.
2. Early warnings on the adverse effects of drug therapy and identification of favorable therapies. The computer would compare the proposed therapy with the statistical successes and dangers of alternative therapies. Several or many therapies could be compared.
3. Furthering the progress of a computer-aided, diagnostic capability, providing the physician with the most up-to-date summation of medical information, both new and old.
4. A vital resource for a superior advisory service to each physician, including a drug advisory service. Information would be provided in a rapid manner, using latest computer advances.
5. A controlled refinement of the statistical validity and comprehensiveness of data used for testing new drugs.
6. A timely and reliable fund of comprehensive data for many other areas of research.
7. The application of the ultimate test of any health care system, facility, surgical procedure, drug, preventive care, or other function. That test requires the timely and reliable answer to the question, "How did it affect the patient, the individual?" To apply this measurement, on a nationwide basis, some sort of national health data bank is essential.

But, again, how would we get from here to there, along this second roadway to the future? Characteristically, the truly big systems development differs from the ordinary situations in the size of possible mistakes and the consequences of poor planning.

All of which reminds me of my favorite computer story—the one where the observer, having observed a computer in action, said, "It would take 100 men a thousand years to make that big a mistake."

However, a step-by-step approach may be possible, at least in the planning and testing phases. We have the framework for the system now in our vital statistics collections. We can add slowly to this such kinds of information about each U.S. resident as can be justified in and of themselves, for thought-through purposes only. Experiences at Tulane, to emphasize this point, clearly identify situations where clinical history and physical examination data sit unused even though they be highly available.

Even before this growth-by-accretion is undertaken, I suspect there would be great profit in a more intensive application of modern methods for statewide or nationwide collections of plain old vital statistics, for learning from and perhaps sharing with the SSA data system. I am not sure, however, that the actual implementation of these various improvements should be step by step. Certainly the planning must be. But the setting-up costs for each step toward a large system may prove to be too high unless they can be proportioned against multiple benefits. We can take no little steps, nor can we take long jumps without planning and practice.

But for purely scientific and medical reasons, a computer-based file of the medical records of all U.S. residents is, I think, inevitable. The question is not shall we have it or even when, but how.

To repeat, very big systems, such as the one described here, can come into being by hooking well-developed smaller subsystems together or by setting up a single big system of low capability and gradually extending its depth of operation. This second, big-system-first roadway to the future has the advantages and disadvantages that usually accompany long-range decisions, those that call for a discrete jump in getting from here to there in developing resources and systems to cope with tomorrow's problems. But this long-range approach tends to give shape to the future, as opposed to just responding to it. Further, it requires a high degree of both expressive and instrumental leadership, a phrase which, I hope, will describe the Public Health Service with increasing aptness in the years which lie ahead.

In conclusion, I will list three means by which we might expect to bring about improvements in our systems for handling the country's vital and health statistics. Foremost among these is an effort to increase the range of usefulness of vital and health statistics. This is another way of expressing the need to focus more sharply on the payoff functions.

Second are the opportunities that lie before us if we can draw on and build on the data collections and experiences of the SSA systems and those of certain other Government agencies.

Finally, it seems probable that a centralized but distributed system, founded on an interconnected series of 50 statewide files, would be the most practical solution of the organization, responsibility, and authority problems. Standardization complexities remain with us, of course. These may have been overemphasized; I am told of new approaches to the electronic handling of data which may let us, increasingly in the future, render unto the machine that which is the machine's, releasing much of our skilled professionals' time for those things that only they can do. This is, potentially, the biggest payoff function of all.

The last sad admission or confession: Scientific information technology is unfortunately not the whole story. We must pay more attention to the trap which is best exemplified by the remark of the farmer when he was offered new information about farming by the county agent. He said, "Heck, I ain't farming half as good as I know how to now."

Dr. LINDER. It may be, Dr. Kelsey, that we are not farming as good as we already know how to farm. But in spite of that, we are going to get more information out of our computers on what to do about it.

In your remarks you have touched upon a whole range of computer problems, and I think the people here have noticed that we have a workshop on automatic data processing through which we are going to work a little more on some of these same types of questions.

Over the years I have had many types of contact with the problems of data processing, and I have noticed some people have a knack for data processing; some people do not. It has always seemed to me that this ability to cope with data processing problems is something of an art; but I feel that if we really work on it, this art of data processing can be made into a science of data processing. And I have been waiting for some leader to come along who can express the basic elements of these processes and convert the elements of this art to a science.

I was looking the other day at some of the papers that have been prepared for these workshops. I noticed in the papers relating to the workshop on automatic data processing that they are beginning to be filled up with all sorts of charts and diagrams and systems outlines. And this led me to begin to hope that the advent of the computer will be the stimulus that we have been waiting for and which will be adequate to convert the whole field to a real scientific effort, rather than just an artistic effort.

We have mentioned several times this morning that the keynote of the future in health programs is going to be that of planning. For this reason, we are very fortunate to have with us as our next discussant Mr. Allen Pond, who is the Assistant Surgeon General for Plans.

I happen to know that Mr. Pond knows how to plan. We could cite many examples of the foresight that he has used in the Public Health Service in the planning area. Everybody now is very much concerned about health resources and health manpower and health facilities. Everybody is aware now that this is one of the critical problems of the coming months and years. Yet it was more than a year ago, I believe, that Mr. Pond wrote a memorandum to the National Center for Health Statistics in which he said that he could foresee that in the future this problem of health resources was going to be important and we had better start developing a program to cope with it.

It is this ability to look a little into the future that is one of the essential prerequisites of planning, and Mr. Pond recognizes the role that statistics have to play in this.

Mr. Pond also has another thing in common with many of us. He came into the health field from one of the related professions, having started out in engineering. With this engineering background, Mr. Pond, in common with statisticians, is used to thinking in quantitative terms. He is a mathematician, he likes to see figures, he likes to see facts put down in a precise manner. So we have a common feeling for these matters with the Assistant Surgeon General for Plans.

Mr. Pond did start out in the engineering field, but for many years now he has been actively engaged in public health aspects and has been a prolific writer of papers on many points of public health, sanitation, the hygiene of housing, and related questions.

This morning Mr. Pond will talk to us about resource statistics, the problems of health manpower and facilities.

Resource Statistics—Health Manpower and Facilities

Mr. M. Allen Pond, *Assistant Surgeon General for Plans, U.S. Public Health Service*

I think the proudest moment in my life was when I convinced Secretary Folsom in 1957 on the legislation which set up the National Health Survey part of the administration's program; that is the only real planning that I have ever done.

We in the United States are well into the geometric growth phase of the public interest in health. In my own professional lifetime of 30 years, our public and private expenditures for health and medical care have increased from about $3 billion to over $38 billion annually. Until 1957, however, both the gross national product and health expenditures grew at about the same pace. Since then, health expenditures have increased steadily at a far faster rate than the economic growth rate of the country. During the last decade, the ratio of health expenditures to the gross national product has risen from 4.7 to about 6 percent, a proportionate gain of about 25 percent.

Data like these obviously have influenced the previous speakers on this program who have pointed out that there is a shortage of health manpower and facilities. We are trying to provide more of each. They have noted that some of the work in the field of health, previously performed by people, is being turned over to machines. The question is: "What else can we do?"

One fact is certain: There will be no cut in health programs. Quite the contrary. Every one of us here knows that medicare; comprehensive health planning; regional programs for heart disease, cancer, and stroke; better maternal and infant care; improved control of environmental hazards; and all the rest will not complete the inventory of our national health effort. I doubt that our inventory will be completed a century hence.

Clearly, we are just beginning to undertake new and far-reaching proposals for improving the country's health. After the fundamental need for food and shelter has begun to be satisfied, people all over the world seek better health. Apparently this is a universal and insatiable need.

It is my purpose here today to enlist your help in thinking through the maze that confronts all of us who have chosen to make our way in the field of health.

What can we do, beyond what has already been discussed, to improve the health of the American people? I think we can do two additional things, and to do them we shall need to do a third:

1. We can help redefine and rearrange and improve the contributions made by the many health occupations as they seek to provide the end product—better health for each of us.
2. We can plan our health efforts as a whole more effectively.
3. To do these things, we need more solid, more detailed health statistics, and we need them promptly.

Essentially, I will talk about three interrelated points: (1) The need for more—and better—analysis of functions; leading to (2) better teamwork than now prevails among the workers in the health vineyard; based upon (3) much more delegation of responsibility.

We need to rethink the activities of doctors, nurses, health technicians, and related health occupations. As the Surgeon General noted at the White House Conference on Health last November, "Relatively little is known about what today's health workers actually do, how they spend their time, to what extent they make full use of the training they receive."

Almost every health function deserves job analysis in terms of present needs and present possibilities. But to perform such analyses would require much more information about most of the occupations than we now have. If we had this information, we would be better able to develop sequences of health occupations into natural career ladders, up which many who begin on lower rungs might reasonably hope to climb.

Look, if you will, at the implications of one set of statistics. In the United States, the infant death rate is around 25 deaths annually per 1,000 live births. In the Netherlands, it is about 16. There are numerous differences in the two situations, of course. One that my statistician friends talk about is that a pregnant woman in the Netherlands is entitled to 9 visits by a paramedical aide during her pregnancy, followed by 12 visits on the child over the ensuing year. If these paramedical people note something suspicious, the problem is referred to more expert personnel. Obviously, this saves time for the doctor. It may also save children's lives. Do we know whether this latter is a fact?

Basic to improving the health team is the need for more facts. Who actually is doing what, and with what effect? Who with lesser training might be doing some of the procedures that are now in the hands of people trained to accomplish more difficult tasks? What combinations of activities will employ the least health manpower to accomplish a given task successfully, in terms of skill-hours that must have been invested in the health team? I am not thinking of mere time-and-motion studies, but of the integration of effort to attain the maximum benefit for the least expenditure of scarce resources.

This integration of effort leads directly to the delegation of responsibility. Here is an area which shows some promise in delivering an immediate benefit.

Delegating responsibility implies improving the abilites of everyone on the organizational ladder. Sometimes it can be accomplished by dividing tasks, so that portions that demand less training, skill, or experience are performed by one or more persons farther down the scale.

Let me cite an example of some thinking in the Public Health Service with respect to stretching the availability of dental services. Present projections of population growth and output of dental schools indicate that the number of dentists per unit of population will continue to decrease at least until 1980. Even though there has been a significant national effort to increase the capacity for dental education, the projections continue to point to increasing shortages. As a result, the Service is supporting research and demonstrations on the utilization of various types of assistants to spread the professional skill of the graduate dentist and to minimize his involvement in the kinds of work which can be done just as well by others less well-trained. Thus, we may hope for an absolute increase in the amount of dental service that can be provided in the United States at the same time that the ratio of dentists to population decreases.

There are those who believe that the computer (or a good information system) can take over many of the tasks that too many professionals are now laboriously performing. But few of us are ready to delegate to a computer the responsibility for developing a health program. If we knew absolutely everything that should go into such a program and had a computer large enough to take all this information, along with experts to get it into the machine, such a project might be worth considering. However, framing a satisfactory health program either for the individual or for a community is the job of professionals. It is a job in which we must make use of all members of the health team, including specialists and social agencies that can help. It is a job that requires knowledge of the patient as a whole man. In the words of the National Commission on Community Health Services:

> His (the physician's) concern will be for the patient as a whole, and his relationship with the patient must be a continuing one. In order to carry out his coordinating role, it is essential that all pertinent health information be channeled through him. . . . He will have knowledge of and access to all the health resources of the community . . . and will mobilize them for the patient.

Let me turn to our need to plan our health efforts more effectively. I am now thinking of entire programs and groups of programs. While my comments are largely in Federal terms, what I shall be saying is applicable to State and local programs and to both the public and private sectors of our economy.

Federal budgets traditionally have shown how much it was proposed to spend for personnel, construction, travel, etc.; with the figures distributed into broadly indentified activities or programs. Such budgets often reach department heads, in the words of one critic, "with objectives unclear, likely benefits vague, costs uncertain, alternatives lacking, and little indication of the long-term commitments."

The executive branch is now trying to remedy this weakness. Our Department, along with others, is preparing materials to be used as a basis for 5-year program memoranda. Major segments of our programs have been identified for more definite analysis, so that planners will work in terms of ranges of possibilities. In this exercise we also will be trying to assess cost effectiveness.

We know, for example, that health manpower and health facilities are now in short supply. We can predict that shortages are likely to increase. But we do not know exactly what is lacking. We do not even know what our resources are in adequate detail. We lack data on the characteristics of physicians; for example, their exact distribution, what they are doing, with whom they are working, how fast each kind or type is being produced, and so on.

There is a similar lack of detailed factual information about health facilities and services—about out-patient clinics, maternity wards, community health centers, long-term care facilities, home health services, and the like. Yet these are the data that provide the basis for modern health budgeting.

State and local health departments can confidently expect that this new kind of budgeting will increasingly be used in relation to their activities. Stemming from systems analysis, among its basic ingredients are relating inputs (as costs, manpower, facilities) to outputs (benefits); development of alternatives, with little respect during the analysis for jurisdictional boundaries; arrangement of possibilities by progressive steps, wherever possible, and quantification throughout, rather than spottily.

Cost effectiveness in the health field is a comparatively new concept. It had little acceptance when the National Health Survey came into being. But the Public Health Service was looking in the same general direction, even that early, in feeling that new baseline data were needed in public health. The conviction has grown since then, as the continued stabilization of the country's death rate diminished its value as a measure of the country's health. The death rate has varied irregularly only between 9.2 and 9.6 per 1,000 population during the last decade and a half. Even the age-adjusted death rate is now similarly stable, so that the health impact of the country's progressive aging also has passed beyond discriminating measurement by this statistic. Of course, there are specific death rates that tell far from monotonous stories.

Since its inception, the National Center for Health Statistics has been developing baseline morbidity data to use in measuring health goals and achievements. Program planners and program managers throughout our Department and elsewhere look to the Center for accurate current data on all important general types of health resources and activities.

Interest in such data is a major concern of this Administration. President Johnson, in his March 1, 1966, Special Message to the Congress on Health and Education, referred to the Department of Health, Education, and Welfare as the "Department of the People" because of its "continuing concern for the social well-being of our people." He added:

> To improve our ability to chart our progress, I have asked the Secretary to establish within his Office the resources to develop the necessary social statistics and indicators to supplement those prepared by the Bureau of Labor Statistics and the Council of Economic Advisors. With these yardsticks, we can better measure the distance we have come and plan for the way ahead.

What is your role in all of this? Let me offer a suggestion for your consideration. The sampling frame and methodology that the National Center for Health Statistics has developed for obtaining measures of the Nation's health are something that geographical areas could accept as standard and use to obtain similar health measures for their own needs. Might we not look forward, in the near future, to States joining each other to form a health-statistics area? You have registration areas for births, deaths, marriages, divorces. Why not a health-statistics area composed of jurisdictions that meet standards established by the National Center for Health Statistics?

Pending legislation recommended by the President to overhaul our Public Health Service system of grants-in-aid to the States would, I believe, be helpful in making funds available for such projects. However, it will require initiative on the part of the health statistics community to organize programs.

I realize there would be difficulties, but two things would be in favor of the possibility. On the one hand, we have the powerful tool of sampling. On the other, we already have general national health statistics in the data being published by the Center. Thus, we have both a method that could be similarly applied everywhere and national values against which local values could be assessed. When the death registration area was in process of formation, there were no real national figures. The reversed situation with respect to health statistics could be a benefit.

Hawaii and Puerto Rico have already collected health statistics similar to—and on patterns compatible with—those used by the National Center for Health Statistics. In a sense, they are already members of health-statistics areas like those I am suggesting. Other areas could qualify by conforming to the standards—States, groups of States, cities, counties, regions. The data gathered from these areas would be directly comparable with the national figures and with each other, permitting fruitful comparisons and coordination of efforts.

In closing, I am confident that we have now entered into a golden age of public health. As public interest in our work increases, we will be called upon more and more to produce. As expenditures for health grow, we will be challenged to measure the results of our efforts much more precisely than ever before. And we will have to perform adequately with predictably limited resources.

I am optimistic enough to believe that we in the field of public health will not be found wanting.

Dr. LINDER. Thank you, Mr. Pond. I think you will agree that the remarks I made about Mr. Pond's ability to look ahead and plan were correct, because he has pointed out several things in the future to which we might give some consideration.

Particularly, I noted his last remark that perhaps the time has come to begin to think of something like the death registration area—but for the broader field of health statistics.

It has now been 10 years since Mr. Pond's planning when he persuaded Secretary Folsom to put the National Health Survey Act in the legislative program of 1956. Perhaps you do not realize that July 3 will be the 10th anniversary of the signing of the National Health Survey Act. So by the end of the month, we will be celebrating our 10th anniversary. And it has now been a little over 5 years since the National Center for Health Statistics was established in the Public Health Service.

So perhaps it is time to start thinking about developing a goal, a "registration area," or a concept of a program of some kind which would stimulate the development of centers of this kind in the State offices.

As I have said, the National Center has been established for over 5 years and, I believe, has been successful in meeting a wide range of needs within the Public Health Service and in a broader clientele within the health professions. I guess I have been a little disappointed that in this 5- or 6-year time not a single State has followed this example by setting up a State center for health statistics. And this is something to which I think maybe we should give a little thought. Is there an appropriate pattern for a State center for health statistics that would be useful and serve an important need? If some definition or concept of such a State center could be established, then perhaps we could find some way to have resources funneled into such State centers. This might be what Mr. Pond is suggesting where we would have a sort of "registration area" for health statistics in its broadest sense.

I am going to continue to think about this challenging idea a little bit and see if we can do a little advance planning on this, too.

second general session

JUNE
1966

STATISTICS FOR MEDICAL CARE: NEEDS AND PLANS

SECOND GENERAL SESSION

Presiding

Mr. Theodore D. Woolsey, *Deputy Director, National Center for Health Statistics, U.S. Public Health Service*

Welcome to the Second General Session of the Public Health Conference on Records and Statistics.

I will at this time introduce only one of the people on the platform, the others will be introduced as they speak. But I wanted those very few of you who do not yet know him to meet Dr. Franklin D. Yoder, who has been director of the Illinois Department of Public Health since 1961.

Dr. Yoder is here as liaison to the Conference from the Association of State and Territorial Health Officers. He is a past president of ASTHO and is presently chairman of the ASTHO Health Services Administration Committee. We are very glad to have Dr. Yoder here, and at the end of this program we hope to have a few comments from him about his thoughts and reactions to the conference so far. This is always of particular interest to us and it has been a custom in the past at the Public Health Conference.

This is the first time that the Public Health Conference on Records and Statistics has had a general session on medical care statistics. I am particularly delighted to preside at this session, because the subject of this morning's talks is of particular interest to me.

I think that the reasons for electing to have this session at this time are really quite obvious, but I would like to review them very briefly. As you have undoubtedly become aware from the opening session and at the various workshops, both the Federal Government and the States are rapidly becoming deeply involved in programs of medical care, in the effort to improve the system of providing medical care to all the people.

Consequently, there is an exploding demand for hard data on the system and how it is working, where it is going, where the problem areas are, research results on how to make it work better, and the evaluation of the result of the new programs.

As statisticians, I feel it is our duty to keep abreast of the developments in this area, discover where the data needs are, and construct data collection systems or help design studies to provide what is needed. Furthermore, we have to coordinate our efforts, exchange our experiences, and plan together. And there is a sense of urgency about this.

Medicare is about to go into operation, but the full impact of that legislation on medical care will not be felt until all of its titles are activated. Senate bill 3008, the comprehensive health planning bill, is on the horizon and again will make new demands upon statisticians for providing statistics to feed into the planning operation in the area of medical care.

The Public Health Conference on Records and Statistics presents us with a particularly fine opportunity to discuss some of these matters. First, because of the presence of so many statisticians from State health departments who will be called upon in this effort. Second, because of the proximity of people who are knowledgeable about the new legislation. And third, because of the flexibility of our charter which permits us to call upon all kinds of experts from universities, voluntary health agencies, and others throughout the country to come and join these sessions.

You will note from the program that yesterday's sessions included a Workshop on Health Manpower Statistics, and Medical Care Statistics Workshops will be held today and tomorrow. The large number of people who elected to attend these workshops is certainly indicative of growing interest. There are also two sessions dealing with health statistics in metropolitan areas and several other workshops which have a bearing on this subject.

A final reason why the Public Health Conference seems to be a suitable place for discussing this matter of medical care statistics is that I feel there is an important need to strengthen the impartial State, local, and Federal statistical agencies, which exist to provide hard data for the planners. I think that the significance of strong independent units which can develop the facilities and the skills for collecting and analyzing this sort of information is very great, and these are the kinds of groups which are represented at the conference each time it meets.

This morning we shall hear from four people who are deeply involved in the business of medical care and medical care statistics. Our purpose in inviting these experts to talk here is to give you an opportunity to hear about some of the ideas and activities in the mainstream of medical care so that, as statisticians, we may better sense the urgency and better plan our own response to the challenge of comprehensive medical care statistics.

The first speaker is a real statesman in the field of medical care research, and a man who, in the time that I have been acquainted with him, has developed an enormously broad vision in this field. I would not call him a visionary—a man with broad vision, but not a visionary.

He graduated from Yale University School of Public Health in 1941. He has been assistant professor of medicine and preventive medicine, University of North Carolina, and professor and chairman of the Department of Epidemiology, Medical College of Vermont in Burlington. He is now the director of the division of medical care and hospitals in the School of Hygiene and Public Health at Johns Hopkins.

Dr. Kerr White will speak to us on the subject of "Medical Care Statistics and the Health Services System."

Medical Care Statistics and the Health Services System

Dr. Kerr L. White, *Director, Division of Medical Care and Hospitals, School of Hygiene and Public Health, The Johns Hopkins University*

The notion that a physician whose earlier responsibilities were largely clinical would have the temerity to suggest to a group of statisticians what they should do may seem strange, but it is not new. Surely, the precedent was set by the physician who founded the field of vital statistics, William Farr. However, not even Farr can take credit for asking the first important question in vital statistics. When the English Government introduced the Registration bill in 1839, not as a new form of social arithmetic but as a means of relieving nonconformists of the remains of Anglican privilege (that is, the Church registration of births, marriages, and deaths), it was proposed to record only the event of death. It took a lawyer, Edwin Chadwick, the founder of the public health movement, to see that this exercise was without redeeming social, scientific, or medical merit, and he insisted that the record also indicate the cause of death. How else, he asked, could one know how to direct efforts at improving the health of the people (1)?

When it comes to medical care, however, statisticians, lawyers, and physicians have to acknowledge the perceptiveness, courage, and perseverance of a nurse. Florence Nightingale roundly condemned the hospital statistics available in her time and asserted that it was virtually impossible to deduce anything from them with respect to the relative merits of different hospitals. In general, the charge is still true; for example, age-specific, case-fatality rates by diagnosis are not available for U.S. hospitals. There are, I believe, about 10 countries which do have such information.

To overcome deficiencies of this kind, Florence Nightingale proposed a uniform reporting system for all London hospitals (2). She wrote to William Farr, "Could you give me a (table of mortality of the various) London hospitals, for such a number of years as would enable a general life table of the London hospitals to be calculated. It would tell very much if we could show that each hospital had it own life-risk." On another occasion she wrote with respect to the science of statistics that, "upon it depends the practical application of every other (science) and of every art; (it is) the one science essential to all political and social administration, all education, and organization based on experience, for it only gives exact results of our experience." (3)

All that was said over 100 years ago. Someone has said that it takes 50 years for a new idea to catch on. Not only is the 50 years up, but it has been up twice. Better objective information, that is, statistics, about the effectiveness and efficiency with which medical care services are provided in response to specific health problems, is indeed long overdue. This is the problem to which I wish to address myself in this paper.

The Health Services System consumes, costs, or spends, depending on one's point of view, over $40 billion a year. Some $600 million is spent on biomedical research, but only about $20 million is spent on research and information designed to shed light on the workings of the Health Services System. I submit that these relationships are inappropriate; a larger proportion of the health services budget should be allocated to objective study of its operations at all levels.

The Health Services System can be regarded as one of the great service systems or industries of society, like transportation, communications, defense, innkeeping, and the church. All have objectives, some more clearly defined than others; they all accept the need for accountability in terms of private satisfactions and/or public records. If the national pool of health personnel, facilities, knowledge, and finances is regarded as a major national resource to which our society devotes about 6 percent of its annual gross national product, surely the consumers are entitled to know a good deal more than they do now about the extent to which the objectives of this system are in fact achieved at the national, State, and local levels. The information on which all of the other great service systems base their decisions is without doubt a great deal more sophisticated than that used by the health services industry. Where resources are scarce and the needs are great, it is essential to introduce improvements in the information available on which to base critical decisions.

By medical care, I mean personal health services. In the field of health, there are two broad areas: environmental health services and personal health services. By personal health services, I mean virtually all health services other than the environmental health services. Specifically, I mean those things done to and for all individuals who request or require health services provided by doctors, nurses, and dentists, and by paramedical, paranursing, and paradental personnel. I do not make a distinction between so-called preventive, diagnostic, therapeutic, and rehabilitative functions. Nor do I find it helpful to separate the physical, emotional, and social components of illness. These are transient divisions of interest, emphasis, organization, and style based more on tradition and arbitrary jurisdictional arrangements than on humanitarian, scientific, or technical constraints. I do not distinguish between the various sites of care on which personal health services may be given; e.g., the solo practitioner's office, the out-patient dispensary, or the voluntary, private, or public hospital—their clinics and wards, the health department clinic, the group practice clinic, the home, the factory, or the school. Nor is the posture of the patient, vertical or horizontal, a factor in the basic definition. Finally, the methods by which the patient's care is financed, whether it be from public, private, or voluntary sources, and the physician's efforts compensated, whether it be fee-for-service, capitation, sessional compensation, or annual salary, do not affect this definition. When I refer to medical care statistics, I refer to statistics about personal health services. We need to know much more than we do know now, both about all of the services sought and received and all of the associated benefits and risks.

There are basically three points of view from which personal health services can be examined. The first is the view of the individual patient and his particular problems; it is also the view of the clinician and the source of traditional diagnostic data. Let us not forget that it is for individual patients and their problems that all of us in health services work. After all, statistics, as I think Bradford Hill used to say, are really people with the tears wiped off.

The second level is that of the institution, agency, practice, or program. Here the concern is for understanding the experience of a particular segment of the population using a particular segment of the Health Services System. The essential deficiency in statistics derived from the experience of individual institutions, such as hospitals, physicians' practices, voluntary agencies, or even prepayment insurance plans and categorical programs, is that adequate information about the population at risk or the denominator is customarily unavailable. Nothing is known about all the experiences of those who for some reason are not represented in the denominator. This defect may be compensated for to varying degrees but rarely can it be overcome completely.

The third point of view is that of the community or the defined population, where it is possible to relate medical care statistics to a population defined by geographic or political boundaries. It is only with such a base that the ecology of medical care can be thoroughly understood. It is the relationship between health services and resources and medical care needs and demands which interests the public; i.e., the consumers, both patients and potential patients. Who gets what, for which purposes, and with that results are the central questions.

From the point of view of the health officer or the new category of health services administrator who is, or, if he is not, to my way of thinking should be, responsible for the health of all the people in his jurisdiction, information about the availability, accessibility, effectiveness, and efficiency of all personal health services is essential. Not only is such information essential to the health department and other institutions and agencies for administrative purposes, but it is a prerequisite for effective planning and policymaking. The proposed "Comprehensive Health Planning and Public Health Services Amendments of 1966"(4) provide for "the establishment of, a single State agency as the sole agency for administering or supervising the administration of the State's health planning functions under the plan," and "for the establishment of a State health planning council, which shall include representatives of State and local agencies and nongovernmental organizations and groups concerned with health, and of consumers of health services, to advise such State agency in carrying out its functions under the plan." It does not say that this agency has to be a health department .

The question is, who is to provide the data on which this group of hopefully hardheaded citizens will make their decisions? I am sure these State health planning councils are going to be composed largely of community leaders who, in other walks of life, are accustomed to basing their decisions more on facts than on individual experience, colorful assertions, or authoritarian pronouncements.

Now unless the statistical arms of health departments are going to see to it that the work Florence Nightingale urged on them over 100 years ago is done, somebody else is going to do it. The possibilities include insurance carriers, so-called fiscal intermediaries, hospital planning councils, areawide planning councils, medical schools, regional medical programs, voluntary agencies, welfare departments, and medical societies. Each of these groups could undertake the work of measuring certain aspects of the input and output of the Health Services System. None of them, as of the present time, has the same broad social mandate as the health department. The Public Health Service, through the National Center for Health Statistics, has established a model. If the State and local health departments do not live up to their mandates, it seems clear from the "Comprehensive Health Planning and Public Health Services Amendments of 1966" that other agencies will be established and assigned responsibility for gathering statistics on personal health services. In some situations, this will undoubtedly occur. If a clearer legal mandate is required, then I suggest that a national commission examine the matter and make appropriate recommendations for necessary legislation.

So much for the problems, now for some more specific suggestions. First, I propose that the terms "vital statistics" and "public health statistics" be abandoned. I suggest that every health department establish a new unit, bureau, division, department, or center for health statistics with a mandate much broader than that connoted by traditional titles. Such a unit would be responsible for the collection and analysis of all statistics relating to the health, health problems, and health services of the community it serves. Funds should be made available by Federal formula and project grants to strengthen these new expanded units. Consultation should be sought and made available from stronger agencies and institutions, such as the National Center for Health Statistics. I suggest that each health statistics unit establish a continuing relationship with an appropriate university department in its region. Faculty members of departments of biostatistics, epidemiology, community medicine, or hospital administration could be made consultants or members of advisory committees for the unit. Members of the unit, in turn, could be given university faculty appointments and encouraged to present their problems to students and faculty colleagues. There are ample precedents for these kinds of interlocking arrangements; they are in the best tradition of our society.

With this extended mandate, responsibilities for registration and vital statistics would represent only a small fraction of the work of the unit. Jack Elinson once suggested that there are three or four "Do's" to be considered in evaluating the Health Services System; I think there are at least five basic levels: Death, disease, disability, discomfort, and dissatisfaction. In addition, there are four major sources of data: Discharges, doctors, dispensaries, and domiciles. For each of the five levels, it seems to me there are a series of questions to which there are no readily available answers at present, largely for the reason that no one is asking the questions.

Death

At Chadwick's insistence, the statisticians of the day moved from recording the event of death to recording the cause of death. We have made some progress since then but there is additional information which would be desirable from the point of view of medical care. For instance, it would be desirable to know not only how long the physician signing the death certificate attended the deceased but for how long the deceased had been receiving medical care for the immediate cause of death. It would also be desirable to know the relationship between the admitting diagnosis and the immediate cause of death. Analyses of these associations would provide insights into the relationships between preterminal medical care and suspected disease, underlying disease, and immediately fatal disease. These may be three quite different diagnoses, and I believe we need to know much more about each in relationship to the medical care which is both available and used. In fact, I would go so far as to suggest that the concept of "underlying cause of death" may be obsolete. Is it still realistic at a time when 75 percent of deaths occur over age 50 to rely largely on an often rather arbitrarily selected underlying cause, when, indeed, in older persons a number of contributory and potentially fatal conditions are usually present?

Disease

About 45 percent of the problems initially presented to primary physicians cannot be given a diagnosis which fits the rubrics of the *International Classification of Diseases,* except in the broadest categories (5, 6). What is needed is a classification of complaints, problems, conditions, and symptoms developed on the basis of their relative frequency and specificity in the general population. Patients present to primary care physicians vague complaints, symptoms, and problems, not labeled diseases. For purposes of deploying health personnel, assigning tasks, and organizing services, we need to know how many people in a community have symptoms of sufficient severity to warrant their seeking or contemplating medical care.

This kind of classification can only be developed with the help of practicing physicians. It is not impossible to do; the precedent was set when the British Registrar General collaborated with the College of General Practitioners in a study of 171 practices (7). To date, this study represents the largest body of published data on primary medical care available anywhere. Similar studies are needed in this country, and currently the American Medical Association is undertaking pilot studies in Utah to develop methods for morbidity reporting in physicians' offices. We had some experience with the continuous recording of morbidity in general practice when I was in Vermont and are planning more extensive studies (8). Both the need and opportunity for collaborative research among practicing physicians, health statistics units, and universities have never been greater than they are today.

What is just as important as a classification for presenting symptoms and complaints is a classification for the action taken by the physician. We want to know not only what the patient complained of but what the doctor did about it. Examples of such a classification might include: "return when necessary," "return at a specific time," "diagnostic tests ordered," "referral for consultation," "referral for treatment," "hospitalization as emergency," "hospitalization for investigation," "hospitalization for chronic care," "no further care needed," etc.

The reasons this information is important are (1) to make better estimates of potential demands for medical care, (2) to educate and prepare physicians and other health personnel to meet these demands, and (3) to organize personnel and facilities so that the demands may be met.

Disability

I take it that the object of the health services of society is at least to keep people out of hospitals and, hopefully, to maintain functional capacity, productivity, and even well-being. We have estimates of disability for the whole country from the National Health Survey, but little is available at State and local levels. We need prevalence estimates by census tracts and communities. We need to know much more about absenteeism from work, school, and usual activities, both in relationship to functional severity and sympton/condition complexes and in relationship to medical care sought and contemplated. Again, the need is to relate the functional impairment with some kind of actual or potential medical care. How else can we obtain estimates of the relationships between need, demand, and available resources for medical care—particularly for rehabilitation services and home care programs? Sickness surveys, disability surveys, and morbidity surveys alone are not enough. We need to know more about what is done for specific problems and hopefully, at a later stage, with what results.

Discomfort

This is a less severe form of disability, but it is in some ways more important, particularly if we are interested in early detection and prevention of illness. Little is known about the distribution of various symptom/condition complexes in terms of the amount of discomfort they produce. People have to perceive some disturbance in their health, interpret it as warranting medical attention, know that medical care is available and accessible, and be able to pay for it before they are apt to seek it. Much more information is required about this end of the spectrum of medical care in order to develop better ways of delivering health services to those who need them and can benefit from them.

Dissatisfaction

Most of the implied criticisms of our present Health Services System in this country are based on articles in the popular press, medical horror stories, and economic analyses of the rising costs of health service. In addition, we need objective data on the organization of health services as seen from the viewpoints of all the consumers; not just those who complain. To what extent do individuals want and have a personal physician to whom they can bring general complaints at any reasonable hour, or even at any unreasonable hour, of the day or night? Are the desired services accessible and available? Are they satisfactory? Would the services of a nurse be just as acceptable as those of a physician for particular problems? To what extent do people use multiple sources of care? To what extent do they travel out of their communities for medical care? Again, where do they go and for what reasons?

Now let me turn to the four sources of data.

Discharges

One hundred and nine years after Florence Nightingale called for them in England, we are going to get data from a national sample of hospital discharges in the United States. We still will not be able to tell anything about State, local, or individual hospital performances. Again, we need to know the relationships between the admitting diagnosis or the chief complaint and the discharge diagnosis. We need to know something about the functional capacity of the patient on discharge; not just whether he is alive or dead. For example, we need to know whether the final discharge diagnosis explained the chief complaint or admitting diagnosis. We need to know whether any disease, drug reaction, hospital infection, or injury was acquired during hospitalization. We need to know whether the admission was primarily for emergency care, acute care, chronic care, investigation, elective care, social care, or custodial care. We need to start calling services by their functional medical care objectives rather than by rubrics designed to justify third-party insurance payments.

Doctors

Doctors themselves are critical participants in the provision of much of the information we require for understanding the Health Services System. There is a great need for medical students to receive adequate preparation for their important roles in the provision of health statistics. The work of the health statistician is bound to be restricted until physicians recognize the importance of the information they generate. They should be encouraged to cooperate on the basis of commitment and enlightened self-interest, both individually and through formal organizations such as the American Medical Association, the American College of Physicians, and the American Academy of General Practice. Here again, there are opportunities for the health statistics unit and the universities, particularly the medical schools, to collaborate in improving teaching about health statistics. I am convinced that this is a subject which can be made relevant and exciting to medical students.

The appeal to physicians can be made on the basis of their individual and collective responsibility for leadership and their potential contribution to understanding the medical care process and to improving the Health Services System. Once physicians appreciate that they are participating in the development of their own profession and are contributing to the improvement of their own work rather than being the object of rascal hunts on the part of "government" authorities, there is likely to be substantial progress.

Another area of needed study is the analysis of the doctor's job. We know very little about the way doctors actually spend their time. What proportion of time is spent listening to patients, talking to patients, giving treatments, prescribing, recording information, and in activities which might be handled more efficiently by nurses or paramedical personnel or could even be automated? Similarly, we know little or nothing about what nurses do.

Dispensaries

The care of vertical patients constitutes the great bulk of all medical care. Whether these patients are seen in out-patient clinics, health department clinics, group practices, physicians' offices, or elsewhere, we need to know much more about the distribution, availability, accessibility, and utilization of ambulatory services. If access to physicians' offices and effective participation in the collection of data are not always possible in every community, studies can be initiated in out-patient clinics and health department clinics. Traditional out-patient statistics only count visits; this is like counting deaths in Chadwick's day and says very little about the actual nature or purpose of the work done. Cohort studies using record linkage could be used to examine the natural history and progression of the diagnostic process from initial complaint or symptom to final established diagnosis. Again, this can all be related to the services needed, demanded, and utilized. Data of these kinds are not available for three major health problems that are the basis for the regional medical programs: heart disease, cancer, and stroke. I venture to suggest that if this kind of information had been available the folly of attempting to regionalize health services on the basis of categorical diseases would have been apparent sooner. At present, many medical schools are trying to plan regional medical programs without data or experience. Commercial systems analysts are advising some schools, but apparently they too are unfamiliar with medical care statistics. Medical care services have to be planned on the basis of the prevalence of symptoms and complaints, not discharge diagnoses or deaths. The former represent the input to the Health Services System; the latter, the output. We know very little about the input side. Regional medical programs could benefit greatly from assistance in developing data on health resources, services, and needs from the vantage point of the health statistics unit in the health department.

Domiciles

I come now to the household interview and health examination as the foundation of the pyramid of information about the Health Services System. The National Health Survey has developed sophisticated methods which can readily be replicated at State and local levels. I am continually impressed in discussions about planning new health services for people in communities by the virtual total lack of useful information which health departments can produce about the way in which people seek and use health services in relation to their perceived and actual needs. In the final analysis, the Health Services System is no different from the other service systems, the customers probably have the last word; I believe we need to know more about their concerns and interests.

Now, a few comments about methods. First, there is need to come to some agreement about terminology. Uniform definitions with respect to institutions, units of service and activity, personnel functions, complaints, symptoms, and diseases are desirable. At least, it would be important to have the data collected by all Federal and State agencies compatible, if not comparable. Fortunately, the miracle of the computer insists on forms of cooperation not readily attainable by mere mortals. The World Health Organization has examined these problems in some depth; much more work needs to be done in the United States to standardize terminology and reporting procedures (9, 10, 11). Methods of record-keeping in physicians' offices and methods of handling utilization data need to be improved. Here again there are precedents and experience on which to build (12, 13, 14).

Simple precoded, mark-sense forms or more sophisticated input consoles in physicians' offices with direct inputs to on-line centralized computers could be used in ways which would preserve confidentiality for both physicians and patients. The data generated would provide physicians with information about their own practices, as well as information of fundamental importance to our understanding of the Health Services System.

Further applications of computer technology are to be found in record-linkage studies. H. B. Newcombe of Atomic Energy of Canada and others have suggested methods for family linkage of vital and health records (16). To my knowledge, however, there has been only one study of record linkage applied to a Health Services System serving a defined population. This was recently completed by the Oxford Regional Hospital Board in England and shows the kinds of data which can be obtained on the flow of patients through the hospital system of a region (17). This is a unique study which could be replicated in one or more States in the United States. Such information would be invaluable for planning regional medical programs.

The problem of estimating denominators will probably be with us for a long time in the United States. The obstacles are formidable but not insoluble. Approaches to the measurement of the catchment areas served by hospitals and other health institutions have been developed for use where the population at risk is not known, but more work is needed (18, 19, 20). The household survey is of course especially useful in this regard because it can be used to produce denominator data.

Finally, there is the matter of collaboration with other groups. The health statistics unit should be in an unusually strong position to propose active collaboration for purposes of data gathering with medical societies, hospitals, nursing homes, welfare departments, insurance carriers, planning councils, and other groups responsible for providing or financing health services. One great virtue of the National Center for Health Statistics lies in the fact that it only collects and analyzes information; it assumes the posture of an objective source of data which all can respect and use. It is not responsible for any medical care service program. This is in contrast to the Social Security Administration, for example, where present arrangements call for it to analyze information on charges and utilization on which it will base its own decisions, its regulations, and its bargaining position. However objective its efforts and methods may be, its motives are bound to be suspect. The same charges are quite untenable when health statistics are collected by an independent unit analogous to the National Center for Health Statistics (15).

For these reasons, I believe that the health statistics units are in a sound position to obtain the support of medical schools, hospitals, physicians, medical societies, and others responsible for the organization of the Health Services System in gathering data which will enable these institutions and individuals to do their best. I am persuaded that physicians and health institutions want to do the best jobs possible, and I believe that gathering health statistics should proceed on that assumption until there is evidence to the contrary.

SUMMARY

In summary, I have tried to challenge the vital statisticians of the country to revitalize themselves by taking on the task of developing a broad range of medical care statistics which will help all of us to better understand the health services system of the country. The object is to use our health personnel and resources more effectively and efficiently in the interests of the health needs of society. In essence, I have six proposals:

1. Expand State and local vital statistics units to health statistics units. These should be supported by Federal formula and project grants as well as by local funds. If this expansion of activities is not accomplished, I see these functions being taken over by other institutions and agencies. The health department will be bypassed, much as the Anglican Church was bypassed.
2. Prepare actively to provide the health services statistics which will be required by the proposed Health Policy Planning Councils and the Health Services Administrators.

3. Establish a national and local mechanism for developing common definitions and terminologies to insure compatability and encourage comparability. International comparability should not be precluded.
4. Experiment with record-linkage studies in order that the whole Health Services System in a region can be understood more thoroughly.
5. Examine the experience of other countries, as well as of different places in this country, with particular emphasis on newer methods of recording, processing, storing, analyzing, and retrieving data at all levels of the system.
6. Institute regular systems for reporting data from all levels of the Health Services System, including hospital discharges, ambulatory clinics, and doctors' offices, as well as from household interviews and examinations. Bear in mind the need to relate: the patient's complaint, the site of the service, the nature of the service, the outcome of the service, and the doctor's diagnosis. As Chadwick pointed out, to report only that an event took place is not enough.

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Mr. Woolsey. Thank you, Kerr, for that wide-ranging paper. It certainly does represent a challenge—not a challenge, I am sure, that will be met overnight but in my view not a visionary challenge, rather a realistic challenge. Here is somebody from a university, supposedly an ivory tower man, but who is quite apparently in touch with what is going on in our field; and I think that this paper deserves very careful study. As far as I am concerned, it represents the makings of a blueprint for our activities in the years to come. We are very grateful for that paper.

Now many of us looking on from the outside have watched for some years the struggles to come to an agreement on a coordinated program of nursing home accreditation. And it is a fine thing for this country, and I may say I feel a little bit more confident about my old age, that this program is now on the track and rolling forward. I hope that we are going to hear something about this from our next speaker.

Our next speaker, Dr. John D. Porterfield, is an old friend of ours in the Public Health Service. In fact, I think I am correct in saying that Dr. Porterfield bestowed upon us the name National Center for Health Statistics.

He was, in any case, Deputy Surgeon General of the Public Health Service at the time of the Public Health Service Task Force on Mission and Organization of the Public Health Service which created the National Center for Health Statistics in 1960.

He has had long experience in the field of public health before assuming his present position. He was director of the Ohio Department of Health in Columbus, director of the Ohio Department of Mental Health and Hygiene, and associate professor of preventive medicine at the University of Ohio before he came to the Public Health Service.

He left the Public Health Service in 1962 and became coordinator of medical and health sciences at the University of California. He is now director of the Joint Commission on Accreditation of Hospitals in Chicago.

Dr. Porterfield is going to talk to us this morning about the standards program for hospitals, nursing homes, and home care.

Medical Care Statistics and the Standards Program for Hospitals, Nursing Homes, and Home Care

Dr. John D. Porterfield, *Director, Joint Commission on Accreditation of Hospitals, Chicago*

I am very grateful to be allowed to speak to you without manuscript. Our affairs seem to change so quickly that manuscripts get much too out of date before we are able to deliver them. I appreciate the indulgence that I have been given in that respect.

I do not feel badly about the allegation of putative authorship in naming the National Center for Health Statistics.

My present job, coming at a time when there is much more activity in the field of voluntary accreditation of health and medical facilities, has made me worry less about my old age—I am less optimistic of having one.

I was somewhat reassured by Mr. Woolsey's remarks in opening this panel that this was a presentation from people outside the field of statistics as to areas of activity and potential, that the process was really a bilateral or participation one in which some of us might describe what we were doing and the objectives of it, and that you in turn would be able to tell us how this might be utilized as a source of data, as a method of providing analyses which will help us in future planning and improvement of our activities. I am relieved by this because I myself (as well as the Joint Commission on Accreditation of Hospitals) am very highly unsophisticated in the field of statistics. There is no competition, there is no contest.

There is no competition as in a story somebody recently told me of the two boys who went all the way through their educational program together, always trying to top each other in athletics, in scholastics, in extracurricular affairs on campus, both in high school and in college, and having been graduated did not see each other for 30 years. When they did meet, they discovered that one of them had become an Admiral of the Fleet in the U.S. Navy and the other had become not only of full habit but with the habit of a high prince of the church. They met after these 30 years on the platform of a railroad station in Rome and immediately, without acknowledgement of knowing each other, continued their competition. The Cardinal, in approaching the Admiral, said "Porter, when does the next train leave for Naples?" And the Admiral replied, "Madam, in your condition I wouldn't take it."

I am very much interested in some of the things Dr. White said about the competition between content and methodology because in spite of my own and my Commission's lack of sophistication in these areas we do recognize that (like education) there is a necessity for study of both, and we have been concerned considerably about content and not nearly enough about methodology. I would like to refer to this a little bit later.

Because I have found that very few people outside of the immediate purview of the Joint Commission know precisely what it is and how it operates, I would like to tell you the history of the Joint Commission and its present state of maturation.

The commission began when the American College of Surgeons attempted to determine a method by which it could admit physicians to fellowship in the college. The college decided to include in the review of applicants a review of the case histories in their experience to determine whether they were indeed surgeons of competence as well as experience. In setting up the review, the college found that it could not properly judge applicants on the basis of the protocols which were presented—they were highly inadequate.

The applicants' defense was that when they went back to the hospital where they had completed their work records were not available and they could not prepare the protocols which now they needed to apply for fellowship in the college.

The college did a sampling of a fair number of hospitals in the country and found that indeed this was so, that the state of clinical records was abysmal, and that other conditions were hardly consonant with the stated ambitions of the American College of Surgeons to improve the breed, to enhance the education and capability of its members, as well as to think of the patient, the public whom they served, and the places where they were served.

As a result of this finding, and after discovering that at the time no one else was interested in this problem, the college established a program called the hospital standardization program. In late 1917 it adopted a very simple one-page code of standards for hospitals. From that day forward, it began to visit hospitals, to survey them, to evaluate them against these standards—to give them a grade mark, if you will.

In the beginning the well-established hospitals in the big cities did not show interest in the project. But there was considerable interest expressed by the new hospitals in the somewhat smaller municipalities that really felt they needed and wanted guidance, and the idea spread.

In the first year, it was impossible to issue individual reports on which of the surveyed hospitals had been approved—many of the hospitals which were missing from the survey list were the ones which you would call prestigious hospitals in this country. In addition, of the 600 or more hospitals surveyed at that time, something like 13 percent were considered to have met the standards.

This situation improved very gradually over the years. With the support of associations like the Catholic Hospital Association, the American Hospital Association, the American Protestant Hospital Association, and subsequently other medical professional organizations, the program prospered. Not only did the results become better in terms of the number of hospitals found to meet these relatively simple and admittedly minimum standards, but the program grew beyond the financial resources of the college. In 1951 the American College of Surgeons said that it could no longer pick up the tab alone and repeated, at the same time, the opinion that this program was of wider interest than just to the American College of Surgeons.

After some delicate negotiations, the Joint Commission on Accreditation of Hospitals emerged, including the American College of Surgeons, the American College of Physicians, the American Medical Association, and the American Hospital Association as corporation members. They each have a number of commissioners on a board of commissioners which establishes the policies, adopts the standards, and otherwise supervises the work of the Joint Commision.

At the time of its creation, the commission included the hospitals of Canada; and, of the commissioners from the American Medical Association, one came from the Canadian Medical Association, and, of those from the American Hospital Association, one came from the Canadian Hospital Association.

In 1959, Canada found itself with such a sizable contingent that it was able to establish its own national program, the Canadian Joint Council for Accreditation of Hospitals, which has been continuing on its own, with the blessings of its parent. The Joint Commission has continued with this country's hospitals and with a handful of hospitals outside the United States (including military hospitals overseas, some overseas industrial hospitals, and the American University in Beirut).

In 1964 these four organizations found the operation to be too expensive and went to a fee-for-service basis. This is a significant aspect of the philosophy of our activities—a system where the hospitals which request an evaluation pay a cost-level fee for the service. This is probably the cheapest consultation (and I hope ultimately the best consultation) that they can buy in their field.

At the beginning of this year, the accreditation of extended care facilities was added to the traditional program. There are two classes, the skilled nursing homes and the domiciliary homes or homes for the aged.

This program is a result of the merger of three antecedents—the National Council on Accreditation of Nursing Homes, sponsored by the American Nursing Home Association and the American Medical Association; the approval program for extended care facilities of the American Hospital Association; and the program of the California Commission on Accreditation of Nursing Homes and Related Facilities.

By virtue of previously enacted Federal legislation in 1966 the Joint Commission was recognized in Congress and in the Federal statutes. We relate to Medicare in the sense that we provide a limited credit card for hospitals which have voluntarily sought and obtained accreditation. At the present time, these hospitals are certifiable by the State certifying agencies, contingent upon two things: that the State statutory standards are not higher, and that the State certifying agency determine the existence and efficiency of a utilization review plan in each hospital. At the time of the enactment of the Medicare Act this was not a condition or requirement of the Joint Commission, but now is.

This, fairly briefly, brings us up to date. I would like to mention now the question of methodology, how we do our work.

In the first place, the Board of Commissioners of the Joint Commission adopts standards, and I think perhaps this is the least well understood of all of the elements of our operation. These standards are not by any means standards of medical practice, nor does the Joint Commission attempt in any way to assess the quality of medical care provided in institutions. From time to time this has been suggested, sometimes rather forcibly, and it is again under study by the Joint Commission and its various advisory groups. But as of now we do not do this.

There are States (recently and rather notably California) where the State medical and State hospital associations have developed a joint program of approval by which they select site visit teams of peers, of clinical people of excellence, to visit hospitals and to devote some time to a depth study of the kind of practice that is being carried on. "Why do you have so many resections here?" "How is it that you have so few or so many of this kind of diagnostic test?" "What are the indications?" These are the kinds of questions that might be asked in this kind of a consulting visit to assess quality of medical practice.

It has been reported that of the accredited hospitals in California which have been surveyed by this joint State program, 15 percent have been disapproved by this State program.

They are studying an entirely different thing. Our standards are directed toward the mechanisms, toward the environment which surrounds the practice of medicine in institutions, and which are positive forces toward allowing it to be of a high quality.

In other words, we do study a methodology rather than content. Our standards are directed toward such things as the physical plant and the physical environment of the patient; toward the organized structure of the hospital to assign responsibility and to assure direction to its activities; and to the screening of those who are given privileges in the hospital to assure that they are competent to fulfill the privileges which they are granted. Our standards look to the required functions of the medical staff as a unit rather than as individual practitioners and to the hospital as an organization that will carry out a number of functions of self-improvement and self-policing. These functions of the hospital would include such things as what is now called utilization review (it has been called other names in the past) and the requirement that the hospital have nursing, laboratory, X-ray, and dietary departments.

We will survey a hospital which has only a pediatrics unit—that is, a children's hospital without a medical department, or a children's hospital which has a medical department but not a surgical department. Our survey would include psychiatric hospitals, or any kind of a hospital that is subject to these same standards. It does not depend on the kind of clinical departments or clinical services it provides, but only on these basic central services and the things which I have described.

Having established these standards, we have attempted to improve and refine them over the years. Retaining the principle of minimum standards commensurate with quality patient care, the Joint Commission surveys hospitals and evaluates them.

A survey is made by providing a two-part form (and I would like a workshop on this some day soon if I can arrange one). One part is filled out by the hospital people and provides all possible information and data they can as to the circumstances, and the second part of the form is filled out by a physician in our full-time employ who visits this hospital. This visit lasts from 1 to 3 days. He talks to representatives of the governing body, the administration, and the medical staff; examines the physical plant; examines a sampling of the clinical records of patients presently in the house and recently discharged; and examines a larger sample of the record of the medical staff activities in the performance of their functions (usually by looking at committee reports).

Here, for example, is the distinction between what we do and what it is thought we do. Neither the Joint Commission nor any of its representatives would say to a hospital "We looked over the application of Dr. X and the recommendation in the governing board's action as to privileges to be granted, and we think he should not have been given these privileges." Or the reverse, as the case might be. We never challenge the judgment exercised. We insist on a judgment having been exercised and that there be a clear record of this judgment, but the judgment itself is the hospital's obligation.

The third operation of the Joint Commission—that of education—is regrettably one of the least of the commission's program. We carry out education in several forms. The survey visit itself is an educational process, unfortunately inextricably tied in with the inspection process—that is, the grading and giving of marks—but the main purpose of the time spent at the hospital is an educational consultative process.

We carry out our education program by voluminous correspondence with people who ask "What do you mean by this statement?" or "If we did this, how would you construe this in terms of meeting standards?" or "What do you think about the possibility of having this kind of requirement?" or "How would we meet it if it were established?" We do publish a bulletin three times a year, but we do very little else unless you are willing to call these poor efforts of mine around the country educational.

We are on the verge now of attempting to develop an educational program which is not just public information but which will be directed toward very specific audiences, the first of which will be ourselves, our own staff. We are developing a highly intensified program of inservice training and annual reorientation of our field staff and our central office staff to be sure that we know what we are doing. As much as is possible with any group of humans, we hope to achieve standard interpretations of situations which are found in our work. We have a lot of devices that we try to use to assure this.

We have a rule that the same surveyor never visits the same hospital two times in a row. This is not to avoid any development of a conflict of interest, because they have treated him so hospitably that he becomes lax in his survey, but rather because every one of our men has had some distinctive previous experience that influences his visit. Some of our men have been pediatricians, some have been surgeons, some have come from Federal establishments in clinical medicine and military services, and one has been a psychiatrist. When the pediatrician gets there, you know the pediatric service gets the most attention; when the surgeon gets there, he often spends an inordinate amount of time in the surgical unit; and the obstetrician gives the nursery fits; etc. So that over the years if we rotate the visitors, the hospital gets a somewhat better balanced consultation.

We have not yet undertaken any research, but we feel its need is unquestionable. We see this as research in methodology, not into the advancement of medical science. We hope to discover whether our files (we have dossiers on well over 5,000 hospitals) contain data which are not replicated anywhere else in the world—not even in the American Hospital Association's registration program—and which may not be replicated in the collection of data through certifying agencies. And we think (and have been told) that there is a great potential for investigation into the ways and trends of hospitals and other health facilities which should be tapped and explored.

We have done only this much so far. Our bylaws provide that the members of the Joint Commission corporation are free to delve into the files for research purposes as much as they like, with the usual provision that any reporting does not identify any individual place or persons.

And this winter we looked at the questions we had loaded into our forms. Most of them, of course, were there to determine adherence to standards, but some were included for other purposes—to see whether their validity could be measured at all. We found a number of interesting discrepancies between question 1 and question 13, for example, which were incompatible and which assured us we have to revise our form. We have got to strip loaded questions which are of no particular use.

Many years ago when I was a division chief in a public health department, I asked my predecessor what use was made of a particular form. He said, "You initial them." I said, "Then what?" He said, "Well, you file it." I said, "Then what?" He said, "That's all you have to do." I think we are still doing some of this. Some of the results are unfortunate.

For example, one of the questions we have on our form asks how many times in the past year the hospital under survey has given a single blood transfusion to a patient. Well, the inference is very clear. A single blood transfusion is either not enough or too much. A single blood transfusion is probably a suggestion that blood has been used too freely.

The result, of course, is not so much that blood use has been minimized as that physicians routinely order two units of blood. Some of the hematologists from various centers in the United States have taken it that we are doubling the risk to patients that require blood, which is a somewhat hazardous therapeutic tool. We agree, and we did not mean to do this.

Future research both into our own methodologies and into a study of the trends in hospitals is very important. We do have a lot of data which may be retrieved and be found to be useful. We are accumulating data at a great rate, and that might be compiled in a better form to make them more useful.

Now finally, to show you how statistically naive we are, I will tell you the annual statistics which we report. I think at the present moment there are something like 7,200 hospitals registered in the United States. This is a selection process in itself. In order to be registered with the American Hospital Association (not be a member) a hospital must meet certain criteria in terms of the definition content—physical plant and services provided, etc. Of the 7,200 hospitals only about 6,000 are eligible for survey and accreditation by the Joint Commission on Accreditation of Hospitals, because we do not visit hospitals of less than 25 active adult beds. As yet it does not pay them or us to include the smaller hospitals.

Of these 6,000 some 4,400 are currently accredited—about 60 to 65 percent of the hospitals in this country are accredited by the voluntary program of the Joint Commission.

This is somewhat better than it sounds because these 60 odd percent constitute 85 percent of the bed days used and 86 percent of the live hospital births that occurred in the past year. Obviously, we have under accreditation the larger rather than the smaller hospitals.

We have presently accredited something like 1,500 of the extended care facilities of both classes. The denominator here is not known. You can get as many guesses as people you ask—anywhere from 9,000 to 15,000 to 22,000 depending partly on definition. But we have 1,500 accredited, practically all of which are grandfathers which we have taken in from the three programs described before.

As rapidly as possible we are resurveying all of these grandfathers against our standards which were adopted last year. Some of them will continue to be accredited and some of them will not. And we are also doing surveys for the first time in newly requesting institutions and adding a few each month. These are volumetric data, that may be of interest, but this is only the surface, and we hope very much to be able to go beneath that to do something better. This will depend on the future.

The future also contains other things we hope to do in education—I mentioned the inservice training program. I did not mention the kind of selected group training for hospital personnel, for medical personnel, and for medical students. We would hope to include such groups as the financial supporters for construction of new nursing homes—people who cannot evaluate their potential for loans because of lack of information about the field.

We are, at the same time, actively examining the question of expanding the categories of medical facilities which might be interested in voluntary accreditation. We have already been approached by rehabilitation centers who are teamed with sheltered workshops and college health services which now are surveyed only in the process of the survey of the educational institution (as a minor service of the educational institution). We would like a more intensive study of this area.

We have even been asked—and this is something I obviously would never have dared suggest myself—to consider the possibility of an accreditation program for group practices which have facilities. Since this might be an outpatient department without a hospital, it would be susceptible to a survey and a determination of maintenance of certain standards of physical plant and records and operation; and we may consider this.

So the future lies before us, but we feel rather shaky unless we can develop better measurements in assessment of what we, ourselves, are doing.

Mr. Woolsey. Thank you very much, Dr. Porterfield, for taking time out to educate us in this very important activity. I think the implications for statistics on health resources are very apparent.

I am particularly interested in this question of definitions in the area of health facilities and organized programs of services, extended care facilities, etc. There are numerous problems for statistical methodology in this endeavor.

It seems to me there is a great need for the statistics at least to be congruent with and compatible with the standards that are being set by the accreditation group.

But there are great difficulties in doing this since the accreditation program goes into such depth and deals with such subjective problems that statistics can only hope to be approximations. I think that some effort is being made at the present time to develop new definitions for statistical purposes that will come closer to those really needed in these fields.

I should think also that the Joint Commission would be a heavy user of statistics, as well as a producer of statistics, for example, on the whole population of health facilities.

As I say, there are many implications for statistics, and I hope that from time to time we can hear further about this as the program of the Joint Commission grows.

Our next speaker is also an old friend of ours. He is the man whom I call the cool man on the hot spot in health statistics. I would say he is probably one of the men who is on the hottest spot at the moment of any of us, but he is the man to handle it. A cooler customer you have never seen. I have had opportunities to meet with him in recent weeks, and I feel he is bearing up extremely well under the challenge of what lies ahead.

Many of you knew Howard West when he was chief of the Statistical Processing Branch of NOVS. Later he became chief of the Biostatistics Division of the District of Columbia Department of Public Health and then became chief of program planning in the District of Columbia Health Department. From there he moved to become director of the Division of Research and Statistics of the Group Health Association of America. Howard is now director of the Division of Health Insurance Benefits Studies in the Office of Research and Statistics of the Social Security Administration and has responsibility for the development of the statistical program of the health insurance benefits program—Medicare. Howard is going to talk to us this morning about the Social Security Administration's statistical program on health care of the aged.

Social Security Administration's Statistical Program on Health Care of the Aged

Mr. Howard West, *Director, Division of Health Insurance Benefits Studies, Office of Research and Statistics, Social Security Administration*

In less than 2 weeks about 19 million aged persons will become eligible for health insurance benefits under the Social Security Act. These are basic benefits providing payment for the costs of hospital care and for posthospital care in extended care facilities and at home, and supplementary benefits on a voluntary basis providing payment for a substantial part of physician services and other medical care services not covered by the basic benefits.

A means for obtaining complete, systematic, and continuous information about the amount and kind of health care services used by the aged and the cost of such services will also become available for the first time as a byproduct of benefit payment operations. The health insurance benefits program will thus create the opportunity for obtaining statistics of unprecedented volume and detail on the patterns of health care of aged individuals. It will provide the basis and opportunity for research in the field of medical care to measure the impacts on other public and private programs and identify and define program gaps and problems of extending the system to meet unmet needs.

Plans for the program of statistics, analytical studies, and research are also firmly rooted in the needs for the information that will become available after July 1. Evaluation of the program by the Administration will rest in large measure on analysis of the statistics derived from program operations. In fact, the primary objective of the statistical program will be to provide the data needed to evaluate the program and measure its performance.

Needs for data by organizations and persons other than the Social Security Administration will also be taken into account. Obviously a wide variety of data will be needed to satisfy all these needs.

What I would like to do is to limit my discussion of our program to the basic characteristics of the data collection system and the sources and types of data which we will obtain, and to leave to you and to further discussion later in the day some of the implications of these data.

One of the things that was mentioned earlier by Dr. White which seemed to me of considerable significance and which we have all been very much aware of is the need for a population base and for demographic characteristics of that popu-

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lation in any program of statistics. As I am sure you are aware, we are in the position in this program where we have such information.

Let me further define this for you. There are in reality two programs. One of them is the basic program of hospital coverage which is available to almost all people over 65, and the other is the supplemental insurance program which covers those people who elected to pay $3 a month, to have this insurance coverage.

There are probably close to 19 million people who are eligible for the first program, for the hospital insurance program, and for these people there is information with regard to their exact date of birth, their sex, for most of them their race, their residence, and certain other information, most of which has been available for some time in social security records. For many of these people who have recently become known, information on them is less available.

There are people who have become known to us because of the fact that, as you may all recall, some 2 or 3 years ago the Internal Revenue system adopted the social security number for identification purposes, and those people have now been matched with social security numbers in the process of attempting to reach everyone possible for the supplementary medical insurance program.

Thus, for the part A program we have basic population data and for the part B program we have the same data, with the differential being that of about 95 percent of the people who have been reached close to 17½ million people have elected to be covered under the part B program.

We have identification of these people with the most significant characteristics. And perhaps most important, we have a number which identifies each of these people—the social security number or the railroad retirement number (which has been modified slightly in order to adapt it to the health insurance program).

Now in the part A hospital insurance program, there are certain factors which have pointed the direction for the development of the statistics under the program.

The principal factor here is something which in the legislation is called the spell of illness. The spell of illness as defined is a method for determining when an individual covered in the program can renew his entitlement for care (or the number of days which are available to him). These are 60 days' full coverage with a slight deductible and 90 days of partial coverage.

In order to keep track of the use of these days and of the spell-of-illness factor, it became clear that it was necessary to record at a central point all of the data which related to the use of hospital services, particularly the use of these days of service.

There are other factors in the legislation which enhance this need, one of which is the psychiatric limitation, a limitation with regard to the use of hospital psychiatric days, and that limitation is 190 days during a lifetime.

But in any case, these particular aspects of the program made it clear that a central recording of the use of services was essential.

It is on that account and with that very strong boost from the legislation itself that we have set up in Baltimore a central records system into which will flow 100-percent data about the use of hospital care and all the other aspects of the part A program, the extended care facilities use, the home care services, the use of psychiatric hospital facilities, and also the use of TB facilities.

This information will come in through a wire system direct from the hospitals through the intermediary initially as an admission notice. This way we will know within a few days of the time that a patient is admitted to a hospital that in fact that patient is in the hospital. At that time the hospital is notified as to the number of days available for payment, and, of course, whether or not the individual is known to the system.

At the time of discharge the actual bill for the services provided (which again flows through the intermediary for payment) is sent to Baltimore. Just about the entire content of this bill, which includes such things as date of admission, date of discharge, length of stay, and also diagnosis and surgical and other procedures, is recorded into the continuing record. The principal purpose of the 100-percent recording, as I said earlier, is to keep account of the number of days of use and of the spell-of-illness factor which requires that a person remain out of an institution for 60 days from the last date of discharge in order to renew his entitlement to days of care.

The spell-of-illness factor has one additional effect on statistics. In order to get into the system the fact of discharge and to then keep track of the 60-day gap which is required for renewed entitlement of coverage, we will be getting a discharge which occurs after coverage has been used up. In other words, if the patient is in the hospital for 120 days and payment for services stops at 90 days, a discharge report has to be received in order to inform the system about the spell of illness.

Looking forward to the statistical aspects of the program we expect that we will have almost complete (it is never 100 percent complete) data on the utilization of hospital services. This data will afford us the opportunity to have not only the days of coverage and usage in those terms, but also the diagnosis at discharge and the procedures which occurred during the hospital stay.

The same situation will exist with regard to use of extended care facilities where the coverage period is 100 days and where stays in such facilities are included in the spell-of-illness concept.

However, it is very highly likely that we will not have as complete reporting of discharges for extended care facilities for the obvious reason that some patients stay in them well beyond 100 days and some of them stay in well beyond a number of years. Thus our control and our knowledge about this aspect of the program are considerably different than they are for short-term hospital stays.

Now let me mention one thing about the hospital data—while we will be getting 100 percent data for hospital stays, we will not be entering codes for diagnoses and procedures into the record for 100 percent of the cases. We have determined upon a sample coding procedure which will code 20 percent of these discharges. The sampling procedure is based on the social security number. We will be sampling certain terminal digits of the social security number which refer to individuals, and whenever a discharge record for those particular numbers comes into the system we will be coding that particular discharge notice and bill for diagnosis and for surgical procedure.

In the part B program which has been elected by something like 95 percent of the aged whom we were able to reach to date, the situation is entirely different with regard to the flow of data.

What has been developed in the part B program is a standard single form for billing purposes which will be used by physicians and by other medical suppliers such as independent laboratories. We feel this form has been a major advance in the whole area of medical care statistics because it links together in data form some rather critical items of service. These are the date of service, the place of service, the diagnosis or the condition and the treatment or the procedure which the physician used, as well as the charge for these identified services. And the concept in this form is that for each date of service and for each visit these five items of information will be linked together.

The flow of data will be from the physician to the intermediary if the physician has accepted assignment of the bill from the patient, or from the patient to the intermediary if the physician has not accepted assignment and has instead asked the patient to pay him directly and then be reimbursed by the intermediary for the reasonable charges for the service.

In any case, all of these bills will go to some 48 or 49 fiscal intermediaries who are assigned to various geographic areas throughout the country. These bills will not come into Baltimore on a 100-percent basis, but instead we have specified a 5-percent sample of social security numbers to all intermediaries. Copies of these bills will be sent to Baltimore for detailed coding of diagnosis, procedure, and the other elements which are covered by the bill.

The 5-percent sample is a subsample of the 20-percent sample, so that the same patients will fall into both the hospital and the medical side of the sample and it will be possible thereby to link these two pieces of information together.

Because the hospital discharge sheet will contain diagnoses at discharge and the surgical and other procedures, if any, which were provided during the patient's stay, this becomes a rather interesting thing about which to speculate. The medical bill will show the diagnosis and the procedures which the doctor puts down as those which he provided this patient in that hospital, and we are going to be extremely interested in seeing what these two things look like when we match them up.

A payment record for 100 percent of these bills is needed in order to deal with the financial aspects of the program. We have added some statistical information to this payment record which we think is essential in order to do certain things which are not possible with the 5-percent sample.

These items have been added primarily because, while we have a sample of individuals in the 5-percent sample of bills, we really have no sample of anything else but individuals. We do not have a sample of the providers of service in the part B program at all. And we felt that in order to properly understand the program's workings and to attempt to evaluate the program we needed to be in a position to draw other samples with regard to the kinds of care that were being paid for and provided.

In the 100-percent payment record we have asked for information on the identification number used by the intermediaries for the physicians or suppliers providing the service, whether the physician was board certified, and what the physcian considers his specialty to be.

We have also added information as to whether or not the bill was paid to the patient or paid to the doctor.

What we have in the 100-percent payment record is a sampling frame which will allow us to look into certain questions about physicians and other suppliers on a very small sample basis by careful stratification of the data which is reflected in the payment records, and to go back to the intermediaries and pick up the small samples of bills for coding and further study.

I think it is important to mention that in the part B segment of the program there is a limitation which is going to be extremely troublesome with regard to statistics. That limitation is that the patient must pay for $50 worth of medical services before any reimbursement takes place, so that for all patients who do not have enough medical service in a particular year to have expended $50 for that service we will have no information about their medical service use.

When the patient does reach the $50 limit and begins to submit bills for reimbursement, he must also submit the first $50 worth so that the intermediary can determine whether the bills for that $50 represented reasonable charges in order to determine that he is reimbursable. And in this 5-percent sample we will be getting the first $50 worth of bills, but we will not have these bills or this reflection of use of service where the patient did not reach this level or where for a variety of reasons he did not submit any bills for reimbursement even though he may have gone beyond the $50 expenditure level.

Also I think it will be clear that in both parts of the program, but particularly in the part B segment of the program, the statistics which will be reflected by the flow of bills will be very difficult to identify for considerable periods of time with regard to the calendar. In the Blue Shield and other third-party-payer experiences some 10 percent of physicians do not submit bills until after the sixth month following the date of service. Based on this knowledge of physicians' billing practices it is going to be difficult to relate the data to the calendar without a fairly considerable lag.

Where we get to the other side of the payment process, where the patient pays the physician or needs to pay the physician because the physician will not accept assignment, and then submits the receipted bill for reimbursement, the lag is really quite unknown and unpredictable, but will undoubtedly be even longer than that for physicians. Many of these people will have difficulty paying the bill and will take longer periods of time to save the money needed to pay the bill in order to get a receipted bill to present to the intermediary for reimbursement.

This problem disturbed us sufficiently so that we decided to do something to ascertain more about what was happening in the program than we would know with the flow of bills. On that account we have been working very hard to try to get into the field by July 1 with an interview survey of sub-, sub-, subsample of the same set of numbers in which we will be asking each one of these people about their use of medical care services and their expenditures for these services during each month.

This sample has been selected and these same individuals will be followed through the end of this calendar year. Each month an interviewer—this we hope will be the Census Bureau—will go to this individual and attempt to learn from him his use of covered medical care services during the preceding month.

On October 1 we will have another sample which will carry through for 15 months where again these people will be interviewed each month in order to try to determine from the interview their actual use of medical care services during the preceding month.

In using these two statistical approaches, we are dealing on the one hand with events as they occur on a current basis (through the interviewing technique), while in the other case essentially we are dealing with a flow of paper as we go along with the calendar. Thus it will not be until a fair amount of time has elapsed that we will have the great majority of the bills representing the services which occurred during particular time periods. At that time we can go back and specifically reconstruct the services which were incurred during the calendar months or any other kinds of time periods.

One of the things that we hope to be able to do from a methodological point of view to learn more about the whole interviewing process is to match the bills which we get for the interview sample with the interview data that we get from the interviewer and attempt to evaluate the success and completeness of the interviewing process.

I think that this gives you a bird's-eye coverage of what our basic program will be. Let me summarize. We will have data for the aged on their entire use of acute general hospitals and on a significant amount of their use of extended care facilities. We will have data on their use of physicians' services and on their needs for laboratory, X-ray, and other services, and how that is used. And we will be able to link these data not only from these two separate programs, but to the individuals who are using them. We will be able to relate these data to a population which is a known, identified specific population, so it will be possible to create rates of various kinds and have a clear picture of utilization of services under this program by the aged.

There are many other things which are elements of the program. This afternoon at the work session we will give you a fuller description of the statistical program in the form of a handout, and we will also provide copies of the forms which are really the basic elements of the program, the hospital discharge billing form and the form which is used in the billing for medical care services.

PLANS FOR HEALTH INSURANCE STATISTICS

I. INTRODUCTION

On July 1, 1966, an estimated 19 million aged persons become eligible for health insurance benefits under the Social Security Act—basic benefits providing payment for the costs of hospital care and for posthospital care in extended-care facilities or at home; and supplementary benefits, on a voluntary basis, providing payment for a substantial part of the cost of physicians' services and other medical care services not covered by the basic benefits. A means for obtaining complete, systematic, and continuous information about the amount and kind of health care services used by the aged and the costs of such services will also become available for the first time as a byproduct of benefit-payment operations. Another first will be the availability of data showing where the aged obtain such services which can be linked to characteristics of the aged beneficiaries and the providers of service.

The HIB program will thus create the opportunity for obtaining statistics of unprecedented volume and detail on the patterns of health care of the aged individuals, providing the basis and opportunity for research in the field of medical care to measure the impacts on other public and private programs, identify and define program gaps and problems of extending the system to meet unmet needs.

Plans for the program of statistics, analytical studies, and research are also firmly rooted in the needs, that are now being defined, for the information that will become available after July 1, 1966. Evaluation of the program by the Administration will rest in large measure on analysis of the statistics derived from program operations. In fact, the primary objective of the projected statistical program will be to provide data needed to evaluate the program and to measure its performance. Needs for data by organizations and persons other than the Social Security Administration will also be taken into account. Obviously, a wide variety of data will be needed to satisfy all of these needs.

a. Program and utilization statistics

1. Statistics on the kinds and costs of specific medical care services used by the aged, including statistics measuring and describing utilization of hospitals, extended care facilities, and home health services (number of admissions and discharges, admission and discharge rates, length of stay, number and rate of surgical procedures, costs of services);
2. Statistics on utilization of physicians' services (number and rate of visits, place of visit, nature of treatment, charges for services) and other medical services, including laboratory tests, prosthetic appliances, etc.;
3. Statistics on the demographic and appropriate medical characteristics (age, race, sex, place of residence, diagnosis, surgical procedures, etc.) of beneficiaries using and not using medical care services under the health insurance benefits program;
4. Statistics analyzing trends in utilization and costs;
5. Statistics analyzing geographic differences in the amount, kind, and costs of services used.

b. Provider statistics

1. Comparative statistics for individual providers—hospitals, extended care facilities, and home health agencies—on variability in utilization (number of admissions and discharges, length of stay, admission and discharge rates) and in charges and costs per day and for specified services;
2. Statistics on comparative trends in utilization and costs among individual providers;
3. Statistics on characteristics of providers (size, location, type of services available, affiliations, accreditation status, characteristics of staff, etc.);
4. Comparative statistics for individual intermediaries on number and rate of utilization of physician services and on charges for specific services;
5. Statistics on operation of utilization review plans;
6. Statistics analyzing geographic differences in the amount, type, and costs of services provided.

c. Operating statistics

1. Statistics for administrative and management purposes, including data on HIB claims operations and workloads;
2. Statistics on processing times, billing lags, and other time lags;
3. Statistics on State agency operations;
4. Statistics on the performance of administrative agents, including data on workloads, productivity, and costs.

All of these data will be obtained recurrently as a byproduct of the claims billing and payment process. This section focuses on such recurrent data. They will, of course, be supplemented as required by special ad hoc studies and surveys.

II. SOME BASIC CHARACTERISTICS OF THE DATA COLLECTION SYSTEM

There are several items which are basic to the whole data collection system and which, to a great extent, define and delineate the kinds of byproduct statistics that will be available. A brief description of these key items follows:

a. Records for individuals

Data will be collected and maintained on an individual person basis. Thus, the individual and his experience under the program will be the basic axis of statistical analysis. Data for individuals will be cumulated over varying lengths of time as desired, making it possible to obtain longitudinal data over time for individual beneficiaries.

b. Centralized records

Master records of health services utilized by all aged persons covered under the HIB program will be maintained on a centralized basis by the Social Security Administration. The central record system will receive copies of admission notices from hospitals, extended care facilities, and home health agencies. Copies of billing forms will also be received at the time an aged person is discharged from a medical care facility. Similarly, copies of bills from physicians for services under part B of the program will be received by SSA after payment by carriers.

c. Comprehensive coverage of specified services

The Social Security Administration will be in a position to obtain all of the utilization experience of aged persons for parts of the hospital benefit program. Reports of all stays in a hospital or extended care facility, including stays in nonparticipating institutions, and days of care not covered or reimbursable under the program, will be necessary to administer the spell-of-illness provision in the law.

d. Centralized statistical reporting

Concomitant with the maintenance of central records will be the preparation centrally of program statistics. Almost all statistics needed by SSA will be obtained directly from copies of hospital bills or physician's statements. Intermediaries will not be required to prepare routine detailed statistics.

III. SOURCES AND TYPES OF DATA (CONTENT OF MASTER RECORDS)

How will HIB statistics be collected? What will the sources of the data be? What kinds of information will be collected? Very simply, a file will be established of all persons eligible for benefits under the program. To this file will be added information about the services utilized by these beneficiaries. A file will also be established for all providers (hospitals, extended care facilities, and home health agencies). As necessary and desired, information from this file will be merged with information about eligibility and utilization. All of this will be accomplished centrally by SSA. In addition, intermediaries will be asked to provide limited and gross statistical information related to their operations.

a. Eligibility records and statistics

Administration of the HIB program will require establishment of a master record that identifies every aged person who is eligible for health insurance benefits and that shows whether he is entitled only to hospital benefits, to supplementary medical insurance benefits, or to both. Eligible persons will be identified from a variety of sources:

1. *OASDI and RRB Records*—Old-age and survivors insurance and Railroad Retirement Board beneficiaries are *automatically* entitled to benefits under the basic hospital insurance program. Old-age beneficiaries and their aged dependents will

be identified from benefit payment records that are now maintained by the Social Security Administration and the Railroad Retirement Board.

2. *Application for Supplementary Medical Insurance*—Since all aged persons must positively register their desire to participate in the supplementary medical benefit program, forms have been sent to all current beneficiaries to determine whether or not they wish to enroll in the supplementary program. Their replies will be made part of the master eligibility record.

3. *Applications by Uninsured*—Aged persons who are not receiving social security or railroad retirement benefits must apply for entitlement to hospital insurance benefits. At the same time, they will indicate whether they wish to enroll in the supplementary medical insurance program. They will be identified and added to the master eligibility record as a byproduct of this process.

The same sources and much the same procedures will be used to maintain and update eligibility records—i.e., to add the newly aged, eliminate those who die, identify those who withdraw from the supplementary program, keep track of those who move, etc.

The master eligibility record plays a very important role in the statistical program. First, it is the source of information and statistics on the demographic characteristics—age, sex, race, place of residence—of each aged eligible person. Second, since it identifies individuals eligible for part A benefits only, for part B benefits only, and for both part A and B benefits, it serves as the base for the computation of various utilization rates—rates for all aged persons, for selected subgroups, such as public assistance recipients, railroad retirement beneficiaries, and other major groups.

b. Utilization Records and Statistics

As previously indicated, each use of services under the HIB program will be recorded centrally in a master utilization record maintained by the SSA to meet administrative and operating needs. However, the amount of information to be recorded for the basic hospital insurance program differs from the amount of information to be recorded for the supplementary program. As a result, the way in which data will be collected for the two programs also differs and is described separately:

1. *Hospital and Institutional Utilization*—Each episode of hospitalization, each use of extended care facilities and of home health services by each individual beneficiary will be recorded in the master records. The information for the record will be derived from admission notices and billing forms that will be submitted by participating facilities every time an aged person is admitted and discharged. The record will be serial-type—i.e., detailed information will be added separately to each individual's record for each utilization episode. In this way, a history will be built up for each individual that will permit any summarization or cumulation needed or desired.

   The basic unit of data input to the record is the billing form. What information for statistical use will it provide? Without listing each item in detail, the more signficant information are summarized below:

   a. *Period of use*—date of admission and of discharge, length of stay, discharge status;

   b. *Diagnostic information*—all of the diagnoses shown on the hospital discharge sheet, although only the primary diagnosis will be coded for a 20-percent sample of beneficiaries and tabulated routinely;

c. *Surgical information*—all of the surgical procedures performed during the period covered by the bill, including the dates for each operation; if multiple procedures are reported, only the "most significant" will be coded for a 20-percent sample of beneficiaries and tabulated routinely;

d. *Charge information*—total charges, covered and noncovered charges for the episode and source of payment; noncovered charges will show separately amounts covered by the deductible and amounts covered by coinsurance provisions of the law.

2. *Utilization of Physician's Services*—The process for obtaining statistics relating to physicians' services under the supplementary insurance program will differ from that described above under the hospital insurance program. Statistics will also be derived from copies of bills—either the physician's own statement or a billing form. However, in this area, the statistical process and records will be separate from the administrative records and process. The reason for this separation is that copies of all physicians' bills are not needed for administrative and operating purposes as the spell of illness provision and other limitations do not apply to physicians' services with the exception of outpatient psychiatric services. As a result, statistics on physicians' services will be obtained for a 5-percent sample of beneficiaries.

It is clear that for statistical purposes the information needed is the diagnosis or condition being treated, the date(s) and place(s) of treatment, a description of each service or procedure performed, and the charges involved. It should be emphasized that the reporting configuration which is essential for statistical purposes will provide direct relationships between time(s), place(s), procedure(s), and charge(s) and the specific diagnosis or condition involved. In other words, the system is intended to provide data on numbers of visits to physicians made by individuals and to relate them to the conditions being treated, the nature of the treatment involved, and the charges for the services.

These requirements relate specifically to medical treatment regardless of place of treatment. The requirements where surgery is involved will be less detailed in that specification of the date and place of each "visit" is not meaningful or applicable. For surgical cases, the statistical requirements will follow current practices in the field—i.e., since surgical care is regarded as a unit, including preoperative and postoperative care, counts of visits for such cases will not be maintained.

One other major difference between the procedure for obtaining hospital statistics and that for physician statistics is that complete reporting of physicians' services will not be possible due to the $50 deductible that must be met before an individual's doctors' bills may be paid under the supplementary insurance program. As a result, the statistics will cover only those persons who have more than $50 of physicians' bills during the year. Special studies will be required to measure the amount of use involving less than $50 annually.

c. Provider records and statistics

Every hospital, extended care facility, and home health agency that wishes to participate in the HIB program will need to file an application for this purpose. This application will be used by the States in certifying providers for participation in the HIB program. The application forms will also provide detailed information about each provider for statistical purposes. The items to be used statistically will include:

1. Geographic location (State and county);
2. Number of beds;
3. Type of control (nonprofit, proprietary, State, county, city, etc.);
4. Types of services provided;
5. Accreditation status, medical school affiliations, identification of approved training programs;
6. Characteristics of the staff including figures on number of physicians, registered professional nurses, qualified speech therapists, home health aides, licensed practical nurses, and other skilled medical care personnel;
7. Number of admissions and discharges, number of patient days, and number of persons served each year (both total and those covered by the HIB program); and
8. Reimbursement rate.

This information will be recorded in SSA records and will be updated as States periodically recertify providers. Data will also be updated from annual or semiannual financial cost statements furnished by each provider. In addition, records for new providers will be added to the files and those for providers who leave the program will be eliminated.

Obviously, these records will be the source of a variety of statistics dealing with the characteristics of hospitals, nursing homes, and home health agencies participating in the HIB program. Over time, the data will show changes in the types of services offered by participating hospitals and other institutions as well as changes in the number and kinds of medically skilled personnel they employ. Data from these records combined with utilization data will show the types of medical facilites in which the aged get their care as well as the extent to which the characteristics of various providers are related to differences in the amount and kinds of services used by the aged.

IV. ANALYTICAL STUDIES

In addition to providing basic program operation data on a recurrent basis, the statistical program is being designed to provide the basis for a variety of special analyses and analytical studies to evaluate the program and measure its performance. The Administration, the Congress, and many outside groups will be concerned with assessment of the program operation and achievements in terms of the goals of the program to protect the aged persons against the catastrophic costs of hospitalization and illness and to provide quality hospital and medical care in the most efficient and economical manner.

A series of studies are planned to analyze the utilization experience, charges and costs, provider and beneficiary records, carrier operations, and the economic and social data available from the HIB records to provide knowledge for evaluating the program's attainment of its purposes and to determine the need for legislative changes to facilitate effective operation.

The following are several examples and illustrations of the type of analytical studies to be undertaken:

a. Studies of the effectiveness of administration

1. *Role of Intermediaries*—The basic responsibility for administration of the program rests with the Secretary of Health, Education, and Welfare. Within this authority, primary program and administrative responsibility will be with the Social Security Administration, which will use ap-

propriate State agencies and intermediaries nominated by providers of services to assist in the administration of the program. Under the hospital insurance plan, groups of providers, or associations of providers on behalf of their members, may nominate a national, State, or other public or private agency or organization to serve as fiscal intermediaries between themselves and the Federal Government. The intermediary will determine the amount of payments due upon presentation of bills from hospitals and other institutional providers and will make such payments.

Studies will be undertaken to analyze the operations of these intermediaries with respect to the effective and efficient operation of the program. Differences among carriers in their operating costs, methods of payments, procedures for claims review, billing lags, and other administrative responsibilities will be reviewed and analyzed in detail.

2. *Determination of Reasonable Charges*—Where payment is on the basis of charges for physicians' services and medical and other health services, the intermediaries or carriers are to take action to assure that the charge on which the reimbursement is based is reasonable and not higher than the charge used for reimbursement on behalf of the carriers' own policy holder or subscribers for comparable circumstances. In determining reasonable charges, the carriers will have to consider the customary charges for services generally made by the physician furnishing the covered services, and also prevailing charges in the locality for similar services.

   Studies will be conducted of the geographical variation in actual charges for physicians' services for comparable procedures as related to characteristics of beneficiaries and providers. These studies will give some clue as to the extent to which the carriers are effectively carrying out this important function and provide a basis for special studies.

3. *Utilization Review*—Hospitals and extended care facilities participating in the hospital insurance program will be required to have in effect a utilization review plan providing for review, on a sample or other basis, of:
   - a. Admissions of beneficiaries of the hospital insurance program to the institution;
   - b. Length of stays; and
   - c. The medical necessity for services provided and facilities.

   Statistical studies will be required analyzing the variations in institutional stays for comparable diagnostic categories in terms of geographical location and type of institution to evaluate the function of utilization review.

b. Analytical studies relating to specific provisions of the law

1. *Recertification Requirement*—The law provides that the physician recertify each case of inpatient hospital service no later than the 20th day of the period that the services are required for an individual's medical treatment. This recertification requirement will be analyzed in terms of its effect on inpatient hospital stay, according to type of hospital, geographical location, and the distribution of actual days of stay in various hospitals.

2. *Spell-of-Illness Requirement*—Inpatient hospital and extended care services within specified limitations are provided under the law for each spell of illness. The term "spell-of-illness" is defined as beginning the first day (not in a previous spell of illness) in which an individual is

furnished covered inpatient hospital or extended care services and ending with the last day of the first 60 consecutive day period during which he was not an inpatient in a hospital or extended care facility. Studies of the impact of this requirement will be made in terms of the average duration of spells of illness, number of beneficiaries who exhaust benefits during single spells of illness, average duration of time between exhaustion of benefits and beginning of a new spell of illness, and the percent of total costs of care in hospitals not covered because of the spell-of-illness concept.

3. *Reasonable Costs*—Payments to providers of service under Part A will be made on the basis of reasonable costs of the services furnished. The costs of services in hospitals and extended care facilities vary widely from one institution to another reflecting differences in quality and intensity of care. Reimbursement rates and the method for determining reasonable costs will be analyzed in terms of geographical variations, type of facilities, and services provided.

4. *Transfer Agreements*—One of the conditions of participation for an extended care facility is that it must have a transfer agreement with at least one participating hospital (except under special circumstances). A transfer agreement is one which provides, in writing, for the transfer of patients between the hospital and extended care facility whenever such action is medically appropriate, as determined by the attending physicians. Analysis will be made of the varying types of transfer agreements, how this requirement is implemented on a geographical basis, and its effect on patterns of care received under the program.

5. *Limitation of Inpatient Mental Hospital Care*—There is a lifetime limit of 190 days of covered services in psychiatric hospitals. Psychiatric care in general hospitals, however, does not count against the 190-day lifetime limit. Statistical study will be undertaken to determine the number of persons who exhaust these benefits, the number and extent of psychiatric services in general hospitals, and emerging trends in this area.

c. Analytical studies related to utilization and costs of health services

1. *Utilization of Hospital and Medical Services*—The availability of a population base will permit the calculation and presentation of a wide variety of utilization rates for population subgroups. In addition to the utilization data, the basic statistics will include data on total and covered charges for the various types of services. The potentialities for combining and cross-classifying utilization data by the characteristics of beneficiaries and providers of services open new vistas for analysis and study of variations in patterns of use of hospital and medical services and the factors affecting such variation including geographical and socioeconomic differences.

2. *Longitudinal Studies*—The availability of statistical data on utilization of hospital and medical services for each individual beneficiary provides the opportunity for longitudinal studies of the patterns of covered services received by individuals over time. Individual use of services can be followed and studied beginning at age 65 (or the start of the program) in terms of the characteristics of the beneficiaries and the type and extent of services received.

3. *Provider Experience Under the Program*—The considerable fund of data relating to the characteristics of the providers of service, their reimbursement rates, and the utilization of their services will provide the basis for a variety of studies. Studies will be undertaken to determine where beneficiaries in a given geographic area receive their medical services and where hospitalized persons come from. The availability of hospital and medical facilities will be examined in terms of the adequacy of existing facilities for purposes of the program.

Mr. WOOLSEY. Every time I hear Howard speak about this, he speaks with greater confidence that it is all going to come about, and at this point I really think it will.

As you can see, it is a terribly intricate system. But it does appear as if for one important group of the population we are going to have a large volume of data on medical care. As I say, it sounds terribly intricate, and I believe that one is going to have to understand the system very thoroughly in order to interpret the data. But as is quite proper, it is primarily designed as an intelligence system, as a monitoring system for the needs of the program.

But I hope that when it all settles down and is working properly we will have a series of publications that will be designed to serve the needs of public health. It certainly is another situation where it behooves us to really study and understand it and to try to make our own data compatible with the provisions of this significant act.

As an old time bureaucrat, I am completely astonished, thrown off my stride, and extremely pleased to find such a person as our next speaker occupying high office in the Department of Health, Education, and Welfare. It isn't that we have not had wise and excellent people in these positions before; but we seldom have had the opportunity to deal with a person who from the outset has had such a broad understanding of our problems, and I think I can speak not only for the National Center for Health Statistics but for the whole Public Health Service in this regard. Furthermore, from my own experience he is a man who listens and rapidly absorbs ideas that are new to him. In short, it is a pleasure to have him in the hierarchy of people under whom we work.

I have a long curriculum vita on Dr. George Silver, and I am not going to review the whole of it. I have a long list of publications as well. I am particularly interested, however, to note that in the course of his career—this is something I had not been aware of—he was health officer of the Eastern Health District in the Baltimore City Health Department. This is one of the places where health surveys and morbidity studies really had their origin. I am sure he must have been somewhat in touch with those activities when he was there.

So it is a great pleasure for me to introduce the Deputy Assistant Secretary for Health and Scientific Affairs of the Department of Health, Education, and Welfare, Dr. George A. Silver, who will speak to us on extending the range of usefulness of vital and health statistics.

Federal-State Partnership in Medical Care Statistics

Dr. George A. Silver, *Deputy Assistant Secretary for Health and Scientific Affairs, Department of Health, Education, and Welfare*

I am not quite sure I know how to respond to that introduction. You might say that it will be one of the instances in a public address where the introduction outweighs the volume or the value of the presentation (and maybe it is not such a rare situation). But thank you anyway.

I am very happy to be able to participate in a program of this kind because the matters that are under discussion have been of great interest and concern to me and, I know, to many others for a number of years. I think that the emergence of health services as a prime area of concern has made the discussion even more valuable and even more important.

It was not too long ago that the development of policy in the improvement of health services was pretty much limited to conceptualization without much reference to any factual base. Serious students had opinions, but decisions were reached empirically. I say this despite the fact that collection of public health statistics as a governmental responsibility is now well over 100 years old—109 years, I think.

It was mentioned quietly among statisticians, if not more loudly in other places, that for all practical purposes statistics were "kept" rather than "used." At the same time, too, the quality of the statistics collected was rarely questioned. The fact that they existed and were somewhere on file was generally considered enough. I do not have to tell you times have changed.

And being the fourth speaker on the panel gives me an opportunity of saying that it is a good thing that we do not have Government speechwriters because then Ted and I could have been accused of having used the same writer to save time by giving us the same speech. As it is, we apparently both worked independently and came up with the same conclusions. So you will forgive me if what I say has in it a considerable amount of what has already been said.

Changing times have made it almost a truism for me to say that we need accurate, reliable data to provide the basis for planning. This is generally accepted.

We need similar information to provide support for policies that are proposed and to encourage public action, to provide proof of the efficiency of one or another programs in operation or activities under consideration. And these are not only governmental demands, but they are also private institutional demands.

We know that we must have data to provide the raw material for support of legislative proposals and that these data can stir the public and legislators to appreciate community needs and to weigh possible resources; to determine where we are going and what more we need to do. PPB, program planning and budgeting, is now a governmentwide task, not a theoretical concept.

Let me say in passing that this recognition and acceptance are due in no small part to the tireless efforts and imaginative leadership the National Center for Health Statistics has given the field.

So we know that we need good data. We know we need statistics of such quality that they can form a reliable base for the structure that we hope to build. The softness and questionable character of much of what has passed for valid statistical information are coming to be recognized as a prime source of defect and error in planning.

In this connection I will not elaborate on it, but I think I should mention the need for better and more widespread use of modern data storage and retrieval devices in medical care institutions. We have to come out of the era of handicraft economy.

I think you will grant me, too, that the statistician has reached a new eminence in our society and that statistics have reached a new plateau of power. The statistician is the expert, par excellence, without whom decisions cannot be made, and his data are the tools with which policies are fashioned.

Let me briefly review with you some of the areas in which we have a concern and in which we would like the extension of statistical information to take place. Let us look at the impact statistics can have and relate this to the Department of Health, Education, and Welfare's position on what has come to be known as "creative federalism."

Secretary Gardner's new HEW is determined to play an active role in the formation and promulgation of national health policies. The Federal department will pursue vigorously the objective of fostering programs to improve the health of all the people. To this end, a great deal of information will be required.

Health services statistics on a national scale presuppose a strong Federal-State partnership. This is to be a two-way street in which duties and responsibilities are shared and in which necessary information is jointly acquired and jointly used.

What I say, therefore, about government is not an effort to paint a picture of a monolithic Federal statistical agency which pries into every nook and cranny of health service operations in the country and banks data in huge computers. We must think in terms of a real partnership in which National, State, and local governments, as well as private agencies, participate to the maximum of their capabilities, in which the partners are supportive and complementary, with a mutuality of information gathering and information using.

Both Federal and State partners have important and distinct roles to play, because there are some statistical matters with which only one or the other can appropriately deal. Data collection on a national scale and data storage on a national scale are Federal functions. But there are many other matters in which only a very experienced and devoted cooperation of State and local authorities can make available reliable, accurate information in depth about important health service functions.

With regard to Federal policy and the data needs that require an extension of the range of collection of information, I would say that the first need for stretching the data collection mechanism is to establish what current information is either sketchy or absent. We recognize that in this country our delivery of health services is something less than optimal for some segments of the population; the poor, minorities, the disadvantaged of one sort or another, and those who live in rural areas do not have access to 20th century modern medicine. Under the best of circumstances, American medicine is neither organized nor equipped to deal with all the population of this country in a manner befitting the present range of knowledge and scientific accomplishment. This is true even for some in the middle income groups or the well to do.

We want to bring a greater range of efficiency to medical care organization and delivery. In the process, we must examine what we are doing and where we are going with a view to making the maximum efficient use of our manpower and resources. These matters require more accurate and more adequate statistical information.

If, for example, we are going to plan for the improvement of the health manpower situation—probably the most critical area of health service needs in this country today—or if we are to plan for improvement of health facilities, we need more precise data. If we are going to place more emphasis on delivery of medical services to children or to minority groups (as we have done in providing a special program with emphasis on care for older people), we must have data that will support the recommendations, the proposals, and the potentially very expensive and complex plans that will be devised.

At the moment, for example, within the Department of Health, Education, and Welfare, a number of program groups are at work analyzing the kinds of health problems that can be identified and establishing a series of priorities for dealing with these problems. In addition, decisions will presumably be made as to the allocation of resources in men, money, and mortar to deal with the problems. Firm, sound statistical information is essential to rational decisionmaking in these areas, since eventually legislation will be proposed from the conclusions. And we have found that not all the information we must have is available.

Our present data on health manpower are quite sketchy. Our present information about health needs for different community groups is inadequate. And our knowledge of the use of resources is particularly lacking. As a corollary to this, planning for manpower or facilities is dependent in no small degree on the ways, and conditions, of delivery of service. If we do not have an accurate index of what that situation is, we cannot plan.

It is not only in the area of specialized information, such as health manpower or health facilities, that more adequate and more accurate data are required. We need to know about special problems that exist in various communities of the United States so as to make it possible for us to develop programs to meet these special problems.

In the Congress today, several legislative proposals have been introduced to provide facilities and resources for dealing with the problem of drug addiction. Is anyone here prepared to state precisely what the dimensions of the problem may be? Should $500 million be appropriated on a guess as to need? Yet this is only today's problem. I do not know what tomorrow's will be. But it will be something different from what we expected and something about which precise, accurate, reliable data should be available.

On July 1, Medicare goes into effect. Howard West has told us something of the way in which they tooled up to cope with it. A vast amount of data collection will be carried on by the Social Security Administration. Another half dozen agencies are engaged one way or another in collecting data with regard to the impact of this new act when it goes into effect.

The coordination of information between the Federal, State, and local agencies, fiscal intermediaries and the rest, is vital to provide an appropriate base so that after a period of time the impact of medicare in all its ramifications can be evaluated.

In the Congress now gestate a number of bills which may or may not become law before the end of this session. Each of them carries within it the seed of added data necessity.

I have in mind, for example, the proposed allied health professions bill for the support of teaching programs to produce more technologists. Do we know the extent of the need for this type of trained person, who represents a higher order than the technician, and who will be the teacher and supervisor subprofessional people need? How many of these people do we need and where can we use them? What is the basis for suggesting that 2,400 additional places be created? Why not 240, or 24,000? Many other bits of information are lacking. How many technicians can a technologist supervise? What does this mean in terms of the cost and operation of laboratory facilities? Where and in what States are the particular needs that make it desirable to locate training programs in this or that place?

Other bills are pending. There is the hospital modernization bill. After a survey, about a third of the hospital beds in the Nation have been declared in need of modernization. What does this mean in terms of hospital efficiency? What kinds of data have to be collected in order to demonstrate that $3 billion is fairly close to what might be spent effectively? How much more local data are required in justifying this estimate?

Another piece of legislation carries with it an absolute mandate for comprehensive planning; without this no State would be eligible to receive formula grants which will be used to subsidize public health services. No more categorical grants are to be made. What kind of a burden will this put on the statistical system of the county, city, or State?

The international health bill carries requirements for development of programs for the eradication of many diseases in large parts of the world. How much do we know about these areas and what is the extent and range of activity that is required? Of course, these data transcend national capabilities, but they underline the farflung needs. Collaboration in data collection on an international scale is a necessity. An international organization for data collection can help us not only to provide better and more useful service in other countries but also give us clues about our own country.

In all of this legislation, the emphasis is on what kind of services people need, who delivers them, how they are delivered. The focus has passed from counting bodies or births to counting the whole wide range of actions and events that compare the organization and delivery of medical services.

Some of you are no doubt a little bewildered by the emphasis that I am putting on medical care data. Vital statistics is an understandable responsibility; health statistics in general, an understandable responsibility. Isn't medical care data collection too much of a refinement? Shouldn't it be restricted perhaps to research programs, to project grants?

The refinement is necessary because the complexity of modern health service requires close and explicit attention to everything that happens to people in the health area, not simply whether the illness that a man suffers from is understandable in microbiological terms and definable on a morbidity or mortality report sheet but also whether it is understandable in sociological terms.

Once we have recognized that the impact of disease is related to what happens in the whole community, we are prepared to accept and deal with disease in terms of the whole community.

It may be that what we are finding out is that statistics has ceased to be the prerogative of a public health oriented statistician. Today the orientation has to be toward the interrelationships in society which demand statistics based on sociological, economic, anthropologic, and even political scientific factors. Welfare, housing, education are intimately related to health, and the data collected have to be related to them. This means, more than ever, interdisciplinary cooperation in design of data collection, in interpretation, and in use. The statistician has an increasing responsibility to establish close working relationships with other health-related disciplines.

And if this were not enough, there is on the horizon a host of other problems with which we have flirted in the past, respecting their influence on, or relationship to, public health, but which now suddenly demand priority consideration.

Family planning and population problems are one example. At one time we were concerned with these as appropriate only for consideration in developing countries. Now we must think in terms of local health department family planning services.

Alcoholism is another example. The President, in his health message to the Congress, outlined precisely what the role of the Department of Health, Education, and Welfare would be with regard to alcoholism, and that role included vastly more responsibilities. Alcoholism has long resisted the efforts of the medical profession, as well as social and municipal services. The illness of alcoholism today is still shrouded by the prejudice and ignorance that a century ago surrounded the mentally ill. Statisticians must give thoughtful consideration and extend cooperative efforts in helping with the prevention, treatment, and control of this disease.

Another is segregation, which I have no doubt should be considered a major killer, since all the data we have at our disposal indicates that being a member of a dark minority is not conducive to good health or to a long life in this country. How much more can be obtained in the way of precise, reliable information that will aid us in dealing with this disease as we have dealt with other diseases in the past?

Specifically relating to the delivery of medical care is the problem of quality. More information is needed to design quantitatively sufficient services and organizational patterns, but even more is required to improve the quality of medical care. There are so many gaps in our information in this area. Standards have to be developed; criteria of health must be designed. Furthermore, in what way can statisticians help us in building quality control into health service programs?

These questions need to be answered to define the role of data-collecting agencies. New and experimental programs are beginning every day. What are we doing to collect the information that will make it possible for us to evaluate these new programs?

Within the past few months, the Office of Economic Opportunity has begun to subsidize novel and imaginative programs of medical care delivery—the neighborhood health centers. It will be important to OEO, to the people working in these new experimental units, to the professional community, and to the country as a whole to know within a relatively short period of time the value or lack of value in this new type of medical care delivery service. Statistical units need to support these newly developed programs to provide the base for evaluation and future planning.

I am asking, in effect, that statisticians play an active role not only in collecting data, but in seeing to it that appropriate data are collected, and that appropriate systems and arrangements be made for collection.

In summary then, I would say today the statistician has a responsible role:

1. To provide the information from which communities can plan for medical services.
2. To provide the information as to the effectiveness of community health services.
3. To aid in the evaluation of the quality of these services.
4. To develop tools for providing the substrata on which innovative medical programs can be built.
5. To participate in the special problems that develop as one generation passes to another.
6. To cooperate with other disciplines in developing the tools that are needed for the growth and development of medical care services.
7. To create a stable base from which information from the lowest level can be transmitted usefully and accurately to the highest level and where material collected nationally and internationally can be used effectively at the local level.

Mr. Woolsey. Thank you very much, Dr. Silver.

I think Dr. Silver has given us a look at the Department's attitude toward the function of government at all levels in the delivery of health services.

I am particularly impressed by the Department's attitude toward the role of statistics in the process of planning. We have had a good deal of evidence of this in the past few months, and Dr. Silver has referred to it again. We feel it is a very healthy sign that there are people in the Department who are looking at our data and making use of them the way I think that data should be made use of—in looking at the magnitude of problems, in trying to discern different courses of action and to evaluate the costs and the benefits, and in general using data to make the whole decisionmaking process more rational.

I wish I could believe everything that Dr. Silver says about the role of statisticians and their ability to perform these functions that are being put upon us. Some of the methodological problems posed by some of these new programs, and producing data for them, are extremely difficult.

When he refers to statistics and drug addiction, I throw up my hands. I still do not know how we are going to go about this.

As to alcoholism, we may have made a little progress. But we still have a long way to go.

The tooling up time is very long. But I think that our attitude is the thing that matters. We should have an attitude toward these problems of looking for ways of doing them, not of finding reasons why we cannot do them. Now, this is a subtle but important difference. We must be concerned, not with picking out reasons why we cannot do something, but looking for ways of doing it.

I want to thank you very much, Dr. Silver, for joining us this morning.

Now, Dr. Yoder, you have been sitting here and listening to this, and I know also that you have been present at a number of the workshop sessions so far this week. I know that you have to leave before the final session on Friday, and I wonder if you could take a few minutes to tell us about your impressions of the conference so far from the standpoint of the State health officer and a friend of the statistician.

Conference Week Observations

Dr. Franklin D. Yoder, *Director of Public Health for the State of Illinois, Liaison Representative for the Association of State and Territorial Health Officers*

First of all I want to bring greetings to you from the great State of Washington, from Dr. Bucove, who is president of ASTHO. I think it is very fine that Dr. Linder has convened the Public Health Conference on Records and Statistics, and I also want to bring you greetings from our Health Services Administration Committee. I have heard that term (Health Services) used enough this morning to know that we named the committee correctly.

And we, of course, want to extend a special greeting to our affiliated organization, the American Association for Vital Records and Public Health Statistics, under the leadership of Mr. Aase from Wisconsin.

I have enjoyed the opportunity of participating in your proceedings and your discussions, and I do have some impressions which I would like to relate that might be pertinent to things that have been discussed.

First, I would like to say that I wish that all 54 members of our Association of State and Territorial Health Officers were here, because I think the people at administrative levels and policy levels need to know more about how you folks work.

I am also happy to see among our group the international guests. I think it is not only, I hope, good for them, but I think it is also good for us to have these international visitors who are interested enough to spend time with us.

I have heard such things as "hard data" and "hardware," and I am very happy to note that in this group there is no such thing as talking about the "big bad computer" that you read about in the popular press. This group makes the computer work for man. There is no question about it. I think that is indicative of your attitude toward contributing to human progress. I have even heard some mention of "stochastic models" and how this might be useful in bringing hard data to administrators for their use in health decisions for PPB, as Dr. Silver says.

I have heard it said that you cannot "piggyback" everything and that it is important, in beginning to survey, that you be able not just to talk about your objectives but to set them down in writing.

The most difficult problem, I presume, as you said, is the statement of the question. I did not learn exactly how, but I know you need to anticipate the types of tables, graphs, and conclusions you want before the statement of the question is final. That seems to be somewhat controversial, but I can understand that most of you, being very competent in your field, do have in your own minds what you want in the way of tables, graphs, and, perhaps, some of the conclusions. Someone said some of them can be reversed if the data so demonstrate.

I understand that "serendipity" is somewhat of a rarity in terms of statistical surveys. Well, I do not know about that. I do believe it is important that we acquire more base data, and I think we are going in the direction of having more information about human beings because we must in the final analysis bring the collection of health data down to the individual. I think Dr. Linder's article in *Scientific American* points this out very nicely. And we must have much more scientific data about the individual, but it has to be gotten down and used and has to be used in such a way that it contributes to positive health.

Dr. Kerr White talked about revision of morbidity data. As health programs improve, morbidity data must be changed, because the definition of health in itself is perhaps one of the most difficult questions we can consider.

If there were time, I could spend a little bit of it detailing my own ideas about a Nielsen rating technique for public health. You all know how the Nielsen rating affects TV shows. But I think we need to be wired in to everybody some way, to find out not only how they are but what they do and how it relates to the level of the public's health.

I heard about "buying the most information per dollar," and I think this is very good that we think in these terms because the science of economics is important in making decisions in the public area where there is competition for the tax dollar.

I think it is true that there is an impact of the survey technique on the measurement of the very thing that you are trying to measure. I guess this is skewing the curve by the way you measure.

And I heard some good discussions on "standard error," computation sampling response error. All of these are very interesting questions. The question of "homogeneous and heterogeneous interviewers and respondents" became quite warm in one session.

Well, in closing I would like to mention that—this is somewhat repetitious, but I think it is important—Senate Bill 3008 is very important to the future of public health, especially to State (departments) and local health departments which are in need of strengthening. I believe it is "creative federalism" at its best. It puts a great responsibility back to the States and localities where it properly belongs, and I think this legislation will bring D-Day for us, those of us in State and local health work.

I would also like to leave the thought that we in Illinois, I hope, will have one of the first State centers for health statistics, and we look forward to meeting with you someday to discuss that.

Mr. WOOLSEY. Thank you very much, Dr. Yoder, for those observations. I hope you will carry our greetings back to the ASTHO, and I am sure that the Proceedings of this Conference will be made available to the health officers for their perusal. These sessions are, for me, a learning process. I really enjoy the opportunity to hear from people from other parts of the country and from other disciplines, and to get a strengthening and a new vision of where we are going. As Dr. Yoder said, this seems as if it is D-Day for us in the Federal Government as well as in the States. I have found this session particularly valuable as a learning experience myself, and I hope the rest of you have.

I want to thank our speakers for their contributions this morning. And I will declare this second general session closed.

special session

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JUNE
1966

HEALTH STATISTICS IN METROPOLITAN AREAS

Presiding

Mr. Todd M. Frazier, *Chief, Planning, Research, and Statistics Division, District of Columbia Department of Health*

I welcome you to this Special Session on Health Statistics in Metropolitan Areas.

This is a rather vague title, intended to give us the maximum flexibility from this platform. We have not had the opportunity to converse on this topic during the 2-year period and I am not really sure what viewpoints will emerge today.

The format of the afternoon will be as follows. Representatives from metropolitan areas will present their viewpoints on the health statistics problems in these areas. Then representatives from the Federal Government will speak to us on some of the things that are planned by the Federal Government to assist those of us who work in metropolitan areas in carrying out our obligations. Following that I would hope that the panel might have opportunity for discussion and then open the discussion to the entire group.

I would like now to introduce the members of the panel. On my left is Mr. James B. Swayne, Chief of Public Health Records and Statistics, County of Los Angeles Health Department, California, who represents a standard metropolitan statistical area that consists of two California counties with a population of about 6.7 million. Mr. Swayne earned his M.A. from the University of New Mexico in 1936, and has supplemented this with studies in public administration and government at Syracuse and the University of Chicago. In 1953 to 1965 he was Chief Public Health Statistician, Los Angeles City Health Department, and when the city and county health departments were combined in 1965, he assumed his present position. He is a member of the Standing Committee of the Public Health Conference on Records and Statistics and is currently serving as president of the California Conference of Local Public Health Statisticians.

Next, Dr. Mildred Kantor, Director of Vital Statistics, St. Louis County Health Department, St. Louis, Missouri. Dr. Kantor represents the St. Louis, SMSA which contains some 2 million people. It has one central city with three Missouri counties and two Illinois counties. So we are beginning to see different types of SMSA's emerging. I want to emphasize that I appreciate the fact, as I am sure you do, that these people are not here representing their SMSA's, but this is the arena in which they must work. Dr. Kantor is a sociologist who took related studies in statistics at the University of North Carolina. She served with the St. Louis County Health Department from 1956 to 1961, when she assumed her present position there as Director of Vital Statistics.

Next is Mr. James F. King, Public Health Analyst for the Division of Public Health Methods, Office of the Surgeon General, Public Health Service.

Our next member is Dr. Herbert Domke, Director, Allegheny County Health Department. He is here today not as a health officer, and not as an epidemiologist, but as a fellow statistician. He received his doctor of public health degree in biostatistics at Harvard in 1959, his M.D. at the University of Chicago, and his M.P.H. at Harvard. In 1959, Dr. Domke assumed his present position. The Allegheny County Health Department is situated in the Pittsburgh SMSA, which in 1960 had a population of 2.4 million. It consists of four Pennsylvania counties—again a variant pattern of an SMSA. Dr. Domke has served in the Public Health Service as a reserve commissioned officer. He is a member of the Surgeon General's Advisory Committee on Urban Health Affairs and the Advisory Committee on Community Health Services. He is a trustee and member of the Executive Committee of the U.S. Conference of City Health Officers.

Next we have Mr. James Miller, Chief, Office of Program Planning and Evaluation, Division of Indian Health, Public Health Service.

And next is Mr. Robert Israel, who joined the staff of the National Center for Health Statistics, Public Health Service, on May 16. From 1959 to 1961, Mr. Israel was a biostatistician with the Maryland State Health Department and from 1961 to 1966 held the position of Chief, Division of Statistical Research and Records, Maryland State Health Department. He is here today not as a recently appointed Federal employee, but in the capacity of one who is quite familiar with metropolitan problems at the State level. Mr. Israel comes from a State that has two metropolitan areas, one located entirely within the State, and one that has two of its counties associated with the District of Columbia Standard Metropolitan Statistical Area. This presents many interesting problems.

Mr. Louis Bromer is Chief of the Statistics and Reports Branch, Division of Hospitals, Public Health Service. These are the participants. Now with just a few words about the ground rules, I would like to begin this program.

First of all, in the information that many of you received about the content of this afternoon's program you may notice several questions were posed to this panel. I would like to restate these questions only slightly.

The first question that I think we may cover this afternoon is: How should large city health departments modify their statistical programs? I say modify, because I think most large city health departments have statistical programs in the sense that they have accepted as a responsibility those staff functions of a statistical office. By those staff functions I am referring to research efforts, consultation and special projects. I would extend this to mean also responsibilities that bridge the gaps between our operational program staff and fiscal staff.

Secondly, what impact are the demographic, legislative, and fiscal pressures now developing likely to have on the content of statistical office programs?

Third, How should these changes be coordinated? In other words, How are we going to work with other departments in our jurisdictions—cities, counties, States, regional and Federal levels? How are we going to work with other competing public agencies within our own jurisdictions? And finally, How are we going to work with other units within our own department, particularly the program and administrative units?

Now I would like to ask Dr. Domke to lead off.

Health Appraisal of U.S. Metropolitan Areas

Dr. Herbert R. Domke,* *Director, Allegheny County Health Department, Pittsburgh, Pennsylvania.*

A major landmark for urban public health has been set. The National Center for Health Statistics is now publishing selected mortality data for 201 standard metropolitan statistical areas (SMSA) (1) as defined by the Bureau of the Budget (2). And metropolitan area natality data also are now being published. These publications mark a major development because they give attention to the real functional urban community, the metropolitan area. The earlier established system of reports provided data primarily by the political jurisdiction of municipality, county and State. Valuable as it may be, the system based on political boundary lines has become progessively inaccurate in depicting the health status and needs of the American city resident.

Some 125 million people, nearly two-thirds of the 1965 population of the United States, now live in urban units designated as metropolitan areas by the Budget Bureau (3). And nearly 85 percent of national population growth is centered in metropolitan areas. It is urgent that we identify the health problems and benefits due to or associated with metropolitanization. And it can be expected that a more accurate appraisal of the health benefits and problems of urbanism will lead to needed reshaping and strengthening of health programs to serve our large urban populations.

There is a popular and professional notion that the urban environment has an adverse effect on health. There is, however, surprisingly little contemporary documentation as to the kind and degree of health damage. The pervasiveness of the notion that cities are more or less unhealthy has obscured awareness of benefits, some substantial, which are to the health advantage of the metropolitan area resident. These present biases are in part due to the existing pattern of vital statistics reports by municipality. The health problems, as other civic problems of the "central city," are indeed very great. But it is high time that the biostatistician, the epidemiologist, and other health personnel look at the whole picture of the American urban community—the suburbs and the central city as a unit.

Vital statistics history shows that the balance for health between urban hazards and benefits is not static. In the past, adverse health conditions in cities required inmigration to sustain or increase population. As recently as 1935, the demographer Thompson (4) stated, "it still remains to be proved that

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*Coauthors: Dr. Shirley E. Johnson, *Public Health Physician, Allegheny County Health Department;* Mr. Kenneth R. Marino, *Statistical Analyst, Allegheny County Health Department.*

man can live and propagate in the modern city." And although present demographic evidence is favorable, there is an accelerating pace of urban growth and technologic change. That these changes will to some degree affect the city dweller's health is certain. Certainly we must also develop techniques to measure these effects as they change in time.

The importance of the new series of publications then is that it recognizes the real American urban unit, the so-called metropolitan area. The basic reason to present data by metropolitan areas is that these are the communities in which people live and work. Any transportation study shows that the boundaries of the metropolitan area, not municipal boundaries, define the area where the urban resident is exposed to health hazards. It is in the metropolitan area that the individual obtains health services. It is commonly recognized that infectious diseases do not respect municipal boundary lines. It is equally true that the patients seeking care will not be concerned with a city boundary. To be sure, some municipally sponsored health or medical care services may vary by municipal lines. But even those most opposed to metropolitan political consolidation do not deny the socioeconomic integrity of the metropolitan area.

In any event, the availability of the 1963 metropolitan area mortality data provides an opportunity for some preliminary appraisal. Important health differences between metropolitan areas are very strongly suggested by the most preliminary kinds of analyses. Especially interesting and important is that the results on occasion suggest the need for reappraisal of conclusions based on available municipal data. Even in cases where metropolitan and municipal trends are consistent, analysis by central city and suburbs may suggest additional relationships beyond the socioeconomic so evident in "central city" data.

Some findings based on the 1963 published mortality data will be presented below. Before presenting these findings, it is necessary to emphasize that the 1963 mortality data as published not only fail to give corresponding population data, but, more unfortunate, the geographic and population base of the data published does not conform with the Bureau of Census SMSA data for the same year. Revised population estimates for the 1963 health data were, therefore, necessary. An addendum describes the discrepancies as we were able to identify them and the adjustments made.

It may also be appropriate at this point to recognize that discussion of health appraisal of metropolitan areas can draw criticism because of substantial methodological problems of measuring health and disease. Apart from problems of theory, complaints are justified about errors in filing death certificates, and so forth. There are, indeed, major methodological problems both in defining a metropolitan area and in deciding what kind of health index to use. For the purposes of this paper, problems of methodology can, I believe, be set aside. The methodological problems have not inhibited publication of health data. The National Center for Health Statistics, other units of the Federal Government, and State and local official and voluntary agencies publish selected health data on a more or less regular basis.

The many substantial problems of use of a health index are, however, little changed if the data are published for a metropolitan area or for a county, State, or city. The implication for the National Center for Health Statistics and for other agencies is that if local area health data are worth publishing then they should also be published by metropolitan areas.

Specifically, the substantial critical questions concerning health in metropolitan areas are three:

1. Are there important health differences between metropolitan areas and rural populations? What are the health effects of urban living?
2. Are there important differences between different kinds of metropolitan areas? Are the large population consolidated areas different from smaller SMSA's? Are more dense urban populations less healthy than the more dispersed? Do steelmaking centers differ from cities based on light industry, etc?
3. What are the health differences between the different portions of metropolitan areas? For example, how do similar socioeconomic areas of different metropolitan areas compare with each other, and what is the kind and degree of health difference between different portions of the same metropolitan area?

This third major question will receive little attention in this paper. For the most part health data by census tracts are not collected or if collected, not published.

Table I presents basic vital statistics for the 37 largest SMSA's to compare with the remaining SMSA's and the nonmetropolitan U.S. population.

From these data, some basic observations can be made:

1. As with population, almost two-thirds of all 1963 U.S. deaths (1) and births (3) occur to metropolitan area residents. The simple magnitude of these occurrences should provide any needed incentive to focus attention on metropolitan areas.
2. Births are more than double deaths. Concern regarding the urban population explosion is obviously more appropriate than the historical concern as to the possibility of natural increase of urban populations.
3. Crude death rates of metropolitan areas do differ from each other and from nonmetropolitan areas. The metro areas with large populations differ from small metropolitan areas.
4. The differences among the 10 largest are of greater magnitude than the difference between the group of the 10 largest and other groups; i.e., variance within groups is substantially more than variance between groups. Probably much of the variance can be accounted for by differing age distribution.
5. The infant mortality rate differences are substantial and important. Biostatisticians agree that the infant mortality rate is one of the most sensitive single indices of community health. The 10 largest metropolitan areas compare favorably with smaller metropolitan areas and with nonmetro populations, and the rate for the 10 largest metropolitan areas is 86 percent of that in nonmetropolitan populations. Again variability within areas of similar population size is great. In the 10 largest areas, the rate for the San Francisco metropolitan area is 80 percent that of the Washington, D.C., area. In smaller metropolitan areas, the Minneapolis-St. Paul area rate is 71 percent that of New Orleans. In contrast to crude death rates where accurate comparison requires that age adjustment must be made, these differences in infant mortality rates are of importance as such. The differences do directly permit judgments as to health status of the different

communities. The infant mortality rates illustrate the important relationships to be demonstrated when data are analyzed by metropolitan areas, and compared with nonmetropolitan populations.

Some appraising this information on infant mortality would quickly "explain it" by reference to the high proportion of Negroes in most areas with high rates. This kind of "explanation" is the public health version of racial discrimination. Certainly all evidence shows the association of high infant mortality with socioeconomic factors; an association more appropriately made than that to race. But in any event, all such references to race or socioeconomic factors, or problems of central cities, do not, in themselves, provide direct causal explanation of infant mortality. The more favorable infant mortality rates of larger metropolitan areas cannot be explained by reference to socioeconomic factors, as can be seen by analysis of birth weight and neonatal mortality data.

Table II, adapted from another NCHS publication, (5) shows the percentage distribution of live births by weight for metro and nonmetro counties of different size. Data are not in identical format as that for infant mortality, but some appropriate analyses can be made, and results are of considerable interest. Prematurity is known to be the most important cause of infant mortality. Table II shows that metropolitan county mothers have a tendency to have a higher proportion of prematures and low-weight babies than rural area mothers. Furthermore, when these data are broken down by metropolitan areas of different population size, the larger the population of the metro county, the greater the percentage of premature and the lower the percentage of heavy babies. This is paradoxical: The tendency to low birth weight should lead to higher infant mortality rates in metropolitan areas than in rural.

Table III based on the same material as table II shows weight specific neonatal mortality rates. The explanation of favorable infant mortality is that better medical care in metro areas more than compensates for the adverse health circumstances of a higher incidence of prematurity.

The usually published data for cities show higher mortality rates for the central cities than in rural areas. But metro comparisons show there are important benefits for the pregnant woman and her infant in metropolitan areas compared to rural. Similar analyses for heart, stroke, and cancer would obviously be most valuable in planning the regional medical program.

Infant mortality analyses also serve to illustrate that change in and with time will substantially alter comparison of urban and rural health indices. In 1950, rural counties had an infant mortality rate approximately 20 percent greater than the metropolitan counties (5). In 1960, rural and urban rates both improved; the metropolitan rate still continued more favorable, but the relative advantage between metropolitan and rural counties was reduced to 10 percent, half the advantage of 1950.

What is the relationship of metropolitan size to other diseases? What other urban factor or dimension should be considered in health? Only definitive epidemiologic investigation of all relevant variables will give the answers to these questions. In an attempt at a preliminary appraisal, some selected data are provided in table IV for grouped metropolitan areas and table V gives data for the 37 largest SMSA's. The arrangement in table V in ranking by crude death rate recognizes the effect of age structure on mortality. It cannot, of course, substitute for age adjusted data. However, it does make possible some observations which may stimulate interest to undertake more definitive analyses.

Indeed, the data of tables IV and V are a smorgasbord to suit many different appetities. There are many intriguing differences and trends, some contrary to expectation. I have little doubt after preparing and reviewing the material presented that meaningful epidemiologic leads are provided. Equally so, in any of the preliminary analyses conducted with these data, whether arranged by population size, or crude death rate, or region, it is easily seen that considerable variance remains. Furthermore, table V shows that the wastebasket category "symptoms, senility, etc." in some metropolitan areas contains a large enough number of deaths possibly to alter rates and trends when properly assigned. For the following observations then, the reservations just stated should serve as a caution, but they may perhaps also serve to stimulate development of better quality data.

The lay person as well as the trained vital statistician would expect tuberculosis to be a greater problem in urban areas. This expected association is confirmed. It is, however, worth noting that the metropolitan area tuberculosis mortality data here are based upon the large middle-class suburban populations as well as those of the central city. And there are congested poor in small metropolitan areas as well as the largest. The persistent tendency for rates to be higher in large metro areas and to shade into the low rate for rural areas suggests that the identified factors of poverty and congestion are potentiated by other factors associated with total size of metropolitan population.

Meningococcal meningitis is the classical disease associated with high density and was selected for review for that reason. Metropolitan area data by population size for meningococcal mortality do not conform to expectation. Comparing the top 10 with the non-SMSA population (thereby reducing the effect of military installations), a distinctly lower mortality is found in the largest metropolitan areas. As with infant mortality, it may well be that the factor of better medical care accounts for this surprising finding.

Rheumatic fever follows the same trend as tuberculosis and the factor of density is appropriately considered for this disease as well as tuberculosis. The rheumatic fever data, however, serve to illustrate the existence, in metro data, of some usual technical statistical problems. More than density is represented in published material, the trend for the category "all forms of cancer" points to higher areas lie in northern latitudes where risk of rheumatic fever is greater. Problems of correlation and causation are found for metro data here as elsewhere.

Turning to another group of diseases where analysis provides support of other published material, the trend for the category "all forms of cancer" points to higher cancer mortality in the largest metropolitan areas and progressively less as populations are smaller. The least cancer mortality is seen in the non-SMSA population (6).

The trend for more cancer in urban areas is most frequently commented upon for cancer of the lung. Cigarette smoking aside, this trend has been interpreted as due to air pollution. It is interesting to see in table IV that the other cancer category, cancer of the breast, selected to have a contrasting pattern does not differ in fact but shows the same pattern as cancer of the lung. Although not completely unexpected, the trend to lower rural mortality for cancer of the breast is more definite in this national analysis than in other breast cancer studies based on more limited intrastate data.

Data in table V also permit calculations which show a tendency for the largest cities to have a higher ratio of cancer to heart disease than smaller metropolitan areas. Altogether there is substantial confirmation that the urban environment does increase the risk of cancer.

Turning to comparison between individual cities as may be done in table V, there are appreciable variations between metro areas of similar crude death rate. For example, Rochester and Buffalo are presumably comparable as Northern industrial areas. These two metropolitan areas have similar crude death rates and total cancer death rates but appreciably different death rates for cancer of the lung. Buffalo has 25 percent more respiratory cancer than Rochester. The New York area and the nearby Paterson, N.J., metropolitan area both have relatively high death rates for cancer of the lung (New York 32.1, Paterson 32.5 per 100,000). The adjoining Newark metropolitan area, however, has a rate (27.2) appreciably less. It can be concluded there is important variability of cancer mortality from one metro area to another.

Turning to other categories of disease, for bronchitis and broncho-pulmonic disease one would expect a trend like that for respiratory cancer, if the trend for cancer of the lung is to be explained by urban air pollution. But not so: the trend, if any, is in the contrary direction; the largest metropolitan areas report the lowest mortality of bronchitis and broncho-pulmonic disease. I can offer no explanation, particularly since clinical and laboratory studies are now being published, which demonstrate health damage from air pollution.

In considering cardiovascular renal diseases, the rates, of course, are consistent with age structure as implied by crude death rate. In this category, however, there are also unexplained variations between apparently comparable metropolitan areas. The Rochester and Cleveland areas have the same crude death rate, but the cardiovascular renal rate for Rochester (575.3 per 100,000) is 8 percent higher than for Cleveland (534.3). There are many other similar puzzling findings in the cardiovascular renal category.

It should not be inferred, however, that data when surprising will be inconsistent with epidemiological findings as can be illustrated by hypertensive heart disease. The National Health Survey report of blood pressure of adults (7) showed small variations between metropolitan areas of different sizes. The conclusion was, that while it cannot be said that no area differences exist, those that do are probably small. The failure to find any but minor differences in blood pressure level is one of the more striking findings of the Health Examination Survey. The hypertensive heart disease metro area mortality data presented here are entirely consistent with the so-called striking findings of that field survey.

Although, therefore, the data available are not definitive; nonetheless, they do serve to indicate that there may be real differences (or interesting lack of difference) between metropolitan areas in either the degree or kind of health hazard or the adequacy of services to protect their residents.

In conclusion, I would like to make some specific recommendations for improvement of format of this new metropolitan area series so that it will be more efficient for the many purposes for which it may be used. Metropolitan area health data will, I believe, be of great interest and value to a wide audience. The new series might well be organized to be more easily useful to the general medical community as well as the epidemiologist; indeed, attention should be given to users of health data outside public health. It is common for a local chamber of commerce to cite available statistics and point with pride to a good health record and for the reformer to deplore a poor health record. The National Center for Health Statistics and State and local biostatisticians should try to insure that published data will not only be as accurate as possible but as little subject to misuse or misinterpretation as can be.

The publication of health data by State and local municipality boundary lines is now a well-established tradition. The value of a continuing series giving basic data is great and it is unreasonable to consider change in that format. Because that material and format will presumably continue to be available, it becomes easier at this time to consider a different format of what will become another traditional vital statistics series. Computer technology, fortunately, simplifies management of large masses of data. This would, therefore, appear to be a most opportune time to design a new format.

The manner in which metropolitan areas are listed can either assist or disguise comparisons between them. Arrangement by alphabetic order as in the 1963 publication will not help define differences regarding health. There are many factors which could be selected by which to list metropolitan areas. It is obvious from the preliminary material presented here that no one arrangement can hope to encompass the varied epidemiological relationships. Nonetheless, an urban area in essence is a relatively dense collection of people; population size as such is one appropriate measure of urbanism. For the widest audience, civic as well as medical, comparison with other areas of similar size is likely to be the best arrangement. Much Bureau of Census material is given in this format. Certainly, one would hope in the future that all data published by any agency will conform to metropolitan areas as defined by the Bureau of the Budget; and as revised by that Bureau to reflect the rapid growth of metropolitan population.

In examining the disease categories by which the 1963 SMSA mortality data are published, it is difficult to make specific recommendations with confidence. It is easy to call attention to the defects of death certification. Nonetheless, there is the opportunity in developing a new reporting series to try to organize selection from the international list into a different pattern than that used in the 1963 publication.

Hopefully, a selection of diseases can be made which will be more appropriate to the disease problems of the United States of the sixties and seventies than the traditional selections developed for the quite different community disease problems of earlier decades. Many examples of desirable change could be cited; to name but one, the wide use of Papanicolau smear in screening for early detection of cancer of the cervix should result in reduced mortality. It would be valuable for those sponsoring community programs to be able to measure the effectiveness of their control efforts. Clearly, it would be desirable to distinguish cancer of the cervix from other cancers of the female reproductive system. An additional column for this category of cancer would be desirable. On the other hand, the infrequent occurrence of deaths from diphtheria, whooping cough, poliomyelitis, each given single columns in the 1963 list, suggests that the system as now used for other uncommon infectious diseases of listing by name communities in which childhood disease deaths occurred would reserve column space to identify diseases of more contemporary interest.

To turn to another aspect of the 1963 publication, occurrences are given by direct count. If any conclusion can be made with conviction about the data presented in this paper, it is that age adjusted rates are essential if comparisons between communities are to be attempted.

There would be major technical problems in developing a revised format, but there could be corresponding great gain in the value of this material.

The value of metropolitan area health data will be very great, and is by no means limited to pure medical or epidemiologic interest. Community health data do suggest and lead to action. Policymakers and administrators need information that will be helpful in making community decisions. There already is public recognition of the unity of health problems in metropolitan areas as witnessed by the trend to consolidation of municipal and large county units—Miami, Dade County; Seattle, King County; Pittsburgh, Allegheny County; Los Angeles City and County—all reflect this trend. Better data may well speed the further development of improved metropolitan-wide services.

We will soon become a predominantly urbanized people. There can be no question of the need to develop better health information and better health services. The development of the new series of metropolitan area health reports can serve a major purpose by providing a sound foundation of fact upon which to build programs.

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Mr. FRAZIER. Thank you, Dr. Domke.

I think at one point in Dr. Domke's presentation he used the word "smorgasbord" to describe the variety of data being presented. I think we might very well use that same word to describe the variety of problems he has presented to us as a group of statisticians.

Next on our program is a representative from one of the large metropolitan areas which Dr. Domke mentioned, Mr. James B. Swayne, who will give us some idea of the problems he faces in the Los Angeles area.

Table I. Population Estimates and Vital Statistics Data for Metropolitan and Nonmetropolitan Areas* 1963

Area	Population (in thousands)	Number			Crude death rate [1]	Crude birth rate [2]	Infant mortality rate [3]
		Deaths	Births	Infant deaths			
Standard Metropolitan Statistical Areas:							
10 largest	46,688	452,513	985,076	23,321	9.7	21.1	23.7
11–37	29,676	275,425	653,512	15,677	9.3	22.0	24.0
38–201	41,636	393,617	993,202	24,367	9.5	23.9	24.5
Total SMSA	118,000	1,121,555	2,631,790	63,365	9.5	22.3	24.1
Non-SMSA	70,616	691,994	1,466,230	40,025	9.8	20.8	27.3
Total United States	188,616	1,813,549	4,098,020	103,390	9.6	21.7	25.2

[1] Crude death rate—deaths per 1,000 population.
[2] Crude birth rate—births per 1,000 population.
[3] Infant mortality—deaths under 1 year per 1,000 live births.

*Sources: *Current Population Reports*, Series P–25, No. 298, February 12, 1965. *Vital Statistics of the United States 1963*, Vol. I—Natality, Vol. II—Mortality.

Table I–A. Population Estimates and Vital Statistics Data for the 10 Largest Standard Metropolitan Statistical Areas,[1] 1963

Area	Population (in thousands)	Number			Crude death rate	Crude birth rate	Infant mortality rate
		Deaths	Births	Infant deaths			
New York	11,291	117,629	222,074	5,421	10.4	19.7	24.4
Los Angeles [2]	7,516	63,953	162,592	3,710	8.5	21.6	22.8
Chicago	6,480	64,859	146,112	3,522	10.0	22.5	24.1
Philadelphia	4,554	47,299	95,406	2,451	10.4	20.9	25.7
Detroit	3,889	33,077	82,906	1,972	8.5	21.3	23.8
Boston [2]	3,165	33,642	67,472	1,372	10.6	21.3	20.3
San Francisco [2]	3,052	27,532	61,486	1,330	9.0	20.1	21.6
Pittsburgh	2,356	25,301	43,996	953	10.7	18.7	21.7
Washington, D.C.	2,250	17,375	55,618	1,496	7.7	24.7	26.9
St. Louis [2]	2,135	21,846	47,414	1,094	10.2	22.2	23.1
Total	46,688	452,513	985,076	23,321	9.7	21.1	23.7

[1] Sources and rates as for table I.
[2] 1963 Census Bureau population estimates adjusted to conform to area for which NCHS reported deaths.

Table I–B. Population Estimates and Vital Statistics Data for 27 Standard Metropolitan Statistical Areas,[1] 1963

Area	Population (in thousands)	Number			Crude death rate	Crude birth rate	Infant mortality rate
		Deaths	Births	Infant deaths			
Cleveland [2]	1,843	18,295	38,018	979	9.9	20.6	25.8
Baltimore	1,811	17,964	40,410	1,049	9.9	22.3	26.0
Newark	1,784	18,090	35,556	919	10.1	19.9	25.8
Minneapolis	1,556	13,388	38,822	792	8.6	24.9	20.4
Houston	1,394	9,799	33,288	790	7.0	23.9	23.7
Buffalo	1,306	13,337	27,014	627	10.2	20.7	23.2
Cincinnati [2]	1,097	11,547	24,860	539	10.5	22.7	21.7
Milwaukee [2]	1,216	11,509	27,672	626	9.5	22.8	22.6
Paterson	1,247	11,129	23,390	492	8.9	18.8	21.0
Dallas	1,211	9,113	28,278	730	7.5	23.4	25.8
Seattle	1,169	10,692	24,646	517	9.1	21.1	21.0
Kansas City [2]	1,090	10,569	24,244	585	9.7	22.2	24.1
Atlanta	1,125	9,288	26,874	738	8.3	23.9	27.5
San Diego	1,113	8,086	25,842	639	7.3	23.2	24.7
Denver	1,051	8,332	24,118	540	7.9	22.9	22.4
Miami	1,049	10,038	19,180	468	9.6	18.3	24.4
New Orleans [2]	932	9,270	22,546	644	9.9	24.2	28.6
Indianapolis [2]	744	7,190	17,812	446	9.7	23.9	25.0
San Bernadino	936	8,016	20,780	499	8.6	22.2	24.0
Portland, Oreg	860	9,000	16,274	337	10.5	18.9	20.7
Tampa	844	11,114	15,068	417	13.2	17.9	27.7
Columbus, Ohio [2]	723	6,309	17,352	385	8.7	24.0	22.2
Rochester, N.Y.[2]	628	6,223	13,212	282	9.9	21.0	21.3
San Antonio [2]	742	5,405	19,482	482	7.3	26.3	24.7
Louisville	760	7,509	17,318	448	9.9	22.8	25.9
Dayton [2]	709	5,960	15,808	359	8.4	22.3	22.7
Providence [2]	736	8,253	14,558	348	11.2	19.8	23.9
Total	29,676	275,425	653,512	15,677	9.3	22.0	24.0

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[1] Sources and rates as for table I.

[2] 1963 Census Bureau population estimates adjusted to conform to area for which NCHS reported deaths.

Table II. Percentage Distribution of Live Births by Birth Weight and by Size of Community of Residence [1]

(Adapted from publication source shown as ref. No. 5)

Area	Grams				
	Less than 2,000	2,001 to 2,500	2,501 to 3,000	3,001 to 4,000	4,001 Grams +
Metropolitan Counties:					
250,000 or more	2.7	5.5	21.1	63.8	6.9
50 to 250,000	2.5	5.2	19.7	65.0	7.5
10 to 50,000	2.2	4.7	18.6	66.5	8.1
2,500 to 10,000	2.1	4.8	18.3	66.7	8.1
Rural areas of metropolitan counties	2.3	4.6	18.3	65.9	9.0
Nonmetropolitan counties	2.3	4.8	17.4	65.8	9.7
All metropolitan counties	2.5	5.2	19.8	64.9	7.6

[1] Based on 725,226 births attended by physicians in hospital Jan. 1 to Mar. 31, 1950. Does not include 65,406 births attended by physicians not in hospital, and 47,154 births attended by midwife, other, and not specified.

Table III. Neo-Natal Mortality by Birth Weight and Metropolitan and Nonmetropolitan Areas Per 1,000 Live Births [1]

Area	Grams				
	2,000 and less	2,001 to 2,500	2,501 to 3,000	3,001 to 4,000	4,001 Grams +
All metropolitan counties	418.6	40.8	10.7	5.6	8.0
Nonmetropolitan counties	428.6	62.6	15.1	7.0	9.6

[1] Based on 837,786 live births and 16,741 deaths under 28 days Jan. 1 to Mar. 31, 1950. (Adapted from publication source shown as ref. No. 5.)

Table IV. Death Rates From Selected Causes by Size of Metropolitan Area, 1963[1]

Area	All causes	Major cardiovascular renal diseases	Hypertensive heart disease	Rheumatic fever, chronic rheumatic heart disease	Malignant neoplasms			Bronchitis, other bronchial pulmonic disease	Tuberculosis	Symptoms, senility, and ill-defined conditions	Meningococcal infections
					All	Respiratory	Breast				
Standard Metropolitan Statistical Areas:											
10 largest	9.7	531.1	31.9	10.9	167.1	28.8	16.1	12.9	5.5	9.3	0.28
11 to 37	9.3	501.5	31.4	9.4	152.9	26.4	14.5	16.6	5.2	5.3	.40
38 to 201	9.5	510.0	31.2	8.5	151.4	25.9	13.2	17.0	4.9	6.6	.44
Non-Standard Metropolitan Statistical Area	9.8	528.7	33.7	7.3	139.6	21.0	11.4	15.0	4.4	16.3	.42
Total United States	9.6	521.4	32.4	8.8	151.3	24.9	13.5	15.2	4.9	11.9	.39

[1] Death rate from all causes per 1,000 population. All other rates per 100,000 population.

Source: *Vital Statistics of the United States 1963*, Vol. II—Mortality, pt. B.

Table V. Death Rates [1] From Selected Causes for the 37 Largest Standard Metropolitan Statistical Areas, 1963 [2]

Area	All causes	Major cardio-vascular renal diseases	Hyper-tensive heart disease	Rheu-matic fever, chronic rheu-matic heart disease	Malignant neoplasms			Bron-chitis, other bron-chial pul-monic disease	Tuber-culosis	Symp-toms, senility, and ill-de-fined condi-tions	Menin-gococcal infec-tions
					Cancer, all forms	Respi-ratory	Breast				
Tampa	13. 2	747. 3	31. 4	10. 4	235. 8	49. 5	17. 6	29. 6	4. 0	16. 6	0. 24
Providence	11. 2	663. 6	31. 4	11. 0	190. 2	31. 3	22. 4	15. 1	3. 9	2. 7	. 95
Pittsburgh	10. 7	621. 6	28. 6	12. 2	181. 9	31. 6	16. 1	12. 4	6. 8	11. 7	. 38
Boston	10. 6	604. 6	29. 2	12. 4	179. 0	27. 6	18. 0	15. 7	5. 0	4. 1	. 32
Cincinnati	10. 5	575. 3	38. 1	11. 4	179. 9	30. 5	16. 8	22. 1	8. 1	2. 3	. 27
Portland	10. 5	597. 7	29. 3	10. 7	173. 0	27. 4	16. 6	21. 5	3. 5	5. 9	. 23
New York	10. 4	569. 3	37. 1	13. 8	191. 2	32. 1	19. 0	10. 0	7. 1	11. 2	. 27
Philadelphia	10. 4	565. 6	45. 4	11. 7	172. 4	29. 8	16. 4	13. 6	6. 8	39. 2	. 18
St. Louis	10. 2	570. 3	33. 1	9. 8	169. 6	31. 7	15. 9	14. 9	5. 7	10. 5	. 28
Buffalo	10. 2	583. 1	27. 5	9. 8	167. 6	30. 6	17. 2	17. 8	3. 8	6. 8	. 08
Newark	10. 1	580. 3	34. 0	11. 7	177. 9	27. 2	18. 7	10. 1	6. 7	2. 2	. 22
Chicago	10. 0	576. 4	29. 8	9. 4	171. 0	29. 4	17. 1	10. 3	5. 5	2. 4	. 22
Baltimore	9. 9	535. 1	63. 2	8. 1	162. 4	30. 1	15. 1	16. 8	9. 5	3. 0	. 33
Cleveland	9. 9	534. 3	40. 6	13. 8	179. 5	30. 7	17. 5	15. 0	5. 6	1. 7	. 22
New Orleans	9. 9	518. 5	47. 9	3. 9	155. 0	32. 0	13. 3	16. 8	9. 3	3. 3	1. 07
Rochester	9. 9	575. 3	23. 6	9. 2	169. 9	24. 5	16. 4	17. 8	5. 9	6. 4	. 47
Louisville	9. 9	525. 3	52. 1	8. 8	150. 6	29. 1	14. 7	16. 1	10. 8	8. 7	. 53
Kansas City	9. 7	521. 6	23. 9	9. 4	149. 4	24. 2	13. 0	18. 2	6. 3	8. 1	......
Indianapolis	9. 7	518. 1	27. 6	9. 8	163. 4	27. 8	15. 5	17. 2	4. 7	1. 3	1. 34
Miami	9. 6	487. 4	26. 7	13. 3	181. 9	35. 4	14. 9	21. 0	6. 2	2. 9	. 86
Milwaukee	9. 5	523. 2	27. 5	9. 5	163. 5	24. 6	13. 8	14. 1	2. 9	3. 3	. 58
Seattle	9. 2	500. 8	22. 6	8. 1	148. 3	24. 0	12. 2	15. 7	3. 2	3. 8	. 43
San Francisco	9. 0	475. 2	28. 5	8. 4	155. 1	26. 3	13. 0	18. 8	3. 8	2. 4	. 49
Paterson	8. 9	505. 8	29. 3	11. 6	179. 9	32. 5	17. 3	11. 4	2. 4	3. 4	. 08
Columbus	8. 7	471. 2	56. 7	10. 4	144. 5	26. 1	16. 1	17. 6	3. 6	1. 9	. 14
Minneapolis and St. Paul	8. 6	436. 8	23. 3	10. 1	146. 8	19. 0	14. 7	14. 3	3. 3	2. 6	. 19
San Bernadino	8. 6	452. 8	23. 9	11. 8	140. 9	25. 4	11. 4	24. 5	3. 8	2. 7	. 32
Detroit	8. 5	445. 4	28. 0	10. 7	153. 6	27. 8	13. 5	13. 8	5. 4	2. 6	. 28
Los Angeles	8. 5	472. 7	22. 7	9. 6	141. 8	25. 5	13. 7	14. 1	3. 1	1. 5	. 28
Dayton	8. 4	466. 0	29. 2	7. 3	134. 6	24. 0	11. 8	17. 6	4. 5	8. 5	. 42
Atlanta	8. 3	406. 0	32. 6	5. 9	126. 1	21. 1	11. 0	16. 1	3. 3	24. 3	. 62
Denver	7. 9	389. 7	11. 0	11. 6	113. 4	17. 9	10. 8	18. 9	3. 4	5. 9	. 10
Washington, D.C	7. 7	370. 3	36. 0	6. 3	128. 2	22. 5	14. 4	12. 9	5. 9	10. 1	. 22
Dallas	7. 5	363. 2	16. 3	5. 0	122. 4	21. 9	10. 5	15. 1	4. 2	12. 7	. 25
San Antonio	7. 3	341. 2	23. 0	3. 8	114. 2	20. 6	10. 6	12. 8	10. 1	4. 3	......
San Diego	7. 3	380. 8	18. 7	9. 8	119. 3	21. 2	9. 4	13. 7	2. 2	1. 3	1. 35
Houston	7. 0	351. 6	24. 7	4. 4	111. 1	25. 1	9. 9	14. 1	4. 4	3. 4	. 36

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[1] Same footnote as table IV.

[2] Same source as table IV.

Administrative and Organizational Aspects of a Statistical Program Serving a Metropolitan Area

Mr. James B. Swayne, *Chief, Public Health Records and Statistics, County of Los Angeles Health Department, California*

Dr. Domke has dealt very well with the substance of a statistical program in a local health department in a large metropolitan area.

I want to take a completely different direction now and talk about some of the administrative and organizational aspects of a statistical program in a large local health department in a metropolitan area. What are the problems involved in providing adequate statistical data, and what kind of organization do we need to produce it?

My remarks will to a considerable extent be related to my experience in Los Angeles County, since this is the area with which I am familiar.

Los Angeles County, with a population of roughly 6½ million, is divided into 25 health districts. This includes two cities, Long Beach and Pasadena, which operate their own health departments under contract with the County.

Within the 25 health districts there are a total of 51 health centers or subcenters. The population of the health districts ranges from roughly 150,000 in one of the poverty area districts to more than 600,000 in one of the rapidly growing suburban areas. Some of the districts include up to eight incorporated cities or recognized unincorporated communities.

While the title of this Workshop, "Health Statistics in Metropolitan Areas," seems to emphasize the need for combining small area data to give a picture of the metropolitan area, the pressure on me as an administrator of statistical services in a metropolitan area has been in the opposite direction. This pressure is to provide consistent and meaningful data for the small local areas within the metropolitan complex as an aid in planning and in allocation of health services. Relatively speaking, health data resources for metropolitan areas are much more adequate than for the communities which go to make up the metropolitan complex. Most of the Federal statistical agencies compile information for Standard Metropolitan Statistical Areas. The State statistical agencies publish data for counties and for cities over a certain size. Usually, however, there is no geographical breakdown within the major cities.

Although some of our health districts are larger than some States, no basic health or socioeconomic information is available except that from the decennial census or from the vital statistics and notifiable disease systems. Information on distribution of public assistance recipients by health district or by local community is not available, nor is information available on county hospital admission by local health districts or communities. These are set forth as examples of the data gap.

With this introduction, I would like to say that the panel members were offered optional topics for presentation at this meeting and one of the options was titled "Ways that Federal and State resources should be used to improve and augment local efforts." Since I have never before had the opportunity to tell the Federal and State people how to run their affairs, my first impulse was to pick that subject. However, when I tried to put some of my thoughts into concrete suggestions, I decided this was a little foolhardy.

My experience, however, does qualify me to make some definition of the kinds of problems we encounter in providing statistical services in a large metropolitan area. Let me make it very clear at the outset that I sincerely believe the Federal and State agencies have contributed substantially to whatever progress we have been able to make. Our failure to achieve the goals we would like to achieve should not be laid at the doors of the Federal and State agencies. There are many basic weaknesses in the local government structure and operation which can only be laid to lack of action at the local level.

Nevertheless, there are significant deficiencies in Federal-local and State-local relationships, as they relate to statistical services in Los Angeles County. If we could remove some of these deficiencies, it might help to open the door to substantial gains.

I have identified at least four major problems, in providing adequate statistical services in Los Angeles County. I presume these problems exist in many other metropolitan areas.

In the time allowed, I want to mention some of the ways that the California State Health Department helps us with respect to each of these problems, and then to suggest some additional ways that Federal or State agencies might help.

The first problem area is the lack of adequate support for establishment of strong statistical services based on sound principles of organization, adequate for a large metropolitan area.

On the positive side, the California State Administrative Code establishes certain basic services which must be preformed by a local health department in order to be eligible for State subsidy funds. The first basic service listed in the Administrative Code is the maintenance of vital statistics and other basic health and demographic data necessary for health programs and planning.

While the statement is good as far as it goes, it in no way establishes a requirement for a strong professionally manned statistical service, adequate to meet the needs of a large health department. Recently I have been sensitized to the importance of an adequate armament of support for even the basic minimum statistical services. Because of the recent consolidation of the city and county health departments, we have been the subject of special scrutiny by the administrative officials of the county. We have had the job of trying to convince the investigators, among other things, that the classification of statistician is not synonymous with statistical clerk. We had to explain what a census tract is to investigators reviewing our census tract program who appeared to be suspicious of the concept.

We sit in these meetings and talk about data needs for health program planning and evaluation. The examples I have cited show the setting in which many of us actually work. We tend to be in a defensive posture rather than in a position to move forward.

We need simple and convincing materials carrying the aura of authority to help our statistical services to at least survive, if not grow. I believe it would be helpful to have an earnest and organized attempt by State and Federal agencies, through regulatory or educational means, to help local officials (including top level health department staff) understand and support the conditions which are required for good statistical services. Since local budgetary, administrative, and civil service authorities cannot be expected to understand the needs and organization for public health statistics, it is essential that top support be marshaled for maintenance of sound organization and adequate financing.

The second problem area is the lack of adequate access to consultative services. We tend to become provincial and inbound and we need stimulus such as this meeting provides. There are many problem areas where we benefit tremendously by outside consultative services from qualified sources.

The California State Health Department has given us some excellent statistical consultations from time to time over the period of years I have been with the city and county health departments. The quality of the State consultations in the statistical area has varied over the years. In my opinion the quality of State statistical consultation to local health departments is closely correlated with the strength of the State organization for statistical services. When the administration of statistical function is widely dispersed among many bureaus, the quality of local statistical consultations is reduced. If the consultations are to be of the needed quality, the State must have high level consultant positions established so that they can recruit and retain personnel with adequate training and experience to meet the consultant needs of large and complex local health departments.

The third problem area is lack of coordination between Federal, State and local statistical services. This relates very closely to the matter of better consultative services. On the positive side, we in Los Angeles County have had a very satisfactory cooperative arrangement in the vital statistics field with the State health department whereby that department, on a cost basis, provides a reproduced deck of its tabulating cards for use by the county health department in preparing vital statistics tabulations. State tabulations of vital statistics data are by county and by city. We need data by health district, study areas, and census tracts, and we are able to provide these at minimum cost using the State tabulation cards.

The chief advantage in this system is that there is one coding authority for the whole State. If we compare Los Angeles data with San Francisco data, we know that the differences are not the result of variation in coding practice.

On the negative side, as far as Federal-State-local coordination of statistical services is concerned, I think the apparent trend toward more special grants and projects often stands in the way of a national approach to data collection at the local level. While these grants often serve a useful purpose in stimulating local health programs, they may tend to weaken rather than strengthen the role of the central statistical service. Unfortunately a few Federal and State representatives in categories and projects are oblivious to all aspects of local health administration, except the narrow confines of the project they are dealing with. Fortunately there are many who do not share this approach. Perhaps the new grant mechanisms which will be described later today will help to eliminate some of the objectionable aspects of the present system.

Further, with respect to the multiplicity of reporting requirements that accompany the various grants and projects that now exist, one wonders if Federal and State data requirements could not be minimized, with better utilization of data from previously existing record and data collection systems, without the necessity for local agencies to constantly respond to changes.

We have had the experience of working for months trying to develop a system to collect data for a new project and then finding new reporting requirements in effect before the original system could be initiated. I realize that we can be accused of being slow to respond to data needs. Much of the mountain of paperwork which confronts local health agencies, however, results from failure to give the time and thought required to planning and implementation of data collection systems. New systems tend to be superimposed on existing systems. Whenever possible Federal and State data requirements should be flexible to allow use of the existing sources.

The last and the major problem area concerning statistical services in a large local health department is lack of adequate facilities for training local statistical personnel. While the National Center for Health Statistics and State health department have instituted many excellent training resources, to a considerable extent these are not actually available to local personnel.

The State health department, for example, sponsors annual institutes for local statistical personnel. These, however, are held in northern California.

It is impossible for us to obtain permission for more than one or two persons to attend an out-of-county meeting. As a result of this situation, the junior personnel who would really benefit the most from participation in these kinds of meetings and conferences are excluded from attendance.

My plea to the State and Federal people is to expand their training programs and institutes so that they will be available to more local statistical personnel. We in Los Angeles County have a large proportion of all of the statistical personnel in local health departments in the State of California. We serve a large proportion of the population of the State. We feel we are entitled to a fair share in the training resources of the State.

On the positive side, the State department of health in California has helped us to institute a Conference of Local Public Health Statisticians. The State provides secretarial support for this new organization. We now have a committee working with the State Division of Alcoholic Rehabilitation on methods of evaluating the expanded alcoholism program in the State of California. We have another committee working with nurses on methods of improving the nursing data collection systems. So I end with a positive note. This is something good that has happened and I commend it to other States.

SUMMARY

In summary, then, let me review the principal problem areas confronting us in the provision of statistical services. First, the lack of adequate support from Federal and State levels for maintaining a sound organizational structure to provide statistical services in large metropolitan areas. Second, the lack of access to adequate consultative services from State and Federal agencies. Third, the lack of coordination between local, Federal, and State statistical programs in which the local health departments are involved. And fourth and most important, the lack of adequate facilities to train local statistical staff to better perform statistical services. Thank you.

Mr. Frazier. Thank you very much, Mr. Swayne. I was reminded while hearing of the problems of some of our west coast friends that we have heard a lot of new words around here this week—such things as constructive federalism, and PPBS—some things you will hear more about this afternoon. Just imagine taking some of those words back to a fellow who wants to know, with some suspicion, "What's a census tract?" I think this would be a real challenge.

Our next speaker is Dr. Mildred Kantor from the St. Louis (Missouri) County Health Department. Dr. Kantor.

Some Basic Components of a Statistical Program for a Metropolitan Area

Dr. Mildred B. Kantor, *Director of Vital Statistics, St. Louis County Health Department, Missouri*

I would like to preface my remarks with two very brief comments. First, I would like to remind the people in this audience that the city of St. Louis is not in the county of St. Louis, and, second, that I speak as a sociologist and demographer, who was asked to develop a vital statistics program for the St. Louis County Health Department.

The first part of my talk presents my viewpoints about the role of a director of vital statistics on the local level, in particular on a county level.

First of all, there is a great necessity for the development of a good population base, including data of all kinds (demographic, economic, political, historical, social) for the area in which we work. This should be developed not only for the county as a whole, but also for small units within the county. Then in connection with these data there is the preparation of all kinds of vital statistics figures and rates, including data concerning trends, for the various areas that relate to a wide variety of public health problems.

A second aspect of this role is the development and improvement of departmental recording systems for the services which the department offers and actually renders to the individuals living in the various parts of the county. Needless to say this all involves reporting systems as well as recording systems. And I would like to emphasize that in my opinion not enough attention is given to improving recording and reporting of services such as nursing, clinics, and social welfare services. Further, I think data for all of these need to be interrelated and looked at together with the vital statistics data. No one service is independent of the others in a health department.

Another dimension of the role of the vital statistician concerns the development of studies of special public health problems. From time to time, for example, we have a disease outbreak in an area. We want to know how it came about, what are the social elements that are related to it as well as the medical elements. Perhaps the director of vital statistics has research interest in a particular problem which at first does not appear to have direct relevance to what we traditionally regard to be the domain of vital statistics. I think the development of such special projects should be encouraged, because very often we are not farsighted enough to see at the beginning of a research program where it might lead.

I offer as an example of such a special study the research which I have been fortunate enough to be able to develop and conduct in the St. Louis County area—research on the relationships among residential mobility, social mobility, and mental health of the population. We live in a mobile age. Many people are changing residence. Many people are changing jobs. All of this has implications for health problems. How, for example, do families become oriented and socialized in a community with respect to the availability of health services? Are there some physical health and mental health problems which these families have which could be prevented if we knew enough about them to know how to prevent them? How can the health department most effectively reach mobile families? You can see that this is not directly vital statistics, but in my opinion it is quite closely related.

Another dimension of the role of director of vital statistics is that of training. We can't always have other people do our training for us, we have to do some ourselves. However, we have to explore in order to find a happy medium for this. We can't become so involved in training people that we take time away from some other work that we need to do. Here I see as important the development of cooperative relationships with the universities of the area. I see the potentiality of developing collaborative training programs. In my opinion this is also a great aid to recruitment because these training programs can occur on the undergraduate levels as well as the graduate levels of training. Further, many different disciplines might be involved. Sociology, psychology, economics, and political science, for example, have relevance for health planning and programing, as well as the more traditional public health disciplines.

Now, I should like to present some examples of special types of projects which I think are of great importance and which arise out of these viewpoints of the role of the vital statistician. One is the development of a statistical data bank—an areal type of data bank which contains information concerning the community. What is the population of a particular area, what characteristics does it have? What kind of housing is in this particular area, and what are its characteristics? What is the economic base of this part of the community? What is its religious base? What are the schools through which health programs can operate? What are the local government facilities with which the health department might cooperate? What kinds of communication media exist in the area? What is the local history of the area? All of these data will give us characteristics of the community which we serve and characteristics of the population, and aid in offering services and in program planning.

Another project is the development of a central index system for a health department—an index system with both an individual and a family base. What kinds of services do we offer to people? What people are getting what kinds of services? What services are used by people from the same family? Which families use preventive services and which families use treatment facilities?

Still another project is the development of a good street directory. At this meeting we heard much talk about the census tract geographic coding and other types of area address coding. I think an areal directory is very important. Further, to maximize its utility, a variety of health indices should be developed and related to the address codes. This is a big commission, but I hope to encourage people in various areas to begin such a task. In relation to this directory, good mapping for the area is very important. A visual view of the location of the population and its characteristics is very helpful to program planning.

An example of how these various functions might be combined is the development of a population demonstration laboratory which is just getting underway in St. Louis County and the city of St. Louis. Collaborators in this project include the county health department, Washington University, and St. Louis University. An area of the county has been selected to be part of this laboratory, and an area of the city of St. Louis also has been selected to be part of this laboratory. Within these areas we hope to carry out and evaluate demonstration projects of various kinds, to initiate new treatment and preventive services, to experiment with training programs, and to conduct health and social surveys. We will try to develop as detailed information as we possibly can for the population and the areas and see which information is most useful in health programing and planning.

In closing, I would like to make some very brief comments about the local, State, and Federal governmental levels: Where should local efforts be directed? In what ways should Federal and State resources be utilized to improve and augment local efforts?

First of all, it is important to note that there are a lot of agencies on the local level, all working with very similar types of problems in any local community. For example, the planning agencies need to know how much population resides in various areas and the characteristics of the population. Similar information is needed by health and welfare councils, by the poverty programs which are going into operation all over the United States, and by universities. Further, all of these organizations are interested basically in many of the same problems. Some exploration is needed about possibilities of collaboration. It is necessary for someone to contact the various agencies, to see what they are doing, and what kinds of information they have to offer to each other. This is the beginning of a statistical data bank.

On the State level, I think resources should be used in training personnel, in keeping local offices informed of methods of processing of vital statistics data, in developing instruction manuals, and in general consultation.

From the Federal level, we need help in the development of training programs and funds for various types of research studies and demonstration programs. In addition, I think it is very important that national publications and visual aids of various kinds concerning, for example, vital statistics trends and methods be available. These are helpful in interpreting trends which we find in local areas, in training, and in initiating new procedures.

Thank you.

Mr. FRAZIER. Thank you, Dr. Kantor.

Now I would like to ask a colleague of mine, Mr. Robert Israel, to discuss some of the problems as he saw them from the Maryland vantage point a few weeks ago.

New Roles for Statisticians in Health Departments Serving Metropolitan Areas

Mr. Robert A. Israel, *Supervisory Statistician, Mortality Statistics Branch, Division of Vital Statistics, National Center for Health Statistics, USPHS*

In considering health statistics for metropolitan areas it occurs to me that a number of boundaries exist whose lines have to be either blurred or erased if we are to meet our objectives in bringing improved health services to the people. These boundaries exist not only on the maps of our respective areas of jurisdiction but also in our own minds. The boundaries to which I refer are not only the outlines of political subdivisions, States, counties, cities, census tracts, city blocks, or what have you, but also they are the barriers of convention and resistance to change.

Let us discuss the problem of geographical boundaries first. Maryland, where I have had some direct experience, is a small State with some 3½ million population. It is contiguous with four other States and the District of Columbia.

Furthermore, in the area of vital statistics, the counties of Maryland are adjacent to six other registration areas. In addition to the four neighboring States and the District of Columbia, Baltimore—Maryland's major city—is a separate registration area.

For Standard Metropolitan Statistical Area purposes, the State contains one area composed of a central city and five adjacent counties, and also two other counties which make up part of another standard metropolitan statistical area that crosses the State line.

You can see that even in a small State which contains only 23 counties and 1 independent city, there are many political boundaries to consider. Yet aside from the standard interchange of vital records and vital statistics, I can think of very few efforts or collaborative attempts to collect metropolitan or regional health data that cross any jurisdictional lines. I am sure this is not an atypical experience. But at the same time we all know and have known for a long time that our health problems have no respect for manmade lines drawn on the pieces of paper which we call maps. We can no longer afford to allow our thinking to stop at the city line, the county line, or even the State line. It is imperative that we raise our horizons and enter into an era of much closer cooperation with other health jurisdictions in the development of local metropolitan regional data.

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These data must be timely, accurate, and comprehensive in scope in order to serve a variety of purposes, especially in the area of planning for health services, health manpower, and health facilities. Pending Federal legislation makes it imperative that States, metropolitan areas, and other regions step up their statistical activities to provide input to the planning process.

We all agree that planning should not be undertaken in a vacuum. But what are we going to do about it? As statisticians we must be prepared to shed light on problems peculiar to geographical areas that have only recently taken on importance to us. We must be prepared to deal with old problems which have taken new dimensions in our urban areas, and we must be prepared to cope with entirely new problems. We must develop mechanisms to collect data on demographic as well as health characteristics, in order to construct meaningful indices and rates.

To be sure, the concept of development of metropolitan health statistics is not new to us. But the concept of timely data for redefined regions is one to which we must direct our attention.

What about the other boundaries—the barriers of convention, inertia, resistance to change? Health agencies certainly have no monopoly in the field of metropolitan planning. As a matter of fact metropolitan or regional planning councils and similar organizations are coming to the fore. These organizations not only are consumers of data of a great variety, in many cases they are prepared to become producers of data of great variety including data in the health field. If those of us who specialize in health statistics and in public health in general don't want to be left out in the cold, we must as a group become more flexible in our thinking and our work. We are doing many things today because that is the way it was done 5, 10, 20, or even 30 years ago. But we seem to lose sight of the fact that these old and comfortable ways that we have were once new and inventive. Public health statistics and demography have fine traditions for us to look back on, but I say we must look forward to the new challenges.

What, then, can we do to assure that the kinds of data of appropriate quality will be available at the Federal, State, local, metropolitan, or other regional levels to assist in the planning, evaluation, and control of health activities?

There should be some standardization of certain health data and indices to be uniformly collected throughout the cooperating areas in order to provide comparable information. This does not imply that all health data must be standardized or routinely collected everywhere. However, it does imply that a mechanism be developed to enable a well-informed attack on the problem where common problems exist—geographical boundaries notwithstanding. We should not fail to apply ourselves to the emerging problems which require new or different methodology or data collection techniques.

We should give serious consideration to the further development of survey techniques in order to be responsive to the changing needs for information. Such surveys can be invaluable in providing the health characteristics or descriptors of interest on a current basis as well as the demographic characteristics so frequently needed in our denominators. Much of our currently available metropolitan or regional health data, for whatever geographical boundaries we consider, is for the most part limited to periods of time closely related to the decennial census.

The Census Bureau will be in a position to produce, on request, data for some very flexible definitions of small areas within metropolitan areas for 1970.

This will be in most instances extremely useful. But what of data for other years? Local health departments must be responsive to the changing problems within their scope of responsibility. They cannot afford to be anchored to the decennial data.

We should give attention to the idea that has been proposed at this conference of creating health statistics centers. Such centers should concern themselves with inputs of health data from a wide scope of sources within their area, not just the data available through the official health agency.

A health statistics center should serve as not only the focal point for data collection but also as a stimulus to the metropolitan or regional planning efforts through the provision of new kinds of data for those areas.

In conclusion, I would like to reemphasize the fact that not only is the complexion of public health changing rapidly—we all know that—but some of the most significant changes have their greatest impact on our metropolitan areas. After all, the metropolitan areas are where most of the people and the health problems are located. The role of health statistics is a key one. We have within our reach the tools to facilitate coordiated sound planning, to implement the products of the planning function, and to evaluate the results of our programs.

But we must be flexible in our attacks on the problems. We as health statisticians must step forward and display some leadership. Otherwise, we are apt to find that we, and the organizations we work for, will slowly but surely find themselves being bypassed as others do our planning for us.

Recently the *Washington Post* claimed that there are many uses of statistics, the most important of which is the employment of statisticians. In my opinion health statistics has done a better job in the past than to merit such a description. If we are able to change our thinking and keep up with the times, then in the future the *Post*'s description of the uses of statistics will certainly not be pertinent to our area of application.

Mr. FRAZIER. Thank you, Bob. Our next presentation will deal with Senate bill 3008. Mr. James King from the Office of the Surgeon General will describe this for us.

Health Statistics in Metropolitan Areas

Mr. James F. King, Jr., *Division of Public Health Methods, U.S. Public Health Service*

I want to give a partial response to some of the things that you have heard from previous speakers and what we think of as perhaps the first step in the solution to some of the problems that have been delineated for you earlier in the conference.

This step is one that is not complete because it is a bill that is in Congress, and all of you know the possible state of anything that is still just a bill.

But this is the administration's proposal, and it has the support of the Department of Health, Education, and Welfare, the State health officers, the major voluntary agencies of a categorical disease nature.

I emphasize this because this piece of legislation, if it were enacted, would eliminate particular disease categories in the formula grant provision of the Public Health Service Act and program increased resources in comprehensive health services to individuals and families. The question is: How can this be done on the Federal level? And how can local jurisdictions, metropolitan areas, and various kinds of institutions benefit more directly and more effectively from the kind of assistance we give?

Right now the bill is about to be reported out of the Senate committee. We think it has a very good chance of being enacted this session. The bill has three major provisions. There are formula grants for comprehensive health services to State level, formula grants for flexible support for comprehensive health services to individuals and families, and, finally, project grants for development of new kinds of services and innovations in organization.

To go into the first part, the 6-year program of support for the comprehensive State and community health planning would be formula grants through State health planning agencies with the advice of State health planning councils. This means that to be eligible for the formula grant planning assistance a State would have to designate or establish a State health planning agency, which in many cases would be the health department, but might also be some kind of interagency setup that would pull together representatives from many different agencies. Advising the State health planning agency would be a broadly representative State health planning council which would include voluntary and consumer representation for health and health related services. We are serious about the word "comprehensive" here, although this would not supersede existing planning mechanisms. That is, Hill-Burton planning would still be done by Hill-Burton agencies. The regional medical programs and other programs which are developing would still do their own planning. But there would be an attempt to pull together the results of all of these kinds of planning into a comprehensive plan for the State.

To assist the States in doing this, there would be areawide health planning grants for particular projects to public or nonprofit planning agencies for metropolitan areas, regional, or local areas. Approval by this new State health planning agency would be required after June 30, 1968; but before that time, only if such an agency exists. The Federal share would be up to 75 percent of the costs.

A new authorization would replace the current section 318 of the Public Health Service Act which is now concerned with health facilities planning. The new provisions would be for planning of health services and manpower as well as facilities.

Then there would be support for training, studies, and demonstrations—all of which are part of this planning package. These would be available for up to 100 percent of the cost of the projects to improve health planning by selectively undertaking developmental measures to increase the capabilities of people and agencies to do planning. Public and nonprofit agencies and organizations, including universities, would be eligible. This is the first big block in this package: comprehensive health planning formula grants.

Next there will be formula grants for comprehensive public health services. This is to provide flexible support for the provision of comprehensive public health services focused on individuals and families in their communities, rather than focused on separate disease entities. The old section 314 of the Public Health Service Act, as you may recall, was used to give formula grants for tuberculosis, heart disease, or any number of other kinds of disease entities. Now the concentration is to be on people.

In allotting of funds to the States for comprehensive health services, at least 15 percent of all funds allotted to the State must be available to the State mental health authority for State and local community mental health services. At least 70 percent of *all* the funds available to the State health authority and to the State mental health authority must be used to support services in local communities. The State could retain up to 30 percent to strengthen State health agency or State mental health agency operations.

The bill authorizes Federal grant funds to be used under this provision to pay the Federal share of the costs of the services provided in accordance with an approved State plan. We assume that the State health planning agency, with its council, would be responsible for developing this overall comprehensive State plan. Beginning July 1, 1970, the programs and services provided by these funds are required to be in accord with the planning decisions made by the State health planning agency and its planning council.

The third major part of this package is health services development grants, which are to be project grants. These would be used, you might say, to round out the system, innovate, and to demonstrate new experiments in provision of comprehensive public health services. I should say here that the word "comprehensive" means the inclusion of environmental health services, mental health services, vocational rehabilitation services, and many other kinds of services that may, at the Federal level, be scattered among many different agencies. Of course, the situation varies from State to State.

Now, these are the three main parts of this bill which is the direct result of quite a lot of planning within the Public Health Service and with the State and territorial health authorities. However, there are two other parts of the bill which are quite interesting.

First is the provision for interchange of health personnel among State and local agencies and Federal agencies. Right now the Federal agencies detail people to State and local agencies. The reverse does not happen too often. The bill would encourage this and make this easier.

Second, it would also provide authorization for training grants to train people at the State and local level for public health work. So there would be a greater emphasis on training.

Now, as I said when I started, this is just a pending bill, but it does speak to many of the problems that I think you have had defined for you before. So I would like to interpret broadly what it would mean in terms of statistics. In the second part—the formula grants for comprehensive health services—the key word is *flexibility.*

We are trying to give the decisionmaking power back to the States and to the local areas, to allocate resources in accordance with their particular and specific needs. But there has to be some justification for the expenditure of this money. So there must be a planning process. And there will be the systems development grants—projects which will have to be consistent with the State plan in 1970.

The planning emphasis on flexibility and this kind of coordination present a tremendous information and analysis problem. Some of you may know that the general health grant decreased in importance over the years while the number of categorical grants increased. This was a direct result of the inability of many areas to set goals and meet them in some way—the failure to establish and maintain effective program planning processes.

The Planning-Programing-Budgeting System at the Federal level which is making us all more concerned with the allocation of our resources and with what we get from them is very likely to have a kind of counterpart analysis at the State and local level. And this will depend upon statistics: health statistics that define problems and goals, that tell you what we are doing now, and measure some kind of progress. Without these statistics, the planning process, feedback, and all of these new techniques really cannot work.

The first line in the planning process is essentially the responsibility of the health statistician. You could ask and help answer the question: What are the categories of data which will be needed across the board to do comprehensive planning? We do not look only at the categories we now have and try to match them up, but at what we will need to coordinate comprehensively the impacts of services in respect to particular individuals and families.

Some of the other panelists here have mentioned the need for data on individuals and families, and in one of the previous sessions there was talk of a social data bank. How much information can we get? How much do we really need? Well, all of these things—these broad interpretations of the impact of this bill and of the planning process as introduced at all levels of Government—are consistent with the kind of long-term thinking that has been laid out in a document by the Assistant Surgeon General for Plans of the Public Health Service. It is a speech that was delivered at the American Public Health Association meeting in New York. I think it indicates some of the directions we are likely to go, whether or not the present bill is passed. With all of the new legislation you have heard of, with all of the new responsibilities that are going to the State and local health agencies, there must be this kind of coordination. If not this particular law, there will be some other kind of program to carrry out this function.

Mr. Pond mentioned three major principles in his speech: Coordinated action, leadership of the type that Mr. Israel was speaking of, and, finally, what has been called creative or cooperative federalism—the idea that all three levels of government are concerned at the point of impact—the point where the individual and the family meet with the comprehensive services that are going to be programed for them.

This last idea also has been expressed in a number of ways, one of which is in the name that was given to the bill, which is "Partnership for Health." This idea is used over and over again in justification for it, that all levels of government, as well as the voluntary or private sector, have to work together at the point of impact. The relative roles of these different agencies and organizations will be defined as the statisticians define them. So the statisticians have to look across these intergovernmental and interagency boundaries to get this broader focus. That is what we mean by comprehensiveness of planning and implementation of services.

I would like to put in a plug now for the presentation Mr. Miller is going to make and ask you, as you see what he is trying to present, to think how you might change the factors that go into his "Q" equation. What factors need to be added or changed in planning for metropolitan areas to make this useful, to set priorities for program planning for comprehensive health services to individuals and families as sets of multiple problems? What kinds of new data, new concepts, new relationships do the statisticians have to be concerned with to use techniques like this in the extremely complex and growing metropolitan areas?

Mr. FRAZIER. Thank you, Mr. King. There is another very similar technique to the PPBS, perhaps more sophisticated for us in health, that is coming up through the Indian Health service. This program packaging technique is similar in many ways to some components of the Planning-Programing-Budgeting System now being implemented throughout the Federal Government. Because this is a broad topic Mr. Miller will focus on the problem of using statistical information to determine program priorities, and that is the technique that Mr. Miller will now describe to you.

Q Index: A Method for Determining Health Program Priorities

Mr. James E. Miller, *Chief, Office of Program Planning and Evaluation, Division of Indian Health, Bureau of Medical Services, USPHS*

I would like to preface my discussion of the Health Problem Priority Index (better known as the *Q* Index) with a little background relating to the responsibilities of the Division of Indian Health. Although the Division of Indian Health is very much a part of the Federal organization as such, the responsibilities are very similar to many of our State and local health organizations. I am referring especially to the broad, comprehensive activities that, within a single operating agency, include the total health of a population—responsibilities that are not limited to any disease or set of conditions but which encompass all diseases and environmental conditions detrimental to the health of a population.

In order to satisfy this responsibility, the Division of Indian Health operates approximately 50 hospitals, 46 health centers, and over 55 health clinics. In addition, a large proportion of health services are obtained through contractual arrangement with local health departments, community hospitals, and private physicians.

The complexity of these operations dictated the development of a formal standardized system for planning health programs and the allocation of available resources.

The system that has evolved, to date, is described in the document "The Principles of Program Packaging in the Division of Indian Health." Copies of this document have been provided to you and additional copies may be obtained from the Office of Program Planning and Evaluation, Division of Indian Health, Public Health Service.

Our discussion this afternoon will be concerned only with the development of the Health Priority Index (*Q*).

The basic contribution of *Q* to the program planning process is that it enables the program manager to consider all diseases and conditions on the same continuum of measurement and from the same aspect. *Q* in its present form is, admittedly, very embryonic but with proper expansion it has considerable value in assisting the manager in making decisions regarding program emphasis and priorities.

In the development of *Q* two major factors were considered. An index was desired that would reflect the impact of the diseases on our beneficiary population and at the same time reflect the amendability of the disease to further reduction within the limits imposed by generally available knowledge and techniques. The first factor is measured in terms of productive potential lost due to a disease or condition while the second factor is measured by mortality and morbidity differences between the Indian beneficiary population and that existing in the general U.S. population. In general, then, the more time lost—the higher the index number, the greater the difference in mortality—the higher the index, and the higher the Health Problem Index—the higher the priority for program action.

The Health Problem Priority Index (Q) is obtained by weighing the crude rate for the Indian population (D) by amenability to treatment as measured by the Health Problem Ratio (M), and a value reflecting years of productive life lost due to mortality (P) and adding to this product factors which reflect time lost due to morbidity (A and B).

The specific formula is:

$$Q = MDP + L\frac{A}{N}(274.0) + \frac{B}{N}(91.3)$$

This health problem index, or Q, forms the basis for establishing a priority for ranking a disease classification, or even a specific disease, in terms of relative importance.

Each factor combining to make up Q will now be taken as follows:

1. M=Health Problem Ratio $=\frac{\text{Indian rate}}{\text{U.S. rate}}$

   This value, $\frac{\text{Indian rate}}{\text{U.S. rate}}$, is obtained by forming a ratio of Indian deaths (M_i) to the all races deaths (M_t) using mortality rates that have been adjusted to a standard million population. To arrive at these adjusted rates, the following steps are taken: For both the Indian population and for the total U.S. population, the age specific death rates for each health problem in the 17 broad classifications (See table I) were calculated. These age specific death rates for both the Indian population and for the total U.S. population are applied to the age distribution of the standard population (table III) which is distributed in such a manner as to yield an approximation to the average single-year age-specific-death rates independently of the age distributions of the two populations.
2. D = Crude Indian mortality rate per 100,000 from a specified cause group. This factor will have been calculated in the derivation of M.
3. P = Value for productive life lost due to mortality.

   To arrive at P, the following steps are taken: For any cause selected, determine the average age at death by:

   a. determine the midpoint of each age interval selected. This midpoint is then multiplied by the number of deaths for that age group. This product will be the total years lived for those who died (table IV). For the age group under 1 year the midpoint 0.5 is used, and for the age group 75 years and over 80.0 has been arbitrarily selected as the midpoint. The average age at death for a particular health problem is obtained by summing all the totals of years lived for all the age groups, and dividing this sum by total deaths for the year.

   b. This average age at death derived in "a" is subtracted from 65.0 years which in terms of Social Security Laws represent generally the top limit of productive employment. Considering also that the Census Bureau has arbitrarily classified persons over 14 years as the potential working force in the population, it means for our purposes that persons under 15 years of age have a total productive potential of 50 years and any one dying under the age of 15 years has lost 100 percent of his total productive potential so that, in general, we have:

   P = 1.0 when the average age at death is less than 15 years;

   P = 0.01 when the average age at death is greater than 65 years, and

   $P = \frac{65.0-\text{average at death}}{50.0}$ when the average age at death is between 15 and 65 years.

4. L, A, and B—measurements of loss due to morbidity.

a. $L = \frac{L_1}{L_a}$ L_1 = average length of stay for Indian hospitals; L_a = average length of stay for non-Indian hospitals

Overall, because this ratio of the Indian experience did not exceed that of all races by more than 2 percent, in the example below, for simplicity, we arbitrarily assigned this ratio the value of unity.

b. A—Computation of conversion factor.

Lost productive potential is also measured by days of hospitalization and visits to outpatient facilities. For this purpose, determine the patient days per 100,000 population; and because productivity lost from mortality is expressed in terms of years, morbidity must also be so expressed and by equating one inpatient day to $\frac{1}{365}$ of a year, we have:

$\frac{A}{N}$, where A = number of inpatient days

and N = the total service population for the area.

Converting to years by multiplying by $\frac{1}{365}$ it becomes

$$\frac{A}{N} \cdot \frac{1}{365} \cdot 100{,}000 = \frac{A}{N} \; \frac{100{,}000}{365} = \frac{A}{N} \cdot 274.0.$$

c. B—Computation of conversion factor

Assuming that 1 outpatient visit is equivalent to a loss of ⅓ of a day, then 3 outpatient visits = 1 day's loss, and $\frac{1}{3 \times 365}$ = portion of a year lost, we have:

$\frac{B}{N}$, where B = number of outpatient visits
and N = the total service population for the area

Converting to years by multiplying $\frac{1}{1{,}095}$

$\frac{B}{N}$ becomes $\frac{B}{N} \cdot \frac{1}{1{,}095}$. Expressing this as a rate per 100,000 persons it becomes

$$\frac{B}{N} \cdot \frac{1}{1{,}095} \cdot 100{,}000 = \frac{B}{N} \cdot \frac{100{,}000}{1{,}095} = \frac{B}{N} \cdot 91.3.$$

Finally, then, the formula for the Health Problem Index Q now appears as indicated before,

$$Q = MDP + L\,\frac{A}{N}\,(274.0) + \frac{B}{N}\,(91.3)$$

To more fully describe the application of this formula, we shall use hypothetical figures to clarify the procedure in obtaining Q. To begin with, suppose we have available Indian deaths from two States under the jurisdiction of Area Office Z. These deaths are by age and in the broad clarification cause groups shown in table I. These deaths are then converted to rates by relating events to the estimated population in the respective age intervals. The computation of these age-cause-specific death rates are shown in table II.

The class of disease "accidents, poisonings, and violence" has been selected as an example. From table II which give the death rates from selected causes in broad classes, the age-specific rates from class XVII are selected. These have been listed in column (5) of the appendix table III. By multiplying these age-specific death rates in each age group by the corresponding weight for size of age group (2) we obtain the products in column (6), the weighted specific rates. The sum of this column when divided by the number of years gives the equivalent average death rate or adjusted death rate (ADR) for Indians. The same procedure is applied to the data for all races and carried through in columns (9) and (10); and the sum of column (10), when divided by the number of years, gives the adjusted death rate (ADR) for all races.

The ratio of this adjusted death rate for Indians from accidents, poisonings, and violence to adjusted death rate for all races, from this same cause, gives us M, the first factor in the formula for Q. The M's for each of the 17 health problems are derived in the same manner.

The factor D is the crude death rate from this cause, i.e., accidents, poisonings, etc.; and in our particular instance (from table II) is 304.2.

The factor P represents the productive years lost because of mortality from a given cause and in this example is computed from the average age at death from accidents, poisonings, etc. Continuing our example of deaths from this cause, we had 80 deaths reported. In the first age group (under 1 year) there were 7 deaths reported. Assuming that deaths are evenly distributed throughout the year it follows that those who died lived, on the average, one-half of a year. Another way of considering this is that the midpoint of the age interval represents the average age at death for the interval, and we can say that in the age interval 25 to 34 years each of the 11 individuals who died lived 30 years; and together, all 11 lived a total of 330 years. Following this procedure through all the age intervals, and assuming further that those who died after attaining their 75th birthday lived 80 years, we arrive at a total representing all the years lived by those who died in the different age intervals. This total divided by the number of deaths gives the average age at death and in our example was 33.2 years (see table IV). This number (33.2) subtracted from 65.0 gives 31.8, the number of productive years lost. Finally, 31.8 divided by 50.0 gives 0.64, the productive potential of a lifetime that is lost. In terms of the Health Problem Index represented by

$$Q = MDP + L\frac{A}{N}(274.0) = \frac{B}{N}(91.3)$$

we have obtained N, D, and P and so far we have

$$Q = \frac{40.3}{6.4}(304.2)\ (0.64).$$

From the mortality portion, we will now direct our attention to the morbidity portion or hospital feature relating to accidents, poisonings, and violence pertaining to Area Z. As indicated above, for all practical purposes, we will consider the ratio L to be unity.

In our present example, all that needs to be computed are $\frac{A}{N}$ and $\frac{B}{N}$. On table V, for class XVII, we have $\frac{57.28}{26{,}300}$ and $\frac{47.52}{26{,}300}$ respectively for these two values. Also on table V is shown the products of multiplying these values by the conversion and 91.3.

By ranking the Q values in descending order, as shown in table VII, the Disease Priority Ratings are assigned for Area Z. Shown for comparison are the rank values based on the crude mortality rates.

It is recognized that many factors affecting health problem priorities, such as social, psychological, and economic costs of morbidity and mortality, have not been given full consideration in the present formulae for Q. We are currently engaged in increasing the sophistication of this technique to include these considerations. In the interim, however, it is felt, in its present form, the method effectively highlights the major problem areas.

Table I. Indian Deaths From Selected Broad Classes of Diseases by Selected Age Groups, Z Area, 1963

Cause of death	Total	Under 1 year	1–4 years	5–14 years	15–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	75 years and over
All causes	314	61	9	8	19	22	35	26	36	37	61
I. Infective and parasitic	18	3	1	1	......	3	2	1	3	2	2
II. Neoplasms	27	1	......	1	1	......	4	4	7	3	6
III. Allergic, endocrine, etc.	8	......	......	......	......	......	......	1	2	2	3
VI. Diseases of the nervous system	16	......	1	......	......	1	1	2	1	3	7
VII. Diseases of circulatory system	69	......	......	......	......	......	8	5	13	19	24
VIII. Diseases of the respiratory system	35	18	1	1	......	......	3	......	......	2	10
IX. Diseases of the digestive system	20	4	1	......	1	5	3	2	2	1	1
X. Diseases of genito-urinary system	4	......	......	......	......	......	1	1	......	......	2
XI. Deliveries and complications of pregnancy	2	......	......	......	......	2	......	......	......	......	......
XIV. Congenital malformations	5	4	......	1	......	......	......	......	......	......	......
XV. Diseases of early infancy	24	24	......	......	......	......	......	......	......	......	......
XVI. Symptoms, senility, ill-defined	6	......	......	......	......	......	1	1	......	1	3
XVII. Accidents, poisonings, and violence	80	7	5	4	17	11	12	9	8	4	3

NOTE: In Z Area there were no deaths reported for classes IV, V, XII, and XIII.

Source: Special tabulations, Division of Vital Statistics.

Table II. Death Rates for Selected Broad Classes of Diseases by Selected Age Groups, Z Area 1963

Cause of death	Total	Under 1 year	1–4 years	5–14 years	15–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	75 years and over
All causes	1,193.9	5,169.5	229.6	107.5	472.6	707.4	1,548.7	1,595.1	2,686.6	4,512.2	10,517.2
I. Infective and parasitic	68.4	254.2	25.5	13.4	.....	96.5	88.3	61.3	223.9	243.9	344.8
II. Neoplasms	102.7	84.7	.....	25.5	24.9	.....	177.0	245.3	522.4	365.9	1,034.5
III. Allergic, endocrine, etc.	30.4	....	.....	.....	.....	.....	....	61.3	149.2	243.9	517.2
VI. Diseases of nervous system	60.8	....	25.5	.....	.....	32.2	44.2	122.7	74.6	365.9	1,206.9
VII. Diseases of circulatory system	262.4	....	.....	.....	.....	.....	354.0	306.7	970.1	2,317.0	4,137.9
VIII. Diseases of respiratory system	133.0	1,524.4	25.5	13.4	.....	.....	132.7	....	....	243.9	1,724.1
IX. Diseases of digestive system	76.0	338.9	25.5	.....	24.9	160.7	132.7	122.6	149.2	122.0	172.4
X. Diseases of genito-urinary system	15.2	....	.....	.....	.....	.....	44.2	61.3	....	....	344.8
XI. Deliveries and complications of pregnancy	7.6	....	.....	.....	.....	64.3	....	....	....	....	....
XIV. Congenital malformations	19.0	338.9	.....	13.4	.....	.....	....	....	....	....	....
XV. Diseases of early infancy	91.3	2,033.8	.....	.....	.....	.....	....	....	....	....	....
XVI. Symptoms, senility, and ill-defined	22.8	....	.....	.....	.....	.....	44.2	61.3	....	122.0	517.2
XVII. Accidents, poisonings, and violence	304.2	593.2	127.5	53.8	422.9	353.7	531.0	552.1	597.0	487.8	517.2

NOTE: In Z Area there were no deaths reported for classes IV, V, XII, and XIII.

Table II–A. Death Rates for Accidents, Poisonings, and Violence by Selected Age Groups, All Races, 1963

Cause of death	Total	Under 1 year	1–4 years	5–14 years	15–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	75 years and over
Accidents, poisonings, and violence	69.4	91.2	32.2	19.2	69.1	67.1	67.7	78.8	90.6	115.1	302.2
Accidents	53.4	86.2	31.1	18.3	57.3	45.1	43.0	51.4	62.5	89.9	274.2
Suicide	11.0	......	......	0.3	6.0	11.8	16.0	21.1	23.6	22.4	25.3
Homicide	4.9	5.0	1.1	0.6	5.8	10.2	8.8	6.2	4.5	2.9	2.7

Source: U.S. Department of Health, Education, and Welfare, Public Health Service, National Center for Health Statistics: *Vital Statistics of the United States, 1963*, vol. II, pt. A, tables 1–9.

Table III. Work Sheet Showing Adjustment by the Equivalent Average of the Death Rates For Indians in Area Z and All Races, 1963

Age (in years) (1)	Weight for size of age group (2)	Estimated population 1963 (3)	Deaths in 1963 from accidents, etc. (4)	Specific rates per 100,000 population (5) $\frac{(4)}{(3)}$	Weighted specific rate (6) (5)×(2)	Estimated population 1963 (7)	Deaths in 1963 from accidents, etc. (8)	Specific rates per 100,000 population (9) $\frac{(8)}{(7)}$	Weighted specific rate (10) (9)×(2)
Under 1..........	1	1, 180	7	593. 2	59. 3	4, 075, 000	3, 717	91. 2	9. 1
1–4..............	4	3, 920	5	127. 5	51. 0	16, 647, 000	5, 360	32. 2	12. 9
5–14.............	10	7, 440	4	53. 8	53. 8	38, 012, 000	7, 291	19. 2	19. 2
15–24.............	10	4, 020	17	422. 9	422. 9	27, 717, 000	19, 161	69. 1	69. 1
25–34.............	10	3, 110	11	353. 7	353. 7	22, 154, 000	14, 883	67. 1	67. 1
35–44.............	10	2, 260	12	531. 0	531. 0	24, 502, 000	16, 622	67. 7	67. 7
45–54..	10	1, 630	9	552. 1	552. 1	21, 464, 000	16, 887	78. 8	78. 8
55–64.............	10	1, 340	8	597. 0	597. 0	16, 392, 000	14, 839	90. 6	90. 6
65–74.............	10	820	4	487. 8	487. 8	11, 335, 000	13, 070	115. 1	115. 1
75+..............	25	580	3	517. 2	1,293. 0	6, 232, 000	18, 835	302. 2	755. 5
Total.........	100	26, 300	80	(304. 2)	4,401. 6	188, 531, 000	130, 748	(69. 4)	1,285. 1

ADR (Indian) $\frac{4401.6}{100}=44.0$

ADR (All Races) $\frac{1285.1}{100}=12.9$

Table IV. Average Age at Death Among Indians from Accidents, Poisonings, and Violence, in Area Z, 1963

Age interval	Number	Midpoint	Years lived
(1)	(2)	(3)	(4) (2)×(3)
All ages	80		2, 658. 5
Under 1 year	7	0. 5	3. 5
1–4 years	5	3. 0	15. 0
5–14 years	4	10. 0	40. 0
15–24 years	17	20. 0	340. 0
25–34 years	11	30. 0	330. 0
35–44 years	12	40. 0	480. 0
45–54 years	9	50. 0	450. 0
55–64 years	8	60. 0	480. 0
65–74 years	4	70. 0	280. 0
75 years and over	3	80. 0	240. 0

$$\text{Average age at death}=\frac{2{,}658.5}{80}=33.2 \text{ years.}$$

Table V. Morbidity Component, Area Z

Disease classification	A—In-patient days 1963 (1)	B—Out-patient visits 1963 (2)	$\frac{A}{N}(274.0)$[1]	$\frac{B}{N}(91.3)$[1]
Total, excluding newborn	52, 729	44, 833		
I. Infective and parasitic diseases	2, 911	1, 670	30. 41	5. 75
II. Neoplasms	1, 548	717	16. 17	2. 47
III. Allergic, endocrine, and nutritional diseases	1, 248	897	12. 88	3. 10
IV. Diseases of blood and blood-forming organs	215	186	2. 19	0. 64
V. Mental, psychoneurotic, etc	728	997	7. 67	3. 47
VI. Diseases of the nervous system	4, 289	1, 928	44. 66	6. 66
VII. Diseases of the circulatory system	3, 543	2, 197	36. 99	7. 67
VIII. Diseases of the respiratory system	9, 580	9, 774	99. 74	34. 15
IX. Diseases of the digestive system	7, 807	6, 277	81. 38	21. 82
X. Diseases of the genito-urinary system	2, 262	1, 973	23. 56	6. 85
XI. Complications of pregnancy	5, 181	7, 487	53. 98	26. 02
XII. Diseases of skin and cellular tissue	1, 620	1, 345	16. 99	4. 66
XIII. Diseases of bones and organs of movement	1, 282	649	13. 43	2. 28
XIV. Congenital malformations	540	224	5. 75	0. 82
XV. Certain diseases of early infancy	1, 436	628	15. 07	2. 19
XVI. Symptoms, senility, and ill-defined	2, 811	3, 143	29. 31	10. 96
XVII. Accidents, poisonings, and violence	5, 728	4, 752	59. 73	16. 53

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[1] N, (the estimated population at risk in the Area Z)=26,300.

Table VI. Showing Method of Obtaining Q Values For Each of 17 Health Problems

Disease classfication	$\frac{M_i}{M_t}$	×	D	×	P	+	$\frac{A}{N}(274.0)$	+	$\frac{B}{N}(91.3)$	=	Q
I. Infective and parasitic diseases . .	$\frac{162.5}{25.6}$	×	68.4	×	$\frac{25.3}{50.0}$	+	30.41	+	5.75	=	256
II. Neoplasms	$\frac{395.6}{431.6}$	×	102.7	×	$\frac{9.4}{50.0}$	+	16.17	+	2.47	=	36
III. Allergic, endocrine, and nutritional diseases	$\frac{174.7}{58.5}$	×	30.4	×	$\frac{.01}{50.00}$	+	12.88	+	3.10	=	17
IV. Diseases of blood and blood-forming organs	0		0		0		2.19	+	0.64	=	3
V. Mental, psychoneurotic, etc	0		0		0		7.67	+	3.47	=	11
VI. Diseases of the nervous system . . .	$\frac{366.7}{513.9}$	×	60.8	×	$\frac{2.3}{50.0}$	+	44.66	+	6.66	=	53
VII. Diseases of the circulatory system.	$\frac{1429.3}{2234.5}$	×	262.4	×	$\frac{0.01}{50.00}$	+	36.99	+	7.67	=	46
VIII. Diseases of the respiratory system.	$\frac{486.3}{146.3}$	×	133.0	×	$\frac{34.1}{50.0}$	+	99.74	+	34.15	=	435
IX. Diseases of the digestive system . .	$\frac{92.9}{51.9}$	×	76.0	×	$\frac{31.7}{50.0}$	+	81.38	+	21.82	=	189
X. Diseases of the genito-urinary system	$\frac{19.2}{18.4}$	×	15.2	×	$\frac{2.5}{50.0}$	+	23.56,	+	6.85	=	31
XI. Complications of pregnancy, etc . .	$\frac{6.4}{0.6}$	×	7.6	×	$\frac{35.0}{50.0}$	+	53.98	+	26.02	=	137
XII. Diseases of skin and cellular tissue.	0		0		0		16.99	+	4.66	=	22
XIII. Diseases of bones and organs of movement	0		0		0		13.43	+	2.28	=	16
XIV. Congenital malformations	$\frac{1.7}{6.6}$	×	19.0	×	1.0	+	5.75	+	0.82	=	11
XV. Certain diseases of early infancy . .	$\frac{2.0}{15.4}$	×	91.3	×	1.0	+	15.07	+	2.19	=	29
XVI. Symptoms, senility, and ill-defined	$\frac{152.1}{36.2}$	×	22.8	×	0.01	+	29.31	+	10.96	=	41
XVII. Accidents, poisonings, and violence	$\frac{44.0}{12.9}$	×	304.2	×	0.64	+	59.73	+	16.53	=	740

Table VII. Area Z Disease Priority Rating Rank Order Compared With the Rank Order of the Crude Death Rate of 17 Broad Disease Classifications as Causes of Morbidity and Mortality, 1963

Rank order of crude death rate	Disease priority rating	Disease classification	Q value
1	1	XVII. Accidents, poisonings, etc	740
3	2	VIII. Diseases of the respiratory system	435
7	3	I. Infective plus parasitic diseases	256
6	4	IX. Diseases of the digestive system	189
13	5	XI. Complications of pregnancy, etc	137
8	6	VI. Diseases of the nervous system	53
2	7	VII. Diseases of the circulatory system	46
10	8	XVI. Symptoms, senility, etc	41
4	9	II. Neoplasms	36
12	10	X. Diseases of genito-urinary system	31
5	11	XV. Certain diseases of early infancy	29
(1)	12	XII. Diseases of skin plus cellular tissue	22
9	13	III. Allergic, endocrine plus nutritional	17
(1)	14	XIII. Diseases of bones plus organs of movement	16
11	15	XIV. Congenital malformations	11
(1)	16	V. Mental, psychoneurotic, etc	11
(1)	17	IV. Diseases of blood plus blood-forming organs	3

[1] No deaths reported.

DISCUSSION

Mr. Frazier. I am sure there will be a number of questions regarding the presentation of the "Q" technique and program packaging and also from the presentations of our other discussants.

First, as I pointed out to you, I would like to move back through the presentations as they occurred and see if we can get a fight going or a lively discussion.

I think there is a linkage here between a number of things we have heard. Dr. Domke's excellent presentation on what could be done with existing information put together in a new way leads us in one direction.

The population laboratory ideas that were proposed tie into a number of the promising features of S. 3008.

The health survey information (at both the national level and the local level) may be the type of information we will need to have if we get into the appraisal of health problems such as has been described in the Q index.

I would like to open this up for panel discussion and go back to Dr. Domke, who was first and should have had an opportunity now to assimilate some of the remarks that have been made. Will you open up the discussion, Doctor?

Dr. Domke. Earlier it was stated that I might be identified as a fellow statistician. In this discussion, though, I think I should revert to my role as a health officer.

For a long time there has been a critical need for data about metropolitan areas for they are the units in which the urban population lives. Metro data more widely available to the public would have a good deal of impact on local programing and, as better data, provide some of the strength that we need at the local level to complement the program planning that goes on federally.

To achieve good metro health data, however, the NCHS and other units of the Public Health Service must take a greater interest and give more attention to the development of metro health material.

If it is understood that I am doing this to start the lively discussion that Mr. Frazier requested, I will ask Mr. King a question.

I first learned of the introduction of S. 3008 as I happened to come back to this country from a stay in Ireland. When I first heard the phrase "cooperative federalism," it seemed to me after having been a local health officer for 20 years that this was like the British-imposed home rule for the poor, long-suffering Irish nationalists.

I would like to have Mr. King comment, if he would, on how we can insure that there is adequate local involvement, to achieve the kind of better planning that he requests. Better statistical planning is needed, but can we insure that the local statistician and other local personnel can make a contribution?

Mr. King. There is a long standing agreement between Dr. Domke and myself about the direction in which the planning process and statistical programs should go. I think we differ in our roles. He is on the firing line, you might say, in the place where the problems are, and needs particular kinds of information to get on with the action. He certainly has the role of not just a goad but a conscience to people who are doing the planning for the Federal agencies—planning of the sort in which I am involved.

I do not think as an individual I can speak for planning in the agency, what is going to happen in the future, or what we are really committed to one way or the other. But I can say that there is a much broader realization of the need for these data, for supporting local areas much more effectively, for strengthening State support of local areas much more effectively, and for getting feedback from the local area, both to the States and Federal agencies, about the effects of what we are really doing. I mean the detailed effects, detailed information about the effects of what we are doing here.

I believe there certainly is a responsibility to study and to listen to the problems of the health officers—the decisionmakers—as they see them, especially those who are sophisticated and who really understand the use of these data.

In some areas you may not have as much of a realization of the usefulness of statistics, and I personally believe that it is up to the Public Health Service and the other Federal health agencies to continually encourage and to provide emphasis on the local health-planning functions, on the better use of local information, on what statistics really mean, on what we really need in these categories, and to publish them, put them in proper categories, and to get them out not only to the places that realize they need them, like Allegheny County, but to the places that are not quite so sure.

I think we are becoming much more concerned with the political processes in the broadest sense, and with those other uses of health data that Dr. Domke and some other people were talking about, the ones that the community planners need, the poverty programers need. I am talking specifically of health data that will influence their decisions in their own functional areas. In my opinion, in the past we have not encouraged enough of these kinds of relationships at the local and State level. And we are committed, I think, to strengthening these relationships and to supporting this kind of interjurisdictional data gathering, as well as creation of new categories and new formats useful for decisionmaking and for action planning.

Mr. FRAZIER. I think one element we need to pick up here is the fact that while there are challenges to the statistician (Mr. Israel said in the form of leadership, and Mr. King said there are challenges in providing information along the lines that Dr. Domke has outlined), there is also a need to look at new types of information that will be required if we are to pursue this generalized technique of "Q" or any other priority scheme, which allows us first to get up a goal, secondly to see what are important elements in attaining this goal, thirdly to look at alternative ways of moving toward this goal, and finally to sense how far we have moved toward the attainment of this goal.

In a nutshell, that is what the program packaging and the PPBS are about. As statisticians we have to consider this question very carefully: Do the techniques we now have, do the measures we now generate, the form in which we now present them, meet these needs? If they don't, and if we are going to exert any leadership, we'd better start looking for other indices, we'd better start listening to what people such as the developers of the Indian health program packaging method have done about modifying their techniques so they can approach these program information needs.

I am not at all convinced that vital statisticians are particularly attuned to the needs that are being talked about in program budgeting systems. I would like to hear some comment on this, either from the panel or from the floor.

Dr. KELSAY (Louisville-Jefferson County Health Department). I don't know whether this is the right time to make this observation or not. But look on page 20 of the conference program and you will find the vital registrars are in their own briarpatch while we are in ours. They haven't heard a word said here. We haven't heard a word they said. It looks like we will never get together.

Mr. FRAZIER. Yes, sir, we are quite aware of that, Doctor Kelsay. I guess, looking back as to why this was scheduled at this time, we felt (or somebody felt) that all of these people were here and those who are not going to be in the registration executive's meeting need something to do on Thursday afternoon.

I think it is a good idea to get together, but I do wish some of the vital registration people could have participated in this session.

Miss GURALNICK. I would like to say I think it is rather appropriate we meet here without the State people. The Federal-State pattern of relationships has been quite well established and has been a good way of working out our mutual problems.

The metropolitan areas are by and large new, and the relationships with the Federal Government are not established and are different relationships. They are the ones where we have new problems and need new solutions. If this group can recommend to the Federal Government or to the statistical agencies the needs of the metropolitan areas independently, we might then move into a discussion of the more complex three-way relationships of Federal-State-local governments.

Dr. KANTOR. I would like to make an observation here, and it is one that came up in the training session this morning also.

I think the concern (at least from the training session) is how to get people to become vital statisticians. Either health departments train them themselves or we look to schools of public health. It is important that we look to other places also to recruit people with different points of view, because they might have something to contribute with their different approaches to vital statistics data.

Looking at this in terms of health planning, I think the economists, sociologists, the community mental-health-oriented psychologists, for example, all have ideas which are relevant to health planning and we ought to look to ways of having them collaborate with health departments in their work.

Now, I think also that in order to attract people to the field of public health statistics they must have some freedom to develop interests of their own as well as looking at ways of dealing with the more traditional vital statistics material.

I think this is relevant to the question of why the registrars and people concerned with certification and recording are in one meeting and we are here in another meeting.

It also relates to the kinds of items that are on certificates, how are they being used, how are they being related to programing of all kinds.

I don't know. Maybe somebody else would like to speak to this, too. Perhaps these are quite radical ideas to some of the people here for the conference.

Mr. VAUGHN. I am wondering if we aren't belaboring the term vital statistics. I think we started out in an early age in the United States, in the early 1900's, and we said there were seven basic functions of a health department, one of which was vital statistics.

The vital statistics at that time were concerned mainly with the collection of vital records which were termed birth, death, and fetal death.

Since that time we have been trying to get away from this connotation that vital records are only those records pertaining to births, deaths, and fetal deaths.

Isn't it just as important for a record coming from a nurse relating to a pregnant woman who is going to give birth to a child, isn't that just as vital in some respects as the paper that would be recorded as a vital record? And some of us who have been in this field for a while have been working to dispel the idea of a vital statistic, and think in terms of perhaps a public health statistic.

Now we are turning to other terms and in many instances we call these public health records. I noticed even the old American Association of Registration Executives changed its name to the American Association for Vital Records and Public Health Statistics, which changes this connotation.

As we get into local health departments we think in terms of operations of programs, while at State levels we think mainly in terms of major study types rather than the actual performance and carrying out of the work.

So, we need an entirely different type of statistic at the local level. And this comes from many types of records.

If we begin thinking in these terms, we get away from the connotation of the so-called vital statistician and the vital record connotation and begin thinking in terms of public health records as they relate to health.

Maybe we should get away from the connotation of public health records and get to health records, and health statisticians, or analytical statisticians, and so forth, rather than to stick with this connotation of vital statistician. I think we would get a lot further with our work.

Mr. FRAZIER. There are even some who I believe might prefer to be labeled public health analysts and, heretic that I am, forget about the word statistician, because we do have, I think, colleagues in this room who would say first they were not statisticians but maybe they were sociologists. We have a health officer who is very much interested in statistics. So I think maybe there is an element of analysis here that sort of overrides all of this.

This problem of being labeled vital records and vital statisticians has bothered some of us a great deal.

Dr. DOMKE. I am very much in agreement with everything that Mr. Vaughn has said. My comments are not in disagreement, but are only to supplement.

Whether called vital statisticians or health statisticians, I think the real problem of frustration we all are dealing with is that we haven't had available to us some of the data we need to influence decisions in the community.

The meaningful data that are going to be most useful are more likely going to be about the metropolitan area than about some municipality or State. I think all of us would feel a good deal happier about our role if we were involved in producing and using data that are more "natural" in the sense that they are going to pertain to the real community in which most Americans live: that is the metropolitan area.

I think some of our frustrations are simply because we have been producing kinds of data which haven't met the needs of the community planners. The community planners are making decisions all of the time. They are not going to wait for the appropriate data, and some of that appropriate data are by metropolitan area.

Mr. KING. I would like to respond to the idea that was put forth before about the statistician. I always think of statisticans as planners. You might go even further and say all statisticians or vital records people are public health planners.

Essentially that is the way in which their information is going to be used. That is the payoff, or the payoff is even further beyond that: the implementation of the plans and measuring the progress.

I think a realization of this context and of the use of data would make all of the statisticians really become planners. As soon as they become planners they can say what data are needed. They don't just have to secure it for somebody else who says what is needed.

Mr. DEHOFF (Baltimore City Health Department). I would like to take issue with Mr. King on public health statisticians becoming public health planners. I think you can be one or the other. But when you get to be a planner you become an administrator, and I believe we would be better off thinking of ourselves as administrators or as statisticians in public health services, and in these services we can plan systems. I think planning takes into consideration some of the less tangible factors than you can develop here; but this is frankly a biased opinion.

Dr. Kantor and Mr. Israel pointed out two areas for broadening your interest. If you broaden your horizon, and lower your portals, I wonder whether you are also going to lower your statistics.

Mr. Swayne took note of the difficulties of planning with statisticians only, when you have situations where those in authority will not support travel for statisticians to attend important professional meetings for no more than the distance that everybody else goes to see a ballgame.

Mr. Frazier. Would anybody like to keep this planner-statistician dichotomy argument moving? I will keep it moving, if no one else would like to. I think everybody does a little bit of planning. I don't think anyone does all of it.

Maybe the way we ought to approach this planning responsibility and how it ties into public health statistics is to ask ourselves what kind of information did we produce last year with our vast statistical system that in any way effected a meaningful program change in our department.

Now I think it is good to address this question to yourselves every now and then. It is a hard one to answer truthfully, because I am sure in my own career there have been many years that have gone by where the system, as I knew it, did not produce, at least to my knowledge, a meaningful change in the overall activity in which I was involved.

The fact that it didn't may mean I was too much a statistician and not enough of a planner.

Dr. Kelsay. This business of being a planner or not seems to be a kind of local and perhaps an administrative consideration. Some statisticians merely get the facts and give them to someone. Others get the facts and interpret them and give them to someone. Still others get the facts, interpret them, and take some planning action. And still others do all three of these and then take some executive action.

My situation is simply to get the facts, interpret them, and let it go from there. I give it to the health officer or chief of the environmental health services, whatever it is, and he does the planning and action.

In my case I don't try to plan much, in, say, the division of general health on the basis of statistics that are given me.

Mr. Frazier. Any other confessions?

Mr. King. When you are interpreting data, you are doing some planning, too. What you consider most significant is indicated by how you stress it or how you point out what it may mean. Isn't this an influence and a minimum amount of planning as to whether one goes on this way or whether one changes?

I think every statistician is involved in some type of planning, even though they are just analyzing data; and they may not be at the administrative level.

Mr. SWAYNE. I feel there are many limitations to the quantitative approach. There are certain things we can't do and should not try to do. And that is part of our role: To try to help administrators and planners know when measurement is appropriate, and how to use it appropriately in program planning. This kind of statistical service makes the statistician a true partner in the planning process.

Mr. KING. I think this is an area related to and reinforcing previous remarks about the development of the social science disciplines, the training of new people, and recruitment of people from universities. I think there are a great many things that can be quantified. They may not be quantified yet, but they soon can be if people put their heads together. Here Dr. Kantor's emphasis on the statisticians' own interests is relevant. They certainly might be in the line of quantifying something new, measuring something new, or developing some new index. There is no reason at all why this should not occur in the local health agency or planning agency. I myself hope this kind of research function will increase at all levels of the government. As soon as a new unit of measurement or a new index is developed, you have new alternatives to present to your decisionmaker. You have a whole new area of justification for his planning. Even if you are not the one who actually makes the decision, you can show the one who does how to do things he would like to do, but never thought were possible before.

On the definition of the word "planning," I think everybody is becoming more and more committed to the idea we want everybody to be in planning. We don't want an elite group of planners and then a lot of functionaries that sort of serve them, giving administrative support, and a few people to run around and carry out their orders. The idea is that as many people as possible should be making informed judgments which all together in some way lead to a health plan and its implementation.

Mr. MILLER. I would like to add to Mr. King's remarks briefly. I wonder if we might look upon the statisticians not so much as bean counters, as I have heard them referred to (and I am one myself), but as essentially analogous to the intelligence officer in the military service, whose responsibility is to provide intelligence to the program manager.

From this standpoint he has to know what the program manager needs in order to make a decision. It is his responsibility to provide the quantitative basis for making this decision. Now, this doesn't mean that the decision is solely on the basis of the numbers and the analysis you provide. There are overriding things also, political pressures, sociological pressures, this sort of thing. But to view yourself as a person who merely gives the numbers to somebody else to use as he sees fit is to shirk a critical responsibility.

The person who is looking at the numbers is not familiar with the background, doesn't know what they really are comprised of, or what they really measure. An analysis has to be done in terms of what the information is going to be used for. From that standpoint, the statisician has to be very closely acquainted with the planning process, the decisionmaking process, and what kind of information is required.

Mr. ISRAEL. I would like to change the subject, if I could, and pursue a little further, perhaps with Mr. King, the question of the interchange of personnel that is described in Senate bill 3008.

I think from Mr. Swayne's comments this afternoon (perhaps from some of Dr. Kantor's comments and from many other comments that we have heard all week long at this conference and at other meetings) there seems to be a rather serious problem at the State and local level, and I think the Federal level also, in recruitment and training of statisticians.

I wonder whether there is any definite thinking in terms of this interchange of personnel as to whether this will be only a one-way street, or an exchange in which the State and local levels will be able to provide the people to come and work and get some exposure and exchange of ideas at the Federal level.

Mr. King. This is a very interesting proposal. As you point out, most of the movements of personnel in the past have been pretty much one way: Federal people going to talk to State people and they sometimes give them technical assistance as we call it.

There are cases where State people do come to the Federal level for particular kinds of training, such as the Communicable Disease Center. Laboratory technicians come there to get various kinds of training.

There are precedents for this. But in the Elementary and Secondary Education Act of 1965, which is the responsibility of a sister agency in the education area, there is a provision for the reverse flow of people, for State and local personnel to come in and get experience at the Federal level. This interchange of personnel is also a major objective of S. 3008.

There are a lot of problems involved in freeing people at the State and local levels to come and get this kind of training. But we are now in the process of thinking what the administrative regulations for this kind of interchange would be, and we would be happy to have suggestions from the floor.

Mr. Miller. I would like to say the Division of Indian Health has made a proposal to the Surgeon General. It is somewhere in channels now. It offers the training facilities of our division located in Tucson, Ariz., which we use to train our own people in program planning, budgeting, adminstratve research, and management epidemiology; to train regional PHS representatives in program planning. This would mean you would be getting some technical assistance closer than Washington.

I think the possibility of expanding this training to include all States is quite possible. I certainly believe if this conference came out wth a recommendation of such, it would fall on very eager ears.

Mr. Frazier. Mr. King, if this provision for training in S. 3008 does go through, would it be possible for State people to come in for the types of orientation sessions that the Civil Service Commission has been sponsoring for the new program budgeting approaches? I suspect that the Public Health Service will be working with them. Would it be possible to bring the people in from the States for this kind of orientation?

Mr. King. I think it would be essential to bring them in for this kind of orientation. The planning, programing, and budgeting system that is being put in is, as you know, a Government-wide operation. This is being developed in all agencies.

Of course it has to develop in the way that is peculiar to the function of each agency. The Federal health agencies are a place for the State and local health people to come to learn about these techniques.

I do think, however, that we are not going to wait for the State and local people to be able to come to the Federal agencies for these kinds of things. There will be an attempt to increase the technical assistance and, as we said here before, various kinds of training assistance to encourage State and local governments and agencies to use these kinds of things. There will be increased information to tell them what is really available.

Dr. DOMKE. I think that this planning, this provision for interchange and for the training that would accompany it, could very well be an extremely valuable contribution.

Certainly all of us are very much aware of the kind of provincialism that we find at the local and State levels. Certainly local health officers need to be told that they must take a more active role in representing the problems with which they are most familiar at State and National levels.

It is no less appropriate to hope that the national officials will also be less "provincial" and recognize what are some very real kinds of local problems.

There would be, I am sure, some real problems in working out this interchange. But I, for one, would see this interchange of personnel between Federal and local levels as a remarkably good opportunity to break down these barriers which are so much tied to the Federal, State, and local legal structure of how we govern ourselves.

These are legal structures that obviously go back a couple of hundred years as we work in trying to solve health problems. Let's be better health specialists for today whether we are statisticians or planners or whatever.

I think this kind of interchange proposal might help a great deal in getting us all to do a better job of being what we are—health specialists—and less concerned with some legal realities (but sometimes also legal fictions) of what is Federal, State, and local.

Mr. FRAZIER. Thank you very much, Doctor.

I would like to thank the panel for their participation and the audience for their participation, and with that I adjourn this special session.

Thank you.

DOCUMENTATION

1. "Some Implications of Urbanization on Urban Health Affairs." Address by M. Allen Pond, Assistant Surgeon General for Plans, U.S. Public Health Service, at the Annual Meeting of the American Public Health Association, New York, N.Y., Oct. 6, 1964.

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PRESIDING

REPORT ON THE NATIONAL MEETING OF THE AMERICAN ASSOCIATION FOR VITAL RECORDS AND PUBLIC HEALTH STATISTICS

WORKSHOP HIGHLIGHTS

REPORT ON THE SPECIAL SESSION "HEALTH STATISTICS IN METROPOLITAN AREAS"

SNEAK PREVIEW: WHAT'S TO COME IN HEALTH STATISTICS

REPRISE

Presiding

Dr. Robert D. Grove, *Chief, Division of Vital Statistics, National Center for Health Statistics, U.S. Public Health Service*

We would like to welcome all of you to this Third General Session. I doubt very much whether there is anyone in the audience who feels quite as vigorous, physically, as he did Monday morning, but I hope all of you feel even more vigorous spiritually and intellectually.

As you know, the American Association for Vital Records and Public Health Statistics has been in session here preceding this meeting. We have had close relations for many years with the Association. I would now like to call upon Mr. Lee Aase, the immediate past president of the Association, to tell you of the activities underway.

Report of the National Meeting of the AAVRPHS

Mr. Leland E. Aase, *Past President*
Mr. W. D. Carroll, *President*

The American Association for Vital Records and Public Health Statistics had a 2-day session on June 18–19, as well as a 1-day preconference session with representatives of the Social Security Administration.

The purpose of the preconference session was to investigate the possibilities of reaching an agreement about the problems of national record clearance. We are particularly interested in a uniform numbering system. I am sorry to announce that we, as yet, have not reached definite conclusions in this regard; however, it is a subject on which we hope to continue negotiations.

We have had two excellent meetings with representatives of the Social Security Administration. Participants at the meeting represented the Social Security Administration and the American Association for Vital Records and Public Health Statistics. Also included were representatives from the National Center for Health Statistics and observers from Canada, who had special problems.

We are thinking about two possibilities. One is the use of the birth number as an identification number, and the other is the use of the social security number.

The matter of record clearance, which we discussed at our meetings, is one that is uppermost in our minds. It seems that with the tremendous increase in research activities we in the State records services are deluged with requests for all types of records. Our problem becomes one of providing services where we have insufficient funds and personnel to get this job done. So our objective is to find a uniform clearance method—a simple uniform method—that will give us results in these particular areas.

At this time, Don Carroll, the president, will give you the balance of the Association meeting report.

Mr. CARROLL. There was an excellent presentation by Mr. Franzen on procedures for State implementation of the standard certificates. Included were historical notes relative to the development of standard certificates and the registration system in this country, a statement of needs for greater uniformity in our registration system, a proposed schedule for implementation of the standard certificates, elements of a successful transition—which were very cleverly prepared—and reccommendations for actions to expedite the implementation of the standard certificates.

Mr. Veigel reported on a meeting of the Surgeon General's Committee on Research Uses of Vital Records.

Dr. Calhoun reported for the Committee on Library of Information. This committee was appointed to study the proposal by Dr. Erhardt that the Association develop a textbook on vital registration and vital statistics. The committee has made its recommendations to the Association, and the executive committee will take appropriate steps to implement this proposal.

Other reports included one by Mr. Williams on data procurement. A committee of association members served in an advisory capacity to the National Center to revise the schedule of fees for data. New contracts, based on these new fee schedules, have been sent to the several registration areas.

Mr. Chancellor, reporting for the Committee on Archives, said a history of the Association since its organization in 1933 has been completed and is now ready for the printer. It will soon be available for distribution.

Thank you.

Dr. GROVE: On my own behalf, and speaking for the staff of the National Center for Health Statistics, I would like to thank Lee Aase for his cooperation, particularly during the past 2 years when he was president of the AAVRPHS, and to welcome Don Carroll as the new president. We have known Don for many years, and we consider him a very good friend.

The major item on the program this morning is to hear highlight reports on the various workshop meetings and other sessions that were held this week. As you know, it was mathematically and physically impossible to attend all of the sessions, because most of the time there were at least four taking place simultaneously. It is also obvious that many sessions that extended from 3 to 6 hours, and were attended by 50 to 150 people, cannot in a literal sense be summarized in the short time we have this morning. Therefore, the people who are going to report to you on these sessions deserve your sympathy, because they are under stringent time limitations.

I would like to call first on Mr. Loren Chancellor to report the highlights on Workshops A and B, which dealt with the standard certificates and handbooks.

Workshop Highlights

Workshops A & B

Mr. Loren E. Chancellor, *Director, Records and Statistics Division, Iowa Department of Health*

In summarizing the workshop reports, I was surprised that there was quite a little agreement bebetween the two workshops considering the same subject matter.

The standard certificates of live birth, death, and fetal death.—It is agreed that the content of the certificates is in final form. The format is in final form, with the exception of detailed editing and some necessary changes due to errors.

There were several detailed comments on the content of the certificates, such as wording of the item on "month of pregnancy prenatal care began" and education versus occupation. These detailed comments will be included in the expanded workshop report.

There were comments on the format in regard to spacing, lettering, and the order in which the items were shown. These will be adjusted in the final copies.

The time schedule.—Certificates will be in the hands of the States by fall. Certificates are to be in use by January 1, 1968.

What the National Center for Health Statistics can do and cannot do for the States, with regard to the standard certificates.—The Center will not be able to print the certificates for the States. The Center will be able to provide a photographic negative which the States may cut or modify and put back together to suit the needs of the various States. The Center will be able to assist the States in adapting the certificates after modifications are made.

Status of the handbooks.—For the first time, I believe, detailed handbooks were prepared with the intention that they be models for adaptation by the States. They are a hospital handbook, funeral directors handbook, physicians handbook, and a medical/legal handbook. The time schedule on these handbooks is as follows: An editorial committee in the Center will begin editing and rewriting the handbooks in the very near future. Comments are solicited from everyone, and the Center will consider these in their final preparation.

The target date for completing the handbooks in the Center is October 1966, and distribution is scheduled for the spring of 1967. I think that all of us in the States would hope that this time schedule could be moved up, because if the States are going to adapt the handbooks to their own particular requirements a minimum of at least a year will be needed to do this.

What the Center can and cannot do for the States, with regard to the handbooks: Copies will be provided to the States in any quantity they desire. This would be with or without the covers, as the State might desire. The Center will not be able to publish any manual as revised for a specific State.

Comments on the handbooks: Some flags, such as asterisks, and so forth, will be employed in these handbooks to identify those portions which may require modification. If possible, this will be carried out so that if a State desires to use a handbook, as it is printed by the Center, there will be no undue obstruction. Identical subject matter was found to be not entirely consistent and uniform within each of the handbooks. In other words, there is some information repeated in various manuals, and it was brought out that this should be consistent in all manuals.

For the physicians' handbook, two approaches were suggested: One would be the concentration on medical certification with all other information listed in the appendix, with the thought that the physician will not have time or desire to read all of the information. The second approach would be to draft a handbook along the same line as the other three handbooks, making it both general and specific in instruction.

We talked a lot about the various types of educational media that might be used in promoting standard certificates. It was agreed that articles should be published in journals of State associations. Of the new educational media, we felt it would work best if initiated at the State level. We could request assistance and advice from the Center.

It was agreed that articles should be prepared for professional journals directed toward the physicians. By so doing, the physicians would be acquainted with the impending changes and the reasons. To avoid confusion relative to the preparation of current certificates, among other things, it was felt that careful thought should be given to the timing of such publications.

It was recommended that articles be published that are directed to hospital associations and medical record librarians, etc.

What the Center can do for the States: First, the NCHS hopes to complete a film on birth registration which will be offered on a loan basis through the Public Health Service to the States. This would be appropriate for use in medical schools.

Second, the Center expects to develop certain types of exhibits that may be used on request by States.

Third, articles will be prepared for different professional groups for use and modification by the individual States.

One of the other important items that came to the attention of the Workshop concerned the access to data on records. I think we all agree that this revision of the certificates constitutes the most intensive effort ever undertaken to distinguish between legal and research items and to develop confidential medical-health sections. With the present widespread variation and uncertainty about the intent of the disclosure sections in the various State laws, and even in the model law and regulations, the States are urged to evaluate closely the meaning of their disclosure sections when revising their present certificates, so that they will not unwittingly restrict access to important legal items.

This constitutes the highlights of Workshops A and B on "Implementation of the Standard Certificates of Live Birth, Death, and Fetal Death."

Dr. GROVE. Thank you, Mr. Chancellor.

Workshop C was concerned with the subject of population surveys and health research, and the report will be given by Dr. Jacob Feldman.

Workshop C

Dr. Jacob J. Feldman, *Senior Research Associate, Department of Biostatistics, School of Public Health, Harvard University*

We had two rather heavily attended sessions, somewhat over 100 participants in each of the sessions. We did not really arrive at recommendations, as in Workshops A and B, but rather tried to share our experiences.

We divided our topic into two parts, the how and why of population surveys.

The first session was devoted to the potential uses of survey data, produced at the city, State, and national levels.

The formal presentations focused on experiences in New York City, the State of Kentucky, and the National Health Interview Survey.

The New York City Survey, which has been in existence three years, is geared not only to the data needs of the local health agencies, but is providing information to the city planning board, the Department of Labor, and other city agencies. It is anticipated that comparative data collected before and after the enactment of the Medicare legislation will provide information on the effects of this program and point up problems of supply. The data produced from the survey have proved to be an intercensal source of information on population mobility.

At the present time the State of Kentucky is attempting to obtain financial support for a State health survey through the Community Health Services grants program. In order to win the cooperation of other State agencies, much consideration was given to the possible uses of the data. It was found that the occupational health program and the State Welfare Department are in need of labor force data which could be collected in a survey. The detection and measurement of public health problems, basic to the establishment of multicounty complexes for health programs, can be accomplished through the survey method. Arrangements have been made with the Bureau of the Census to provide assistance to the State on the sample design and the training and control of interviewers.

In relation to the National Health Survey, it was pointed out that the needs and uses for data cannot always be anticipated. However, a theoretical structure of uses was outlined as follows:

(1) *Planning,* ranging from the most elementary rank-ordering of causes of morbidity to the most sophisticated cost benefits analysis.

(2) *Evaluation,* usually concerned with the effectiveness of disease controls in terms of time trends.

(3) *Administration,* for example, the use of health data for budgetary or legislative purposes.

(4) *Research,* principally in the role of suggesting research hypotheses—in other words, definitive data that are rarely obtainable in population surveys, but certain differences that could be of use in population hypotheses.

(5) *Nongovernmental,* for example, the utilization of health related topics by marketing, advertising, education, and volunteer health agencies.

It was emphasized that there is a definite need for research on how people use data, so that the interview survey can be made more relevant to the problems at hand. I believe the National Center is planning a program of research to find out just how its material is used, although it was made clear in the discussion that this is no simple matter.

A brief report was presented on an international health interview study being conducted in towns in England, Yugoslavia, and the New England section of the United States. Of particular interest is the fact that questionnaires of identical format can be administered in the three areas despite the differing cultures and mores. Also, there is an amazing similarity in the way people view their health, their reports of morbidity, and, to some extent, even the use of medical facilities.

The need for local surveys in addition to a national survey was justified by the fact that rates for certain health characteristics are affected by economic, social, and geographic differences. Utilization is a function of local availability and custom. For this reason, rates for the Nation as a whole cannot be applied to local areas. Furthermore, local surveys usually provide flexibility and feedback in contrast to the rigidity of a national survey.

A number of specific local surveys were discussed in addition to the ones that were formally presented. I will just mention one here.

The findings in the Hawaii Health Survey, a program which has been underway for approximately seven years, have led to the establishment of several State programs. For example, the unusually high prevalence of asthma-hay fever was responsible for the initiation of a program to eradicate plants producing certain irritant pollens; the high incidence of industrial injuries prompted the establishment of safety programs. The advisability of using unfilled requests for information to shape the output of data was suggested. The selling of the sample design to other agencies (a plan under consideration in New York City) was presented as a method of obtaining financial support for a survey. It was the general consensus of the group that both national and local surveys are required for the rational planning of health and medical facilities.

The objective of the second session was to discuss the essential elements in planning and conducting a health survey. This was more a how-to-do type of session.

Heavy emphasis was laid upon the importance of carefully defining survey objectives. A statement of the research problem, though difficult, represents a crucial phase of the survey. It is always important that consumers be able to spell out precisely what it is they wish to know. Dummy tables are useful in this regard. They particularize for the consumer what it is that he hopes to get and open up other questions, such as cost and sample size. Once formulated, the survey objectives should be adhered to. The temptation is always present to add a few more questions to the survey instrument. This, however, can be a real problem, particularly in terms of processing and tabulating the additional items.

Closely related to defining survey objectives is the question of survey concepts and definitions. These concepts and definitions are often dictated by considerations of what is practical and the desire to use concepts and definitions which are comparable with other data. A clear notion of the survey objectives is useful in formulating concepts and definitions, and, again, dummy tables are useful. When complete, the tables must add up to the objectives of the survey.

Under the heading of sample design and selection, it is important to know whether a survey is to be a one-time or continuous undertaking. This is important in determining whether emphasis shall be placed on levels (incidence, prevalence) during a given time period or trends over time, or the relationship of one distribution to another. Generally, large samples are used where levels are involved, and repeat visit samples are employed where trends over time are involved. However, the final decision must be based upon the specific objectives of the survey. A statistician should be brought into the survey at the earliest possible moment, even at the point where the survey objectives are being defined.

The particular research and sample design is also influenced by other considerations. Among these is the interaction between the target (the survey objectives) and what is feasible (what can be done). This boils down to reconciling the ideal aims of the survey with what the survey can realistically be expected to produce. Resources come into play here. Research and sample designs are influenced by personnel—how many and what kind (professional backgrounds) are available to work on the survey? Are interviewers and supervisors available? Equipment is also important here. Are field offices and sample lists available? Is tabulating equipment available? And with obvious implication, considerations of time and money also influence research design. Other considerations influencing research and sample design are type and length of the survey instrument, standard (sampling) error, and nonresponse rates.

It was pointed out that evaluating a total survey on the basis of its nonresponse rate is a common fallacy. We tend to forget other factors (target population, etc.) which are equally important.

Then we moved into a discussion of the design of the questionnaires. This session dealt with national techniques of conduct of surveys. Health interview survey interviewers are currently told they are to follow questionnaire wording precisely; however, future questionnaires may allow the interviewer more freedom in conducting the interview. Questionnaires should allow space for coding right on the questionnaire, and precoding is always an asset. The questionnaire was viewed as being the weak link in survey research. The literature represents an invaluable tool in determining questionnaire format and wording. An interview schedule insofar as possible should have interviewer instructions in bold type right on the schedule. This is the type of thing that was discussed. It is very general, but it gives you the flavor of the discussion.

The use of randomized assignments in measuring interviewer variance is feasible in many survey situations.

Data processing was discussed as being a major part of the survey process. It begins as soon as the questionnaires or data collection instruments come in from the field. At this point, the instruments receive preliminary editing. The importance of quality control is emphasized in this editing and processing. It was further stressed that the importance of frequent and clear communication between the content specialists and the data processing specialists cannot be overemphasized.

At the close of the session, it was suggested that interviewer bias is likely to be lower in getting factual data than in getting other types of information, such as attitudinal information. However, there is need for much research into interviewer bias and other reporting problems. Although a continuous program of evaluative studies is maintained in the National Center, it was suggested that efforts to solve some of the problems of reporting might be intensified and coordinated in the Center.

Although no definite plans were made to continue this workshop in the next biennium, the interest displayed by the large number of workshop participants attested to the success of this session and the need for further exploration of survey problems.

On behalf of the participants, I would like to thank the coordinators for arranging the session. Basically, it was their work, and I think we benefited a great deal from the amount of planning and thought they put into it.

Dr. Grove. Thank you, Dr. Feldman.

Next, we would call on Mr. Theodore Ervin to give the highlights of the Workshop on Automatic Data Processing.

Workshop D

Mr. Theodore R. Ervin, *Associate Commissioner for Administration, Michigan Department of Public Health*

Mr. Lemasson of Louisiana was codirector of this workshop, so this should be considered a joint report.

In our group discussion, we considered in some depth a series of experiences in various States and localities in the development of subsets or subsystems of the total health information system. Reports were given and discussions were developed related to the computerization of (1) traditional vital statistics and (2) quality medical services, including applications related to mental health, services for the medically indigent under title XIX of medicare, tuberculosis control, and dental health. We also gave much attention to efficiency aspects of data processing, such as the use of generalized computer programs. And, I might also say, excellent materials are available, related to these applications, and I hope you folks will have an opportunity to get copies of the material which was distributed at our workshop session.

We came up with a set of recommendations, a little different than the other workshops, reflecting the consensus of the group.

(1) We recommend that the Association of State and Territorial Health Officers and the National Center for Health Statistics vigorously promote the development of centers for health statistics, using modern technology including computer systems, on a State and/or regional basis, the type of organization depending upon the population and the needs of the various areas.

(2) We recommend that the Association of State and Territorial Health Officers and the National Center for Health Statistics use all available channels to develop increased technical consultation and training for the States and localities in this field.

(3) We recommend that the Association of State and Territorial Health Officers and the National Center for Health Statistics further emphasize and endorse the need for top-grade statistical services as essential to comprehensive health planning and services and support the provision of Federal grant funds in this area commensurate to the scope of the problem on a basis which will both sustain accelerated, effective development and embrace the optimum use of available and potential State and local resources and facilities.

(4) We recommend that the National Center for Health Statistics take leadership with the American Association for Vital Records and Public Health Statistics and the Association of State and Territorial Health Officers to establish a mechanism similar to a specialized users group of health data processors aimed to bring about the convenient exchange of information and experience in this field through the use of publications and work conferences as well as other channels, toward the end that we can gain from the experiences and software developed by others, capitalizing on subsystems which already have been designed at a cost of millions of dollars.

(5) We recommend that the National Center for Health Statistics take leadership in continuing workshops on computerization as part of this conference and in sponsoring regional training institutes which reflect the needs of the States and localities; these ongoing activities might well represent the nucleous of the organization for the users exchange group recommended under item No. 4.

(6) In view of the large-scale systems approach which appears to be in our immediate future, we also support action at a high level (such as in the office of the Secretary of Health, Education, and Welfare) toward the early establishment of some type of an efficient, individual identification numbering system on a national basis, to be used for record linkage, such as has been developed by the Social Security Administration.

These recommendations represent a consensus of our group. At one time or another, about half of the States, together with several large cities and Canada, were represented among our participants. We believe that the work group got the message of the opening session and has here provided some substantial feedback toward a real-time, on line, space-age public health system.

Dr. Grove. Thank you, Mr. Ervin.

I think Mr. Ervin also demonstrated an on-line, automated, computerized, and rapid method of presentation that shows the advantages of modern techniques.

Workshop E had two sessions, the first related to fertility statistics and the second related to perinatal mortality statistics. Mr. Arthur Campbell will report on the first session.

Workshop E

Mr. Arthur A. Campbell, *Chief, Natality Statistics Branch, Division of Vital Statistics, National Center for Health Statistics, PHS*

At the first session of the Workshop on Fertility and Perinatal Statistics, Dr. Kiser, the director of the workshop, noted that demographers have increasingly recognized the effects of changes in the age patterns of childbearing on fertility. Dr. Kiser also discussed advances in our knowledge of physiological and medical aspects of fertility and of family planning. Gaps still exist, however, in many areas, such as the relationship of fertility to health and the influence of fertility differentials on the genetic characteristics of the population.

In the second paper, I discussed the status of research on family planning variables. The most intensive study of these variables has occurred over the past 12 years during a period when fertility rates were relatively inflated by changes in the age patterns of childbearing. Now we are entering a new phase of the fertility cycle, during which it seems likely that fertility rates will be relatively depressed.

In recognition of the importance of continuing research in this area, staff members of NCHS have proposed that a fertility survey program be added to the several research resources already existing at the Center. We hope that this proposal will be approved and that the program will begin operating before the next meeting of the Public Health Conference.

Mr. Siegel of the Census Bureau discussed the two preceeding papers and gave additional information about research on fertility carried out at the Census Bureau.

Mr. Hiller, the registrar of Minnesota, described his experience with a supplement that has been added to the birth certificate in his State. This supplement contains several questions relating to fertility in addition to medical information. The largest number of objections have been directed toward the item on the date of mother's first marriage, which will be deleted. On the main part of the certificate, Minnesota requests the educational attainment of the mother. This item was reported with 95 percent completeness, which is a hopeful sign for its success when it is added to the certificates of other registration areas.

Dr. GROVE. I would like to say that we, in the Center, were very glad that Bob was willing to introduce some of these new items, particularly the educational item.

Dr. Helen Chase will give the report of the second session of this Workshop on perinatal mortality. She will be speaking for Dr. Arthur Lesser of the Children's Bureau, who is unable to be present.

Dr. Helen C. Chase, *Statistician, Office of Health Statistics Analysis, National Center for Health Statistics, PHS*

The second session of the Workshop on Fertility and Perinatal Statistics dealt primarily with perinatal mortality. Dr. Lesser directed the workshop; Dr. Jacob Yerushalmy, professor of biostatistics at the School of Public Health, University of California, discussed problems in perinatal mortality; and Mr. Glenn A. Flinchum, chief, Public Health Statistics Section, North Carolina Board of Health, reported on the activities of the Study Group on Improving Registration of Fetal Deaths.

Dr. Yerushalmy reviewed some of the statistical contributions which have been derived from the vital registration system and focused on securing more adequate data on perinatal mortality. In contrast to data derived from small studies, registration data have the advantage of permitting simultaneous cross-classification of a number of factors but for practical reasons must be limited in the number of items which may be collected. In the last three decades, changes in the statistical items obtained through the registration of births and fetal deaths and record linkage with death records have contributed to the better understanding of many factors important in determining the outcome of pregnancy. He cited record linkage as a particularly valuable research technique in the study of perinatal mortality.

Several studies were reviewed. Early research in New York State on the relationship between maternal age and the infant's birth order and survival suggested:

(1) An optimum age and birth order with regard to the survival of the infant.

(2) A direct relationship between the number of previous losses experienced by the mother and the outcome of her current pregnancy.

(3) An association between higher mortality among infants and the father's age.

Later studies have suggested that socioeconomic influences apparently are more significant in the postneonatal and early childhood periods than in the prenatal and neonatal periods.

Dr. Yerushalmy also discussed problems in measuring fetal maturity. Low birth weight, alone, has been found to be an inadequate determinant of maturity. Length of gestation is indicated on live birth and fetal death certificates. However, it is recorded inaccurately with considerable heaping at even numbers of weeks, especially at 36 and 40 weeks. The onset of the last menstrual period has been advocated as a more useful item in the determination of fetal maturity. Dr. Yerushalmy proposed a classification of maturity based on the dual criteria of birth weight and gestation and presented mortality data indicating differentials in survival using this index.

Another study based on vital records in New York City was presented to show the relationships to perinatal loss of the trimester in which prenatal care was started and the type of medical care at time of delivery. To foster a better understanding of these relationships, Dr. Yerushalmy endorsed inclusion of the following items on the standard certificates of live birth and fetal death:

(1) Number of prenatal visits, and

(2) Date and outcome of last previous pregnancy.

Mr. Glenn A. Flinchum, in reporting on the activities of the Study Group on Improving Registration of Fetal Deaths, emphasized the present inadequacies in the registration of fetal deaths. Presently, we are unable to answer such basic questions as:

(1) How big is the total problem of fetal mortality in the United States?

(2) What are the most significant causes of fetal deaths and at what gestational age do they occur?

(3) What are the differences and similarities between fetal and neonatal causes?

(4) How many of these causes are preventable?

(5) What conditions in the mother are likely to lead to a fetal death?

He indicated that more complete and accurate registration would provide answers to these questions, as well as facilitate research in problems of intrauterine growth and development and help provide for the establishment of better controls over illegal abortions.

One of the basic references of the Study Group was the 1952 report by Drs. Yerushalmy and Bierman on "Major Problems in Fetal Mortality." The Study Group pointed to the lack of effort and slow progress which had been made since then with regard to basic registration and statistical problems. The Study Group also investigated several factors influencing the completeness and accuracy of fetal death registration, including the lack of uniform registration requirements throughout the country and differences in burial practices as they relate to fetal deaths. They also noted the increasing importance of hospitals in the registration process.

The Study Group concluded that fetal death registration remains incomplete, but that the registration of all products of conception increases the registration of those 20 weeks or more. They also concluded that data for causes of fetal death should be tabulated, published, and utilized. Educational programs in the form of query programs and conferences of national groups should be exploited to promote communications about the problems and to establish national policies in this area.

The Study Group recommended required registration of all products of conception, with an abbreviated document permitted for those below a certain gestation age. The Group endorsed the change in the proposed standard certificate of live birth and fetal death from "weeks of gestation" to "first day, last menstrual period." Specifically, the Study Group recommended that the National Center for Health Statistics conduct a wide-scale study of perinatal mortality and fetal death registration in 1970 and requested that the Study Group be extended to the next biennium in order to continue its work.

Considerable discussion of many aspects of the Study Group's report followed. Dr. Alexander J. Schaffer, representing the Committee on Fetus and Newborn, American Academy of Pediatrics, endorsed the registration of fetal deaths for all periods of gestation. The concept of "superregistration" areas in contrast to nationwide registration was discussed, but it was noted that the concept has not had much support. It is perhaps more applicable to developing countries than to the United States with its present advanced registration system.

The proposed standard fetal death certificate was discussed and the suggestion made that, because of its length, the present proposal would not induce registration at the early periods of gestation. It was suggested that serious thought be given to an abbreviated certificate for fetal deaths of short gestation periods, as was recommended in the Study Group's report.

In conclusion, the workshop generally agreed that the Study Group's report was to be highly commended and that its work be continued into the next biennium.

Dr. Grove. Thank you, Helen.

The report from Workshop F, concerned with the developments in metropolitan area statistical information, will be given by Mrs. Joan E. Jacoby.

Workshop F

Mrs. Joan E. Jacoby, *Management Office, Department of General Administration, District of Columbia Government*

I would first like to extend Mr. Mindlin's apologies. He had planned to make this presentation, but is unable to be here.

This workshop was divided into two portions. The first part related to the 1970 population census activities as they will affect statistical information for metropolitan areas and also local activities. Mr. John C. Beresford, Mr. William T. Fay, and Mr. Robert B. Voight, all of the Census Bureau, made these presentations.

Mr. Beresford discussed the problems of identifying detailed geographic areas in the census of population in 1970. In the 1960 census, the geographic entity was the enumeration district (ED). From the ED, one could build up to larger areas. Block identification was not retained in the basic file of the census. However, in 1970, the block face will be the basic identification. The 1970 census will offer three possibilities:

(1) Detailed tabulations where the unit of tabulation could be as small as a block face.

(2) As in 1960, there is the possibility of special surveys based on the census enumeration; for example, a mail survey of pharmacists identified in the census.

(3) Records can be matched to the census record, as was done for the University of Chicago mortality study, 1960.

Mr. Fay described the plans for the 1970 census, which this time is to be a mail enumeration for all areas that are covered by a city postal delivery system. A computer tape is being developed containing all addresses covered by the postal delivery system. This tape can be used to mail the enumeration schedules and can also be printed out in the form of street guides. The tape will provide space for a five-digit local code to identify other local reporting districts, such as health districts, police precincts, etc. These would be coded by the local government. The accuracy of the address information in the tape will depend on local cooperation. The tape, or the printed guides, will obviously be useful to a city in coding its own records so that local information can be matched to census information for the same geographic units. There will be no coding guide for rural areas not covered by the city postal delivery system.

Mr. Voight described the New Haven project, where the 1970 census will be pretested by a mail questionnaire. They also intend to test the usefulness of census data for small areas. And they intend also to build a package of computer programs for small area data utilization.

At the second part of the session, local activities relating to health planning were considered. Dr. Tayback of the Baltimore Health Department noted that projects such as the census pretest in New Haven do not solve the immediate problems of health services. Planning programs in a health department must be dynamic, and information systems must be flexible. Current census data are needed in planning programs. The Great Society's legislation has now exceeded the ability to run programs. Health departments are called upon to do immense jobs quickly with little information available. The answer is a survey mechanism in the hands of the health authority to obtain this information.

Mr. Mindlin gave the final report, which was a discussion of data banks. He defined a data bank as a computerized repository of information from diverse sources, plus the various programs necessary to utilize the information.

He described several different kinds of data banks as follows:

(1) *Real property data bank.*—The basic record is a parcel or lot and consists of information about its physical characteristics—tax status, land use, size, value, various characteristics about the structure, etc.

(2) *Geographic data bank.*—The basic record is also the parcel or lot, but the information is social presence of a person or family in various governmental programs—a juvenile delinquent, a crime, a relocatee, etc.—identified by address.

(3) *Person data bank.*—The basic record is a person and consists of information about him as obtained from various official sources.

(4) *Family data bank.*—The basic record is a family.

Local geographic, person, or family data banks do not yet exist, although primitive person banks should develop rapidly in the immediate future as a result of the medicare legislation.

The present successfully operating data banks deal with real property, and all of them extract information from present operating procedures, computerize it, and manipulate it as a separate operation. They do not make fundamental revisions of the existing daily operating procedures. The creation of such a bank can be large scale, as in Alexandria (Va.), or step by step, as in the District of Columbia. The District of Columbia started by computerizing the entire assessment records. It has proven a wonderfully useful management tool, valuable as a sampling for surveys, for geographical discussion of services, and used for urban renewal, transportation, planning agencies, etc.

In the case of person and family social data banks, we run into two sizable technical problems. The first is matching records, and the second is confidentiality. These still are being faced and are yet to be solved.

Dr. GROVE. Thank you, Mrs. Jacoby.

Mrs. Maryland Pennell will report the highlights of the Workshop on Health Manpower Statistics.

Workshop G

Mrs. Maryland Y. Pennell, *Chief, Health Manpower Statistics Branch, National Center for Health Statistics, PHS*

Dr. William Kissick, Division of Public Health Methods, served as the workshop director and discussed the health manpower requirements of the Federal Government. Existing health manpower studies have shown insufficient information to meet the needs for program planning and budgeting. In view of recent legislation, mammoth investments will be made that will require quantitative and qualitative assessments of our health manpower resources.

The National Center for Health Statistics now has responsibility for health manpower statistics on numbers, distribution, and characteristics of some 100 to 200 health occupations and professions.

The sources of health manpower statistics are related to:

(1) Academic degree and educational level,
(2) State license or work permit,
(3) Certification or registration boards,
(4) Association memberships,
(5) Place of employment,
(6) Decennial census, and
(7) Identification of individuals through other means, such as telephone books, city directories, and mailing lists.

We actually use all of these sources at the present time.

The National Center currently has two contracts in the manpower field. Through the Council of State Governments, we are trying to obtain information on each of the 28 occupations and professions in the health field for which licenses are required by State governments. The questionnaire solicits information on policies and practices of the boards, examination procedures, periods of renewal, and so forth, as well as number of licenses in effect.

The National Center also has a contract with the National Association of Boards of Pharmacy to obtain information on each of 125,000 pharmacists at the time of renewal of licenses. A total of about 180,000 State licenses are in effect throughout the Nation.

The Division of Nursing, PHS, has obtained information through State licensing agencies since 1950. The 1962 survey, financed by the Public Health Service, obtained information on questionnaires attached to the renewal notice of about 1 million licenses. These licenses represent about 550,000 active professional nurses and about 300,000 inactive R.N.'s. The licensing mechanism, of course, does not provide information on the additional 200,000 to 300,000 inactive nurses not currently licensed.

The Division of Nursing has for many years conducted a study of public health nurses employed by public health agencies. One of the newer studies of nursing personnel uses the cohort approach to follow 12,000 nursing students graduated in the class of 1962. The study is being repeated for the class of 1965.

Dr. Donald Johnson, Division of Dental Health, PHS, reported a successful first endeavor to obtain information on dentists through State licenses, with data already back from about 20 States. A similar study for dental hygienists is in the planning stages. In both instances, tabulations of health manpower will be made available to interested State agencies. Neither dental laboratory technicians nor dental assistants are licensed. Hence this system of collection of manpower data cannot be used.

Dr. Franklin Yoder, Illinois Department of Public Health, spoke of the responsibilities of State health departments to provide adequate manpower information. Planning within the State should consider the need for statistics below the county level (including census tracts). The new legislation, proposed in Senate bill 3008, when passed, should help the States strengthen their organization.

Mr. David Hoover, Division of Community Health Services, PHS, emphasized that the objective of collecting statistics is to manage or control manpower. We need to make good use of our present information; to standardize nomenclature and methods; and to collect better information on location, function, qualifications, and demands for services.

In summary, commensurate with health manpower information requirements, we need cooperation between State and local agencies and the Federal Government. State agencies have an obvious stake in the delivery of health services and must share responsibility for such endeavors as data collection, analysis of findings, and support of manpower activities.

Dr. GROVE. Thank you, Maryland.

Mr. Deane L. Huxtable will tell us about the Workshop on Record Linkage.

Workshop H

Mr. Deane L. Huxtable, *State Registrar and Director, Bureau of Vital Records and Health Statistics, Virginia Department of Health*

Suggestions for reinstituting a study on record linkage grew out of the recognized need to better relate vital records to each other and to interrelate them to other types of records. Discussions at the 10th National Meeting of the Public Health Conference on Records and Statistics and a request by the Association of State and Territorial Health Officers' Committee on Research and Planning led to passage of a recommendation by the ASTHO that the Surgeon General request the National Center for Health Statistics to initiate a study of linked vital statistical data. To implement this, the Study Group on Record Linkage was established in the program of the Public Health Conference on Records and Statistics.

At the record linkage workshop held Tuesday afternoon, opening remarks by Mr. Saybolt, chairman of the Study Group on Record Linkage, were followed by an overview by Dr. Halbert Dunn, a progress report by Dr. Sagen, and a number of reports on medical research, patient care, and administrative uses of record linkage.

It was pointed out that 25 years ago there was tremendous interest in the possibilities of national registration. The need for personal identification during World War II was so great that the vital records system nearly broke down. The President appointed a Commission on Vital Records to determine if a national registration system for personal identity was needed. The Commission recommended waiting until peace time for a national registration system, unless it could be demonstrated that such a system was needed for military purposes. At that time, the idea of a national registration system was a "hot potato." It would cost millions of dollars and require the services of at least 30,000 people. Some persons now feel that the time has come when another commission of presidential order should be set up to determine the present need for a registration number. Public acceptance is much closer than ever before. There is a general realization that identification of people is important. An identity number is the key, and there ought to be one unique number.

A national registration system would make it possible for us to settle questions we just toy with now. Death clearance would be of tremendous value. Population registers could be set up to tie in with census records. Small area statistics could be brought up to higher standards. As an experimental project, a population center could be created for small areas to keep census figures up to date, accounting for migration in and out of specific areas.

It has been suggested that we ask that plan IV of the report of the Commission on Vital Records be declassified, released, and made available to the public. It was necessary to keep these recommendations secret during the war because of strong opposition to the concept of national registration. It was associated with totalitarian tactics. People do not like the "Big Brother" idea of being watched from birth to death. We will get further with a registration number if we divorce record linkage from the data bank concept. There is now no doubt that the data banks are mechanically feasible. The question is whether they are judiciously in the interest of the people. Record linkage is simply the capacity to go from one record to another with minimum expense. A unique number would not be an invasion of privacy. It is a way of positively identifying ourselves.

The social security number has become nearly a universal identification number. Internal Revenue and banks use it. Some States use it to identify students. With number and name, positive identification is possible. The question is: What are we going to do in vital records?

Comments from the floor, as well as reports to the workshop, made clear that record linkage is well recognized as a complicated problem which will take top-level thinking. The Welfare Administration has been working with the Social Security Administration on the problem of linking family records. Maryland has a statewide psychiatric register and has developed a system of record matching which works quite well and is of tremendous benefit in longitudinal studies.

The American Association of Medical Record Librarians advocates universal health and vital record linkage. It feels an all-encompassing system is needed for health information, with national responsibility for output.

A project in Minnesota was developed to describe the history of the community over the last 30 years. They have obtained almost complete coverage, with the overwhelming majority of records coming from the Mayo Clinic. They have access to birth and death records and hope to have, among other studies, a study on cancer with 100 percent followup.

The Commission on Professional and Hospital Activities in Michigan feels the need for a number to link people together. There is no way of discovering people in mass data. Individuals cannot be traced. These problems of record linkage are not of a technical nature. The problems are on a social, ethical, economic, and political level.

At the University of Rochester, where studies are concerned with trying to get medical care to people who need it, record linkage would be of enormous value. The validity of self-reporting in surveys is of very low order and could be validated by record linkage.

Internal Revenue is using the social security number in tax administration. IRS now has a successful system which involved legislation and the cooperation of Social Security and the taxpaying public. It would find a national death index useful in avoiding issuance of delinquent tax notices to the deceased (something for which IRS receives public criticism), in giving notice about filing requirements to the administrator of affairs of the deceased, eliminating multiple filing for refunds, and checking for change in marital status. IRS feels potential benefits justify continued efforts to move the study forward.

The Social Security Administration has strong uses for a death and marriage clearance system in avoiding unwarranted payments. Social Security is now willing to discuss the problems involved in time of number assignment and composition of the number.

The Canadian experience with record linkage first proved the technical feasibility of computerized record-linkage operations; second, it attached quantitative weights in discriminating powers of particulars on combinations of items that were used in distinguishing genuine or spurious matches; and, third, it yielded indications of the kinds of scientific information that can be extracted. However, it was cautioned that any such system must have carefully laid plans.

In Alaska, they are undertaking application of social security number through the hospital. This birth number is used for immunization control, and the Indian health program will use it for health services.

In subsequent discussions, the questions of confidentiality of records and the protection of personal rights were discussed. It is recognized that the present plans for a record-linkage system, insofar as they have been developed to date, do not contemplate the release of personal information in other than those critical areas already established for research purposes or for establishing individual rights. This is not, and never is it intended, to be a police state function but rather a systematic and coordinated method for a linked recordkeeping system in the United States.

The overwhelming opinion of the workshop is that record linkage is extremely desirable, and by the use of modern recordkeeping facilities and computer techniques it would be entirely feasible, although a substantial financial involvement would be required.

When asked for an indication of opinion, the participants of the workshop voted overwhelmingly in favor of continuing as a Conference activity a study group on record linkage.

Dr. Grove. Thank you. Mr. Huxtable has informed me that the American Association for Vital Records and Public Health Statistics, at its meeting yesterday, took positive action which would pledge its members to use a unique birth number, beginning January 1, 1967. A number of States have been using a unique number for some years, but others have not. Apparently, the Association decided to give its own official impetus to this, which is, related both to having a unique identification number and its use in record linkage.

Dr. Monroe Lerner will report on the Workshop on Medical Care Statistics, which you will remember was intended to followup in detail the subject as discussed in the general session on Wednesday morning.

Workshop I

Dr. Monroe Lerner, *Division of Medical Care and Hospitals, School of Hygiene and Public Health, The Johns Hopkins University.*

Mr. Shapiro was cochairman of this session, and, consequently, this is a joint report.

Three major implications, drawn from the general session on medical care statistics, served as the keynote for the workshop.

(1) The role of the Federal Government in the provision of health care services has expanded greatly in recent years, particularly during 1965 and 1966.

(2) The Federal-State partnership concept, basic to this Nation's governmental system, implies that the role of the States in this regard will also be expanded considerably. This means that the statistical offices will face greatly expanded responsibilities for evaluation and planning of medical care programs.

(3) With some very significant, but few, exceptions, these statistical offices have previously confined their activities to the area of vital statistics and other concerns more limited than those which will now be required of them. It is hoped that they will be able to meet these new challenges, and the workshop sessions were intended to open this area and provide some background for this purpose. The sessions focused mainly on problems under the medicare legislation, including both titles XVIII and XIX.

A report of the Study Group on Evaluation of Nonhospital Care Programs for the Chronically Ill and Aged was presented. Its objectives were:

(1) To determine what programs, along these lines, were being carried out in State health departments,

(2) To determine the evaluation procedures being carried out in relation to these programs, and

(3) To suggest procedures for evaluating programs being carried on.

A questionnaire was pretested in three States, and a limited number of nonhospital care programs were studied by this group. Their principal finding was that very little evaluation was being done by the States.

As background for participants in the workshop, general medical care statistics available from the National Center for Health Statistics were reviewed and described. This was followed by a description and review of the medical care statistics available from other national sources.

Canada's experience in medical care statistics has been similar to that presently faced in the United States. The basic problems in Canada involve coordination, evaluation, and standardization or comparability.

With regard to the Social Security Amendments of 1965, Title XVIII, information will be collected from completed applications for certification by provider institutions. These data may be linked to the data from hospital bills and will furnish information about where people receive services in relation to where they live.

Although most of the data from this program will be on a 100-percent basis, a 20-percent sample of claims for coding diagnoses and surgical procedures and a 5-percent sample of total beneficiaries will be used. There may be an overlap in beneficiaries in the samples from parts A and B. Statistical reports from the program will be prepared as soon as data become available. The earliest reports will be based on receipted pay claims and interview forms.

In coding diagnoses, the new ICD list will be used along with a new procedures code developed by the AMA. For hospitalization, the principal diagnosis will be determined from the face sheet of the hospital record. All diagnoses will be coded. The form completed by the physician asks for the nature of illness or injury requiring services or supplies. It is anticipated that one diagnosis will be entered, and therefore only one diagnosis will be coded.

Selection of the principal diagnosis from the hospital form will be a problem, as will be questionable diagnoses. Also, diagnoses may not agree on the hospital and physician forms. It is not known at this point whether the forms used in title XVIII and title XIX will be similar. The advantage of having similar forms would be in the ability to mesh data from the two programs. Coordination among Federal programs producing medical care statistics is needed.

In our second session, the implications of new developments in social policy in the health field were discussed. The new medicare legislation embodies three sets of concepts related to the organization and financing of health care which, because they are in fundamental conflict, cannot coexist for a very long period of time.

Part A, under title XVIII, is based on the social security concept, using a payroll tax. It provides a very high level of hospital and extended care facility benefits to the aged as a matter of right.

Part B provides for voluntary participation by the aged in a national medical insurance program, sponsored by the Federal Government and with the Congress expected to underwrite any deficits that may arise. It will be administered through the private sector, largely by Blue Shield, a physician-sponsored agency. It adopts two control devices long used by the commercial insurance industry, deductibles and co-insurance. It recognizes the fee-for-service principle and provides virtually unlimited free choice of physician.

Title XIX provides a very high level of comprehensive medical care for the medically indigent aged and for other disadvantaged groups. The States will administer this program, but will have to meet very high Federal standards.

The role of the statisticians, crucial in this context, will be to provide data for the community to weigh the relative merits of these three approaches.

Some statistical aspects of title XIX were discussed. The programs put into effect by the States must contain a system for evaluation of quality, and evaluation programs must have their origin as close as possible to the provision of services. Also, the States must study the impact of the program on hospitals, both as to financing and construction; on teaching facilities; and on the utilization of manpower. Complications will arise because, under title XIX, 54 jurisdictions with varying standards will be involved. This is in contradistinction to title XVIII which will be administered essentially through one central agency.

The Welfare Administration, as well as other interested parties, would like to know how well services under title XVIII and title XIX jibe with each other, and how well the deductibles and co-insurance features under title XVIII work. While the Welfare Administration would like to encourage use of the same forms and concepts in the statistical data provided under titles XVIII and XIX, this cannot be legally required. Record-linkage systems should be developed.

We also discussed what Baltimore is doing in its program for evaluation of quality of care in title XIX. In a way, local communities have almost been left out of this program, but this is one indication of how they can participate and, hopefully, very effectively.

Baltimore proposes to evaluate the quality and quantity of medical care under title XIX, under three major lines:

(1) Industrial quality control—this sets up relatively gross quantitative criteria for utilization of services of all types. Where these criteria are not met, medical audits are called for with subsequent referral, if indicated, to an appropriate professional body. This program is aimed at both the provider and the patient.

(2) Evaluation of patient management—this method sets up criteria for certain diagnoses, where concepts of patient management are fairly commonly accepted.

(3) Household interview—this is aimed at attitudes of the patients toward use of services, satisfaction with the services, etc.

Dr. GROVE. Thank you, Dr. Lerner.

Next, Mr. Robert Hiller will give the report on Workshop J.

Workshop J

Mr. Robert W. Hiller, *Chief, Section of Vital Statistics, Division of Administrative Services, Minnesota Department of Health*

This workshop was essentially a continuation of the activities of the Conference Study Group on Field Experiments in Vital Records Improvement, established following the 1964 Conference.

The charge to the Study Group was:

(1) To describe areas of needed research,

(2) Develop protocols for a series of controlled experiments, perhaps using experimental and control registration districts to test different methods of improving the quality of data,

(3) Explore with various States the possibility of undertaking recommended experiments or some modification of these,

(4) Review and help to improve applications for research grants in this area, and

(5) Assist the interested States in bringing research proposals to the attention of the authorities.

The activities of the Study Group to stimulate developmental and evaluative studies in vital statistics methods were described. The basic consideration back of this Study Group was the need to know how effectively the vital statistics system is working. Its activities included:

(1) Determining what research is being done in vital statistics,

(2) Encouraging new projects,

(3) Determining the type of studies needed, and

(4) Acting as a middle-man between granting authorities and State and local health departments.

A variety of research projects in vital statistics were described in the two sessions. These included both projects underway and those under consideration.

Studies discussed in the first session included a Minnesota study on birth record supplements; a California study relating to family dynamics, which includes record linkage, marriage, divorce records; a study in Iowa relating to the completeness of reporting information on congenital malformations on the birth certificates; a study in Kentucky involving the field testing of standard certificates; a New York City study on automatic data input, in which paper tape is made at the hospital at the time the birth certificate is being prepared; and a variety of epidemiological studies using vital statistics, either as an end point or a starting point.

During the second session, a number of studies under consideration, or having been proposed, were discussed, including a study in Baltimore on death certification practices, and a Kansas study which among other things matched a birth record to a State census record as a check on the accuracy of information on residence; a study in Missouri involving death registration completeness and the use of burial permits; and a study under consideration in Oklahoma, which would use birth certificates as a sampling frame for morbidity studies.

We also had a report on an investigation of the meaning of certain medical terms reported on death certificates, a study conducted by the National Center. It was the consensus of the workshop that this particular study should certainly be continued.

A great deal of interest in the projects described and method of developing studies was expressed in the discussion. The consensus of the workshop was to continue the Study Group for the next 2 years. It was suggested that the activities of the Study Group should emphasize the development of guidelines for research projects, the publication of working papers on the areas needing research, and methods for the development of joint projects between the health departments and universities. While it was suggested that universities might initiate research projects and be responsible for their development in cooperation with the State or local health departments, it was the group's consensus that in most instances it would be best for research projects to be initiated by State and local health departments with the university staff acting as consultants.

The long-range objective is the improvement of the vital statistics system. The immediate need is for research into current operations and the development of improved methods. The consensus of the workshop was that while a start had been made in focusing attention on these requirements, much remains to be done in removing the obstacles to these developments.

Dr. Grove. Thank you, Mr. Hiller.

The next report is on the Marriage Registration Workshop and will be given by Mr. Leo Ozier.

Workshop K

Mr. Leo A. Ozier, *Deputy State Registrar, Bureau of Statistics, Illinois Department of Public Health*

The marriage registration workshop was opened by reviewing recent growth in the marriage registration area. It was pointed out that three States and New York City have entered the marriage registration area for 1964 and 1965, making a total of six States and two cities added in the past 7 years.

Several directors of vital statistics in the States described advances made in registering marriages.

Mr. W. D. Carroll, of Texas, after two earlier unsuccessful attempts, obtained a law authorizing a State file and a standardized license application form. The form includes key items of data (age, etc.) except for information on previous marriages. He expects reporting to be almost 100 percent complete for 1966.

Mr. Katz, City Clerk of New York City, described how his office arranged to report records for the City of New York to the NCHS and the provisions in their recordkeeping system for preserving confidentiality of data for all but a few identifying items.

Mr. Paul Shanks of West Virginia emphasized the steps taken to educate local registration officials and gain support through their association for a new and more adequate reporting form needed to qualify his State for the MRA.

Mr. James Porter and Mr. Loren Chancellor summarized improvements in Arkansas, including the securing of a fee system for financing marriage registration.

Mr. John Sullivan of Nevada expressed his confidence that legislation authorizing State registration of marriages and divorces will be enacted in 1968.

Dr. Grove of the NCHS opened discussion on the proposed standard certificate of marriage by indicating that it is being prepared for printing and is expected to be ready at the same time as the other standard certificates.

Dr. Yoder, Health Commissioner of Illinois, foresaw several uses in health department programs for marriage records and statistics recently developed in Illinois, especially in maternal and child health program activities.

Dr. Paul Glick of the Census Bureau illustrated gaps in census data about marital statuses of persons of different education levels which could be filled by education data from marriage records.

Dr. Hugh Carter indicated the interest of the Family Law Section of the American Bar Association, the National Council on Family Relations, and the American Sociological Association in supporting improved registration.

Mr. Chancellor indicated he expects to use regular meetings and other contacts with Iowa's local clerks to explain the new standard certificates to them.

Mr. C. R. Council described a new booklet on "Marriage and Divorce Registration in the United States" available for promoting understanding of marriage registration among State and local officials and other interested groups.

Discussion in the workshop focused on a few main issues or problems. No resolutions or recommendations were adopted, however.

The main areas of interest and expressions of opinion were:

(1) While seeking to promote entrance into the MRA and the acceptance of the standard certificate, the NCHS should maintain a flexible attitude so that the differences in State laws and the problems in local registration will not bar acceptance of a State into the MRA.

(2) A greater effort must be made to create confidence and cooperation among the officials performing the marriage, county clerks, and local civic organizations whose support can be invaluable.

(3) The importance of maintaining not just complete information, but also a high quality of data among participating States should be emphasized.

(4) There is a great need for materials such as "Marriage and Divorce Registration in the United States," issued by the National Center for Health Statistics, which are designed to aid State people in explaining to professional and lay associates why certain improvements are needed. The cooperation of professional associations, such as the American Bar Association, the National Council on Family Relations, and the American Sociological Association is also needed.

(5) The question whether data on education or on occupation of the bride and groom were more essential was debated without conclusive results.

(6) Brief mention was made of the possibility of better using the information on vital records to measure the health characteristics of the American people, on the need to bring the wording of the marriage certificate in line with the other vital certificates, and on the need to require the registration of all persons authorized to perform a marriage.

In summing up the workshop, participants stressed the need to educate the public on the importance of the data on the marriage certificate for the statistical needs of all of the users, including the National Center, and to carry this on within the existing framework of each State.

Dr. GROVE. Thank you, Mr. Ozier.

Dr. Richard Remington will report on the workshop that dealt with the subject of careers in health statistics.

Workshop L

Dr. Richard D. Remington, *Professor, Department of Biostatistics, School of Public Health, University of Michigan*

The Study Group on Student Training and Staff Development met once during the past biennium and confirmed the proposal of the 1962–64 Study Group calling for the establishment of a center for the expansion and collation of efforts in delivering knowledge of statistics applied in the field of health. The 1964–66 Study Group report noted that anticipated increased needs for health statisticians were fast becoming a reality with new demands for more services; that S. 3008 may accomplish, in part, the Group's recommendations for solving the problems of staff exchange and recruitment; and that NCHS should administer the proposed health statistics training center and serve all in the field.

S. 3008 will facilitate staff exchange between Federal-State agencies for work related to health since fringe benefits are protected and competitive civil service requirements waived. The result will not only be an exchange of experience, but also will enhance individual career development. In fiscal

1968, NCHS may begin a series of courses of varying lengths tailored to the needs of State programs.

A survey of curricula in biostatistics in the United States, sponsored by the section on training of the American Statistical Association, shows that degree program requirements vary widely, with some programs similar to those for full mathematical statistical majors, others geared to training statistical members of biological research teams, and still others providing strong emphasis on demography and public health statistics. It was recommended that the findings and implications of this survey be studied during the next 2 years.

Computers are beginning to play an important role in biostatistical training. The preparation of personal packages of statistical programs by the individual biostatistics student provides direct experience, as well as useful materials, for later application on the job. The computer as a teaching aid multiplies the effectiveness of the teacher and provides the student a new kind of individual attention and opportunity for basic instruction, as well as reinforcement and feedback. Computer assisted instruction using remote terminal devices, time-sharing system, and conversational computer languages promises to be an important development for the preparation of all health personnel for course units in statistics, as well as other areas.

A report of the AAVRPHS statistics survey of 1964 does not delineate unmet needs as clearly as it was assumed it would, although many of the problems discussed did relate directly to lack of funds. Some surprising findings include:

(1) Statisticians' salaries have increased over time at about the same rate as those of other health workers in State offices.

(2) Average educational attainment is higher than that which the positions require.

(3) General registration activities budget and staffing needs appear to be more adequately met than those activities of a statistical nature.

Revisions of curricula in two schools of public health were reported. One is going into a four-track structure of a master's degree. These are: Vital statistics and registration at State and local levels, biometry, demography, and mental health statistics. These are four individual programs in effect. The other is emphasizing training directed at planning local health programs, rather than analysis or evaluation.

Discussion brought out that S. 3008 appears to cover staff exchange of employees of State universities and provides grant programs. The grants are especially important since a recent policy change limiting NIH biometry grants to full-time doctoral level study may threaten the graduate summer session in biostatistics. (I will have more to say about that in a minute.)

Adequate budget, staffing, and provision for inservice training were considered to be the key components to recruitment techniques employed by NCHS, State and city offices, and schools of public health. Sources for recruitment include high schools, small undergraduate schools, specialized graduate schools, summer employment, summer training, correspondence, and contacts through alumni. It was suggested that NCHS consider sponsoring a 3-month summer session for undergraduate students as summer employment and as a means to interest them in the field.

The role of the public health statistician in various professions was discussed. The health administrator, whether on a national or local level, needs more study and analysis of data already available to get rate and trend information needed for long-range planning. Concern was expressed that the programs planned for NCHS and changed curriculums in the schools of public health may be too little and too late—that the universities stress training and research, but minimize service, even though other public health professions need statisticians trained primarily for service. Changes in FDA regulations and advances in technology in the pharmaceutical industry, too, have increased the need for more and better trained medical statisticians.

A consensus of the workshop agreed that a study group devoted to recruitment and training of statisticians in health statistics and registration should be formed for the next biennium. Suggestions for the specific charge to that group and membership should be submitted directly to Dr. Sagen.

Over the last 10 years, NIH biometry training grants have been one of the leading producers of professional statisticians in our field. I think you should be aware of certain administrative changes that have taken place recently in the regulations governing these training grants.

First of all, there is a change in the stipend ceiling level. A new ceiling on all predoctoral training has been established by NIH, which is lower than the levels currently being paid many students in these programs—lower than stipend levels for similarly qualified students in other training programs supported by the Public Health Service.

You should also be aware that training to a terminal master's degree is no longer to be supported by NIH biometry training grants but the support must lead directly to the doctoral program. This means that several institutions which do not have doctoral programs, but train only at the master's level, will either presumably cease to exist or produce statisticians, or will have to seek support from other sources.

In addition, an administrative change has been made which indicates that all future support of trainees in this program shall be for full-time study—defined to be a full load for two full academic terms per year. This means for example that tuition-only support as a provisionary or recruiting device is no longer feasible, and it means that the graduate summer session in public health statistics, which has been supported from this source, may be discontinued or may have to receive funding from other sources.

I hate to end this report on a pessimistic note, but it is a pessimistic time.

Dr. Grove: Thank you, Dr. Remington.

Mr. Wilson, our next speaker, is going to tell us about the Workshop on Divorce Registration.

Workshop M

Mr. John C. Wilson, *State Registrar, Montana Board of Health*

The Workshop on Divorce Registration revealed that a greater effort is needed to further improve the accuracy and completeness of reporting. At present, only 22 States plus the Virgin Islands make up the divorce registration area (DRA) and only 6 of these 22 States report age and previous marital status.

California has a unique divorce reporting system. A three-part record is furnished by the attorney for the plaintiff when the initial complaint is filed. This system offers some exciting possibilities for collecting and analyzing the statistical data on marital dissolution, from the time an action is filed until it is either dismissed or becomes final.

Mr. Shipley of California raised a question about confidentiality of information collected from divorce certificates. He stressed the need to enact legislation which would insure the confidentiality of the data collected. In order to insure complete and accurate reporting of information for divorce records, the parties involved have to be assured that data provided in connection with this traumatic event will not be made public, except as authorized by the legislation.

Dr. Glick, from the Census Bureau, discussed a study of 5,600 divorces that attempted to describe the characteristics of divorced people and investigate possible relationships between divorced groups and other population groups. Dr. Glick felt that additional information related to divorce will be asked during the 1970 census, and expressed hope that the research aspects of the divorce certificates data will be better utilized.

Dr. Rosenberg, representing the National Institute of Mental Health, discussed a paper which suggests that there is a definite relationship between alcoholism and divorce, and he felt that this area is open for, and in need of, further research.

Finally, there are several States which may soon meet the requirements for admission to the divorce registration area, and the future looks more promising than it has for many years.

Thank you.

Dr. Grove. The final report is on a special session held yesterday afternoon on the subject of statistics for metropolitan areas, with particular emphasis, of course, on health statistics.

The report will be given by the chairman of that session, Mr. Todd Frazier.

Special Session

Mr. Todd M. Frazier, *Chief, Planning, Research and Statistics Division, District of Columbia Department of Public Health*

This special session undertook to focus attention on the challenge to health statistical programs in the metropolitan areas.

How should central city or metropolitan county health departments modify their statistical programs?

What should be the added content?

Who is to do what among the assortment of agencies in the metropolitan area, the State, and beyond?

What can be anticipated and what should be the role, responsibility, and impact of the Federal Government, particularly in view of the likely passage of S. 3008—the Comprehensive Health Planning and Public Health Services Amendments of

1966—the implementation of the Planning-Programing-Budgeting System required of the Federal agencies by the Bureau of the Budget?

Dr. Herbert Domke, director of the Allegheny County (Pennsylvania) Health Department, presented statistical program needs for health appraisal of the U.S. metropolitan areas. He pointed to the publishing of selected mortality data for 201 standard metropolitan statistical areas (SMSA) by the National Center for Health Statistics as the setting of a major landmark for urban public health. He emphasized that the political boundary line system, as the basis for depicting the health status and needs of the urban America, has become progressively inaccurate; the biostatistician, the epidemiologist, and other health professionals must look at the whole picture of the American urban community.

Dr. Domke reviewed selected results of the 1963 health data series by SMSA's, pointing out that substantial methodological problems existed in measuring health and disease, both in defining the area and in describing the kind of health index to use.

Dr. Domke closed by pointing out that community health data suggests and leads to action and that better data will provide a sound foundation of fact upon which to build programs for improved metropolitan-wide services.

Mr. James B. Swayne, chief, public health records and statistics, Los Angeles County Health Department, emphasized his problems in terms of:

(1) Lack of adequate Federal and State support, both in terms of program development and fiscal support;

(2) Lack of access to adequate statistical consultation from the State level;

(3) Lack of intergovernmental coordination between Federal, State, and local programs; and

(4) Lack of adequate training programs and facilities for local program personnel.

He also pointed out that the many varied categories of project grants tend to weaken the needed data collection effort, especially where specifications and requirements are changed without respect for the local program. He expresseed the hope that S. 3008 may bring relief here.

Dr. Mildred B. Kantor, director of vital statistics, St. Louis County (Mo.) Health Department, emphasized the importance of comprehending the broader demographic and social science purposes in developing the metropolitan areas statistical program. She described the needs for this program in terms of good population base data of all kinds; development and improvement of health department recording and reporting systems for service statistics; and the development of research and studies of special health problems, including social as well as disease and medical elements.

Dr. Kantor briefly described the "population laboratory" sponsored by two St. Louis universities and the city and county health departments as an example of SMSA cooperation in health statistics programs.

Mr. Robert A. Israel, now with the NCHS and until recently chief, Division of Statistical Research and Records, Maryland State Department of Health, spoke out of his experience as a State official. He stressed the desirability for blurring or erasing psychological, as well as the many political boundaries in order to provide the needed statistical services in metropolitan areas. The psychological barriers of convention and resistance to change that have grown up through the years must be overcome. New approaches—new descriptors and denominators—are called for in order that timely, accurate, and comprehensive methods are brought to bear. We must not lean on decennial data, but rather develop and apply survey techniques to allow us to be responsive to the changing problems within the scope of our responsibilities. Health statisticians must be flexible in attacking the problems at hand and step forward to display leadership in planning and programing in the health field.

Mr. James F. King, Jr., of the Division of Public Health Methods, briefly described the provisions of S. 3008. In this bill, there is provision for:

(1) Formula grants for planning through State health planning agencies;

(2) A 5-year formula grants program for flexible support of comprehensive public health services; and

(3) A 5-year project grants program for health services development. Other provisions allow interchange of Federal and State health personnel and training for State and local program staff.

The key provisions for statistical programs are those for flexibility in the planning and development of services. Mr. king pointed out that this type of program will give statisticians increased support and responsibility in program planning and decision-making, and they should seize the opportunity presented for a leadership role.

Mr. James E. Miller of the PHS Division of Indian Health reviewed the statistical technique for health program priority determination developed and used in his program to meet the needs of the planning and programing budgeting system, PPBS.

The steps in program planning require:

(1) Identifying the health problem;

(2) Setting the health objective;

(3) Developing the alternative plans of action; and

(4) Implementing and evaluating the selected plan.

Mr. Miller described the Q index, or the health problem priority index system, as a method for combining measures of mortality and morbidity utilizing the common denominator system.

The discussion that followed brought out that new types of information to be used in systems like PPBS, Q, etc., will be increasingly called for in setting goals, developing means to achieve goals, and measuring achievement. The role of the statistician as a planner—whether the statistician must become more of a public health analyst or program specialist—was debated.

The sense of the discussion pointed to the need and desirability for a study group on research in the improvement of useful health statistics for metropolitan areas.

Dr. GROVE. Thank you, Mr. Frazier.

I must say that, in introducing the next item on our agenda, I am a little bit surprised. Dr. Linder was my first boss in the Federal Government and one of his many wise principles was, "Never say in a report that you will come out with another report later on, because you may never do it."

This, I have found by experience, is very good advice. It is dangerous to say what you are going to do some time in the future.

Nevertheless, some very skillful persuader has induced Dr. Linder to speak on the subject of what is to come in health statistics.

Sneak Preview: What's To Come in Health Statistics

Dr. Forrest E. Linder, *Director, National Center for Health Statistics, U.S. Public Health Service*

Dr. Grove, I have to admit that I made a serious mistake in ever agreeing to have this particular title put in the program, because it does violate the principle that you mentioned, which has been one I have expounded many times: "Do not promise people what you are going to do. until you are ready to do it."

Also, I think it is perhaps the most misnamed topic which has been on the program this week: "Sneak Preview—What's To Come in Health Statistics." All this week, in my opinion, has been a preview of what is to come in health statistics. The whole conference has scooped any possible remarks I could make on what the future of this particular profession is to be.

We have talked about computers, data banks, linked information systems, new certificates, new handbooks, revised international classification of diseases, revised international classification of diseases adapted (for hospital purposes), multiple-cause tabulations, health resources statistics, medical care statistics, health-manpower statistics, population measurements, fertility statistics, marriage and divorce registration, record linkage, longitudinal studies, methodological studies, local area statistics, State health surveys, training, recruitment, career development.

It almost makes you dizzy just to think of the topics we have been discussing here during this week. I can't imagine what there is left to give a "sneak preview" about. All that is left is to go back and summarize all of the points that have been made about these numerous items that have been discussed. But I am not going to do this. I am not going to try to give a "sneak preview," or to try to tell you what I think is really to come in health statistics.

Instead, I would like to make one or two observations on what I think is the meaning back of the discussions that we have engaged in around these topics. What are the points that underlie them? The points themselves are the symptoms. What are the underlying points that these symptoms are indicating?

I think the first thing I might mention is that the discussions this week have stressed the fact that the era of planning in public health is now with us. We have heard planning, and budget planning, and program planning, and all kinds of planning, but this, at this point, is now an accepted fact. And it is going to demand of the statistician, as has been said many times this week, the production of much more hard data than we have had in the past.

But it also offers the statistician the big chance to move from the backroom to the frontroom of the public health organization. If we have the initiative and

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the foresight and the ability to seize this planning opportunity that is now confronting the health organizations of this country, we will be able to do an immense amount to increase the prestige and the status, and the qualifications, and the salary of the State health statisticians.

This planning, however, is not just analysis. It is going to require that you look ahead into the future and be able to tell what is coming in health department programs, not just what is coming in health statistics. And, here, I have a lot of faith that we ought to start working with the concepts of model building in public health organizations and in public health statistics.

I believe that the technique which has been mentioned here only briefly, that of computer simulation, is the coming tool of our profession for the future. Simulation and the computer are going to be, for the social sciences and the public health profession, what the physical laboratory and the chemistry laboratory have been for those professions in the past. It is going to be one instrument by which we can advance our science.

Connected with this idea of simulation, I have been wondering whether we shouldn't start getting into something which might be analogous to the war games that are played by other departments in the Government. In other words, could we design a computer program and scenario as a teaching and planning instrument that can make us more acutely aware of how to use data? We can play a game with a computer, so that we can test a design for this sort of a health program and this sort of action program, with this much money for this or for that. And the computer will read us back from the scenario whether or not we are making a significant impact on the solution of the problem.

These computer-type war games are making big strides, so I understand, in teaching. Perhaps you saw a popular article on the computer games in teaching in elementary and secondary schools? One incident that was reported in this article was that the high school students were playing a game in which each student was pretending to be a king of a small country and he had the problem of allocating so much of the agricultural product to feed the people and so much of it for storage reserve, and so much of it for seed for next year. The computer would report back to him whether or not he was doing a good job as a king.

There was one instance of a rather inept student king who was allocating these resources this way and that way, and the computer then reported back to him, "You have reduced your population to zero. Please call the teacher."

But I wonder if this isn't a concept we ought to start playing with in public health planning, to see whether we have to call the teacher, or whether we know really how to do planning that is productive and useful.

Now, the other general meaning that I see in all of the points discussed this week is that I believe we have a chance for a real renaissance of State statistical work in the public health organization.

Somebody, earlier in the week, said, "This may be our last chance to get the statistical work in the State health department at the proper level." This speaker implied that, if the public health organization didn't take advantage of this chance, other elements of the State government might begin moving into these fields and leave the health departments rather "high and dry."

There has been a lot of concern among health people about the fragmentation of health services. Maybe we should begin to be a little concerned about the possible fragmentation of health statistics in State organizations. But if we are to develop our chance for a renaissance of statistical work in the State health departments, there are some things I think we have to do.

In the first place, for years we have been talking among ourselves about statistics in the State health departments. I think talking to ourselves is not going to solve the problem. We have to find some way to raise this dialogue to a higher level within the organizational structure of the State government. At this higher organizational level in the State government, we must begin to start a dialogue of some kind, a discussion about the proper role of the statistical function in the health department—how it is to be initiated and how it is to be sustained.

To make any success in getting this higher-adminstrative level dialogue started within the State government, the State statisticians and the State registrars have to find some way to disentangle themselves from the unending and relentless pressure of the detail of the work day by day.

I am sure that the requests that come into the State offices from the public in terms of registration problems and procedures are so demanding that very few State people have a chance to really think of the broader issues. They do not have an opportunity to consider what the statistical office in their organization ought to be doing or to explore the long-range planning for this sort of organization.

Now, it is a vicious circle. I don't know how you are going to lift yourselves by your own bootstraps, in a sense, but some way has to be found, I think, to give the responsible State officials, those responsible for registration and vital statistics, a chance to sit back, put their feet up on the desk, and think a little bit about solving the broader problems of the organization that must be faced.

I mentioned earlier that I was disappointed to see that in the 5 years since the National Center for Health Statistics has been established, there has not been a State counterpart—a State center for health statistics—established in any one of the 50 States.

I think the time for this has come. I think it is now time that State centers for health statistics be developed in the many State health departments. The time for the idea is here, but what is now needed is some leadership, somebody to crystallize the concept and draw up a blueprint. It needs to be set as a goal that can be worked for and achieved.

When the National Center for Health Statistics was created, the idea was a creation of a committee in the Public Health Service that was studying the functions and program of the Federal Public Health Service. This committee spelled out the basic idea for the National Center for Health Statistics. With that, we were able to move ahead on it.

But where would the idea in State health departments come from? Where is this crystallization of a plan, of a concept, coming from?

I don't think it is our job, at the national level, to take the responsibility for developing the concept of what is appropriate for a State office. This should be a function of the State people, to see for themselves what is required, what is needed, and what is within grasp.

Some progressive leadership and some progressive work is needed. Maybe this is a proper function for the American Association for Vital Records and Public Health Statistics. I just checked with your secretary-treasurer. This is not a poor organization. They have a rather enviable treasury, something that would make many other professional associations wonder how they could do the same.

Maybe it is the responsibility of this State organization to set up and finance its own committee to develop its own ideas, to hire its own consultants if necessary, and to write out the blueprint. Such a general blueprint can be used by any appropriate State to start a dialogue at the highest levels within the State public health department to create an organizational entity which will really cope with the demands for hard data and the demands for program planning.

One of the big problems with this is the shortage of personnel. We complain about this, you complain about it, everybody complains about it. But I have the optimistic conviction that this shortage of personnel is something which is going to ease in the relatively near future. If Dr. Hauser, when he talks about the population program at lunch, doesn't contradict me, I believe I am right in saying, within a few years, there is going to be a flood of available people, trained at different levels, who will be looking for jobs and who will be a pool from which we can draw trained personnel in the various categories.

You must keep in mind that, last year, 1965, I believe a million more people had their 18th birthday than the year before. This is the result of the large baby boom of 1947. Those people in the baby boom of 1947 are just now 18 or 19 years of age, and, in a year or another year, they will soon be coming into the labor market, after a certain amount of college or advanced education.

So I think this personnel problem is going to ease up. It is one aspect of the problem that can give us some optimism.

And while I think it is a safe policy not to make short-range predictions, because you can easily be embarrassed, I would suggest possibly that 2 years from now, when we are back here again in this room, having the next meeting, let's look back at the program of this year and the recommendations that we made and the things we said we hoped were going to happen and let's have, whatever the opposite of a preview is, namely, a little looking back to see whether or not we were on the right track this year.

Dr. Grove. I think that Dr. Linder came close to making some predictions, and he certainly has given us a challenge for action, right now and in the short- and long-range future.

I would like to call on Dr. Sagen to make some concluding remarks. I don't know which direction he is going to look into, maybe both directions, ahead and backward.

Reprise

Dr. Oswald K. Sagen, *Assistant Director, National Center for Health Statistics, U.S. Public Health Service*

Members of the Conference: "If we could first know where we are, and whither we are tending, we could better judge what to do and how to do it."

This was said by Abraham Lincoln, in his famous House Divided Speech, when he accepted the nomination for the Presidency over 100 years ago.

While his words were applied in a completely different context, they are certainly quite appropriate to the kinds of problems that we are concerned about here.

He also said in that speech, you will recall, that "A house divided against itself cannot stand." That certainly is true of our national vital and health statistics system, and that is really why we are here, why we have been here this week, to find ways and means of keeping our house together, keeping it in order, and keeping it up to date.

So this has been really our whole concern this week. And I think we have found out this week that we are at a turning point, if not actually in a crisis, in the field of records and statistics. It has been brought on by rapid changes occurring in our society; changes that are bringing new problems, new challenges, and new opportunities. Hopefully, we can react to these things, take them home for reflection, and do something about them during the next 2 years.

I heartily endorse the suggestion that 2 years from now we take a good look to see what has really been done about the problems we have aired during this week, and evaluate the usefulness of the concepts and ideas that were brought to light here this week. We must recognize that, no matter how provocative a meeting like this has been, it yields no solutions to our problems. The discussions can never do more than point up and describe the problems themselves, suggest several ways in which something has been done or can be done about them, and stimulate us to attack them.

As our Latin American friends say, "Via con Dios."

Dr. Grove. Thank you. I think this is an appropriate note on which to adjourn the meeting.

luncheon session

JUNE
1966

PRESIDING

Dr. Oswald K. Sagen

POPULATION POLICY

LUNCHEON SESSION

Population Policy

Dr. Philip M. Hauser, *Director, Population Research and Training Center, and Professor of Sociology, University of Chicago*

My subject today is "Population Policy."* Let me start out with a few highlight facts, international and domestic.

When one turns to a consideration of population policy, one must among other things realize there has been something called a "population explosion." There is adequate justification for the use of this purple emotional propagandistic language, as explosion is certainly not a scientific term. Justification for this language can be summarized quickly. Let me remind you that it took most of the 2 million years that man has been on the face of this earth to produce 1 billion persons simultaneously alive. That number was not achieved until about 1825. It required only an additional 105 years to produce a second billion persons simultaneously alive. Two billion was the population in about 1930. It took only 30 years to produce a third billion, by 1960. And with present trends and allowing for diminished fertility (which I may say parenthetically at this stage is wishful thinking), it would take only 17 years, until 1977, to produce a fourth billion; about 10 years after that, 1987, to produce a fifth billion; and about 9 years after that to produce a sixth billion persons simultaneously alive.

There in a nutshell is the population explosion. I should like to remind you that in terms of the available data there probably never has been any significant inflection point downwards in the rate of world population growth. That is, as far back as we can get any reasonable data, despite the fact that individul parts of the globe have certainly experienced population loss, total world population growth has continued to increase at ever greater rates.

Should present trends continue, world population would approximate 7.5 billion by the year 2000; that is, it would more than double in the next 34 years. Total world population approximates 3.3 billion today. The United Nations, in its projections, presents three variants of population estimates for the year 2000, ranging from about 5.2 billion as the lower variant, to something like 6 billion as an intermediate variant, and 6.8 billion as a high variant.

Each of these variants is based on the assumption that the birth rate will diminish in the so-called developing regions of the world, and that there would be a deceleration in the rate of world population growth.

I have inquired into the basis for these assumptions. I think the best rationale that can be given is that something has got to give. And for that reason, it is assumed there will be a reduction in fertility. I want to stress this, because

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*Based on the transcript of an extemporaneous talk.

it perhaps helps account for the one thing that seems to be paramount in all contemporary considerations of population policy; namely, the need for family planning in an effort to reduce fertility. I hope to indicate that this is but one and not necessarily the most important aspect of population policy today; and one that is perhaps receiving more than its share of attention at the moment.

A final perspective with respect to the world situation. That is, despite the efforts that have been underway now for some years, in India, for example, since 1952, and in other nations, there has yet to be the first demonstration of a mass population characterized by poverty and illiteracy which has managed to reduce its birth rate.

Now I say this advisedly, partly to offset what I think is an unwarranted optimism in many quarters. It is true that intensive efforts have been accompanied by reduced birth rates, presumably through these efforts, in places like Hong Kong, Singapore, Taiwan, and Korea. But it is also true that the birth rate in these areas had already begun a downward turn before the intensive experimental efforts began. As a matter of fact, there still has to be demonstrated to what an extent the experimental efforts as such decreased the birth rate below the trend that was already in motion.

Permit me to state two propositions to conclude the global perspective. First, in the history of man there is no example of a mass population which achieved literacy and higher levels of living that did not decrease its birth rate. Second, unfortunately the converse of this proposition is also true. We have yet to see the first mass population, illiterate and living in poverty, that has managed to decrease its birth rate. For example, the efforts in India since 1952 have as yet produced no measurable decrease in fertility.

Now there is a lot of optimism about the prospect for fertility reduction in the developing areas. A recent issue of *Newsweek* quotes one of our colleagues in the field as saying, "we know now how to reduce the birth rate." Well, I can only hope this is right. But I am from Missouri, via Illinois, in the sense that I have got to see that measurable decrease in the birth rate before I believe anyone who says he now knows how to do it.

Let me turn now to some national factual perspectives.

In this Nation, of course, we have one of the most startling examples of the population explosion in the Western World—a population explosion that is remarkable not only for the level of natural increase but, also, for an unprecedented level of immigration. From something like 4 million persons in 1790, when our first census was taken, we are now almost 197 million, according to the census clock in the Commerce Department corridor today.

As a matter of fact, since we are in a family of statisticians, I think it is appropriate to direct your attention to this fact. At some time, possibly during the current year, this Nation has already topped a population of 200 million. This is with an allowance for underenumeration. (Incidentally, because I am talking to a statistical audience, this thought occurs to me. One of the most important contributions that you statisticians in the vital statistics and health field can make toward increased precision in the measurement of vital rates, fertility, mortality, marriage, and divorce, for the nonwhite population of this Nation, would be to retrogress in the completeness of registration. You are now responsible for tremendous distortions in our measurements of birth and death rates. You have achieved something like 100 percent completion in registration of births and deaths, particularly in urban areas. Hence, with a census underenumeration of perhaps 10 percent or higher for nonwhites, we have a serious imbalance in the relative accuracy of the numerator and denominator of vital rates. In consequence, my recommendation and contribution to this conference is to suggest you reduce completeness of registration to about 90 percent. This will get us much more accurate death and birth rates.)

We have in the course of our national history experienced many other drastic population changes—I have time to refer to only four of them.

Perhaps the most significant of these changes, in many ways, is to be found in the changing distribution of our population. When our first census was taken in 1790, 95 percent of the American people lived in rural areas, on farms or in places having fewer than 2,500 people. When our 18th decennial census was taken in 1960, from 5 percent urban, in 1790, we had become 70 percent urban. Within the next two decades we may well approximate 80 percent urban. Moreover, by 1960, we had become 63 percent metropolitan. We are probably over 65 percent metropolitan now, and we might approximate 70 percent over the next two decades.

These figures call attention to a transformation in a way of life—from agrarian living to metropolitanism—that is probably unprecedented in human history. This transformaton has created many policy problems originating in population change—problems of which our society, I submit, is still largely unaware.

A second major population change creating policy problems lies in our changing age structure. The secular decline in birth rate from the beginning of our first statistics in this Nation down to the bottom of the depression, on which there was superimposed the postwar boom in babies and marriages, has modified our age structure in the most amazing way, of which you are quite aware. Our younger and older people are increasing at much more rapid rates than are our people in between. This is why, if I may corroborate what Forrest Linder said earlier in the day, young people under 25 entering the labor market have tripled during this decade over what they were in the second quinquennium of the fifties. During this decade, 600,000 persons per year under 25 are entering the labor force, as contrasted with 200,000 during the second part of the fifties. Thus in the coming decade, the labor force will be very much improving in terms of available bodies for recruitment purposes. This will be particularly true in the category of persons 25 to 45 years of age. The changing age structure has generated any number of problems.

Let us turn next to a third population problem on the domestic scene. As you know, we have measured differential fertility and differential mortality and we have noted great imbalances in the relation between people and income across the Nation and within various categories of population groups. I have had occasion recently, on the basis of Mollie Orshansky's work, to calculate that something over 8 percent of all Negro children in families having five or more children are today being reared in poverty; and almost two-thirds of all Negro children in families with children under 18 are being reared in poverty. The association between high fertility and poverty and little or no education within these United States is as manifest as it is for the world as a whole. Similarly, there are great differences in mortality among various population groupings in this Nation which raise obvious policy questions, especially in the fields of public health and adequate medical care.

Finally we have great differences in economic opportunity within this most affluent Nation, generating internal migratory flows which create many problems that require policy consideration. Among these problems are: the inadequate education provided to many Americans to prepare them in their areas of origin for life, as migrants, in their areas of destination; the inadequate educational facilities in areas of heavy in-migration to deal with the problems of the in-migrant populations; and the inadequacy of other facilities and services for in-migrants including housing, employment opportunity, public health programs, medical care, recreational facilities, and the like. Changes in population distribution and in age structure, differential fertility and mortality, and internal migration on the domestic scene require policy considerations, in my judgment, that go far beyond concern with family planning—that is limiting the number of people.

These are the kinds of factual considerations that lead me now to population policy per se. We may well conceive of population policy in three categories: global, international, and domestic. By global, I refer to those policies that completely transcend national boundaries. By international, I refer to policy that involves nation-to-nation interrelationships. In respect to the domestic, I shall focus on the United States.

What about global population policy? With the kind of growth which the world is experiencing, with what we already know about the relationship between world population growth and economic development, it is clear that over the next 34 years—that is, to the end of this century—there can be little solace for anyone who is concerned about the inability and frustration of the developing nations to achieve higher levels of living. That is, for the next 34 years, with present trends or even with the most optimistic allowances for diminution of fertility in the developing regions of the world—Asia, Latin America, and Africa—there is little prospect of significant increases in levels of living.

As a matter of fact, what evidence there is indicates that despite all of the efforts we have made—technical assistance toward economic development through the programs of the United Nations, including the expanded programs of technical assistance, the programs of the specialized agencies, the various national and regional bilateral and multilateral programs, the programs of the great foundations—the gap between levels of living in the "have" and the "have not" nations, is increasing, not decreasing.

Permit me to stress the implications of this observation because I think the kind of policy consideration involved is of a character that we as a society, literally, have not yet faced. In my judgment, anyone who can see hopeful signs on the global horizon during the next 34 years to the end of this century is either among the faithful who expect miracles from Heaven, among the optimistic who expect superwonders from science, among the affluent parochials who anticipate that they can live in an island of plenty in a sea of world poverty, or among the naive who can anticipate nothing.

This dismal outlook is based on the following considerations. First, even the most optimistic outcomes of present family planning efforts would not provide much stimulus to increased levels of living during this generation. Its major benefits would come in the next generation. But it is the present generation that has experienced the "revolution of rising expectations" and is pressing for economic advance and political freedom.

Moreover, not only is there very little prospect for great advances in levels of living in Asia, Latin America, and Africa during the remainder of this century, but, also, there is some prospect that conditions, especially in respect of food supply, may worsen.

Between 1960 and 1964, for example, food production per capita in Latin America, whose population is now increasing at 3 percent per annum, actually diminished by 6 percent. Food production per capita in Asia, in the same period of time, actually diminished by 3 percent. It is too early to reach a definitive conclusion on this point; but it may well be that an inflection point has occurred during the first half of this decade, auguring that many regions of the world may no longer be able to increase food production at the rate at which population is growing.

What does this mean, then, from the standpoint of global policy? I can only sketch the answer very briefly.

For one thing, it means that the peoples of the world must face up to the fact that this is a finite planet; that there are only 200 million square miles of surface on the earth; that only one-fourth of the surface, some 50 million square miles, is land. This means that the world as a whole must face up to the necessity of limiting world population and, I am going to use this word deliberately, setting quotas for population numbers for the world as a whole and for its various subdivisions.

Nobody has quite faced up to this problem. The fact is that given a finite space, given the present world rate of increases of 2 percent per annum which doubles population every 35 years, and given the fact that, despite efforts to the contrary, world population growth rates so far have been going up, not down, some form of population control is inevitable. In fact, any rate of growth, in the long run, produces saturation. And in the short run, we are already far too late to avoid social unrest, political upheavals, threats to peace, and hot and cold wars, which, in my judgment, will grow much worse, not better, in the remaining years of this century.

What I am saying in effect is that although we have begun to talk about population problems neither within this Nation nor in the world as a whole have we faced up to the policy implications of population trends on this finite planet—implications with great social, economic, and political significance.

In addition to policy problems arising from population numbers, there are also qualitative considerations of population policy. Much of what has been said about quality was said about two generations ago. Much of what was said was nonsensical; that is, it was a kind of popularized and distorted genetics called eugenics. We are aware today, largely by reason of the progress of the social sciences, that the quality of the population in this generation and in the next generation is not so much a function of the genetic as it is a function of the social heritage—of the opportunity that a population has for acquiring education and acquiring skills. The quality of a population, to use the language of the educationists, depends on acquiring the basic skills, the salable skills, and the citizenship skills which presumably the schools should be transmitting.

The quality of population in the world as a whole, the ability of a population actually to transform a society from relatively low levels of productivity to high levels of productivity, is more dependent upon opportunity for education and the acquisition of skills than upon any prospect of changing its genetic heritage.

This calls for important global policy of a magnitude that we have not yet really begun to face, despite the valiant efforts of UNESCO to deal with the problem of world literacy, world education, and worldwide opportunity for the acquisition of skills.

In effect, I am suggesting that the need for policy with respect to both quantity and quality of population on the globe is reaching such urgency that not only the welfare but the very continued existence of much of this world's peoples is at stake.

Let me turn now from the global scene, although there are many other aspects of the problem that require global policy considerations.

On the international, as distinguished from the global, level, considerations of quantity and quality are also involved and are closely interrelated. That is, in international relations, agreement on control of numbers and, also, control of population quality, in the sense of opportunities for education and the acquisition of skills, is necessarily involved in any economic considerations designed to increase income per capita. Population policy is as much involved as international trade, international capital flows, technical assistance, etc., in planning higher levels of living. Needless to say, however, no amount of family planning alone will automatically produce higher income per capita, unless there are also other inputs toward economic development.

The question of determining whose population is to be controlled how much is a most difficult one—whose ox is to be gored? And I dare say that within the coming years we will be talking about population quotas that will help determine which populations are to grow how fast within what periods of time. And along with such talk we will be talking more and more about improving population quality through increased investment in human resources.

Such considerations are almost certain to enter into international relations, especially those involving bilateral or multilateral arrangements between economically advanced and developing nations.

Let me pass next from the international to the domestic scene. I shall focus on some aspects of domestic population policy and come to a close.

We in the United States are under the illusion that the population problem is the world's problem, or Asia's problem, or Latin America's problem. Anyone who really believes this is, in my judgment, revealing the parochial and naive character of his own understanding of population matters.

We are faced with acute population problems in this country. And we have crucial problems of policy with respect to them.

So far as numbers are concerned, we also have problems for the remainder of this century. If you think you are harassed now in getting to work on expressways, if you live in a community in which a glass of water is essentially a chlorine highball with a detergent head, if you are forbidden to bathe in the polluted lakes in which you were able to swim as children, if you are experiencing other irritations that may lead to an ulcer, and if you feel that you are worse off than if you were smoking more than two packs of cigarettes a day because of air pollution—if you think you are now suffering these things, "you ain't seen nothing yet." These kinds of costs of population numbers will grow much worse before they get any better.

Despite the fact that our national birth rate has been turning downward since 1957, we shall still be generating over 4 or 5 million babies per annum for perhaps the next two decades. The reason for this is that persons of reproductive age will double within the coming generation, as our postwar babies reach marriageable age.

This means that within the next 20 years we stand to add something like 70 million people to our population, even with the allowance for decreased fertility, as made in the recent projections of the Bureau of the Census. This is about as many persons as in the United Kingdom and Canada combined. We must produce, therefore, amenities of existence for another 70 million people in the next two decades even while we are still trying to struggle with accumulated problems of urban renewal and public housing, not to mention the problems of acculturation and the adjustment of our new in-migrants to the mainstream of American life, metropolitan United States.

We do have problems of population quantity in this Nation. We have achieved fabulous productivity, which has certainly enabled us to belie Malthus—in increasing income per capita, even while growing at fabulous rates. But the relationship between population and land in this country, the relationship between population and nonrenewable resources, and the relationship between population and outdoor recreational resources are portending increasingly difficult problems.

We too face the qualitative problem. On the domestic as well as the world scene, the differences in quality of our population are determined more by differences in the social heritage than in the genetic heritage. Now this is not to say that we ought to forget about genetics. There are obviously some specific types of things that should be controlled through eugenic programs.

But let me remind you that it may take literally millions of years to produce genetic change of a kind that would vitally affect the quality of a human being. And we know, and we in these United States know this better than any nation on the face of the earth, that within one generation you can take an illiterate, poverty-stricken people and turn them into persons who can qualify as professors at Harvard University, or even the University of Chicago.

We know that through the social heritage you can produce tremendous changes in the quality of population. Yet despite the fact that we know this, what is the situation at the present time? Population policy, if we are to be concerned about quality, as well as quantity, and this increasingly is the concern of the demographer and affiliated sciences, means concern with the nature of the social heritage and the process of socialization. It means recognizing—and this is an example of a policy problem—that American education, elementary and secondary education, is now ironically failing a significant proportion of the American people. Public education in this Nation, among our basic social institutions, has been a vital element in the two great contributions we have made to the story of man as I see it: First creating unity out of the diversity of ethnic and racial groups of which we are constituted; and second making it possible to give an unparalleled demonstration of an open society, a society in which every person, no matter how humble his origin, could rise to levels in the social and political and economic world limited only by his own individual capacities. Despite this historic role of education in our society, education today is helping to create a stratified society in the United States, a society stratified by economic status and race.

Let me try to put it succinctly in this way. The child—forgive me if I invent a new concept here—the child with a preconception IQ of a high order who is smart enough to pick white parents who live in the suburbs may get an input for his public school education as high as $1,500 to $2,000 per capita. The child with a lower preconception IQ that picks white parents who live in a city may get an education that gets him a $500 to $1,000 per capita educational input. But, in our society, the child with a miserably low preconception IQ that is stupid enough to select parents who not only live in the inner city, but who, also, have black skins, automatically by that "stupid" act may get an educational input of about $200 to $400 per capita as his preparation for life in a metropolitan society.

In the report of the recent White House Conference "To Fulfill These Rights," the section on education recommends that, as a minimum, educational expenditures per child be raised from the national average of $500 to $1,000, a level still well below that which is available in our most affluent suburbs. This recommendation would require an increase in expenditures for education—public, private, and church-related, elementary and secondary education—from $27 billion to $54 billion per year, a doubling of expenditure. This is a matter of population policy, policy affecting the quality of population.

We have up to this point in our history acted as if Mississippi or Alabama or, for that matter, the inner sections of New York City or Chicago were really foreign entities. We have paid little attention to the fact that people reared in these parts of the United States were not being adequately prepared for life in the mainstream of American life—in metropolitan areas.

Until recently, it was anathema for the Americans even to think of Federal intervention into local education. Yet Federal funds are now available for education. And such funds, followed by insistence on the maintenance of Federal standards, will grow, not diminish. It is becoming the policy of the United States that every person born within the boundaries of this Nation, no matter in which part he is born and reared, must be prepared for metropolitanism as a way of life. This is a population policy with respect to quality of population. It is probably the most important single policy on population quality that the Nation could adopt.

There are other policies with respect to immigration. Despite the fact that we are the leaders of the free world, our immigration laws, until the recent change, proclaimed to the whole world the built-in prejudices, biases, and bigotries of some of the American people. As a matter of national policy, our laws held that certain people were much superior to other people. Well, now, in our most recent immigration laws, we have set new standards. This also is a population policy and an important part of our total population policy.

To summarize, policy must be set on problems arising from population trends and considerations not only of growth but considerations, also, of distribution, of composition, and of components of growth, including not only fertility but, also, mortality. Most demographic policy is now focused on fertility and fertility control. This tends to obscure other important areas of population policy. For example, there are populations on this globe and within this Nation whose death rates are still as much as twice as high as average death rates for the area as a whole. There is much yet to be done in the reduction of mortality which would pose even greater problems on the growth front. But these are also matters of important population policy. There are also important population policies to be set globally, internationally, and domestically on interrelated matters such as migration, international trade, capital flows, centralization and decentralization of economic activity, and investment in human as well as other resources. So it should be clear that population policy goes far beyond family planning alone and involves almost every aspect of life in a complex, modern, technological society.

Now I have a last consideration of population policy of special interest to you with which to close. Population policy must also include policy for not only maintaining but, also, expanding present levels of population statistics and research. In addition to the social, economic, and political, population statistics and research encompass the biomedical aspects. For example, I do not believe for a moment that we know all that we need to know about fertility control. I believe, on the contrary, that the social sciences are still so ignorant we are not yet sure that we can invoke motivation and incentive for family planning in the cultures and types of life situations that exist in the developing regions of the world. Moreover, I believe that the biomedical sciences are still so ignorant they have as yet been unable to produce means of family planning that are efficacious enough, practical enough, and acceptable enough to have solved the problem of peoples in the developing areas. My notion is what we know today will seem primitive within a decade.

These observations are a means of calling attention to the need for policies of expanding statistics and expanding research. I do not believe that in any State represented here, nor in the Federal Government, have we yet allocated enough resources to acquire the kind of knowledge necessary for developing sound population policy and sound population programs of the types to which I have referred.

I think our statistical and research job is just beginning. Man has been on the face of this earth, if I may close with this final perspective, for some 2 million years. He had not been faced with the kind of crises that he now faces for the rest of this century until the end of World War II. It is only since then the population explosion embraced the mass populations of the world—in Asia, Latin America, and Africa.

We are confronted with a brand new unprecedented problem—the second population revolution, if you will. Moreover, we are just beginning to face the problems of metropolitanism as a way of life. In the two million years of existence on this globe, man did not achieve widespread metropolitan living until the beginning of the century. Not until about 165 years ago did mankind as a whole achieve enough in the way of technological development and social organizational development to permit the proliferation of cities of a million or more. And it is with the cities of a million or more that we are beginning to discover all kinds of problems for which our social heritage has no answers and which require the invention, almost daily, of new answers such as those given by the New Deal, the Square Deal, the New Frontier, and the Great Society.

We are still coming to grips with the problems which, at least in part, involve population. Many of the problems center around the population explosion. But the problems of metropolitanization are the product of what might be called the population implosion. The increased concentration of people and economic activities is creating unprecedented problems and calling for unprecedented types of policy and program considerations.

In consequence, statisticians in the population field have not yet reached the peak of responsibility which will be theirs. Quite apart from the specific technical considerations with which you have been concerned during the past week, I think you are going to be called upon to produce new kinds of data needed for policy formation—data of a type that we have not yet even anticipated. What lie ahead are new kinds of demands that our new kind of society is continuously creating and at an accelerated rate. It will be your job to help to generate and to service these new types of demands for population statistics and research.

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JUNE
1966

WORKSHOPS

A & B

WORKSHOP DIRECTORS

Mr. Robert A. Israel and Mr. Loren E. Chancellor (Workshop A)

Mr. William H. Veigel and Mrs. Marian Maloon Colby (Workshop B)

COORDINATORS

Dr. Robert D. Grove (Workshop A)

Dr. Anders S. Lunde (Workshop B)

RESOURCE PERSONS

Mr. Arthur A. Campbell, Mr. Charles R. Council, and Miss Mary A. McCarthy (Workshop A);

Mr. Thomas C. Dundon (Workshop B)

Both Workshops: Mr. Donald Green, Mrs. Margaret F. Shackelford, Dr. Carl C. Dauer, Dr. Charles S. Petty, Mr. Leo A. Ozier, and Members of the Study Groups on Revision of Standard Certificates and on Preparation of Handbooks

RAPPORTEURS

Mrs. Dorothy L. Herrell, Mr. Robert J. Armstrong, and Mr. Walter H. Schuler (Workshop A)

Mr. Frank H. Godley, Miss A. Joan Klebba, and Mrs. Nancy T. Barber (Workshop B)

IMPLEMENTING THE STANDARD CERTIFICATES OF LIVE BIRTH, FETAL DEATH, AND DEATH

Monday Afternoon—June 20, and Tuesday Morning—
June 21, 1966

DISCUSSION SUMMARY

Implementing the Standard Certificates

DISCUSSION SUMMARY

Status of the Revised Standard Certificates and Development of Handbooks

Revision of the standard certificates began in 1963 when over 1,000 questionnaires were sent to various individuals, agencies, and organizations that had particular interest in the certificates' content. Replies from approximately 400 respondents and comments and suggestions from three study groups in the 1962–64 biennium concerned with the content, format, and medical certification of medicolegal cases were reviewed and evaluated. Revised drafts were prepared in May 1964 for consideration at the 1964 National Meeting. The resulting recommendations were reviewed by the staff of the National Center for Health Statistics. Third drafts were prepared for discussion during the 1964–66 biennium with a new Study Group on Revision of the Standard Certificates, composed of representatives from the three previous groups plus several new members selected to represent special areas of competence. Fourth drafts were prepared in June 1965, based on changes suggested by this Study Group, and circulated to about 300 specially selected individuals and agencies. The present drafts, dated January 1966, reflect the results of the circularization and suggestions made at an August 1965 meeting of the American Association for Vital Records and Public Health Statistics.

The January 1966 multilithed drafts, which present the proposed content, were sent to all participants prior to the meeting. First drafts of the printed format of the certificates were given to participants at the start of the workshops. After further refinement in format to correct any errors in spacing, location of items, etc., and formal approval from the Bureau of the Budget, the proposed standard certificate forms will be submitted to the Government Printing Office for printing. The first printed editions will be made available to the registration areas with an accompanying statement explaining the reasons for the changes.

Recommendations from the 1964 National Meeting resulted in the establishment of a Study Group on Preparation of Hospital and Physicians' Handbooks on Births, Fetal Deaths, and Deaths. A preliminary draft for use in hospitals was prepared by the Division of Vital Statistics for review at the first meeting of the Study Group, and a revision was prepared for further consideration at the second meeting in June 1965. In view of the need to develop additional handbooks and to have them available for use with the revised certificates on January 1, 1968, contracts were entered into with four knowledgeable persons to write handbooks for use by hospitals, physicians, funeral directors, and medical examiners and coroners. First drafts were prepared by the authors and reviewed by the Study Group at a meeting in December 1965. Suggestions resulting from this review were incorporated into second drafts by the authors. These second drafts were circulated to the registration areas for review and comment and furnished to patricipants in the workshops as background material for discussion. The handbooks, designed to provide guidelines for all who have a role in completing certificates, are intended to serve as models for adaptation to the specific needs of the registration areas in accordance with their laws and regulations. They are based on the Model Vital Statistics Act of 1959. The handbooks will be uniform to the extent that uniformity is feasible, but will emphasize those areas of particular concern to the persons who will use them.

A special editorial team will review the handbooks for uniformity of instructions, definitions, explanations, etc., and prepare final drafts for distribution to the registration areas. Comments and suggestions on all four handbooks were requested from persons attending the workshops.

Review of the Standard Certificates

While consideration in the workshops was to be confined primarily to implementing use of the revised certificates, there was some discussion of the content and format, particularly of the new items.

An item on "education" has been substituted for "occupation" on all except the death certificate. The consensus was that information about education is more important for statistical and research purposes than information about occupation, except as occupation may relate to death. However, one participant voiced strong opposition to omission of occupation from the other certificates.

Addition of items covering the dates of the last previous live birth and fetal death to the live birth and fetal death certificates did not occasion comment. These are expected to yield useful data for child spacing and fertility studies.

It was questioned whether the item on number of prenatal visits would yield meaningful or useful information. There will be a high correlation between the amount of prenatal care and the complications of pregnancy, merely because obstetricians will want to see women with complications more often than those who are having a normal pregnancy. However, it was suggested that this information is important for perinatal health programs.

Better spacing and use of boldface type in item 16a for "prenatal care began" as well as "month of pregnancy" was suggested in order to assure information about the number of months of care rather than length of pregnancy.

Some objection was voiced from a research point of view to the terminology of some of the live birth certificate items. There was an expression of need for a specific definition of "attendant" and for a means of showing when a *certified* attendant actually was present at the time of birth.

Moving the item on race to the confidential section was accepted without objection. However, it was generally agreed that the lineup and spacing for this item, as well as the one on education, are confusing, particularly with respect to the mother.

It was recommended that the wording for item 23 (birth defects) be more specific and that instructions in the handbooks include examples.

In discussion of the confidential sections of the live birth and fetal death certificates—particularly the medical items (19–23 and 24–28, respectively) on complications of pregnancy and labor, birth injuries, and congenital malformations or anomalies—it was explained that these medical items are expected to yield important data. For example, NCHS is working with the Iowa State Health Department and PHS Dental Health Division on studies in connection with reported congenital malformations. It is to be remembered that certificate information is needed for two kinds of purposes; the first is for legal uses, and the second is for research, statistical, and program uses. In this revision, while a significant attempt has been made to differentiate between the legal and research-statistical-program items, there is almost a need for two records—one legal and one scientific. However, this is not yet feasible in the United States.

The new birth and fetal death certificates provide space in the left margin for entering certificate numbers for "mates" in multiple births. The United States has not published detailed tabulations on multiple births since 1958.

There was some objection to substitution on the live birth certificate of "State of birth" (items 6c and 8c) instead of "place of birth" since this space is also used to enter the county of birth.

Changes in the death certificate include return of an item on surviving spouse; additions in part I of item 18 of "or as a consequence of" to b and c and "approximate" before "interval between onset and death" to a, b, and c; addition of a question (item 19b) about use of autopsy findings in determining the cause of death; and addition of "or undetermined" to item 20a. There was no specific comment on these changes, except that the wording for item 20a should be "or *manner* undetermined" to make the meaning clear. It was suggested that "approximate interval between onset and death" might be printed vertically along the right margin to give more space for entering the information (as in Rhode Island's certificate). There was mention that the reference to time of death in the physician's certification of the combined certificate is confusing and awkward; it will be corrected.

Other comments included a suggestion that the signature instructions in the certification be changed to "sign and type or print name," and the group recognized the inappropriateness of including the Zip Code in item 20f (location of place of injury).

While Workshops A and B were not concerned with implementing use of the new marriage and divorce certificates, there was brief discussion of new items on these certificates.

New items on the marriage certificate are: Education items for the groom and bride instead of occupation, an item (14e) to obtain information on whether the ceremony was performed by a religious or civil official, space for signatures of two witnesses (15 a and b), and items on the date of dissolution of the last previous marriage, if any. There was some criticism about the number of signatures requested and their location and spacing. In developing the marriage certificate, items were taken from the application for marriage, the marriage license, and the facts of marriage; therefore, to come up with a satisfactory certificate, space for the maximum number of signatures was provided.

The divorce certificate contains as new items the approximate date the couple separated (item 10), an item (11) on the total number of living children as well as those under 18 years of age, and items (18 and 22) on the dissolution of previous marriages for both parties.

There was some question of the need for a confidential information section in these certificates. However, it was included to meet requirements for placement of the race item. The education and previous marriage items were included in it although they might be termed "other personal information" rather than confidential.

In setting up the printed format, the objective was to simplify the certificates and to try to get all of them to a standard size. The style of type used was one that would be readily photographic and yet not overpowering, and all changes should also be in this type. The printed format for the combined death certificate for use by either physicians or medical examiners/coroners was made available to the participants in the workshops. Separate certificate forms, one for physicians only and one for medical examiners or coroners only, will also be prepared and made available to the registration areas.

In printing copies of the certificates, the registration areas will omit "Form Approved, Budget Bureau Form No." in the upper right corner and the Department designation along the left edge.

Marginal notations—"Type or print, in permanent ink" and "For instructions, refer to the (specific) Handbook(s)"—will appear on all certificates in the upper left corner.

It was suggested that the spacing in the left margin of the live birth certificate be improved to clearly show that the item which calls for the number of the death certificate for deaths under 1 year of age, important for relating infant deaths to live births, is separated from the item on multiple births. Suggestions to return "For State use only" to the certificates and to provide space for use by the registrar for entering needed data, such as the results of serological tests for syphilis, will be brought to the attention of the printer. Other suggestions for better spacing—e.g., item 11b about the use of autopsy findings in determining the cause of death on the fetal death certificate—will also be given consideration.

In response to several inquiries, it was explained that the mother's name appears before the father's on the birth and fetal death certificates because the residence of the mother is taken to be the residence of the child; also, in most illegitimate births, the name of the father does not appear on the certificate. It was the consensus that information about the mother should come before information about the father in the confidential section as well as in the legal section.

Attention of the group was called to the fact that the "name" item on all certificates is in reverse order to other legal documents which usually start with the surname.

A suggestion favoring shortening "confidential information for medical and health use only" to "for medical and health use only" was made.

Review of the Handbooks

The Study Group on Handbooks recommended to the authors that the handbooks should be presented in the philosophy and language of those individuals who use them, but the introduction for all handbooks should give the same philosophy of presentation. They should follow provisions of the Model Law and show options by bracketing (as used in the Model Law) to avoid omission of material when adaptations are necessary. The importance of careful review and revision to conform to particular laws and regulations should be clearly stated. It also set up principles for editing to assure that definitions which appear in two or more handbooks are alike, that instructions for completing identical items and explanations on the need for collecting information are consistent, that general guidelines are uniform, and that the minimum essentials for completing items are included. The Group suggested inclusion in all of the handbooks of an outline of the registration system and a general instructions section, both to be prepared by the staff of NCHS. It recommended that the handbooks should be no larger than 6″ x 9″, that they be bound so that they open to lay flat, and that they be in looseleaf form to facilitate adding new pages to keep them up to date.

The NCHS editorial team is charged with careful review of the handbooks to be sure that all definitions, instructions, explanations, etc., are consistent, although there may be shifts in emphasis to more readily meet the needs of the persons for whom they are written.

To make the handbooks more useful, it was suggested that well-selected examples of certificate preparation should be incorporated in them and that these should be full-page examples. This is particularly important in the medical examiner/coroner handbook. If the use of a standard certificate results in an oversize page, it should be folded to fit into the book. It was also suggested that footnotes should be used for legal references and explanations. Thus legal references would appear on the same page as the material to which they apply. Numbers should be used for medical references which should be brought together in a bibliography as an appendix to the handbook.

The Hospital Handbook.—Mrs. Shackelford discussed the structure of the handbook. In giving instructions, it follows the Model Law as nearly as possible, and at the same time an attempt was made to have it general enough to be readily adaptable to the specific needs of the individual registration areas. There are some differences in practice even among areas having the Model Law. The instructions point out the items most frequently affected by varying regulations so that in registration areas using the national version of the handbook hospital personnel will know when to depend upon local regulations and procedures.

The handbook contains some of the reasons why certain items of information appear on the certificates so that hopsital personnel may have more interest in collecting and properly recording this information. In the interest of brevity, only those situations arising most frequently are covered in the detailed instructions. There will always be unusual circumstances surrounding an individual birth which will require a decision from registration officials.

Also included in the handbook are suggested worksheets for use by the hospitals in gathering personal information from the informant and medical information from patient records of the hospital and the attending physician. Such a practice allows the certificate to be completed at one place by transcribing information already entered on worksheets.

In the discussion, there was mention again of the need for inclusion of a clearly stated definition of attendant in the handbook. It was suggested that the person signing the certificate should be the senior person actually present at the event. At the present time, persons who sign certificates may not have been present at all.

In general, participants agreed that the hospital handbook was well prepared.

The Physicians' Handbook.—Dr. Dauer said the physicians' handbook on the certification of births and deaths should be a concise but adequate guide containing, for the most part, information and instructions that are essential to the proper understanding of the procedures that are involved in medical certification. If it is geared to medical students, physicians will not use it; therefore, it may be desirable to consider having two handbooks—one to serve as a training tool and the other to serve as a guide for physicians. Dr. Dauer approached the task of producing a handbook consistent with the Model Law but from the point of view of a physician:

1. The average physician, new or old, has no inclination, and usually no time, to read about the development of the registration system, how it is presently organized, how standard certificates come into being, etc.
2. He is aware that he has a legal obligation to certify causes of death and that a birth certificate must be filled out and filed for every infant that he delivers, but he may resent having the legal aspects of registration belabored.
3. He is concerned about the confidentiality of the the medical information that he supplies on births and deaths and needs reassurance on this point.

4. He may be confused by the language used to describe methods of certification, and he may not have a clear understanding of the meaning of some words and phrases that appear in the medical section of certificates.

The death certificate is more difficult to fill out than the birth certificate. Medical certification is the problem for the physician, and it is more difficult to explain in understandable terms. In the development of instructions for completing the medical section of the death certificate, the following points need emphasis:

1. The meaning of the words and phrases appearing in parts I and II;
2. The importance of listing accurately and in proper sequence the immediate, contributory, and underlying causes of death according to the physician's best judgment;
3. The desirability of using standard nomenclature for the diseases listed in parts I and II;
4. The necessity of knowing when and under what circumstances the physician should notify or consult with medical-legal authorities (coroner or medical examiner) regarding deaths due to external and undetermined causes; and
5. The role of the physician in the improvement of cause-of-death statements and mortality statistics.

Dr. Dauer suggested the following considerations on the content of the handbook to make it useful to physicians:

1. There should be a short introduction at the beginning of the manual followed by general instructions regarding legibility, use of typewriters when possible, use of permanent ink, erasures, and the like. Otherwise, this material will not be read by the practicing physician.
2. The main concentration should be on those items the physician must complete, and this text should contain concise explanations. All descriptions and discussions on subjects not directly related to medical certification should be placed in appendixes. Where necessary, references to these appendixes (and where they may be found) should be made in the main text. This should apply to the listing of items for which funeral directors or hospitals have the responsibility for providing information—e.g., inclusion of age and sex items is questioned since the physician does not complete these items. Justification for the inclusion of any such material should be based on a real need—i.e., will it assist the physician in meeting his obligations?
3. The handbook should satisfy the needs of physicians rather than those of registrars.
4. Physicians should be encouraged to consult with State and local health officers, registrars, and other official agencies about certification and local requirements as a means of improving registration. Participation in reverse order by medical officers of health is also highly desirable.

Participants in the workshops reacted negatively to the physicians' handbook, but said they had not had time to review it thoroughly. There was general agreement with Dr. Dauer that medical certification should be the important part of a handbook for physicians. Several participants suggested that the handbook be set up in two parts—one with medical certification and the second with other necessary information. Several participants suggested that the various references to legal and State requirements were confusing. Since anything that goes into a certificate is there by State requirement, this language should be cleared up. There was one suggestion that it would be difficult to write adequate handbooks for funeral directors and physicians until the procedure is turned around. Now the registrar gives the certificate to the funeral director, and he goes to the physician for his signature. It would be better if the registrar gave the certificate to the physician and he transmitted it to the funeral director.

Several participants suggested that the dilemma presented by this edition of the handbook would not be solved until there were two parts or two sections to the certificate—one for the physician and one for other persons now responsible for completing the certificate. There was consensus that the item on birth injuries to the child infers negligence on the part of the physician and that perhaps a term other than injuries should be used.

The Handbook for Medical Examiners/Coroners.—Dr. Petty stated that the handbook is designed to acquaint medical-legal officers—whether medical examiner or coroner, elected or appointed to office, physician or nonphysician, experienced or inexperienced—with the details of death certification and to provide aid to them in properly filling out the death certificate. It should also prove helpful to users of data based on death certificates. These data will be more properly interpreted by a person who knows something about the background and the methods for arriving at the underlying cause of death.

Discussion was limited because participants did not have time to review the draft. It was suggested that sufficient well-selected case examples should be included, since the training of physicians, including medical examiners and physician-coroners, tends to make them turn for guidance to specific cases. There was some feeling that the explanation for the place of death, which calls for the place where the body was pronounced dead, should instead require the actual place of death.

A Manual for Funeral Directors.—Mr. Ozier indicated that the manual for funeral directors is not intended to be the last word on how things should be done in a particular State, but rather to serve as a model to be adapted to the code and practices of any vital statistics area that thought it might be helpful. It is based on the Model Vital Statistics Act of 1959. Mr. Ozier stated that he tried to write a manual that would serve both as a guide and reference source on the technical aspects of the funeral director's general and statutory duties and as a textbook for students of mortuary science and funeral director apprentices and trainees. He also attempted to include useful information for persons, such as physicians, coroners, and medical examiners, who are interested in or subject to the laws and regulations pertaining to the business and practice of funeral directing, the transportation and disposition of dead human bodies, and the preparation, filing, and amending of certificates of death and fetal death and the uses of these records for legal and statistical purposes.

The author said that the manual was crammed with information because the funeral director has responsibility for filling out the personal particulars and geographic items. He noted that trainees, if not all persons engaged in funeral directing, need detailed instruction in a manual that they can keep readily accessible.

The "Instructions for Obtaining and Using Permits," chapter V, may appear to some to be a bit lengthy, especially since there is a move in some areas to do away with the requirements for permits. Mr. Ozier believes that permits serve a useful purpose. The chapter is based on procedures followed in Illinios for instances in which permits are necessary.

Chapter VI on "Correcting Certificates of Death or Fetal Death" provides information which will be useful in many States, as well as in Illinois.

Mr. Ozier recommended that the registration areas include a section which explains how funeral directors may obtain certified copies of certificates for the families they serve. Although inclusion of copies of forms increases the size of the manual, he feels strongly that their omission would detract from the usefulness of the document.

Discussion of this handbook was limited also because many participants had not reviewed it thoroughly. However, it was suggested that the Funeral Directors and Embalmers Act should be included as an appendix. Other comments are to be sent to the National Center for Health Statistics.

Educational Programs for Implementing Use of the Certificates

Mr. Green discussed possible educational programs and other media for publicity which might be used to promote the revised certificates and the handbooks both as a national program of the National Center for Health Statistics and as an aid to the States and other registration areas.

At the national level, he suggested a campaign using 1-minute radio and television announcements which would be read according to a specified schedule. The content has not been worked out, but the object would be to involve the general public in the program, giving information as to why and how the new certificates should be filled out, etc. There are some fairly firm ground rules as to the content of such announcements—e.g., they must be directed to a broad public group, rather than a limited professional group, and must be endorsed by the National Advertising Council. Clearance from the Government must be obtained before endorsement from the National Advertising Council may even be requested. Because of the great number of requests received, only a limited number of clearances are granted by the Government. Mr. Green suggested that three or four announcements be prepared which would have a tag message to relate them back to the registration areas, would be tied specifically to the office of vital statistics, and would indicate that this office might be contacted for further information. The registration areas would have to be prepared to handle requests for further information or service. Mr. Green asked for suggestions concerning the content of such announcements.

In general, the participants contended that these announcements would not help them to implement the new certificates; instead, they would burden them with a lot of useless work. If the public in general were informed of the new certificates through such announcements, State and local offices would be swamped with letters and telephone calls, asking whether the old certificates were still valid, whether people should apply for new certificates to replace all those the family had, etc. The consensus was that the general public should not be involved in implementing the new certificates. The audience to be reached consists of the practicing physicians, medical schools, medical examiners and coroners, hospital personnel, funeral directors, and allied personnel having a role and responsibility for the proper completion of certificates. Most of the participants in the workshops have had experience in implementing the use of new standard certificates on at least three occasions in the past.

Mr. Green's second suggestion concerned the use of popular periodicals, such as the *Ladies' Home Journal, Parents' Magazine,* and the *Saturday Evening Post,* for articles directed to a general audience. He suggested that the parent of a new child, knowing of the need for accuracy and the importance of the information requested, might help in promoting proper completion of the certificate if he mentioned this to the physician. Participants rejected this approach as, in effect, trying to influence the general public to prod—or even police—the physicians and other persons with responsibility to produce accurate and complete certificates. This approach would constitute a hindrance rather than a help.

Mr. Green also discussed the placement of informative articles in State and local professional and technical journals. For some of these articles, the byline of a prominent person might be effective. The workshop participants granted that State medical and allied professional journals, rather than national, might prove to be good media for the right type of articles. They suggested that a general article at the national level which describes the items and their value might be confusing because the certificates will vary to some extent across the country.

There was agreement that articles in State journals would be effective, but it was suggested that there is a place for articles at the national level to introduce the new certificates. These articles might indicate, for example, that the new live birth and fetal death certificates include new medical items which pertain to the field of health, that congenital malformation items are presently on the birth certificates of over 40 registration areas, that studies based on congenital malformation information now being carried out by the Division of Dental Health cover 31 areas which means that these areas have information so complete that they can be included, etc. Publication of the fact that good data on congenital malformations are available from many areas may influence other areas to include this information on their new certificates. The value of national articles would depend on their timing. It was suggested that they are needed now.

In further discussion, participants continued to express the opinion that articles in State and local journals would be more beneficial, that they should be prepared cooperatively by the States and NCHS or cleared with the States before submission to State journals, that they should appear before the adoption of the certificates in those States in which it was felt that this would be helpful, and that they might be more effective with the byline of State people. The consensus was that these articles should be directed to the people who will have a role in supporting needed legislation and in the proper completion of the certificates. If such articles started appearing very soon in the State medical and other professional journals, it would help to secure the support of medical and other professional associations to obtain State legislation to make it possible to adapt the new certificates. There was some feeling, however, that alerting the medical profession might give time to pull together forces necessary to defeat legislation for changing the certificates. It was generally agreed that this situation would differ greatly from State to State.

There was agreement that short films directed to county medical societies, hospitals, medical schools, etc., would be beneficial. Reference was made to the success of the film on medical certification for physicians. A similar film on the live birth certificate is to be produced by the Public Health Service audiovisual facility located in Atlanta, Ga. It will be offered through the PHS on a free loan basis.

Although national articles and the various educational media suggested would be of some benefit to some States, there was consensus that more effective use of money and talent is needed. For example, it was pointed out that since 98 percent of births occur in hospitals and the medical librarian and other hospital personnel have responsibility for entering most of the information on the birth certificates, this is the audience to which educational activities should be directed. Also, in connection with the birth certificates, the physicians, especially the obstetricians, should be reached through their journals.

While several participants pointed out that, for the most part, the only writing on the certificate by the physician is his signature, others expressed the opinion that most physicians carefully read what they sign and do feel responsible for it. Consequently, it is important to convey to the physician that he is affixing his name to a document on which the personal particulars, as well as the medical information, are accurate. He should be assured that he is not alone in the responsibility he takes when he signs it and that a reliable team is working with him. It was generally agreed that worksheets should be developed on which nurses and other personnel might gather information for transfer to certificates. It was suggested that eventually the dilemma will be solved by having two certificates—one will be a skeleton medical certificate that the physician will sign, and the other will contain the personal items as well as other items which may be added in the future.

Several participants in the workshop continued to remind the group that the medical profession's support is needed to assure adoption of the new certificate items.

The group was not receptive to Mr. Green's proposal that pharmaceutical and equipment manufacturers be solicited to purchase space in journals and make it available for the presentation of information on the new certificates. They thought this might have the adverse effect of creating confusion.

Mr. Green next suggested the use of exhibits and "give-away" leaflets and brochures for professional audiences. Before an investment is made in such materials, NCHS should know if effective mechanisms exist for their distribution and use. The consensus was that there would be no problem in finding outlets for such materials.

Consideration was given to the leaflet addressed to the mother entitled "The Most Important Document in the Life of Your Baby." Questions were raised as to its usefulness and how it might best be distributed. Participants in the workshop agreed that the leaflet would be useful and that the areas would be glad to receive copies of it. Several States have already developed similar leaflets which are distributed through hospitals to inform the mother of the information she should be prepared to give. The suggestion was made that the leaflet would be more effective if it were designed so that the information for the birth certificate on page 4 could be on a separate page which is slipped into the leaflet. Thus, mothers could retain the remainder of the leaflet for informational purposes after giving the separate page to the nurse, physician, medical librarian, or other person who transcribes the information to the birth certificate. It was suggested, also, that it would be helpful if space were provided for including information about the office from which a copy of the birth certificate might be obtained.

Participants suggested that the leaflet should be given to mothers during the prenatal period through doctors' offices and prenatal clinics, as well as on admission for delivery in hospitals. Supplies of the leaflet should be sent to the boards of health for distribution. Further suggestions about the content and distribution of the leaflet should be sent to the National Center for Health Statistics.

Mr. Green asked if an exhibit on the certificates or on any other subject would be useful and of interest. NCHS might work up a general model on a subject that could be modified by photographs and statements appropriate in local situations. Such modified exhibits might cost about $100. Some of the participants suggested that such exhibits might be set up by the State medical societies; others assured him that they would be willing to accept any exhibit from the Center if it were free and if they agreed to what was included in it. Such exhibits should be light, flexible, mobile, and colorful.

It was noted that the National Center for Health Statistics is planning an article on the history of the standard certificates to be published in one of its regular series of reports. The article will go into considerable detail about the changes in the new certificates and the reasons for the new items. It is expected to be published in about a year.

It was also suggested that training institutes for local registrars, medical record librarians, physicians, and others concerned in the registration process might be an appropriate educational tool to describe the reasons for and uses of the certificate items, the advantages of adopting the standard forms from the registration area viewpoint and for statistical and research purposes, etc. Financing for these activities is available to the States from MCH funds, the AMA, etc.

Participants concluded that the discussion strengthened the conviction that the registration areas are in the best position to know what they need and are able to use. It was suggested that NCHS would be most helpful if it continued its role of offering assistance and advice in carrying out the programs that the areas believe are essential.

Time Schedule, Procedures, and Policies for Implementing Use of the Revised Certificates and Handbooks

Preliminary copies of the revised standard certificates will be provided to the registration areas before the end of November 1966 to enable them to begin the planning needed to put them into use as scheduled on January 1, 1968. However, it was suggested that preparatory work should start at once and that those concerned should keep in mind the schedule for specific activities proposed by Mr. Franzen in a paper presented before the AAVRPHS on June 18. Mr. Franzen spells out 15 specific steps and the approximate timetable for carrying them out, covering the period July–December 1966—when the 1968 fiscal year budgets should be prepared to provide for printing, postage, and extra expense for field work—through April–June 1968 when letters should be written to express gratitude for cooperation in the transition process and to invite questions and comments about problems in the use of the new forms. It was requested that copies of the paper be reprinted and made available through NCHS.

Several areas have already started implementing the certificates by working through their MCH and other staff groups, obstetrical physicians, committees, and others who reflect the attitude of hospitals, physicians, funeral directors, and medical examiners or coroners. In a sense these professional people are coauthors of what comes out as the standard certificates and of the material for implementing them. Through them, the attitudes and problems will be reflected; thus, by the time the certificates are offered to the board of health the groundwork has been laid and the certificates will have wide professional support. In the past, this approach has been so successful that no opposition is encountered.

The National Center for Health Statistics will not print certificates for the registration areas; however, it will provide photographic negatives which can be used without charge by the areas to print their own certificates or with minor modifications to suit the needs of particular areas. These negatives will be useful unless too many changes are necessary. NCHS will also assist in providing help to the best of its ability to make the needed modifications or in adapting the standard certificates after modifications have been determined. For example, the live birth, fetal death, and death certificates are quite crowded; NCHS will give assistance in spreading out the items if larger certificates are desired.

The standard certificates contain the minimal number of items, and the areas are free to add others if they wish; however, all areas were urged to accept the standard certificates with as few changes as possible. Legislation may require some modification, but every effort should be made to maintain uniformity in the interest of the country as a whole and of the areas themselves. While no definite promise can be made, the Center will do everything possible to promote acceptance of the standard certificates and is willing to consider suggestions for help to the areas in financing their printing costs. Implementation of the new certificates rests, of course, on the shoulders of the areas, but NCHS will not spare its resources to help them achieve success in this undertaking.

Initial copies of the revised drafts of the four handbooks, based on comments and suggestions received from conference participants and edited by the NCHS team, will be made available to the registration areas by the end of the year. Inquiry will be made by NCHS to determine whether the areas want to print their own adaptations of the handbooks or whether they wish to distribute the models printed by NCHS and, if so, the quantity of each required. The Center also has interest in knowing their plan of distribution and who will receive them. NCHS will supply the models to those areas which cannot print their own, but it will not be able to print revised handbooks for any area. It is estimated that final printed copies will be available in the spring of 1967.

FUTURE STUDY

The following subjects were suggested for study during the next biennium:

1. Educational documents.
2. Procedures for numbering certificates, if numbered, for record linkage.
3. Evaluation and verification of items on certificates and in the handbooks as to usage, deletion, etc.
4. Evaluation of the format of the certificates of fetal death and death.

DOCUMENTATION

1. "Demographic Implications of the New U.S. Standard Certificates," by Dr. Anders S. Lunde and Dr. Robert D. Grove. Paper prepared for presentation at the annual meeting of the Population Association of America, New York, N.Y., April 29, 1966.
2. Draft copies of the U.S. Standard Certificates of Live Birth (Jan. 1, 1966), Fetal Death (Jan. 1, 1966), Death (forms I, II(A), and II(B), dated Jan. 1, 1966, Jan. 1, 1966, and Dec. 21, 1965, respectively) and first drafts of the printing format for the U.S. Standard Certificates of Live Birth, Fetal Death, Death (for physician, medical examiner, or coroner), Marriage, and Absolute Divorce or Annulment.
3. Draft of throwaway leaflet "The Most Important Document in the Life of Your Baby," PHCRS Doc. No. 602.8.
4. Registration of Births and Fetal Deaths—A Hospital Handbook. Second draft, March 18, 1966.
5. Medical Certification of Births, Deaths, and Fetal Deaths—A Handbook for Physicians. Draft, May 1966.
6. Medical Certification of Medicolegal Cases of Births, Deaths, and Fetal Deaths—A Handbook for the Medical Examiner/Coroner. Second draft, May 1, 1966.
7. A Manual for Funeral Directors on the Registration of Deaths and Fetal Deaths. Second draft, February 1, 1966.

C

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POPULATION SURVEYS AND HEALTH RESEARCH

Monday Afternoon—June 20, and Tuesday Morning—June 21, 1966

242-344 O - 67 - 13

Population Surveys and Health Research

FIRST SESSION—USES OF DATA FROM INTERVIEW SURVEYS

The uses of data from interview surveys and the elements that are essential to the success of surveys were considered by the Workshop on Population Surveys and Health Research. The first session, presided over by Dr. Jacob Feldman, School of Public Health, Harvard University, was devoted to the potential uses of survey data produced at the city, State, and national levels, based on experiences in New York City, the State of Kentucky, and in the National Health Interview Survey.

The City Government

Dr. Carl L. Erhardt, associate director of the Office of Research, New York City Health Department, and Mrs. Anne Cugliani, director of the New York City Population Health Survey, described their experiences in conducting the survey. The kinds of information collected in the New York City survey are quite similar to the basic items included in the health interview survey. However, the national survey does not have sufficient flexibility and population detail to describe the local scene completely. On the other hand, the local survey, to be worthwhile, must be geared to community needs and programs.

In addition to providing basic information for the health survey, population data are useful to other city agencies, such as the city planning board, the local labor department, and the mayor's office. Moreover, this byproduct of the survey data produces financial support by other agencies and can serve to link the work of public, private, and Federal agencies within the area.

Data produced by the New York health survey have been particularly useful in the estimation of health insurance coverage. Demographic data produced from the survey have proved to be an intercensal source of information on population mobility. It is expected that changes in the use of medical services resulting from the Medicare legislation can be measured by trend material from the survey.

The sample frame of the New York survey, which has been in existence about 3 years, is at present the only representative frame from which a local sample of area households can be drawn. This has already been used by three other survey groups and has begun to provide a small income to the survey.

The State Government

The State of Kentucky is at the present time attempting to obtain financial support for a State health survey through the community health services grants program. In order to assure the cooperation of other State agencies in this venture, much consideration has been given to the possible uses of the health data and to the ways that related data needed by other agencies could be "piggybacked" in the survey.

Mr. Strawn W. Taylor, director of the Division of Research, Planning, and Statistics, Kentucky Department of Health, stressed the importance of contacting persons with knowledge about surveys during the planning phase, the desirability of obtaining the advice and cooperation of official and volunteer agencies, and the advisability of informing data consumers about what the survey method can produce.

One of the expected uses of the Kentucky health survey is the detection and measurement of public health problems, basic to the establishment of multicounty complexes for health programs. Pending approval of the grant application, arrangements have been made with the Bureau of the Census to provide assistance to the State on the sample design and the training and control of interviewers.

The Federal Government

Mr. Theodore Woolsey, deputy director of the National Center for Health Statistics, pointed out, in relation to the National Health Interview Survey, that the needs and uses for data cannot always be anticipated. However, he outlined the following theoretical structure of uses:

1. *Planning,* ranging from the most elementary rank-ordering of causes of morbidity to the most sophisticated studies on cost benefits;
2. *Evaluation,* usually concerned with the effectiveness of disease control in terms of time trends;
3. *Administration,* for example, the use of health data for budgetary or legislative purposes;
4. *Research,* principally in the role of suggesting research hypotheses; and
5. *Nongovernmental,* for example, the utilization of health related topics by marketing, advertising, education, and volunteer health agencies.

It was emphasized that there is a definite need for research on how data are used, so that the interview survey can be improved. This type of research would be of invaluable assistance in the redesign and reevaluation of the interview survey. For example, what is the relative emphasis that should be placed on levels, relationships, and time trends in the measurement of morbidity? Should comparability of the data be sacrificed in the interest of improving the collection instrument?

A brief report was presented by Dr. Kerr L. White, School of Hygiene and Public Health, The Johns Hopkins University, on an international study being conducted in towns in England, Yugoslavia, and the New England section of the United States. Of particular interest is the fact that questionnaires of identical format can be administered in the three areas despite the differing cultures and mores.

DISCUSSION

During the discussion which followed the first session of the workshop, some interesting points regarding the general conduct of surveys and their value were brought out.

The need for local surveys in addition to the national survey was justified by the fact that rates for certain health characteristics are affected by economic, social, and geographic differences. For this reason, rates for the Nation as a whole cannot be applied to local areas. As a rule, local surveys provide flexibility and feedback in contrast to the rigidity of the national survey.

There are many items on which information is needed but which have not yet been exploited in surveys. Particularly suitable for local surveys are such topics as mental illness, family planning, and unnecessary hospitalizations.

The advisability of using unfilled requests for information to shape the output of data was suggested. The selling of the sample design to other agencies, a plan profitably invoked in New York City, was presented as a method of obtaining financial support for a survey.

Findings in the Hawaii health survey, a program which has been underway for approximately 7 years, have led to the establishment of several State programs. For example, the unusually high prevalence of asthma-hay fever was responsible for the initiation of a program to eradicate plants producing certain irritant pollens, and the high incidence of industrial injuries prompted the establishment of safety programs.

Within a State or city jurisdiction, stimulation to conduct interview surveys should usually come from a research office, since this is the area in which the overall view of the health needs of an area is apparent. While local surveys, particularly of the *ad hoc* kind, do not always provide answers, they often lead to other and more definitive studies.

It was the general consensus of the group that both national and local surveys are needed to produce health data.

SECOND SESSION—ESSENTIAL ELEMENTS IN THE SUCCESS OF INTERVIEW SURVEYS

Dr. Jack Elinson, School of Public Health and Administrative Medicine, Columbia University, presided at the second session of the Workshop on Population Surveys and Health Research. Since the objective of the session was to inform the participants of the essential elements in planning and conducting a health survey, a panel discussion was presented by:

Dr. Jacob Feldman, Harvard University

Dr. Charles Cannell, University of Michigan

Mr. George Kearns, Bureau of the Census

Dr. Philip S. Lawrence, NCHS

Miss Regina Loewenstein, Columbia University

Mrs. Anne Cugliani, New York City Health Department

Mr. Walt R. Simmons, NCHS

Heavy emphasis was placed on the importance of carefully defining the survey objectives and, once defined, staying within the limits of the objectives. It is necessary to know what questions one wishes to answer and to determine if the survey technique is suitable for obtaining answers to these questions. Although it is difficult in some instances to state the research problem, such a statement represents a crucial phase of the survey. Once formulated, the survey objectives should be adhered to, even though the temptation to add a few more questions to the survey is always present. The interviewer and the respondent can tolerate collection of but a limited amount of information at one time. Furthermore, in the processing and analysis phases of the collected material, the handling of an excessive amount of data can become difficult.

It was suggested that the formulation of dummy tables prior to the collection of the survey data can particularize the types of information that should be sought. Such a procedure clearly defines the areas to be covered, often dictates the cost of the survey, and helps in determining the sample size.

Closely related to defining survey objectives is the question of survey concepts and definitions. The concepts and definitions used in a survey are often dictated by considerations of what is practical and the desire to maintain comparability with other sources of data. In formulating the concepts, it is advisable to have a clear notion of the survey objectives, and, again, dummy tables are useful in outlining the objectives. When completed, the outlined tables should add up to the problem area of the survey.

There are several factors that should be considered in the sampling design of a survey. It is important to know:

1. If the survey is a one time or continuous project;
2. If emphasis is to be placed on levels (incidence, prevalence, or amount of disability) or the relationship of one distribution to another; and
3. If trends over time are to be stressed.

Generally, large samples are used where levels are involved, and repeat visits are employed where trends over time are involved. It may be that a repeat-visit sample design may have advantages. However, the type of design must also be considered in relation to the type of sampling (area or list sampling), the length of the questionnaire, and the collection procedure (direct interview or mailed questionnaire). Because the final decision on sample design must consider the specific technical problems involved, a statistician familiar with all aspects of survey procedure should be brought into the planning at an early stage, even at the point where the survey objectives are being defined.

The particular research and sample design is also influenced by the interaction between the target (the survey objectives) and the feasibility of the project (what can be done). In other words, this interaction implies the reconciliation of the idealistic aims of the survey with the objectives that the survey can realistically be expected to fulfill.

The designing of a sample, probably more than any other phase of a survey, is influenced by the resources available. In addition to the obvious considerations of time and money, other resource items include qualified personnel, processing equipment, and the availability of field establishments and supervisors.

In order to evaluate the findings from a survey, there must be an indicator of the precision of the results. The standard error is probably the best, the simplest, and the most generally understood by consumers. It is a common practice to assess the quality of a survey on the basis of the nonresponse rate. While it is desirable to have as many interviews completed as possible, this should not be the sole criterion for obtaining complete data; it is sometimes more reasonable to adjust the data for a noninterviewed household than to force poor information from a reluctant respondent. However, a high response rate is desirable in all surveys and should be a target at all times.

In the preparation of the interviewing instrument—the questionnaire—one of the most difficult tasks is converting concepts into questions. Furthermore, in a continuing survey one is faced with the problem of changing questions in the interest of improving data but at the sacrifice of maintaining the comparability of the data from year to year.

Interviewers in the Health Interview Survey are told that they must follow the questionnaire wording precisely, since it is only through this procedure that comparable data are obtained.

Effort should be made to keep a questionnaire at a reasonable length; provision should be made for as much precoding as possible; and questions should be worded so that they are "comfortable" to the interviewer and clear to the respondent. It is wise in the construction of a questionnaire to consult the literature on this topic. The use of format and wording that has been tested in previous surveys can result in a considerable saving of time and money. The questionnaire was described as the weak link in survey research, and it was felt that much work was needed on validating the collection instrument.

Some experiences in the use of randomized assignments as a measure of interviewer variance were described. It was the consensus that this technique is feasible in some survey situations within limited geographic areas, but that costs and operational problems may rule out a strict randomized design of assignments over a wide area.

Data processing, one of the most important phases in the survey process, begins with the preliminary editing of the collected material. The necessity for maintaining quality control of the data during the entire processing phase was emphasized. The quality and accuracy of the ultimate tabulated material are dependent on frequent and clear communication between the researchers and the data processing personnel.

It was emphasized that there is an urgent need for research in the fields of interviewer bias, quality control, and other reporting problems. Although a continuous program of evaluative studies is maintained in the National Center for Health Statistics, it was suggested that efforts to solve some of the reporting inadequacies should be intensified and coordinated in the Center.

The large attendance and the active participation at the two sessions of the workshop were evidence of the interest in the survey method and the need for developing research studies to solve some of the current problems and to adapt survey methods to the local health jurisdictions.

D

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AUTOMATIC DATA PROCESSING

Monday Afternoon—June 20, and Tuesday Morning—June 21, 1966

Automatic Data Processing

PLAN OF THE WORKSHOP

The Workshop on Automatic Data Processing was formulated to present certain public health applications being performed within electronic data-processing systems, two along the lines of a vital statistics system and a generalized computer system within a State health department and the other four of a specialized nature which are not routine applications in most public health data-processing systems. It is hoped that these presentations will create additional ideas for those already in the computer field and perhaps encourage those in EAM systems to begin thinking of ADP in the very near future.

The purpose of the workshop discussion, however, is not just one of sharing experiences and learning from each other but also of drawing generalizations from presentations as bases for recommendations which can be laid before the Conference. Therefore, it will also consider possible recommendations on the feasibility of a clearinghouse for specialized public health ADP applications, future ADP institutes, future ADP workshops, and the possibility of asking NCHS to provide ADP field consultation for the States. Such recommendations must be very specific in order to be effective.

The first paper concerns a subsystem of a total information system which is under development in the Michigan State Health Department. It is the first phase of an effort to integrate computer science into health programs in Michigan. Other subsystems under development in Michigan involve licensing applications, inventories, registers, evaluation programs, and research, as well as the usual housekeeping applications. The work is carried out in a Health Statistics and Evaluation Center which has a staff of approximately 30 persons. At present this does not include the vital records unit, although it may when the organization is complete.

A Systems Approach to the Computerization of Vital Statistics

Mr. Louis W. Steinbach, *Chief, Systems and Programming Unit, Health Statistics and Evaluation Center, Michigan Department of Public Health*

This group represents people with varying degrees of data-processing background and experience. Some are from State health departments or other agencies which have taken the big step into automatic data processing and already experienced the problems that arise in the early stages of conversion to the computer. Others have not yet taken this step into computerization. When this step is taken, you will be faced with many decisions which will, in the long run, determine the characteristics of your data-processing centers. One decision you will have to make is what approach will be used in computerizing applications at your department.

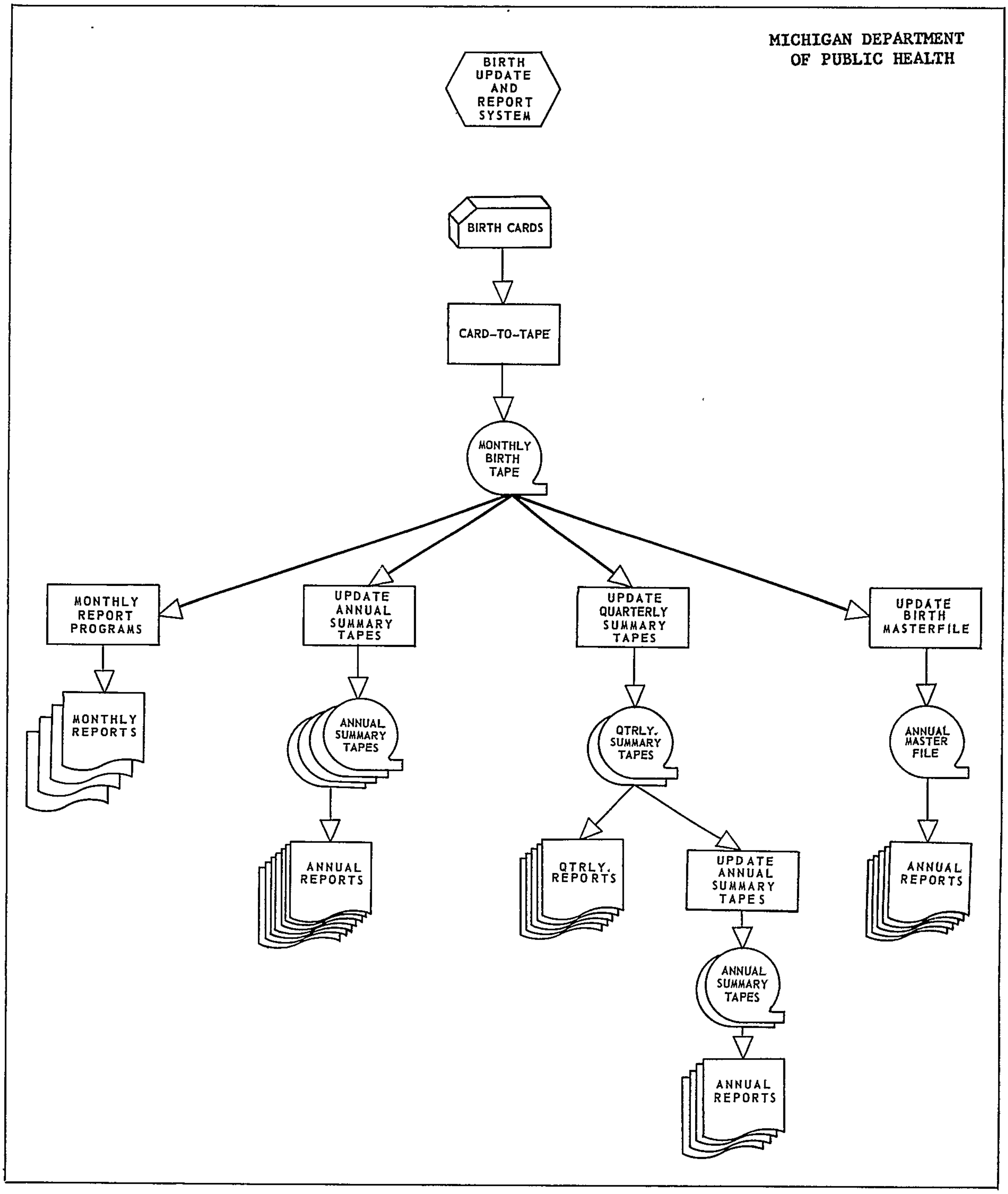
In the fall of 1964, the Michigan Department of Public Health was faced with the same decision. At that time, we decided to take a systems approach to each application, knowing that this would prolong the process of computerization. We felt that sound planning in the development stage of a computer system, which results in a smoother running system, more than compensates for the extra time and work involved in using this approach.

What do we mean by a systems approach? We mean that a systems analyst has to meet with each division head or a representative of that division to get a clear definition of the application to be computerized. In this definition, we have to know what the input or source document is and what output or reports are required. Programing is a very detailed and exacting business. Therefore it is important that the definition be very clear, very accurate, and very thorough. You have to look at all aspects of an application before programing begins. You have to look at the relationship between this program and other systems that are going to be computerized, to look for the common areas in these systems—what data can be shared by systems. This has to be recognized before you get into programing. The next step, an important one, is that you have to make whatever revisions are needed in this system. Maybe the procedures used when this was done manually or on EAM equipment should be changed. You should look at the input or source documents to be sure that the input includes all the information that the people are going to request in their output. Maybe you will want to make changes in the input documents that will make them easier to key punch. Or maybe it is an application where you can go to a different type of source document which can be read on an optical mark reader, eliminating key punching. These are some areas that make the computer system a little different than when it was done manually. You have to look at the output—the reports that they are asking from this system. This is the time to eliminate any reports that have been around for years that are not being used. And be sure that the output report that is defined provides the answers that people are looking for when they ask you to run this system. It is important that these revisions are made at this time, because a poor manual system will still be a poor computer system if no revisions are made.

This systems approach continues into the programing. A network or system of computer programs must be designed which will process the input records and produce the required output efficiently. One of the systems which we developed at the Michigan Department of Public Health is the Birth Update and Report System (fig. 1). This system's flow illustrates one approach to computerization of vital records applications.

The Birth Update and Report System provides data for annual statistical reports which are required by law and for meeting routine and special

Figure 1


MICHIGAN DEPARTMENT OF PUBLIC HEALTH
BIRTH UPDATE AND REPORT SYSTEM
BIRTH CARDS
CARD-TO-TAPE
MONTHLY BIRTH TAPE
MONTHLY REPORT PROGRAMS
UPDATE ANNUAL SUMMARY TAPES
UPDATE QUARTERLY SUMMARY TAPES
UPDATE BIRTH MASTERFILE
MONTHLY REPORTS
ANNUAL SUMMARY TAPES
QTRLY. SUMMARY TAPES
ANNUAL MASTER FILE
ANNUAL REPORTS
QTRLY. REPORTS
UPDATE ANNUAL SUMMARY TAPES
ANNUAL REPORTS
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ANNUAL REPORTS

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health requests from State health programs, local health departments, the National Center for Health Statistics, other State agencies, private organizations, and individual researchers. The system deals with approximately 180,000 birth records annually from which 51 annual reports, 5 quarterly reports, and 5 monthly reports are prepared. The computer system enables us to prepare all the annual reports for a given year several months sooner than was possible using EAM equipment.

This system is set up to run on a monthly cycle. We go from birth punchcards to magnetic tape once each month, and the rest of the Birth Update and Report System revolves around this monthly birth tape. Figure 2 shows a monthly card to tape run. Approximately 15,000 records are put on tape each month. Checks for errors in coding and key punching are made on the punched cards. If an error is found, the card is kicked out or not put on the tape. A duplicate card is punched, and the original card is listed on an error report which indicates the field that was in error. Types of data checked include such items as residence code of the mother, hospital where birth occurred, hospital code, sex, and race. Checks on reasonableness are also made—for example, mothers who are over 55 years of age and mothers having 20 or more events.

Figure 2

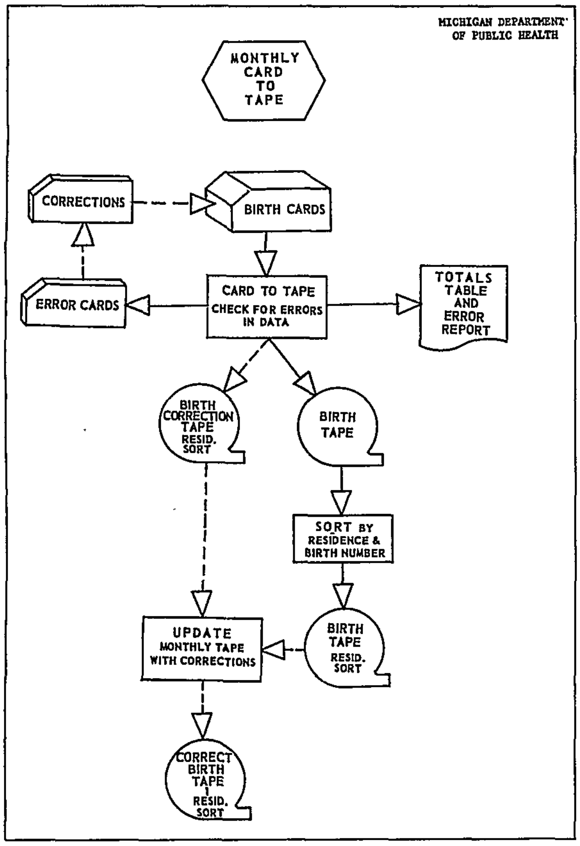


fig 2

The total will indicate the number of cards sent into the computer, number of errors found, and number of tape records written. When error cards come out, they will be corrected and come back through the same program. A second tape—the birth correction tape—will be produced. The two tapes are than merged to produce the correct monthly tape.

Tapes are sorted in order by residence of mother and birth number. Residence of mother is used, since this is the most common sequence requested in reports and tabulations. While reports in other orders are also prepared, the master file is kept in this order. An index is prepared from this system, and tapes are sorted alphabetically for this purpose.

First uses of the monthly tape are shown in figure 3. The report by residence and month is cumulative and shows birth certificates received from counties and cities by residence of mother, month of occurrence, and cumulative totals. When this report is run at the end of June, it will show such items as individual monthly totals and also cumulative totals for that 6-month period. Thus when the December run is made, it will show 12 individual monthly totals as well as an annual cumulative total. The report is available for use in handling mail and telephone requests for current data. Preparation of this report formerly requiring 5 hours a month now takes 10 minutes of computer time.

The next report, by occurrence and month, is very similar except that it reports on occurrence of births and no cumulative totals are kept. For the third use, report of Detroit illegitimate births, the tape is sorted by county and hospital of birth to prepare reports on Detroit rather than the entire State. Reports sent to the Detroit City Health Department show numbers of illegitimate births by census tracts, special areas designated A through Q within the city, and also give numbers for each hospital where births occurred.

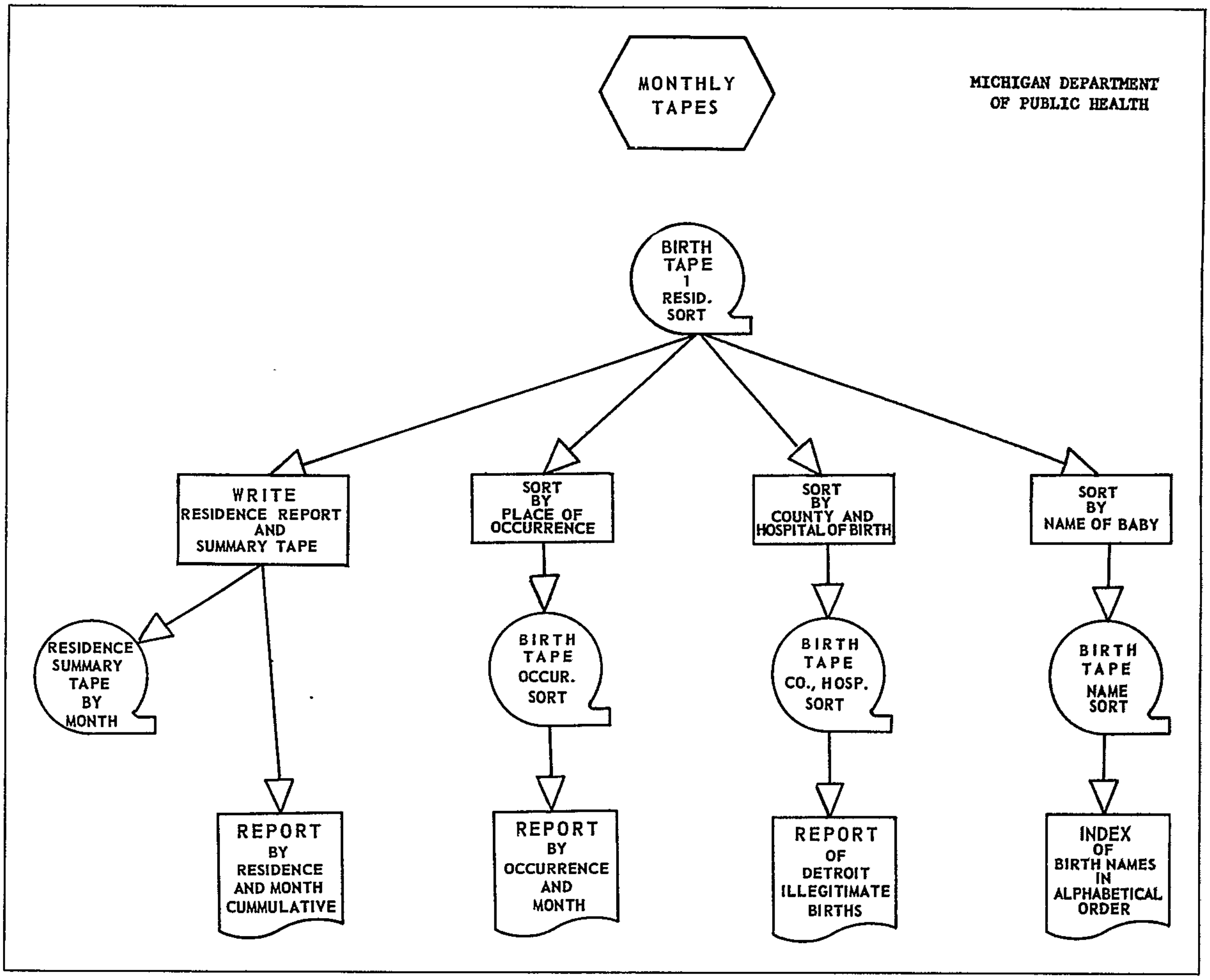


Figure 3

Another use of monthly tapes is to prepare the index of birth names in alphabetical order. Sort and listing time on a monthly basis takes about an hour. A separate index is prepared each month and an annual index at the end of the year. January births, for example, are punched by the end of February and the index comes out in mid-March.

Summary tapes for annual reports are given in figure 4. Four summary tapes are used to prepare 24 reports at the end of the year. Through use of summary tapes, sizable reductions are made in the number of passes made on the annual master file of 180,000 records. Each of these summary tapes is updated on a monthly basis. Each summary tape has only one record for each subtotal from a table. For example, on county and city there will be approximately 350 breakdowns (or records) as opposed to 180,000 records on the annual master file.

In planning this system before programing starts, decisions have to be made as to what reports can be grouped together and put on one summary tape. This is determined by the stub on the side of the page and the spread across the report. While more than one spread can be put in a summary tape, there is a tendency to stay mainly with one stub. The stub determines the sort on monthly tapes before summarizing; if the stub is residence of

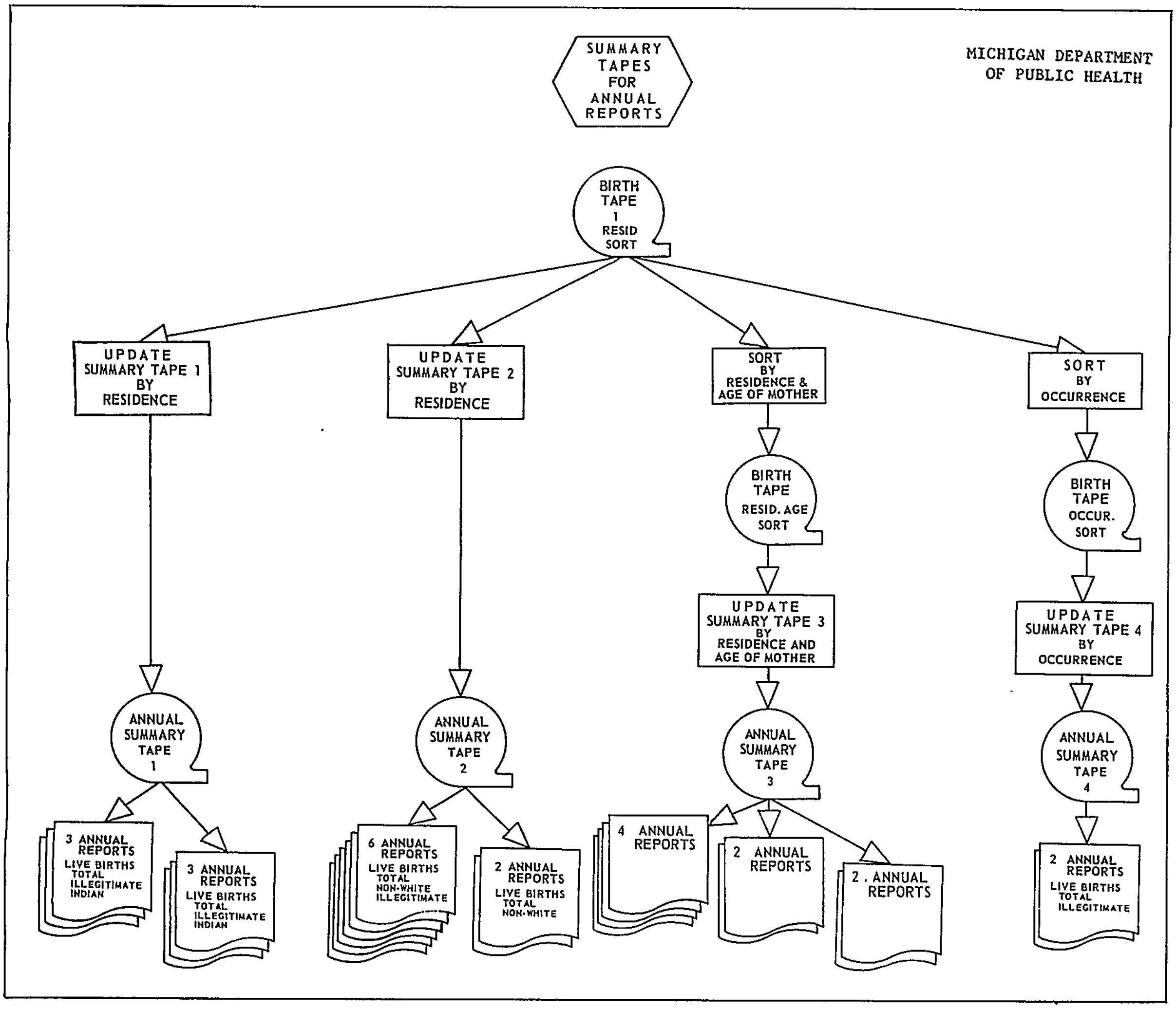
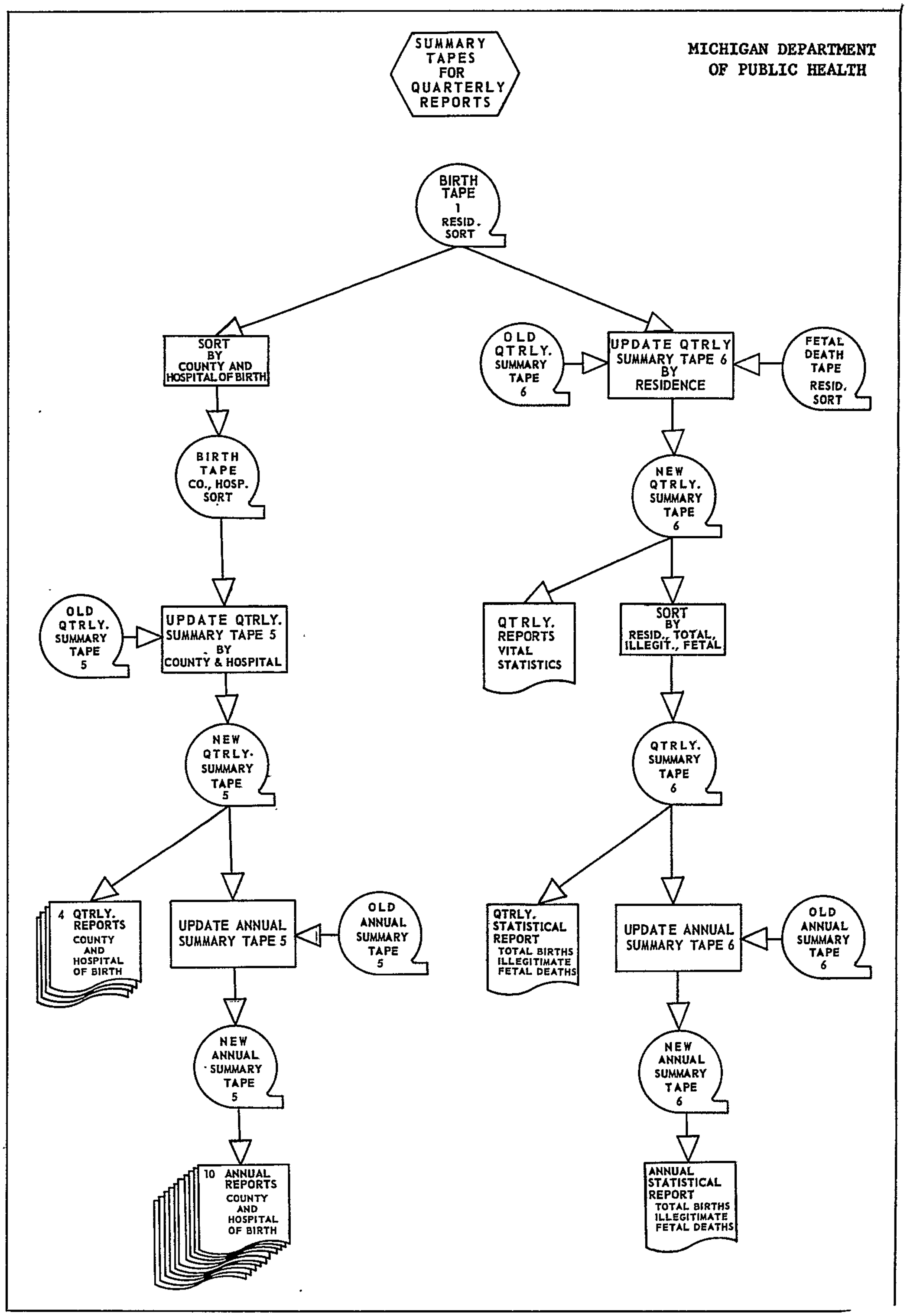


Figure 4

mother, then the tape has to be sorted by residence of mother before summarizing. The spread of the reports involved determines the tape layout. In other words, spreads to be printed in these reports have to be included in the tape records.

Figure 5 provides information on two summary tapes for quarterly reports. One of these provides totals on births by hospitals for planning uses by health department staffs. The other tape provides quarterly reports for local health departments. Along with this tape, we also prepare a fetal death tape. This is the first time a new tape is introduced in the system. Even though fetal death records have the same tape format as the birth records, they are kept on a separate file since fetal deaths are used in reports with births, deaths, and by themselves. These quarterly summary tapes are added together to form new annual summary tapes for use in preparing various annual reports.

Update of the master file is described in figure 6. The master file is updated each month with a monthly file. In this program, you go in with the old master file and the current monthly file and come out with a new master file. Indian birth punchcards are punched and sent to the Indian Health area office of the Department of Health, Education, and Welfare. Cards are accumulated monthly and forwarded annually.


SUMMARY TAPES FOR QUARTERLY REPORTS
MICHIGAN DEPARTMENT OF PUBLIC HEALTH
BIRTH TAPE 1 RESID. SORT
SORT BY COUNTY AND HOSPITAL OF BIRTH
BIRTH TAPE CO., HOSP. SORT
OLD QTRLY. SUMMARY TAPE 5
UPDATE QTRLY. SUMMARY TAPE 5 BY COUNTY & HOSPITAL
NEW QTRLY. SUMMARY TAPE 5
4 QTRLY. REPORTS COUNTY AND HOSPITAL OF BIRTH
UPDATE ANNUAL SUMMARY TAPE 5
OLD ANNUAL SUMMARY TAPE 5
NEW ANNUAL SUMMARY TAPE 5
10 ANNUAL REPORTS COUNTY AND HOSPITAL OF BIRTH
OLD QTRLY. SUMMARY TAPE 6
UPDATE QTRLY SUMMARY TAPE 6 BY RESIDENCE
FETAL DEATH TAPE RESID. SORT
NEW QTRLY. SUMMARY TAPE 6
QTRLY. REPORTS VITAL STATISTICS
SORT BY RESID., TOTAL, ILLEGIT., FETAL
QTRLY. SUMMARY TAPE 6
QTRLY. STATISTICAL REPORT TOTAL BIRTHS ILLEGITIMATE FETAL DEATHS
UPDATE ANNUAL SUMMARY TAPE 6
OLD ANNUAL SUMMARY TAPE 6
NEW ANNUAL SUMMARY TAPE 6
ANNUAL STATISTICAL REPORT TOTAL BIRTHS ILLEGITIMATE FETAL DEATHS

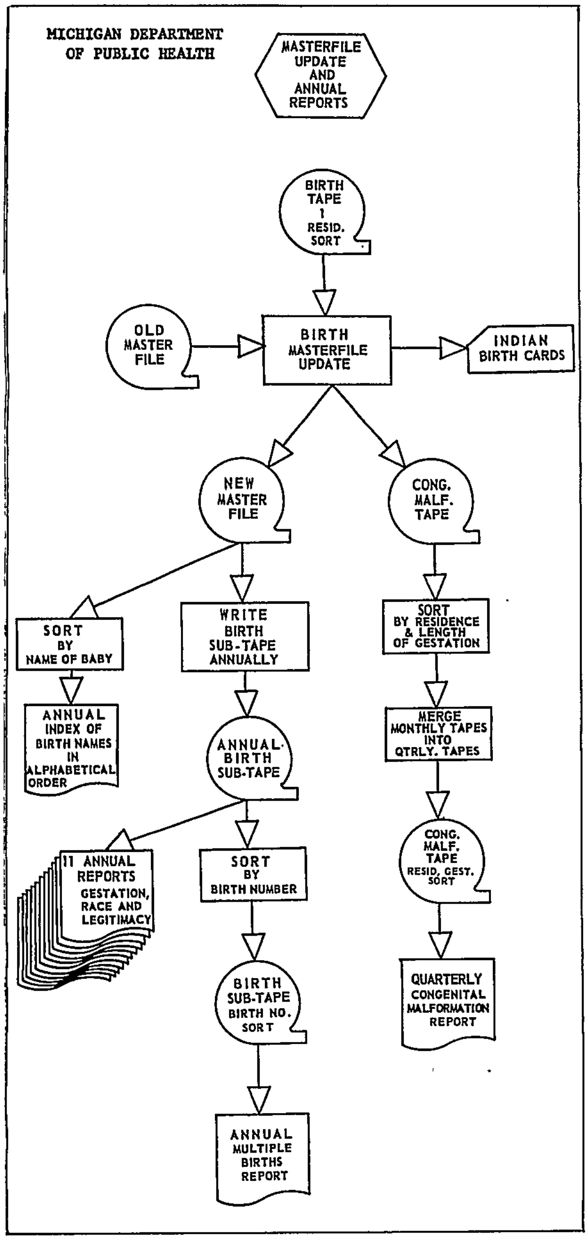


Figure 6

Another tape is prepared from the master file on congenital malformations. Monthly tapes are accumulated to quarterly totals and then merged into annual storage tape. This program is carried to supply continuing demands from users for this type of information.

Two purposes are met in use of the master file. The first is to sort the master file by name of baby and run our annual index of birth names in alphabetical order. The second is to pull the annual birth subtape for use in preparing 11 annual reports. This is referred to as a subtape since only selected data are included and the tape is shorter than the master file.

In summary, it needs to be noted that this system has been programed in autocoder; the programs run on the IBM 12K 1401 system with four tape drives. The annual master file is a file of individual birth records; there are approximately 180,000 records each year. The annual computer run time for the entire system is approximately 120 hours.

The time and effort that go into the systems work are emphasized as being worth the investment. If adequate systems work is not done before programing begins, more programs will be written than are needed. Duplication of effort and unrelated programs and reports result whenever systems work is not thought out and put in in the beginning.

The Birth Update and Report System is regarded as one of our basic foundation systems. By fall of this year, we hope to have complete vital statistics on the computer. Communicable diseases, marriages, divorces, and births are now computerized, and the death system is about three-fourths complete. The Health Statistics and Evaluation Center is one of the mainline organizational units in the Health Department. The Center is a part of the Bureau of Management Services, but it also has direct access to the Director of Public Health.

The approach used in the feasibility study and in succeeding implementation and operation has been directed toward involvement of program staffs within the Department. This continuing staff group is made up of assistant chiefs for the various divisions and bureaus with the aim of building a Center program devoted to furtherance of activities by the professional health workers. Systems representatives from the Center have been appointed to each division to work at office manager levels on preparation of inputs and procedures. As a result, there have been many good applications within an environment suited to continuing growth and strength.

Computer Processing in the Maryland Psychiatric Case Register

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BACKGROUND

The Maryland Psychiatric Case Register was established on July 1, 1961, as a cooperative project of the Maryland State Department of Mental Hygiene and the Office of Biometry, NIMH. The need for such a research tool, in which reports of different psychiatric episodes for the same person are linked serially to form cumulative records of psychiatric careers, has long been recognized by epidemiologists and program directors. Maryland was selected for the development of a prototype register because of its proximity to the statistical and computer resources at the National Institutes of Health in Bethesda, the statewide psychiatric reporting already achieved, and the interest of the State's mental health agencies and two principal universities in this research tool.

The reporting universe consists of all patients admitted to psychiatric inpatient or outpatient facilities in Maryland and Maryland residents admitted to psychiatric facilities in the District of Columbia. Current reporting from 130 facilities is estimated to represent about 97 percent of Maryland residents who receive care in a psychiatric facility. A Public Health Service ruling and a Maryland statute guarantee the confidentiality of identifying information, the use of reported data for research purposes only, and protection of the reporting physician against suit. To date, private psychiatrists do not report.

At the initiation of the register, each type of facility (public mental hospital, private mental hospital, general hospital with psychiatric beds, and outpatient psychiatric clinic) reported on a different type of form. After the register concept had been more widely accepted and basic register maintenance problems solved, a standard report, designed with the assistance of a research committee, was put into use on July 1, 1964.

The long-range requirements of the register dictated that it be computer oriented because of the large volume of reports, complex data processing, the register's eventual large size (66,000 persons at the end of 3 years) and repetitive tasks, and the shortage of authorized clerical positions.

The system was initially designed for the Honeywell 800 computer at NIH. All data-processing programs and most tabulation programs were written in Assembly language because, at the time the decision was made (1961), this was the best choice from among the several available computer programing "languages." The Honeywell Company was at that time supporting the "FACT" language in preference to the "COBOL" language, and the other alternative, FORTRAN, was primarily oriented toward algorithmic calculations rather than high-volume data-processing applications.

In 1965, the NIH decided to convert to IBM's system 360 equipment. At the same time, extensive program changes were needed to accommodate the new standard report form. This presented the opportunity in developing a revised system to apply what had been learned empirically during the previous 3 years. Approximately 90 percent of the programs will be written in COBOL.

The proposed use of COBOL instead of Assembly language will have several advantages. It will (1) facilitate the adaptation of our programs by other register installations (9, 10); (2) make more efficient use of available programer resources, particularly those with limited experience; (3) implement more rapidly changes required by new form designs and addition of new types of reporting facilities; and (4) reduce the programing effort required for one-time special analyses. COBOL will have several negative features. It will (1) increase the amount of computer time; (2) restrict the use of the full capabilities of the computer; (3) complicate input/output operations for the large Master Statistical Records of our files; and (4) require more sophisticated initial programing effort to set up the Data Division of the COBOL programs so that data files will be easily reusable to meet special one-time analyses.

The basic data files will be described first and then the data-processing system.

DATA FILES

Two basic computer files are maintained—the Master Identity File and the Master Statistical File. The separation of identification from the statistical data reduces the size of the files for computer processing and further protects the confidentiality of the data.

The Master Identity File is used for linkage of new reports received to records of previous registrants, to furnish participating facilities with listings of their patients, for recordchecking with other data banks, and for certain other research and routine processing needs. The information contained in the records of this file (see fig. 1) consists of facility code and patient case number, complete name, maiden name, address, date of birth, sex, race, social security number, and date of admission. (Place of birth and mother's maiden surname will most likely be added in order to provide additional discriminating factors for identifying patients.)

A unique identifying or register number associates the identity records for each individual admission with the cumulative statistical record. There is only one cumulative statistical record for each registrant, but a separate identity record is retained for each reported admission of a patient.

The Master Statistical File is used to prepare routine statistical tabulations and for research analyses. The records contain all statistical information reported to the register and admissions, separations, movements to and from long-term leave or elopement (escape), migration, and death, with pertinent data related to each of these events.

In the initial register system, summaries of items, such as days in inpatient care and number of admissions by type of facility by year and since entrance on

Figure 1

Code	Register number	Facility		Patient case number		Soundex code	Sex	Race	Admission			Name—Last, first
		Type	Code		o o o				Year	Month	Day	
1	1 2 3 4 5 6 7	1 2	1 2 3	1 2 3 4 5 6 7 8	1 2 3	1 2 3 4	1	1	1 2	3 4	5 6	1 2 3 4 5 6 7 8

Name—First, middle	Street or box number	Street name	City or town
9 10 11 12 13 14 15 16 17 18 19 20 21	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12 13	1 2 3 4 5 6 7 8 9 10 11 12 13

ZIP Code		State	Maiden name or alias	Social security no.	Status	Residence		Birth			Marital	
Area	Zone					Geo.	Tract or code	Year	Month	Day		b b b b b
1 2 3	4 5	1 2 3	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 9	1 2	1	2 3 4 5	1 2	3 4	5 6	1	1 2 3 4 5

Maryland Psychiatric Case Register Master Identity Record: Fiscal Year 1965

the register, were accumulated during updating and prefixed to the chronological data of the Master Statistical Record. The purpose was to aid in tabulation and limit the need for rescanning the entire Statistical Record. Experience indicated, however, that too often the information desired differed from that accumulated. The Statistical Record therefore has been simplified, and only very limited data are cumulated automatically. In addition to these summary counts, the patient's latest statistical data and current treatment status are prefixed to the chronological data for easy access.

COMPUTER PROCESSING SYSTEM

The basic computer processing system (see fig. 2) can be divided into six phases: Report editing, report linkage, record updating, death clearance, migration checks, and data retrieval and analysis. Each phase is composed of several computer programs. There are in addition several utility programs for applications such as file correction and listing. Each phase of the processing is described in detail in the following pages.

A. Report Editing

All data enter the system via punchcards. These punchcards contain the basic data necessary for routine State statistics plus the identifying information needed for record linkage. Processed annually are 1 statistical punchcard and 1 identification card for each of 30,000 admission forms, 1 statistical card for each of 30,000 separation forms, and approximately 90,000 dataphone cards reporting "movement" into and out of State hospitals. Also included in the processing are several thousand additional punchcards used for reporting address changes, to record death information located clerically, to record symptoms (Problem Appraisal) for selected facilities, and for control purposes.

The input cards, designated FORMAT–1 Records, are punched in Baltimore and brought to Bethesda where they are recorded on magnetic tape with standard card-to-tape procedures. The cards are sorted by facility code and patient case number for more efficient checking of the error listing before being processed through the first Editing Program.

The first Editing Program (MHR001A) is designed to detect all possible internal discrepancies for any one report or card image record. An error listing is prepared for clerical checking. Correction is made by reproduction of the original data punchcard with the revised information and reentering it into the system for a second run of the Editing Program.

Output of the first Editing Program (MHR001A) is designated as FORMAT–2 Records. During this Editing Program a facility-type code is assigned to each record, and the records are reformated to facilitate processing in the next program. All outputs from various edit runs are sorted and merged on facility code, patient case number, date of action, and record-type code. During the merge operation, the earliest processed of any duplicate records detected in the system are dropped from the file.

The sorted FORMAT–2 Record file is input to the second of the Editing Programs, called the Combining Program (MHR310A). In this program, all data, including identifying information pertaining to the same action or event (admissions, separations, placements, or returns from long-term leave or elopement), are consolidated into one card designated as FORMAT–3. Also, a temporary identifying number called the pseudo register number is automatically assigned to each set of events which has the same facility code and patient case number.[1] Thus all actions pertaining to the same episode of treatment, as well as to multiple episodes for the same person for facilities which assign the same case number each time a person is admitted (i.e., a unit case number), are linked. The pseudo register number is placed in both the pseudo register number field and the "located" register number field of FORMAT–3 Records. This temporary number or "handle" begins with 5,000,005 and skips by arithmetic progression of 10 for each change in facility code-patient case number. As will be described later, it has proved to be extremely useful in the linkage phase.

The bringing together of all the data records for each action makes possible additional checks which were not possible during the first Editing Program. The primary check is for missing data records such as an admission identity record without a matching admission statistical record. When an error is detected, all data records for this facility code-patient case number are rejected in order to prevent erroneous assignment of two different pseudo register numbers to the same person. All new data cards resulting from this edit are reintroduced into the

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[1] In view of the increasing percentage of reports which include social security number, this number will in the future also be used for assignment of the same pseudo register number to multiple episodes for an individual.

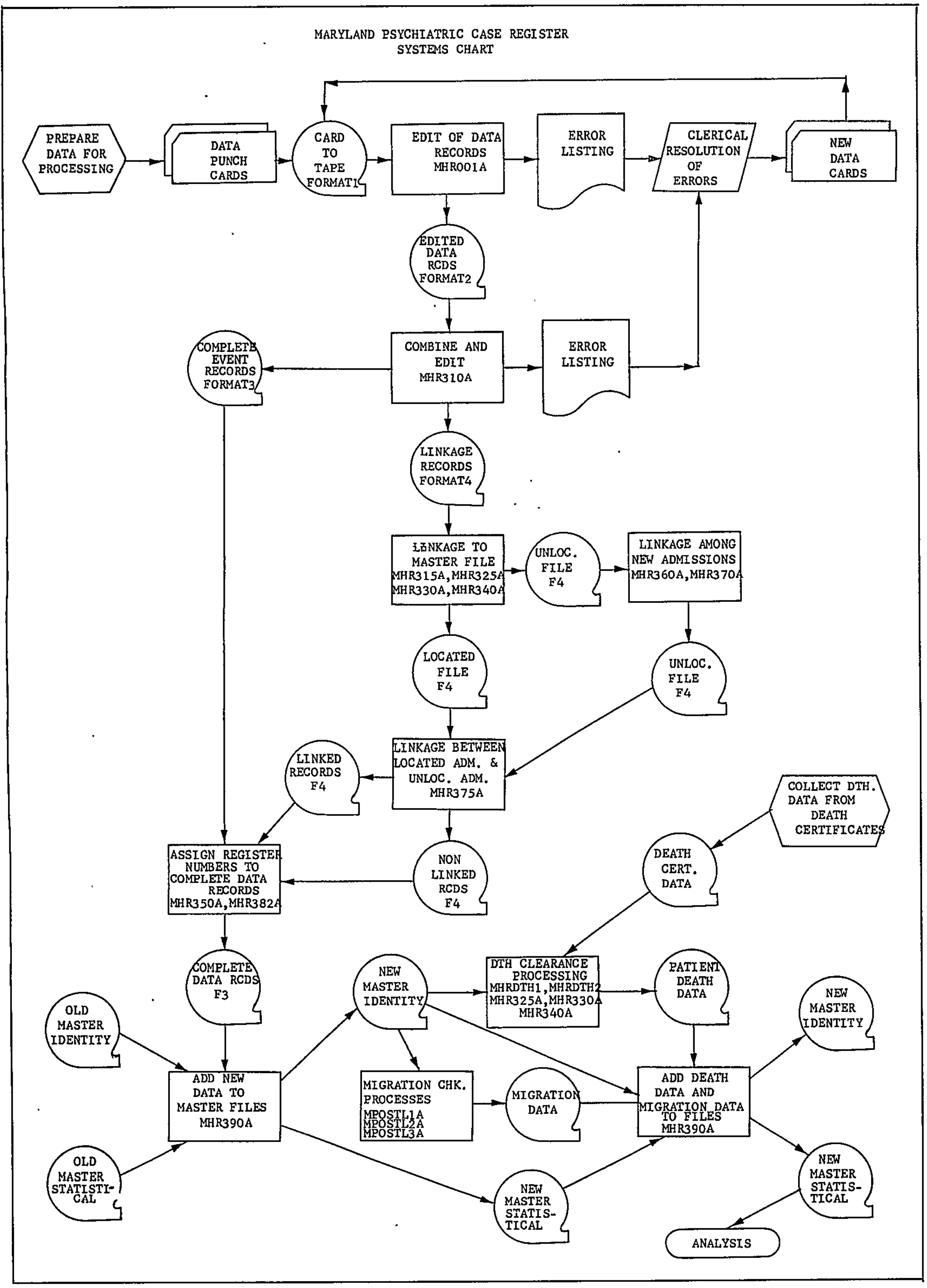
MARYLAND PSYCHIATRIC CASE REGISTER
SYSTEMS CHART
PREPARE DATA FOR PROCESSING
DATA PUNCH CARDS
CARD TO TAPE FORMAT1
EDIT OF DATA RECORDS MHR001A
ERROR LISTING
CLERICAL RESOLUTION OF ERRORS
NEW DATA CARDS
EDITED DATA RCDS FORMAT2
COMPLETE EVENT RECORDS FORMAT3
COMBINE AND EDIT MHR310A
ERROR LISTING
LINKAGE RECORDS FORMAT4
LINKAGE TO MASTER FILE MHR315A,MHR325A MHR330A,MHR340A
UNLOC. FILE F4
LINKAGE AMONG NEW ADMISSIONS MHR360A,MHR370A
LOCATED FILE F4
UNLOC. FILE F4
LINKED RECORDS F4
LINKAGE BETWEEN LOCATED ADM. & UNLOC. ADM. MHR375A
COLLECT DTH. DATA FROM DEATH CERTIFICATES
ASSIGN REGISTER NUMBERS TO COMPLETE DATA RECORDS MHR350A,MHR382A
NON LINKED RCDS F4
DEATH CERT. DATA
COMPLETE DATA RCDS F3
NEW MASTER IDENTITY
DTH CLEARANCE PROCESSING MHRDTH1,MHRDTH2 MHR325A,MHR330A MHR340A
PATIENT DEATH DATA
NEW MASTER IDENTITY
OLD MASTER IDENTITY
ADD NEW DATA TO MASTER FILES MHR390A
MIGRATION CHK. PROCESSES MPOSTL1A MPOSTL2A MPOSTL3A
MIGRATION DATA
ADD DEATH DATA AND MIGRATION DATA TO FILES MHR390A
OLD MASTER STATISTICAL
NEW MASTER STATIS-TICAL
NEW MASTER STATIS-TICAL
ANALYSIS

Figure 2

system beginning with the first Editing Program (MHR001A).

After creation of FORMAT-3 complete data records, a FORMAT-4 Linkage Record containing only identifying information is extracted and written on a second output file. FORMAT-4 Records are used for all subsequent record linkage operations and at a later stage reassociated to FORMAT-3 Records by means of the pseudo register number. In addition to a separate linkage record for each admission action, there is a separate linkage record for each separation or hospital movement, not matched to a current admission, which must be linked to a previous admission in the Master Statistical File.

B. Linkage Phase

Thus far, linkage has been accomplished only among new events with the same facility code-patient case number, but no unique number is available in most other cases to assist in the record-matching process. Social Security number was reported for only 19 percent of the initial patient census in 1961 and for 40 percent of current (1965) admissions. Therefore, it cannot serve as the only linking device, and its use as the register number is still impractical.

Our series of seven computer record-linkage programs takes into account all reported identifying information, shifts the main burden and cost of identification to computer rather than clerical operations, and at the same time produces faster and more accurate linkages. Although record matching by computer has been attempted by several others (11, 12), its use by the Maryland Psychiatric Case Register is unique among chronic disease registers.

During 3 years, 94,828 admission actions were combined to represent 66,006 persons. All of the linkages have now been clerically reviewed. Only 26 incorrect or false linkages were found, 17 due to error in key punching the correction card which is used to change the computer decision or to error in clerical review of the computer decision.

A clerical check of approximately 10 percent of the Master File listed in alphabetical sequence detected 17 missed linkages. According to program logic, these records would have been linked except for errors in clerical review or key punching. It is estimated therefore that a total of less than 300 linkages that should have been detected were missed, an accuracy score of 99.7 percent. Unreported changes of name due to adoption, marriage, or use of alias, where address also has changed, would usually not be linked.

The series of linkage programs described in the next pages applies in succession different methods to achieve a true linkage, the rejects from each preceding process becoming the input to the next process.

Linkage Program No. 1—Facility and Patient Case Number Check (MHR315A)—As stated previously, many facilities reporting to the Maryland Psychiatric Case Register assign the same case number every time the patient is admitted. Thus the facility code-patient case number can be used to link readmission records to an earlier admission record in the register. Also, all the separation actions and hospital movement actions pertaining to persons who had been previously admitted to the register can be readily linked by facility-case number.

In preparation for this program, both the Master Identity File and the file of Linkage Records (FORMAT-4) from the Combining Program (MHR 310A) are sorted into facility code-patient case number sequence. The program searches for a record on the Master File that agrees with the Linkage Record on facility code-patient case number. Unmatched Linkage Records, including separation and movement actions, are written on the "Unlocated File." Where facility code-patient case numbers match, additional checks are made on name, date of birth, sex, and race. When the decision rules indicate the validity of the match is doubtful, the record is written on the "Unlocated File" and a print record produced. For accepted matches, the register number is moved from the Master Identity Record to the Linkage Record and the latter is then written on the "Located File."

Unmatched separation and hospital movement actions and doubtful matches are clerically reviewed. A utility program (MHR309A) allows for the assignment of register numbers where clerical decisions indicate the "possible" linkage to be a "true" linkage. In many cases correction is needed of the name, date of birth, facility code-patient case number, admission date, etc. In some cases, this is done by a utility correction program. In other cases, we have found it more feasible to prepare new data cards and process them through the two Edit Programs and combine the output with the original editing output. This is especially true where several items of information are incorrect.

The "unlocated" output file of this program is processed through a utility program (MHR324A) which leaves only admission type linkage records not matched to the Master Register File for input to the next linkage program.

Linkage Program No. 2—Social Security Number Check (MHR325A)—The percentage of registrants with reported social security account number, while still small, is improving due to general emphasis on the importance of this item. The Social Security Number Check program is similar to the facility-case number check program but uses the social security number as the unique identifier. Over 700 admission actions in fiscal year 1963 and over 1,300 in 1964 were properly linked by use of this number. Only two cases were found where different persons were reported with the same social security number. However, in our total review of linkages, several persons were found who reported entirely different social security numbers at different admissions. This is merely an observation and not a complete analysis of this problem.

Linkage Program No. 3—Soundex Name Check (MHR330)—The next linkage program uses reported surname and sex as primary linkage factors. During the Combining Program (MHR310A), each admission surname is automatically assigned a four-digit phonetic code based upon a modified Russell Soundex coding system. This code brings similar sounding names together despite variation in spelling. It also serves to partition the file into groups small enough for comparison.

Program MHR453A converts the Master Identity File into a Master Linkage File by removing records of deceased persons and records that are exact duplicates as to name, address, date of birth, sex, and race. It also duplicates Master Identity Records for Soundexed maiden or alias names, with the duplicates identified by a code.

The Master Linkage File and the Unlocated Linkage Record File are sorted into Soundex code-sex sequence. A block of records with the same Soundex code-sex is read from the Master Linkage File into core memory. Records from the Unlocated Linkage Record File in the same Soundex-sex group are then read into memory one at a time and compared to every record of the Master Block. Comparison is made between each pair of records on all identifying information. One of three decisions, "acceptable," "possible," or "reject" match, is made by the computer (see fig. 3).

When an "acceptable" match is made, further checking of this Linkage Record is discontinued; the register number from the Master Record is entered in the located number field of the Linkage Record which is then written on a Located File. For "possible" and "reject" matches, checking is continued against the next Master Record in memory.

For each "possible" match, both records are printed for clerical review. In earlier years all "acceptable" linkages were reviewed for verification. Based upon this experience with each decision rule, only certain "accept" categories are now reviewed. For "reject" matches, no print record is produced; checking merely continues to the next Master Record in memory. If a Linkage Record has been checked with all records in the Master Block and no "acceptable" match made, the record is written on the Unlocated File.

Where clerical review determines that the computer decision was incorrect, a correction card overrides the computer decision with the linkage correction utility program (MHR309A). To change a "possible" to an "acceptable" match, the master register number from the correction card is placed in the located register number field of the Linkage Record and the record rewritten on the Located File. To change an "acceptable" to a "reject" match, the pseudo register number is moved to the located register number field and the record rewritten on the Unlocated File.

Over 4,500 admissions in fiscal 1963 and over 6,000 in fiscal 1964 were linked by this program. Although some details of the logic have changed based on continuous review of the yield of each decision rule, the basic concepts have remained the same. Because core memory will eventually be too small to hold all Master Linkage Records with the same Soundex-sex code, procedures will be reversed; that is, all of the new Linkage Records will be read into memory and the Master Records matched to them.

Linkage Program No. 4—Month and Day of Birth Check (MHR340A)—After the Soundex name check, a further match for unlocated admissions uses month and day of birth as the primary key but follows the same concept. Both the Master Linkage File and the Unlocated Linkage Records are sorted into month and day of birth and sex sequence. All records with the same month and day of birth and sex from the Master File are read into memory, and the Linkage Records with the same birth and sex are compared one at a time to every record in the Master Block on the basis of other identifying information.

Presumably, this program should associate records where name misspelling is such that different Soundex codes are assigned. This program how-

MARYLAND PSYCHIATRIC CASE REGISTER
DECISION TABLE FOR SOUNDEX LINKAGE PROGRAMS
MHR330A, MHR 360A AND MHR375A

	FIRST CHECK						SECOND CHECK			THIRD CHECK				FOURTH CHECK	
Reference Code	Soundex Code And Sex	Surname	First Name	Address	Birth Year Range	Decision	Maiden Name	Middle Name	Decision	Race	Birth Month & Day Spec.	Birth Year	Decision	Birth Month & Day	Decision
A0000	0	0	0	0	0	Accept	▨	▨	▨	▨	▨	▨	▨	▨	▨
A0100	0	0	0	0	1	Possible	0	0	Accept	▨	▨	▨	▨	▨	▨
A0110							0	1	Accept	▨	▨	▨	▨	▨	▨
A0120							1	0	Possible	▨	0	▨	Accept	▨	▨
A0120-N										▨	1	▨	Possible	▨	▨
A0131							1	1	Possible	0	0	1	Accept	▨	▨
A0133										0	1	1	Possible	▨	▨
A0135										1	0	1	Possible	▨	▨
A0137										1	1	1	Possible	▨	▨
A0200	0	0	0	1	0	Possible	0	0	Accept	▨	▨	▨	▨	▨	▨
A0210							0	1	Accept	▨	▨	▨	▨	▨	▨
A0220							1	0	Possible	▨	0	▨	Accept	▨	▨
A0220-N										▨	1	▨	Possible	▨	▨
A0230							1	1	Possible	0	0	0	Possible	0	Accept
A0230-N														1	Possible
A0231										0	0	1	Possible	0	Accept
A0231-N														1	Possible
A0232										0	1	0	Possible	▨	▨
A0233										0	1	1	Reject	▨	▨
A0234										1	0	0	Possible	0	Accept
A0234-N														1	Possible
A0235										1	0	1	Possible	0	Possible
A0235-R														1	Reject
A0236										1	1	0	Reject	▨	▨
A0237										1	1	1	Reject	▨	▨
A0300	0	0	0	1	1	Possible	0	0	Accept	▨	▨	▨	▨	▨	▨
A0310							0	1	Accept	▨	▨	▨	▨	▨	▨
A0320							1	0	Possible	▨	0	▨	Possible	▨	▨
A0320-R										▨	1	▨	Reject	▨	▨
A0331							1	1	Possible	0	0	1	Possible	0	Possible
A0331-R														1	Reject
A0333										0	1	1	Reject	▨	▨
A0335										1	0	1	Possible	0	Possible
A0335-R														1	Reject
A0337										1	1	1	Reject	▨	▨
A0400	0	0	1	0	0	Possible	0	0	Accept	▨	▨	▨	▨	▨	▨
A0410							0	1	Accept	▨	▨	▨	▨	▨	▨
A0420							1	0	Accept	▨	▨	▨	▨	▨	▨
A0430							1	1	Possible	0	0	0	Possible	0	Accept
A0430-N														1	Possible
A0431										0	0	1	Possible	0	Accept
A0431-N														1	Possible
A0432										0	1	0	Possible	▨	▨
A0433										0	1	1	Possible	▨	▨
A0434										1	0	0	Possible	▨	▨
A0435										1	0	1	Possible	0	Possible
A0435-R														1	Reject
A0436										1	1	0	Reject	▨	▨
A0437										1	1	1	Reject	▨	▨
A0500	0	0	1	0	1	Possible	0	0	Accept	▨	▨	▨	▨	▨	▨
A0510							0	1	Accept	▨	▨	▨	▨	▨	▨
A0520							1	0	Accept	▨	▨	▨	▨	▨	▨
A0531							1	1	Possible	0	0	1	Possible	▨	▨
A0533										0	1	1	Reject	▨	▨
A0535										1	0	1	Possible	▨	▨
A0537										1	1	1	Reject	▨	▨
A0630	0	0	1	1	0	Possible	(1)	(1)	Possible	0	0	0	Possible	0	Accept
A0630-N														1	Possible
A0631										0	0	1	Possible	0	Possible
A0631-R														1	Reject
A0632										0	1	0	Reject	▨	▨
A0633										0	1	1	Reject	▨	▨
A0634										1	0	0	Possible	0	Possible
A0634-R														1	Reject
A0635										1	0	1	Reject	▨	▨
A0636										1	1	0	Reject	▨	▨
A0637										1	1	1	Reject	▨	▨
A0730	0	0	1	1	1	Reject	▨	▨	▨	▨	▨	▨	▨	▨	▨
A0800	0	1	0	0	0	Accept	▨	▨	▨	▨	▨	▨	▨	▨	▨
A0900	0	1	0	0	1	Possible	▨	▨	▨	▨	▨	▨	▨	▨	▨
A1030	0	1	0	1	0	Possible	(1)	(1)	Possible	0	0	0	Possible	0	Possible
A1030-R														1	Reject
A1031										0	0	1	Possible	0	Possible
A1031-R														1	Reject
A1032										0	1	0	Reject	▨	▨
A1033										0	1	1	Reject	▨	▨
A1034										1	0	0	Possible	0	Possible
A1034-R														1	Reject
A1035										1	0	1	Reject	▨	▨
A1036										1	1	0	Reject	▨	▨
A1037										1	1	1	Reject	▨	▨
A1100	0	1	0	1	1	Reject	▨	▨	▨	▨	▨	▨	▨	▨	▨
A1230	0	1	1	0	0	Possible	(1)	(1)	Possible	0	0	0	Accept	▨	▨
A1231										0	0	1	Possible	0	Accept
A1231-N														1	Possible
A1232										0	1	0	Possible	▨	▨
A1233										0	1	1	Reject	▨	▨
A1234										1	0	0	Possible	▨	▨
A1235										1	0	1	Possible	▨	▨
A1236										1	1	0	Reject	▨	▨
A1237										1	1	1	Reject	▨	▨
A1300	0	1	1	0	1	Possible	▨	▨	▨	▨	▨	▨	▨	▨	▨
A1400	0	1	1	1	0	Reject	▨	▨	▨	▨	▨	▨	▨	▨	▨
A1500	0	1	1	1	1	Reject	▨	▨	▨	▨	▨	▨	▨	▨	▨

0=Agreement 1=Disagreement (1)=Assumed Disagreement

SURNAME CHECK - In a one-to-one correspondence of each letter of each name, based on the longest of the two, only one disagreement allowed.

FIRST NAME CHECK - (Same as Surname)

ADDRESS CHECK - Agreement on street number and first 8 positions of street name. If street name blank, agreement on street number. If street name not blank, and it is RT, RF, or RD - agreement on first 5 positions of City/Town.

MAIDEN NAME CHECK - Agreement on 8 positions of maiden name.

MIDDLE NAME CHECK - Agreement on middle initials; or middle initial/maiden name first letter cross-check.

Birth Year Range - If current age is: Range must be within:

If current age is:	Range must be within:
0 - 17	2 years
18 - 29	5 years
30 - 49	10 years
50 and over	15 years

Month & Day of Birth: Special - Agreement in either month & day of birth or in crosscheck or any of month & day of birth fields are blank.

Complete agreement required for Social Security Number, maiden name, sex, race, birth month and day, and birth year.

Figure 3

ever has yielded only 80 to 100 linkages annually.[2] Although computer time is considerable—over 4 hours in fiscal 1964—the importance of obtaining all possible linkages justifies this program. Many of the linkages were for cases reported without a name (about 1.5 percent of all identity records).

Linkage Programs Nos. 5 and 6—Match of New Records With Each Other (MHR360A, MHR370A.)—The linkage process, up to this point, has attempted to match admissions with persons already on the Master File. The remaining several thousand unmatched admissions (about 60 percent) are assumed to represent new patients. However, a new patient may have several admissions in 1 year. Therefore, all remaining actions must be matched with each other.

The first program (MHR360A), a modification of the Soundex Linkage Program (MHR330A), uses as input the unlinked new admission (FORMAT-4) Records in Soundex code, sex, and located register number sequence. These records are read into memory in groups composed of all records containing the same Soundex code-sex. The first record in a block is checked with all other records in the same block. The procedures and decisions previously described are followed with one exception. When an acceptable match is made, the located register number field of the base record (i.e., the first record being compared) is reduced by one and placed in the located register number field of the second record. When a record encounters an "acceptable" match or is checked to all records higher in sequence in the block without encountering an "acceptable" match, the next record in the block is matched to the remaining records of the block. Subtraction is limited to the low order position of the located register number, thereby allowing for an infinite number of linkages.

Since there is only one output file from this program, the correction procedures are also slightly different. To create a linkage, the pseudo register number minus 1 of the base record, obtained from the correction card, is placed in the located register number field of the matching record. To destroy a linkage, the pseudo register number of the record is moved to the located register number field of the same record.

After these corrections have been made, a second cross-check linkage program (MHR370A) checks the unlocated admissions, using month and day of birth and sex as the grouping factor.

Linkage Program No. 7—Final Linkage Check (MHR375A)—Although admissions have been checked to the Master File and a cross-check has been made among all admissions not linked to the Master File, there are other possibilities of duplication. A previous registrant may have multiple episodes during the year, some linked to the Master File through programs 1–4 and some not linked. This can occur when there is a readmission to a facility which uses the unit patient case number system or where the social security number is reported for only one of the episodes. In addition, the reported name would necessarily differ in its Soundex code from that recorded on the Master Files.

To detect this duplication, a modification (MHR375A) of the Soundex Name Check to the Master File is used. The Located Linkage File (all admission FORMAT-4 Records linked to the Master File in Linkage Programs 1–4) is used in place of the Master File. All procedures are the same as previously described for the Soundex Name Check to the Master Files (MHR330A). For fiscal 1964, 25 positive linkages were made with this program.

C. Record Updating

All of the FORMAT-4 Linkage Records from the various linkage programs are sorted and merged by located register number sequence. A new register number is automatically assigned to all events for each new registrant; i.e., with the same pseudo register number in the high order position of the located register number field. (The low-order position may have been changed to create linkage during the cross-checks for multiple admissions during the current fiscal year.) The new register numbers are assigned in sequence, continuing from the last number previously assigned.

Both the output of this program (MHR380A), and the complete data FORMAT-3 Records are then sorted and matched on pseudo register number. The number in the located register number field of the FORMAT-4 Linkage Record is placed in the located register number field of the matching FORMAT-3 Record or Records (MHR382A).

The file of data FORMAT-3 Records is now ready to update the Master Files. To do this, it is sorted into register number (in the located register number field), date, and record-type sequence. New events are added in chronological sequence to

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[2] An earlier paper (8) presents more detailed information on the relative yields of each program.

the record of previous registrants in the Master Statistical File. A new Master Statistical Record is created for new registrants. At the same time, the cumulative portion of this record is updated and a two-position "current status" code assigned that describes the type of psychiatric care, if any, being received as of the end of the update period. This information aids in the selection of patients for statistical tabulations or other analyses.

During the update, many edits, not feasible earlier, can be performed. These relate to consistency between records for different episodes such as birth date, race and sex, movements to and from State hospitals, or reported under care of two inpatient facilities at the same time. Occasionally, a second report has been received for an action reported the previous year. Corrections are usually applied to the input to the updating program, and a new update run is made.

Identity records are added to the Master Identity File for all admission actions. This new Master Identity File is then processed through a program (MHR453A) which creates the Master Linkage File for the next running of the Soundex Linkage Check (MHR330A) and Date of Birth Linkage Check (MHR340A) as previously described.

D. Death Clearance

An important element of a chronic disease register is the recording of the final disease outcome. Deaths in institutions are routinely reported but usually not those in the community. Unless counterindicated by further experience, therefore, we plan to match the register against resident death certificates each year. Only one death clearance process covering all 3 years at one time has been undertaken thus far.

For death clearance, the death certificate punchcards prepared routinely by the Maryland State Health Department and the Baltimore City Health Department are supplemented by additional identifying information such as complete date of birth, maiden name or alias, social security number, and address, needed for record matching. Deaths of all persons under 1 year of age are eliminated since few noninstitutionalized infants are in the register population.

The identifying and statistical information contained in several punchcards for each death are combined as a complete death data record (FORMAT-3). Also, an admission type linkage record (FORMAT-4) is created for each death. Death Linkage Records are then matched by the Social Security Linkage Program (MHR325A) to the Master Identity File. The unmatched Death Linkage Records from this program are matched to the Master Identity File by the Soundex Linkage Program (MHR330A) and the month and day of birth linkage program (MHR340A).

The matched Death Linkage Records are then reassociated to the complete Death Records, and the located registrar number placed in the latter. A new run of the Update Program (MHR390A) is made using these records with all appropriate checks, such as deaths of persons recorded as still being under psychiatric care.

For the first 3 years, the death clearance programs identified 335 registrants who had died while on the rolls of an outpatient psychiatric clinic and 696 who were in the community not under any psychiatric care. Most of these deaths would not have been known to the register without the death clearance procedure. In addition, the date and cause of death were obtained for 2,756 institutional deaths previously known to the register.

A number of death certificates were not matched, however, for registrants known to be deceased. A thorough review of this process revealed that in most instances the date of death reported by the facility differed by several months from the actual date of death, accounting for reject of the match. A few missing death certificates were located in the District of Columbia Health Department files. In other cases, nonmatching resulted from gross misspelling or change of name. Only one name death index card had been selected for matching, but in future operations all available name cards will be used. It became evident also that for various reasons not all resident death certificate punchcards entered into the matching operation.

Based upon this experience, a Master Death Clearance File will be created which will exclude duplicate identity records, records for deceased persons where a cause and date of death are already recorded on the register, and persons recorded on the register as currently in an inpatient facility.

E. Migration Checks

When a registrant emigrates from Maryland, he is generally no longer subject to risk of readmission to a facility in the State. Psychiatric admission or death outside the State while a nonresident will not be reported except through special study. For these reasons, it is desirable that information be obtained on out-migration of registrants. Furthermore, the mobility of psychiatric patients is in itself a subject of epidemiological interest.

Fortunately, the post office when furnished a suitable card with name and address will check their records to see if the person is still living at that address and will provide any forwarding address available. This service is free to Federal agencies but otherwise costs 5 cents per card.

A trial postal inquiry was conducted on 5,000 registrants. Based upon this experience, the following procedures were developed and are being applied to determine the present address of 48,000 registrants (excluding only those deceased or institutionalized for 3 years or more and therefore unlikely to be released):

1. The latest reported address record for each selected person is extracted from the register files;
2. The extracted records are processed through an IBM 1401/1404 system to place the name and address of the patient on a specially designed mail punchcard for post office inquiry;
3. A matching control statistical punchcard is prepared containing the register number plus selected statistical codes. (This card can be collated with the return mail punched cards for tabulation of returns by patient characteristic, to determine missing mail cards for each post office, etc.)

The inquiry cards returned by the post office are coded clerically according to the information furnished by the carrier serving that address, and the codes are gang punched into the inquiry cards. These cards are then matched to the control statistical card, and the migration code from the inquiry card is reproduced into the statistical card. This migration statistical card is then introduced into the next updating cycle along with a migration identity punchcard for each reported change of address.

In this project, the effect of the passage of time on locatability is being tested by mailing for each month only one-tenth of the inquiries selected on the basis of an arbitrarily assigned serial number. Variation over the 10-month period in the proportion reported moved but without forwarding address can then be studied. If a forwarding address is received, further mail inquiry is being made.

The followup of all residual nonlocatees will probably be too difficult, so a small "continuous" sample of registrants will be systematically selected, on the basis of permanent register number, for intensive followup. Those not located in this sample will be traced through city directory, other records, and facility contact, if necessary. A small sample of out-of-State migrants may also be followed, if feasible, to determine if migration is selectively associated with mental health status.

At the end of this experience a better appreciation of the value of migration checks will be known.

F. Data Retrieval and Analysis

The end goal of the register is the retrieval of summary data and of sample patient records for detailed study. The first task is the most difficult and most costly.

In addition to programs which prepare tables directly from Master Statistical Record search and count of indices, there are data reduction and extract programs required as intermediate steps to provide the input for various statistical tabulation programs. In order to reduce the number of times the entire Master Statistical Record must be scanned, a generalized program is available which extracts five different types of records for statistical tabulation. This program can be readily modified to extract records meeting different conditions.

Tabulations include frequency counts, percentage distributions, age-specific and age-adjusted admission and prevalance rates, "unduplicated" by type of facility, by individual facility, or by residential area, or not unduplicated. The total experience of patients under care some time during the year can be summarized. One set of routine tabulations "follows" groups of patients separated from each psychiatric facility for a period of 1 year. The next psychiatric facility to which the patients had been admitted and the time lapse since separation are presented. A wide variety of other routine and special followup studies are anticipated now that several years of data have been accumulated. (13–17).

Several life table analyses have been carried out (18, 19). First we define the cohort, then extract from the Master Statistical File a record containing all necessary variables for each patient in the cohort. The primary variables are the exact date of various psychiatric events recorded. These extracted records are then processed through a program which compiles the frequency counts needed for computing the various probabilities, and in turn these are processed through a FORTRAN program which produces the life tables. Selection of cohorts and time periods is determined by parameter cards. Any combination of variables may be used to select cohorts, and up to 24 time periods may be specified.

A very useful form of data retrieval for exploratory analysis of the psychiatric careers of a small number of patients or for the examination of inconsistent records is a printout of selected patient Statistical Records. Selection of records can be based on register number, patient characteristics, current status code, or other variable.

Another potential use of the Maryland Psychiatric Case Register data is for comparative studies with other registers (20). The main difficulties of this type of study are twofold: each existing register records different types of data on each patient; secondly, each register uses different coding schemes to record its data in machinable form. The lack of uniform definitions is especially troublesome in comparisons with foreign registers such as those in England, Scotland, or Yugoslavia. The computer is, however, useful for accurate conversion of comparable data when the different definitions or coding schemes used can be isomorphically related.

FUTURE PLANS

Future plans include possible extension of reporting not only to private psychiatrists but also to nonpsychiatric agencies such as family service, welfare, and correctional agencies. Such a psychosocial register would be very desirable for many reasons (22). However, its size would imply additional financial support due to the added costs of maintenance. It would also be necessary to obtain the cooperation of a large number of different types of agencies that would be involved in such a broad program.

The main volume of current work in the Maryland Psychiatric Case Register is related to State mental hospital movements. We hope to develop a teletype communication system between all State mental hospitals and the central office to record statistical and administrative data on patients. Notifications of State hospital movements in the current dataphone system allow for numerical transmissions only, and as a result it is not possible to verify patient case number by name. A better telecommunication system would enable all actions pertaining to a patient to be verified. A telecommunication terminal in the Baltimore office to link with the NIH computer at Bethesda also may be possible. This will provide significantly more frequent computer access and foster "turn around time" for tasks with small volumes of input, such as processing of corrections or status inquiries into the register files.

DISCUSSION

This project is an example of the use of a digital computer to reduce the amount of clerical work required in maintaining a large case register file while increasing accuracy and consistency of data and facilitating scientific analysis. The computer assisted report and death certificate linkages are perhaps the most unique features of the case register process as it is implemented in the Maryland Psychiatric Case Register.

The project has been primarily experimental in nature, and therefore the project has borne many developmental costs. By writing time-proven computer programs in COBOL, however, we hope to reduce direct costs while also making them readily useful to others engaged in similar projects. Although computer programing and processing are costly, without computer aid this type of research for a 3 million population would not be possible. The number of register research publications attests to its increasing use.

A unique person number that could aid in linking various vital and morbidity events in a person's life would greatly facilitate register research, substantially reduce costs, and bring registers within the reach of many more agencies. The assignment of the social security number at birth is a recommended solution (21).

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Generalized Tabulating Concepts

Mr. Willis H. Kenyon, *Data Processing Specialist, Office of the Dean, University of Wisconsin*

Before I begin, I should like to take a moment to discuss the title of the seminar today—Automatic Data Processing. I am amazed that I do not understand what that means. I have been in the business about 8 years and have found nothing automatic about data processing. Perhaps one solution or one possible avenue toward more automatic data processing is the type of program which we are going to discuss.

Introducing myself, I should like to say that I have worked for the State of Wisconsin, Department of Administration. The Department of Administration controls a central computer complex for the entire State. This does not preclude any other agency having its own computers, but hopefully will dispel them when it is unnecessary. On the staff I acted as a systems analyst, ranging over the State whenever problems came up, and was assigned on a feasibility study to the Board of Health in Wisconsin.

You can have the best solution in the world, but if no one has a problem it does not help you. But I think every person in this room, if I am judging you properly, has the problem. Perhaps we can show you an approach that may help you if you have a 1410. The data-processing industry seems to be undergoing a period of revolution right about now to try to catch up with its users. The feeling is that data processors must make the computers more accessible to the user. It is all well and good that we can train very talented programers to communicate with the computer, but it is very difficult to get these same people to communicate with the user. This causes many problems, slips between the tongue and the lip, so to speak.

This, then, is one of the things that we tried to bypass. We want to go directly from the problem definition stage, from you people as those asking the questions, to the computer and, within reason, allow the computer to answer the inquiry requests that you have.

I was impressed by the weight placed on data processing in comments at the opening general session. However, I saw a lack of one word with which I think you are all very concerned. We heard a lot about collection and presentation of data to a machine, but very little about the *retrieval* of that information in the form that you require. The major requirement, I believe, in your area is tabulations. They form the basis for your reporting and also for your analysis. This is what WISTAB—a generalized cross-tabulation program—is designed to accomplish.

Probably the most obvious example of user-oriented languages or languages that you yourself could learn and use on the computer is FORTRAN (Formula Translator); anything that you can express in formula terms you can write in those formula terms and give to a computer for processing the job that you require. A newer programing language is the General Information System being developed by IBM for their 360. Its primary objective is inquiry, so that a user can go to a computer, pose a question, and get the results back. IBM expects to have this out in a year.

The WISTAB Program

WISTAB is short for WISconsin TABulator. It was developed in Madison by Richard W. McCoy (Director, Data Processing Center, School of Commerce, University of Wisconsin) and myself. WISTAB is a generalized cross-tabulation program written for the IBM 1410 data-processing system.

It is a do-it-yourself tool of data analysis which allows the user to program his own tabulations without the assistance of a computer specialist. One hour should be sufficient to become an accomplished WISTAB user. Using the accumulation capabilities, one can also produce budget, accounting, or audit reports. In your work, this can give such items as number of visits by nurses or number of teeth in a dental study.

It will calculate and print percentage distributions based on row, column, or grand totals, in addition to the raw frequencies or accumulations. As input, the program accepts a wide variety of data formats on punched cards or magnetic tape; sorting or otherwise reorganizing original data is *not required.* This means that if you have a file sorted in alphabetic sequence for your birth index you would not have to re-sequence it to produce any other tabulations you might require using this method. Most present methods require that the file be sorted into county sequence to produce tabulations by county and then sorted by, let's say, cause of death to produce the cause-of-death register. We do not do this at all. There is no requirement for sorting. Results appear in the form of printed reports; optionally, magnetic tape records.

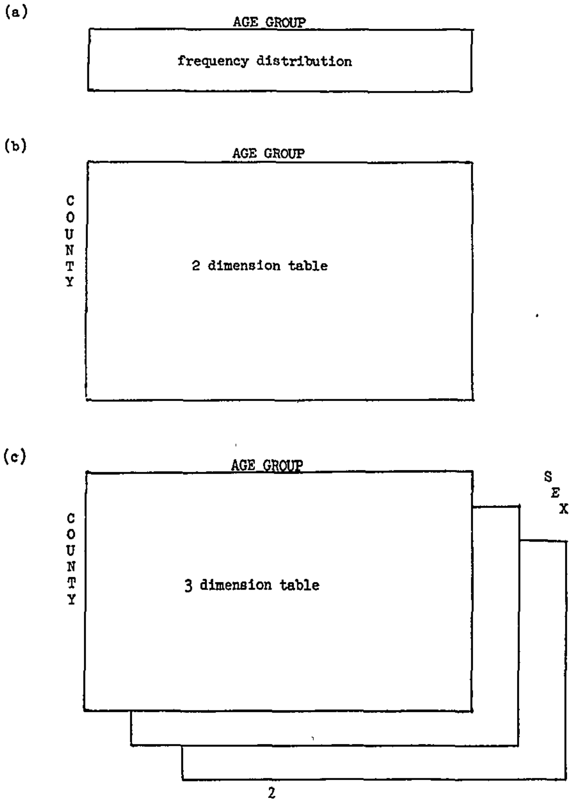
WISTAB users specify the variables of interest, their location in the input records, and the way in which they are to be distributed. This information, along with other general control information, is then punched into tabulating cards for presentation to the program. These control cards are thoroughly edited by the WISTAB program for detectable errors. If errors are found, they are noted for the user, and the run is discontinued before valuable computer time is wasted.

WISTAB was prepared to eliminate the time-consuming task of preparing separate, special programs for each tabulation and to give the user closer control over his data. In short, WISTAB is an accurate, efficient means of tabulating data under personal user control.

WISTAB output possibilities in sketch form are given in figure 1. The first example is a simple frequency distribution, which would be the distribution, perhaps, of the number of occurrences within a specific age group. The second is a two-dimensional table where we use age groups by county (this could be almost any other variable that you would want). The third uses the same example of age group and county and is divided further again by sex on a three-dimensional plane. While this is the extent of the output format, we can go to any number of dimensions you may require.

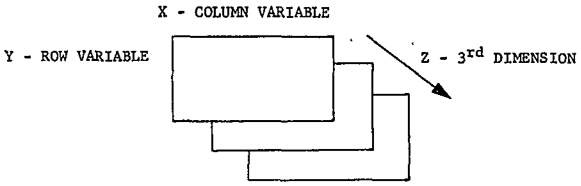
Figure 1. WISTAB OUTPUT POSSIBILITIES

The general formats of WISTAB tables are shown in the following examples:



X, Y, and Z Variables

To effectively use the WISTAB program, the terminology used in control-card preparation must be thoroughly understood. The axes of the tabulation are designated according to standard practice as X, Y, and Z, respectively, defining column, row, and third-dimension axes:



The X or column variable is so named because it establishes the columns of the table; it is defined by the "X control card." The Y or row variable is so named because it establishes the rows of the table; it is defined by the "Y control card." Similarly, the Z or third-dimension variable is defined by the "Z control card."

Several tables can be generated with one pass of the input data. The end of a sequence of tables is defined by either a new "X control card" or an "END control card." An X appearing alone in a sequence will cause a frequency distribution to be produced. An X and Y will produce a two-dimensional table. By coding an X followed by several Y's, a series of two-dimensional tables will be produced, each having the same X axis. An X, Y, and Z sequence will produce a three-dimensional table. By coding one X, several Y's, and one Z, a series of three-dimensional tables will be tabulated. A formula is available to help determine the number of machine passes required for any given sequence of control cards.

If, for instance, you have an 80K 1410, this would mean you have room for 80,000 characters of information. The program itself would require about 10,000 of these positions, leaving 70,000 for your use. If, then, your tables were 10 columns by 10 rows, requiring 100 cells in the table, and each cell was, say, 7 digits, that would mean 700 digits will be required for 1 table. By simple divisions, we find 100 tables could be generated from one pass of the data. Now if you go to a larger number of intervals on any axis or to larger or smaller counter sizes, you increase or reduce the number of tables that you can get on one pass.

The machine can, without preplanning, decide the number of tables which can be generated in one pass. It will reject those remaining for another run. In the event all tables cannot be processed in one data pass, the computer will count the unused control cards and print a message letting you know how many are left to be processed. This takes the busy work out of your hands. You go ahead and ask for whatever you want. The computer decides how much of that it can accomplish at one time, goes ahead and does this amount, and then tells you how much it was not able to accomplish.

XTAB and End Definition Cards

Each run requires control cards to establish the starting and ending points of the run.

The "XTAB control card," which is short for cross-tab control card, must always be the first control card of a run. It specifies data formats, required outputs, and a title to be printed at the top of each output page.

The "END control card" must always be the last control card of a run. Its only purpose is to signal this fact.

Criterion and Limitation Variables

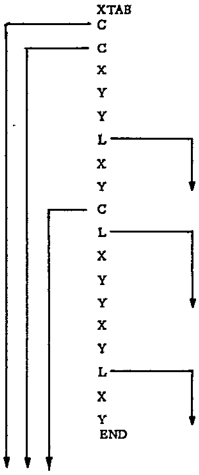
Two additional control cards serve as "modification" cards to alter the manner in which tabulation takes place. This increases the flexibility of the program very much.

The C or criterion variable is so named because, on the basis of the described criterion, records may be isolated and excluded from all or a portion of a particular WISTAB run; it is defined by the "C control card."

The L or limitation variable provides a limited criterion variable to exclude records from a single table sequence only; it is defined by the "L control card."

These two cards are similar in their effect, except for their span of control; the C control card affects all tables from the point of its insertion through the end of the run, while the L control card holds only through one table sequence. Their respective spans of control can be best understood using the illustration in figure 2, where the vertical arrows demonstrate their influence. The C and L cards may be used for many purposes. The user should not feel restricted by the few examples described here.

Figure 2



1. The number of table dimensions can be increased. When a user finds the three dimensions provided by WISTAB insufficient and requires four or more, the C and L cards can provide this facility while remaining relatively conservative of machine memory space.
2. Error values or undesirable values can be eliminated from tabulation. This feature can be of

particular import when the percentage tables could be distorted by their inclusion.

3. Data can be restricted to a given range. An example of this might be that only records containing years 58 and 59 are of interest and all others in the data will be eliminated from the tabulation.

There is no practical limit to the number of C and L control cards which may be inserted into any given run nor the sequence of their insertion.

Accumulation Variables

The accumulation variable, defined on the "A control card," is used to specify a single field of the input record which is to be added into the table to allow, for example, the accumulation of dollar amounts or item quantities rather than simple frequencies. The span of control of the A control card is identical to that of the L control card specified in the previous illustration.

Examples of possible areas to which the accumulation variable might be applied are suggested here. Many more will be found by the user.

1. Analysis of an accounting, audit, or budget nature may be carried out.
2. Analysis of source data may be made in order to facilitate the checking of results and debugging of specially written computer programs.

WISTAB Users Manual

Detailed explanations and illustrations for the program are given in the *WISTAB Users Manual,* July 1964 (revised April 1966). In addition to materials presented here the Manual covers:

1. Control card preparation;
2. Error messages;
3. Technical information;
4. Coding example; and
5. Examples of machine output.

Data Processing for Medicare—Title XIX

Mr. Stephen F. Gibbins, *Chief, Data Processing Center, California State Department of Public Health*

This report describes the data-processing strategy in processing information for California's Title XIX Medicare Program. This activity resulted from California legislation known as the Casey Bill, or AB 5, which allocated some $558 million for medical care to eligible recipients under the program. The program is administered in California by the Health and Welfare Agency, which has delegated specific responsibilities for management to the Department of Public Health and to the State Department of Social Welfare. The Department of Social Welfare is responsible for maintaining the file of eligible recipients which is developed by county social welfare departments in accordance with regulations contained in the legislation. The Department of Social Welfare also has responsibilities for fiscal accounting and for reporting to the Social Security Administration.

The Department of Public Health has nine specific areas of responsibility. The first five of these require large-volume information processing.

1. Monitoring of standards and quality of care;
2. Monitoring of benefits provided and utilization of medical services;
3. Recommendation of reasonable rates and charges;
4. Recommendation of program modifications based on experience;
5. Preparation of reports and conduct of studies for the State Agency;
6. Certification of facilities and providers to participate;
7. Consultation to facilities on standards;
8. Management of vendor and vendor group relations;
9. Development of training and educational materials.

In general, California's title XIX program is considerably more comprehensive than the Federal Medicare program.

The operation of the program has been contracted by the State Agency to three fiscal intermediaries: California Physicians' Service, Blue Cross of Northern California, and Blue Cross of Southern California. The 1 million eligible recipients obtain medical care from some 50,000 vendors of medical services. The vendors of services submit claims to the intermediaries for payment. The claims are checked for the appropriateness of the charge for the service rendered and for the eligibility of the recipient; if satisfactory, the claim is paid. During an average month, 150,000 claims are submitted for hospitalization, nursing home care, or home health agency services; 1 million drug claims are submitted; and 500,000 claims for other medical services, e.g., physicians, dentists, osteopaths, chiropractors, optometrists, clinical laboratories, podiatrists, and so forth.

In some instances the claims forms used are the Federal medicare forms; and in other instances, are forms used for earlier programs of medical care for public assistance, medical care recipients, and medical assistance to the aged.

Data-Processing Resources

To carry out the Department of Public Health's responsibilities for processing these data, approximately $½ million was budgeted to the Division of Research, Data Processing Center. One-half of this amount was for machine rental; the other half, for staff and miscellaneous costs. Technical staff included two systems analysts and six programers. Machine resources available to the Department include two 7094 systems and the Department's own RCA Spectra 70, model 45 computer. The RCA computer has 65,000 bytes of core storage, 6 fast tapes (two 7-channel, four 9-channel), a card reader, punch, and printer. Since the fiscal intermediaries process the claims data from the claims and eligibility records, the intermediaries provide the Department of Public Health with tape files of all claims paid. Each month this amounts to some 10 blocked tapes of drug claims; 2 tapes for hospital and nursing home claims; and 6 blocked tapes for medical, dental, and other vendor services.

Data-Processing Methodology

Because of the volume and variety of data processing required for these applications, both the 7094's and the RCA 45 are used for processing data. The 7094's with their large core storage and fast internal computational speeds are used for developing large statistical tables and tables requiring extensive computations. The RCA 45 is used for all work leading to the development of appropriate tape files in properly sorted sequences and for small tabulations and reports not requiring extensive computation.

Tape files required for the 7094's are not compatible with Spectra 70, model 45 tape standards. The 7094's require seven-channel tape with particular blocking characteristics, which include in some instances control bits which are unacceptable to the RCA system. Conversely, the RCA software includes control data not acceptable to the 7094's. Hence, tape files must be prepared in some instances for both the 7094 and the RCA 45. Other applications are designed for either the 7094's or the RCA 45, but not for both systems.

The most salient characteristics of these applications relate to the extremely large volumes of the files involved. Since data from successive months must be merged, it is obvious that careful planning is required to minimize sorts of consolidated files. Also, there is a necessity to develop summary records wherever possible to reduce volumes.

Processing Flow

Data received from the fiscal intermediaries come from a Honeywell 2200 system using seven-track tapes and from IBM 360 systems using seven- or nine-track tapes. These tapes are rewritten by the Department's RCA system into a nine-track format with 15 records per block. These data are abstractions of the records received from the intermediaries which include some data not required by the Department. The medical and other practitioner claims are copied in seven-track mode, blocked 30 records per block, according to 7094 systems standards. This file is then available for use on either the 7094 or the RCA 45. The hospital and nursing home file is similarly rewritten for both the RCA 45 and the 7094. The drug file, the most voluminous of all, is processed exclusively on the RCA equipment.

The first efforts of the Department were designed to stabilize the costs of the title XIX operation and to eliminate unnecessary fiscal drains on the system. Since the major costs stem from hospital, nursing home, drugs, and physician services, these operations were first brought under close scrutiny. While most practitioners received a fixed fee for the medical service rendered, physicians were allowed to charge "reasonable and customary" fees. This forced immediate attention to physician practices and particularly to those physicians who participated heavily in the program. Essentially, the job was to define the amount and type of service provided by individual physicians to specific recipients. The medical claims file contained information on recipient's identification, including age and sex, the date of service, vendor identification, the medical procedure applied according to four-digit code, the medical diagnoses (ISC, 3-place) for which treatment was given, the amount charged for each procedure applied, total charges, and claim number. For each medical procedure, tabulations were developed by county of the number, the highest cost, lowest cost, average cost, and the standard deviation of the cost distribution for each procedure. This report allows for cost analyses through time to calculate the trend in costs of physicians' services, for each area of the State.

Other reports are designed to provide information on the pattern of utilization of medical services and on characteristics of the practice of individual physicians. For example, tabulations are made of the number of routine followup office visits claimed by a particular physician compared with his initial office visits. Since initial visits command a higher charge, an occasional practitioner will claim all visits as initial visits, with no routine followup visits. Also, routine visits are tabulated against other services, such as laboratory tests, innoculations, and various specific office procedures. Practitioners identified in such reports as deviating from customary patterns of medical practice are individually identified by type of violation. These individuals are reported to the fiscal intermediaries who followup with county medical associations to secure compliance with accepted standards of practice. Recurring violations will result in the practitioner's being declared ineligible for participation in the program.

Surveillance of drugs is accomplished by tabulations of the most common drugs prescribed, according to volume prescribed to individual recipients by geographic area. Other tabulations of the drugs file are designed to study costs and the consequences of deleting or adding specific drugs to the formulary.

Hospital, nursing home, and home health services analyses are presently limited to such items as average length of stay and average cost per patient, by diagnostic condition, by geographical area, and by type of hospital. The broad analysis plan was designed by Lester Breslow, M.D., Director of the Department of Public Health, and Henry Anderson, senior statistician, involved in the title XIX program. During the past months, Timothy D. Baker, M.D. (Johns Hopkins), served as a consultant to the Department and developed a comprehensive program for study and improvement in the quality of care given to title XIX recipients. There are a number of elements to this program, such as searching for preventable diagnoses and notifying the attending physician of steps he might have taken to prevent the conditions occurring; using the claims files as case-finding devices for communicable disease programs; testing for eventual hospitalization rates for patients treated by general practitioners, medical specialists, chiropractors, faith healers, and other practitioners.

Programing and Problem Areas

Virtually all processing on the 7094 has been accommodated by FORTRAN programing or by a generalized statistical report program developed by the Department for processing public health data. Virtually no Assembly programing has been required to date on the 7094. Programing for the RCA 45 includes use of the Report Program Generator and FORTRAN. The comparable merits of these two methods must be measured according to the experience of the programers involved. Inexperienced programers can use RPG more effectively than FORTRAN, while experienced programers can produce more by FORTRAN than by RPG. No COBOL has been used to date on either system.

Machine runs on the 7094 often require as much as 3 hours, and runs on the 45 are expected to exceed this amount.

At this date, the Department is no more than 25 percent into our eventual workload. Most programs are still under research to improve the usefulness of the output, and the bulk of the programing effort is yet to come. However, it is already apparent that major attention must remain focused on problems relating to the sheer volume of data to be handled. Alternative strategies of large file management are playing an increasingly important part in our total systems management. Also, we are impressed with the operating complexities resulting from involvement with computer systems of several different manufacturers. Moving data between the Honeywell, RCA, and IBM equipment—involving seven- and nine-channel tapes with varying standards for labels, tape marks, end of tape, and end of file marks—creates far more complex problems than does the generation of any specific report. The operating systems of the third-generation computers contain some significant conceptual differences as compared with the large scale, second-generation computers. Also, being new, they do not always perform according to their design. These are the areas of challenge.

The Dental Health Survey Data Processing Program in Virginia

Mr. Charles Derr, *Chief, Data Processing, Bureau of Vital Records and Health Statistics, Virginia Department of Health*

Data processing in the Virginia Health Department comes under the jurisdiction of the Bureau of Vital Records and Health Statistics. The Bureau is divided into three major sections: The vital records section; the public health statistical analysis section; and the data-processing section. The data-processing section serves as a service bureau for the entire Health Department. You have guessed, no doubt, that I am not public health trained or oriented. Unfortunately, most of the personnel in the data-processing installation in Richmond came to us from private industry; therefore, we depend to a large degree on the public health statistical section for background information regarding our various programs and in our dealings with the various program directors.

We currently have an IBM 1440 data collection and processing system installed in the State Health Department. This system is composed of the 1441 central processing unit with an 8,000-character memory, 1442 card read punch, 1443 line printer, 1447 console typewriter, two 1311 disk drives, and two 7335 magnetic tape units. We also plan to install the 1232-534 optical mark page reader in July of this year.

We selected the 1440 data-processing system because of its flexibility and the fact that it is a rather inexpensive means of getting into data processing. We are performing quite a few programs on the computer in the vital records area that require more than the 8,000 positions of memory. In order to accommodate programs requiring excessive memory and to produce some of the rather large tables required in the vital records area, we use our disk drives as auxiliary memory and will quite often take advantage of the fact that the random access devices can provide us with an additional 2 to 4 million characters of data or memory on line if necessary.

At this time, we are physically separated from the rest of the Health Department which is rather inconvenient. We will move into the new Health Building in July 1967, and we plan to install the system 360, model 30, which will be a configuration similar to the one currently installed. We do plan to beef-up the new system if at all possible, since Medicare and some of our proposed activity areas will result in multiple shift operation if we keep the configuration we now have.

Some of the activities we are now processing on our equipment are birth, death, fetal death, marriage, and divorce records and statistics. These include the monthly, quarterly, semiannual, and annual reports and indices. We also perform many administrative tabulations, special studies, and miscellaneous reports. We are processing the nurse and sanitarian activity reports for the Division of Local Health Services in our section. These reports will be processed on the 1232-534 starting in July. We feel the switch to the optical mark page reader for this type of processing is necessary to reduce the workload in the key-punch section sufficiently to absorb the extra workload we anticipate with title XVIII (Medicare). We also process clinical reports and tabulations for the Division of Local Health Services and special reports for the Bureau of Maternal and Child Health.

The data-processing section also has responsibility for the production of the State and Federal reports for the 14 programs now being handled by the Bureau of Crippled Children. I will not attempt to name all of the programs; but, to give you an idea, some of the programs are seizure control, facial deformity, congenital heart, orthopedic, and rheumatic fever. The data used for processing the many reports for the Bureau of Crippled Children are now stored in punchcard form. We plan to switch the crippled children data collection and processing to magnetic recording media during the latter part of 1967.

The data-processing section will also begin processing work in July 1966 for the Division of Local Health Services' home health care section. To be more specific, we plan to process billings to the Social Security Administration for Medicare patients and will be processing all billings to Medicare and non-Medicare patients receiving home health care visits as related to title XVIII. Cost accounting and related statistical reports will be tied into this operation.

Other activity areas now being processed in part and due for expansion in the future include tuberculosis case reporting, communicable diseases, epidemiology, and chronic disease reports and case registries.

Some of the projects we plan to process in our section in the not-to-distant future include personnel accounting, medical examiner reports and statistics, alcohol studies, inventory control, property accounting, and the many related industrial hygiene and specialized environmental health activities.

The activity of primary importance today deals with our involvement in the Dental Health Survey Program, and I shall devote the rest of my presentation to this activity area.

The Division of Dental Health in the State of Virginia continues to fight Virginia's most widespread disease, dental decay. A staff of 45 full-time public health dentists is utilized to provide dental treatment for the geographically isolated and medically indigent children of the State, as well as patients who are chronically ill. The Division continues to give special emphasis to the following public health dental programs: To support and carry on programs of fluoridation of communal water supplies and topical applications of phosphate fluoride; to emphasize dietary control of caries; and to perform examinations and make referrals for preschool, elementary, and secondary school children.

Dental surveys have been conducted in many counties and cities to secure baseline data on school children of prefluoridation and fluoridated areas. The Division of Dental Health, in cooperation with the Medical Society of Virginia and the Virginia Dental Association, is conducting the Virginia Oral Cancer Control Program.

The Virginia Dental Association has approved the expansion of the public health program to provide services to maternal and child health patients whenever dental facilities are contained in the local health department. The Dental Division, in cooperation with the Bureau of Crippled Children, hopes to expand services to the mentally and physically handicapped children throughout the Commonwealth of Virginia. There are now better than 300 such cases under treatment in this cooperative program.

We feel progress has been made toward the long-term goal of developing and maintaining public health dental programs in each health district, increasing the number of permanent public health dentists, and improving operating facilities. Reports being produced in the data-processing section have provided timely and valuable information to the Dental Division's education supervisor, allowing him to provide consultation and other services to public school personnel and the many interested community organizations. Virginia ranks fourth in the Nation with 84.1 percent of the total population utilizing public water supplies and drinking fluoridated water.

Materials developed for conduct of the dental health survey data-processing program include: (1) Program definitions together with limit and continuity checks performed during the processing operation; (2) key-punch instructions for punching the various spread cards; (3) source document (DH–1203) used by the public health dentist to record findings from examinations; (4) general and detailed flow charts and card and disc storage layout sheets; and (5) reports with their related control totals on findings. Copies of these materials are available on request from the National Center for Health Statistics.

The Dental Health Survey Program is simple, yet typical of the many small surveys data-processing installations are called upon to perform. This survey was placed on computer equipment to facilitate limit checking, cross addition, columnar addition, as well as the development of averages and percentages. Since this survey is repetitive in nature and will be used for comparisons, the reduction in errors, coupled with the fact that we can produce hard copy in a form acceptable for use without retyping, has resulted in enough clerical savings to justify the cost of processing on computer equipment.

Surveys of this type can be made as sophisticated as your needs dictate or can be as simple as you wish. The cost of producing satisfactory hard copy must be foremost in our planning, and with this thought in mind we can easily switch back to the unit record concept if we cease to realize a payoff with the present system.

In conclusion, I might note that the cost of the 1440 system runs approximately $64,000 per annum. Since the exact configuration on the system 360 is not firm, I can only estimate the cost. It will range somewhere between $81,000 and $180,000 per annum, depending on the extent we feel necessary to beef-up the system. We will be happy if we get into action around $120,000 per annum.

Central Tuberculosis Case Register in New York State

Mr. Harold Gottheim, *Office of Electronic Data Processing, New York State Department of Health*

The office of data processing of the New York State Department of Health is a new office created last October. We are a staff office reporting to the First Deputy Commissioner. This is the only way we feel we can function as a true service bureau to the entire Health Department. Our interests, therefore, go beyond vital records and vital statistics and provide services for a many faceted operation that includes our environmental health programs.

The office of data processing has punchcard equipment at the present time and utilizes the computer services of a central State agency, the Office of General Services. We are presently utilizing an IBM 7010–80K, with a 1401 for input and output. However, the Office of General Services is about to place an order for a 360 model 50 to be delivered in the spring of 1967 and a 360 model 30 to be delivered later this year. The Central Tuberculosis Case Registry consists of a number of programs, most of which are written in COBOL. When we make the switchover from the 7010 to the 360, we hope it will be with the minimum of reprograming effort.

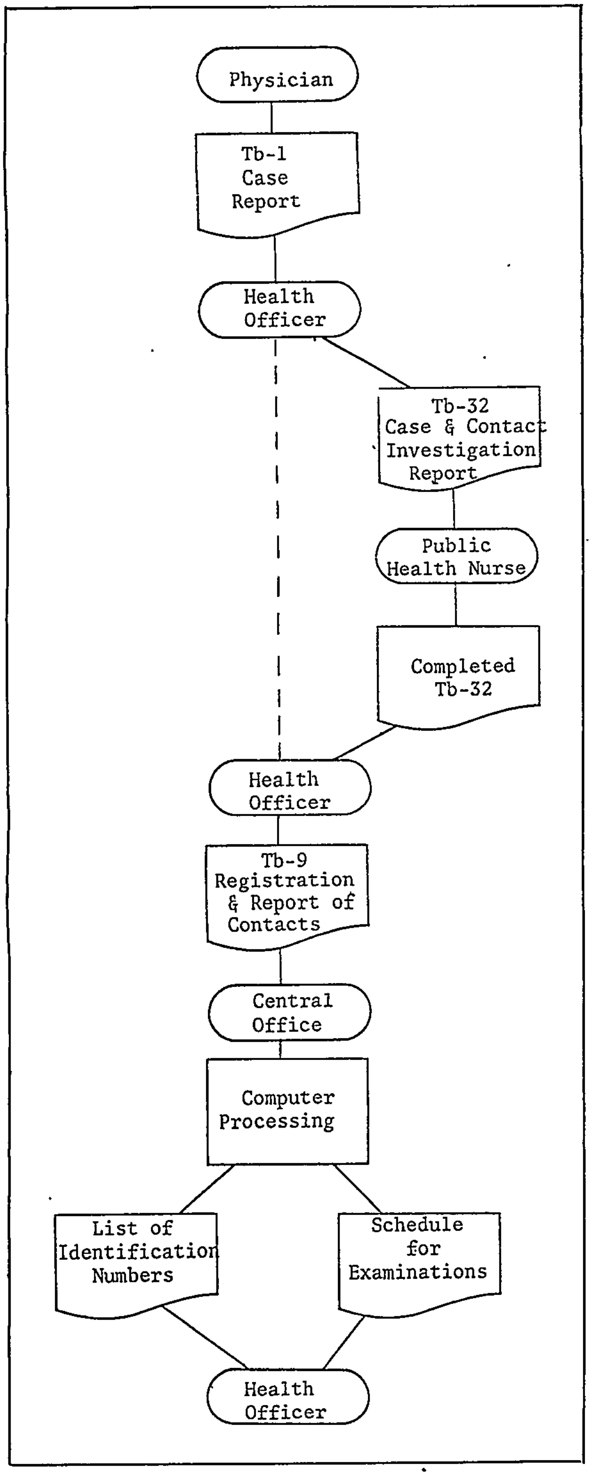
The Central Tuberculosis Case Register has been established to provide a single integrated computer-based system for the collection and processing of data on all active TB cases and their contacts; to have a systems capability for providing local health agencies and the New York State Department of Health with information related to periodic requirements for summary data as well as regular followup procedures for active TB cases; to provide simple and effective liaison between local health agencies in upstate New York in order to keep track of cases moving from one local jurisdiction to another; and to provide a machine-processible file which can be compared with other vital records files in order to produce various correlations and other statistical manipulations for research purposes.

The general systems design and data requirement were defined by various staff members of the Division of Chronic Disease Services in cooperation with the Office of Electronic Data Processing, New York State Department of Health. The detailed systems design, forms design, and computer programing were done by Mr. Michael J. Reedy, senior computer programer.

Our program is still in the early phases of development. We have not received the first live data yet, but the programs have been written and tested with test data. In order to create a registry file, information will have to be taken from the files currently in use at the local health agencies. The earliest data available for each case on file will be extracted along with the most up-to-date data.

We are now in the process of moving into our areas for a pilot study; for this purpose, we have

Figure 1



chosen one district, one county, and one city health office. Personnel from the central offices will visit these agencies to pick up basic information to start the file. Forms will be completed on cases already in these local registers, together with new cases as they enter their systems. The agencies will also be asked to report status changes, examination results, and other pertinent information necessary to keep the central registry up to date.

At the conclusion of the pilot program, when the entire local-State system appears to be operating satisfactorily, all local health offices will be invited to participate in the central registry program.

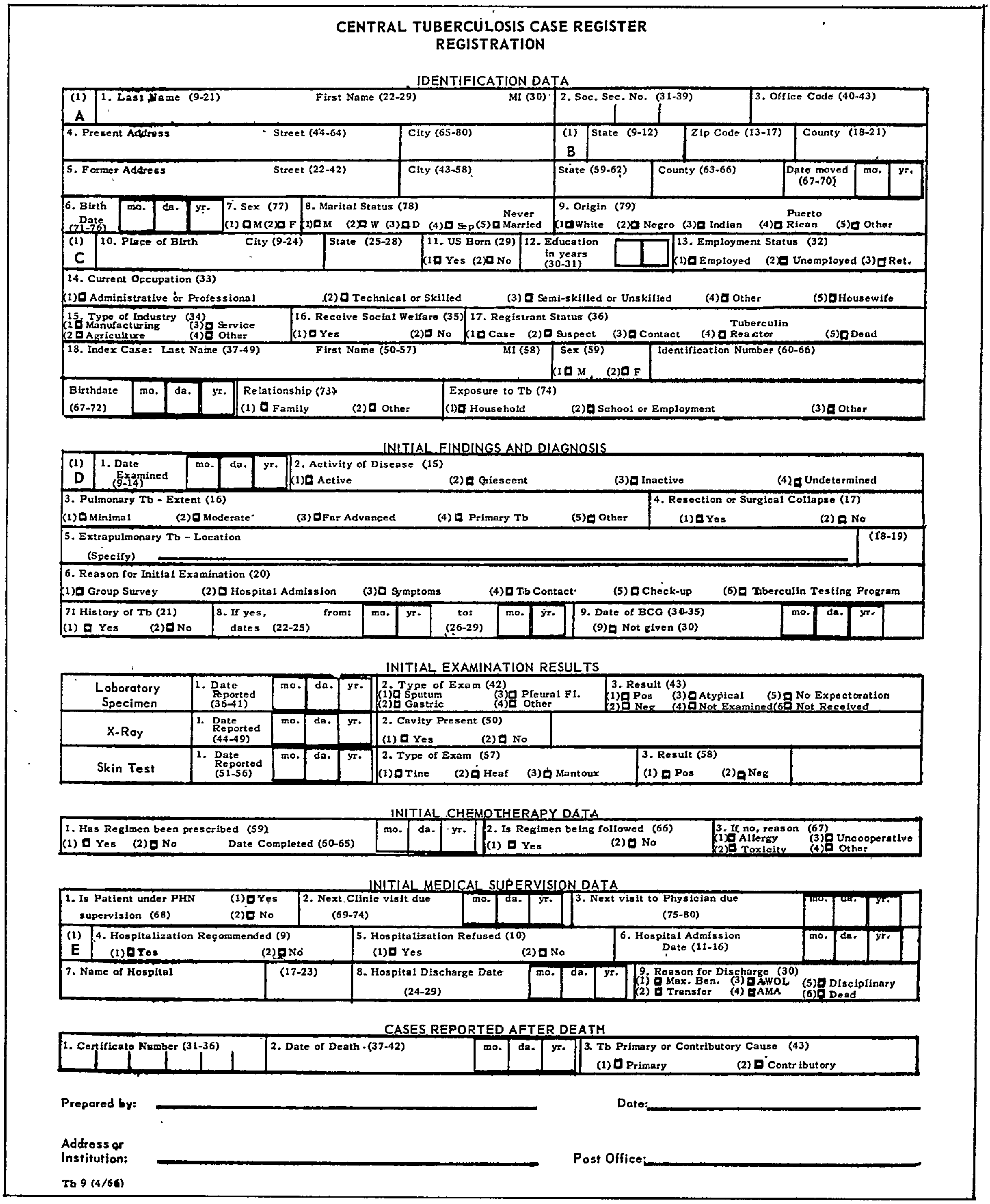
The first part of our systems flow chart is given in figure 1. The physician fills out a form notification card (TB–1) which is sent to the city, county, or district health officer. This information is used to complete a more detailed form (TB–32) for a followup visit by the person to the clinic or a home visit by the public health nurse. These reports serve as a basis for the local health department to complete the registration form, TB–9 (see fig. 2) which has been designed in a form suitable to electronic data processing for extraction of required information. In the identification section of the form, we have such items as name, address, social security number (for the numbering system and linkage problem), occupation, marital status, and origin. The form also provides information on initial examination results, initial chemotherapy data, initial medical supervision data, and cases reported after death.

The TB–9 form will be used initially to extract information from the local files currently in use and, later, to register newly reported cases, TB suspects, and tuberculin reactors. For these registrants it will only be used once.

When registering contacts, however, it may be used twice; once when a newly reported case reports a contact and again either when the results of that contact's initial examination are received or when it is decided to remove the contact from the files without followup. Space for contact identification, including name, sex, and probable race, is given on the reverse side of the TB–9 form.

The initial case is considered to be the index case. Once the initial data have been collected and the TB–9 forms completed, they will be transmitted to the central office for editing. TB control personnel will examine the documents for obvious errors, code certain items of information, and assign identification numbers to newly registered patients. The erroneous data will be corrected either by telephone or by written request. The edited forms will be transmitted to the key-punch section of OEDP

Figure 2



CENTRAL TUBERCULOSIS CASE REGISTER
REGISTRATION

IDENTIFICATION DATA

(1) A | 1. Last Name (9-21) | First Name (22-29) | MI (30) | 2. Soc. Sec. No. (31-39) | 3. Office Code (40-43)

4. Present Address Street (44-64) | City (65-80) | (1) B | State (9-12) | Zip Code (13-17) | County (18-21)

5. Former Address Street (22-42) | City (43-58) | State (59-62) | County (63-66) | Date moved (67-70) | mo. | yr.

6. Birth Date (71-76) | mo. | da. | yr. | 7. Sex (77) (1) ☐ M (2) ☐ F | 8. Marital Status (78) (1) ☐ M (2) ☐ W (3) ☐ D (4) ☐ Sep (5) ☐ Never Married | 9. Origin (79) (1) ☐ White (2) ☐ Negro (3) ☐ Indian (4) ☐ Puerto Rican (5) ☐ Other

(1) C | 10. Place of Birth City (9-24) | State (25-28) | 11. US Born (29) (1) ☐ Yes (2) ☐ No | 12. Education in years (30-31) ☐☐ | 13. Employment Status (32) (1) ☐ Employed (2) ☐ Unemployed (3) ☐ Ret.

14. Current Occupation (33) (1) ☐ Administrative or Professional (2) ☐ Technical or Skilled (3) ☐ Semi-skilled or Unskilled (4) ☐ Other (5) ☐ Housewife

15. Type of Industry (34) (1) ☐ Manufacturing (2) ☐ Agriculture (3) ☐ Service (4) ☐ Other | 16. Receive Social Welfare (35) (1) ☐ Yes (2) ☐ No | 17. Registrant Status (36) (1) ☐ Case (2) ☐ Suspect (3) ☐ Contact (4) ☐ Tuberculin Reactor (5) ☐ Dead

18. Index Case: Last Name (37-49) | First Name (50-57) | MI (58) | Sex (59) (1) ☐ M (2) ☐ F | Identification Number (60-66)

Birthdate (67-72) | mo. | da. | yr. | Relationship (73) (1) ☐ Family (2) ☐ Other | Exposure to Tb (74) (1) ☐ Household (2) ☐ School or Employment (3) ☐ Other

INITIAL FINDINGS AND DIAGNOSIS

(1) D | 1. Date Examined (9-14) | mo. | da. | yr. | 2. Activity of Disease (15) (1) ☐ Active (2) ☐ Quiescent (3) ☐ Inactive (4) ☐ Undetermined

3. Pulmonary Tb - Extent (16) (1) ☐ Minimal (2) ☐ Moderate (3) ☐ Far Advanced (4) ☐ Primary Tb (5) ☐ Other | 4. Resection or Surgical Collapse (17) (1) ☐ Yes (2) ☐ No

5. Extrapulmonary Tb - Location (Specify) ____________________ | (18-19)

6. Reason for Initial Examination (20) (1) ☐ Group Survey (2) ☐ Hospital Admission (3) ☐ Symptoms (4) ☐ Tb Contact (5) ☐ Check-up (6) ☐ Tuberculin Testing Program

7. History of Tb (21) (1) ☐ Yes (2) ☐ No | 8. If yes, dates (22-25) from: | mo. | yr. | to: (26-29) | mo. | yr. | 9. Date of BCG (30-35) (9) ☐ Not given (30) | mo. | da. | yr.

INITIAL EXAMINATION RESULTS

Laboratory Specimen | 1. Date Reported (36-41) | mo. | da. | yr. | 2. Type of Exam (42) (1) ☐ Sputum (2) ☐ Gastric (3) ☐ Pleural Fl. (4) ☐ Other | 3. Result (43) (1) ☐ Pos (2) ☐ Neg (3) ☐ Atypical (4) ☐ Not Examined (5) ☐ No Expectoration (6) ☐ Not Received

X-Ray | 1. Date Reported (44-49) | mo. | da. | yr. | 2. Cavity Present (50) (1) ☐ Yes (2) ☐ No

Skin Test | 1. Date Reported (51-56) | mo. | da. | yr. | 2. Type of Exam (57) (1) ☐ Tine (2) ☐ Heaf (3) ☐ Mantoux | 3. Result (58) (1) ☐ Pos (2) ☐ Neg

INITIAL CHEMOTHERAPY DATA

1. Has Regimen been prescribed (59) (1) ☐ Yes (2) ☐ No Date Completed (60-65) | mo. | da. | yr. | 2. Is Regimen being followed (66) (1) ☐ Yes (2) ☐ No | 3. If no, reason (67) (1) ☐ Allergy (2) ☐ Toxicity (3) ☐ Uncooperative (4) ☐ Other

INITIAL MEDICAL SUPERVISION DATA

1. Is Patient under PHN supervision (68) (1) ☐ Yes (2) ☐ No | 2. Next Clinic visit due (69-74) | mo. | da. | yr. | 3. Next visit to Physician due (75-80) | mo. | da. | yr.

(1) E | 4. Hospitalization Recommended (9) (1) ☐ Yes (2) ☐ No | 5. Hospitalization Refused (10) (1) ☐ Yes (2) ☐ No | 6. Hospital Admission Date (11-16) | mo. | da. | yr.

7. Name of Hospital | (17-23) | 8. Hospital Discharge Date (24-29) | mo. | da. | yr. | 9. Reason for Discharge (30) (1) ☐ Max. Ben. (2) ☐ Transfer (3) ☐ AWOL (4) ☐ AMA (5) ☐ Disciplinary (6) ☐ Dead

CASES REPORTED AFTER DEATH

1. Certificate Number (31-36) | 2. Date of Death (37-42) | mo. | da. | yr. | 3. Tb Primary or Contributory Cause (43) (1) ☐ Primary (2) ☐ Contributory

Prepared by: ____________________ Date: ____________

Address or Institution: ____________________ Post Office: ____________

Tb 9 (4/66)

Figure 2—Continued

CENTRAL TUBERCULOSIS CASE REGISTER

CONTACT IDENTIFICATION

CONTACT INFORMATION					
NO.	(1)	SURNAME (2-14) GIVEN NAME (15-22) MI (23)	SEX (24)	RACE (25)	SUPERVISION DISCONTINUED (26)
1	1				☐
2	1				☐
3	1				☐
4	1				☐
5	1				☐
6	1				☐
7	1				☐
8	1				☐
9	1				☐
10	1				☐
11	1				☐
12	1				☐
13	1				☐
14	1				☐
15	1				☐

INDEX CASE INFORMATION*				
1. SURNAME (27-39) GIVEN NAME (40-47) MI (48)	IDENT. NO. (49-55)	SEX (56)	BIRTHDATE (57-62)	OFFICE CODE (63-66)
			mo. da. yr.	

* Fill in index case information only when it is not supplied on reverse side.

Information reported under "Race" should be one of the following:

White, Negro, Indian, Puerto Rican, other.

where the data will be transferred to punchcards. The cards will then be forwarded to the OEDP central office for computer processing.

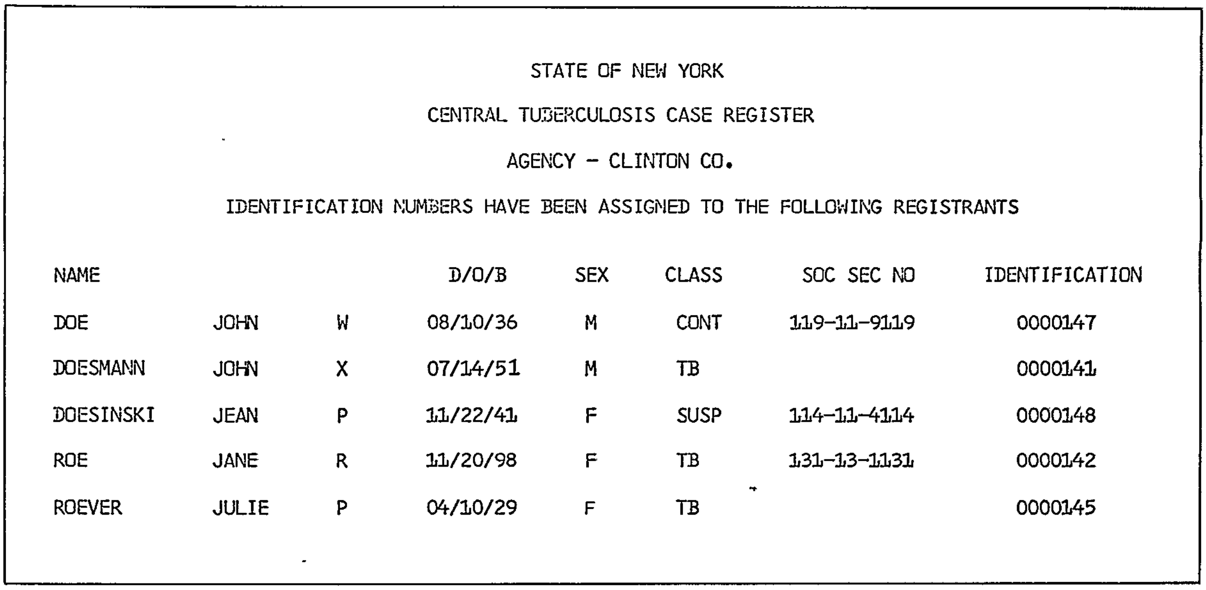
The initial data will be transferred from punched cards to magnetic tape. The magnetic tape file will be sorted by identification number, and the resultant output will become the Case Register History File. The History File will then be processed by a computer program wherein only the identification data and most up-to-date medical data will be extracted. The output of this program will become the original Master File.

Two monthly reports to the field, as noted in the systems flow chart (fig. 1), are printed out for distribution to each participating health agency. The first of these monthly reports, "Notice of Registration," sorted by agency code, lists newly assigned identification numbers for all patients registered in the previous cycle. Each participating health agency will be asked to use the identification number on all reports pertaining to registrants. An example of this type of report is given in figure 3. We are assigning our own number in every case. As each new registrant comes in, our central TB control office assigns a TB case identification number. Social security numbers are also used whenever these are available. We realize that people move from jurisdiction to jurisdiction. In so doing, they may or may not indicate to the new area that they have been in the system before. To check on previous records, we will first search by social security numbers; in instances where no matches are made, we will check on such characteristics as alphabetic name, date of birth, sex, and race in further efforts to identify cases that have been in the system before.

The second type of monthly listing will show all patients who are scheduled for examination during the following monthly cycle. The schedule will be based solely on the information previously submitted by the local agencies and will be the latest available at the central registry. In addition, we will provide separate listings of contacts by initial or index cases that have not been reported as examined when the monthly schedule is issued. These listings will give names of persons as noted on the reverse side of the TB-9 form. Centrally, contact information will be kept in a separate file until the TB-9 registration form is received. The record will then be added to the registry Master and History Files.

There may be times when it is desirable to remove a record from the contact file and either not examine the contact at all or give a very quick examination which shows that the individual is not likely to have TB or to be a TB suspect. In this case, the contact is again reported on the reverse side of a TB-9, a box labelled "supervision discontinued" is checked, and certain items of index case information are entered.

Figure 3



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                              STATE OF NEW YORK

                        CENTRAL TUBERCULOSIS CASE REGISTER

                             AGENCY - CLINTON CO.

           IDENTIFICATION NUMBERS HAVE BEEN ASSIGNED TO THE FOLLOWING REGISTRANTS

NAME                          D/O/B      SEX    CLASS      SOC SEC NO      IDENTIFICATION

DOE          JOHN      W     08/10/36     M      CONT      119-11-9119        0000147

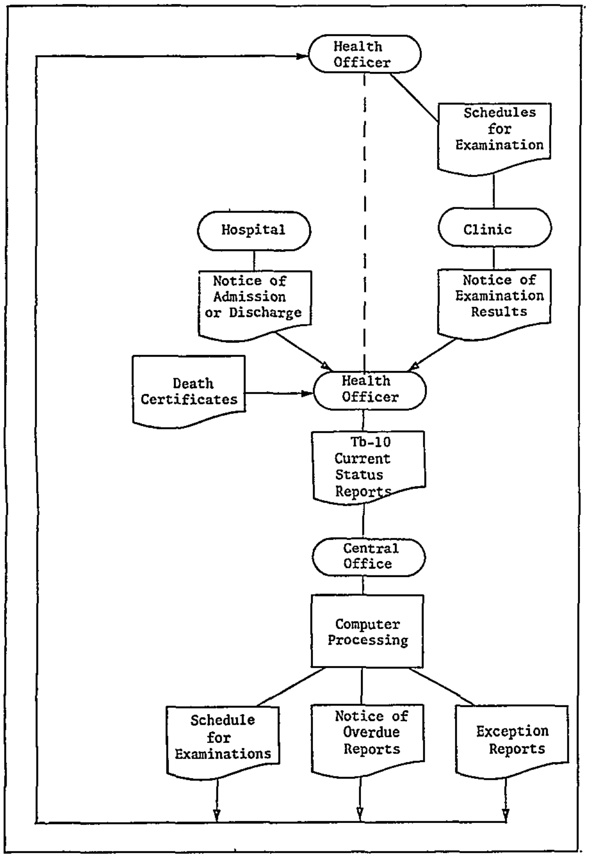
DOESMANN     JOHN      X     07/14/51     M      TB                           0000141

DOESINSKI    JEAN      P     11/22/41     F      SUSP      114-11-4114        0000148

ROE          JANE      R     11/20/98     F      TB        131-13-1131        0000142

ROEVER       JULIE     P     04/10/29     F      TB                           0000145
```

Figure 4



Continuation of our systems flowchart is shown in figure 4. The local health officer acts as coordinator on schedules for examinations, reports of findings by clinics, notices of admissions and discharges by hospitals, and cause-of-death information on death certificates. The current status report, TB-10 (fig. 5), will be used to report status changes, examination results, and other pertinent information necessary to keep the central registry up to date. This form contains the identification number previously assigned when the case was "registered" and, hopefully, this will begin to eliminate the linkage problem. These reports come into the central office, are key punched, go through computer processing, and generate again the monthly cycle of reports. Other reports issued monthly to local agencies include a listing of those registrants whose information is either incomplete or inconsistent and a listing of overdue examinations. If a "current status report" is not received during the monthly cycle following the period in which the examinations were scheduled, a notice of overdue reports will be prepared for transmittal to the agency concerned. The notice will be repeated each month, each cycle until a report is received, the examination is rescheduled, or the registrant is removed from medical supervision.

Our data-processing flowchart is set forth in figure 6. As the TB-9 and TB-10 registration forms are received in the central office, the data will be edited, key punched, and transferred to magnetic tape. First runs are directed toward detection of errors for correction and sorting of records by identification number and alphabetic card code. The next run, edit and split, is quite detailed; edit checking prints out a list of error areas which go back to TB control and then makes a split between contacts and cases. Every case with any relation to the contact file is included in file 55005A. All others, both registrations and followups, will split off to file 55005B.

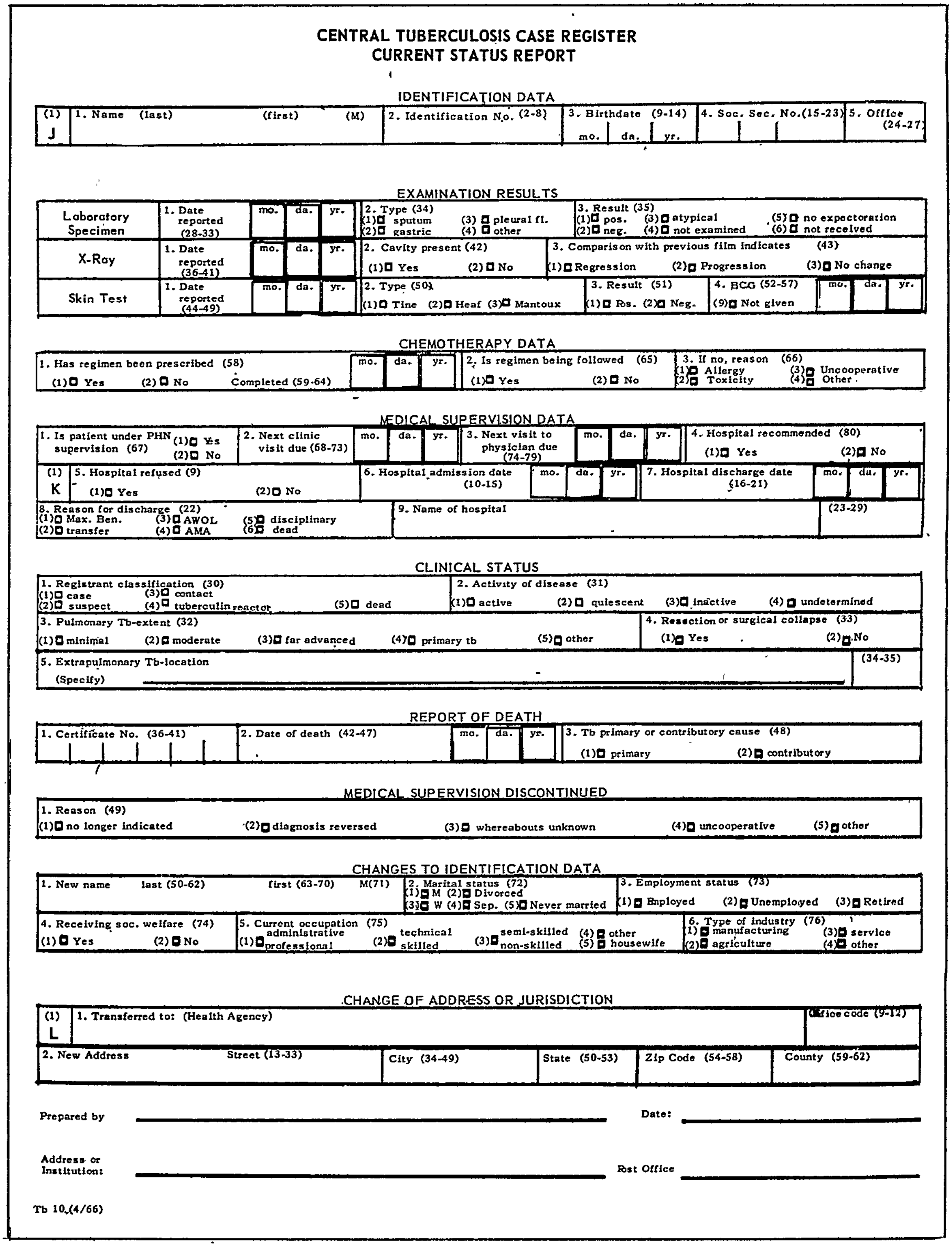
Run 55007 is a sort of contact records by alphabetic name; our contacts have not had case numbers assigned to them and, therefore, are sorted on alpha by complete name. The Contact Master contains the names and index case numbers of all those people who have been examined to date. In run 55009, update Contact Master, the transaction file is matched with the Contact Master File. Previously registered contacts, about whom no medical information is yet available, are retained on the Contact Master. Copies of these records are written on the contact report file. Previously registered contacts for whom reports are present are removed from the Contact Master File. Newly reported contacts are placed on the Contact Master File. Transactions for which no master records are present are deleted, written on the error file, and later printed.

Run number 55013 updates Master and History Files for all registrants. A complete, chronological record of all reports received from the participating health agencies will be kept on the History File. Its purpose will be to answer inquiries concerning individual registrants, provide data for research projects, and maintain a ledger-type record for each registrant.

Maintenance of the History File will enable the Master File to carry only a single record for each registrant, thereby allowing a certain amount of simplicity in processing. Most of the processing is against the Master File.

In updating, the transaction file is matched with the registry Master File. All master records for

Figure 5



CENTRAL TUBERCULOSIS CASE REGISTER
CURRENT STATUS REPORT

IDENTIFICATION DATA

(1) J	1. Name (last) (first) (M)	2. Identification No. (2-8)	3. Birthdate (9-14) mo. da. yr.	4. Soc. Sec. No.(15-23)	5. Office (24-27)

EXAMINATION RESULTS

Laboratory Specimen	1. Date reported (28-33)	mo.	da.	yr.	2. Type (34) (1)☐ sputum (3) ☐ pleural fl. (2)☐ gastric (4) ☐ other	3. Result (35) (1)☐ pos. (3)☐ atypical (5)☐ no expectoration (2)☐ neg. (4)☐ not examined (6)☐ not received
X-Ray	1. Date reported (36-41)	mo.	da.	yr.	2. Cavity present (42) (1)☐ Yes (2)☐ No	3. Comparison with previous film indicates (43) (1)☐ Regression (2)☐ Progression (3)☐ No change
Skin Test	1. Date reported (44-49)	mo.	da.	yr.	2. Type (50) (1)☐ Tine (2)☐ Heaf (3)☐ Mantoux	3. Result (51) (1)☐ Pos. (2)☐ Neg. 4. BCG (52-57) (9)☐ Not given mo. da. yr.

CHEMOTHERAPY DATA

1. Has regimen been prescribed (58) (1)☐ Yes (2)☐ No Completed (59-64)	mo.	da.	yr.	2. Is regimen being followed (65) (1)☐ Yes (2)☐ No	3. If no, reason (66) (1)☐ Allergy (3)☐ Uncooperative (2)☐ Toxicity (4)☐ Other

MEDICAL SUPERVISION DATA

1. Is patient under PHN supervision (67) (1)☐ Yes (2)☐ No	2. Next clinic visit due (68-73)	mo.	da.	yr.	3. Next visit to physician due (74-79)	mo.	da.	yr.	4. Hospital recommended (80) (1)☐ Yes (2)☐ No

(1) K	5. Hospital refused (9) (1)☐ Yes (2)☐ No	6. Hospital admission date (10-15)	mo.	da.	yr.	7. Hospital discharge date (16-21)	mo.	da.	yr.

8. Reason for discharge (22) (1)☐ Max. Ben. (3)☐ AWOL (5)☐ disciplinary (2)☐ transfer (4)☐ AMA (6)☐ dead	9. Name of hospital	(23-29)

CLINICAL STATUS

1. Registrant classification (30) (1)☐ case (3)☐ contact (2)☐ suspect (4)☐ tuberculin reactor (5)☐ dead	2. Activity of disease (31) (1)☐ active (2)☐ quiescent (3)☐ inactive (4)☐ undetermined
3. Pulmonary Tb-extent (32) (1)☐ minimal (2)☐ moderate (3)☐ far advanced (4)☐ primary tb (5)☐ other	4. Resection or surgical collapse (33) (1)☐ Yes (2)☐ No
5. Extrapulmonary Tb-location (Specify)	(34-35)

REPORT OF DEATH

1. Certificate No. (36-41)	2. Date of death (42-47)	mo.	da.	yr.	3. Tb primary or contributory cause (48) (1)☐ primary (2)☐ contributory

MEDICAL SUPERVISION DISCONTINUED

1. Reason (49) (1)☐ no longer indicated (2)☐ diagnosis reversed (3)☐ whereabouts unknown (4)☐ uncooperative (5)☐ other

CHANGES TO IDENTIFICATION DATA

1. New name last (50-62) first (63-70) M(71)	2. Marital status (72) (1)☐ M (2)☐ Divorced (3)☐ W (4)☐ Sep. (5)☐ Never married	3. Employment status (73) (1)☐ Employed (2)☐ Unemployed (3)☐ Retired
4. Receiving soc. welfare (74) (1)☐ Yes (2)☐ No	5. Current occupation (75) (1)☐ administrative professional (2)☐ technical skilled (3)☐ semi-skilled non-skilled (4)☐ other (5)☐ housewife	6. Type of industry (76) (1)☐ manufacturing (3)☐ service (2)☐ agriculture (4)☐ other

CHANGE OF ADDRESS OR JURISDICTION

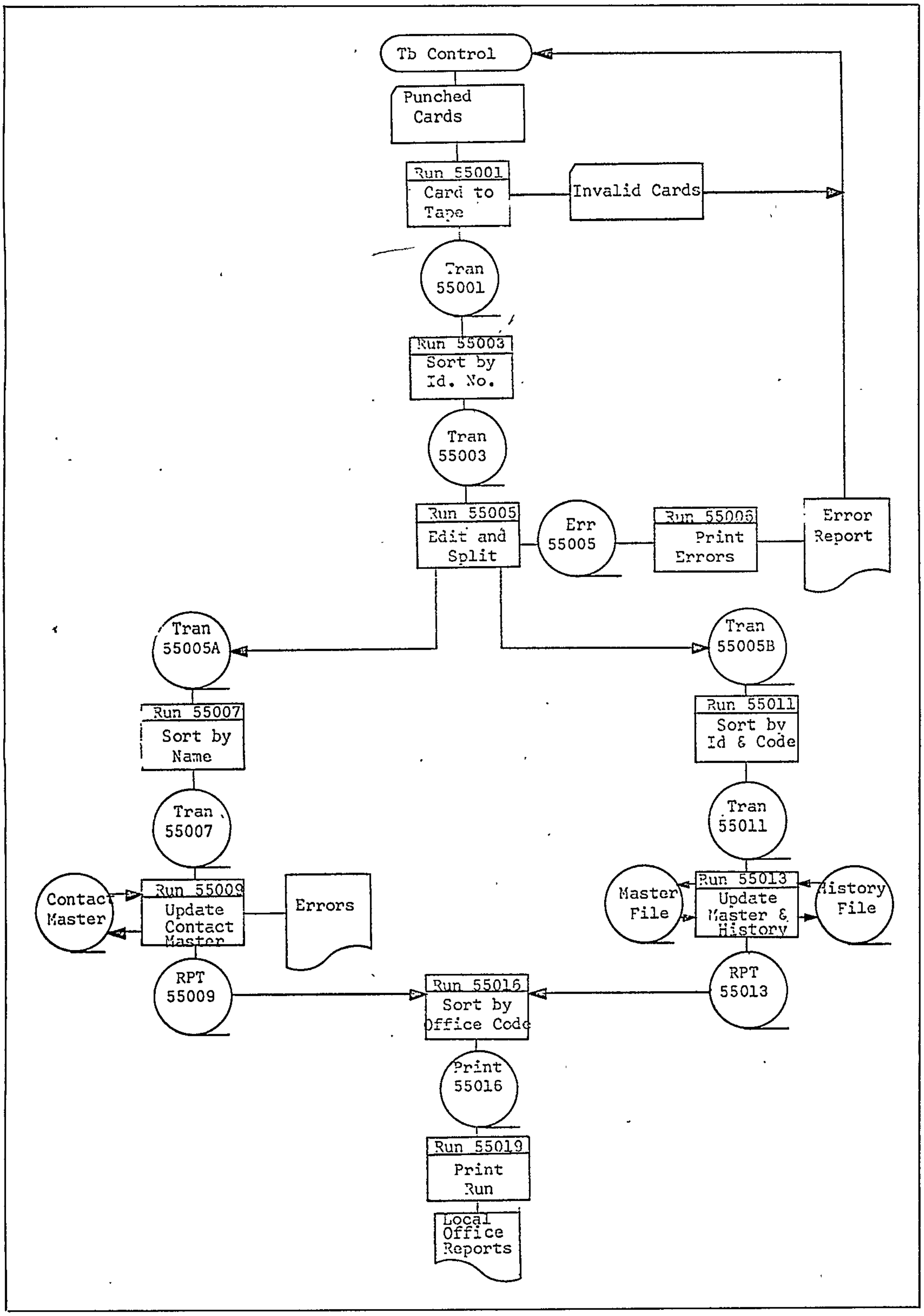
(1) L	1. Transferred to: (Health Agency)				Office code (9-12)
2. New Address	Street (13-33)	City (34-49)	State (50-53)	Zip Code (54-58)	County (59-62)

Prepared by ______________________ Date: ______________

Address or Institution: ______________________ Post Office ______________

Tb 10.(4/66)

Figure 6


Tb Control
Punched Cards
Run 55001
Card to Tape
Invalid Cards
Tran 55001
Run 55003
Sort by Id. No.
Tran 55003
Run 55005
Edit and Split
Err 55005
Run 55006
Print Errors
Error Report
Tran 55005A
Tran 55005B
Run 55007
Sort by Name
Run 55011
Sort by Id & Code
Tran 55007
Tran 55011
Contact Master
Run 55009
Update Contact Master
Errors
Master File
Run 55013
Update Master & History
History File
RPT 55009
Run 55016
Sort by Office Code
RPT 55013
Print 55016
Run 55019
Print Run
Local Office Reports

which there are no transactions are examined for visits due or overdue and exception criteria. All master records for which transactions are present are first updated and then checked for visits due or overdue and exception criteria. All transactions for which there are no master records are checked to ensure that they are registrations. If so, master records are built. If not, an error message is written on the report file. All accepted transactions are added to the History File.

In Run 55016 the contact report file is sorted together with the registry report file by office code, transaction code, and name. Run 55019 is then made to print reports by local offices.

Every 3 months, the most up-to-date History File and Contact Master File will be reproduced to provide security files. The duplicate files will be stored in a convenient location, away from the original files. In addition, copies of the transaction files will be similarly stored. These measures will enable the central registry to rebuild all files and continue operations in case fire or a similar disaster destroys the current files.

The primary thought on this entire setup was this monthly operational procedure to allow the central office to collect all these data it needs for reports and also to generate these followup procedures. We have been able so far to determine some of the statistical reports and analyses which we will want.

The central registry will annually produce the following reports:—

1. Newly reported tuberculosis cases and rates per 100,000 population, by county.
2. Newly reported tuberculosis cases and rates per 100,000 population, upstate cities over 25,000 population.
3. Newly reported tuberculosis cases and rates per 100,000 population, by county exclusive of cities over 25,000.
4. New active cases of tuberculosis reported by age, race, sex, and type of disease.
5. Newly reported pulmonary tuberculosis cases and rates per 100,000 population by age, sex, and race.
6. Newly reported pulmonary tuberculosis cases by extent of disease.
7. Tuberculosis deaths and rates per 100,000 population, by county.
8. Tuberculosis deaths and rates per 100,000 population, upstate cities over 25,000 population.
9. Tuberculosis deaths and rates per 100,000 population by county, exclusive of cities over 25,000 population.
10. A general table showing the number of patients on drug therapy, total resident deaths from TB and total resident deaths of TB patients from other causes, total of newly reported cases of TB in upstate New York.

In order to produce reports 7, 8, 9, and 10, above, the Central TB Case Register Master File will be crossmatched with the vital records death file.

The central registry will have the facilities to produce certain statistical reports on a timely basis as well as annual. The exact nature of these reports is presently unknown. They will be produced individually, upon request of the TB control program or participating health agencies.

This then is the basic description of our EDP system in its application for the Central Tuberculosis Case Register. Questions on phases of our operations as well as requests for additional information will be welcomed.

DOCUMENTATION

1. "Computer Processing in the Maryland Psychiatric Case Register—Record Drawings and Exhibits" by Dr. Anita K. Bahn and Mr. William Phillips Jr., Office of Biometry, National Institutes of Mental Health, U.S. Public Health Service.
2. "Computer Processing in the Maryland Psychiatric Case Register—Detailed System Flow Chart" by Dr. Anita K. Bahn and Mr. William Phillips, Jr., Office of Biometry, National Institutes of Mental Health, U.S. Public Health Service.
3. "The Dental Health Survey Data Processing Program" by Mr. Charles Derr, Bureau of Vital Records and Health Statistics, Virginia Department of Health.
4. "Data Processing for Medicare (Title XIX)" by Mr. Stephen F. Gibbons, Data Processing Center, California Department of Public Health.
5. "Central Tuberculosis Case Register" by Harold M. Gottheim, B. Ch. E., P.E., Office of Electronic Data Processing, New York State Department of Health.
6. "Birth Update and Report System—A Systems Approach to the Computerization of Vital Statistics" by Mr. L. William Steinbach, Health Statistics and Evaluation Center, Michigan Department of Public Health.
7. "WISTAB—Wisconsin Tabulator Users Manual," April 1966, by R. W. McCoy and W. H. Kenyon, University of Wisconsin.
8. "Inventory of Present and Proposed Automatic Data Processing Equipment," questionnaire prepared by Mr. John S. Lemasson, Division of Public Health Statistics, Louisiana Board of Health.
9. "Computer Processing in the Maryland Psychiatric Case Register" by Mr. William Phillips, Jr., and Dr. Anita K. Bahn, June 1966. (Hectograph copy of presentation distributed to Workshop participants.)

E

WORKSHOP DIRECTORS

Dr. Clyde V. Kiser (First Session) and
Dr. Arthur J. Lesser (Second Session)

COORDINATORS

Dr. Iwao M. Moriyama, Mr. Arthur A. Campbell, and Dr. Helen C. Chase

RESOURCE PERSONS

Members of the Study Group on Improving Registration of Fetal Deaths

RAPPORTEURS

Mr. Arthur A. Campbell and Mrs. Adele Dingfelder (First Session);
Dr. Helen C. Chase and Mrs. Stephanie Ventura (Second Session)

FERTILITY AND PERINATAL STATISTICS

FIRST SESSION—FERTILITY STATISTICS

Tuesday Afternoon—June 21, 1966

SECOND SESSION—PERINATAL STATISTICS

Wednesday Afternoon—June 22, 1966

First Session—Fertility Statistics

In structuring sessions of the workshop, the subject of fertility statistics was presented in the first session with papers by Dr. Kiser and Mr. Campbell, a discussion of these presentations by Mr. Siegel, and a paper by Mr. Hiller, followed by comments and questions from participants. As an introduction to the first session, Dr. Kiser commented on the new emphasis given to fertility measurement in the field of public health. He noted that this emphasis is accompanied by increased interest in factors related to fertility, such as migration.

Status of Research on Fertility in the United States

Dr. Clyde V. Kiser, *Senior Member, Technical Staff, Milbank Memorial Fund*

The subject of fertility probably has been studied as much as, if not more than, any other facet of human behavior during the past 10 years, especially in the United States. Despite this, there are important gaps in our knowledge of the determinants of human fertility in this country, and we are still largely in the dark even about levels or trends in fertility in large areas of the world.

I shall try to summarize briefly the outstanding gains in research in fertility during the past decade and to discuss briefly the gaps in our knowledge as I see them. In this we shall be concerned mainly, but not altogether, with the United States. In the world setting the great increase in population brought about by the sharp declines in mortality in the underdeveloped areas has stimulated the search for ways and means of bringing declines in fertility.

There have been various stimuli to research in fertility since World War II. In the United States, the unexpected volume and persistence of the baby boom provided a belated stimulus to research. That the demographers were caught off-base by the baby boom is an indication of (a) the inadequacy of existing techniques of analysis and (b) the failure to predict, or even to *detect* very early, the changes taking place in patterns of marriage and reproduction and changes in attitudes toward marriage and family size. Even after some of these changes were detected, their significance was minimized.

However, a belated effect of the baby boom in the United States was that of causing students of population to examine some of the existing measures of fertility and research techniques and to try to find better ones. The net reproduction rate was one of the first fatalities of this critical examination. Developed by the late Alfred J. Lotka in the middle twenties, the net reproduction rate simply purported to indicate the rate of increase per generation implicit in given sets of age specific fertility and mortality rates(1). However, it was misused rather blindly and uncritically as an instrument for population projection. In a sense, it was the old story of using a projection model as a prediction model.

Thus the users, including some of the best demographers, failed to appreciate that births and marriages for a specific calendar year might be wholly unrealistic of what happens to a cohort of women passing through life. Thus, because of both improved economic conditions and the impending threat of military service for single men, there was a rash of marriages and first births during the early forties. At the 1944 Annual Meeting of the American Public Health Association, the late P. K. Whelpton demonstrated that if the age-specific rates of first birth occurring in 1943 in the United States were applied to a cohort of women passing through the reproductive period, some 109 percent of the women would have first births(2). This, of course, was an impossible situation because a woman could not have more than one first birth.

This finding set Whelpton off on his series of studies of trends in cohort fertility and his elaboration of methods of assembling, analyzing, and interpreting cohort fertility data. It resulted in books and articles by Whelpton and others on cohort fertility and a realization of the importance of data on cohort fertility for an understanding of what is taking place in fertility trends.

Norman Ryder has contributed in this field by his differentiating of cohort fertility and period fertility and the interrelation between the two variables. This differentiation was emphasized in a recent report of the Subcommittee on Fertility Measurement in its assessment of the meaning of the downward trend in the crude birth rate in the United States since 1957(3). This downward trend is observed for age-specific and order-specific fertility rates as well as for crude birth rates. There is no doubt about the existence of a decline in the period fertility rates. Furthermore, we can say with some degree of assurance that the decline in period fertility rates results in part from the cessation of the previous trend toward younger age at marriage. Probably also involved is a decline in completed cohort fertility—i.e., the recent cohorts of women probably will have fewer children as they pass through life than did the immediately earlier cohorts. The evidence for this is based largely on the data regarding "number of children desired" and "number of children expected" obtained in the Growth of American Families Study. Thus, young women in the 1960 Growth of American Families Study on the average wanted and expected to have fewer children than did the young women in the 1955 Growth of American Families Study. On the other hand, in a recent unpublished study David Goldberg expresses the opinion that the dramatic changes in the United States birth rate are related to cohort shifts in the postwar trends in proportions marrying and the timing of their births rather than a major change in completed family size among married couples(4).

The Growth of American Families Studies and the Princeton Fertility Studies themselves represent efforts at improvement of surveys designed to collect basic data of possible use in the interpretation of trends and differentials in fertility and, hence, ultimately useful in population progression.

The Growth of American Families Studies have been efforts to collect data regarding fertility, sterility, and family planning at 5-year intervals from national samples of women and married women 18–39 years old. Featuring questions on number of children expected during the next 5 years, the Growth of American Families Studies provide comparisons of what women say with what they do with respect to childbearing within a 5-year period. It is true that the same women were not necessarily interviewed at the 5-year intervals. However, the same types of women were interviewed and the comparison of number of additional children expected during the next 5 years among women 20–24 years old in 1955 with the number of children the women actually bore during the preceding 5 years among women 25–29 years old in 1960 revealed an interesting result. The reliability of data on expected number of children was rather low on the basis of the experience of individual women. However, the averages were quite close. Stated in another manner, the distribution of women by number of children expected differed from that by number actually produced in 5 years, but the average number of children expected proved to be close to the average number experienced during the 5-year period in question.

The 1955 Growth of American Families Study was carried out jointly by the Scripps Foundation and the University of Michigan, and the authors were P. K. Whelpton, Ronald Freedman, and Arthur Campbell. The 1960 study was carried out by Scripps Foundation alone, but with the sampling plan developed by the Survey Research Center of the University of Michigan. The authors of the recently published report were Whelpton, Campbell, and Patterson. The first two studies were financed largely by the Rockefeller Foundation (5).

The National Fertility Survey of 1965, directed by C. F. Westoff and Norman B. Ryder with funds from the National Institute of Child Health and Human Development, made a special effort to estimate the prevalence and effectiveness of the new contraceptive pill. According to a recent news report in the *New York Times,* the survey "indicated that 56 percent of married women under 20 were using or had used the pill. Among non-Catholic college graduates under 25, 81 percent of those married were pill users * * *.

"Doctor Ryder and Doctor Westoff found that 21 percent of Catholic wives under 45 were pill users. This compares with 29 percent of non-Catholic wives (6)."

There has been a rumor in the air that the National Center for Health Statistics may assume responsibility for future surveys of the Growth of American Families type. The possibility may be discussed further by Mr. Campbell when he takes the floor.

A companion study of GAF has been the Princeton Fertility Study. This is a longitudinal study in the real sense in that it has been concerned with following the couples through time in an effort to discover some of the social and psychological correlates of fertility. It began with a sample of about 1,165 white women living in 7 large metropolitan areas who reported their second birth during September 1956. They were first visited in 1957 by women interviewers who collected from them a wide variety of information regarding history of pregnancies and family planning practices, total number of children wanted and expected (including the existing two), and a number of specific questions pertinent to given social and psychological variables presumed to be related to fertility. The analyses of these data resulted in the book by Westoff, Potter, Sagi, and Mishler, "Family Growth in Metropolitan America" published by the Princeton University Press in 1961. The second round of interviews was carried out in 1960. In this case, an important dependent variable was the actual number of third and later births and pregnancies occurring during the preceding 3 years to the 905 women located and interviewed in the second round of visits. This resulted in the book "The Third Child" by Westoff, Potter, and Sagi, published in 1963 by the Princeton University Press.

Although the Princeton study failed to add substantially to our knowledge of psychological factors related to fertility, it provided some illuminating data regarding differentials in fertility by religion. Collectively, the Princeton Fertility Study, the GAF Study, and the Detroit Area Study (7) provide strong suggestions that the higher fertility of Catholics than of non-Catholics cannot be explained simply by the less frequent or less effective practices of family planning. The Catholic couples appeared to *want* larger families than the non-Catholic couples. Data from these and other sources suggest that the gap between Catholic and non-Catholic fertility has widened in recent years because of relatively large increases since 1950 in the fertility of Catholics than of non-Catholics in the United States.

We might now mention a few of the outstanding results of the monograph on fertility during the 1960 census period being prepared by Wilson H. Grabill, Arthur Campbell, and myself as one of the APHA series of monographs on vital and health statistics. Like the differentials in fertility by religion, those by color have become larger since 1950. This has been due to the especially marked increase in the fertility of nonwhites since 1950. In contrast, there has been a narrowing of differentials in fertility by urban-rural residence, by broad region of residence, and by socioeconomic status, especially among the whites. In particular the work of Wilson H. Grabill should be mentioned. He has not only contributed heavily to the two monographs on fertility but he has carried the responsibility of processing different types of fertility data to make them amenable to different types of analyses. Examples have been his processing of the household rosters to yield data on intervals between births, his processing of data on children under five years of age, and his use of fertility data in experimental population projections.

At the outset, we noted the stimulus to research created by the high fertility levels in underdeveloped areas of the world. As a consequence, there has been a great increase in research on two fronts (a) the physiological or medical aspects of fertility and (b) the so-called KAP (knowledge, attitude, practice) studies of family planning in underdeveloped areas. Both types of research have been supported substantially by U.S. foundations, notably by the Population Council, and also increasingly by the governments concerned. A recent landmark of research in these two fields was the publication of the proceedings of a conference held in Geneva in 1965 on family planning and population programs (8).

The research on the first front has resulted in the oral contraceptive already discussed. Although this device is still rather expensive for people in underdeveloped areas and requires a rather high level of motivation, it is in some respects an answer to the dream of those who 20 years ago said, "if we only had a pill." Although the pill must be taken 20 consecutive days per month, the method has the distinct advantage of being unrelated to the sex act.

The intrauterine device (IUD) also has this marked advantage. Except for the initial cost of insertion, the expense is virtually nil. For these reasons, the IUD has been acclaimed by some as providing the answer to the need for a safe, inexpensive, and acceptable contraceptive device for the underdeveloped areas.

The intrauterine device cannot be claimed as the product of any recent sustained and expensive research. It fell almost like manna from heaven. Although the large foundations were quick to realize its potentialities, to improve it, and to devise ways and means for rapid manufacture and distribution, probably none can honestly claim credit for its actual appearance. Whatever its source, there is no doubt that the IUD represents a great gain in the present state of family planning.

Furthermore, the increasing interest in demographic matters on the part of governments, international agencies, and even the Catholic Church is a definite positive factor or asset insofar as the present status of research in fertility is concerned. The interest of both the National Center for Health Statistics and the Bureau of the Census in levels and trends in fertility is commendable.

The development of the electronic computer has opened up new avenues for research in fertility. It has facilitated factor analysis with many more variables than was previously possible. It has also made possible the use of simulation techniques and analyses of stochastic processes relating to marriage and reproduction, such as those carried out by Mindel Sheps, Jeanne Clare Ridley, Robert G. Potter, Edward Perrin, and Alice M. Rivlin.

Gaps in knowledge. Despite the favorable picture, gaps in our knowledge of fertility trends and differentials definitely exist. Specialists in the medical or physiological aspects of fertility will be the first to acknowledge the walls of ignorance in that field. There is, for instance, current research in the possibility of inducing temporary immunity to conception, but the goal has not yet been attained. We are still ignorant of precisely why the IUD works and why it is spontaneously expelled by some women. There has not yet been time enough to make a definite assessment of the *side effects* of the two newer methods of contraception. Until this is done, there will be an important gap in our knowledge.

We still know little about the relation of social and psychological factors affecting fertility. In fact, we have not yet succeeded in securing dependable measures of psychological characteristics in field surveys or interview situations.

The birth certificate should indicate the educational attainment of the mother. The census collects data on education. Thus, if the birth certificate also had an item on education, we would be able to have annual fertility rates and cohort fertility rates by educational attainment of the mother. The birth certificates have long contained occupational class, but the data have fallen into disuse because of difficulties in coding and inaccuracy of reporting. Educational attainment is a more meaningful variable because it relates to the mother, it means the same for married and unmarried women, and it is an unchanging attribute. Thus, it is an ideal index of socioeconomic status for purposes of cohort fertility rates.

Knowledge of the psychology of family size is needed for all areas and strata of society and especially for the nonwhites.

We know little or nothing about the relation of health to fertility. The incorporation of questions on total number of children ever born in the schedules of the National Health Survey might be the means of building up a body of knowledge on the relation of fertility to various types of illness and impairments of the wife and husband.

We have virtually no factual data about the impact of trends and differentials in fertility on the gene pool of our population. Some effort is being made by the American Eugenics Society to encourage more dialogue between demographers and population geneticists. Studies such as those of the Amish carried out by McKusic at The Johns Hopkins University need to be made on other population groups (9).

There has been commendable cooperation between the National Center for Health Statistics and the Bureau of the Census. Probably the discrepancies between the two with respect to classifications by area and personal characteristics are of minor nature. Close and continuous watch for the prevention of discrepancies and for the promotion of meaningful similarities of classifications and categories should be encouraged.

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   Whelpton, Pascal K.; Campbell, Arthur A.; and Patterson, John E.: *Fertility and Family Planning in the United States,* Princeton, Princeton University Press, 1966.
6. *The New York Times,* May 31, 1966, pp. 1 and 37.
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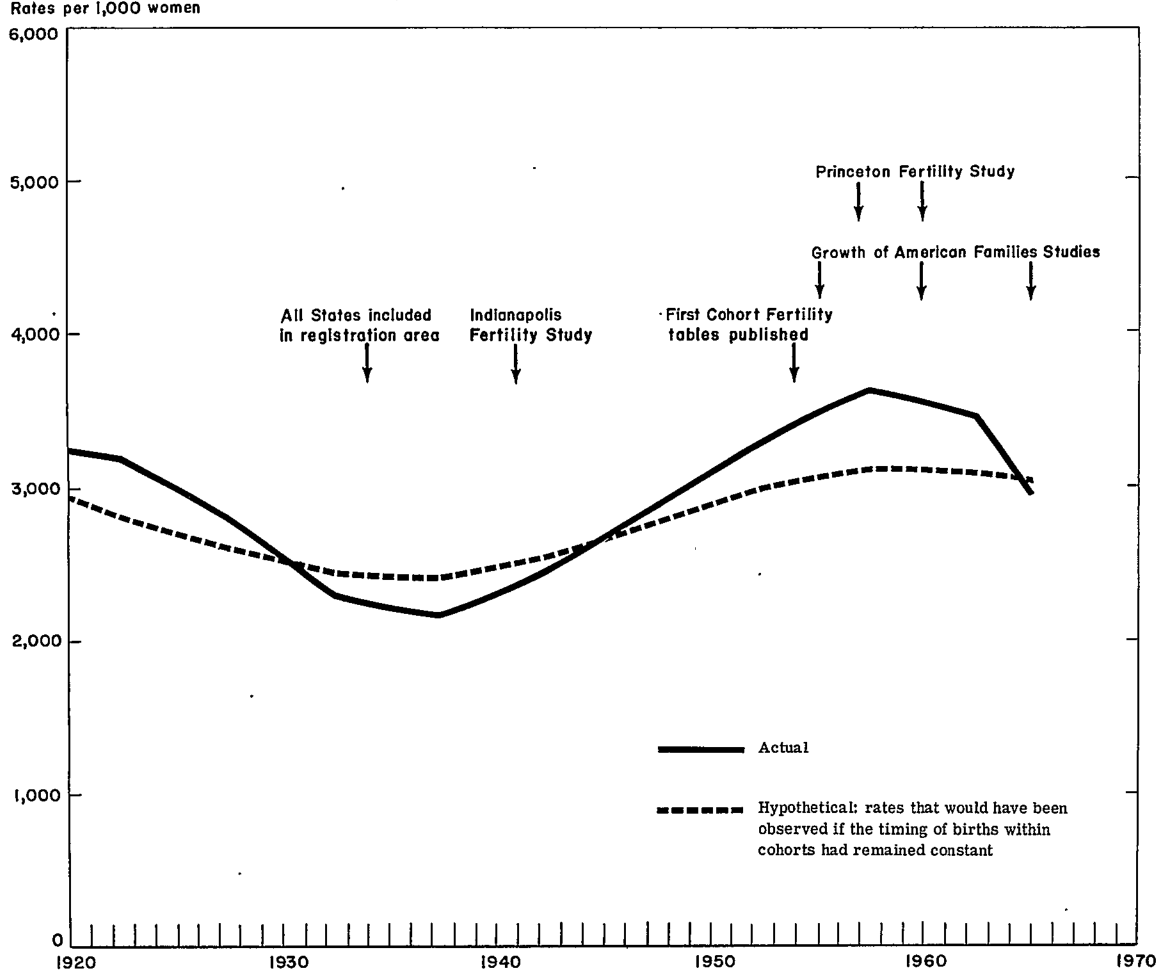
The Status of Research on Family Planning in the United States

Mr. Arthur A. Campbell, *Chief, Natality Statistics Branch, Division of Vital Statistics, National Center for Health Statistics, PHS*

The set of variables we are talking about when we use the phrase "family planning" includes all of the factors directly affecting the number of children a couple has and the spacing of these children. Thus, it includes not only the use of various methods of contraception, but also fecundity—that is, the couple's ability to have children. It also includes various measures of the couple's success in planning their families, and this necessarily involves an attempt to study preferences and expectations with regard to completed family size and the spacing of births. Thus, "family planning" includes a wide range of variables.

I should like to discuss research on these variables in the context of the changes in fertility that we have experienced in the United States. For this purpose, we have distributed a chart showing the secular trend of the total fertility rate over a 45-year period from 1920 to 1965 and certain important landmarks in fertility research during that period.

ACTUAL AND HYPOTHETICAL SECULAR TRENDS IN TOTAL FERTILITY RATES, 1920-65, AND MAJOR LANDMARKS IN FERTILITY RESEARCH



The measure of fertility used in this chart is the total fertility rate, which is the sum of all the single-year age-specific birth rates observed in a given calendar year. The total fertility rate indicates the number of children that a cohort of women would have if they experienced a given set of age-specific birth rates throughout their childbearing years of life. For example, the rate of 3,200 for the period around 1920 means that if a group of women were to experience the age-specific birth rates observed at that time throughout their reproductive years of life they would complete their fertility with an average of 3,200 births per 1,000 women, or an average of 3.2 children per woman.

The heavy line shows the trend in observed total fertility rates averaged over 5-year periods. This line smooths out the year-to-year fluctuations and enables us to see the general trend more clearly than would a chart of annual rates.

The movements of the heavy line can be interpreted as the result of changes in two major components of fertility. The first is completed fertility: The total number of children a cohort of women bears by the end of the reproductive period of life. The second is the timing of these births—that is, the percentage distribution of birth rates over the reproductive ages of life.

In the chart, the dotted line represents the trend in completed fertility. If the only fertility component that had changed over the past 45 years had been completed fertility, the trend in total fertility rates would have resembled the dotted line. In effect, the dotted line is a weighted average of completed fertility rates for cohorts of women. The weights are averages of the age distributions of fertility rates for the cohorts of 1901–45. In the period 1935–39, for example, the hypothetical total fertility rate plotted on this chart is 2,417. This is a weighted average of the completed fertility rates of the women who were then in the reproductive years of life. In order to extend the dotted line to 1965, it was necessary to estimate the completed fertility of most of the women still in the reproductive years of life. The shape of the dotted line during the 1950's and 1960's may, therefore, look somewhat different 20 years from now when we have more information to use in estimating the completed fertility of the cohorts now reproducing.

Since the only factor influencing the movements of the dotted line is the number of children cohorts of women eventually have, the differences between the dotted line and the heavy line are due to changes in the timing pattern of fertility throughout the 45-year period under review. Comparisons of the trends in these two lines bring out several important points:

1. The heavy line cannot remain above the dotted line indefinitely. Eventually, the trend in annual total fertility rates must cross or converge with the trend in the completed fertility of cohorts.
2. Changes in the timing patterns of fertility have tended to reinforce, rather than dampen, changes in the underlying cohort completed fertility rates. In other words, when completed fertility was declining, the changes in the timing pattern of births made the decline in annual measures of fertility steeper than the decline due solely to changes in completed fertility. Similarly, when completed fertility was rising, the trend toward younger ages at marriage and childbearing made the upward trend in total fertility rates much more rapid than the changes in the total number of children couples had. In other words, the secular trends in annual measures of fertility have a much wider amplitude than do the secular trends in completed family size.

In the early days of serious study of fertility in the 1920's and 1930's, the effects of changes in timing on annual measures of fertility were largely unrecognized. The emphasis on reproduction rates, of which Dr. Kiser has spoken, was due essentially to the mistaken assumption that the heavy line in this chart was an adequate measure of the completed fertility of cohorts in the reproductive years of life. The mistake was especially serious in the 1930's when, as we know now, annual measures of fertility were relatively depressed.

Another common fallacy that influenced thinking at that time was the idea that the trend in fertility was uniformly downward. This view is understandable from the perspective of the 1930's, which represented the end-point of a decline in fertility that had been going on for over a century. It was generally believed that the curve of fertility would flatten out at some low value near or below the level required for the replacement of the population. This assumption, in fact, was built into population projections prepared for Europe and the U.S.S.R. under the auspices of the League of Nations.

Now our view of trends in fertility is quite different. We see in this chart a major long-term cycle in fertility, and we have become accustomed to the idea that fertility can move in either direction, up or down, and will probably not remain at a constant level for many years.

The serious study of the variables immediately affecting fertility (that is, the family planning variables) began just 25 years ago with the Indianapolis Fertility Survey, conducted in 1941. Dr. Kiser was one of the principal investigators in this study. The timing of this study was especially fortunate because it provided us with a valuable record of the family planning practices of an important segment of the population during the period of relatively depressed fertility rates observed during the 1930's. The couples in the Indianapolis study were married in the years 1927–29 and spent their most fertile years in the depression period.

The unexpected rise in fertility during the 1940's and early 1950's stimulated more research in family planning. This research was preceded by Whelpton's first work on cohort fertility analysis, to which Dr. Kiser has referred. Our recognition of the importance of the factor of the timing of fertility is due largely to Whelpton's research. His publication of the book *Cohort Fertility* in 1954, therefore, represents another significant landmark in research in fertility.

Whelpton's early recognition of the importance of timing led him to try to separate the effects of timing and completed family size. The crucial question in such an attempt is, of course, "How many children will the women in the reproductive years of life eventually have?" If this question is answered accurately, it is possible to estimate the extent to which current fertility measures are influenced by each of the two major components of fertility. It would also be possible to make more reasonable estimates of future trends in fertility. In order to obtain an approximate answer to this question, Whelpton and Freedman embarked on a national survey of married women in the reproductive years of life. This was the first Growth of American Families study of 1955, noted on the chart. The women in the sample were asked about their past pregnancy histories, their ability to bear children in the future, and their estimate of how many children they would eventually have. Questions on childbearing expectations, incidentally, had been used by Freedman in the Detroit metropolitan area in 1954.

The 1955 Growth of American Families Study provided us with the first information on family planning variables for a nationwide sample of couples. The study was limited to white couples for reasons of economy. One of the major findings of the study was that nearly one-third of the couples were below normal in their ability to reproduce. This subfecund segment of the childbearing population reported a wide range of impairments. One in ten of all the wives reported that they or their husbands had had an operation that prevented childbearing. Such couples and a few others indicating serious impairments were classified as definitely sterile. Also included among the subfecund couples were those who had tried for several years to conceive without success. These couples were not considered to be sterile, however, because some of them would undoubtedly have a child at some time in the future. In any case, demographers were surprised at the relatively high proportion of couples with some physiological limitations on their fertility.

Another important finding of the 1955 Growth of American Families Study was that nearly all couples had some limitation, voluntary or involuntary, on their fertility. The proportion reporting that they had ever used contraception was 70 percent. An additional 9 percent expected to use contraception. Of the remaining couples, most were below normal in the capacity to reproduce. Only 4 percent of the couples were able to have more children and said that they had not used contraception and did not intend to do so. In other words, 96 percent of all the couples had or expected to have some limitation of their fertility.

The 1955 study also found that the practice of family limitation was widely approved. Even Catholic wives who said at first that they disapproved of attempts to control fertility tended to qualify their disapproval by favoring the rhythm method of contraception.

In spite of the widespread use of contraception, the 1955 study showed that many couples were unable to control fertility to the extent desired. Thirteen percent of the wives reported that they had had more children than they or their husbands had wanted. The comparable proportion was higher for couples with low incomes and low educational attainment.

The second Growth of American Families Study of 1960 was intended to aid in evaluating the fertility expectations collected in the 1955 study and also to explore more thoroughly some of the relationships discovered in the earlier study. The sample for the 1960 study included nonwhite wives and 40- to 44-year-old white wives. The 1960 study showed that the wives interviewed in the 1955 study made, on the average, surprisingly accurate predictions of the number of children to be born in the 5-year period between the two surveys. It was also found that the total number of children expected tended to rise with age, evidently largely because of unplanned conceptions.

By 1960, the proportion of couples using contraception had increased to 81 percent. Part of this rise was due to the fact that women were completing their fertility at an earlier age than had formerly been the case and were, therefore, using contraception to prevent any additional births, and part of it was due to an increased tendency to space births before the family was complete. Again, the study revealed that only a very small proportion of couples were able to have children and never expected to use contraception.

In the 1960 study, the timing of the first use of contraception received more emphasis than it did in the 1955 study. It was found that the major reason that couples in the lower socioeconomic status groups had smaller proportions using contraception was that they tended to begin using contraception at a later point in the family building process than did couples in the higher status groups. As a result of this later use of contraception, a number of couples discovered that they had impairments of the reproductive system and would not have to begin using contraception in order to limit the number of children they had.

However, the 1960 study also found that late use of contraception was highly correlated with excess childbearing. The most important reason for excessive childbearing among less-educated women was the failure to begin using contraception before they had more children than they wanted. The irregular use of contraception also contributed to excessive childbearing.

The first two surveys for the Princeton study were conducted in 1957 and 1960. The Princeton study was a descendant of the Indianapolis study of 1941 and was designed primarily to test certain hypotheses concerning social and psychological factors affecting fertility. Its aims, then, were different from those of the Growth of American Families Studies, which were intended to provide estimates of the values of family planning variables for the entire United States. Although, as Dr. Kiser pointed out, the Princeton study showed very small correlations, or none at all, between fertility and psychological variables, it did produce some important findings. One of them was that as couples come closer to the number of children they want to have their success in using contraception improves markedly. This finding has many important implications for the study of family planning, and particularly for the study of the effectiveness of various methods of birth control.

In the 1960 Growth of American Families Study, an attempt was made to confirm this finding of the Princeton study, with the use of cruder but more representative data. The result was a complete verification of the Princeton hypothesis.

It is important to note that both the Princeton Study and the 1955 and 1960 Growth of American Families Studies were conducted during a period when annual measures of fertility were relatively inflated by the trend toward younger childbearing, as the chart shows. This has important implications for the findings of these studies. For example, we were surprised at the extent of poor control of the timing of births as revealed by the 1960 Growth of American Families Study. Fifty-four percent of all couples reported either that they had had some pregnancies earlier than desired or that they had had more pregnancies than they wanted altogether. Among couples with one or more children, the proportion was 60 percent. Most of these couples avoided having more children than they wanted, but the figures did reveal a widespread failure to space births successfully. It should be emphasized that the criterion of success is the couple's own and not one that is artificially imposed. In general, this lack of success was due to the irregular use of contraception, rather than the failure to use contraception at all.

It seems entirely possible that this carelessness in the use of contraception early in marriage is not a constant tendency, but one that was prevalent during the period of inflated fertility of the 1950's and early 1960's.

Now, according to the trends plotted on the chart, we seem to be entering a period when annual measures of total fertility will fall below the line indicated by the trends in the completed fertility of cohorts. This means that couples will be having their children at later ages than formerly, the use of contraception will probably begin at an earlier stage of family growth, and methods of contraception will probably be more carefully used than was the case in the 1950's.

It is unfortunate from the point of view of the investigator, always on the lookout for fortuitous large-scale social experiments, that we are entering this period of relatively depressed fertility with new and highly effective methods of contraception. It would have been interesting to see how much couples would have improved their control of fertility with the methods in common use in the 1950's. However, the couples relying on these methods may not sympathize with the demographer's outlook on such matters.

The study of family planning variables has gone forward another step with the new National Fertility Survey of 1965, directed by Charles Westoff of Princeton and Norman Ryder of the University of Wisconsin. The purposes of this study are consistent with those of the earlier Growth of American Families Studies, and this is the reason that I have shown it on the chart as the third Growth of American Families Study. Dr. Kiser has already told you about some of the important findings of this study with respect to the use of the contraceptive pill.

I have described briefly the largest studies of family planning variables. In addition, there have been other studies more limited in scope. Several of the Detroit area surveys have included questions on expected completed family size. Early in 1962, an elaborate survey was conducted of 1,215 women in the Detroit area who had recently married or given birth to their first, second, or fourth child. These women were questioned again late in 1962 about their fertility since the first interview and their future birth expectations. The major aim of this study is to examine social and economic factors affecting fertility. A number of important findings relating to the timing of births have already been reported by Freedman.

Inasmuch as most of the available studies of family planning variables have been conducted during a period of relatively inflated fertility, in view of the changes in contraceptive methods that have taken place, and in view of the fact that we are now entering a new phase of the fertility cycle, it is important that research on family-planning variables continue into the future. We no longer think of fertility in a complex urban-industrial society as a relatively constant phenomenon, but as a variable that responds to a number of influences and that can be expected to fluctuate significantly. So far, we have only one long-term fertility cycle to inspect in any detail, and our attention has been concentrated on only one portion of that cycle. Have we insured that equal attention will be given to all phases of future cycles?

In 1965, Dr. Linder formed a committee of staff members of the National Center for Health Statistics to consider the possibility of starting a fertility survey program, allowing for the regular collection of statistics on family planning variables. Early this year, the committee recommended that such a program be instituted and that a survey generally resembling the Growth of American Families Studies be undertaken every 2 years, beginning in 1968. The sample envisioned for this survey would be larger than that for any of the earlier surveys and would provide for the over-representation of couples in the socioeconomic groups experiencing the highest prevalence of excess fertility. These groups are expected to show the greatest changes in family planning practices in the near future. Also, the survey would provide for the reinterviewing of various subsamples of respondents at stated intervals in order to obtain the valuable insights that have come from longitudinal studies of the kind conducted by Princeton and by the University of Michigan in the Detroit area. A number of demographers all over the country have been informed about this proposal, and many of them have written to Dr. Linder endorsing the general idea of such a series of studies. So far, we have only a proposal. But agencies of the Federal Government have already shown their approval of the idea of such surveys by the Public Health Service grant to Princeton University for the 1965 National Fertility Survey. There is a good chance, therefore, that a fertility survey program will eventually be included among the several research resources comprising the National Center for Health Statistics.

Discussion of Preceding Papers

Mr. Jacob S. Siegel, *Chief, National Population Estimates and Projections Branch, Population Division, Bureau of the Census*

I think we have here two fine summaries of the development of research in fertility and family planning and of current research needs. I have little to take issue with in these papers. The two fields of fertilility and family planning overlap somewhat, and so the contents of the papers overlap somewhat. I should like to devote my comments to

1. Some "fallacies or misunderstandings" to which research has provided the answers but which remain misunderstood by many users of fertility and family planning data;
2. Some "developments" not mentioned or lightly touched on by our speakers; and
3. Some areas for "further research" not mentioned or deserving further emphasis.

Fallacies and Misunderstandings

A. Both speakers stressed the historical development of the recognition of the difference between fertility measures for calendar years and fertility measures for cohorts. Research has demonstrated the importance of separating trend from annual fluctuations (or changes in timing from changes in completed family size). Hence, it does not make sense to talk of size of family (a cohort measure) for a given year. It is still a

Note: The views expressed are my own and are not to be attributed to the Bureau of the Census.

common error to confuse the calendar-year total fertility rate (TFR) with a cohort completed fertility rate (CFR) and interpret the former as the latter. As Mr. Campbell has pointed out, the TFR tends to overstate the CFR in years of high fertility and to understate it in years of low fertility. The CFR has little relevance to the years when fertility is completed (cohort aged 45). A practical solution is to relate a given completed fertility rate to the years of principal childbearing (cohort aged 25) and also to identify the year of birth or year when the cohort reaches the end of childbearing.

B. We have lived through, and now look back upon, a period when everyone assumed the birth rate would continue to decline. This belief continued to dominate our thinking into the late forties. Now we seem to be entering an era when many users of our data are ready to assume that the birth rate, or even birth rates by age, will, once again, go on declining. This may not be the case at all. With increased control, birth rates may go up or down, and particularly the crude birth rate which is so much affected by the changing numbers of women of childbearing age.

With respect to completed family size, I personally believe we may see a generally downward trend as families achieve more closely their preferred size but where progress toward reduction of fecundity and subfecundity is limited and insufficient to offset the decline among families able to have the children they want. This range might be 2.5 to 3.0 children per woman. This may be particularly true for Negro families.

C. We should recognize the considerable limitation of cohort data and survey information relating to "expectations" for preparing predictions of fertility, particularly predictions of the CFR. We must recognize that even "pure" or accurate measures for actual cohorts of women are not in themselves a final answer to the problem of predicting what will happen to future fertility. Completed fertility can be predicted accurately only after a cohort has already had many of its children and is no longer an important contributor to the Nation's annual births. In the United States, roughly half of a woman's lifetime births occur by about 5 years after marriage and 70 percent by about 10 years after marriage. This means that within a very few years the bulk of the Nation's annual births will come from women who are not married at present and for whom we have no data on expected family size. Moreover, the married women giving their predictions cannot predict their future physiological condition or the changing socioeconomic environment in which they will decide to have or not to have future babies.

D. A major finding of the fertility surveys is that generally couples with large families would like to have had smaller families, particularly Negro couples. Too, we know from other sources that abortion among married women is not uncommon. In short, the public has been ahead of the government, the church, and other institutions in its thinking regarding the desirability of fertility control. These facts are at last being communicated to those in positions of leadership and authority.

E. The studies suggest that excessive emphasis has been given to technological factors in interpreting current trends in the birth rate. The recent declines started to occur before the contraceptive pill, and we have had lower fertility before than we have now. In our society, the key factor is the couple's intentions regarding family size wanted and regarding the spacing of their children. This is illustrated particularly by the persistent and increasing differential between Catholic and Protestant fertility, as noted by Dr. Kiser. However, new and improved techniques may increase planning effectiveness and so reduce instances of bad spacing and excess children. On the other hand, some of the effect of technological improvements may be reflected in a reduction of abortions.

Developments

Among developments to which I should like to call attention as omitted by our speakers or to which I should like to call particular attention are these:

A. One is the entry of the U.S. Bureau of the Census into the area of fertility analysis with the inclusion of questions on fertility in the 1910 census and later in the 1940, 1950, and 1960 censuses. We may add the inclusion of fertility questions from time to time in the Current Population Survey beginning in the 1950's.

B. A major step was the conduct of the first national birth registration test in 1940.

C. The possible initiation of periodic national fertility surveys by the NCHS will be a major development. The need for continuing fertility surveys of the type proposed is recognized. We agree fully with the need to repeat the GAF Study under conditions of depressed fertility to see if predictiveness remains under changed socioeconomic conditions, changed conditions of fertility control, and conditions where fertility is changing rapidly. There is the problem, however, of sponsorship of a survey covering so sensitive an area by the U.S. Government. In view of the risks involved in the Government's entry into the area of attitudinal studies on fertility, will the new survey differ in method and scope from the National Fertility Survey of 1965 and the continuing national fertility surveys conducted by the Michigan Population Studies Center in 1962, 1963, and later years (which were not mentioned by our speakers but which, presumably, like the 1965 National Fertility Survey, are successors to the 1955 and 1960 GAF Studies)? These earlier surveys were carried out under private direction, whereas the proposed survey would be under U.S. Government direction, even if the field work is contracted out to a private organization.

There may be some overlap with the traditional scope of the work of the Census Bureau through its decennial censuses and current surveys, and these joint interests should be explored before the plans for the survey are carried very far. I may call attention to the establishment of an informal Census-NCHS Committee on Fertility Statistics which has as its purpose exchanging information and achieving such consistency between the two agencies as is possible and desirable.

D. I should like to review briefly the general developments in the methods of projecting births, with which the Census Bureau has been closely involved.

- In the period-fertility method, the method first used, the analysis is in terms of annual fluctuations in age-specific rates or some summary measure of age-specific rates, such as the gross reproduction rate.
- The cohort fertility method was introduced by the Scripps Foundation in the late fifties, but the Census Bureau did not officially employ it until the early sixties. In this method, the analysis is in terms of the expected lifetime childbearing experience of a cohort of women and the distribution of their births by age and time (spacing). The projection of completed fertility is based on historical analysis, survey results on expectations, and mathematical methods. The cohort method may incorporate the factor of marital status, as the Scripps Foundation has done.
- The marriage-parity-childspacing progression method involves increased specificity of the rates, the analysis being in terms of age-specific first marriage rates and of birth rates specific for parity of women and order of birth of child, and interval since first marriage or previous birth. In general, the rates represent the chances of having a next child in a year on the basis of previous fertility experience. As Dr. Kiser noted, Wilson Grabill of the Census Bureau has recently experimented with this method.
- This method will be elaborated further for use in a national demographic model being developed by the Census Bureau. The method of computer simulation will be employed to develop component models for marriage, fertility, and households. Such a demographic model will serve in the analysis of current fertility changes and in the preparation of projections of fertility.

E. A development of tremendous importance for research mentioned by our speakers, which I should like to emphasize, is the recent involvement of the Federal Government, the major church organizations, and international agencies in the issues of family planning and in fertility studies.

F. Our speakers did not mention the research underway relating to the economic determinants and consequences of fertility, particularly the work on cyclical factors carried out by Richard Easterlin.

G. Other domestic developments that might be mentioned include cohort fertility tables for nonwhites (Farley), marriage cohort tables (Campbell), etc.

H. Finally, with particular reference to international studies, we may note the research in the use of household surveys to measure national birth rates where registration systems are defective and the development of tables of functions of the stable population for the same purpose. Independent work in the latter field has been carried on by the Population Branch, United Nations; Princeton Office of Population Research; and the Demographic Center at Santiago. Dr. Kiser has referred to the major research now underway abroad in the design, implementation, and conduct of family planning programs.

Further Research

With respect to needed research, I should like to call attention to the following items:

A. We need a better understanding of current fertility changes on an up-to-date basis and, more specifically, a method of distinguishing at an early date a real change of trend from annual fluctuations (i.e., changes in timing of marriage and spacing of children). We should like to have a measure of current fertility which would eliminate variation in the age distribution of mothers (i.e., timing of births), such as Mr. Campbell has employed in his paper, a measure which would eliminate variations in the parity distribution of women, and a measure which would standardize for both of these factors. Yet how can we adjust current annual rates to eliminate annual fluctuations when we can hardly know the trend, since the CFR is not known or cannot be approximated closely for many cohorts? The goal may not be achievable or may be achievable in only a limited way.

B. An enlightened society should have as one of its goals that all children are wanted (before the fact as well as after the fact). Couples should also be able to have the children they want. More research is needed to provide the information for effective family planning; this involves the fields of communications, technology, physiology, and organization of family planning programs. We need more knowledge particularly about the role of abortion as a form of family control, its extent, the motivations, characteristics of abortees. More research is needed on the factors underlying infecundity and subfecundity and the means of reducing them and on the factors underlying pregnancy wastage.

C. The fuller development of the whole area of marriage statistics will make an important contribution to fertility studies; also more data are needed on the marital characteristics of parents.

D. The study of differentials remains important to our interpretation of the present and our projection of the future. Dr. Kiser has suggested the possibilities for examining differentials by educational attainment on the basis of the new model certificate. This should soon be possible from the Census Bureau's Current Population Survey, too. Why the widening of white-nonwhite and Catholic-Protestant differentials at this time when we would expect convergence? Differentials by farm background have been shown to be significant, but we have at present no basis for studying this variation nationally. With respect to urban-rural differences, there remains the problem of comparability of data from the National Center and Census.

E. An important gap is the lack of fertility data for single women, particularly in groups where family structure is unstable and premarital pregnancy is common. The omission of date of first marriage from the model birth certificate is, therefore, regrettable even if it may be justified. We need a new approach in the census, fertility surveys, and registration.

Collection of Fertility Data on Birth Record Supplements

Mr. Robert W. Hiller, *Chief, Section of Vital Statistics, Division of Administrative Services, Minnesota Department of Health*

Minnesota was one of 11 areas admitted to the Birth Registration Area when it was first formed in 1915. The statistical data available from birth and fetal death (stillbirth) records for many years remained essentially unchanged in Minnesota and elsewhere. A major step toward greater use of such records for the collection of statistical data was taken in 1957 when a detachable confidential medical supplement was added to the Minnesota fetal death certificate. This supplement contained questions relating to complications of pregnancy, labor, and delivery; birth injuries; malformations; RH sensitivity; etc.

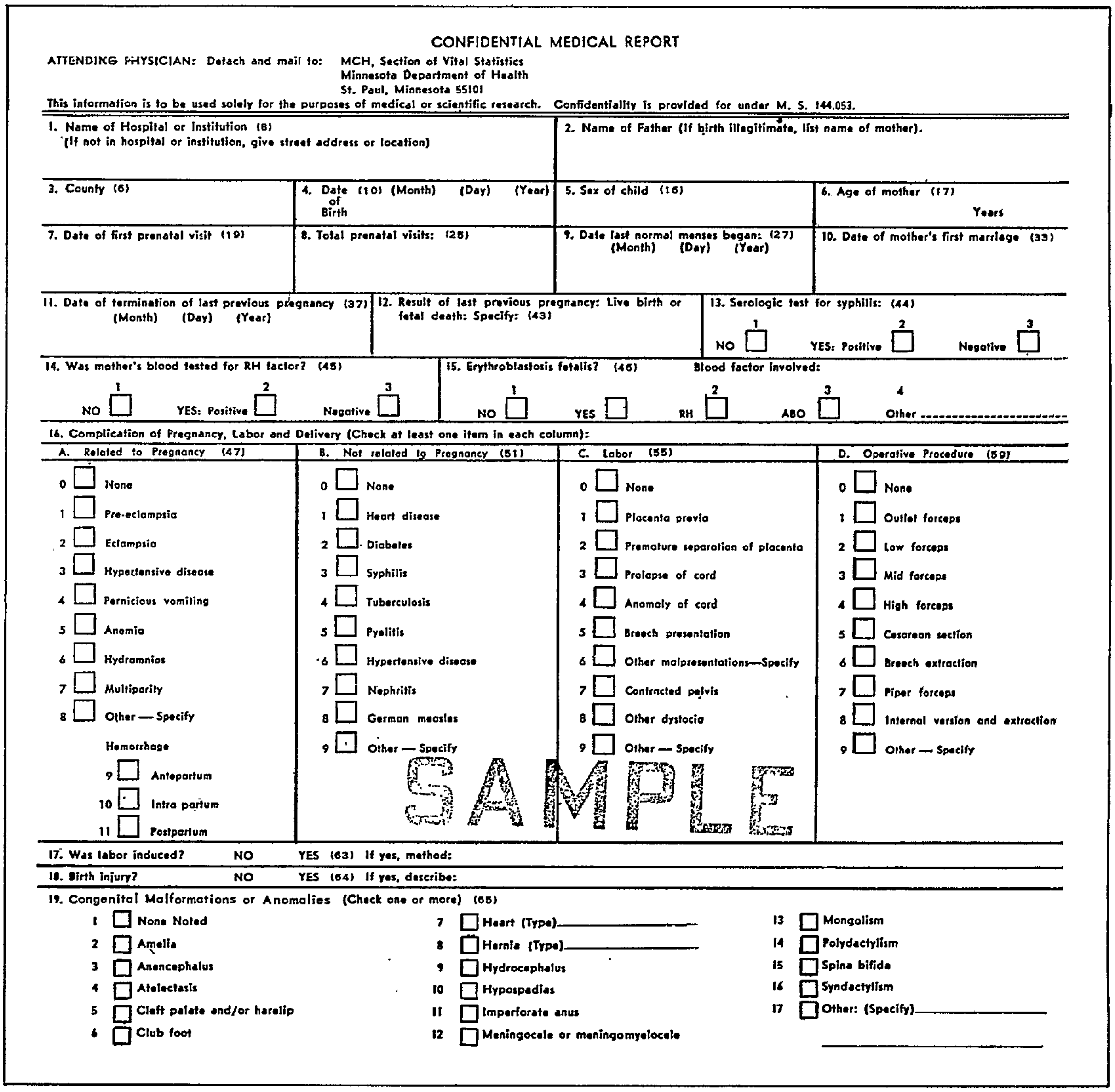
A similar supplement was added to the Minnesota birth certificate in 1962. The supplements were added to obtain data requested by the Section of Maternal and Child Health within the State Department of Health. No attempt was made to match these supplements to the birth certificates nor was the completion and filing of the reports a legal requirement. Thus, there was no followup for missing supplements.

In January 1965, because of incomplete reporting, a revised birth supplement form was introduced along with several administrative changes. The new form contained several questions primarily related to fertility in addition to the medical information. The resistance encountered in obtaining responses to the questions relating to fertility (date of mother's first marriage, education of parents, date of termination and result of last previous pregnancy) is the primary subject of this report; but before discussing this question specifically, a few brief remarks relating to certain other arrangements may be in order.

First of all, the State Board of Health adopted a new regulation which specifically requires that the supplements be completed and filed. Second, the supplements are to be filed with the Section of Vital Statistics rather than the Section of Maternal and Child Health, so that the supplements could be matched to birth records and a followup program would be possible. Third, an instruction manual was distributed to hospitals and a letter of explanation sent to physicians to acquaint them with the new requirements and the reasons for the change.

Prior to the introduction of the supplement forms and the revision of the birth supplement form, the proposals had been discussed with and received the approval of the Maternal Health Committee and the Council of the Minnesota State Medical Association. With the introduction in 1957 of the fetal death supplement, the physicians responded by filing fetal supplements for approximately 75 percent of the fetal certificates filed. When the birth supplement was first introduced in 1962, supplements were filed for around 83 percent of the births registered. When the birth supplement was revised in January 1965 to include the fertility questions, there was no particular change in filing practices until the followup program began. At that time, the percent of supplements filed jumped almost immediately to 92 percent. This percentage has risen steadily since then, reaching 97 percent for the first quarter of 1966 (see table II). Thus, physician response to the birth supplement, as measured by the percentage of supplements filed, might be termed excellent.

Another question which arises immediately is the question of whether the supplements are being completed adequately. The part of the question relating to adequacy cannot be answered definitely at this time except to note that the malformation rate has jumped from 14 per thousand live births to 21 per thousand live births, indicating increased concern and interest in these data. It is also obvious that an



CONFIDENTIAL MEDICAL REPORT

ATTENDING PHYSICIAN: Detach and mail to: MCH, Section of Vital Statistics
Minnesota Department of Health
St. Paul, Minnesota 55101

This information is to be used solely for the purposes of medical or scientific research. Confidentiality is provided for under M. S. 144.053.

1. Name of Hospital or Institution (8) (If not in hospital or institution, give street address or location)
2. Name of Father (If birth illegitimate, list name of mother).
3. County (6)
4. Date of Birth (10) (Month) (Day) (Year)
5. Sex of child (16)
6. Age of mother (17) Years
7. Date of first prenatal visit (19)
8. Total prenatal visits: (25)
9. Date last normal menses began: (27) (Month) (Day) (Year)
10. Date of mother's first marriage (33)
11. Date of termination of last previous pregnancy (37) (Month) (Day) (Year)
12. Result of last previous pregnancy: Live birth or fetal death: Specify: (43)
13. Serologic test for syphilis: (44) 1 NO ☐ 2 YES: Positive ☐ 3 Negative ☐
14. Was mother's blood tested for RH factor? (45) 1 NO ☐ 2 YES: Positive ☐ 3 Negative ☐
15. Erythroblastosis fetalis? (46) 1 NO ☐ YES ☐ Blood factor involved: 2 RH ☐ 3 ABO ☐ 4 Other ----------------------

16. Complication of Pregnancy, Labor and Delivery (Check at least one item in each column):

A. Related to Pregnancy (47)	B. Not related to Pregnancy (51)	C. Labor (55)	D. Operative Procedure (59)
0 ☐ None	0 ☐ None	0 ☐ None	0 ☐ None
1 ☐ Pre-eclampsia	1 ☐ Heart disease	1 ☐ Placenta previa	1 ☐ Outlet forceps
2 ☐ Eclampsia	2 ☐ Diabetes	2 ☐ Premature separation of placenta	2 ☐ Low forceps
3 ☐ Hypertensive disease	3 ☐ Syphilis	3 ☐ Prolapse of cord	3 ☐ Mid forceps
4 ☐ Pernicious vomiting	4 ☐ Tuberculosis	4 ☐ Anomaly of cord	4 ☐ High forceps
5 ☐ Anemia	5 ☐ Pyelitis	5 ☐ Breech presentation	5 ☐ Cesarean section
6 ☐ Hydramnios	6 ☐ Hypertensive disease	6 ☐ Other malpresentations—Specify	6 ☐ Breech extraction
7 ☐ Multiparity	7 ☐ Nephritis	7 ☐ Contracted pelvis	7 ☐ Piper forceps
8 ☐ Other — Specify	8 ☐ German measles	8 ☐ Other dystocia	8 ☐ Internal version and extraction
Hemorrhage	9 ☐ Other — Specify	9 ☐ Other — Specify	9 ☐ Other — Specify
9 ☐ Antepartum			
10 ☐ Intra partum			
11 ☐ Postpartum			

SAMPLE

17. Was labor induced? NO YES (63) If yes, method:
18. Birth Injury? NO YES (64) If yes, describe:

19. Congenital Malformations or Anomalies (Check one or more) (65)

1 ☐ None Noted
2 ☐ Amelia
3 ☐ Anencephalus
4 ☐ Atelectasis
5 ☐ Cleft palate and/or harelip
6 ☐ Club foot
7 ☐ Heart (Type)________________
8 ☐ Hernia (Type)________________
9 ☐ Hydrocephalus
10 ☐ Hypospadias
11 ☐ Imperforate anus
12 ☐ Meningocele or meningomyelocele
13 ☐ Mongolism
14 ☐ Polydactylism
15 ☐ Spina bifida
16 ☐ Syndactylism
17 ☐ Other: (Specify)________________

increasing number of supplements have additional comments and qualifications written on them, particularly on the items relating to complications, which almost certainly means that better data are being obtained.

That part of the question related to the completion of individual items of information is summarized in tables I and II. Table I indicates that the questions related to fertility were not completed as often as other items on the birth record or the birth supplement, although the percent completion would be comparable with certain items of information on the fetal death certificate.

The suggestion that there is more resistance to the fertility question than to the other items on the birth supplement is confirmed by the correspondence with physicians relating to the birth supplements. Essentially, every complaint has focused on the fertility questions and most specifically on the date of marriage and the education items. The collection of such data has been termed unconstitutional, a violation of the doctor-patient relationship, busy work

TABLE I.—Percent Completion of Selected Items of Information on Vital Records: Minnesota, 1965

Item	Item completeness as a percent of	
	Records filed	Events[1]
Birth supplement:		
Date first prenatal visit	90.0	84.0
Total prenatal visits	85.0	79.0
Date last normal menses	89.0	83.0
Date first marriage	73.0	68.0
Date termination last pregnancy	85.0	79.0
Result last pregnancy	88.0	82.0
Serologic test syphilis	87.0	81.0
Blood test, RH factor	94.0	87.0
Erythroblastosis fetalis	89.0	83.0
Complications related to pregnancy	95.0	89.0
Complications not related to pregnancy	95.0	88.0
Complications of labor	94.0	88.0
Operative procedures	93.0	86.0
Induction	91.0	85.0
Birth injury	91.0	85.0
Malformations	89.0	83.0

Item	Item completeness as a percent of	
	Records filed	Events[1]
Birth certificate:		
Previous deliveries	100.0	100.0
Education of mother	95.0	95.0
Legitimacy	100.0	100.0
Color of mother	100.0	100.0
Length of pregnancy	99.0	99.0
Birth weight	100.0	100.0
Fetal death certificate:		
Previous deliveries	99.0	....
Length of pregnancy	87.0	....
Weight of fetus	85.0	....
When did fetus die	78.0	....
Was autopsy performed	89.0	....

[1] It is assumed that births are completely registered.

TABLE II.—Percent Completion of Selected Items of Information on the Minnesota Birth Supplement, by Quarter, 1965 (Percent of Total Registered Births)

Item	Quarter				Total
	1st	2d	3d	4th	
Date first prenatal visit	82.0	84.0	84.0	85.0	84.0
Total prenatal visits	73.0	82.0	81.0	81.0	79.0
Date last normal menses	83.0	83.0	84.0	82.0	83.0
Date first marriage	61.0	69.0	66.0	74.0	68.0
Date termination last pregnancy	73.0	81.0	84.0	79.0	79.0
Result last pregnancy	78.0	81.0	88.0	81.0	82.0
Serologic test syphilis	80.0	81.0	82.0	81.0	81.0
Blood test, RH factor	87.0	87.0	89.0	84.0	87.0
Erythroblastosis fetalis	83.0	80.0	87.0	83.0	83.0
Complications related to pregnancy	88.0	87.0	90.0	90.0	89.0
Complications not related to pregnancy	88.0	87.0	89.0	89.0	88.0
Complications of labor	88.0	88.0	89.0	88.0	88.0
Operative procedures	86.0	87.0	84.0	89.0	86.0
Induction	79.0	85.0	88.0	88.0	85.0
Birth injury	80.0	84.0	87.0	89.0	85.0
Malformations	73.0	83.0	86.0	89.0	83.0
Percent of supplements filed	92.0	91.0	94.0	95.0	93.0

for statisticians, and none of the health department's business. Resolutions in opposition to the birth supplement have been introduced at State medical association meetings on two occasions without being adopted. Such comments and activities suggest rather strong feelings on the part of some physicians, and the relatively low completion rates for these items suggest many other physicians are somewhat in agreement with such views.

Table II, on the other hand, indicates improvement in percent completion of the fertility questions during the year, the most striking improvement being for the item on the date of mother's first marriage. The percentage for the first quarter was 61 percent, while the fourth quarter percentage was 74 percent. This improvement would seem to indicate increased acceptance of these questions and probably increased assistance from hospital personnel in obtaining such information for the physicians.

In conclusion, it is clear that there has been substantially more opposition from physicians to the fertility questions than to the other medical questions on the birth record and the birth supplement. It is also clear that there is an increased acceptance of these questions. However, present plans are to drop the date of marriage question from the supplement with the next revision along with several other items but to retain the items included in the Public Health Service standard certificate. We expect continued improvement in the completeness of reporting of the other fertility items to the point where such data may be considered entirely adequate.

DISCUSSION

In reaction to one of Mr. Siegel's comments, Dr. Kiser suggested that the problem of distinguishing calendar year from completed fertility measures is similar to the problem of interpreting the life table concept of expectation of life at birth. These ideas must not be avoided, but care must be used to employ them correctly.

Dr. Bernard G. Greenberg of the University of North Carolina asked if any thought was given to including an anesthesia-used item on the confidential medical supplement and if anything is known about the joint distribution of missing items. In reply, Mr. Hiller stated, first, that except for the added fertility items the 1965 revision of the confidential medical supplement was to be similar to the previous form.

Secondly, Mr. Hiller answered that he had no measure of the correlation of missing items, although there is probably a close relationship. Responding to an inquiry by Dr. Greenberg about the number of 100-percent-complete certificates returned, Mr. Hiller estimated that about one-half to two-thirds of the certificates had no more than one missing item.

Dr. Jean Pakter of the New York City Department of Health wanted to know the time allowed for returning the supplement and the certificate. Mr. Hiller replied that both were to be returned within 5 days following the birth. Dr. Pakter then expressed concern for the adequacy of a 5-day limit, considering the frequent delay before many congenital malformations are observed. Mr. Hiller indicated that many supplements and reports of malformation are received later than the time specified and, when received, are included in data tabulations.

When the question was asked whether physicians receive reports showing tabulations based on certificates filed, Mr. Hiller said he expects an annual summary to be issued later this summer.

Miss Lillian Freedman of the National Institute of Child Health and Human Development wondered why the "date of first marriage" item was being dropped on future revisions. Mr. Hiller explained this was a concession to criticism from Minnesota physicians.

Another participant posed three questions to Mr. Hiller:

1. Is information on congenital malformations comparable for early and late reporting?
2. What of the quality, aside from the completeness, of items?
3. Could you check marriage records to determine the accuracy of legitimacy responses, as was proposed by this conference?

Mr. Hiller replied:

1. Although reporting delays create doubts as to the comparability and completeness of malformation responses, this information is used to refer cases to the Crippled Children's Society and even late reporting is encouraged.
2. A followback study matching hospital clinical records with birth documents is planned in order to evaluate the quality of response to the medical items.
3. Because Minnesota's central file of marriage records is relatively new, its use in matching studies is severely limited.

Mr. Hiller also agreed with the questioner that it would be useful to compare rates of congenital malformations derived from early reports with those derived from late reports.

Dr. Ronald Kelsay of the Louisville, Ky., Department of Public Health reiterated his original criticism of the supplement—that it was too long. Mr. Hiller agreed that the length of the form was an important consideration and also that the question of whether check boxes were better than open-ended questions should be given additional attention.

Mr. Campbell commented on the high percentage completeness of the education item as compared to the medical items. Mr. Hiller noted that this difference is probably due to the fact that education is included on the birth certificate itself, while medical items are included on a supplement to the birth certificate.

Dr. Kiser invited further questions on any of the topics discussed during the session. Another comment on the birth supplement was made by Dr. Kelsay. He reported that, in Louisville, some field testing on a sample basis furnished information relating to education items and a "drug-used (yes or no) item." No opposition was encountered from any of the obstetricians who were involved in this sample. Dr. Kelsay also noted that they had found check boxes to be quicker and easier for the physician to use.

In regard to the results of fertility studies, Mr. Joseph Schachter of the Division of Research Facilities and Resources, NIH, pointed out that subfecund individuals do not all want more children. Mr. Campbell agreed that this is true, especially in the cases of some subfecund persons who have undergone operations to prevent further conceptions.

Dr. Kiser opened the discussion to suggestions for future studies on fertility. Mr. Schachter mentioned a child-spacing probe on the Illinois birth supplement. The topic of natural spacing, as a probability of conception, was also brought up. On behalf of the New York City Department of Health's statistician, Mrs. Freida Nelson, Dr. Moriyama of the Office of Health Statistics Analysis, NCHS, mentioned a proposed research study in New York City for NCHS involving several New York hospitals. This study would examine criteria for classification of evidence of life at birth. A final comment was offered about research at the Research Triangle in North Carolina concerning the use of household surveys to obtain birth and death rates.

Second Session—Perinatal Statistics

The second session of the Workshop on Fertility and Perinatal Statistics dealt primarily with perinatal mortality with presentations by Dr. Yerushalmy and Mr. Flinchum. Each paper is followed by the comments of participants.

Problems in Perinatal Mortality

Dr. Jacob Yerushalmy, *Professor of Biostatistics, School of Public Health, University of California, Berkeley*

In discussing problems in perinatal mortality, I would like to review some of the statistical contributions derived from the vital registration system in this area and to focus on securing more adequate data concerning other factors related to perinatal mortality. Through the past couple of decades, the registration mechanism has provided much more useful information than perhaps any other discipline in this area. The clinicians obviously could not be expected to produce very much in the area of fetal mortality because the fetus and embryo are not available for clinical observation during the most important developmental periods. Moreover, the factors related to the survival and well-being of the fetus and infant are multiple and strongly intercorrelated. Therefore, very large numbers of observations are needed to observe meaningful relationships. For example, when studying the relationships of parental age and birth order to infant survival, at best one can get a notion of each of these separately in the hospital setting. In order to disentangle these highly related factors, one needs large numbers—and it is the registration mechanism which provides them.

The addition of new items of information (e.g., birth weight) on the official records of live birth and fetal death in the past three decades has contributed significantly to our understanding of the relationships of a number of important factors to the outcome of pregnancy. Research into infant mortality using the registration system provided one of the earliest examples of record linkage. The value of record linkage as a research technique in the study of infant mortality cannot be overemphasized.

I first became aware of the amount of useful information on the birth records in the 1930's at the New York State Department of Health in Albany. These records reflected the situation into which an infant was born: ages of parents, occupation of the father, number of children lost by the mother, and so forth. The infant death certificates, in contrast, contained relatively little useful information—age at death and cause of death; but for perinatal deaths, a sizable proportion with nonspecific causes. However, through linkage of the death record to the birth record for the same infant, extremely valuable data were produced. This study and others of similar design enabled closer examination of the interrelationships of maternal age, parity, and the yet unexplained relationship to paternal age which is so tantalizing to geneticists. The studies demonstrated optimal ages and birth orders in relationship to the infant's survial. Later mortality studies included the variables of birth spacing and the mother's history of reproductive loss.

A serious deficiency of the records at that time was the lack of any indicator of fetal maturity. However, in time this was rectified, and by 1950 study material was available for Mr. Sam Shapiro's enusing studies of mortality related to birth weight.

As for socioeconomic level, the later studies of Dr. Helen Chase in New York State were based on the father's occupation on the birth record. Death records for children under 5 years of age were linked to their birth records. This provides a lot of insight into the interaction between the biologic, the obstetric, and the socioeconomic factors. It is obvious that the socioeconomic factors can play a much larger role with the older child, and that the younger the fetus, the more biological and obstetrical factors come into play. If birth order is kept constant, the variation in fetal and neonatal mortality is slight with regard to socioeconomic level, but becomes pronounced in postneonatal and early childhood (1–4 years) mortality.

Focusing attention on low-birth-weight infants, the risk of death at or near birth is independent of socioeconomic factors; but once infants get home, if born of a more favored socioeconomic group, their chances of survival are much better. Although the use of father's occupation is useful in demonstrating these socioeconomic differentials, it is still a relatively crude index of socioeconomic level. Hopefully, the situation will be improved when the education of the parents replaces their usual occupation on the next revision of the Standard Certificates of Live Birth and Fetal Death.

It has become increasingly obvious in recent years that low birth weight alone is not an adequate index of maturity for the study of etiological factors. Gestation, an additional factor describing maturity, is generally entered in weeks by the certifying physician. The resulting data provide evidence of heaping at multiples of 4 weeks, particularly at 36 and 40 weeks. A few areas adopted a recommendation made some years ago by the U.S. National Committee on Vital and Health Statistics to change this item to the "date of onset of last menstruation" from "weeks of gestation." Data obtained from New York City, which adopted this change, indicate that this method reduces the heaping and provides a more reasonable distribution. Subsequent studies in New York City and in California, as well, resulted in the development of a proposed classification [1] of maturity using the dual characteristics of birth weight and gestation. Use of this classification produces differentials in mortality whether the basic information is obtained from hospital data (as in the California Child Health and Development Studies) or vital statistics data (as in New York City), and the differentials persist into the second year of life. This contradicts the contention that data obtained from vital records "aren't any good at all," an allegation that should be denied emphatically. While it is true that at best the statistics are only as good as the raw data which go into them, the vital records have produced an extremely useful instrument for perinatal research.

The dual characteristics of birth weight and gestation have been further developed to provide an index of intrauterine growth. Using data from birth and death records in New York City, the births were divided by sex and birth weight groups of 2 ounces each. Each of these groups was subdivided into quartiles on the basis of single weeks of gestation, yielding four groups ranging from "very fast" to "very slow" growth in utero. These classes describe the rate at which specified weights are attained. The very fast growing babies have a very high mortality, which decreases for the two intermediate groups but increases slightly for the very slow-growing babies. When this same approach was used in a hospital setting at the child development study in Oakland, California, it was found that severe congential malformations are associated with these slow-growing babies. Furthermore, fast-growing babies have difficulties in immediate adaptation to extrauterine life, but after a month or two of life the fast-growing infants are more successful in surviving than slow-growing infants.

The relationship of prenatal care and survival is another factor which has been studied using vital records. Turning again to New York City vital statistics data for second births, more than half of the mothers giving birth to a live infant first sought prenatal care in the first trimester of pregnancy, about one-third in the second trimester, one-tenth in the third trimester, and about 2½ percent had no prenatal care at time of delivery. Private care patients sought prenatal care earlier than general care patients. The mortality among infants born to mothers under private care was significantly

Group	Birth weight		Gestation
I	3 pounds 8 ounces or less	1,600 grams or less	All periods.
II	3 pounds 9 ounces–5 pounds 8 ounces	1,601–2,500 grams	Less than 37 weeks.
III	do	do	37 or more weeks.
IV	5 pounds 9 ounces or more	More than 2,500 grams	Less than 37 weeks.
V	do	do	37 or more weeks.

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[1] Yerushalmy, J., van den Berg, B. J., Erhardt, C. L., and Jacobziner, H.: Birth weight and gestation as indices of immaturity. *A.M.A.J. Dis. Child.* 109:51, January 1965.

lower than to those under general care. Furthermore, the outcome of the first pregnancy apparently has a bearing on the mother's initiative in seeking medical care for the second pregnancy. Having lost a previous child apparently stimulates the mother to seek prenatal care earlier at the time of the second pregnancy than if the previous child survived. However, seeking prenatal care early for the second pregnancy does not appear to improve the infant's chances of survival.

These last observations on prenatal care, previous loss, and outcome of current pregnancy are preliminary and should be considered experimental. Upon my arrival at this conference, these experimental results led me to suggest that "month prenatal care began" should be added to the proposed standard certificates, and I was pleased to find that the idea had already been approved. In addition, the dates of the last previous live birth and last previous fetal death have been added, and these are also worthy additions.

In summary, I would say that the contributions of the registration mechanism to our knowledge of infant survival and conditions surrounding pregnancy and perinatal problems are considerable. They have been very helpful in clarifying our understanding of the interrelationships of a multiplicity of factors and perinatal and infant mortality. Over the past few decades the mechanism has kept pace with the needs for further knowledge, and indications are that it will continue to do so in the decade ahead.

DISCUSSION

Dr. Donnelly reported that data from Iowa indicate that perinatal mortality was consistently higher for those who came to prenatal care early. Also, perinatal mortality at 37–39 weeks' gestation is always twice as high as at 40 weeks. This information has proven useful in discussions with physicians in hospitals, causing them to reexamine inductions which may have been performed prior to term. A possible reason for higher mortality among women seeking prenatal care early may be that there is some pathology or health problem in the first trimester which stimulates them to seek medical care. Mortality among the postmature births is also definitely higher, and the decision to induce labor remains a complicated medical problem.

The variability of infant mortality and socioeconomic level came up for discussion. Dr. Moriyama asked if the observation that there was relatively little variation in the neonatal death rates shown in the slides were true. If so, this suggests that there is no longer any significant difference in total infant mortality between, say, the lowest and highest socioeconomic groups because of the preponderance of deaths now occurring in the neonatal period. Dr. Yerushalmy indicated that, based on a few studies in the United States, it appears that the relationship between infant mortality and socioeconomic level as determined by the father's occupation is not as pronounced as data from England and Wales would suggest. Dr. Chase, who had the largest recent experience with the item, indicated that she felt the use of the father's occupation on birth certificates and the census classification produced some groups which are probably definitive; e.g., professionals, skilled craftsmen, nonagricultural laborers, and the two farm groups as a total. However, other groups (e.g., managerial workers, sales workers) include within them individuals of widely divergent incomes and educational backgrounds. While the index is useful in highlighting relationships, the mother's educational achievement which appears on the proposed standard certificate will be easier to classify and thus may be more widely used.

In answer to a question, Dr. Yerushalmy noted that studies of mortality related to season of birth are not available, but a paper on season of conception and mortality by Nelson, Erhardt, and Pakter is scheduled for presentation at the annual meeting of the American Public Health Association in November. Season of conception is being developed as a new variable in perinatal research.

Dr. Treloar described a study of menstrual histories which began in 1934 with a group of university women. These women are followed over time and presently account for over 30,000 person-years of history, representing, in some instances, the total menstrual life from menarche to menopause. Incidental to these histories are the interruptions to menstruation which can provide information on gestations. Despite what many obstetricians say, women generally provide reliable information on the date of onset of the last menstrual period. However, close attention is needed to detect unrecorded and unknown abortions which sometimes precede a pregnancy without intervening menstruation. Also, there is much evidence of cyclic bleeding simulating menstruation and following pregnancy. Thus, both long and short gestational intervals may not reflect the true gestation period. The data show that there is a drift in the menstrual cycle with age, and menopause is reached later than most people think.

Dr. Yerushalmy indicated that spacing of births was another aspect which is being studied indirectly by the Child Growth and Development Study using data from New York City birth certificates.

Report of the Study Group on Improving Registration of Fetal Deaths

Mr. Glenn A. Flinchum, *Chief, Public Health Statistics Section, North Carolina Board of Health*

Fetal death registration is one area in the field of vital statistics to which few, if any, vital statistics agencies can point with pride. While most State laws requiring the registration of fetal deaths were enacted concurrent with laws requiring the registration of live births and deaths, the same amount of emphasis has not been placed on securing complete and accurate registration. In considering this problem, we seem to have become involved in a vicious circle—that is, the statisticians are reluctant to use data from fetal death certificates because of their inadequacies, and, at the same time, registrars are reluctant to make a special effort to improve the data unless their uses can be demonstrated. In any event, medical researchers are now asking questions for which we have no answers, and speculation frequently replaces facts whenever the important problem of fetal or perinatal mortality is discussed.

At the present time, it is difficult, if not impossible, to accurately answer some of the most basic questions regarding this problem, such as:

1. How big is the total problem of fetal mortality in the United States?
2. What are the most significant causes of fetal deaths and at what gestational age do they occur?
3. What are the differences and similarities between fetal and neonatal causes?
4. How many of these causes are preventable?
5. What conditions in the mother are likely to lead to a fetal death?

These and many other questions could be answered factually if we had more complete and accurate registration. There is also the opportunity to contribute indirectly to other broad related fields of research involving the total problem of intrauterine growth and development. In addition, there is the possibility of contributing toward the establishment of better controls over illegal abortions.

Following the Public Health Conference of 1964, the NCHS appointed a Study Group for the purpose of developing "recommendations for obtaining more complete coverage and a better quality of fetal death registration."

In carrying out this charge, an effort was made not to duplicate the work of preceding groups or individuals, but rather to review, analyze, and build upon foundations which had previously been laid. It was inevitable that the Study Group would rely heavily upon Yerushalmy and Bierman's report of 1952, entitled "Major Problems in Fetal Mortality," since it is one of the most complete and authentic reports published on this subject. For the most part, the same problems described in 1952 still exist in 1966. Appendix I of the Study Group Report outlines the areas recommended for study in 1952 and also the progress, if any, which has been made in these particular areas. For example, it was recommended that the number of autopsies of fetuses be increased and that the resulting information be reflected on the fetal death certificate and in the resulting statistics. The best information available indicates that about 20 percent of fetal deaths of 20 weeks' gestation or gestation unspecified actually are autopsied. Another recommendation made in 1952 was to encourage vital statistics offices to produce more extensive tabulations of fetal deaths, particularly in regard to causes of death. Presently, relatively few tabulations of fetal deaths are prepared by each registration area. Very little is published cross-tabulating cause of death with any other variables, although 39 registration areas are now coding cause of death. Nationally, fetal deaths of 20 or more weeks' gestation are tabulated, but not by cause of death.

In addition to reviewing a large amount of background material, the Study Group investigated several factors which it felt would have some bearing on the completeness and accuracy of fetal death registration. One of these was the lack of uniform registration requirements throughout the country. While 31 registration areas have definitions in essential agreement with the WHO definitions, there is great variety in the minimum gestation requirements. While the majority of requirements are centered around approximately 20 weeks' gestation, the laws and/or regulations are subject to a variety of interpretations. They are expressed as: advanced through the 5th month, after the 5th month, advanced to the 20th week, 20 weeks or more, after 20 weeks, etc. Appendix II of the Study Group Report shows the requirements for each registration area.

All registration areas were queried to determine to what extent causes of fetal deaths are being coded and utilized. With 39 areas coding causes of death, it was felt that greater use could be made of this information, if for no other purpose than to reduce the large proportion of ill-defined and unknown causes.

It was recognized that registration and burial practices in the various States can influence the quality of registration, as well as serving as the means to improve registration. A questionnaire designed to solicit information on this subject revealed that most registration areas permit the disposition of fetuses by hospitals or persons other than funeral directors. It was also indicated that burial-transit permits are generally not required when disposition is made by a hospital. Apparently there is very little demand for copies of fetal death records at the State level, indicating that the importance of these records is primarily statistical rather than legal. The results of this questionnaire highlighted the increasing importance of hospitals in the registration process.

One of the most encouraging aspects encountered by the Study Group was the interest shown by certain professional medical and health organizations and their apparent willingness to cooperate in promoting better fetal death registration. It was felt that the development of a closer working relationship with these groups at the national level could have a definite bearing on improving fetal death registration.

After reviewing and analyzing the pertinent information available on the subject, the Study Group recognized the following:

If there is to be progress in reducing fetal mortality, it is urgent that there be complete and accurate reporting. Fetal mortality is becoming a health problem which is being given intensive study similar to that given to infant and maternal mortality some years ago. Reliable fetal mortality data are needed as a guide to the significant problem areas.

Therefore, the Study Group reached these conclusions:

1. Although fetal mortality is a public health problem of considerable magnitude (some estimates are as high as more than a million a year), relatively little action has been taken to implement the recommendations of Yerushalmy and Bierman in 1952 or those of other study groups.
2. There is a general agreement that fetal death registration is incomplete. Failure to register these events increases as one approaches the minimum period of required registration.
3. The registration of all products of conception usually increases the registration of those with 20 weeks' gestation and over. Any uncertainty as to when to report or not to report a fetal death tends to result in underreporting, particularly in those gestational ages near the cutoff period.
4. Data on fetal deaths by cause are probably more consistent than they were thought to be and should be more widely published and utilized.
5. In addition to field visits and other educational programs, query programs stimulate improved registration.

6. Conferences of the national organizations of concerned groups (e.g., the National Center for Health Statistics, American Medical Association, American College of Obstetricians and Gynecologists, American Association of Medical Record Librarians, American Academy of Pediatrics, American Academy of General Practice) are needed to establish good communication and national policies in this area.

In compliance with the Study Group's charge, the following recommendations were made:

1. The Study Group concurs completely with international recommendations and the report of Yerushalmy and Bierman in requiring registration of all products of conception, permitting an abbreviated document for those below a certain period of gestation. The Study Group recommends its promotion by the National Center for Health Statistics.
2. The Study Group endorsed the change on the standard certificates from "weeks of gestation" to "first day, last menstrual period" and recommends its adoption by all registration areas. Furthermore, all registration areas are encouraged to standardize their definitions, requirements for reporting of fetal deaths, and structure of items common to birth and fetal death records.
3. The completeness of registration and completion and accuracy of specific items are improved by followup and querying procedures. The Study Group recommends that all registration areas:
    a. Develop methods of checking completeness of fetal death registration through comparison of registered events with lists obtained from hospitals and funeral directors and through use of statistical tabulations by hospitals to detect deficiencies in registration.
    b. Establish query programs for missing information for fetal death records comparable to those for other death records to reduce missing and inconsistent items. The major emphasis should be for those of 20 weeks or more.
4. The Study Group recognizes that publication and utilization of data stimulate their improvement. In view of the consistency of the State tabulations of causes of fetal death, the Study Group recommends that national tabulations by cause of fetal death be published. Pathological examination of fetal deaths should be stimulated by the States in an effort to reduce the ill-defined and unknown causes.
5. The Study Group recommends the maintenance of close rapport between registration officials and agencies with the licensing authority for hospitals and funeral directors to improve registration. In addition, closer relationships between the National Center for Health Statistics and national organizations, such as the American Medical Association, the American College of Obstetricians and Gynecologists, the American Academy of General Practice, the American Academy of Pediatrics, the American Hospital Association, and the American Association of Medical Record Librarians, should be fostered.
6. The Study Group encourages the use of the Prenatal Record designed by the American Medical Association and the American College of Obstetricians and Gynecologists. Transmittal of a duplicate of this form to the hospital prior to delivery will increase the information available both for live birth and fetal death records.
7. The Study Group recommends an increase in the educational efforts to stimulate motivation for proper registration. Among the suggestions offered are:
    a. Publication by the American College of Obstetricians and Gynecologists, the American Medical Association, and the American Academy of General Practice of information emphasizing the importance of complete and accurate registration. This publicity could be in the form of items in their newsletters or discussions at seminars or annual and district meetings.
    b. Promotion of more complete and accurate registration through hospital and county or State committees on perinatal mortality and morbidity, both in their publications and in their conferences.
    c. Promotion of joint studies by registration offices and the maternal and infant care projects in their respective registration areas.
    d. Investigation of the possibility of research grants for special studies regarding fetal mortality.
    e. Education of medical students on the importance of registration and of reporting products of conception.
    f. Periodic publication of papers and articles in medical literature, pointing out the significance and inadequacies of the data on fetal death certificates and what could be accomplished in the field of prevention if more complete data were available.

8. In view of past decennial emphases on birth registration completeness (1950) and infant mortality (1960), the Study Group recommends that the National Center for Health Statistics make a special study of fetal mortality and fetal death registration problems in 1970. Draft documents tested by this Study Group could be exploited for suggestions for improvement.

9. The Study Group feels that it has just begun to come to grips with the subject of improving the registration of fetal deaths and that its work should be continued into the next biennium.

It is felt by the Study Group members that these recommendations are practical, attainable, and would not require the expenditure of large amounts of funds. If the Study Group is continued for another biennium, perhaps its greatest contribution would be in stimulating each registration area to exploit all practical means for improving fetal death registration and to publicize information which is now being collected. In addition, the Study Group could collect and disseminate available data which would be useful in pointing out present deficiencies. Also, in regard to liaison with national organizations, we feel that the Study Group could make a definite contribution by sponsoring some articles and papers for publication in the appropriate journals. It might also be possible to prepare some promotional material for use at the State level. Other suggestions for specific activities which would help to accomplish the objectives will be welcome.

DISCUSSION

Dr. Alexander J. Schaffer, representing the Committee on Fetus and Newborn of the American Academy of Pediatrics, urged continuation of the work of the Study Group with special emphasis on the universal reporting of all fetal deaths.

Dr. Moriyama felt the report contained a very significant series of proposals. While the U.S. fetal mortality rates seem low compared to other countries, the neonatal death rates are high. This makes it particularly important to have a clear-cut notion of the status of fetal death registration in this country. Although perinatal death rates theoretically circumvent confusion between fetal deaths and early neonatal deaths, this argument does not overcome the problem of incompleteness of the fetal death component in the United States. Furthermore, although the definitions of live birth and fetal death are clear, there is a need to know how these definitions are applied in practice. A study to be conducted in the delivery rooms of a few hospitals in New York City will explore this subject.

Dr. Schmidt, chairman of the Program Area Committee on Child Health of the American Public Health Association, indicated that his committee had discussed the report, "Infant and Perinatal Mortality in the United States" by Shapiro, Schlesinger, and Nesbitt. He was happy to see the report of the International Conference on the Perinatal and Infant Mortality Problem of the United States and will call it to the attention of the committee. These matters will be discussed further at the committee's meeting in November, at which time the Study Group's Report can be considered as well. Last September, representatives of the six New England States met in Boston to discuss problems of mutual interest to the directors of maternal and child health, nursing, and vital statistics. Such regional meetings stimulate communication to improve utilization of data produced by vital statistics offices.

Dr. Yerushalmy expressed concern over the developing confusion about definitions. Independent sets of definitions proposed by professional medical groups are at variance with the vital statistics definitions and present a definite source of potential trouble in generating statistics. He asked whether the National Center for Health Statistics could not coordinate these activities before the situation gets out of hand.

Dr. Gilbert Mellin questioned being overly concerned about constructing definitions rather than obtaining complete and accurate observations. He indicated a preference for concentrating on the recording of observations in such a manner that they might satisfy various definitions and classification systems afterward. More meaningful observations can be obtained in a hospital setting, where in many areas almost all births and recognizable losses occur. In addition to the vital statistics, information is needed in other related areas, such as the arterial structure of the umbilical cord and the condition of the placenta. However, communication problems exist in hospitals as well as in other areas of data collection because of departmentalization. Mr. Flinchum noted that the Study Group realized in the course of its work that the hospitals would need to be much involved in the problems of registration.

Dr. William Taylor suggested concentration on certain "superregistration areas" which could be cities or States which are particularly interested in obtaining either more or better information than is usual in vital registration. Such areas exist in Aberdeen, Scotland, and in Birmingham, England. Such superregistration areas might act as a stimulus to others and improve registration. According to Dr. Moriyama, a similar proposal had been made for cities of the United States, but the idea has not received much support. It was felt that the concept was more readily adaptable to developing countries. For the country as a whole, there would be a question of the representativeness of the data.

The concept of intensive registration areas was favorably commented upon by Dr. Mellin and Dr. Schaffer. They hypothesized that this would produce better information, and perhaps extensions could be made into subject matter not presently considered. While Dr. Yerushalmy agreed with proposals for more intensive work in hospitals or small areas such as cities, he emphasized the importance of the broad base which is provided by vital statistics. The superstructure of more intensive study is already underway on a voluntary basis through statistical cooperatives. It is important to prevent the deterioration of the vital statistics system which has demonstrated its utility in perinatal research and whose scope cannot be matched by hospital or sample studies.

Dr. Pakter commented on the difficulties encountered in obtaining fetal pathological examinations, including shortage of personnel, lack of recognition of fetal autopsies in AMA hospital statistics, lack of interest on the part of pathologists, and relatively little information gleaned from fetal autopsies. This is an area of great need for information with relatively little work being carried on except in a few teaching institutions. Dr. Schaffer indicated that for each institution interested in the subject 10 were not, and the autopsies which are conducted are rather haphazard. This is an expensive undertaking, and the pathologists will need to develop an orientation to preventive medicine before they appreciate the value of their work. He agreed with Dr. Yerushalmy that there is a need for the basic data on a broad base, but cautioned against expecting too much from them.

Mr. Berg referred to the need for greater dissemination of information to the medical profession on the problem of incomplete and inaccurate registration. He indicated that he had encountered various objections, many of which seem quite superficial, from representatives of some medical groups; but he believes that, with a more complete awareness of the potential value of accurate and complete registration of fetal deaths, these clinicians would readily cooperate to the fullest in programs designed to improve registration and the compilation of useful and significant statistics on fetal deaths. He found it understandable that in deference to the families concerned and for possibly other social reasons some physicians might have objections to registering fetal deaths when these events are involved with the problem of illegitimacy. Greater effort could be made to ensure confidentiality, however.

Dr. Pakter explained that a large number of early fetal losses never get to a hospital and that practical advice in fetal death registration is elusive for the physician who only occasionally encounters such an event. Further difficulties are encountered when the product of conception is not an identifiable fetus. Dr. Moriyama felt that if registration were regarded as the record of an event, and not as the record of a child born dead, some of the problems would disappear. Another obstacle to registration is the concept of a viability which is incorporated into some of the classifications proposed by professional groups. Dr. Mellin called attention to the problem of motivation. Hospital personnel are oriented toward patient care, while the statisticians are interested in measurements.

Mr. Flinchum indicated that because of its length the proposed standard certificate of fetal death was not conducive to improving fetal death registration. The Study Group felt that an abbreviated form for fetal deaths of short gestations would improve vital registration.

Recommendation

The workshop generally agreed that the Study Group's Report was to be highly commended. Since it has begun to identify a number of practical problems, it was recommended that its work be continued into the next biennium.

DOCUMENTATION

1. Report of the Study Group on Improving Registration of Fetal Deaths. PHCRS Doc. No. 601.12, May 14, 1966.

F

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F

DEVELOPMENTS IN METROPOLITAN AREA STATISTICAL INFORMATION

Tuesday Afternoon—June 21, 1966

DISCUSSION SUMMARY

Developments in Metropolitan Area Statistical Information

DISCUSSION SUMMARY

This workshop was designed to inform participants of developments in the collection and use in health planning of data for units within metropolitan areas. Discussion began with presentation of plans for the 1970 census focused on innovations in the compilation of data for small areas. Several papers concerned with innovations in data collection methods at the local level were then presented.

BUREAU OF THE CENSUS ACTIVITIES THAT RELATE TO METROPOLITAN AREAS

Mr. John C. Beresford described the forms in which data for small areas were produced from the 1960 census. Person records produced summary tally records for enumeration districts which were stored on tape and used to build up data for larger areas such as appeared in published reports by census tract. Sample data were summarized in a similar manner. These tally tapes and the basic record tapes for the sample are capital assets useful in building up data to meet special needs.

Recombinations of geographic units for 1960 data were limited to combinations of enumeration districts as the smallest unit. Block identification was not retained on the basic tape records. Plans for the 1970 census call for block face to be a basic unit of identification in urban areas.

Census data for 1960 were rearranged in a number of ways to suit users' purposes. Some examples pertinent to health activities were described:

1. Tape tallies for tracts were recombined according to administrative units for some areas. For New York City, health area codes were inserted on the tract tapes, facilitating the task.
2. Census programs originally prepared for tract data were run for enumeration districts in some areas upon request.
3. Special tallies recombining enumeration districts according to areas defined by the user have been done, but they are expensive. An organization contracting with the San Francisco Government had data by enumeration districts and tracts reorganized into neighborhood aggregates in developing a model for future community growth.
4. Special record uses of 1960 data included linkage of death certificates and census records for the University of Chicago mortality study and linkage of patient records to census records of their families for mental health studies conducted in Maryland and Louisiana;
5. Census based surveys of pharmacists and of other health workers were carried out using census records containing occupation data as a starting point.

Mr. William T. Fay described plans for the 1970 census, which will largely be conducted by mail. Wherever a city postal delivery exists, a mailing list will be constructed, starting with a commercial mailing list, which postal carriers will bring up to date. Enumerators will be used only to followup incomplete or obviously erroneous returns in these areas.

Accurate assignment of addresses to blocks depends upon accurate area maps. Since 1960, the

Census Bureau has had a program directed toward the creation of accurate maps of local areas in preparation for the 1970 census. In one case, 137 maps for parts of an urbanized area have had to be reconciled for this purpose.

For each area, a computer tape known as the "address coding guide" is to be developed. It will contain identifications of address ranges for block faces, or block sides, for all addresses covered by the postal delivery system and, for each block face, the appropriate codes for block, tract, ward, city, township, county, State, and so forth. Local aid is being sought in constructing this file, and where such aid is forthcoming a five-digit field will be provided for coding areas such as health districts, police precincts, and educational districts of interest to local authorities. The tape will be used to code the addresses to which enumeration schedules are sent and later will permit easy tabulation of data according to local needs. The Bureau will also supply a street guide in tape or print-out form for use by local cooperators in coding local records.

Development of the address coding guide will make it possible to obtain block data for most of the urbanized area as well as the central city, but not for rural areas. Data can be extracted for any area definable in terms of sums of block faces. Block face identification will permit tabulation along streets and avenues as well as within blocks, where desired. Realization of these plans will require considerable local cooperation in providing accurate address information. The Department of Housing and Urban Development will assist local areas in becoming eligible for planning assistance funds.

Mr. Robert B. Voight described a pretest of 1970 census procedures to be carried out in the New Haven, Conn., SMSA. New Haven was chosen as an area of manageable size where a trial census could be conducted at moderate cost and where local interest in utilization of census data is high. The pilot census has three main objectives:

1. To test the mail questionnaire and other procedures for the 1970 census. For this purpose procedures will conform closely to those planned for 1970;
2. To test the usefulness of census data for small areas in combination with data from local sources. Local health departments and other agencies have been asked to plan uses of census data. Exercises in the linkage of census records to other data sources will be carried out and evaluated;
3. To construct a package of procedures, computer programs, formats, and related aides which could be offered to other SMSA's for exploitation of 1970 census data. Confidentiality requires the Census Bureau to do much of the processing, but in many cases useful tapes can be turned over to cities with computer facilities.

Although budgetary requirements and the need for developing final census procedures by mid-1968 require that census objectives have priority, other uses of local area data will be explored in conjunction with the New Haven project. The Bureau of Public Roads is using the project to explore the feasibility of census-based surveys as a replacement for the more expensive independent surveys now being conducted. The Public Health Service is studying possibilities for improved geographic coding of vital events and is also surveying other components of the Department of Health, Education, and Welfare to ascertain their interest in local area data. The New Haven data will be used to experiment with computer graphics systems and with the assignment of grid coordinates to data for expanded analysis of special relations. An attempt will be made to define new indices of property characteristics and of social problems which local areas may find useful in analyzing 1970 census results. Finally, the data developed by the New Haven project may provide the basis of a rudimentary data bank for the area.

During the discussion, Mr. Fay stated in response to a question that the Bureau was not yet committed to maintaining the address coding guides after the 1970 census, but it seemed essential to do so. Mr. Mindlin asked for a definition of the term "census data bank." Mr. Voight described it as an information retrieval system for the area, which related census data to data from other sources. Mr. King suggested that an example would be the potential use of area data from the New Haven census of 1967 to provide a baseline for evaluating the operations of a mental health center to be established in the area. The Department of Epidemiology and Public Health and the Sociology Department of Yale University are also interested in population studies based on these data. Mr. Mindlin noted that, if the 1970 census retains individual records by address, integration of census and local records by location will be possible, and that, if the census obtains social security numbers, integration of census and local records on a personal basis will be possible. Mr. Voight stated that social security numbers would be obtained in the New Haven census.

LOCAL ACTIVITIES RELATING TO HEALTH PLANNING

Data Systems in a Metropolitan Health Department and Their Uses for Information and Planning

Dr. Matthew Tayback, of the Baltimore City Department of Health, pointed out that new census data will not be available until 1971 or later, while data for local areas collected in 1960 are now of severely limited utility. Health problems are changing and health departments do not determine the timing of legislation. Yet their response must be a dynamic planning effort supported by information systems flexible enough so items can be dropped, added, or changed as planning needs require. Needs for health services are determined by population characteristics and the environment. A health information system must adjust to rapidly changing population characteristics.

Family planning activities provide an example of a health department objective which could not have been anticipated. In a few years, national policy has changed and transformed family planning from a concern of the private sector into a public problem. Local planning of family-planning programs requires information about the current situation and cannot await the next census. Similar urgent planning problems were posed by recent legislative actions expanding maternal and child health services, by legislation expanding community mental health services, and by "medicare" and related legislation. These acts were addressed to a uniquely urban population. Planning to implement them cannot await 1970 census results. Distribution of the area's population by age, sex, and economic characteristics must be known now.

The concept of health authorities generating their own demographic data was recognized years ago in Baltimore. This is not meant to deprecate vital statistics data and communicable disease reporting, but they have serious limitations for today's problems. Dr. Tayback's predecessor in Baltimore (the late Dr. W. Thurber Fales) set forth the preeminent need for demographic information in health planning. Today more money and effort to sustain the health department's capacity for generating its own information are needed.

Resource analysis is a facet of the health department's armentarium in urgent need of development. Health departments should coordinate inventories of available physicians, nurses, auxiliary personnel, and facilities. This is not complicated, but it requires determination. Whether such inventories are used in choosing priorities depends on the reaction of the health power structure to evidence developed. But legislation defining health commitments has outrun our capacity to plan rationally for solution of problems. Rarely is any agency in control of all resource allocation. In the future, the agency which becomes master of resource analysis data will have a preeminent position in allocation of resources. At present, the concept of total community resources and their allocation to areas of greatest need is not used. The Baltimore Health Department is now beginning to devote more staff time to resource analysis.

In the discussion of Dr. Tayback's paper, Mr. Mindlin pointed out that obsolescence of census data is a particularly crucial problem where small area data are needed. This indicates the importance of obtaining a mid-decade census in the 1970's. Mr. King asked whether Dr. Tayback were advocating local surveys in each area. If not, what alternative sources of data did he propose? Whether or not such surveys were recommended, where would the statistical personnel be found? Dr. Tayback replied that he thought adequate statistical skill existed in most areas. Mrs. Anne Cugliani, of the Population Health Survey, New York City, noted that their health survey produces extensive denominator information of value to other departments and turns up demographic information of widespread public interest. She has found statisticians are less difficult to obtain than interviewers.

Mr. Quentin Remein, of the Division of Chronic Diseases, PHS, asked Dr. Tayback's opinion of cost-benefit analysis as a justification for health programs. Dr. Tayback suggested cost-benefit analysis is not always practical. The cost of an unplanned pregnancy, for example, may be construed as so great as to justify almost any input. Cost-benefit analysis is complex, and estimation of benefits leads into areas of subjective valuation, but may be useful if skillful analysts are available. Mr. Todd Frazier, of the District of Columbia, commented that critics may demand analysis of the cost of numerous alternative methods requiring a large investment of staff time. Dr. Tayback replied that many people are interested in the best end-product and are not too concerned with cost.

They consider the goal to be discovery of the best technique available.

Local Data Banks

Mr. Albert Mindlin, of the District of Columbia Government, described the concept and operation of data banks, a recently developed resource for local area data. Their novelty is primarily a result of technological developments which provide means of interrelating existing information. He defined a data bank as a computerized repository of selected information from various sources, with identification of individual records being retained, together with the programs and procedures necessary to maintain and manipulate the data. Data are extracted from operating agency records—often as fifth-carbon files—in order to serve more general purposes than the day-to-day operations of the contributory agencies.

Several distinct types of data banks exist although the following list is not exhaustive:

1. *Real property data bank.* The basic unit is a parcel of land, and the bank contains information on its size, physical characteristics, tax status, assessed value, and characteristics of structures erected upon it.
2. *Geographic data bank.* The unit is also a parcel or lot of land but information is social—e.g., presence of a juvenile delinquent, site of a crime, presence of a relocated family, etc.
3. *Person data bank.* The unit is a person. The record consists of integrated information about him obtained from various official sources.
4. *Family data bank.* The unit is a family, and records consist of information about family members.

As yet only one or two local geographic banks exist, while person and family data banks do not exist, although first approximations to person banks should develop rapidly in the immediate future as the result of Medicare legislation. Several property data banks are in existence—in the District of Columbia, Alexandria, Va., Philadelphia, and elsewhere.

Creation of a data bank can proceed on a large scale, as in Alexandria where several departments participated from the beginning, or step by step, as in the District of Columbia where the bank was started by computerizing the entire assessment roll. In either case, banks extract information from present operating procedures, computerize it, and manipulate it as a separate operation, without fundamental revision of existing operating procedures.

In the District of Columbia, the property data bank file is the one universal file for the city and serves many purposes. It is a principal source of directories, providing addresses, types of business, and other information. It has provided data useful for land use distribution studies; health control of vacant land; acquisition of sites for schools, public building, and road right-of-way; location of employers for poverty programs; various planning and program purposes; and as a universal framework for mechanization of files of other public agencies.

In the future, social, person, and family data banks seem inevitable, but will be more difficult to create. By record linkage, these could integrate records of health and welfare departments, court and other special records as obtainable. The problems are more complex because individual records rather than those for locations must be matched. Moreover, confidentiality must be preserved. Additional problems are posed by matching family records and maintaining records on a current basis.

A fundamental issue is being raised because the Medicare program will force the integration of personal records. Few persons are aware of how much data on them are available in various dispersed files. The historical possibility of integrating such records is now upon us and raises the question, "Do we want to do it?" Integrated data are essential for administration of legislative acts already passed. Still, "1984" is possible as a consequence of our liberal intentions unless the problems of confidentiality and privacy are resolved.

DOCUMENTATION

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G

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HEALTH MANPOWER STATISTICS

Tuesday Afternoon—June 21, 1966

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Health Manpower Statistical Requirements of the Federal Government

Dr. William L. Kissick, *Chief Division of Public Health Methods, Office of the Surgeon General, PHS*

I think that it is easiest to pursue this topic within a context which we find emerging very rapidly at the present time. It is appropriate to mention the Planning-Programing-Budgeting System reviews which are in progress in the Department this week because this activity, regardless of whether or not one supports all of this concept or its assumption, requires a specificity and quality of information which many people have sought or desired heretofore, but for which we have not really had this severe requirement for program direction. Many of the questions that are being raised by the analysts in the staff of the Office of the Assistant Secretary for Program Coordination require a detail of information and a precision of information on many activities which we do not have at the present time. I find that the more we work with them, the more I fall back on the statement that "You are right; you are asking the right questions, but we do not have the answers for them at this point."

What this program structuring does is to look at activities in a very broad and useful context, one in which we need to pursue our thinking on health manpower. If we are looking at health manpower, the question is "Manpower for what?" At the present time, the "for what" is a $40 billion enterprise, representing approximately 6 percent of our gross national product. This is a health enterprise or the health endeavor in our society.

Looking at the probable rate of growth as a projection of previous growth over the past 10 to 15 to 20 years and just making a linear projection, one can foresee approximately 7 percent of the gross national product in 1975 going in this area of our societal activities. If there is a more rapid rate of growth that would reflect a rising expectation, and this appears evident from the periodicals and newspapers and the discussions around Medicare and other topics, we can assume that the percentage will be higher. We may be talking in terms of an $85 to $90 billion enterprise by 1975, given in constant dollars.

This enterprise is based upon three essential, basic resources. They are the same resources that any aspect of our economy requires: manpower, equipment (or capital stock as the economists would refer to it in other systems), and the state of the art or knowledge.

In health, we have addressed ourselves heretofore to research; biomedical knowledge and health-related research have received a great deal of support since the Second World War. The support is in excess of $8 billion and will probably be increased by $2 billion next year. The creation of facilities has received rather extensive support, the Hill-Burton program investing $2½ billion since its inception, matched by another $5 billion of appropriations at other levels of Government, private funds, and so forth.

We are just beginning to look at manpower—the third basic resource in this area. With the exception of some support of research training in various precise fields of this nature, this resource has yet to receive much attention.

"Manpower" was begun on a large scale in 1963, when the first Federal legislation passed. State governments have been putting a good deal into the education of health professionals—dental, medical, nursing, and so forth. We are not certain exactly how much has been invested, but until very recently State governments have been far more involved than the Federal Government.

The next element of the economic structure of society is the efficiency of use, or the degree of effectiveness of use, of the resources. This, in turn, is another area to which we are just beginning to address ourselves in health. How do you get the most effective utilization of these resources? How do they relate one to the other? How do you get economies of scale, to use the economists' approach, or get an effectiveness or efficiency in the way these resources are related and the way the services are provided?

Many people say that we are waiting for the Flexner report of this era or of this decade. I suspect that it either has been written, is being written, or will be written in the next few years or perhaps even months. There are several candidates for this report, and I do not think we are going to know which one is actually the report or its equivalent; perhaps we will know in retrospect.

Fred Hechinger, the education editor of the *New York Times,* defined the activities of commissions, committees, or task forces as the contemporary equivalent of the chorus in Greek drama; they have the responsibility of defining the issues, identifying the protagonists, and forecasting the crises, but under no circumstances do they interfere with the action. Well, we have had several of these commissions, committees, and task forces working during the past few years. I think probably the initial one dealing with the current activities was the Truman Commission which in 1952 rather dramatically forecast manpower shortages in "Building America's Health." In 1959, the Bane Committee looked at "Physicians for a Growing America" and tried to get some assessment of the requirements in this area. In each of these reports, it became evident that there were deficiencies in the quality of our information—in our awareness of the numbers of individuals, how they were distributed, and the services they were providing.

"Toward Quality in Nursing," the nursing study of the Surgeon General's consultant group, was one of the next efforts. The Coggeshall report, published in 1965 and addressing itself to "Planning for Medical Progress Through Education," looked at many of these issues. The Millis Commission to review graduate medical education—Her Majesty's Royal Commission equivalent—whose report will be available in the AMA News of September 19, 1966, was appointed and supported by the American Medical Association but operated apart from it under the direction of the president of Western Reserve University, President Millis. There is a study currently underway by a subcommittee of the National Advisory Health Council. This Council, advisory to the Surgeon General, is looking at allied health professions personnel and will have a report in some form in the latter part of the summer or the fall. One of the main task forces of the National Commission on Community Health Services addressed itself to manpower as a very critical activity.

For those of you who have been following the discussions in the press at the present time, we know there is a manpower shortage because Walter Lippmann tells us so; and I think that this suggests that there is an increasing awareness of things which have been written about, and spoken about, and discussed, and debated for quite a while by other individuals.

The most recent arrival on the scene is the new National Advisory Commission on Health Manpower, announced by the President approximately a month ago, which will be operated out of the White House through the Office of Science and Technology under the chairmanship of J. Irwin Miller who is connected with a large industrial firm—I believe the Cummins Engine Co. Several health professionals and renowned public citizens are members of this particular Commission, created by Executive order to have a life span of 1 year from its first meeting which will be held at the end of June. I am sure that as this Commission addresses itself to the problems of our manpower requirements it is going to find, as all the others have, that the quality of information is of a sort which is going to cause a great deal of trouble, particularly in moving from head counts of individuals in particular areas to the quality of services—quality in the sense of types of services they represent, how they provide the services, how many services are available, and under what circumstances the services are represented.

Thus, we are moving beyond what I call the Gertrude Stein approach to health manpower—that a nurse is a nurse is a nurse is a nurse—to a realization that a lot of individuals are, for all intents and purposes, in a single category representing a whole variety of services under certain circumstances. We are going to have to get this type of awareness as to what services they do represent and how they can operate in some fashion to present a greater delivery of service, both in quantitative and qualitative terms.

This brings me to my final point—that as we have made major investments in the first two of the three basic resources, I think we are on the threshold of massive investment in the third area, the area of health manpower. With the Health

Professions Educational Assistance Act of 1963 and its amendments in 1965, the Nurse Training Act of 1964, the Vocational Education Act of 1963, and the Manpower Development and Training Act of the Department of Labor in 1962—all of which have programs that are concerned with the development of health manpower—as well as the new proposed legislation for allied health professions, I think that, taken together, these are a pretty good indication that we are at the threshold of rather extraordinary investments in health manpower. I am willing, as an individual, to predict that over the next decade these investments will probably be on the order of tens of billions of dollars. In other words, the same general frame of reference in which previous investments have been made in these other critical resources applies; so that as we begin these investments and make the investments, I think that the questions that are going to be asked are: How can these investments be justified, and how are they utilized and related in some fashion in terms of delivery of services?

The only way we are going to be able to answer these questions, and I return to PPBS, is by having accurate information, detailed information, precise information of a very great degree of definition or resolution, if you will, and information that is related to impact analysis. What are the outputs of these particular investments? We are going to have to be looking at our activities in terms of output, and the only way in which we can get a quantitative assessment is by getting a far greater grasp of what we are doing and undertaking at the present time.

The NCHS Responsibility for Reporting Health Manpower Statistics

Mrs. Maryland Y. Pennell, *Chief, Health Manpower Statistics Branch, Office of the Director, National Center for Health Statistics, PHS*

The Health Manpower Statistics Branch was established in the National Center for Health Statistics in October 1964. The functions of the branch include statistical studies to determine the numbers, distribution, and characteristics of our existing supply of manpower. We are talking about more than 100 professions and occupations. Now I know that professions are a part of occupations, but it seems everybody's feelings get hurt if you leave out the word "professions." If you use synonyms for specific occupations or designations related to field of practice or place of employment, you can come up with more than 300 primary and alternate job titles. So, nobody really has a firm count of health occupations—except that in the Center we wish to identify all in which the workers are required to have special education or training designed to help them function in a health setting.

The point is, how do you get statistics on these manpower groups? I will give a brief outline of such sources and then you may think of other ways for specific occupations. We do not attempt to include information on the persons who perform the business, clerical, and maintenance services essential to the operation of health facilities and agencies. Of course these occupations are essential, but they are not unique to the health field.

Sources of manpower statistics may be related to education, licenses to practice, certification or registration, membership, place of employment, or other factors. I will talk about each one in turn.

We often identify people in the health field through their educational background. A person with an M.D. is a physician regardless of whether he sells real estate. This example is one of the better ones that I could give for physicians not active in the medical profession. When we present the AMA statistics on physicians, we have to know that the count includes those who are retired or not engaged in medical practice. But, we consider that all physicians should be counted since they theoretically would be available to provide medical services in case of emergency.

The master's degree is usually required for social workers; a master's degree in public health, for health educators or nutritionists. Occupational therapists, physical therapists, and statisticians are examples of persons for whom the educational requirement is a bachelor's degree or higher. Professional nurses may have a baccalaureate (4 years), diploma (3 years), or associate arts degree (2 years). Below the baccalaureate level, we can identify dental hygienists who have completed a 2-year course and practical nurses and medical record technicians with 1½ years of education. Information on persons who have received on-the-job training can only be obtained through *ad hoc* surveys, censuses of the general population, or through surveys of places where they work. On-the-job training is usual for dental assistants and technicians with a high school education. However, formal educational programs are being developed in both areas.

Another way to identify health manpower is by the license issued by a State organization permitting practice. Some of the States issue work permits so that they can keep track of how many persons are engaged in what activity. I was trying to get some information on midwives, and it turned out that I asked about registration and did not mention work permit. The reply from Mississippi indicated that they did not license midwives but they could tell me how many had current work permits. So, the kind of statistics you get back depends upon how you phrase the question.

Certification or registration by professional organization is another source of manpower statistics. Within some professions there are specialty boards, certification boards, or registries established by the profession itself for the purpose of distinguishing quality. Diplomates of these boards have usually met certain requirements of education, experience, and competency, and have passed an examination given by the board. They are then permitted to use specific professional designations such as MT(ASCP) indicating that the medical technologist has been registered by the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists.

The American Medical Association lists as specialists persons who indicate that they limit their practice to a specialty. But this does not always mean that they have been certified by one of the American specialty boards. Nevertheless, we count them all as specialists.

Health personnel may also be identified through association membership. Most of us belong to one or more organizations. It has been told that some of the engineers belong to more than 20. When you try to establish counts of health manpower by means of association membership, you have to consider this duplication so that you cannot add all association memberships to get an estimate of the numbers in the field. Memberships in one specific association may represent nearly all persons in a selected health field, as in the case of the American Occupational Therapy Association, or only a small portion of those carrying the job title, as in the case of the American Society of Radiologic Technologists.

Agencies and establishments that provide health services also can give us information on manpower. Later on you will hear about the current survey of personnel employed in hospitals and related institutions. A companion survey is being conducted for non-AHA hospitals and extended care facilities.

Establishment surveys do give data on those persons currently employed. They may provide some information on educational qualifications, but they will not tell us about persons with similar training who are not currently employed.

The decennial censuses provide statistics for each of about 18 occupations in the health field. We also can obtain identification of individuals through commercial "list houses" or listings in telephone books and city directories. If you are in a strange city and have need for a physician, you may resort to the yellow pages of the telephone book.

Today we are particularly concerned with State licensing agencies. About 28 occupations in the health field are licensed in one or more States. All States and the District of Columbia require that the following health personnel have a license to practice: dental hygienists, dentists, environmental health engineers, optometrists, pharmacists, physicians (M.D. and D.O.), podiatrists, practical nurses, professional nurses, and veterinarians. All except a few States license chiropractors and physical therapists. About 20 to 30 States license midwives, opticians, psychologists, and sanitarians or sanitary inspectors. One to five States license hospital administrators, nursing home administrators, clinical laboratory directors, clinical laboratory technologists or technicians, health officers, psychiatric aides, social workers, and X-ray technicians. In some States the law authorizes the licensing of naturopaths or other drugless healers.

The Council of State Governments, under contract with the National Center for Health Statistics, is in the process of analyzing data on policies and practices of the State agencies. The survey should provide information on licensing qualifications, reciprocity, and other related matters, as well as the numbers of licenses in effect.

I want to mention also the NCHS contract with the National Association of Boards of Pharmacy to provide information on licensed pharmacists. We have had some experience in this field in connection with the 1962 survey which showed that one pharmacist had as many as nine different State licenses. We hope to use the Social Security number as one means of eliminating duplication.

These are our major activities in the Center to obtain health manpower statistics.

Statistics for the Nursing Field Available Through Licensing Agencies

Dr. Eugene Levine, *Chief, Manpower Analysis and Resources Branch, Division of Nursing, Bureau of State Services, PHS*

It may seem odd to use the term manpower in a field like nursing, which is 99.9 percent female. I was giving a talk recently on manpower and I said, "When we talk about manpower in the field of nursing, the term manpower is synonymous with woman power; in other words, in manpower, man embraces women." Now when I said that everybody laughed. I really couldn't see what was so funny about that, but they laughed.

When we talk about nursing, we are dealing with the largest single health manpower field. If we added up the numbers of persons in the various categories of nursing, we would come up with well over 2 million people. This means that nursing is not only the largest health manpower field, but is probably one of the largest manpower fields among all occupations.

Just to give you a quick statistical rundown—among the active manpower supply—we have 621,000 professional nurses (RN's), 282,000 practical nurses, and 500,000 aids, orderlies, and attendants. If we consider the inactive group (those trained but not working as nurses), we find a half million professional nurses and about a hundred to two hundred thousand practical nurses. Finally, if we add up the number of nursing students, we would have nearly 136,000 students in schools of professional nursing and about 34,000 students in schools of practical nursing.

So we are dealing with a very large and very complex manpower field, further complicated by the many different places of employment of nurses. Nursing personnel work in over 7,000 hospitals listed by the American Hospital Association, 2,000 hospitals not listed by the American Hospital Association, 25,000 or so nursing homes and other kinds of extended care facilities, 4,000 industrial plants, approximately 9,000 public health agencies and public schools, and 40,000 physicians' and dentists' offices. This adds up to about 87,000 different places of employment. And, of course, these are spread widely throughout the country. Every State, and practically every county in the United States, has at least one professional or one practical nurse.

Now, how do we count members of the field of nursing? I will briefly mention the two major ways—through employers and directly through the individuals themselves. I will not say too much about employer counts. Dave Hoover will probably talk about the current study of hospitals and related institutions. I will mention one study that the Division of Nursing does every couple of years—the study of public health agencies employing public health nurses, which obtains counts of employed nurses including their characteristics. I mention this study because I know that some people in the audience are from State health departments. The questionnaires that you people receive every 2 years, called the Census of Public Health Nurses, originate in the Public Health Service. This is probably the oldest continuing manpower study in the Public Health Service. I think that it was started way back in 1930.

As far as counts of individuals are concerned, I might first mention the American Nurses' Association membership list. Unfortunately, nurses are not too prolific as members of their association. There are an estimated 1 million registered nurses who are alive today, and only 150,000 maintain membership in the American Nurses' Association. That is 15 percent. So we cannot use the membership list if we are trying to get a complete manpower count.

We have another count of individuals enumerated in the Census Bureau's decennial census. I will not say too much about that source myself, because there may be a representative from the Census Bureau here. Although the census may have certain limitations, it does provide us with certain data on nursing manpower unavailable elsewhere, such as race.

The third source of manpower data on nurses collected from individuals is the licensing mechanism. I feel this is the best source of data on nursing manpower. The Public Health Service has a contract with the American Nurses' Association which provides for the collection of data on professional and practical nurses from every State board of nursing in the country through the licensing mechanism. Each time a nurse is licensed for the first time or renews her license, she responds to a series of questions concerning her marital status, year of birth, place of employment, type of employment, type of training, etc. These are then tabulated centrally to provide detailed information on nursing manpower.

The licensing mechanism has many advantages as a source of manpower statistics:

1. It is complete, at least in terms of licensed manpower, and among professional nurses about 95 percent of those who are employed are licensed.
2. It is comprehensive because it not only reaches the active nurses but also those who are inactive. When manpower statistics are collected from employers, the inactive supply—an important source of potential manpower—is excluded.
3. The licensing mechanism is an inexpensive way of collecting manpower date. We estimate that it costs 10 cents a respondent to collect data on nurses through the licensing approach. That cost is for the total study, from the questionnaire to the final report. I do not think you can get a study any cheaper than that.
4. The licensing mechanism provides us with a mailing list for a variety of followup studies.

Now there are some limitations to the licensing method. One is the problem of timing. Every State seems to have a different licensing period. Some license nurses annually, while some license every 2 years. Moreover, expiration dates vary widely, ranging over every month of the year. Finally, some States license on the birthday of the licensee and some license on the anniversary of the original date of licensing. This means that the collection of data through the licensing mechanism has to extend over a 3-year period, making it difficult to place a precise date on the data that are put together from all the States.

Another limitation is the number of items that can be included on a questionnaire of this kind, since it has to be geared to the licensing application. Many States use an IBM card or even a smaller document, so we have to jam our statistical questions into a very small space. This does not leave much room for anything except the basic, core questions.

I would like to mention one other source of data on individuals in the health manpower field which I think will become increasingly important over the years. This is not a new approach because the National Science Foundation has been using it for quite awhile. This is the cohort approach, in which you start with a specified group and follow them up longitudinally. In 1962, the National League for Nursing selected a group of entering nursing students in the four different types of initial (undergraduate) nursing programs—practical nursing, the 2-year associate-degree program, the 3-year diploma program, and the 4-year collegiate program. The League drew a sample of 12,000 students and is planning to follow them up for the next 20 years to find out what happens to these people year by year—how many complete their education, how many drop out, and so on.

One of the big problems in nursing is the tremendous attrition rate among practitioners. We have no hard data on what this attrition rate is, and we are hoping that this study will provide us with this information. We liked the cohort approach so much that in 1965 the Public Health Service contracted with the National League for Nursing to draw another sample of entering nursing students. We now have two cohorts, the 1962 and the 1965 entering students, and we are going to follow both these groups for 20 years to find out more about the career patterns of nursing manpower.

Dental Manpower Statistics Available Through State Licensing Agencies

Dr. Donald W. Johnson, *Acting Deputy Chief, Resource Analysis Branch, Division of Dental Health, Bureau of State Services, PHS*

First, I would like to point out that, in addition to dentists, the dental manpower supply consists of three auxiliaries—dental hygienists, dental assistants, and dental laboratory technicians. In 1965, the total dentist supply was estimated to include 93,400 active and 15,900 inactive dentists. These figures include dentists in the military and other Federal services, but exclude the graduates of dental schools in 1965. About 15,100 dental hygienists are currently in practice, including those working both full time and part time. The dental profession currently employs an estimated 91,000 dental assistants, while laboratory technicians number about 25,500, including 20,200 working in commercial dental laboratories and 5,300 employed in private dental offices.

The Division of Dental Health is developing a national data compilation system for collecting more reliable and up-to-date information on the dental manpower supply than has heretofore been possible. Under a contract with this Division, the American Association of Dental Examiners—working through its members, the 51 State boards of dental examiners—has established this plan for collecting national data from all licensed dentists and dental hygienists at the time of their annual or biennial reregistration with the State examining boards. Because dental assistants and laboratory technicians are not licensed, the collection has necessarily been limited to dentists and hygienists. The system was established in 1965 with a survey of licensed dentists, and this year it has been expanded to include a survey of licensed dental hygienists. We are very pleased with the way both surveys are progressing and hope that each survey can be repeated periodically, perhaps every 2–4 years.

The first cycle of the dentist survey is in various stages of development because reregistration dates vary among the States. The dental examining board in each of 43 cooperative States is mailing the survey questionnaires with license renewal applications. Each dentist returns the completed questionnaire to his State examining board which in turn forwards all questionnaires to the American Association of Dental Examiners. The Association edits and codes the questionnaires and punches the survey data on cards for machine tabulation. The Division tabulates and analyzes the data from each State survey after the punchcards are received from the association. Data collection has been completed in 35 States, and reports are being prepared containing the analysis of the survey results.

Data from the first cycle of the dentist survey present a rather detailed picture of the current dentist supply within each State. In general, this information includes the current status and activity of dentists, their professional background, and selected characteristics of their practices such as specialization and auxiliary utilization. It is anticipated that future cycles of the survey will collect the data needed to maintain a current count of dentists and provide information on their location and activity. Also, more detailed information may be collected on a sample basis.

Almost 30 States have already agreed to participate in the first cycle of the dental hygiene survey which was initiated only 5 months ago. Because of the interest shown by State examining boards, it appears that most States will eventually participate in this survey. Following procedures similar to those for the dentist survey, the same type of data will be collected for the active hygienist as for the dentist. In addition, information will be obtained on future career plans of the licensed hygienist who is not professionally active at the present time.

Each State dental examining board will receive a written report, as well as the basic tabulations from both the dentist and dental hygienist surveys. These reports will highlight the distribution and characteristics of the current supply of dentists and dental hygienists—for example, sources of supply, age distribution, county location, professional activities, and practice characteristics.

Survey findings will be used in estimating the Nation's manpower training requirements for dentists and dental hygienists. The dental profession, governmental agencies, and colleges and universities need such estimates to plan for new and expanded dental schools and additional dental hygiene training facilities. Data from the first cycles of the surveys have already been utilized in estimating requirements in South Dakota where a new dental school and a new hygiene training program are currently under consideration. By using the age distribution of dentists and hygienists currently in practice, it was possible to determine the numbers who will still be in practice in 1980. These data provide the basis for a more accurate estimate of the additional numbers who must be trained in order to meet the demands for dental services in South Dakota in the next 15 years.

When the data are available from all of the States participating in the first cycle of each of the two surveys, the information will be presented in new sections of the Health Manpower Source Book series, published by the Public Health Service. These two publications will present up-to-date State and metropolitan area data in tabular form, as well as national and regional summaries and analyses of dentist and dental hygienist manpower. In looking ahead to other potential uses of the survey data, each respondent was asked to provide his social security number which will permit the identification and comparison of data supplied by each respondent in various survey cycles. After completing several cycles, it will then be possible to develop trend data and to make longitudinal studies of the dental profession.

In both the dentist and hygienist surveys, the State dental examining boards are experiencing a very high response rate—for example, the first 10 States conducting the dentist survey averaged a 92-percent response. Many of the examining boards are also furnishing available data on nonrespondents. As a result, these surveys are providing more accurate and comprehensive data than were previously available.

Indeed, it is unfortunate that the surveys conducted by the State examining boards cannot be extended to the 25,500 dental laboratory technicians and 91,000 dental assistants who are not licensed. Because there is no one source for contacting all laboratory technicians and dental assistants, survey procedures are more difficult to develop. However, possible methods of conducting surveys of these two occupations are now under study in our Division.

As I have tried to outline for you today, the data which are being collected by the State examining boards provide a comprehensive picture of the current dentist and hygienist supply and a basis for determining future manpower requirements. The State boards of dental examiners have played a vital role in developing these statistics. We urge you to familiarize yourself with these data when they become available in your State and to utilize them as a tool in developing the dental manpower resources in your State.

The Role of the State Health Department in the Production of Health Manpower Statistics

Dr. Franklin D. Yoder, *Director of Public Health, Illinois Department of Public Health*

Perhaps it is helpful to take a look at a specific State and see how it relates to the problem of health manpower. I might begin by saying that Illinois is the fourth State in population. It has 10,600,000 people, comprising about 5.5 percent of the U.S. population. The Director of Public Health has the authority by law to supervise the interests of the health and lives of the people of the State of Illinois. This responsibility is probably greater than that carried by any officer in the State government except the Governor. The Director of Public Health has the authority to do something with health manpower. I do not mean to imply that he has had enough to do with it, because he has been deficient in many respects which I will tell you about.

One of the panel members said, at noon, that being Director of Public Health in Illinois must be like being president of General Motors and presiding at a Chinese fire drill. Well, that is somewhat descriptive of the contrasts in this very interesting position. We have in Illinois approximately 1,200 employees in the State Health Department, 1,200 employees in the city of Chicago Health Department, and 500 more in other local health departments—a total of approximately 3,000 employees. This does not, of course, include the health manpower who work in voluntary health agencies nor the practicing professionals.

In public health in Illinois, there are, over and above the 3,000 official health agency employees, roughly 750 or close to 800 budgeted but unfilled public health positions. We should have two to three times this number in terms of demand for public health services. I used this information recently to emphasize the need for a school of public health in our State, which I think we shall have one of these years.

Now, regarding the deficiencies of the Director of Public Health in developing health manpower, I would differ somewhat with Dr. Kissick on what the State of Illinois has done in contributing to the education of the health professions. Some States have supported universities and schools that educate members of the health professions—and some of these are in the public health field; but it has been difficult to find sufficient State funds. State health department personnel recognize that legislatures are somewhat reluctant to appropriate funds for training of health manpower—specifically, for the official health agency. So I do not know where we would have been without Federal scholarship and loan funds.

In terms of Federal programs, I want to mention the proposed comprehensive health planning and grants legislation contained in Senate bill 3008. This will be most important to health departments in terms of "health resource development." When I say "health resource development," I mean training, research, evaluation, and complete health manpower statistics. I think of this pending legislation as "creative federalism," which will make it possible for State and local health departments to significantly strengthen their organizations. I know that you will agree as to the need when you consider the health agency responsibilities in relation to the present manpower and physical resources. We are most anxious that this legislation—introduced in the President's health message of March 1—be passed in this session of the Congress. I consider S. 3008 to be the first priority in public health today.

Senate bill 3008 provides that the Governor designate a given agency—the health department—and a health planning advisory group to represent the practicing professions and the consumer. I think it is well that we focus on the needs for health manpower in this way. Illinois has a number of legislative commissions relating to facets of public health, one of which is to survey and study public health generally.

In thinking of the ways in which we can determine whether health manpower is adequate in a given area, I am also considering another suggestion. Information is available on the concentration of health professions by county, but it is most difficult to go below the county level. Is it not worth considering the development of health manpower statistics by census tracts? If we are to carry the responsibility for the delivery of health services in a given area, say a census tract, we need to develop statistics that relate to the health manpower in such areas. Perhaps, we need to counsel with a lot of people before we decide. Maybe I am speaking to Dr. Linder and Mr. Woolsey and some of their associates.

I was fascinated by the discussion this morning on health survey techniques. I feel that I have a great deal to learn. I wish that health administrators from every State were present to hear the panel yesterday afternoon and this morning.

The Role of Other State Agencies in the Production of Health Manpower Statistics

Mr. David B. Hoover, *Manpower Resources Program, Division of Community Health Services, Bureau of State Services (CH), PHS*

Since I have come lately to health manpower, I feel obliged to identify the organization with which I am associated. It is the Manpower Resources Program of the Bureau of State Services, created last fall to look at health manpower from the research and development point of view. We are embarking on several different courses of action—looking at the utilization of health manpower; seeing what additional quantitative information about health manpower should be obtained; and initiating a variety of growing programs, research, and demonstration projects. We also will serve as a clearinghouse, hopefully, for health manpower information. I see our "clearinghouse" man, Mr. Alex Adler, here in the audience. He has the title of Scientific and Technical Intelligence Officer for Manpower, which I find very impressive. I hasten to add that we are still a baby organization. At the moment we are by no means completely equipped to carry out all our responsibilities, but we do have hopes.

Our main concern is with what health manpower should be and do; we are considering *exactly* what the health manpower problems are. Dr. Kissick has gone over these very nicely. Briefly, we have increasing shortages of highly trained people, relative to our need for them. We are faced with possible surpluses of people who work at the semiskilled and unskilled level. There is more rapid job obsolescence. There are more demands on our health services establishments. Some way or another we have to produce more of the right kinds of trained people, and we have to be able to use them better.

This implies that we are entering an era of more attention to manpower management on a national scale. I think that this is true across the board; it is certainly true of health. We would not want all this information about manpower, except for purely historical purposes, unless we felt that something would be done with it. I think we should consider this for a moment; because unless you think about what you are going to *do* about manpower, you really do not have any basis for thinking about what information you need about it.

Manpower management is not anything new. It is not a spectre looming on the socialistic horizon. It has been around for a long time. The methods of manpower management that probably spring to mind first are the sort one finds farther east—control of jobs, control of housing, control of place of residence, and this sort of thing. At the other extreme, you have no management of manpower at all; you rely entirely on the commodity theory of labor. We put that stage behind us a long time ago. In this country, we have been managing manpower through permissive arrangements whereby we encourage trends in the utilization and production of manpower; but we do not deny individual choice to do this or that, with of course a few reservations. You cannot go out and practice medicine unless you meet certain qualifications.

Our methods of management include setting educational standards. Since education and manpower utilization are inseparable, this is basic. If we did not have our compulsory school system, we would not have much to manage. We have accreditation and certification or licensure programs by which we can manage people. We have educational assistance programs which are used to promote socially desirable trends in manpower. There are economic controls—minimum wage, pay structure, and pay differentials given for this and that. There are Federal programs such as WPA, Selective Service, and VISTA. Most familiar to us, perhaps, are recruitment programs put on on behalf of one or another interest. You might speak of these as "occupational propaganda." So it seems to me that there are ample and quite acceptable means available for us to manage health manpower with more direction and purpose in the future than we have had in the past.

Why do we want to manage health manpower? Well, for obvious reasons. If you look at what we presently know about manpower in terms of what our management problems are, the picture is a little bleak. We have lots of snapshots, but we do not have many motion pictures, and those that we do have are pretty badly exposed. As snapshots, I mean the sort of annual statistics that you get from surveys of licensing, from the current AHA survey of personnel and vacancies in hospitals, and from similar studies. These tell us how many people are where and what they are doing at the moment. A movie, on the other hand, will tell you what is happening to individuals over a period of time. A movie gives you a picture of the dynamics of manpower; it shows how individuals flow through the education and work process. This kind of information we very rarely get. In order to get it you need registers, continuous surveys, and that sort of thing.

A good example of why we need dynamic information is found in the 500,000 inactive professional nurses that Dr. Levine mentioned. There are a lot of programs designed to "help return these nurses to work." Somewhere there is a bottom limit. At some point, as you address your programs to more and more of these inactive nurses, it becomes unrealistic and economically wasteful to attempt to do something to return the residue to work. However, we do not know enough about inactivity in health professions, especially those in which women predominate, to know just how far we can go in reducing the percentage of the occupation which is inactive at any given time.

What we need in health manpower information, ideally, is a "Who's Who" on everybody in health work, and I guess we need a "What's What" and a "Who's Where," too. This is being seriously proposed in some quarters. The Association of American Medical Colleges has a committee which is working jointly with the American Medical Association, the American Dental Association, and various other professional societies to consider the feasibility of establishing a data bank on health professionals, which would begin when they matriculate for their professional education and which would continue to follow them throughout life. Whether or not the economics of this are feasible, I am sure the technology is feasible. The fact that we are seriously considering operations of this size and scope is to me a very good indication of what is around the corner for health manpower information. It is interesting to note that many of the most far-reaching ideas for getting better information and for managing health manpower do not come from the Government; they come from professional societies and from organizations that represent users of manpower.

Realistically, we need to start with better use of the information that is available now, which is apt to be scattered around when you want it and often is not comparable. It is very difficult to add the results of two different surveys together and compare what has happened. We should standardize nomenclature and our methods of looking at manpower. We require more precise information on the location of health workers, on their functions as opposed to their qualifications, and especially on forecasted needs.

Obviously, the Federal Government cannot solve all of these problems alone. The job is too big; Washington does not have any corner on talent. We have difficulty in recruiting people to work on manpower problems. In this connection—and I guess since I am the last speaker, I am permitted a little time for a digression—I was talking to a fellow about the possibility of getting into manpower analysis and the more I talked, the more distressed he looked. He finally left with the attitude of the small boy who wandered into an old country store. The storekeeper had a cat which had got run over and left a new batch of kittens. The storekeeper worried about this quite a bit and finally went out into the backyard and got an old setting hen and put her down in the box on top of the kittens. The little boy wandered in and said, "What have you got in the corner?" He went over and lifted up the hen and looked, put it back down and thought a minute, lifted it up again and looked, and finally turned around and started for the door. The storekeeper said, "Well, what do you think of that, boy?" and he said, "I'll tell you what I think of that, mister; I think I've ate my last egg."

Well, everybody has to get into the act if we are going to meet the demands for health manpower information. We need to know what local problems and opportunities there are in health manpower. Most national manpower problems after all are only the summation of a large number of local manpower problems. State and local agencies, both official and voluntary, have a stake in this. They also have the competence to collect information, and they have access to the information. The contribution of nonhealth agencies ought to be fairly obvious. It is no good planning for health manpower management unless you look at the constraints that the total manpower picture puts on you. You need labor market data, you need to know about the economic constraints, and you need to know what the educational system is capable of producing before you can even begin to discuss what the health share of the output of the educational system might be.

How can we coordinate the use of all of these information resources? How can we see that this information is available when and as it needs to be used? For short-term efficiency, we need to support health manpower data collection, research, and analysis wherever it can best be done now. In the long run, the nature and function of State health planning groups, of forward looking and active vital statistics offices, of medical centers which are concerned with the delivery of health services, and of other sorts of organizations need to be considered in apportioning responsibility for the production and analysis of essential health manpower data.

We think that the present situation calls for a "sparkplug" group at the State or area level. Even before we escalate manpower data collection, we need centers to which local data can be fed and in which demands for data can be coordinated. These groups would develop some expertise in an area in which experts are homegrown and few and far between. We envision a sparkplug group like this as coordinating State-level data collection, carrying out analyses, supporting other agencies in manpower statistical activities, serving as an information center, and doing some research and development.

What organization should be the sparkplug? We do not know. If you name a particular State or area, we still do not know, because the people there who are active and interested and engaged in health manpower activities can best identify how to put together a sparkplug and get on with the business of using the information that they have.

We believe that these centers for manpower information and research would function best if they are not heavily involved in planning. We see such centers now as feeding information to other organizations which have planning responsibilities. Centers should be closely tied to the Federal Government, to university activity, and to national professional organizations, since standardization of data is one of our main needs in this area. I should hope that if such health manpower sparkplug organizations at the State level develop they will become involved with manpower research as well as information. From our experience to date, there are enormous amounts of work to be done.

DISCUSSION

The panelists' presentations and the wide-ranged discussion that followed depicted where we are and where we must go in the health manpower statistics field. Obviously, statistics of quality and quantity must be developed. The sources and methods basic to this purpose were discussed in the Workshop. The afternoon discussions centered around the topics listed below:

1. Comparison of manpower statistics from census and professional associations.
2. County location of eight health occupations (*Health Manpower Source Book* No. 19, PHS Publication No. 263, 1965).
3. National Science Foundation Register of Scientific and Technical Personnel, for data on engineers.
4. Availability of published directories on health personnel.
5. Periodic data from American Medical Association, American Dental Association, American Nurses' Association, and other organizations.
6. Model State registration acts for health manpower.
7. Acceptance of national examinations by State licensing boards.
8. Uniform dates for renewal of State licenses.
9. Availability of licensure data on punch cards.
10. Cooperation of State licensing boards on current manpower surveys.
11. Motivation for response to survey questionnaires financed by PHS.
12. Income of physicians.
13. Establishment of State health-manpower registration areas, similar to vital statistics.
14. Statistics on foreign-trained health personnel.
15. Data on trained but inactive persons currently not licensed.
16. Current educational requirements and effect of "grandfather clause."
17. Career ladder approach and upgrading of health personnel.
18. Sources of money for manpower research and development.
19. Cooperative studies and State commissions.
20. Information on volume of health services currently being provided, measurement of services required, and manpower to provide.
21. Concept of positive health; Dr. Linder's article, "The Health of the American People," pp. 21–29, *Scientific American,* vol. 214, No. 6, dtd. June 19. 1966.

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RECORD LINKAGE

Tuesday Afternoon—June 21, 1966

DISCUSSION SUMMARY

Record Linkage

DISCUSSION SUMMARY

Suggestions for resuming study of record linkage grew out of the recognized need to better relate vital records to each other and to interrelate them to other types of records. Discussions at the 10th National Meeting of the Public Health Conference on Records and Statistics supported this need, and a request by the Association of State and Territorial Health Officers' (ASTHO) Committee on Research and Planning led to passage of a recommendation by ASTHO that the Surgeon General request the National Center for Health Statistics to initiate a study of linked vital statistical data. To implement this, the Study Group on Record Linkage was established in the program of the Public Health Conference on Records and Statistics.

At the record linkage workshop held Tuesday afternoon, opening remarks by Mr. Saybolt, chairman of the Study Group on Record Linkage, were followed by an overview by Dr. Halbert Dunn, a progress report by Dr. Sagen, and a number of reports on medical research, patient care, and administrative uses of record linkage.

Report of the Study Group on Record Linkage

In his opening remarks, Mr. Saybolt drew on the analogy between record linkage and big business to set a frame of reference for the papers and discussion to follow. He stated that record linkage is not really a new business but one which needs a lot of development and organization before we have a saleable product. The business of record linkage is diversified and international in scope. In its corporate structure are many divisions, such as administrative uses, demographic genetics, family health studies, patient illness and care, and death clearance. So far, we are still in the exploratory stage as far as the development of efficient managerial practices is concerned. Production is limited, and the price-earnings ratio leaves much to be desired. Dividends are infrequent.

Although we are all stockholders in the business, we have not yet seen our way clear to selecting a board of directors. Our goals are still poorly defined, and as a result our sales force works under a great handicap.

We have been taking an inventory over the last 2 years of the resources available. The Study Group's progress report may be considered as the first annual report of the company. How long it will take us to get listed on the big board is a matter of conjecture, but there are an awful lot of small and big investors waiting for us to make it so that they too can get a piece of the action.

Medical Research, Patient Care, and Administrative Uses

Dr. Dunn pointed out that 25 years ago there was tremendous interest in the possibilities of national registration. The need for personal identification during World War II was so great that the vital records system nearly broke down. The President appointed a Commission on Vital Records to determine if a national registration system for personal identity were needed. The Commission recommended waiting until peacetime for a national registration system, unless it could be demonstrated that such a system was needed for military purposes. At that time, the idea of a national registration system was a "hot potato." It would cost millions of dollars and require the services of at least 30,000 people. Some persons now feel that the time has come when another commission of presidential order should be set up to determine the present need for a registration number. Public acceptance is much closer than ever before. There is a general realization that identification of people is important. An identity number is the key, and there ought to be one unique number.

A national registration system would make it possible for us to settle questions we just toy with now. Death clearance would be of tremendous value. Population registers could be set up to tie in with census records. Small area statistics could be brought up to higher standards. As an experimental project, a population center could be created for small areas to keep census figures up to date, accounting for migration in and out of specific areas.

It has been suggested that Plan IV of the report of the Commission on Vital Records be declassified, released, and made available to the public. It was necessary to keep these recommendations secret during the War because of strong opposition to the concept of national registration. It was associated with totalitarian tactics. People do not like the "big brother" idea of being watched from birth to death. We will get further with a registration number if we divorce record linkage from the data bank concept. There is now no doubt that data banks are mechanically feasible; the question is whether they are judiciously in the interest of the people. Record linkage is simply the capacity to go from one record to another. We would be well advised to develop this capacity with minimum expense. A unique number would not be an invasion of privacy. It is a way of positively identifying ourselves.

The Chicago death certificate and census record matched study is an example of what could be done. As it was, matching was only 80 percent complete and costly. If capacity to link had been present, the study could have been done more efficiently.

The social security number has become a nearly universal identification number. Internal Revenue and banks use it. Some States use it to identify students. With number and name, positive identification is possible. The question is "What are we going to do in vital records?"

Comments from the floor, as well as reports to the workshop, made clear that record linkage is well recognized as a complicated problem which will take top-level thinking.

Mention was made of the Netherlands registration system. Numbers are assigned to individuals at the time of birth. The individual's record goes with him, and the number stays with him through life until death. It was described as an ideal way to follow the population and suggested that we could learn from their system.

The Welfare Administration has been working with the Social Security Administration on the problem of linking family records. Maryland has a Statewide psychiatric register and has developed a system of record matching which works quite well. It is of tremendous benefit in longitudinal studies.

The American Association of Medical Record Librarians advocates universal health and vital record linkage. It feels that an all-encompassing system is needed for health information, with national responsibility for output.

A project in Minnesota was developed to describe the history of a community over the last 30 years. They have obtained almost complete coverage, with the overwhelming majority of records coming from the Mayo Clinic. They have access to birth and death records and hope to have, among other studies, a study on cancer with 100-percent follow-up.

The Commission on Professional and Hospital Activities in Michigan feels the need for a number to link people together. There is no way of discovering people in mass data. Individuals cannot be traced. These problems of record linkage are not of a technical nature. The problems are on a social, ethical, economic, and political level.

At the University of Rochester, where studies are concerned with trying to get medical care to people who need it, record linkage would be of enormous value. The validity of self-reporting in surveys is of very low order. It could be validated by record linkage.

Internal Revenue is using the social security number in tax administration. IRS now has a successful system which involved legislation and the cooperation of Social Security and the taxpaying public. It would find a national death index useful in avoiding issuance of delinquent tax notices to the deceased, something for which IRS receives public criticism; in giving notice about filing requirements to the administrator of affairs of the deceased; in eliminating multiple filing for refunds; and in checking for change in marital status. IRS feels that the potential benefits justify continued efforts to move the study forward.

The Social Security Administration has strong uses for a death and marriage clearance system in avoiding unwarranted payments. Social Security is now willing to discuss the problems involved in time of number assignment and composition of the number.

It was reported that Canada has the same problems as the United States in record linkage. The Canadian system has no distinctive feature which makes it susceptible to record linkage. In a study to determine long-term genetic effects of radiation, marriage records were linked to records of offspring. Methodology was incidental to the study. The number came into play afterwards; it was assigned after marriage to the bride and groom, then to the children. Population geneticists feel the study will be more fruitful if it is carried to the second generation. The plan is to link grandparents, cousins, uncles, and aunts.

The Canadian experience with record linkage accomplished three things. First, it proved the technical feasibility of computerized record linkage operations. Second, it attached quantitative weights in discriminating powers of particulars on combinations of items that were used in distinguishing genuine or spurious matches. And third, it yielded indications of the kinds of scientific information that can be extracted. However, a word of caution was noted in that any such system must have carefully laid plans. It was suggested that we have been preoccupied with feasibility. Now it is time to acknowledge that it can be done and to study the advantages of record linkage. Adoption of a common number would move the job along. We need to show how confidentiality aspects can be preserved.

In Alaska, they are undertaking application of social security numbers through the hospital. This birth number is used for immunization control, and the Indian health program will use it for health services.

In subsequent discussion, the questions of confidentiality of records and the protection of personal rights were discussed. It is recognized that the present plans for a record linkage system, insofar as they have been developed to date, do not contemplate the release of personal information in other than those critical areas already established for research purposes or for establishing individual rights. This is not, and never is it intended, to be a police-state function but rather a systematic and coordinated method of a linked recordkeeping system in the United States.

In a closing summary, Dr. Dunn stated that we have to answer the question "do we want a registration system for personal identity?" This needs to be argued in the country and in the Congress. If the answer is yes, as a minimum:

1. Identity has to gear address into the system,
2. The system has to serve as an index for any other number system, and
3. National law is required.

The overwhelming opinion of the workshop is that record linkage is extremely desirable, and by the use of modern recordkeeping facilities and computer techniques it would be entirely feasible, although a substantial financial involvement would be required.

RECOMMENDATION

When asked for an indication of opinion, the participants of the workshop voted overwhelmingly in favor of continuing a study group on record linkage as a Conference activity.

DOCUMENTATION

Progress Report of the Study Group on Record Linkage, PHCRS Document No. 603.5—May 31, 1966.

I

WORKSHOP DIRECTORS

Dr. Monroe Lerner (First Session)
Mr. Sam Shapiro (Second Session)

COORDINATORS

Mr. E. Earl Bryant
Mr. Milton C. Rossoff

RESOURCE PERSONS

Members of the Study Group on Evaluation of Non-Hospital Care Programs for the Chronically Ill and Aged

RAPPORTEUR

Mr. Arne B. Nelson

MEDICAL CARE STATISTICS

FIRST SESSION

Wednesday Afternoon—June 22, 1966

SECOND SESSION

Thursday Morning—June 23, 1966

Medical Care Statistics

FIRST SESSION

Dr. Monroe Lerner, *Division of Medical Care and Hospitals, School of Hygiene and Public Health, The Johns Hopkins University*

This workshop is intended to provide opportunities for discussion, and perhaps for amplification, of some of the major trends and current issues in medical care organization which were pointed to during the preceding general session on medical care statistics. Our special interest is in the implications of these trends and issues for records and statistics. At least three of these trends and/or issues considered as a unit and their implications for records and statistics provide, in my opinion, a useful framework for the discussion that is to follow.

Perhaps the major impression emerging from the preceding discussion concerns the expansion during recent years in the role of the Federal Government in financing personal health services. This expansion gives every evidence of continuing. A whole host of new Federal legislation embodying this trend and providing new bases for expansion was passed during 1965 and the first half of 1966.

Expansion of the Federal role in the financing of health services has taken place presumably in response to widely felt unmet need for health care services. Clearly, therefore, the new programs will merit careful and precise evaluation. Will they, once in operation, in fact correct the situations of perceived deprivation at which they are aimed? If so, and considering the dynamic and constantly changing nature of man's definition of his own situation, will new unmet needs emerge as an immediate result? What will these needs be, and how rapidly will they emerge? The effort at evaluation should prove to be useful also as a basis for planning future programs.

A second major issue considered during the general session, and again one with implications meriting discussion in the present workshop, concerns the new developments in the concept of a Federal-State partnership for health. For example, the Medicare legislation (Social Security Amendments of 1965) embodied within itself, under titles XVIII and XIX, quite opposing concepts concerning the Federal-State division of responsibility for the financing and provision of health services. While title XVIII vests primary responsibility for the operation of its program in the Federal Government, title XIX gives this responsibility to the States. The latter program, however (if I understand it correctly), fails to illuminate at least one crucial aspect of the program. For example, which agencies—Federal or State—will have the responsibility for evaluating this program? Also, within each State, will it be the welfare or health agencies? What will be the role of local heath agencies in this regard?

In any case, it is certainly clear that the States, and possibly the local health agencies as well, will be asked to embark, in one degree or another, upon new programs of routine data collection and analysis and upon special studies and other forms of research above and beyond the routine. The third point emerging from the general session is thus the challenge to the statistical agencies of the States and local communities. Can they meet this challenge? Will the States and local communities be able to respond to this challenge and to expand their statistical activities, for example, by attracting new talent on the needed scale? Will they be able to change the climate in their statistical and research agencies to one that will be conducive to meeting the new challenges?

Medical care statistics will be a new area for many State and local agencies, regardless of whether they are health or welfare agencies. For example, statistical offices in State and/or local health agencies have traditionally been involved in the collection and, to a lesser extent, the analysis of vital statistics. In all too many cases, however, their activities have been unfortunately limited to this area. While this is certainly not in any way intended to depreciate the importance of vital statistics, nor the contribution which these statistics have made to our understanding of health trends and needs, it is obvious that much more is now needed. Of course, there are many and well-known exceptions to this general pattern of limited activity by the State and local statistical offices. Many State and local health agencies have developed excellent programs for the collection of medical care statistics, and we shall be hearing from the representatives of some of these agencies during the course of this workshop.

To begin the program for the first portion of our workshop, we have arranged for four presentations on the general topic of medical care statistics. These are intended to serve as background for the subsequent discussions of titles XVIII and XIX, in that order, of the Medicare legislation (Social Security Amendments of 1965).

Report of the Study Group on Evaluation of Non-hospital Care Programs for the Chronically Ill and Aged

Dr. Isidore Altman, Professor of Medical Care Statistics, Graduate School of Public Health, *University of Pittsburgh*

This afternoon, I think we get down to a few specifics. I shall limit myself to two collateral topics—activities at the State level and evaluation—topics which I and one or two other people around the countryside seem to think are important. Actually, I had little choice of topic, for at one of the planning sessions the group of so-called experts who developed this workshop decided as follows: "The discussion should most certainly include a report from the Study Group on Evaluation of Non-hospital Care Programs for the Chronically Ill and Aged. This Group is reviewing methods of evaluation used by State health departments." The second sentence is a little bit premature.

You will probably be wondering, as I meander along, what my words have to do with medical care statistics. I confess not much in the direct sense but a great deal in the indirect sense, for there are possibilities of generalizing from a specific situation. Please think of what I am going to say to you as in some measure a "for instance."

My story of the work of our Group is unfortunately somewhat limited because we did not get nearly as far as we had hoped or dreamed. This Study Group was a brainchild or brainstorm of Mr. Bernard Frank, who is on the platform with us. At that time he was a member of the Division of Chronic Diseases. He and colleagues of his were concerned that, with all the Federal, State, and local governmental activities going on concerning services in connection with chronic disease, so little was known about their achievements—particularly State and local achievements. Mr. Frank and his associates especially wanted to know whether there were records and statistics that were being kept for the purpose of evaluation. And, of course, they wanted to determine the kinds of records and statistics that should be maintained to achieve this purpose.

These people in the Division of Chronic Diseases thought that some exploration of approach and methodology was in order before any large-scale investigation should be launched. Therefore, Mr. Frank came to the PHCRS to seek its help in conducting such an exploration, and our Study Group was thus created. My name was hauled up from somewhere as a possible (or impossible) chairman. Conversations with the right people led to the selection of a hard-working and able group plus a quota of Government consultants. The group consisted of Mrs. Nancy W. Lucas of Ohio; Dr. Margaret W. Rathbun of New York; and Mrs. Grace Spitz, William Stewart, and Earl Bryant. The original name for the Study Group was "Study Group on Evaluation of Records and Statistics in Out-of-Hospital Settings." We felt that this topic was rather broad, so we came up with our present title, "Study Group on Evaluation of Nonhospital Care Programs for the Chronically Ill and Aged." More important than the change of title, however, was the delimiting of our objectives and functions to something we felt we could handle.

Like many of the study groups, we recognized that as a cluster of people fully occupied by the duties for which we ostensibly receive our salary and able to get together only once or twice a year we had to limit our scope and lower our sights considerably, although reluctantly. We therefore decided that we would concentrate on State health departments, even though many of the activities in which we were interested were carried on in welfare departments and in other agencies, in a number of States, or carried on essentially at the local level. We also decided to exclude mental health, a huge field of endeavor in itself. We gladly accepted the notion of limiting ourselves to out-of-hospital programs.

Incidentally, we quickly cleared up (in our own minds) the distinction between program evaluation and patient evaluation. It is a little unfortunate and confusing that the same word is used in two such allied contexts.

At the start our objectives were threefold. A preliminary step was to design a method to identify and classify programs in State health departments which provide and support out-of-hospital care for the chronically ill and for aged patients. (We first had to find out what was going on before we could begin evaluating.) The second step was to see what program evaluation procedures were being employed and third, to recommend, if we could, the procedures for carrying out an evaluation program. Partly because of the limited amount of time our group members had, because of our geographic scatter, and because it presented itself as a sensible machinism with which to begin, we decided to develop a mail questionnaire. We realized, however, that we could try it out personally in only a few States in the time available to us, and it did not take us long to discover (as if we did not know) that we would have to try out several drafts.

We had many suggestions about scope and content to discuss among ourselves and were not always agreed about what we were after. We were plagued, as is every medical care study, by problems of definition. For example, we had to decide what we meant by provision of a service and support of a service—not always a simple thing to do. The service might be direct care, or it could consist of training or consultation; support could be partial or total. After much discussion, the Study Group and its consultants decided to select a few major activities and to concentrate upon these. We picked nursing services, homes for the aged, and organized home care.

Our questionnaire went through many drafts by correspondence among ourselves before we arrived at something that seemed worth a trial.

The questionnaire then was tried out in person in three States and by mail in one. My own experience in finding out what a State health department does was as revealing as any. I spent an entire morning with two highly placed officials of a certain State health department who were gracious enough to give me all this time. Preliminary conversations with other officials of this department had led me to believe that it did very little in respect to our selected subject matter. However, it turned out that the department did a great many different things, but often on a small scale and often not on a statewide basis. That is to say, it might support a certain kind of activity in only three or four communities; or, for a certain kind of program, it might give consultation service in some communities, operate clinics in others, and give financial support in a third group of communities. Thus, just about every box in our questionnaire would be checked, resulting in a misleading impression for the unwary of the extent and content of chronic disease programs in this department. The findings in the other States were similar.

As far as I could determine, evaluations were made pretty much by impression and judgment; that is to say, no formal evaluative studies were made of any of the programs.

My conclusion, based on my visit, was that the only way one could hope to obtain the kinds of information we were seeking would be to "live" with the department, or its division of chronic disease, for some adequate period of time which I would place at no less than a month for a State of any size. Nevertheless, my committee and its consultants decided that we, too, would try harder. We met again in September 1965 (our first meeting had been in February 1965) to pool our experiences. We revised our questionnaire considerably and tried it out once more by mail to three States. Two responded with full and comprehensive descriptions of what they were doing.

In this version we actually created three questionnaires, one each for the three types of programs I mentioned earlier—home care, nursing homes and/or homes for the aged, and the general public health nursing program (but with reference to adult chronically ill and aged). In general, we asked whether the department furnished or supported direct services, participated in training of personnel, or provided consultation; and then what it did by way of evaluation. Judging from the replies we received, the questionnaires in this form did not work too badly (but my preference for on-the-spot study persists).

While we were primarily engaged in testing an instrument, we were also interested in the content of the replies we received, especially with respect to evaluation. I think the following comment about evaluation is fairly typical:

"We do not have a formal procedure for evaluating or measuring these accomplishments. Our accomplishments are reflected in the number of fully licensed nursing homes. In the early years of the licensing program, there were always many nursing homes on provisional license because of deficiencies. Currently, a provisional license is a rarity."

Actually, I suppose one could think of ways of evaluating that are not as good as this. Here you have a definite measure, and maybe a pretty good measure.

Where do we stand right now as a Study Group of the PHCRS? I think we have developed a questionnaire that warrants further investigation—if one is interested in finding out what State health departments are doing in some given field and provided sharp detail is not required.

As for evaluation, our several inquiries and responses would lead us to believe (from our small sample, as it were) that evaluation as a premeditated, deliberate measure exists in few places (if any). But how might a State health department go about evaluating its activities—specifically, in our context, its medical care activities?

I was recently connected with the planning of a study which might teach us much. This study involves the provision of some selected services over and above those ordinarily provided in a prepayment medical care program. The investigators want to see if these extra measures do the patients any good. We set up a whole battery of indices which could be divided into:

a. Changes in health status;

b. Differences in selected utilization rates;

c. Changes in patient attitudes;

d. Analysis of staff perceptions and reports; and

e. Comparative costs.

The work itself is currently going on and so remains to be evaluated itself. Just let me quote a few sentences from the grant application:

"Devising a workable system of project evaluation has proven to be the most difficult part of the planning project. Significant changes in health status of chronic disease patients are hard to detect and even harder to measure. * * * Indices used for the appraisal must be relatively easy to record, measure, and compare, and must have both reliability and validity."

I have one more quote I cannot resist:

"This does not mean that we merely accumulate more statistics of the same kind that we now have, but statistics of a different order, based on more detailed and exact observations of individuals and of circumstances, in order that we may convert what is now indefinite 'common experience' into an orderly and flexible array of definite facts. Such statistics are not easily collected. They must be carefully planned in each case with a special view to answering some definite question, and must then be collected by painstaking systematic investigation, continuing often over a long series of years. To carry out such investigations in a sufficient number of sample areas is a large and difficult undertaking, but neither greater nor more difficult than is demanded by the extent of present effort in public health and the importance of the best possible evaluation. Moreover, it is work of a kind which may be done most economically and effectively by local health departments, rather than by independent institutions for research, and must be one of the most important items in the future program of health department practices if this is to go forward on straightened lines."

Wade Hampton Frost said this over 40 years ago.

General Medical Care Statistics Available From the National Center for Health Statistics

Mr. E. Earl Bryant, *Chief, Institutional Population Survey Branch, Division of Health Records Statistics, National Center for Health Statistics, PHS*

Some of you are probably familiar with the programs of the National Center for Health Statistics. If you are, I hope you will bear with me while I provide some background for the benefit of those who are not.

The NCHS has the major responsibility among Federal agencies to provide comprehensive information about the health of people in the United States, the medical facilities that they use, and about other health related matters. The organization of NCHS involves five divisions, four of which have data collection responsibilities. In addition to the Division of Vital Statistics with which you are all familiar, the Center's program includes the Division of Health Interview Statistics, the Division of Health Examination Statistics, and the Division of Health Records Statistics. The latter three divisions collect statistics under provisions of the National Health Survey Act.

The Health Interview Survey, first of the National Health Survey activities to get underway, began in July 1957. It is a continuing survey of the noninstitutional population, with data collected each week from a small probability sample of households in the United States. The design of the survey makes it possible to add the results of weekly samples. Thus, as the sample accumulates detailed information from survey results can be obtained.

The Health Examination Survey is also based on a probability sample of the noninstitutional population. The data are collected by means of tests, measurements, and physical examinations of the selected sample persons. The procedures are carried out by teams of physicians, dentists, nurses, and technicians who travel from one area of the country to another in mobile units to conduct the survey. The Health Examination Survey does not cover the total population at a time, but rather it concentrates on certain age groups in one cycle and another age group in the next cycle. This procedure makes it possible to study factors which have special significance to the particular age groups. The first cycle of the Health Examination Survey included the adult population 18–79. The next cycle covered the 6–11-year age group, and the third cycle now underway covers the 12–17-year age group.

The third and newest of the National Health Survey programs is the Health Records Survey. HRS is a family of surveys. In addition to collecting statistics about the health of the institutional population (a segment of the population not included in either HIS or HES), a continuing national hospital discharge survey is underway, and a complete inventory of all hospitals and institutions in the United States is maintained. The Division of Health Records Statistics also conducts surveys based on probability samples of birth and death certificates to collect statistics associated with the vital event; for example, about the utilization of health services during the year prior to death or about prenatal care received by mothers.

Now let me tell you in more detail about the programs which relate specifically to medical care statistics. By medical care statistics, I mean data on the utilization of medial care given by physicians, dentists, nurses, and other personnel in hospitals, clinics, home, or wherever. Important associated variables are the health of the person receiving care, the cost of care, the ability to pay, etc.

The data from the Health Interview survey cover many more topics than those that I'll be mentioning here, and the information I'll give you is not necessarily the order in which it has been collected over the years. Some of the information relating to medical care has been collected in the Health Interview Survey since its beginning, while other types of information might be collected for 6 months or a year or maybe 2 years, on supplements to the questionnaires, and then dropped and something else added. So keep in mind that this is a rather flexible instrument and that a great deal of different types of information might be collected from time to time.

The information collected about hospitalization concerns patterns of utilization in terms of length of stay, diagnoses, operations, charges for care, source of payment, place discharged to, length of convalescence after surgery, etc. Data on physician and dental visits have been collected in at least a couple of supplements to the health interview survey questionnaire. These include such things as the interval since the last physician visit; where the visit took place—whether the doctor went to the home or whether the person went to the doctor's office; and the type of physician seen—whether it was a general practitioner, an internist, etc. Data have also been collected about medicines—whether they were prescribed medicines or nonprescribed. For prescription medicines, the name of the medicine, the condition for which it was prescribed, and the cost of the medicine were determined. For nonprescribed medicines, data were collected on the cost but not the related condition. I understand that a report on this topic will be published in the near future.

Recently, because of the great interest that is being put on health insurance for the aged and health care of the aged, analysts in the Division of Health Interview Statistics have written a report which will provide baseline statistics for measuring effects of the Medicare program. The title of the report, "Age Patterns in Medical Care Illness and Disability," gives you some idea of its content (Vital and Health Statistics, NCHS series 10, No. 32).

Some of the data to be collected in 1967 were influenced by the needs of the Medicare program. For example, data on home care will be collected, including such things as the type of care needed by the people who are getting some kind of home care; who provides the care—whether it is a relative, friend, registered nurse, or some other nurse; and the number of days and hours per day during a specified 2-week period that help was received. Data will also be collected to determine whether or not the person providing care is paid, the source of payment (whether Medicare, self or family, a relative or friend, health insurance, welfare, etc.), and the number of visits made by a nurse during the past year. The Health Interview Survey will also collect information about nursing home care in 1967—data similar to that to be collected about hospital care during fiscal year 1967. This would include the fact that the person was in a nursing home, length of stay in the home, medical reason for admission, etc.

Now let me speak a moment about the information that is collected in the Health Records Survey. I mentioned the programs that compose the Division of Health Records Statistics—the Hospital Discharge Survey, the Institional Population Survey, and the Vital Records Survey. In a sense every one of these programs provides information which may be considered medical care statistics.

The Hospital Discharge Survey began in 1964 on a pretest basis, using a probability sample of 81 short-stay hospitals in the United States. At the present time, about 300 hospitals are participating in the survey. Ultimately, the sample will contain about 300 hospitals. The data collected from the Hospital Discharge Survey provide comprehensive data on hospital utilization and hospitalized morbidity. In the beginning, the data have been limited to that recorded on the face sheet of medical records. This includes such things as the diagnosis, operations, length of stay, and certain personal and demographic information. As knowledge and resources permit, the survey will be expanded to collect other types of information; for example, about charges for care and laboratory procedures. The survey provides a medium for possible special studies, such as of rare diseases, using diagnostic indices of the hospital or by followback survey of the patients to collect pertinent information not in hospital records. I understand that the first report of this Hospital Discharge Survey which will cover the data that were collected during October to December 1964 is expected in a few months.

Another activity carried on by the Center which produces important medical care statistics is the Master Facility Inventory Program. Work began in 1962 to list the names and addresses of all of the hospitals and all of the resident institutions in the United States. The primary purpose of this inventory is to serve as a sampling frame for the substantive surveys conducted in the Division of Health Records Statistics. But in addition, the MFI provides valuable statistics on the availability of hospitals and institutions in the United States by type, size, ownership, etc., as well as the changes that occur over time.

At the present time, we are working to develop a procedure for maintaining the inventory. If our efforts are successful, a national agency reporting system will be established through which we will learn of all of the hospitals and institutions that begin operating each year. After obtaining the establishments' names and addresses, questionnaires will be sent to each place to determine the type of business, type of ownership, and other data needed for the purposes of the survey design. The plan is to conduct a survey of all establishments in the MFI every 2 years to determine what changes have occurred since the last survey. The data collected would not only serve to keep our sampling frames current, but also be published in statistical summaries.

The MFI has served as the sampling frame for the Hospital Discharge Survey and for two Institutional Population Surveys. The institutional surveys primarily included nursing and personal care homes for the aged. However, the first survey also included mental hospitals and other types of long-term facilities caring for the chronically ill and aged. In the first survey, data were collected primarily by mail, asking questions about such things as the homes' admission policies, whether round-the-clock nursing care was provided, level of skill of the nurse supervising nursing care, charges for care, and rather gross information about the health of residents. Four publications have been produced on the results of the survey.

The second Institutional Population Survey was conducted in 1964 by personal visits to each of the sample establishments. The universe for this survey was similar to that for the 1963 survey, except that all hospitals other than geriatric were excluded. Also, the survey was more comprehensive, covering more subjects. Detailed information was obtained about the health of residents and other factors associated with their health, economics, and social well-being. In addition, the survey collected statistics about a sample of employees and about the establishments themselves. More specifically, data collected included that on the prevalence of chronic conditions and impairments, the interval since the resident last saw a physician or dentist, nursing and personal services provided, the charge for care and sources of payment, arrangements for physician and dentist services, and a number of other topics. Information was collected about the number and types of staff employed, hours worked, salary, length of employment in nursing homes and hospitals, and special training received relating to care of the aged and chronically ill. Several reports are now in the editing stage and will soon be published.

The last of the surveys conducted in the Division of Health Records Statistics that produces medical care statistics is the Vital Records Survey. This program is composed of two sample surveys, the National Natality Survey and the National Mortality Survey. The sampling frames for the surveys are the copies of birth certificates or death certificates, as appropriate, which are received by the Vital Statistics Division, NCHS, from the registration areas.

Questionnaires are mailed to such respondents as the physician, hospital, informant, etc., depending on the survey topics. In the National Natality Survey, for example, data have been collected on such topics as doctor and dental visits during pregnancy and radiation exposure during pregnancy, including X-rays and radiological examinations. The National Mortality Survey produces statistics on the utilization of hospitals and other medical services during the last years of life, as well as of characteristics of the deceased person.

At best, the foregoing remarks provide a rough picture of the types of medical care statistics that have been collected in the National Center for Health Statistics. The Center's present program obviously does not produce statistics on all types of medical care. Some of the gaps are the lack of data about utilization of physicians, dentists, clinics, etc. We are collecting information from individuals in the Health Interview Survey about home care. But another survey of home care programs is needed to find out what they are doing and to determine the relationships between the characteristics of the facilities, their staffs, etc. I think you will agree that the Center has made a substantial start in the collection of medical care statistics, but much more needs to be done.

Medical Care Statistics Available From Other National Sources

Mr. Milton C. Rossoff, *Chief, Hospital Discharge Survey, Division of Health Records Statistics, National Center for Health Statistics, PHS*

Mr. Bryant had a relatively easy time, since virtually everything that the Center does is related to medical care statistics. Consequently, there was no semantic problem involved.

But we are faced with a problem of definition when we discuss national medical care statistics from other sources. The term "medical care" can run through the gamut of services and the provision of many things, as well as allocation of resources related to such services and conditions affecting these services.

Dr. White has limited the term "medical care" to personal health services as opposed to environmental health services. I am not inclined to quarrel with a concept that can be packaged so neatly, but it does leave me feeling somewhat uncomfortable. My own preference would be to go beyond services and also acknowledge the impact of environmental health factors, of economic and social factors, and, with respect to the latter, especially population—to consider the entire population, all of whom are possible recipients of medical care services. This is a population in constant flux, and we all know that this movement and change greatly affect the allocation and utilization of medical care resources.

With respect to the kinds of medical care statistics needed, we can think of this in many ways. For the most part, those aspects of medical care that we measure relate to quantity; there is less in terms of quality. As an evolutionary thing, this is quite understandable. Quality of medical care is measured by indices which, in the first instance, are dependent on the refinements of quantities measured.

The need for medical care statistics is shown by certain other statistics. Expenditures for health (and here I am including medical care) in the United States more than doubled in the decade 1950 to 1960, from $13 billion in 1950 to $27 billion in 1960. In 1964, expenditures were nearly $37 billion, nearly three times what they were in 1950. This tremendous growth represents growth in services, supplies, and research. To some extent, it also represents an increase in prices. The Consumer Price Index, with the base period 1957 to 1959 equal to 100, stood at 123 for medical care in November 1965.

In 1964, the percentage distribution of national health expenditures was as follows: health services and supplies, 91 percent; research and construction of medical facilities, 9 percent. When we break down the 91 percent, we find a large segment of this, 35 percent, to be hospital care, with physicians' services, 20 percent; drugs and drug supplies, 12 percent; dentists, 6 percent; nursing home care, 3 percent; net cost of insurance, 3 percent; government public health activities, 2 percent; industrial inplant services, 1 percent; and a scattering of others. The 9 percent for research and construction of medical facilities was distributed as 5.5 percent for medical facilities construction and 3.5 percent for research. Of the national health expenditures by source of funds, three-fourths were private, nearly all being paid by the consumer. About one-fourth were public expenditures, equally divided between the Federal Government on the one hand and the State and local governments on the other. Out of the $37 billion expended in 1964, $31 billion were spent for personal health care, with $15 billion of this representing third-party payment. One-half of the third-party payments was by way of health insurance, nearly as much by government, and somewhat less than 5 percent by philanthropy, etc.

The figures I have cited point to some of the axes of classification that could be used with respect to the kinds of sources of national medical care statistics. I omit reference to manpower statistics, as this subject has been discussed by others at this conference. Even omitting subjects like population and prices, any brief listing would be somewhat arbitrary and selective, in large measure because of the lack of clear-cut definitions.

I think of the kinds of data and, perhaps, their uses, too, in three areas: (1) levels of medical care; (2) trends in medical care—and here I am talking about recurrent surveys and studies; and (3) special studies that give more insight, depth, and meaning to those dealing in levels and trends. It is in these three areas that I have tried to look at the sources of data. I have broken these sources down into two types—governmental and nongovernmental. There are very few governmental sources, outside of the Center, which provide national medical care statistics—that is, statistics relating to the entire U.S. population. I think there are some that would come to mind quite readily, such as those produced by the Communicable Disease Center; those produced by the National Institute of Mental Health; those produced by the Division of Radiological Health, which relate to environmental aspects, rather than personal health care, such as the production of monthly data by States on the average radioactivity concentration in the air; and those of the Social Security Administration, which compiles statistics from a great many sources on national health expenditures and produces them on a regular basis.

But over and above these, I do not see that there are many agencies of the Federal Government producing data on either a recurrent basis or one which gives us a point from which we might make measurements at a later time. There are a few others, I know, and perhaps I will get to mention these along the way, because they are rather specialized and I have not included them here. Other agencies produce data on circumscribed populations. This is not to detract from what they are doing. They need the data for their own operations; as a byproduct, many of the statistics which they produce are important in throwing light on the entire medical picture in the United States. Here we have such agencies as those constituting the armed services, the Office for Dependent Medical Care, the Veterans Administration, and the Selective Service. Here we have some very special kinds of data. Although they relate to the young adult male population of the United States, we are afforded, on a recurrent basis, an excellent picture of the conditions for which men are rejected for induction into the armed services. The Social Security Administration produces data concerning persons collecting social security disability benefits.

The Federal Aviation Agency, the Interstate Commerce Commission, the Peace Corps, the Job Corps, and quite a host of Federal agencies are producing data on those groups with which they have specific concern. Within HEW, the Children's Bureau produces data on crippled children's programs and the Vocational Rehabilitation Administration produces data with respect to its particular programs. In the Public Health Service, we have program-oriented data produced for the most part by the Division of Indian Health, the Division of Hospitals, and the National Institute of Neurological Diseases and Blindness which is conducting a long-time perinatal study. Also in the Public Health Service, the National Cancer Institute produces data which come partly from the cancer registries of certain States as well as Institute-produced statistics on incidence of cancer, mortality, and survival following treatment.

The Division of Chronic Diseases in the Public Health Service has two surveys of interest to this workshop. The first is a study begun in 1955 based on a nonprobability sample of about 125 U.S. colleges reporting on examinations of entering college freshmen. This is an annual thing, and so far information has been collected for about 10 or 11 years. The Division has come up with figures on prevalence of rheumatic fever and history of rheumatic heart disease by sex and race. A second study which the Division of Chronic Diseases has just started through the American Hospital Association and the American Osteopathic Hospital Association is a survey of heart disease patients, outpatients, and the facilities and equipment related to heart disease patients. The data are being obtained from approximately 5,000 hospitals. It is planned to repeat this survey about every 5 years.

Among the nongovernmental sources, I think the American Hospital Association is probably the most important of these in terms of the production of national statistics. At this time I shall not discuss the kinds of statistics that AHA produces because this would infringe on the time of other speakers. The Professional Activity Study (PAS) of the Commission on Professional and Hospital Activities produces very valuable hospital statistics, although it should be recognized that this is not a probability sample. The Blue Cross Association produces data concerning people covered by Blue Cross plans; these statistics are especially important in view of the expenditures and the large population covered by these plans. Other sources include the Metropolitan Life Insurance Company and the National Academy of Sciences and National Research Council. (I am not sure whether this is a governmental or nongovernmental organization.) Although they are not producing data relating to the entire population, nevertheless their followup studies of the veteran population are extremely important. Here we have retrospective and prospective studies that have given us a wealth of information about specific diseases and groups of diseases.

Well, the list is a long one. It has been curtailed greatly. It really is a broad-brush view, and I felt that after we had begun to look at what many of the Government agencies and nongovernment organizations are doing it would be desirable to have such information gathered in one place. I think one could easily spend weeks trying to find out what kind of medical care statistics others have. I should like, therefore, to make a recommendation to this group that a mechanism be set up for the coordination (with respect to assembling and disseminating) of medical care statistics; that there be a central warehouse of medical care statistics, both governmental and nongovernmental; and that this be lodged in some existing agency, preferably within the Public Health Service. At the present time the closest we can come to any compilation of statistics of this kind, I think, is in the Statistical Abstract that is published by the Department of Commerce, and the medical care data therein barely scratch the surface. I believe those of us here would certainly prefer to see many other kinds of statistics published, so I leave you with that recommendation.

Medical Care Statistics in Canada

Dr. Robert Kohn, *Associate Professor, Division of Medical Care and Hospitals, School of Hygiene and Public Health, The Johns Hopkins University*

I interpret the "medical care" in the topic assigned to me to mean health services generally and not just the services of physicians.

Why should Canadian health services statistics be of interest to the Public Health Conference on Records and Statistics? For one thing, the general pattern of health services in Canada and of the agencies providing these services is quite similar to that in the United States. At the same time, however, Canada has experimented with and developed certain new forms of organizing and financing health services. These programs have yielded statistical information which in many respects is unique in North America and which has provided planners in the United States with data not otherwise available. Moreover, constitutionally the relationship of Canada's Provinces to the Federal Government in Ottawa is very similar to that of the States here to the Government of the United States. For these reasons, there has always been a lively exchange across the border not only of information but also of scholars interested in the problems related to the provision and utilization of health services. American experts have come to Canada to help in the planning of health services; Dr. Sigerist went to Saskatchewan and recently Dr. Getting to Nova Scotia to assist in provincial health services planning. On the other hand, there are many students of health services in the United States who have come here with experience in Canadian medical care programs. The pages of U.S. journals contain many articles analyzing data derived from Canadian programs.

Canadian health services statistics have by and large remained as fragmented and unsystematic as the way in which these services are provided. Statistics on a national basis are, therefore, limited and with but few exceptions exist only where there is a universal national program such as hospitalization. But there are other programs which, within their confines, have yielded most useful statistical data.

Canada has a nationwide universal system of hospital insurance based on the Hospital Insurance and Diagnostic Services Act of 1957. All 10 Provinces and two Territories are now parties to agreements under the Act with the Federal Government, and about 99 percent of the population are insured. The Dominion Bureau of Statistics, Canada's central statistical agency, has for many years maintained a fairly comprehensive system of hospital statistics based on returns from the individual hospitals. These reports contained data on hospital facilities, personnel, and finances, as well as some rudimentary statistics on the movement of patients. Hospitals have always been looked upon as institutions with a responsibility to the public, and thus we find accounts of the financial operation of certain hospitals in public accounts dating back as many as a hundred years. The advent of national hospital insurance has not only brought about an increased demand for uniform reporting but also for far more comprehensive reporting on the part of the participating hospitals. The program actually consists of 12 provincial and territorial programs whose costs are shared by the Federal Government. Hence, there are annual reports on the operation of the scheme in each Province and Territory, the Saskatchewan reports going back to 1948 when that Province first instituted its provincial hospital insurance plan. The Dominion Bureau of Statistics in Ottawa prepares an annual report showing national and provincial data derived from the returns of the individual hospitals. These reports deal in great detail with the various aspects of hospital facilities, personnel, services, and finances, as well as with the utilization of hospitals. The report is now published in seven volumes, including a presentation of analytical hospital indicators which relates a wide range of hospital service and financial data to units of beds, patient days, etc. These reports are now being supplemented by detailed hospital morbidity statistics derived from individual discharge records. The Department of National Health and Welfare publishes annual reports on the operation of the hospital insurance scheme, the emphasis here being on cost data supported by certain utilization statistics. This Department also summarizes annually certain hospital morbidity data received from the Provinces. This relates to general and allied hospitals.

Mental and tuberculosis institutions do not fall under the provisions of the Hospital Insurance and Diagnostic Services Act. But for these institutions, too, the Dominion Bureau of Statistics has for many years published statistics on their facilities, operations, and utilization, supplemented by data on annual patient censuses.

Of particular interest to the hospital planner are hospital surveys carried out by provincial hospital insurance agencies to provide the information necessary to plan the provincial or regional hospital services.

This is just about the extent of regular national health services statistics. The vital statistics provide data on the percentage of births and deaths occurring in hospitals. Attempts to obtain additional data on health services related to births and deaths are always limited by the basically legal nature of the registration system which must not be impaired by too many incidental statistical demands.

The regular routine statistics are supplemented by occasional research projects carried out by the Department of National Health and Welfare dealing with such matters as nursing activities, treatment in mental institutions, surveys of voluntary prepayment plans, etc. Provincial hospital insurance also carries out a very extensive research program on various aspects of hospital care. A list of these ad hoc projects is prepared annually by the Federal department.

In regard to physicians' services, no national statistics are available; nor is there as yet a national program of insurance for medical care as such. The Federal Government plans to introduce such a plan and share its cost as of July 1, 1967. It is not yet clear, however, to what extent provincial plans will vary in their basic organization and, hence, what uniform statistics may be expected from that scheme. There has been a system of public medical care insurance in operation in one of Saskatchewan's health regions (Swift Current) since 1948, and regular annual statistics have been available on the experience of that plan, as well as on the utilization of a plan operated by the Province of Saskatchewan for its assistance population. The universal medical care insurance scheme instituted in Saskatchewan in 1962 results, of course, in a gold mine of information on the original records, machine tapes, etc., of which so far only some very basic data have filtered through into the annual reports of the Medical Care Insurance Commission.

The voluntary medical care insurance plans in Canada, sponsored similarly to the Blue Shield Plans by the medical profession, have been very uneven in the degree of their statistical sophistication. Many studies carried out by these plans have never seen the light of publication. Exceptions are the Windsor Medical Services (there have been reports from time to time in the "Milbank Memorial Fund Quarterly") and Physicians' Services Incorporated of Ontario where leRiche and Stiver have carried out a good deal of research published partly by the plan and partly in the Canadian Medical Association Journal. These prepayment plans as well as Trans-Canada Medical Plans, their national organization, have provided the Royal Commission on Health Services with a certain amount of data, particularly on the cost of their services. A comprehensive study on the present and projected cost of medical care in Canada was carried out for the Royal Commission by C. H. Berry under the title "Voluntary Medical Insurance and Prepayment." Patterns of medical practice have been studied, on an ad hoc basis, by Clute in his investigation of general practice in two Provinces and in a survey undertaken several years ago by the Therapeutic Index. Modern Medicine of Canada has also from time to time surveyed certain aspects of the physicians' workload.

Certain data on health units and their activities are contained in the annual reports of provincial and certain municipal health departments. Several years ago, a national survey of health unit facilities was carried out.

The program of national health grants to the Provinces has, since its inception in 1948, sponsored many projects related to health services and their utilization; many of these are never reported except to the grant agencies. Because so much of the results of research carried out in this field is never published or otherwise not generally known or available, the Canadian Public Health Association has recently undertaken to survey annually, through the Department of National Health and Welfare, health agencies throughout Canada regarding their research activities. The resulting annual inventory of research is probably still far from complete but constitutes a hopeful beginning.

Case registers, such as those for tuberculosis, cancer, handicaps, psychiatric disorders, and other chronic diseases, are an important source for medical care statistics, a source which in Canada has been exploited to a limited extent only.

When, in 1961, Canada appointed a Royal Commission on Health Services to inquire into and report on ways of providing the best possible health care for all Canadians, the Commission was faced with a desperate lack of adequate statistics on health services, their resources as well as utilization. It had neither the resources nor the time to remedy this lack. As part of its own research program, the Commission undertook a limited study of the utilization of physicians' services, of dentists and nurses, and of organized home care plans. The Commission's report contains a number of recommendations aimed at improving health statistics in general. Volume II of the report contains chapters devoted to research and statistics, emphasizing particularly "the need for statistical information in the future to evaluate health progress and the effectiveness of the recommended health services programs." It was the need for this kind of research which led the Commission to recommending the expansion of the existing Medical Research Council into a Health Sciences Research Council.

If the Canadian Royal Commission on Health Services identified the lack of coordination and rational organization of our multiple and fragmented health services as one of the major problems, this applies particularly also to the health services statistics. What is needed here, too, is a coordinated system, aided by modern data collecting and processing methods. The statistical process itself must be subject to continuous evaluation in order to avoid collecting statistics only for statistics' sake and, also, in order to ensure that the relevant statistics are available whenever it comes to major planning in the field of health services.

SSA's Statistical Program on Health Care of the Aged

Mr. Howard West, *Director, Division of Health Insurance Benefits Studies, Office of Research and Statistics, Social Security Administration*

By way of beginning, I should like to amplify some of the things mentioned during my talk on the "Social Security Administration's Statistical Program on Health Care of the Aged" at the second general session.

As a part of this program, we are going to be collecting a considerable amount of information about institutions. One of the forms we will be using for this purpose is the "Hospital Request to Establish Eligibility in the Health Insurance for the Aged Program." Similar forms will be used for extended care facilities, home health agencies, and other agencies which are applying for certification. The information being collected can give us a reasonably good picture of some of the characteristics of institutions applying for participation in the program.

These institutions are being surveyed by State agencies, which have contracts with the Social Security Administration to carry out an evaluation of each of the institutions to determine whether they meet the standards promulgated for participation in the program. We will, therefore, be able to link and utilize data for these institutions and to classify them as to size, staffing, and certain other characteristics. General characteristics of these institutions are noted on the back of the form. All of the hospital bills will be related by identifying numbers to the characteristics of these institutions.

It will be possible to develop data which not only identify the kind of institutions in which the aged are getting hospital and other services, but their location and where their aged admissions come from. It will also be possible to identify the aged in terms of where they live and where they go for services. The actual evaluations being done by the State agencies are routed to us through a channel which includes the regional offices of the Public Health Service. We hope to be able to translate these evaluations into statistics. To the extent that these data are complete and accurate, we will have details on the particular standards and the particular factors in those standards which were met by hospitals and other institutions.

One question that has been raised concerns the 5 percent sample to be used for part B. This is 5 percent of total beneficiaries eligible for part B, and not 5 percent of the 20 percent sample to be coded for part A. Both of these samples are samples of total persons eligible, in which particular claims number digits are identified and selected. The 5 percent sample is actually a subsample of the 20 percent sample. There is a difference in the samples in that the 20 percent sample is really a coding sample for diagnosis and procedure; we are actually receiving 100 percent of these bills. We are going to be coding the discharge diagnosis and surgical procedure information for 20 percent.

Of the 5 percent of eligible persons, theoretically about 30 percent will not use any medical services in any one year—30 percent of the persons enrolled for part B. Another 30 or so percent probably will not exceed the $50 deductible. Roughly, 60 percent of the persons identified for the 5 percent sample will not be represented by reimbursed bills. The sample is not 5 percent of the bills; it is 5 percent of the people who will have a variety of experiences, ranging from zero all the way on up.

Another question concerns our publication plans. We are planning a series of reports which will stem initially from our interview sample in order to get currency, but we will also be tabulating the actual receipted paid claims on a monthly basis. However, until we can accumulate the flow over time and get a clear picture of the relationship between events as they occur and bills as they flow, we are not able to say when we will begin publishing data.

A question has been asked about diagnostic codes and coding procedures. The ICDA is being used as the diagnostic code, and decision has been made to use the new AMA Current Procedure Terminology for our procedure code. There will be difficult problems in coping with diagnostic key data. For example, the initial bill may report a brain tumor (questionable) which turns out in a subsequent report to be tension headache. It seems to me that the meaning of these data has to wait for linkage studies. If we take cross-sections of the data as reported, we can expect these kinds of variations. If we try to put them together, I think it may turn out a little differently.

While we are going to code only the principal diagnosis on discharge, we will also code the number of other diagnoses shown. We are trying to provide a means to go back for studies in depth. For principal diagnosis, we will use the face sheet of the hospital record, although we will also have the physician's description on his bill. Coding is being done manually, and use of other techniques will be introduced later if it proves feasible. The basic idea that we have been proceeding on is that the primary discharge diagnosis will be listed first on the hospital form. However, in addition to coding rules, we will expect to have coding judgment in making determinations.

In answer to the question about special studies, let me say that there are a number of areas where special studies will be required. In our interview survey, we are going to get specific information concerning the deductibles and coinsurance. As a matter of fact, it has been designed to follow people for the 15-month period during which the deductible is operative. So we will be getting the data in that way. It remains to be seen as to what will happen when people find they are not spending $50. Many of the Blue Cross plans, the Blue Shield plans, and the insurance industry plans generally have been attempting to supplement the Medicare program to cover some deductibles and some of the coinsurance.

Another question that has been raised concerns differences in nomenclature between the hospital and physician billing forms as it relates to diagnosis. It is still too soon to know whether this may create problems from the standpoint of statistical tabulations. One of the real problems with the physicians' billing form is that very frequently there just is no diagnosis. Some of these bills will have questionable diagnoses; some will be just symptoms; and still others will be conditions. So with this in mind we did deviate in nomenclature. We would expect a definitive diagnosis on the hospital discharge bill; we would not expect it all the time by any means for the physicians' bills. Very often, this physicians' form is going to say "office visit," "examination," or something similar. But we hope we can study the relationship between the data which the physician records when he bills for a hospitalized case and the hospital discharge itself.

The Health Resources Data Center

Mr. Royal A. Crystal, *Deputy Chief, Health Economics Branch, Division of Medical Care Administration, Bureau of State Services, PHS*

In his presentation today, Mr. Rossoff recommended that a mechanism be set up for the coordination (with respect to assembling and disseminating) of medical care statistics; that there be a central warehouse of medical care statistics, both governmental and nongovernmental; and that this be lodged in some existing agency, preferably within the Public Health Service. This may be the fastest response to a suggestion that has been made in a long time. The Division of Medical Care Administration of the Public Health Service is in the process of establishing a Health Resources Data Center, which will, I think, embody a lot of what was meant by the suggestion. What the Health Resources Data Center will be attempting to do is:

1. Develop a statistical base for program planning and evaluation through the construction of local and regional health resources profiles, which will identify all existing health resources in a given population area. The objectives of the profile are:
    a. To delineate the extent of utilization of exist-health resources;
    b. To determine through statistical analysis the need for additional health resources in a given profile area;
    c. To determine the interrelationships of different types of health resources in the profile area;
    d. To determine whether each resource in the profile area is being optimally utilized; and
    e. To develop indices of quality standards in a profile area.
2. Provide a statistical base for the identification of problem areas. The generated data will be available for utilization by the appropriate health agencies in carrying out their medical care responsibilities.
3. Collect, consolidate, and coordinate health resources data from various sources; especially as they relate to the health insurance for the aged program.
4. Provide information and answer inquiries from public and private agencies and organizations relating to the factual base of health resources and medical care data.

This is an activity which is just really beginning at this time, and I am sorry that we do not have a great deal of data that would be immediately helpful to everyone. However, the Data Center will be operational in a fairly short period of time.

Except in unusual instances, the Data Center will not conduct surveys itself. Rather, it will acquire and work with data collected from and by other groups and collaborate with these groups to the greatest possible extent. Initially, the Data Center will compile detailed information on the extent and characteristics of health resources (facilities, personnel, etc.) throughout the country in order to provide community inventories of available resources and services. After completing basic health resource inventories, the Data Center plans to obtain the results of various community health research and demonstration activities and add these data to its files. Information on morbidity, mortality, resource utilization, and socioeconomic characteristics of communities will also be retained by the Data Center for use in community analysis. A majority of the data obtained will be stored on magnetic tape and will be available for rapid retrieval to meet information requests.

One of the initial purposes of this entire activity is to determine the location of potential medical care trouble spots in advance of problems and to suggest possible corrective action. In the long run, we hope to have information on the total medical resources in the country, which can be looked at on a county-by-county or community-by-community basis. We feel that this type of data will, of course, be very helpful to the Public Health Service, the

Department, and State and local agencies for planning purposes.

The Data Center has as its objective the provision of service. It will endeavor to provide information for both management and technical purposes, as requested by all data users. Our plans are to issue reports on selected topics at regular intervals, as well as occasional special reports of significant interest to data users. In addition, detailed reports will be prepared in response to requests for special information. We hope to make all of this information available to States, to other health agencies, and to anyone else who needs this type of information.

We are planning to meet with the various State agencies in the not-too-distant future to find out what information does exist, what problems exist, and what the gaps in existing data are. In this regard, we will also want to look at the larger communities as separate entities for data purposes. Ultimately, all of this can lead to a fairly extensive data bank which can be useful to everyone.

I want to stress most emphatically that in carrying out these activities we do not intend to duplicate the work of other agencies or organizations. We hope to develop very close working relationships as we determine the types of data that each agency has and how we can best collaborate in their use. The Data Center will attempt to augment existing data once we have information on what are available from various sources. However, from a practical standpoint, we recognize that this is a long and complex process. We will, therefore, be looking to many of you for advice, assistance, and active cooperation.

Medical Care Statistics

SECOND SESSION

Mr. Sam Shapiro, *Director, Division of Research and Statistcs, Health Insurance Plan of Greater New York*

Today, we are concerned with vital issues that face not only the providers of medical care, but also those people who are responsible for developing measures that will assist the planners of the new programs and point the way to changes that may be needed in these programs. To the public health statisticians who have been coming to these conferences for a long time, many of the words spoken sound very familiar—planning, standards, quality, resources, evaluation, records, and systems. In fact, several important documents have come out of the Public Health Conference on Records and Statistics in which these terms have appeared prominently. But today they are being used in a quite different context. The canvas is extremely broad; it is as broad as anyone can imagine in the field of medical care. It includes physicians' services, institutional services, dental care, drugs, the works—you name it, and it is there; and as a result we have to clarify the new set of responsibilities faced by the public health statistician and possibly point the way to new approaches in the field of public health statistics.

A word is in order concerning Mr. Harry Becker who will be our first speaker at this session. Harry Becker is currently executive secretary of a special committee at the New York Academy of Medicine, and we feel very fortunate in being able to interest him in coming here. His interest has been for many years in social policy and planning in the field of medical care. Before joining the Academy, he was a county director of welfare in Kansas; later he became the State director of children's health and welfare services in Nebraska. He was with the New York City Health Department as a consultant in medical care administration and has worked closely with people in the field of welfare and social security administration. For a number of years, Mr. Becker was with the National Blue Cross Association. Finally, he has become well known to all who are concerned with medical care from a policy standpoint as a projector of issues well in advance of the time when they become burning issues for consideration by the general population.

Implications of Titles XVIII and XIX for the States

Mr. Harry J. Becker, *Executive Secretary, Committee on Special Studies, The New York Academy of Medicine*

On my way down yesterday to meet with you, I was recalling my experiences in the Yale and Columbia Schools of Public Health and thinking through what I was taught about public health statistics. I was trying to daydream about the difference between the public health statistics we collected 25 years ago and those we need today. Then I began to project a little about some of the things you might be concerned with in the States, in the communities, and in the Federal Government in contrast to what I was familiar with when I was in Washington and the Schools of Public Health. I think the areas of primary concern in the field of public health statistics have changed very markedly in the last few years. For the most part, in the last several decades, we have been struggling with somewhat the same kinds of problems. But all at once, we have thrust upon us a whole new area of concern, which we have talked about and been on the edges of; but now we are in the main stream, and we are no longer on the outside looking in.

I am referring quite specifically, for example, to the Medicare Act, passed last year, as being the first major piece of social legislation since the midthirties when the Social Security Act itself was enacted. It is, in fact, the first major change in social policy in relation to the role of government in the health services in our country since the country was founded. Most of us, I think, are so close to the day-to-day operation of the Medicare program in all of its various ramifications that we are quite unaware of the revolution in which we are living. We are in the beginning stages of a revolution in the financing and organization of personal health services. And this revolution was brought into focus at the time that Congress acted on the Medicare bill. I think in this new revolution it is you people in the field of statistics and research who are at the very center of this whirling storm that is building up around us.

Probably never before in our lifetimes has it been more important to have data collection and analysis before public decisions are made in the health care industry. For the first time—and from now on—the statistician is probably going to be the most important person in the whole health care industry, with the exception of decisionmakers themselves. I feel quite strongly about this because of the fact that we are now in the beginning phase of the revolution I mentioned. Revolution means movement; it means action; and eventually it will mean some resolution of the problems. We are crying for facts on the whole problem of medical care financing, organization, and all the rest. It seems to me that we are going to be turning to you people more and more for the factual basis for decisionmaking. The basic policy decision, or the basic political decision, has more or less been made, so from now on refinements and the strengthening of these new programs are going to be based on experience and analysis.

Very briefly, I should like to point out some of the conflicts that I think exist. Title XVIII becomes effective on July 1, 1966, and title XIX is causing every State at the highest legislative and policymaking levels to rethink all of its historical concepts. You, who work with the records and statistics in the States and are responsible for their interpretation, must appreciate that you are becoming increasingly more important to your Governors, your legislators, and the others who are formulating and shaping up the new thinking in the States. What is going to be done about title XIX? How is the State going to relate itself to title XVIII, to such programs as poverty, regional heart disease, cancer and stroke centers, etc.?

The electronic mechanisms that are now available to us and the people who determine the input and analyze the output are, in my judgment, in the final analysis, going to be the most important factor in decisionmaking in the future. Strange as it may seem, we have long been fighting these battles on the medical care front with ideology as a principal tool. But from now on, I think we are going to fight more with the product from the computers than we are with ideologies, because the ideology problem, as I have said, is largely behind us—not entirely behind us; but we have made the breakthrough. And the breakthroughs that we have made this past year are pointing pretty sharply in one direction.

I make these opening remarks because the legislative breakthroughs in this past year, in my judgment, are only the beginning of a large number of changes in public policy in relation to all aspects of health care. I would include workmen's compensation programs and related programs that we do not ordinarily think of in the States as being in the medical care field. The States are going to be increasingly concerned, for example, with the problems of community coordination as suggested by the heart disease, cancer, and stroke legislation. Obviously, the States—the State health departments specifically—are no longer, for example, going to be able to take a hands-off policy with respect to voluntary insurance. Voluntary insurance has now, for all practical purposes, moved into the public sector with the Blue Cross organizations, for example, being the fiscal intermediary for part A under title XVIII. They are no longer a private organization in the sense they were prior to the present functions they are now assuming. There are lots of ramifications of this sort which are coming into focus very quickly and coming within our scope of health department concern. We are going to have to bring these new concerns into our statistical thinking, into our statistical studies and analysis.

Before talking quite specifically about title XIX, let me give you a little overall view on some ideas about which I have been thinking. It seems to me that the Medicare bill as passed by Congress has created for us three diametrically opposed programs. If one is right, the other two are wrong. If either one of the other two is right, then the other two are wrong. These three programs do not mesh. They do not mesh philosophically; they do not mesh in terms of principles; they do not mesh in many respects so far as I am concerned; and I do not think they are going to stand up for long in their present forms. At some point, we are going to have to bring a more rational and orderly approach to all of these three programs. For example, we have said it is national policy in our country that all of the aged people—regardless of their income, regardless of the place they live, regardless of whether they are working or not working—are going to have a relatively high level of hospital benefits as a matter of right. We are backing up this right by a nationally established and administered compulsory hospital insurance program financed in this instance primarily by payroll tax, with employer and employee contributions.

We have said, at the same time, that the same group of aged eligible for the first program are going to have the right to elect on a voluntary basis to pay $3 per month into a Federal medical insurance plan and receive specified cash indemnity benefits—paid either directly to them or to their doctors—to meet part of the cost of their physicians' services. Whenever expenditures of funds under the voluntary program are insufficient to meet the costs of the benefits promised, Congress is going to underwrite the difference from general revenues. The amount not covered by the voluntary medical insurance plan is a risk assumed by the aged or by the Federal-State title XIX programs.

In the first program, the compulsory hospital insurance plan, we find the principles are pretty largely those we had in mind in the 1930's and the 1940's when we were talking about a national health insurance program in this country. Part A of title XVIII is patterned pretty closely after the national health insurance concepts of the thirties and the forties. On the other hand, the voluntary medical insurance plan meets virtually all of the principles that the American Medical Association wanted incorporated in a program which they called, about a year ago, "elder care."

Now the principles of the voluntary medical insurance program do not jibe with the principles of the compulsory hospital insurance program. Parts A and B are two quite different kinds of animals under the same tent. The voluntary medical insurance program, for example, is almost precisely what the AMA advocated; it is a voluntary program, not a compulsory program; it is administered through the private sector, largely by Blue Shield, which again is a doctor-sponsored organization. The doctors set their own fees, and they can charge each patient what they want to charge that patient. There are deductibles and coinsurance features which people who have been sponsoring this type of program have wanted for a long time; there is recognition of the fee-for-service principle; and there are measures in this act which will tend to discourage hospitals from providing medical services by paying physicians on a salary or some other basis. It is virtually unlimted free choice of physician, and it contains all of the other principles with which you are so familiar.

These two systems, parts A and B of title XVIII, are too incompatible in concept to stand for long without some basic changes. The need for these changes is going to come into focus rather rapidly and will be the subject of amendments at the next session of Congress. From there on out, the momentum for legislation changes will build up. But in the final analysis, I feel it is going to be the data and the formulations that are supplied by you people which will determine the direction of the changes that we make in these two programs. To the extent that part A is not meeting the problems where program meets people, and to the extent part B is falling down, it seems to me you people are going to be the ones who set up the mechanisms with the capacities to pick up the problems.

We appreciate that parts A and B together are only going to cover about 40 percent of the costs incurred by the aged group. Even that may be too high a figure. Many aged people in the States and communities are going to be shocked when they find that parts A and B cover only 40 percent. My experience in the past few months has been that most aged persons think Medicare is going to cover the whole cost of needed medical services. Many of the aged are going to fall back on State and local programs for those services that are not covered by parts A and B when they cannot pay for those services from their own resources. We have yet to eliminate the "means test" for the aged.

So it becomes particularly important for you to be familiar with the way parts A and B operate in your State. To gather the data necessary, you will understand the process that is going on and can interpret it to your principals—the Governors, the legislature. You will be among the first to know when a large segment of the aged is falling back on State and local resources for a major portion of its health care expenses after July 1, 1966.

Now we have superimposed on these two programs what we are calling title XIX. Congress, without too much articulation and without very much discussion, in hearings and otherwise, seemed to realize that the failure of the Kerr-Mills program to meet the public expectations with respect to the aged could not be laid aside by passage of title XVIII without something being done for the aged unable to pay uncovered costs as well as for the other disadvantaged groups. In effect, what we did on title XVIII was to say that the Kerr-Mills program was not the approach of choice in this country for the aged; we had to have another approach. We could not quite make up our minds whether we wanted the approach of choice for the aged to be primarily part A or primarily part B. So we put in both. But we realized when that move was made that we could not do one thing for the aged and do nothing for the other disadvantaged groups. So title XIX, whether we like it or not, really is an attempt to face the fact that in a country like ours you cannot do a program for the aged—who are as a group a disadvantaged category—and then say to all the other disadvantaged people, "We are not going to have any concern about you." So title XIX makes an attempt to do something about the other disadvantaged groups.

One of our immediate problems is going to be to define what is a disadvantaged group with respect to the other categories of persons—and here I am talking about categories of public assistance. If we are completely logical, this definition of disadvantaged groups for the other categories than the aged must bear some definition, some relationship, to the criteria used for saying that the aged as a group have presumptive need of the magnitude that we have recognized in the passage of title XVIII. If we take, in some general terms, the criteria of presumptive need that we have set up for the aged and move from there in the States, we can identify and analyze the population groups that are in like circumstances to the aged. We can then begin to collect statistics and analyze the problem faced by the States and the people in the States who cannot pay for necessary medical care. You will not only have a very interesting problem but also one that must be undertaken. It seems to me, we have no choice at this time. Because title XIX, which really bears no resemblance to title XVIII, picks up where title XVIII leaves off. We have got to start now to think about our responsibilities to provide equity to all the population groups which are in the same circumstances, roughly, as are the aged. We have said, for example, that when Federal funds are used for medical assistance under title XIX there is a Federal standard that must be observed by the States. Under title XIX we have also said that physicians must be paid reasonable charges.

We have gone a long way in title XIX in contrast to what we have done in other Federal grant-in-aid programs. But what we have failed to say in title XIX is that the level of protection to be available to all people in this country is going to be a matter of right, and not a matter left to the social-policy decision of individual States. I point out that here again in title XVIII we are saying nationally that we underwrite and guarantee levels of protection and eligibility as a right. But in title XIX, we are saying to the disadvantaged groups, "What you get depends on the social policy adopted by the State where you live, even though the Congress has set up a broad policy framework which if fully implemented by the States would give the other disadvantaged groups even more than title XVIII."

The hard core of this problem is that we have left title XIX up to the initiative of the States. For how long can the programs in States like New York, Massachusetts, and California be explained to people in States with less adequate programs? Per capita income in the States is not, perhaps, as important a factor in determining adequacy of programs as is the State's social commitment. The people in the States with higher social commitments are going to take out a disproportionate amount of money from Federal funds under title XIX. These States are also going to provide for their people what other States in some cases are not willing to do at all. We cannot have these inequities existing throughout the country without having a political decision to make on our future course of action. Here, again, I plead with you and your colleagues to give the statistical and factual basis for some intelligent planning on how we meet these kinds of problems.

Title XIX is broader than our customary concepts on grant-in-aid programs under public assistance. It follows more closely the early concepts developed under the grant-in-aid program for handicapped children. Title XIX, however, does leave completely outside of any program what I would call the general relief group. This really means that we have got four categories of situations: (1) the aged with compulsory hospital insurance which is relatively good protection; (2) the voluntary programs of medical insurance for the aged; (3) title XIX—which I think is going to go the path of the Kerr-Mills programs for the reasons I have given, primarily the State initiative problem; and (4) a category of disadvantaged people for whom nothing has been done—they are still the responsibility of their communities and States; the National Government is not as yet concerned about them.

Obviously, this situation cannot continue. You people are too logical and orderly in your thinking to accept this kind of a situation. So, the conclusion obviously is, as I see it, that on one hand we give guarantees for some groups and on the other we have done nothing for other groups. We really have not established a national policy on how health care for the disadvantaged is going to be financed. But we are now testing out basically four different approaches, and you people are the ones who are going to have to give us the results of that test. I am convinced that in the next few years there is no domestic issue in this country which will receive more public attention, debate, and consideration by the Congress and legislators, as well as the press and radio, than this whole problem of how we are going to finance and organize health care. Factors including the financing and organization of health care together with determination of reasons for rises in cost are now in a stage of ferment. As long as that ferment exists, this problem is going to be on top of the domestic agenda.

You people are at the very center of concern, because you are the ones who can furnish the answers on the factual basis that will determine the direction we are going to go from here on out. I plead with all of you to go home, roll up your sleeves, think about this broad problem of medical care, and then start putting together all the pieces that are needed for intelligent, public decisionmaking. This is no longer a problem that is going to be kept private; this is now a public issue, a public problem, and all the facts are going to be ventilated in the forums of public opinion. You people either have the facts, or you have to produce them, one way or the other.

Major Responsibilities of Federal and State Agencies Under Title XVIII

Mrs. Dorothy Rice, *Office of Research and Statistics, Social Security Administration*

It is rather difficult to follow Mr. Becker after his pronunciation that the basic philosophies of the three programs established under the Social Security Amendments of 1965 are diametrically opposed and that changes in the law will be forthcoming in the near future to obtain a more rational national policy to provide medical care to the various population groups. In spite of Mr. Becker's dire warnings, the Department of Health, Education, and Welfare does have a responsibility for carrying out the Social Security Amendments of 1965, and we intend to see that they are carried out.

My topic for discussion is to describe the major responsibilities of the three Federal agencies and the State agencies under title XVIII of the Social Security Amendments of 1965. I will leave to Mr. Mulder and to Mr. Mugge, of the Welfare Administration, the task of describing the role of the Federal and State agencies under title XIX.

The Social Security Administration has the responsibility for policy formulation and for the general management and operational aspects of the program. Briefly, these include the following: First, the determination of the individual's entitlement to benefits and the nature and duration of services for which the benefits may be paid.

The second responsibility is the establishment, maintenance, and administration of agreements with State agencies, providers of services, and intermediaries. In this area considerable progress has been made. Agreements have been made with the State agencies in all States and with a considerable number of intermediaries. We are proceeding to make agreements with providers of service if they are certified by the State agencies as meeting the conditions of participation.

A third responsibility of the Social Security Administration is consultation with the Public Health Service and Welfare Administration in the formulation of major policies regarding conditions of participation for providers. The Public Health Service has worked very hard in this area and has consulted with many public and private agencies in the development of conditions for participation for hospitals, extended care facilities, home health agencies, and independent laboratories. These conditions for participation are set forth in four publications which are now available for distribution.

The fourth responsibility of the Social Security Administration is the development and maintenance of the research and statistical program. In his presentation yesterday, Mr. West described in some detail the centralized statistical system which will be maintained at the Federal level to report the utilization and financing of hospital and medical services by the aged under the program. We envision a strong and broad research program based on statistical data obtained from the reporting system, as well as data outside the program obtained on a special study basis.

Another responsibility of the Social Security Administration is the general financial management of the program. In the first year of the program, it is estimated that more than $3 billion will be paid out in benefits under title XVIII. The Social Security Administration will maintain records of the flow of funds.

The Social Security Administration also makes the determinations of reasonable costs and amounts to be paid to providers who have elected to deal directly with the Government. Under part A of the program, individual providers may nominate an intermediary to serve in the claims process or the provider may deal directly with the Social Security Administration. In the latter case, we have set up administrative procedures to handle this aspect of the program.

The Public Health Service has the principal responsibility for carrying out the professional health aspects of the program. These include professional consultation and recommendation to the Social Security Administration in development of health and safety and other guidelines for determining whether providers of services meet the conditions for participation under the program. As previously indicated, the Public Health Service has performed a tremendous job in a very short time in preparing these conditions for participation after consultation with many public and private agencies. The Public Health Service also has the responsibility of consultation and advice to State agencies concerning the application of standards for providers. This is a very important function that is going on at this moment, and this is a continuing function under the program. The Public Health Service is also responsible for the coordination of program activities with other health services and activities in the State. This is also a very important function in which the Public Health Service can serve as the coordinating agency for the wide variety of health services provided in the States.

The third Federal agency involved in the administration of title XVIII of the Social Security Amendments of 1965 is the Welfare Administration. It has a primary role in hospital and medical insurance program planning, coordination, and evaluation in matters that affect other federally aided assistance programs; in assisting State agencies to achieve a coordinated approach with other medical care plans under the Social Security Act; and in all other aspects of program administration affecting public welfare agencies. The Social Security Administration is working closely with the Welfare Administration in several areas of mutual concern. Arrangements are being made for States to pay the premiums for the public assistance recipients they enroll.

The role of the State agencies in carrying out title XVIII of the Social Security Amendments of 1965 is described as the three "C's": certification, consultation, and coordination. I have mentioned the certifications that are made by the State agencies to the Department of Health, Education, and Welfare indicating whether hospitals, extended care facilities, home health agencies, and independent laboratories meet and continue to meet their respective conditions of participation. This function is intended to be a rational adjunct to ongoing State activities, such as licensing of health facilities and other standard-setting activities. In this connection, I was asked whether there are any statistical responsibilities or requirements that are given to the State agencies in the area. We will have a central master provider file in Baltimore which will be based on applications for participation under the program by providers of services. These applications will be transmitted through the State agencies and the Public Health Service. Although data will be available from a central file, the State agencies do have a responsibility for maintaining their own files for their own information. The certification process is an ongoing responsibility and not one which ends on July 1, 1966, when the provider of service is certified for the first time. This continuing responsibility clearly requires maintaining records at the State level. The Social Security Administration will be in a position to provide to the State agencies lists of providers of services together with considerable provider characteristics. We hope that this will be a two-way street where State agencies will use the capabilities and resources of the Social Security Administration and the Social Security Administration, of course, depends upon the State's agencies to supply the data for certification under the program.

The consultation services of the State agencies also are very important because they include consultations with hospitals, extended care facilities, and home health agencies that need and request assistance to meet the conditions of participation. This is an integral part of the certification process.

Coordination by the State agencies relates their activities in the performance of their functions under the program to the various other programs in the State which have to do with payment for health care, quality of care, and the distribution of health facilities. Coordination of such activities is designed effectively and economically to utilize existing State facilities and trained personnel and to prevent duplication of effort. The Social Security Administration will reimburse State agencies for their fair share of consultation services relating to Medicare.

An important nongovernment group that has a significant role in the administration of the program is the fiscal intermediary. Under the hospital insurance plan, groups or associations of providers, on behalf of their members, may nominate a national, State, or other public or private agency or organization to serve as intermediary in the claims process. The intermediary makes payments to providers for covered items and services on the basis of reasonable cost determinations and assists in the application of safeguards against unnecessary utilization of covered services. The intermediary may also furnish consultative services to assist providers to establish and maintain necessary fiscal records and otherwise qualify as providers of services. It is hoped that the intermediary will serve as a center for communicating with providers in addition to making audits of provider records.

Under the medical insurance plan, the intermediary's principal function is to determine whether physicians' charges are reasonable and to make payments.

In closing, I would like to emphasize that the Social Security Administration is fully aware of the interest of the public and of other groups in the operations of the Medicare program. We, in the Office of Research and Statistics, hope to be in a position to provide an accurate and comprehensive picture of the utilization and financing of health services under the Medicare program.

Major Responsibilities of Federal and State Agencies Under Title XIX

Mr. Carel E. H. Mulder, *Assistant Chief, Division of Medical Services, Bureau of Family Services, Welfare Administration.*

I was quite interested in the observations by Mr. Becker as to what we are facing and what the future may hold for us. I agree that we are dealing with what in my chemistry days we used to call a relatively unstable compound. We do not know exactly what will happen, but we know something is going to happen. I think we have identified a challenge for those working in health research and statistics. We have also very clearly identified the cause of insomnia of most medical care administrators.

However, the medical care administrators, particularly those with responsibilities under the Social Security Amendments of 1965, have a dual role. They have to be concerned with the future and plan and lay the groundwork for what may come. But they must also operate in the present, and, notwithstanding the conflicts that they too can see in this legislation, I think they have to adopt the position that, "What the Congress has joined together, let no administrative official pull asunder."

Understanding these conflicts, we have a title XIX program that can be looked upon in various ways by various people. It has been looked upon primarily as a safety net under the title XVIII program, so that those who are entitled to health insurance benefits may use this program to fill the gap. The gaps are many, and, as Mr. Becker indicated, many people are not aware of these gaps. The uncovered services not included in the benefit structure are such items as dental services and drugs. This may amount to 60 percent or more of the medical care costs of the services people need after expiration of benefits and those needed by people who may have difficulty meeting some of the other conditions in the way of deductibles, coinsurance, and premiums.

But actually, as you already know, there is a much broader purpose in title XIX. Its purpose is to provide care and service for a broad population, people of all ages who are unable to finance their medical needs. The specific goal expressed in the law is that by 1975 there will be comprehensive medical care and services for all who are unable to finance their own. This 1975 goal is still many years away, but on the other hand these years will slip by fast. In New York, they seem to have slipped by extra fast. So this is a broad goal, and I think that there is now a realization that this is really a more important aspect of title XIX than the concept of the safety net under title XVIII.

Title XIX has been referred to in both Senate and House committee reports as an expansion and improvement of the Kerr-Mills program. The need for expansion, of course, was known from the very beginning, because there was no sense in isolating a certain group of people who have reached the magic age of 65 to provide them with medical care. The need for improvement soon became apparent after the program was in operation and we saw the States using the program in many cases to shift financing from State and local sources to a federally supported basis. As a result, I think there is now a universal agreement that the Kerr-Mills program under the 1960 law was not a success. So this new program contains advancement and improvement.

Traditionally the medical care programs under public assistance have had only two dimensions. The dimension of the population that is to be covered by such a program, and the dimension of the services that must be provided. The 1960 law was rather unspecific, except for the concentration on the aged, and did not give much direction as to what the eligibility conditions should be. In the services to be provided, it was very broad and contained a list of about 15 services ranging from those of the physician to chiropractic and spiritual healing, without any specific direction on priorities as to what needed to be done. As a result of these two dimensions, the programs (including programs under titles IV, X, and XIV, of the Social Security Act for the blind, and disabled, and families with dependent children) were generally pretty inadequate. Some of them were broad programs that provided comprehensive, or near comprehensive, services; and some of them even became like smorgasbords. Every service was available, as people might wish it or as their practitioner might suggest, and very little control was exercised. Title XIX, of course, is much more specific in what population shall be covered and what services shall be minimally provided by July 1, 1967.

It has been said by a previous speaker that the people on home relief are not provided for in the legislation. This is not exactly true. The people in the home-relief category are provided for but not financed, because the provision in the law is that the Secretary shall not make payments to a State unless he is satisfied that the State is making efforts in the direction of broadening the program so that by 1975 all medically needy people will be covered. That, of course, would include those who are on home relief and cannot afford to pay for their medical care.

The thing that I would like to point out is that the 1965 Amendments, title XIX, contain a new dimension, and that is a concern with the quality of care. Title XIX has specific provisions for the State to set up standards and methods to assure that the care will be of high quality. As a result we have developed a conviction in the Welfare Administration that these programs must contain a sound system of evaluation. And for such a system of evaluation, there is need for a much larger body of information than ever before—a large body of statistical data which must be concerned with much more than dollar signs.

The gathering of information needed for evaluation, planning, and program directing has not been effectively done in the past. It is our hope to do a better job in title XIX and in conjunction with title XVIII. We have an obligation to make sure that whatever data we do collect are able to be correlated to the data which are collected in connection with other programs.

Now there are some problems in achieving all of this. A major problem is this: Title XVIII is a colossal, monolithic program. It operates under nationwide rules and regulations; it can prescribe records and reports anywhere throughout the Nation; it can give instructions through its own staff lines as well as through intermediaries, carriers, and State agencies. As a result, it is in a better position to obtain uniformity and quick response to the need for data. Title XIX has the characteristic that it is a grant-in-aid program that will deal with 54 different jurisdictions. State plans will vary from one State to another. And the ability of the States to set up adequate information and evaluation systems also varies. Moreover, we are in a position of being permitted only a minimum of Federal direction—no more than the law specifically authorizes or we can require for proper and efficient administration with respect to standards to be set and procedures to be followed. On the other hand, though, we do recommend that with the advent of titles XVIII and XIX a real attempt be made to develop common policies and procedures to the optimum extent.

Vendor Medical Care Program

Dr. Robert H. Mugge, *Chief, Program Research Branch, Division of Research, Bureau of Family Services, Welfare Administration*

The previous speakers really did not leave me much to say. I agree with all that Mr. Mulder has said about our general approach to the development of medical care statistics, and we cannot get much more specific at this time. Perhaps, though, I can fill in a few details of interest for you. I did want to comment first that in discussing the sources of useful information on medical care one of the speakers yesterday omitted a particular program under which $1½ billion worth of medical care is provided each year and for which we do have considerable statistical information, although still far from what we need.

I speak, of course, of the vendor medical care program under the federally aided public assistance categories. On the assumption that some of the rest of you lack such information as that speaker did, I wish to recount briefly the kinds of information that we do have and which we should look at if we are interested in what is being done under the programs. For quite a number of years, as Mr. Mulder has mentioned, we have had general financial information. We do know how much has been provided under each of the categories by each State for each year since 1950, and for several of the more recent years we also have these data detailed by broad types of service.

Since early 1961, we have been obtaining utilization data on medical care provided under the programs. Beginning with fiscal year 1962 for old-age assistance and medical assistance for the aged and with fiscal year 1963 for all programs, we have obtained from the States the unduplicated counts of recipients by program and by type of medical care received, so that we are able to determine to what extent the broad categories of care are reaching the people. We have the costs related to this utilization, and we have broad kinds of data relating to care provided under the categories: hospitalization discharges by length of stay and by discharge diagnosis, nursing home care by length of stay, physicians' visits by place, and number of drug prescriptions. This pretty well summarizes what is still perhaps a small and limited program of statistics. We are, to be sure, still crawling and trying to walk, but still we consider these present reports to be the basic data from which our statistical research and reporting program can and must build. And I might say that although we have been working very hard with the States to get this basic foundation in complete, valid, and reliable form, we are having a great deal of difficulty just getting this much from many of them. One particular State—in fact a rather large State with a large research staff and the latest and biggest in computer equipment—continues to report that the old-age assistance recipients receiving medical care are equivalent to 120 percent of the unduplicated caseload for the year. In other words, they have not been able to get proper unduplication of their medical care recipients.

In most States, the reporting is based upon the billing process, the information that came through the bill, just as will the utilization data for social security medical care under the title XVIII program. And, as Howard West mentioned, we have the problem that it still takes us longer than 6 months to get in all the bills. Therefore, in developing utilization data for a year, you have to wait for another 6 months to receive all the needed information. In addition, you have to allow for processing time. Some of the States are still 6 to 8 months late in getting in their reports. But we have been working with them, and the situation is improving.

In addition, we have planned to conduct periodically surveys of the recipients of medical care, and we are currently conducting a survey of the recipients of the Kerr-Mills program, MAA. This survey will enable us to relate the general social and economic characteristics of the recipients to the levels of utilization and the types of care received. We plan to do this more frequently with all of the programs and, of course, title XIX in particular. We have a specific plan for developing our reporting program in relation to title XIX. Of course, basically we must know how our services, provided under title XIX, jibe with title XVIII. We must, and we shall, adjust our financial reporting and our recipient reporting to determine the extent to which the medical care provided is in the form of deductibles related to title XVIII and the extent to which they are coinsurance or other supplementation.

We also plan to seek additional, more intensive data with an indication of the nature and quality of care. The basic utilization program we have now does give some broad indications of quality in showing the extent to which clients avail themselves of hospitals, physicians, etc. But what else is practical to include in a statistical program that will provide truly useful, hard data on quality of care? It is easy to make broad generalizations about this, but good, solid, specific, objective proposals are hard to come by. Do you try to measure exactly what the physician does in his office? We certainly must get data on major surgical proceedings, but we really do not have the answer for reporting on what is done in the office otherwise. Now, we have seen some classifications of physicians' services, including consultations, examinations, diagnoses, advice, etc. But if you were a doctor in an office would you really know when to report that what you were doing was a consultation, examination, diagnosis? I venture to say that any half dozen would likely give you a half dozen different answers in describing some specific services. There are no easy answers to this. We shall have to continue to try to develop good indices as to the quality of care. One of the specific areas we can get into on quality will relate to the qualifications of the providers of care.

Someone asked a question yesterday as to why we do not require use of the same medical care billing forms as Social Security, so that we can come up with comparable data. There are some legal considerations, since some States have laws that require the use of their own forms. However, as strongly as possible we are encouraging the States to use the SSA forms also for their own programs. If these forms cannot be used for legal reasons, we shall probably require the same content. We shall also be developing recommended—or perhaps required—procedures for States to use in administering their medical care programs, methods which will yield the needed statistics as a natural byproduct of proper medical care administration.

Those of us who are in the business of running a research and statistical program are caught in the middle between the demands for ever-increasing statistics and the practicality of obtaining useful data. On the one hand there are the protests that we fail if we do not obtain vastly detailed data on every possible aspect (whether it is truly measurable or not), and on the other hand there are the protests from the operating agency people that if they have to spend much more time collecting statistics they will have no time to provide services to people. The computers will certainly help us to solve this dilemma, as they can provide us with great amounts of detailed information very rapidly, once the case information is fed in. But for some time we shall have the problem that great human effort is required to make sure that something other than garbage goes into the computer in the first place. (And the computer won't sweeten the garbage.)

But we statisticians must retain some skepticism as to the real need for vast amounts of new and greatly detailed statistics on the medical care programs as long as the very valuable and basic utilization data now available are either unknown or, if known, are used so little. Obviously, we statisticians and the program administrators and theoreticians need to get together more so that we can better understand each other's problems.

Program Operations in a Metropolitan Area

Dr. Matthew Tayback, *Deputy Commissioner of Health, Baltimore City Health Department, Maryland*

The City Health Department in Baltimore, in connection with the State Department of Health in Maryland, has been engaged in the administration of a publicly funded medical program for indigent individuals since 1948. When responsibility for administration of the medical assistance program to the aged was added, this placed us in the field of care of the medically indigent. In addition, we have had responsibility for bits and pieces of other publicly funded programs for the medically indigent in Baltimore. However, these have not been offered under an organized plan.

As a consequence of the above circumstances, medical care administration has been a subject of major interest. We have studied it very carefully, hoping that at some stage the medical care needs of the medically indigent could be met by a formal program as these needs of the indigent have been met since 1948. In connection with the operation and management of all of its programs, our Department historically has undertaken to look at them with the assistance of medical statistics. Over the years, careful attention has been given to the application of medical statistics for program management. While no Nobel prize for new methodological developments has been earned, we have constructed techniques involving the use of medical statistics in medical care administration which are unquestionably of critical importance.

Thus, the experience gained since 1948 can now be applied to the administration of title XIX. Fortunately, we will be relieved of the day-to-day responsibility for payment of bills. This responsibility will be taken over by the State Department of Health for the entire State, using fairly advanced computer equipment, and this is as it should be.

At the local level, we are able to devote our entire attention in medical care to the issue of evaluation. We feel that a local health authority, particularly in a metropolitan area—namely, the city which is associated with large proportions of individuals who are poor—must interest itself in the management and evaluation of the titles XVIII and XIX programs. If it does not, it has no major place in the medical affairs of a major city. Currently, we propose to concentrate on the issue of an evaluation of the title XIX program.

Three methods are being developed. First, employing the prototype of industrial quality control, certain quantitative criteria will be set forth in respect to utilization patterns. These criteria will be concerned with the use of services provided by physicians, pharmacists, and hospitals. They will be set up in terms of dollar units and effort units. Individual patients and physicians, who fall outside the range of customary levels of utilization, will move into a medical audit phase. The medical audit will be undertaken by physician members of our staff and by pharmacist consultants.

We have had some experience in this regard with previous publicly funded programs for the indigent. A computer program has been debugged and can be employed for title XIX beginning July 1. In this regard, it is essential to note that we do not judge the consumer or provider on the basis of the fact that he is selected for medical audit by a computer in connection with certain quantitative criteria. These individuals, the producer and consumer, merely fall into a class which is designated a "query" class. This group is subject to very careful study by physicians and pharmacists on the staff. As an example, we have identified a physician who is recorded as making weekly visits each to a number of patients in nursing homes. This is a very fine service, 52 or more visits a year per patient, but it becomes somewhat difficult to fund when one reimburses on the principle of usual and customary fees. When fees amount to 40 percent of what the physician should get, the sensitivity to an issue of this type is quite low. But once one commences to pay usual and customary fees, the doctor will receive an adequate reimbursement for his time. Then one must ask such a provider to adhere to usual and customary patterns of providing services.

So far as patients are concerned—that is, the consumer—there is the problem of "shopping." Title XIX provides wide latitude to the consumer in seeking service. We believe in this principle. However, under conditions of this type the phenomenon of shopping arises. The consumer may visit any number of providers, not maliciously but deriving out of the pattern of illness. This can be an intolerable situation from the point of view of good medical care. Computers are programed to detect this sort of thing. These cases are subject to medical audit. The medical audit saves some money and also improves care. The patient usually is not benefiting by this type of shopping about. Quantitative controls of this type will be accepted by all responsible parties—the medical society, the State authority, and the Federal authority. But they tend to be negative in direction for they do not seem to provide alternatives. Quantitative controls tend to be dollar oriented and not care oriented. Thus, they are but one of several approaches.

The second facet of our evaluation program concerns the issue of quality. This is a difficult matter, but not an unknown, in terms of how one goes about it. The Health Insurance Plan of Greater New York and several other organizations have explored the problem. We propose to identify certain categories of patients for which there is a high degree of, but not necessarily complete, unanimity of thinking as to how such patients shall be handled. For example, diabetics should be physically evaluated at certain intervals, undergo a certain schedule of blood sugar determination, and so forth. One can establish say five or six utilization patterns that are necessary for the proper care of diabetic individuals. Having identified a sample of diabetics and having documented the actual utilization pattern, the question which arises is, "How does the pattern of utilization conform to the standards set forth by physician consultants?" This procedure can be used for a group of cardiovascular patients and a number of other types of entities.

The third part of our program is a sampling of the eligible population with a household interview. It is proposed to visit these individuals and determine what their utilization patterns were in the light of what is the known physical and disease situation of the individual. We also propose to ascertain whether these individuals understand fully the benefits to which they are eligible under the title XIX program. In addition, we will accomplish some soft measurements, through such questions as, "What is your attitude toward the program?" "Have you had some difficulties?" In my own experience I have rarely used this form of measurement. I believe, now, it has its place in the evaluation program, and I intend to build it into our immediate plans, at least during the first year of the administration of title XIX.

Briefly, this is our program. Our staff will consist of physicians trained in public health. It will include pharmacists who have experience in the administrative complexities of publicly funded programs of drug services. We are able through our own resources to secure and also train a group of medical analysts. The support of a computer is essential, and we will secure this from the medical school of a nearby university.

The major objective of the systems outlined is simply stated: Optimum care at reasonable cost and with judicious use of medical manpower.

J

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Mr. Robert W. Hiller

COORDINATORS

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RESOURCE PERSONS

Members of the Study Group on Field Experiments in Vital Records Improvement

RAPPORTEURS

Miss Jane Hazlewood
Miss Janie R. Newman

RESEARCH ON VITAL STATISTICS METHODS

Wednesday Afternoon—June 22, 1966
Thursday Morning—Juue 23, 1966

DISCUSSION SUMMARY

Research on Vital Statistics Methods

DISCUSSION SUMMARY

During the 10th National Meeting of the Public Health Conference on Records and Statistics, one workshop considered vital records in health research, including evaluation studies. Its objectives were:

1. To stimulate greater use of vital records in health research;
2. To improve the quality of data for use of vital records in health research with regard to four aspects—completeness of registration, omission of items on certificate, validity or accuracy of items, and reliability of items;
3. To consider administrative, financial, and legal problems in the use of vital records, with particular reference to confidentiality and costs.

The consensus of the workshop was that most vital statistics offices are being funded only for service operations. Preferably, health departments should fund these offices so they may develop their own record-linking systems with other data. With the increasing demand for services, continued research on the quality of data is needed. It was suggested that such research can be funded by grants from Federal agencies.

A PHCRS Study Group on Field Experiments in Vital Records Improvement was constituted for the 1964–66 biennium and charged with:

> Describing areas of needed research; developing protocols for a series of controlled experiments, perhaps using experimental and control registration districts to test different methods of improving the quality of data; exploring with various States the possibility of undertaking recommended experiments or some modification of these; reviewing and helping to improve applications for research grants in this area; and assisting the interested States in bringing research proposals to the attention of the authorities.

The present workshop was set up as a forum to review research studies underway (first session) and research studies under consideration (second session).

FIRST SESSION

Report of the Study Group

Mrs. Margaret F. Shackelford, University of Oklahoma Medical Center, reviewed the activities of the Study Group. To stimulate development of projects to improve the vital statistics system, State health officers, registrars, and statisticians were informed of the objectives of the Group and were invited to develop research proposals. She defined the term "field experiments" as a tool used to gain information about the system which might affirm or deny opinion as to how it functions. The vital statistics system is functioning with the same collection principles laid down around the turn of the century, and there has been no overall examination of whether these principles are now outmoded.

Responses were received from 14 States. Four States indicated interest in research concerning accuracy of reported residence data, reporting of congenital malformations, accuracy of the reporting of cause of death, and computer utilization. One New England State reported an interest in developing a proposal which would examine the basic vital statistics system, hopefully to adapt new techniques and equipment to the collection process.

Areas of possible financial support were investigated by the Study Group. The Department of Health, Education, and Welfare has a number of grants mechanisms, and there is no indication of barriers on their use in support of vital statistics methodological research. Grants authorities from the Public Health Service and the Children's Bureau met with members of the Study Group to explain the sources of support from research grants and contracts.

Mrs. Shackelford said that the Study Group had addressed itself to an "awareness" program directed at the needs of the system and had stimulated the formulation of studies that, once conducted and evaluated, might improve the statistics now produced.

Research Studies Underway

The first three presentations were on research studies underway in cooperation with universities.

Quality of Data Reported on Birth Record Supplements.—Mr. Robert W. Hiller, Minnesota State Department of Health, said that the Children's Bureau has funded an evaluative study on the quality of data reported on birth record supplements.

In January 1965, new items were added statewide to the supplements. These items, both medical and social, relate to education of parents, date of marriage, last menstrual period, etc. This study is an inquiry into the vital statistics system as a method of collecting detailed data on both the mother and child. The objectives are to determine quality of information reported, characteristics of hospitals and completeness of information reported, relationship of hospital reporting procedures and degree of agreement between hospital records and birth certificates, and effect of discrepancies on tabulations. The Minnesota Hospital Association and the School of Public Health, University of Michigan, are cooperating with the health department in conduct of the study.

The Children's Bureau has also approved a second Minnesota study for a developmental grant. This study will consider the significance of variations in infant mortality in that State.

Demographic Studies in Family Dynamics.—A proposal has been developed jointly by the Bureau of Vital Statistics, California Department of Public Health, and International Population and Urban Research, University of California at Berkeley, for a 5-year program of study dealing with marriage, fertility, and marital dissolution.

Mr. Paul W. Shipley reported that in 1964 there was widespread legislative interest in family stability within California. As was realized when planning data were needed, there is a dearth of information on family dynamics. The California divorce registration program is being expanded, and a program of research if funded could provide demographic statistics that would fill the major gaps in information needed.

The objectives of the studies are to:

1. Increase the knowledge of family dynamics,
2. Analyze marriage fertility,
3. Provide base data for additional studies, and
4. Stimulate future studies.

Tabulations of divorce data are underway. The California office would do the studies if resources permitted, but supplemental resources are needed to get underway with the studies proposed. As planned, in the collaboration between the Bureau of Vital Statistics and International Population and Urban Research, the former will supply technical skills and personnel in the collection, processing, and tabulation of vital statistics, and both will collaborate in formulating analytical problems, working out the additional tabulations required, bringing in comparative material from other studies, and writing up the results.

It was noted in the workshop that the scope of this research program covers all areas of vital statistics, not only grassroots problems of registration, but analysis as well. The basic methodological concept here is record linkage, which is a method of revitalizing the vital statistics system.

Epidemiological Studies Using Vital Statistics as a Takeoff Base—Dr. Helen Abbey, of The Johns Hopkins University, reported on studies in the graduate school where vital records were used in epidemiological research. Birth and death records can be used both as end points or as beginning points in such research, and for each of these points she cited examples.

The health department entered into the projects by furnishing copies of certificates involved in the research and in providing information on selected characteristics or causes under study. There is need to build into the vital statistics system methods for providing records information more effectively.

The following three presentations at this session concerned contract supported research.

Iowa Congenital Malformations Study.—Dr. Anders S. Lunde, NCHS, said this study is a joint project of the Epidemiology Branch of PHS's Division of Dental Public Health, the NCHS, and the Iowa State Department of Health. The purpose of the study is to determine the completeness of reporting of congenital malformations on the birth certificate.

Iowa was selected because of its high incidence of reported congenital malformations and also because of the number, size, and distribution of hospitals in the State.

Since this is a study which is underway, the procedures in use were reported upon and discussed in some detail.

Field Testing of the Standard Certificates of Live Birth and Death in Louisville-Jefferson County (Kentucky).—Dr. Ronald C. Kelsay, Local Registrar, Louisville Department of Public Health, has field tested the proposed standard certificates under contract with the NCHS. This is an evaluative study, investigating both the mechanics of completing the certificate and the types of information being collected. Some areas investigated in the mechanics of completing the certificates were ease of completion, use of check boxes in the medical section, space needed for items, ease of reading completed certificates, reasonable location of items, and ease of key punching.

Most items on the certificates have been collected over a period of years. The items were studied as to the usefulness, appropriateness, and quality of the data collected. Some attention was also given to other items which might be needed on the certificates in the future. This study is a beginning; much more work needs to be considered in these areas.

New York City Study on Automatic Data Input.—Mr. Sidney Binder, former chief of the NCHS Division of Data Processing, reported on this research study. The purpose of the study was to explore the development and test the feasibility of a system for paper tape input to the computer using tape generated simultaneously with the preparation of birth (and death) certificates. Equipment for this purpose was installed in three hospitals in New York City. Similar equipment was installed in the New York City Health Department for use in the preparation of additional paper tapes for recording and transmission of corrected or additional data on the certificates and to cross index numbers assigned in the hospital with certificate numbers assigned in the health department.

Experience in the study indicated that differences encountered by the hospitals in preparing satisfactory tapes would require continued and close liaison at considerable cost between the data preparation staff of the health department and the personnel in the hospital who prepare the certificates.

Most differences were due to the fact that the hospital personnel were concerned primarily with the preparation of the paper document (the certificate) and were consequently unaware of the fact that the tapes produced could not for the most part be machine processed.

SECOND SESSION

Research Studies Under Consideration

There were six proposed studies described at the second session of the workshop.

- Dr. John B. De Hoff, Baltimore Health Department, said the purpose of one study is to determine the quality of data on death certificates. The funeral director will be approached to ascertain how the certificates are filled out. This should lead to instructive material on completing the death certificate.

Physicians will be queried as to how the medical data are entered on the death certificate. Under consideration is what kind of review the medical entries should have; i.e., by the medical record librarian when the record is reviewed in the hospital or by the hospital epidemiologist. It is hoped this study will spot the problems of getting accurate information, determine what is legally required that should not be required, and determine what is not legally required that should be required.

- Mr. Hiller described a study planned jointly by the Mayo Clinic and the Minnesota Department of Health.

Death certificates filed in Olmstead County (Minnesota) for the years 1935–65 will be matched against Mayo Clinic records and, for comparison purposes, cause of death will be recoded for the matching records.

This is an evaluative study to determine the accuracy of reporting of cause of death and is an example of the use of death certificates as end points in research.

- Mr. Thomas C. Dundon of the NCHS said the burial transit permit as a useful tool in registration has been under discussion for some time. A study is suggested to gain more knowledge of the purpose of the burial permit, laws governing the use of burial permits, differences in registration of deaths in areas where the law is observed and where it is not, and the need for the burial permit as seen by law enforcement officials.

After evaluation of findings, it should be possible to determine whether the permit should be used as it is presently or modified to conform to present social and legal needs.

- The meaning of certain medical terms entered on death certificates was studied by a working group of the PHCRS from 1952 to 1958. According to Miss Lillian Guralnick, NCHS, medical terms that were difficult to interpret for coding purposes were set forth jointly by the NCHS and States participating in the study. Queries to establish the meaning of terms reported were mailed from State offices to physicians who used the medical terms. From the replies, interpretation of the use of medical terms was established and incorporated into the cause-of-death coding instructions for State and national use.

The findings of the first study proved to be immensely helpful to the States and the NCHS in determining the underlying causes of death, and many will be incorporated into the eighth revision of the *International Classification of Diseases*. Because other medical terms reported also need the same intensive study, it is suggested that a similar project get underway through the mechanism of a PHCRS study group.

- Mr. Kenneth Johnson, Kansas State Department of Health, reported on a proposed study which would match death records to State census records.

Kansas has a unique annual census enumeration by county assessors. By matching death certificates against census records, it would be possible to establish the accuracy of reporting of residence. The mobility of the decedent population as compared to the general population could also be studied, as well as the hospital to which they resort for care. Age, as reported for the decedent, could also be compared with the item on the census record.

This study is in the planning stage. A development grant would be helpful in getting it underway. It is expected that a demographer from Kansas State University will work with State health department personnel in the conduct of the study.

- Mrs. Margaret F. Shackelford, University of Oklahoma Medical Center, is interested in the use of birth certificates as a sampling frame for morbidity studies.

Because of the set format of the birth certificate, there is recognized conflict of interest between legal and demographic items as they appear on the record. Demographers and statisticians would like to extend information on medical and social characteristics for research uses. Using birth certificates as a sampling frame would allow for expanded sources of such information. These sources might include followback to hospital records, sampling from logbooks in delivery rooms, and querying samples of mothers.

Problems that might be encountered in this type study could be small frequencies of reporting, incomplete data on hospital records for referred cases, etc.

DISCUSSION

A great deal of interest was expressed in the projects described. The consensus of the workshop was to continue a study group in this area. It was suggested that the activities of such a group should emphasize the development of guidelines for research projects, the publication of working papers on the areas needing research, and methods for the development of joint projects between the health departments and universities. While it was suggested that universities might initiate research projects and be responsible for their development in cooperation with State or local health departments, the consensus was that, in most instances, it would be best for research projects to be initiated by State or local health departments with the university staff acting in a consulting capacity.

The long-range objective is the improvement of the vital statistics system. The immediate need is for research into current operations and the development of improved methods. While a beginning has been made in focusing attention on these requirements, much remains to be done in removing the obstacles to these developments.

DOCUMENTATION

1. Progress Report of the Study Group on Field Experiments in Vital Records Improvement. PHCRS Doc. No. 606.4, May 31, 1966.

K

WORKSHOP DIRECTOR

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Mr. Charles R. Council
Dr. Robert D. Grove
Dr. Carl E. Ortmeyer

RAPPORTEURS

Mr. Russell Kuhn
Miss Janet Westbrook

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MARRIAGE REGISTRATION

Wednesday Afternoon—June 22, 1966

DISCUSSION SUMMARY

Marriage Registration

DISCUSSION SUMMARY

Present Status of the Marriage Registration Area

In his opening remarks, Mr. Leo A. Ozier, Deputy State Registrar of Illinois, discussed progress since establishment of the Marriage Registration Area (MRA) in 1957. In these 9 years, 38 States, 2 independent registration cities, the District of Columbia, Puerto Rico, and the Virgin Islands have been included in it. Of these, Illinois, North Carolina, West Virginia, and New York City were admitted to the MRA since January 1, 1964. Complete reporting of marriage and divorce statistics is necessary to the overall statistical work in the study of population.

The recent publication "Marriage and Divorce Registration in the United States" was praised as excellent promotional material to use in emphasizing the importance and use of marriage and divorce statistics to various associations, such as the American Bar Association, State legislatures, and the County Clerks Association.

Recent Developments in Marriage Reporting

A discussion of procedures followed. Several directors of vital statistics in States which have enacted recent marriage legislation presented their experiences, providing ideas for directors with similar problems in other States.

Mr. W. D. Carroll of Texas described the process Texas went through to obtain a new law. He stressed the importance of timing and preliminary groundwork in the legislative process. After two previous attempts, a law establishing central files and a standard marriage license application as the form for reporting marriages to the State office was passed in 1965. The application (exhibit 1) is signed by the applicants, and the clerk completes the form as to the date and place of marriage from other information when the application is returned. Mr. Carroll anticipates nearly 100 percent completeness of reporting in the first year.

Mr. Herman Katz, City Clerk of New York City, explained the marriage registration activities of his office and recent legislative changes concerned with confidentiality of marriage data in New York State. Each borough in New York City can issue marriage licenses, and such licenses will be adequate for marriage in other locations in the State. The facts of marriage are completed and returned to the place of licensing. New York City is an independent unit in the collection of marriage data. Approximately 72,000 licenses are issued in New York City each year, and 50,000 to 60,000 are issued in the remainder of the State. New York City was admitted to the MRA this year and will send microfilmed copies of its marriage records, beginning with 1965 events, directly to the National Center for Health Statistics.

A certificate of marriage is issued after the marriage record is returned. The information on the certificate relates only to identity—name, place of residence, place of marriage, and date of marriage—since it was felt that the marriage application contained too much personal information to be a public record. Since about 1840 in New York City, a file has been maintained on all clergymen, judges, etc., who are authorized to perform marriages.

Despite objections from Mr. Katz, the New York State Legislature removed the race or color item from the State's marriage forms. Mr. Katz thinks that if the Conference goes on record that the race item is important, even if it is placed in the confidential section, the legislature would be favorably inclined toward restoring it in some future session.

Mr. Ozier felt that efforts to clarify what information is public and what is solely for statistical use would help to reduce opposition to supplying certain information items.

Mr. Ciaccio of Louisiana explained that every person in his State authorized to perform marriages is registered. A copy of his signature is available with other facts, such as civil position or denomination. This information aids in a querying program.

Mr. Paul Shanks of West Virginia discussed the importance of gaining the support of local officials in furthering the success of the marriage registration program. A vital statistics act was initiated in 1921 in West Virginia, and there had been reporting of a limited number of items on marriages on ledger sheets to the State office. In 1961, it was discovered that West Virginia lacked only a few items on its record form toward meeting important criteria to qualify for the MRA. In 1962, the Chief of the Marriage and Divorce Statistics Branch of the National Center for Health Statistics discussed the needs for and the uses of marriage data at the annual State County Clerks Association meeting. In 1963, Mr. Shanks, with the assistance of the National Center for Health Statistics, presented a recommended marriage record for adoption in a series of district meetings with State Association members. Several suggestions for revision were made, and a form was put into use. On January 1, 1964, the new marriage application form (exhibit 2) went into effect. The original application is kept by the county clerk, and a copy is sent to the State Division of Vital Statistics.

At the end of 1965, the State office considered that complete and accurate statistics were being collected, and a request was made that a test of registration completeness be conducted. In January 1966, a marriage registration completeness test by the National Center for Health Statistics revealed 97 percent complete reporting of 1965 events and a high degree of item completeness. In two counties, the State of residence of the bride and groom was not being recorded. Since this has been corrected and a very close liaison has been maintained with the county clerks, marriage registration is probably better than 99 percent complete. West Virginia was admitted to the MRA effective with 1965 events.

Mr. James O. Porter of Arkansas and Mr. Loren E. Chancellor of Iowa (who has been consulting on improvements in the Arkansas system of indexing and registration of marriages and divorces) described recent developments in that State. Steps have been taken to index marriages and to promote completeness. Currently, a querying program is underway to secure completion of records. The State laws have been amended to give the State Health Department authority to amend the record form. In Arkansas, the responsibility for returning the marriage record form after the ceremony rests with the persons who were married. It was felt that Arkansas has a satisfactory marriage registration system, but that a new form is needed. It is planned that a modification of the standard form will be adopted in Arkansas at some future date. For every marriage performed in the State, one dollar of the fee goes to the State office. Both Mr. Porter and Mr. Chancellor feel that Arkansas will be ready to enter the MRA very shortly.

Mr. John Sullivan of Nevada explained recent legislative developments in his State. Nevada had tried for several years to establish central files for marriages, but many attorneys in the State opposed this earlier legislation. Then in December 1964, the American Bar Association effectively persuaded the State Bar Association to urge the legislature to adopt legislation establishing a State marriage registration program. A bill authorizing State registration was passed; however, no action was taken on the appropriation. Mr. Sullivan anticipates no opposition in the next session of the State legislature. The registration program should become operative in 1968. The two-dollar fee collected for issuing a marriage application will be divided between State and local offices to help finance the program. Mr. Sullivan again emphasized how important the leadership of the American Bar Association and the State Bar Association has been in these legislative proceedings in Nevada.

The Revised Standard Certificate of Marriage

Dr. Robert D. Grove, Chief of the Division of Vital Statistics of the National Center for Health Statistics, opened the discussion on the status of the Standard Certificate of Marriage (exhibit 3). The certificates have not yet been approved but are currently at the Bureau of the Budget. It is hoped that they are in almost final form and will be available for use in the fall. After final approval, photographic negatives of the forms will be made and furnished to interested States for use in preparing their own certificates.

Dr. Thomas P. Monahan, Professor of Sociology at State University College, Oswego, N.Y., approved addition of the item on education but felt it was unwise to delete the occupation item. Dr. Grove pointed out that any State that wishes to do so may retain the occupation item on its certificate form. Most States have items which are not on the standard certificate. Dr. Monahan asked why the names and States of birth of the parents of the bride and groom were added to the certificate. Dr. Grove explained that these items were added for identification and geneological purposes at the recommendation of the study group which considered the standard certificates during the 1964–66 biennium.

Dr. Carl Ortmeyer of the National Center for Health Statistics reviewed new items which have been added to the marriage certificate. Many of these were added to bring the marriage and divorce certificates more nearly into conformity with other vital records. Dr. Ortmeyer made particular mention of the importance of clarifying the wording of items to alleviate coding problems.

Specific changes in the marriage certificate were explained:

1. The residence item was changed to give the local street name and number. This information will be useful for querying programs, in the study of local migration, and for matching certificates with census data. Separate State and county items were specified to yield greater completeness. Currently, the county of residence is omitted a great deal.
2. The added information about the parents of the bride and groom should be useful in matching marriage and birth records for further research.
3. The title of the officiant enables tabulations to be prepared by type of ceremony, whether civil or religious.
4. The item on "Number of this marriage" enables tabulations to be prepared by marriage order.
5. The item "Last marriage ended by (death, divorce, or annulment)" should elicit data leading to more accurate appraisals of the effect of divorce and death on remarriage trends.
6. The addition of the education item on the standard certificates has very interesting research possibilities. The education item is much easier to code than occupation or industry and has at least as many research applications in the social sciences.

Mr. Ozier pointed out the misunderstanding by many persons about the reasons for having a confidential section on records. Dr. Ortmeyer suggested that the addition of the confidential section should aid in improving completeness and accuracy of reporting.

There is no designation of any specific items as constituting minimum items for admission into the MRA. It is felt that States should conform to the items on the standard certificate as closely as possible and not omit essential items.

Dr. Monahan suggested that States should examine their existing marriage laws. A few States have adopted provisions in their vital statistics laws which require them to accept the new standard certificate.

Uses of Marriage Data

Dr. Paul Glick of the Census Bureau discussed possible research uses of data. He maintained that education is the single most useful socioeconomic item obtained from marriage and divorce records. This is evident because education greatly affects the future of young people. It influences their income, when and whom they will marry, the number of children they will have, and their chances of success. It is very feasible to secure data on grades of school completed, and these data are easy to code. There is little resistance to giving information about schooling, it is well known to both partners, and reporting errors are within acceptable limits. Educational information is equally applicable for both bride and groom. A woman's occupation does not influence her standing as does her husband's or father's occupation. Education at the time of marriage is an even better indicator of socioeconomic status than income, because many people marry right after school when their incomes are often quite limited.

Dr. Monahan again called attention to the importance of occupation as a socioeconomic indicator because it shows a "way of living." It was observed that one of the main problems in the use of occupation was developing an effective coding scheme. A great amount of querying effort would be necessary to have complete and accurate occupational data. Most States do not have the time and money available for this type of program.

Dr. Franklin D. Yoder, Director of Public Health of Illinois, emphasized that health department interest in family formation would increase as society becomes more complex. With growing programs in maternal and child health, there is a need in planning these programs for marriage statistics in smaller areas than counties. If data were available on a census tract basis, data from vital records would aid in determining where health facilities are needed. Health department programs at all levels are dependent on data about family formation.

Dr. Glick reported that definite progress has been made in Congress toward initiating a census every 5 years.

Gaining Acceptance of the Certificate

Mr. Chancellor of Iowa outlined aids in gaining acceptance of new items. It is important to work with three distinct groups within the States: The clerks of court, the Council of Churches, and the justices of the peace. Currently in Iowa, the law divides responsibility for reporting of marriages between the officiant and the clerk of the court. Iowa hopes to revise the law to put the entire responsibility on the clerk of the court. Mr. Chancellor meets with the clerks of court at least once a year and feels this has been a great help.

Mr. Ozier again reminded the group that public relations and groundwork are very important in the States in getting legislative authority, exploring existing codes to determine regulatory authority, and obtaining minor legislative amendments.

Dr. Carter, former chief of the Marriage and Divorce Statistics Branch of the Division of Vital Statistics, National Center for Health Statistics, discussed the important part that professional societies can play in the expansion of the MRA. Such organizations as the National Council on Family Relations, the American Bar Association, and the American Sociological Association have professional interests in complete and accurate collection of data about marriages and divorces. Social scientists generally see the necessity for good data on family formation and dissolution. Professional organizations can be helpful in creating a demand for statistics on marriages, thereby influencing State legislatures.

Dr. Grove said that an instruction manual for persons who handle marriage licenses will be prepared and ready in about a year or so.

It appears that the trend is favorable for inclusion of more areas in the MRA. Public relations, timing, and preliminary groundwork are essential in planning to secure enabling legislation.

DOCUMENTATION

Exhibits:

1. Application for Marriage License, Texas.
2. Application for Marriage License, West Virginia.
3. U.S. Standard Certificate of Marriage and "The Revised Standard Certificate of Marriage."
4. Items on Marriage Records Tabulated by NCHS Showing Deficiencies in Areas with Central Files, June 1966
5. Map of the Marriage Registration Area: June 1966.
6. Map of Areas Maintaining Central Files of Marriage Records, June 1966.

The following exhibits were also used in the Workshop on Divorce Registration:

7. "Importance of Marriage and Divorce Records and Statistics."
8. "Criteria for State Participation in the Marriage Registration Area and in the Divorce Registration Area."
9. Marriage and Divorce Registration in the States and Independent Areas.

APPLICATION FOR MARRIAGE LICENSE, ____________________ COUNTY, TEXAS

MALE

1. FULL NAME FIRST MIDDLE LAST
2. USUAL RESIDENCE STREET NAME AND NUMBER CITY STATE
3. DATE OF BIRTH
4. PLACE OF BIRTH CITY COUNTY STATE
5. COLOR OR RACE
6. PROOF OF IDENTITY AND BIRTH DATE

FEMALE

7. FULL NAME FIRST MIDDLE LAST
8. MAIDEN SURNAME
9. USUAL RESIDENCE STREET NAME AND NUMBER CITY STATE
10. DATE OF BIRTH
11. PLACE OF BIRTH CITY COUNTY STATE
12. COLOR OR RACE
13. PROOF OF IDENTITY AND BIRTH DATE

OATH

Each party hereto, for himself, or herself, individually and together, solemnly swears that the information set forth hereinabove in this application is true and correct; that neither party is disqualified or incapable of entering into the marriage relation; that the parties are not of the relationship prohibited by law; and that there are no legal impediments to such marriage.

SIGNATURE OF MALE APPLICANT

SIGNATURE OF FEMALE APPLICANT

Subscribed and sworn to before me on ____________________, 19 ____

____________________ County Clerk

____________________ County, Texas

By ____________________, Deputy

E OF MARRIAGE ____________________, 19 ____

COUNTY OF MARRIAGE ____________________

Exhibit 1

WEST VIRGINIA STATE DEPARTMENT OF HEALTH—DIVISION OF VITAL STATISTICS

APPLICATION FOR MARRIAGE LICENSE

SAMPLE

License No.____________________

License Issued: Date ________ County ________ State file No.____________

Write plainly with permanent ink or typewriter.

GROOM

1. FULL NAME (First) (Middle) (Last)			2. COLOR OR RACE
3. DATE OF BIRTH (Month) (Day) (Year)	4. AGE (Last Birthday) _____Years	5. RELATIONSHIP TO BRIDE________ None ☐	
6. BIRTHPLACE (City or Town, State or Foreign Country)	7. USUAL RESIDENCE	Street & No. or Rur. Rte. County	City or Town State
8. PREVIOUS MARITAL STATUS Never Married ☐	LAST MARRIAGE ENDED BY: Death ☐ Divorce ☐ Annulment ☐		9. NUMBER OF PREVIOUS MARRIAGES______ None ☐
10. FATHER'S NAME		11. MOTHER'S MAIDEN NAME	

BRIDE

12. FULL NAME (First) (Middle) (Last)			13. COLOR OR RACE
14. DATE OF BIRTH (Month) (Day) (Year)	15. AGE (Last Birthday) _____Years	16. RELATIONSHIP TO GROOM________ None ☐	
17. BIRTHPLACE (City or Town, State or Foreign Country)	18. USUAL RESIDENCE	Street & No. or Rur. Rte. County	City or Town State
19. PREVIOUS MARITAL STATUS Never Married ☐	LAST MARRIAGE ENDED BY: Death ☐ Divorce ☐ Annulment ☐		20. NUMBER OF PREVIOUS MARRIAGES______ None ☐
21. FATHER'S NAME		22. MOTHER'S MAIDEN NAME	

Bride, groom, or, both should sign →

The applicant(s), being first duly sworn, declares that the statements above are true and correct.

23. SIGNATURE OF GROOM	24. SIGNATURE OF BRIDE

25. Taken, subscribed and sworn to before the undersigned authority by the applicant(s) above, this_____day of____________, 19____

____________________, County Clerk By____________________,

Deputy Clerk, County Court of____________________County, W. Va.

RECORD OF MARRIAGE

To County Clerk:
1. Transcribe information from marriage license to Record of Marriage.
2. Item 31: Enter date this record is completed.

26. DATE OF MARRIAGE (Month) (Day) (Year)	27. COUNTY OF MARRIAGE	28. CITY OR TOWN OF MARRIAGE

29. OFFICIANT'S A. NAME____________________B. ADDRESS____________________

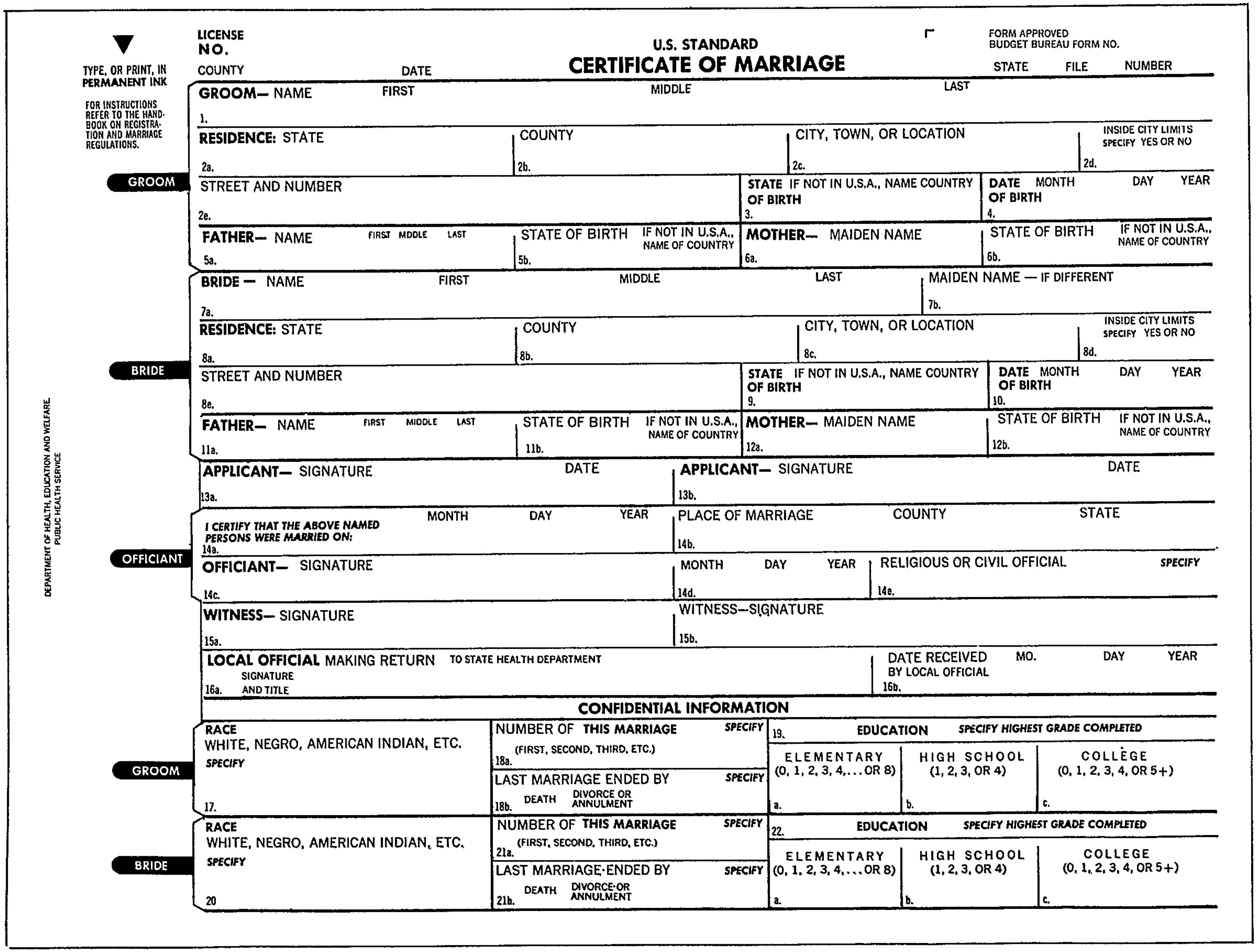
C. AUTHORIZED POSITION ☐ RELIGIOUS OFFICIAL____________ ☐ CIVIL OFFICIAL____________

Specify Religious Body — Specify Authorized Position

30. SIGNATURE OF COUNTY CLERK	31. DATE FILED (Month) (Day) (Year)

VS-008 (1-1-64)

Exhibit 2



▼ TYPE, OR PRINT, IN PERMANENT INK

FOR INSTRUCTIONS REFER TO THE HANDBOOK ON REGISTRATION AND MARRIAGE REGULATIONS.

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
PUBLIC HEALTH SERVICE

LICENSE NO.
COUNTY DATE

U.S. STANDARD
CERTIFICATE OF MARRIAGE

FORM APPROVED
BUDGET BUREAU FORM NO.
STATE FILE NUMBER

GROOM

GROOM— NAME FIRST MIDDLE LAST 1.			
RESIDENCE: STATE 2a.	COUNTY 2b.	CITY, TOWN, OR LOCATION 2c.	INSIDE CITY LIMITS SPECIFY YES OR NO 2d.
STREET AND NUMBER 2e.		**STATE OF BIRTH** IF NOT IN U.S.A., NAME COUNTRY 3.	**DATE OF BIRTH** MONTH DAY YEAR 4.
FATHER— NAME FIRST MIDDLE LAST 5a.	STATE OF BIRTH IF NOT IN U.S.A., NAME OF COUNTRY 5b.	**MOTHER—** MAIDEN NAME 6a.	STATE OF BIRTH IF NOT IN U.S.A., NAME OF COUNTRY 6b.

BRIDE

BRIDE — NAME FIRST MIDDLE LAST 7a.			MAIDEN NAME — IF DIFFERENT 7b.
RESIDENCE: STATE 8a.	COUNTY 8b.	CITY, TOWN, OR LOCATION 8c.	INSIDE CITY LIMITS SPECIFY YES OR NO 8d.
STREET AND NUMBER 8e.		**STATE OF BIRTH** IF NOT IN U.S.A., NAME COUNTRY 9.	**DATE OF BIRTH** MONTH DAY YEAR 10.
FATHER— NAME FIRST MIDDLE LAST 11a.	STATE OF BIRTH IF NOT IN U.S.A., NAME OF COUNTRY 11b.	**MOTHER—** MAIDEN NAME 12a.	STATE OF BIRTH IF NOT IN U.S.A., NAME OF COUNTRY 12b.
APPLICANT— SIGNATURE DATE 13a.		**APPLICANT—** SIGNATURE DATE 13b.	

OFFICIANT

I CERTIFY THAT THE ABOVE NAMED PERSONS WERE MARRIED ON: MONTH DAY YEAR 14a.	PLACE OF MARRIAGE COUNTY STATE 14b.	
OFFICIANT— SIGNATURE 14c.	MONTH DAY YEAR 14d.	RELIGIOUS OR CIVIL OFFICIAL *SPECIFY* 14e.
WITNESS— SIGNATURE 15a.	WITNESS—SIGNATURE 15b.	
LOCAL OFFICIAL MAKING RETURN TO STATE HEALTH DEPARTMENT SIGNATURE AND TITLE 16a.		DATE RECEIVED BY LOCAL OFFICIAL MO. DAY YEAR 16b.

CONFIDENTIAL INFORMATION

GROOM

RACE WHITE, NEGRO, AMERICAN INDIAN, ETC. *SPECIFY* 17.	NUMBER OF **THIS MARRIAGE** (FIRST, SECOND, THIRD, ETC.) *SPECIFY* 18a.	19. **EDUCATION** *SPECIFY HIGHEST GRADE COMPLETED*		
	LAST MARRIAGE ENDED BY DEATH DIVORCE OR ANNULMENT *SPECIFY* 18b.	ELEMENTARY (0, 1, 2, 3, 4,...OR 8) a.	HIGH SCHOOL (1, 2, 3, OR 4) b.	COLLEGE (0, 1, 2, 3, 4, OR 5+) c.

BRIDE

RACE WHITE, NEGRO, AMERICAN INDIAN, ETC. *SPECIFY* 20	NUMBER OF **THIS MARRIAGE** (FIRST, SECOND, THIRD, ETC.) *SPECIFY* 21a.	22. **EDUCATION** *SPECIFY HIGHEST GRADE COMPLETED*		
	LAST MARRIAGE ENDED BY DEATH DIVORCE OR ANNULMENT *SPECIFY* 21b.	ELEMENTARY (0, 1, 2, 3, 4,...OR 8) a.	HIGH SCHOOL (1, 2, 3, OR 4) b.	COLLEGE (0, 1, 2, 3, 4, OR 5+) c.

Exhibit 3

THE REVISED STANDARD CERTIFICATE OF MARRIAGE

The new Standard Certificate of Marriage succeeds the Standard Record of Marriage which was recommended in 1954 by the Public Health Service as a model form for use in reporting statistical data about marriages. Many of the changes from the standard record in the title and items on the new Standard Certificate of Marriage bring this certificate into conformity with the new Standard Certificates of Birth, Death, Fetal Death, and Divorce. This standardizing of the items appearing on all of the standard certificates has several advantages. For example, the uniform reporting of residence data is important for marriage statistics so that marriage rates based on place of residence of bride and groom can be estimated for comparison with the rates at which other vital events occur to a population of an area such as a State or metropolis . The MRA now covers three-fourths of the marriages in the United States, including those in all but one State east of the Mississippi River. Standardization of this item makes it possible to compute and compare rates by residence for several States and counties or metropolitan areas. When all States are in the MRA, rates by residence can be made available for all States and definitely bounded local areas. If certificates are interchanged, these rates can be determined at State and local levels.

Specific changes in the residence and other items, most of them common to two or more of the revised certificates, are:

Residence.—Items of residence data are requested in the same order as on the standard record—State, county, and city, town, or location. A question about whether or not residence is inside city limits and an item, street name and number, have been added. The detailing of each item in a box of its own emphasizes the importance of recording complete residence data. The order of the items helps in classifying brides and grooms by largest residence area (State) first, than by as many successively smaller residence subareas as are required to allocate the persons or tabulate the data for the purpose at hand.

State of birth.—Title of item was Place of birth, but data to be recorded are the same.

Items related to certification of the marriage.—On the revised certificate the officiant certifies to the date and place of the marriage, signing his name below these data, along with the date and specification of his official position as religious (priest, pastor, rabbi, etc.) or civil (judge, mayor, etc.). The date and place of the marriage provide some of the most essential marriage statistics. The clergyman or civil official who performs the ceremony already certifies to these data in many States. It was felt that this should be the practice in all States. In most States, he also enters the title of his office. This title will be used by the NCHS in classifying the ceremony as civil or religious. These statistics provide information about proportions of civil and religious ceremonies in various locations; also, for analyses of relationships of age at marriage and marriage order to type of ceremony.

Name and State of birth of father and mother of bride and groom.—These items were added at the request of study group members considering the new certificate. An interesting possible research use of these items is that of aiding in matching the marriage record to the birth records of the bride and groom where these data are also usually given for the parents of an infant.

Race.—The term "color" was dropped from the "race or color" item since the responses desired are not primarily color groups. The most common groups referred to by the term "race" are listed on the certificate.

Education: Highest grade of school completed.—This item has been substituted for usual occupation and kind of business or industry. The item on education is simpler to report and classify than are those on occupation and industry. It is a more stable indicator of socioeconomic differences for young brides and grooms. This item also appears on the Standard Certificates of Live Birth, Fetal Death, and Divorce or Annulment.

A number of questions can be answered more factually with these data on education. Estimates can be made of differences by educational level in probabilities of first marriage (and of remarriage of widowed and divorced). Trends in age and sex specific marriage rates can be determined for persons with little or no schooling as compared to those at higher educational levels. The extent to which persons marry partners at the same education level as themselves can be determined. Knowledge about relationships to education of rates of marriage, divorce, widowhood, and remarriage is needed to provide "bench mark" statistics for comparison with similar statistics about the family life of groups such as, for example, those with health, welfare, or family problems. Changes in marriage rates of persons at different education levels in response to changes in levels of economic activity can also be determined.

Number of this marriage; Last marriage ended by (death, divorce, or annulment), with date ended.—The items about previous marriages are needed to classify the order of the current marriage and to present accurate rates of remarriage, as well as age and other characteristics of persons remarrying, since these differ for previously widowed persons from those previously divorced. The date on which the last marriage ended is needed for statistics on duration of divorce and widowhood preceding remarriage. Only the date on which the last marriage ended is a new item. It may be used in conjunction with the item on the Standard Certificate of Divorce or Annulment requesting the date of the marriage being ended and/or the date of death on the death certificate for verification and for other purposes.

Confidential information.—In order to guard more completely the rights to privacy of marrying couples with respect to most of the personal information they supply, the new certificate has a section for confidential information which includes the items on race and education along with those about marriage order and information about the last marriage. Several States do not now provide for a confidential section on the marriage certificate. However, the overall purpose in recommending this section is to retain these data for prescribed legal uses and legitimate research and statistical uses. Dr. Grove has noted in a recent paper that "Marriage records have traditionally been treated as public records in local offices. However, the National Center for Health Statistics believes that the reasons for confidential treatment of certain information are as valid for marriage and divorce as for birth certificates." [1]

Other items which have been added or revised, are:

Local file number
License issued: County
Date
Signatures of applicants and dates
Signatures of witnesses and dates
Date (certificate) received by local official

These items are recommended for administrative controls, including detection of delays in reporting, and for future legal verification of the parties to the marriage and other purposes. They are presented on this certificate in order to consolidate important information on one form. It is recognized that the selection and precise wording of these items may vary depending on State laws.

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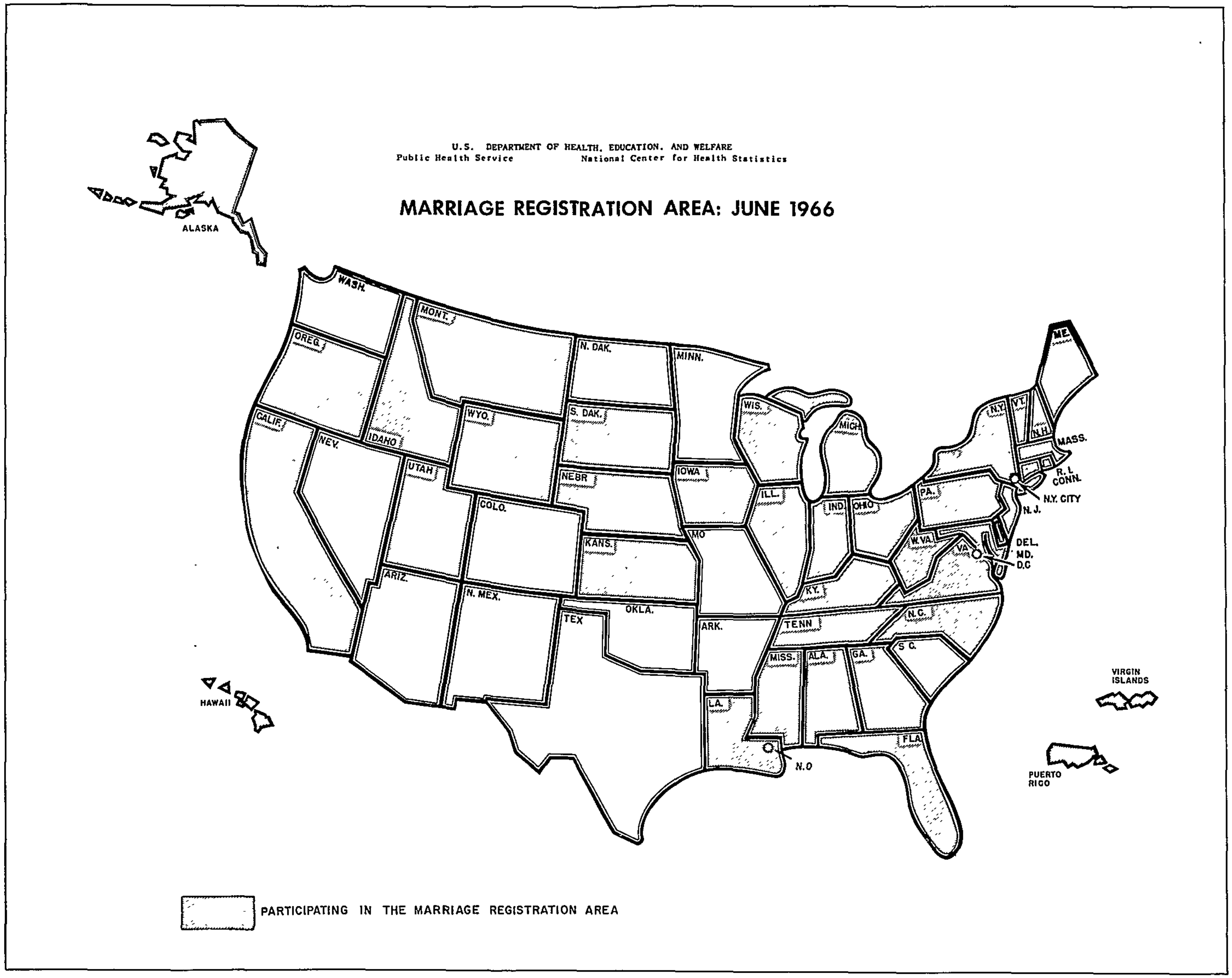
[1] Robert D. Grove, Ph. D., "The New Standard Certificates of Vital Events." Paper presented on Oct. 21, 1965, at a joint session of the Statistics Section and the American Association of Vital Records and Public Health Statistics at the 1965 meeting of the American Public Health Association.

Exhibit 4

Items on Marriage Records Tabulated by NCHS Showing Deficiencies in Areas with Central Files, June 1966

Area	Age or date of birth (1)	Rate (2)	Previous marital status (3)	Number of this marriage (4)	Date of this marriage (5)	State of residence (6)	State of marriage (7)	County of residence (8)	County of marriage (9)	Type of ceremony (10)	State of birth (11)
Arkansas	—	—	X	X	—	—	—	—	—	—	—
Minnesota (Ledger)	—	X	X	X	—	(1)	—	(1)	X	X	X
Missouri	—	—	—	X	—	—	—	—	X	X	—
North Dakota	—	X	(1)	(1)	—	(1)	—	(1)	—	—	X
South Carolina	—	—	X	X	—	(1)	—	(1)	(1)	—	X
Texas (Law)	—	—	X	X	—	—	—	—	—	X	—

[1] Item not explicitly requested.
NOTE.—=Item on form. X=Item not on form.

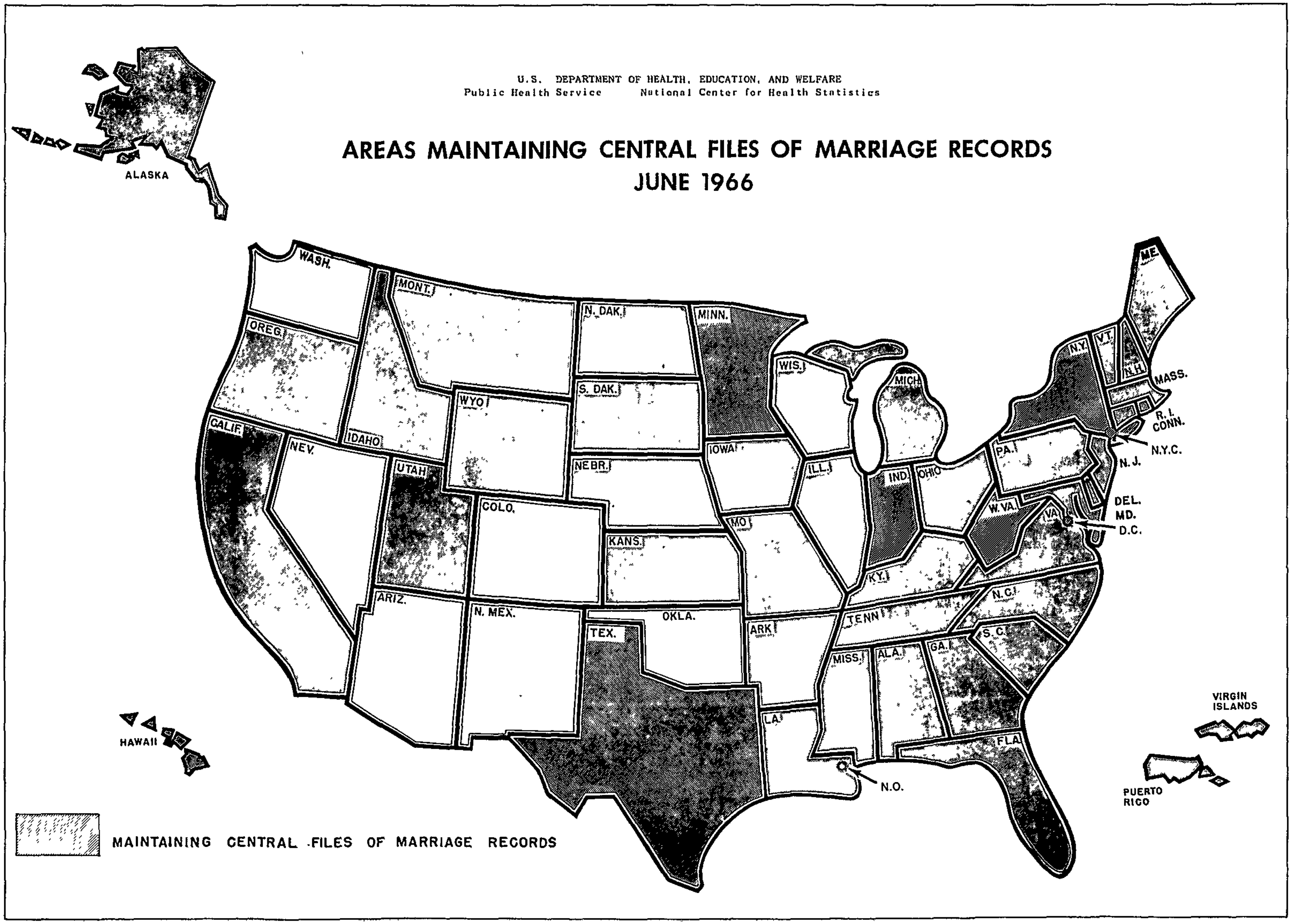


U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Center for Health Statistics

MARRIAGE REGISTRATION AREA: JUNE 1966

▨ PARTICIPATING IN THE MARRIAGE REGISTRATION AREA

Exhibit 5



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Center for Health Statistics

AREAS MAINTAINING CENTRAL FILES OF MARRIAGE RECORDS
JUNE 1966

Exhibit 6

Exhibit 7

IMPORTANCE OF MARRIAGE AND DIVORCE RECORDS AND STATISTICS*

In the development of marriage and divorce records and statistics, State health departments have actively assisted the National Center for Health Statistics in collecting data needed for national statistics. The State health departments have taken the principal role in requesting legislation authorizing State files of marriage and divorce records from which basic statistics are tabulated. These efforts have resulted in the growth of the Marriage Registration Area from 29 States in 1957 to 36 States and the District of Columbia; of the Divorce Registration Area from 14 States in 1958 to 22 States. In addition, 7 States outside the MRA and 18 outside the DRA have central files of records. A number of States outside the registration areas are securing needed legislation and adequate reporting to central files. Thus, in most of the States, the State health department now assumes a major share of the responsibility for improving marriage and divorce statistical reporting programs.

A few months ago, a State registration official described a problem. He was expected to discuss the usefulness of marriage and divorce statistics, but he felt hard pressed to cite specific examples. The following comments are directed to this problem.

General Uses of Marriage and Divorce Data

1. State agencies—Courts adjudicating domestic relations cases, welfare and correctional programs wishing to compare family formation and dissolution statistics among their clients with similar statistics for the State as a whole, State legislative committees or Governor's task forces wishing information about marriages and divorces for a variety of purposes.
2. Business and industries in the State—Those that market products for new families, including clothing, appliances, house furnishings, jewelry, etc., and products for infants.
3. Press, radio, television—For programs and articles about young marriages, about marital disruption, about expected increases in numbers of marriages and divorces as the post-World War II "baby boom" babies grow up, about frequency of remarriage and of marriages among older persons, and about children affected by divorce.
4. College and university extension programs—Data for theses, texts, and class discussion.
5. Church organizations—Data on relative frequencies of religious and civil ceremonies and on trends in divorce.
6. The general public—Many ask for accurate statistics about early marriages; about trends in divorce; and on most of the topics about which press, radio, and television writers inquire.
7. State and local health departments—Health education and other health department services for young married couples and new parents, and for mothers after marital disruption; program planning for programs offering these services.

Public Health Uses of Marriage and Divorce Data

That statistics from birth and death records are useful in State health departments is well established. Not so well established, and perhaps not so obvious, are the possible uses of marriage and divorce statistics.

The statistics, combined with other information, are useful in planning and administering some of the health department's programs, especially those in maternal and child health. Marriage records supply information about geographic areas of concentration of brides by age. They also usually provide an approximate index of the socioeconomic status of the couple (for example, occupation or educational level of the groom) as well as the race or color of the couple. If the State can add an item on intended residence after marriage of the couple, statistics can be obtained on the distribution of brides in the childbearing ages. Projection of trends in numbers of brides in the State or in local communities would be helpful in anticipating increases or decreases in needs for health education materials, services of public health nurses, and any other services available to mothers, particularly to young mothers with their first-born child. If the health department through clinics or in other ways provides information about family planning, trends in the number of young married couples will be useful for anticipating needs for these services. Distribution of health education materials about nutrition for maintaining child and family health should also be related to the numbers of young brides.

In addition to program planning, opportunities might be made available to young couples securing

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*Prepared for the meeting of the Health Services Administration Committee, ASTHO, Nov. 16, 1965.

marriage licenses to apply for or to indicate interest in State or local health department services available to them. Through this channel, the health department might reach a broader segment of the public.

If the State health department has a file of marriage records, the cooperation of social scientists or public health researchers can be secured in designing surveys to secure more data on the health knowledge and health problems of recently married couples. One way of doing this is by the device of followback studies; that is, by sampling marriage records of recently married couples and securing the needed data from them by interviews or mailed questionnaires. Such studies could yield much information about gaps in health education and health problems among the recently married.

Information from divorce records—i.e., number of children, especially minor children, of couples securing divorces—can be useful in maternal and child health programs. Case workers with domestic relations courts could cooperate in supplying information to local health departments about anticipated residences of divorced mothers with minor children. If some mothers, living through the stress of marital disruption, feel inadequate and defeated, inattention may generate or intensify nutritional and emotional health needs of children. An increase in the number of recently divorced mothers in a State or local community may thus be one indicator of increased need for mental health and child health services.

Family relationships, both husband-wife and parent-child, play a key part in the intensification and alleviation of mental health problems. Dr. John J. Hanlon, after listing various professionally trained persons whose services are needed in mental health programs in public health, comments, ". . . perhaps the key group toward which the efforts of all the others should be primarily aimed, are parents—both actual and prospective."* The same possibilities which make marriage and divorce statistics and records useful in relation to maternal and child health programs apply in developing programs of mental health services—especially trends in numbers of new families and recently divorced mothers as indicators of groups whose education and awareness of mental health needs and services are vital.

Marriage and divorce statistics are useful parts of any program for estimating population growth and increases and decreases in numbers of families in States and local communities.

For estimates of population growth in a State or other area, the classic formula is population at the beginning of a period of time plus births plus people migrating into the area minus deaths minus people moving out of the area. Marriage and divorce trends may be indirectly useful in using this formula—marriages because women in the childbearing ages have increased probabilities of bearing children, divorces because they signalize decreased probabilities of bearing children. If numbers of births are projected for estimating future trends in population, it is useful to be able to estimate rates at which women may be expected to marry and divorce (thus altering their probabilities of bearing children). Overall estimates of population growth in a State or community are useful in planning for land uses, tax revenues, economic growth, school needs, and growth in needs for health services, personnel, and programs.

Why Central State Files of Marriage and Divorce Records?

Local registration and filing of these records meet some needs, but far from all. For one thing, it is almost impossible, on a local community basis, to secure marriage statistics by place of residence. These statistics must be tabulated centrally so that persons who did not marry in the communities in which they lived can be allocated to these communities. Marriage rates and other statistics by State and county of residence will also be one of the major gains when every State can report data on place of residence to the National Center and can send to their States of residence copies of the marriage records of persons coming into the State to marry. At present, marriage rates for each State are actually ratios of number of marriages occurring in the State to number of people residing in the State. Hence, they measure, without differentiating, rates at which persons cross State boundaries to marry and rates at which residents marry in the State, and they fail to measure rates at which State residents go to other States to be married. Just as we have birth statistics by residence of mother and exchanges among States of birth records, we could have, it would seem, marriage statistics by place of residence of bride and of groom along with the exchanges of marriage records.

Another great advantage of a State file of records is that indexes based on it cover a broader area than

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*Hanlon, John J., M.S., M.D., M.P.H., Principles of Public Health Administration, fourth edition, St. Louis, Mo., C. V. Mosly Co., 1964, p. 630.

a local community and are far more useful for locating certificates.

Another essential gain from State files is the greater ease with which data can be collected and classified by uniform procedures and supplied to users with relatively exact and uniform definitions of concepts. For example, county totals of marriage could be tabulated as marriage licenses issued, marriages performed in the county, marriages performed on licenses issued in the county, or marriages of residents in the county. A uniform definition of "county total of marriages" is essential for accurate statistics.

Why Should Files be in the State Health Department?

Health departments have assumed responsibility for marriage and divorce programs partly because they include vital records and statistics staffs with invaluable experience in registering, certifying, and processing records and statistics in the programs established for births and deaths. Since records of marriage and divorce, as well as those of births and deaths, are created and registered using public funds, the public is entitled to essential statistical information from them. The State health department includes in its vital statistics office an operation which can maintain files of these records and could, given the resources, produce the basic statistics from them. They can also improve the quality of the data when necessary, if given adequate statutory authority to secure complete reports from local offices.

However, the fundamental significance of marriage and divorce statistics in a State health department rests in the broadening of the goals of public health. Along with traditional concerns in public sanitation, communicable disease control, and other health surveillance activities have come new concerns about chronic disease, mental and emotional health, and environmental health. These new concerns of public health involve relationships in families and other groups. As public health becomes more concerned with the family relationships so essential to emotional, nutritional, and other aspects of good health, information about families, including data on marriage and divorce, will become essential in assessing needs for public health services. State health departments can supply the basic statistics on family formation through marriage, growth through births of children, and disruption through divorce or death for local, State, and national purposes.

Public Interest in Marriage and Divorce Information

In 1964, the National Center for Health Statistics received over 1,500 requests for information on marriages or divorces. Although the number of inquiries received by State and local offices is not known, it is certain that it would be much larger. The inquiries received in the National Center for Health Statistics come from the Congress, various Federal agencies, business organizations, news media, college professors and students, welfare and religious organizations, and a variety of other sources.

Some examples of the specific information requested will be of interest. What are the trends in numbers and proportions of teenaged brides and grooms? What proportion of so-called teenage marriages end in divorce compared to percents of all marriages ending in divorce? What effect did the deferment from military service in 1963 of married men have on the marriage rate of young men? What are the expected marriage rates in the future of teenage men and women?

Another subject of interest concerns children of couples who are divorced. What are the trends in proportions of children affected by divorce? What provisions are made for the financial support of these children? What proportion of persons who remarry bring minor children into their new marriages?

A large number of inquiries ask for facts on marriage and divorce rates—trends and projections, rates of specified years or areas, and rates at which marriages end in divorce.

Many inquiries were also received for statistics on numbers of marriages in which bride and groom come from different religious or ethnic groups, for trends in such marriages, and for estimates of rates at which such marriages end in divorce.

Several requests were known to be for statistics needed in larger program planning or research projects. For example, the Veterans' Administration, trying to estimate future benefits due to survivors of deceased veterans, is interested in marriage rates as estimates of risks of first marriage and remarriage at different age levels, along with statistics on age differences between bride and groom.

Directors of a survey research project on adults receiving outpatient psychiatric care need age-specific divorce rates for general adult populations with which to compare rates among their outpatient populations.

Marriage rates respond quickly to changes in levels of economic activity, particularly levels of unemployment, with the rates decreasing as unemployment increases. They can be useful when compared with other trends as indicators of changes in economic activity.

Exhibit 8

Criteria for State Participation in the Marriage Registration Area and in the Divorce Registration Area

1. The existence of adequate central files of marriage records or of divorce and annulment records.
2. The use of a statistical record form containing items of information recommended by the Public Health Conference on Records and Statistics.
3. A functioning registration system with all local areas reporting regularly to the State office.
4. Joint testing of registration completeness and accuracy between the State office and the Division of Vital Statistics.

State or area	Registration areas: Criteria for participation (X=Criterion met; —=Criterion not met)							
	MRA				DRA			
	1	2	3	4[a]	1	2	3	4[a]
Arizona	—	—	—	—	—	—	—	—
Arkansas	X	—	X	—	X	—	—	—
California	In the MRA				X	X	X	—
Colorado	—	—	—	—	—	—	—	—
Connecticut	In the MRA				X	—	X	—
Delaware	do				X	—	X	—
District of Columbia	do				X	—	X	—
Florida	do				X	—	X	—
Illinois	do				X	X	X	—
Indiana	do				—	—	—	—
Kentucky	do				X	X	—	—
Louisiana	do				X	X	—	—
New Orleans	do				(b)			
Maine	do				X	—	X	—
Massachusetts	do				X	—	X	—
Minnesota	X	—	X	—	—	—	—	—
Mississippi	In the MRA				X	—	X	—
Missouri	X	—	—		In the DRA			
Nevada	—	—	—		—	—	—	—
New Hampshire	In the MRA				X	—	X	—
New Jersey	do				X	—	X	—
New Mexico	—	—	—		—	—	—	—
New York (excluding New York City)	In the MRA				X	—	X	—
New York City	do				(b)			
North Carolina	do				X	—	X	—
North Dakota	X	—	X	—	X	—	X	—
Oklahoma	—	—	—	—	—	—	—	—
South Carolina	X	—	X	—	X	X	X	—
Texas	X	—	—	—	—	—	—	—
Vermont	In the MRA				X	X	X	—
Washington	—	—	—	—	—	—	—	—
West Virginia	In the MRA				—	—	—	—
Puerto Rico	do				X	—	X	—

[a] Agreement for joint testing of registration completeness and accuracy is made after meeting the other three criteria.

[b] Area reports to the State.

Exhibit 9

Marriage and Divorce Registration in the States and Independent Areas

Area	Marriages		Divorces	
	Central files established (Year)	Included in MRA (Year)	Central files established (Year)	Included in DRA (Year)
Alabama	1908	1957	1908	1958
Alaska	1913	1957	1949	1958
Arizona	....	....	....	....
Arkansas	1917	....	1923	....
California	1905	1957	1962	....
Colorado	....	....	....	....
Connecticut	1897	1957	1947	....
Delaware	1913	1957	1935	....
District of Columbia	1811	1961	1802	....
Florida	1927	1957	1927	....
Georgia	1952	1957	1952	1958
Hawaii	1896	1957	1951	1958
Idaho	1947	1957	1947	1958
Illinois	1962	1964	1962	....
Indiana	1959	1961	....	....
Iowa	1880	1957	1914	1958
Kansas	1913	1957	1951	1959
Kentucky	1958	1959	1958	....
Louisiana	1937	1957	1942	....
New Orleans	1870	1957		
Maine	1892	1957	1892	....
Maryland	1914	1957	1914	1959
Massachusetts	1841	1961	1882	....
Michigan	1867	1957	1897	1961
Minnesota	1958	....	....	....
Mississippi	1926	1957	1926	....
Missouri	1948	....	1948	1961
Montana	1943	1957	1943	1958
Nebraska	1909	1957	1909	1958
Nevada	....	....	....	....
New Hampshire	1858	1957	1881	....
New Jersey	1848	1957	1795	....
New Mexico	....	....	....	....
New York (excluding New York City)	1880	1957	1963	....
New York City	1847	1965	....	....
North Carolina	1962	1964	1958	....
North Dakota	1925	....	1949	....
Ohio	1949	1957	1949	1962
Oklahoma	....	....	....	....
Oregon	1907	1957	1925	1958
Pennsylvania	1906	1957	1943	1958
Rhode Island	1852	1957	1962	1963
South Carolina	1950	....	1962	....
South Dakota	1905	1957	1905	1958
Tennessee	1945	1957	1945	1958
Texas	1966	....	....	....
Utah	1919	1957	1953	1958
Vermont	1857	1957	1896	....
Virginia	1853	1957	1918	1958
Washington	....	....	....	....
West Virginia	1921	1965	....	....
Wisconsin	1907	1957	1907	1958
Wyoming	1941	1957	1941	1958
Puerto Rico	1931	1957	1931	....
Virgin Islands	1953	1957	1953	1958

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Dr. Oswald K. Sagen

RESOURCE PERSONS

Members of the Study Group on Student Training and Staff Development

RAPPORTEUR

Mrs. Natalie C. Freeman

CAREERS IN HEALTH STATISTICS

Thursday Morning—June 23, 1966

DISCUSSION SUMMARY

Careers in Health Statistics

DISCUSSION SUMMARY

Report of the Study Group on Student Training and Staff Development

This study activity, which began in the 1956–1958 biennium, has been concerned with training, implementing Federal-State-University staff exchange, and recruitment to the field. The 1962–1964 Study Group sponsored a project proposal [1] for a national center for training in health statistics to expand and collate efforts in delivering knowledge of statistics applied in the field of health. The 1964–1966 Study Group [2] met once and confirmed that project proposal, further recommending that the National Center for Health Statistics (NCHS) administer the proposed training center. Although the Group's efforts heralded the development of a national mission, it was impossible to implement this proposal from within the profession. The report also noted that while the Study Group alluded only briefly to the increased needs for statisticians and demands for more services new legislation (S. 3008[3]) has already delineated many of these and attempts in part to do what the Study Group recommended in the area of staff exchange, recruitment, and manpower development.

Discussion centered primarily on the details of S. 3008. This bill should facilitate staff exchange between Federal and State agencies, including *State* universities, for work related to health, since it protects fringe benefits and waives competitive Civil Service requirements. The result will be not only an exchange of experience, but also enhanced individual career development. Another provision of the bill, which allots 5 million dollars a year in fiscal 1968 and 1969 for training grants, appears to be broad enough to cover vital statistics training. This is particularly important in view of recent policy changes in the administration of the NIH biometry grant program. That program now limits grants to full-time study in doctoral programs and eliminates assistance to part-time and master's students, which may possibly threaten the summer sessions in biostatistics. In addition, the stipends for biometry grants have been decreased so that they are now lower than some other PHS stipends. An expression of personal views indicated that the bill does not go far enough, that at first the exchange will probably be one way—from Federal to States—and that State health officers need to be educated in the statistician's role in health protection. Apart from S. 3008, and included in a program of expanded emphasis in the area of training assistance to States for fiscal 1969, NCHS hopes to begin a series of courses of varying lengths tailored to the needs of State programs.

Revisions in the Curriculum of Schools of Public Health

The first report [4] dealt with findings of a survey of curricula in biostatistics in the United States sponsored by the Section on Training, American Statistical Association. This survey covered 28 institutions operating under the NIH biometry training grant program and asked questions concerning the number of graduate students enrolled in the fall of 1964, the kinds of students accepted, the levels of attainment usually required for both master's and doctoral degrees, the practical experience gained by students in these programs, and the titles of recent theses. A series of tables were presented which gave summaries and a catalog of requirements in biometry. Although it was recommended that the findings and implications of this survey be studied thoroughly during the next 2 years, some notable facts emerged from the review presented at the workshop:

1. Average "requirements" are not hard and fast, some being a combination of requirements and electives.

2. A doctoral degree takes a long time.
3. There is wide variation in semester hour requirements for both master's and doctoral degrees, with some theoretical statistical programs similar to those for full mathematical statistical majors, others geared to biological research, and still others emphasizing demography and public health statistics.

Another report dealt with the use of computer instruction in a school of public health. Computers are beginning to play an important role in biostatistical training. The preparation of personal packages of statistical programs by the individual biostatistics student provides direct experience, as well as useful materials for later application on the job. The computer as a teaching aid multiplies the effectiveness of the teacher by providing the student with an economical form of individual attention. Basic instruction especially can be augmented with increased reinforcement and feedback. Computer-assisted instruction using remote terminal devices, time-sharing systems, and conversational computer languages promises to be an important development for the preparation of all health personnel for course units in statistics, as well as other related areas.

Curriculum revisions in two schools of public health were reported. One is going into a four-track structure leading to advanced degrees in—

1. Vital statistics and registration at State and local levels,
2. Biometry,
3. Demography, and
4. Mental health statistics.

The latter two are new programs. The master's level course in demography consists of the biometry curriculum without parasitology and mental health courses but adds courses in fertility, conception, contraception, and sterility; techniques of population research; and 10 to 12 weeks of field training in demographic problems. For the doctoral level, six courses in sociology are added. The mental health statistics program is designed to train statisticians to work in mental health hospitals and centers and in related units where training needs are more specialized. Emphases will be placed on such subjects as the classification of mental disease and hospital statistics and participation in a 10- to 12-week field program.

Another school is emphasizing training directed at planning local health programs, as provided in S. 3008, rather than analysis or evaluation. It will provide training in vital statistics, continuous community health surveys, and community mental health statistics. Continuous demonstration projects will be developed, as well as a series of short-term programs for health officers and other community health planners.

Survey of Duties, Qualifications, and Salaries of Registration and Public Health Statistics Personnel

The workshop next discussed the findings of the survey conducted in 1964 by the AAVRPHS in the 54 registration areas of the United States. This presentation related information from the survey in distributed tables[5] to information from other sources, bringing out some interesting and rather surprising facts. Among them were:

1. The program directors' median salary range, from $9,000 to $9,700, ranks third among selected professional State health workers whose salaries are reported to the Division of Merit Systems, DHEW—a ranking maintained since 1957;
2. The average educational attainment of incumbents is higher than that which the positions require;
3. Most of the reasons given for loss of professional health statisticians can be related in one way or another to lack of money;
4. Budget and staffing needs of general registration activities appear to be more adequately met than those of a statistical nature; and
5. Most of the problems discussed were directly related to the lack of funds, despite large increases in both State and Federal moneys allotted for specific health services in the past 15 years.

However, since vital statistics programs are largely financed from State funds, an increase in Federal funds does not necessarily make more funds available for vital statistics programs.

Recruitment Techniques

The next topic on the agenda concerned the recruitment techniques employed by NCHS, State and city statistical offices, and schools of public health. Adequate budget, staffing, and provision for in-service training emerged as the key components to all good recruitment.

NCHS has two major recruitment efforts underway, one of direct visits to undergraduate schools for the junior professional training program (JPTP) and the other of mid- and high-level staff. For its fourth year of operation, the program has 112 campus visits planned for the period October 1965–February 1966. This recruitment program involves numerous telephone calls and correspondence with placement officers as well as candidates. Recruitment materials and posters are sent to the schools in advance of interview dates, and forms are used both to record the interview and for evaluation of new schools visited. Advance distribution of a newly developed recruitment brochure [6] has proven helpful. Timelags caused by Civil Service processing present a problem, so much communication is geared to holding onto candidates during the interim between interview and final selection. Last year, the program cost approximately $900 per trainee recruited, primarily in travel and communication expenses since the regular management staff conducts the campus visits and no additional staff has been added. The mid- and higher-level recruitment program has found utilization of the PHS Commissioned Corps system particularly beneficial since qualified candidates may fulfill their military obligation in this way. Twelve new officers are expected to report for duty this summer.

The State office reporting its recruiting experience indicated that undergraduate and graduate schools in related fields are more often used than schools of public health, except the summer sessions which are used more for training and reorientation once a person has been employed. High attrition may be caused by many factors, and in an attempt to retain candidates it was proposed that a two-step philosophy be used:

1. Selling the "health of the Nation" in recruitment and
2. Using orientation to retain employees.

It was also pointed out that the present swing is to public, rather than private, employment in this decade and that S. 3008 requires that people be found now to do the job. MPH training programs have not greatly benefitted State statistical programs because of higher wages elsewhere and migration to better positions outside of State employment after training has been received. The need in State statistical programs is for practical statistics and to a lesser degree for highly theoretical statistics.

Recruitment experience in five city statistical offices revealed that some problems varied according to locale. For example, one area where salaries were low had no problem obtaining inservice training because a school of public health was close by; whereas another, whose salaries were competitive, considered inservice training a major recruitment problem. Recruitment sources ranged from high schools (through public health educators) to undergraduate and graduate schools in various fields, including, but not limited to, public health. In all areas, retention was considered to be a major problem.

Universities engage in two kinds of recruitment—persons new to the field and those from positions to schools of public health for training. Recruitment techniques used also included distribution of brochures [7] and active contact and correspondence with schools granting degrees in mathematics, biology, psychology, and sociology. Concentrated recruitment at smaller schools has been found to be very effective. Another tool has been fellowships at the freshman level, and contacts through alumni have also been fruitful. Summer sessions, medical and dental schools, and statistics departments are used, the latter candidates sometimes being attracted to biostatistics by better fellowships as well as the opportunity to qualify for PHS Commissioned Corps service in lieu of the draft. It was pointed out that some city and State health departments offer summer training as summer employment to aid new recruitment to the field, and it was suggested that NCHS consider sponsoring such a program for undergraduate students.

The Role of the Statistician

The role of the statistician in other health professions was the final topic discussed. The health administrator, whether on a national or local level, needs more study and analysis of data already available to obtain rate, trend, and population information needed for long-range planning. He needs assistance in identifying problem areas and priorities, determining methods of attack, and estimating resources required in order to get the most results for the investment. It was stressed that few local areas have this type of service available, but they need it and should get it from States through S. 3008, especially since 70 percent of State funds granted by this bill must be allocated at local levels.

At the State level, concern was expressed that the new programs planned for NCHS and within the schools of public health may not be in time nor, equally important, aimed in the right direction—since universities stress training and research but minimize service, while other public health professions need statisticians trained primarily for service.

An industry spokesman indicated that changes in FDA regulations and advances in technology in the pharmaceutical industry, too, have greatly increased the need for more, better trained, and more highly specialized statisticians by industry.

FUTURE PLANS

A consensus of the workshop agreed that a study group should be formed for the next biennium devoted to further consideration of the problems of recruitment and training of statisticians in health statistics and registration. It was requested that suggestions for the specific charge to that group and its membership be submitted directly to the Assistant Director, NCHS.

REFERENCES

1. Project Proposal—An Agency for the Expansion and Collation of Efforts in Delivering Knowledge of Statistics Applied in the Field of Health. Study Group on Student Training and Staff Exchange, PHCRS Doc. No. 583.4, May 21, 1964.
2. Summary Notes of the First Meeting of the Study Group on Student Training and Staff Development—PHCRS Doc. No. 605.1, December 22, 1965.
3. Public Health Planning and Grants.—S. 3008: A bill to amend the Public Health Service Act to promote and assist in the extension and improvement of comprehensive health planning and public health services, to provide for a more effective use of available Federal funds for such planning and services, and for other purposes. (Hearings before the Subcommittee on Health, of the Committee on Labor and Public Welfare, U.S. Senate, 89th Congress, 2d Sess., Mar. 16 and 17, 1966.) U.S. Government Printing Office, Washington: 1966.
4. "An Inventory of Biometry" by Dr. William F. Taylor, professor of biostatistics, School of Public Health, University of California, 1965.
5. Tabulated responses to the AAVRPHS Questionnaire on "Duties, Qualifications, and Salaries for Registration and Public Health Statistics Personnel," September 1964 (preliminary analysis).
6. A Training Program in Health Statistics for the College Graduate Majoring in Mathematics, Statistics, or the Social Sciences. U.S. Department of Health, Education, and Welfare, Public Health Service, National Center for Health Statistics. U.S. Government Printing Office: 1966.
7. Careers in Statistics, Second Edition, July 1963. Prepared under the auspices of the Committee of Presidents of Statistical Societies (American Statistical Association, Institute of Mathematical Statistics, and the Biometric Society).

M

WORKSHOP DIRECTOR

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Dr. Robert D. Grove
Dr. Alexander Plateris

RAPPORTEURS

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DIVORCE REGISTRATION

Thursday Morning—June 23, 1966

DISCUSSION SUMMARY

Divorce Registration

DISCUSSION SUMMARY

Present Status of the Divorce Registration Area

Mr. John C. Wilson, State Registrar of Montana, opened the workshop by stating that 1967 will mark the 100th year from the time that national marriage and divorce data first became available. Under the present status of divorce registration in the United States, he noted a State might fall into three categories:

1. Those States and areas which have met the four criteria for entrance into the Divorce Registration Area (DRA), namely:
   a. Central files of divorce records.
   b. A statistical report form that includes items conforming closely to those on the Standard Record of Divorce or Annulment.
   c. Regular and timely reporting by all local areas.
   d. Agreement on tests of divorce registration completeness and accuracy, carried out in cooperation with the National Center for Health Statistics.
2. Those States which have central divorce files, but are not in the DRA.
3. Those States which have no central divorce files.

Fourteen States, Alaska, Hawaii, and the Virgin Islands were included in the DRA when it was established in 1948. Today, it consists of 22 States and the Virgin Islands. Even in the DRA, however, reporting of certain items is not complete. As an example, Mr. Wilson pointed out that only 6 of the 22 States in the DRA report age or number of this marriage of husband and wife with 85 percent or more completeness. The workshop, he continued, could serve as a forum for new ideas and improvements for divorce recording in the United States.

Recent Developments in Divorce Reporting

The divorce registration programs of three States—Illinois, California, and Vermont—were described.

Mr. Leo A. Ozier, Deputy State Registrar of Illinois, briefly explained how he is solving the problem of underreporting in his State by eliciting cooperation between the Department of Public Health and the legal profession.

Mr. Paul W. Shipley, Chief, Bureau of Vital Statistics of California, described the recently instituted divorce registration program of California. He mentioned several salient features of the new law:

1. A report is sent to the Bureau of Vital Statistics when the complaint for divorce, annulment, or separate maintenance is filed with the clerk of court. Later, a certificate of registry of final decree is filed with the Bureau. Special preliminary forms are used when the required statistical information is unavailable or incomplete, and lists of interlocutory divorce decrees are transmitted monthly by the clerks of court to the Bureau of Vital Statistics.
2. The statutes as enacted give the permission to use the collected statistical information for purposes of research.
3. A $2 filing fee is charged, half of which is retained by the county clerk and the other half is forwarded to the State registrar of vital statistics. Hence, the program is supported both locally and in the State office through filing fees.
4. The law also contains a statement of confidentiality of information designed to protect the identity of the involved parties. Provision is made in the statutes that the records shall not be open to public inspection in the office of the

State registrar of vital statistics or in the offices of the county clerks and that certified copies shall exclude personal data such as race, religious denomination, and education.

Since the law's enactment in January 1966, 33,500 initial complaints have been registered. Mr. Shipley feels that reporting has been good, cooperation has been excellent, and no major problems have been encountered in the acceptance of the new system.

Mr. Charles R. Council, of the NCHS staff, reported on recent developments in divorce recording in Vermont for Mr. Donald E. Bergstrom, who was unable to attend the workshop. The report form has been revised to include items recommended on the revised standard form and has been distributed for use. Objections to certain items, though somewhat strenuous, had been small in number, and he looked for general acceptance in the future. Mr. Council expressed the hope that in the near future a test of reporting completeness could be conducted and that Vermont could be admitted to the DRA.

The Revised Standard Certificate of Divorce or Annulment

In discussing the revised standard certificate, Dr. Robert D. Grove, Chief, Division of Vital Statistics of the National Center for Health Statistics, emphasized the need for recognition of the individual problems with which each State must contend; e.g., State law may prohibit the use of certain items on certificates of vital events. He added that he was very pleased with the new divorce registration program in California, particularly the compromise struck between confidentiality and the acquisition of comprehensive and useful information.

Dr. Thomas P. Monahan, Professor of Sociology at State University College, Oswego, N.Y., similarly praised the California program and stated that the California divorce certificate should serve as a national model in gathering comprehensive data under conditions of confidentiality.

Uses of Divorce Data

Dr. Paul C. Glick of the U.S. Bureau of the Census described a study based on certificates of divorces granted in five States (Georgia, Iowa, Ohio, Oregon, and Pennsylvania) during March 1960. These certificates were matched with the 1960 census forms of the parties to the divorce. The census forms were completed before April 1 of that year. The purpose of the matching operation was to ascertain the consistency of reporting marital status; to obtain additional characteristics of the newly divorced persons, such as education, occupation, income, and number of children; and to investigate the differences between the recently divorced and other population groups. Divorce records and census schedules were matched for 554 persons. This study will be included in a monograph being prepared by Dr. Glick and Dr. Hugh Carter and sponsored by the American Public Health Association. Dr. Glick also revealed that plans are being made to include additional information related to divorce in the 1970 census. These plans include items on date of most recent as well as first marriage, number of times married, and how previous marriages ended.

Mr. Leo Ozier, speaking on behalf of Dr. Franklin Yoder of the Illinois Department of Public Health, described the potential use of marriage and divorce data in public health programs and exhorted public health officers to make more widespread use of the information available from marriage and divorce records.

The utilization of divorce statistics in studies on alcoholism was outlined in a paper prepared by Dr. Edward S. Sands and presented by Dr. Nathan Rosenberg, both of the Public Health Service. Alcoholism was reported to be significantly involved in divorce, though further research and evaluation are needed to determine the exact nature of the relationship. An interesting finding pointed out by Dr. Rosenberg was the variation in death rates by marital status due to cirrhosis for the age group 35–44.

Mr. Loren E. Chancellor, Director, Records and Statistics Division of the Iowa Department of Public Health, explained how acceptance of the certificate in the States can be effected through a program of education; i.e., explaining the uses of the new items of information to judicial organizations and other interested groups and detailing goals to be attained through collection of certain items on the certificate.

Gaining Acceptance of the Certificate

Dr. Hugh Carter, formerly Chief, Marriage and Divorce Statistics Branch of the National Center for Health Statistics, and now professorial lecturer in Sociology at the American University, described the activity of the Committee on Marriage and Divorce Statistics of the American Sociological Association. Representatives of this committee were appointed in all States outside the DRA. Dr. Carter remarked that a cooperative attitude is exhibited by the officials of most of these States, but it is difficult to improve divorce registration because new legislation is necessary in most cases. Dr. Carter also made mention of the hesitancy on the part of some State registrars to call upon social scientists in legislative hearings.

In describing trends in State registration, Dr. Carter spoke of the increasing high caliber of local and State officials and looked forward to more positive action in such areas as vital and health statistics.

In response to inquiries from the floor, Dr. Grove discussed tentative plans for a revision of the *Manual for the Registration of Divorces and Annulments.*

Dr. Glick cited the need for more interest and research in comparing census data with marriage and divorce data.

Mr. Wilson then reviewed the highlights of the workshop and concluded that, while at present divorce registration in the United States leaves much to be desired, many positive moves are being carried out and the future appears promising.

RECOMMENDATION

Upon the suggestion of Mr. Paul B. Shanks, Director, Division of Vital Statistics of West Virginia, the workshop recommended that a study group on divorce registration be appointed for the 1966–68 biennium. The main function of this group would be to study registration problems in States outside of the DRA and to recommend ways and means to stimulate the growth of the DRA.

DOCUMENTATION

Exhibits:

1. "Divorce Data and Studies on Alcoholism" by Mr. Edward S. Sands.
2. Draft of the United States Standard Certificate of Absolute Divorce or Annulment and "The First Revision of the Standard Record of Divorce or Annulment."
3. Items on Divorce Records Tabulated by NCHS Showing Deficiencies in Areas with Central Files, June 1966.
4. Set of Forms for Reporting Decrees of Divorce, Annulment, or Separate Maintenance, State of California, 1966. (4a–4j)
5. Map of the Divorce Registration Area: June 1966.
6. Map of Areas Maintaining Central Files of Divorce Records, June 1966.

Documents used in both Workshops K and M are shown as exhibits with the report on the Workshop on Marriage Registration.

Exhibit 1

DIVORCE DATA AND STUDIES ON ALCOHOLISM

Edward S. Sands, *Executive Secretary, Secretary's Committee on Alcoholism.*

The concern for alcoholism as an important public health problem and the need for taking action were made very clear by President Johnson in his 1966 Message on Domestic Health and Education, submitted to the Congress on March 1. The President said:

> The alcoholic suffers from a disease which will yield eventually to scientific research and adequate treatment. Even with the present limited state of our knowledge, much can be done to reduce the untold suffering and uncounted waste caused by this affliction.
>
> I have instructed the Secretary of Health, Education, and Welfare to:
>
> —appoint an Advisory Committee on Alcoholism;
>
> —establish in the Public Health Service a center for research on the cause, prevention, control, and treatment of alcoholism;
>
> —develop an education program in order to foster public understanding based on scientific fact;
>
> —Work with public and private agencies on the State and local levels to include this disease in comprehensive health programs.

This Department is completing development of a new policy and new plans for an expanded program of alcoholism activities. We are committed to finding ways that will be more effective in bringing about prevention and control of this disease. Your help is needed.

Alcoholism, one of our major public health problems, is reported to be significantly involved in divorce. On the other hand, divorce, an important symptom of an underlying public health problem, may be significantly involved in alcoholism.

Although far from adequate, the current statistics concerning divorce, on the one hand, and deviant drinking or alcoholism, on the other, do strongly suggest that this is an important area for more meaningful study and more extensive research, demonstration, and evaluation.

For example, according to statistics based usually on definitions of causes of marital failure and provided by inebriates or their spouses, alcoholism or deviant drinking is reported as a contributing factor or one of the grounds for separation in 29.8 percent of cases coming before the Catholic Church Tribunal in Chicago.[1] In the opinion of Idaho lawyers, alcoholism is a major contributing cause of divorce in 18.3 percent of cases.[2]

Statistics as now developed provide information on current marital status, but they usually do not show if the deviant drinking or alcoholism preceded the marriage or preceded its disruption or dissolution. Nor do we know about the children involved or of the effect on the children.

Data on divorce and alcoholism which can be meaningful and useful are lacking.

"From an examination of all the available data on abnormal drinking and the family," Jackson notes, "it can be concluded that those who develop drinking problems at some time during their lives are less likely to have been married and, if they did marry, are more likely to have been involved in one or more marital failures. The drinking problems of those who married tended to develop during marriage and tended to be a factor in the termination of the marriage. In some cases, drinking problems developed following divorce or the death of the spouse." [3]

Another interesting statistic is the death rate due to cirrhosis, Code 581, for the age group 35–44:

Marital status:	*Male*	*Female* [1]
Single	31. 3	6. 6
Married	8. 2	6. 1
Widowed	33. 7	19. 7
Divorced	64. 4	20. 1

[1] "Vital Statistic Rates for Cirrhosis, Code 581," *Vital Statistics, Special Reports,* Selected Studies, vol. 39, no. 7, National Center for Health Statistics, PHS, 1949–51.

If nothing else, these data show that more men have cirrhosis than women and that there is need for further study and research. The death rate due to cirrhosis, it should be noted, is highest for the divorced in both males and females; and divorce is

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[1] Thomas, John L., "Catholic Family Disorganization," Contributions to Urban Sociology, University of Chicago Press, 1964.

[2] Harnsworth, Harry, and Minnis, Myra, "Non Statutory Causes of Divorce—Lawyers Point of View," Marriage and Family Living, Nov. 1955.

[3] Jackson, Joan K., Ph. D., "Drinking, Drunkenness, and the Family," Alcohol Education for Classroom and Community, McGraw Hill Book Company, 1964.

markedly higher than any other marital category within the male group and is markedly higher over the single and married groups within the female group.

The 22 States which are in the divorce registration area offer a resource, as yet untapped, for developing data that would be useful to agencies which have responsibility for including alcoholism services—restorative, rehabilitative, and preventive—in comprehensive health programs; for the clergy who counsel alcoholics and their families; for welfare and social agencies; for courts adjudicating domestic relations cases; for social and behavioral scientists; for developing and improving education programs; for premarital medical examinations and premarital counseling.

In the statement on the importance of marriage and divorce records and statistics, general uses of marriage and divorce data prepared by the Health Services Administrative Committee of the Association of State and Territorial Health Officers, one example particularly important and useful in alcoholism studies is the central file of marriage and divorce data. More and more State health departments are establishing and maintaining such files.

This central file represents an excellent source for "followback studies." For example, record linkages could profitably be established between the central file and the alcoholism outpatient clinic, the State hospital and Veterans' Administration hospital, the welfare agencies, and the school counseling and child guidance service centers.

The central file provides opportunity for surveys designed to secure data on the health knowledge, health problems, and attitudes about drinking and about alcoholism problems of recently married couples. Such studies could yield information about gaps in knowledge among the recently married and provide a basis for developing and targeting educational programs. This information also could be potentially useful to churches, universities, high schools, and courts for premarital and family counseling, and for mental health education.

Evaluation of the causes and effects of divorce involving the alcoholic may be developed from central file data. Study of the relationship between early marriages, school dropouts, and alcoholism is another possibility.

The PHS National Center for Health Statistics is responding to the need for information about alcoholism. A project which began in 1963 at the University of Iowa was designed as the first stage of an investigation to determine the feasibility of estimating the prevalence of problem drinking (alcoholism) by including appropriate questions in interviews conducted by the National Health Interview Survey.

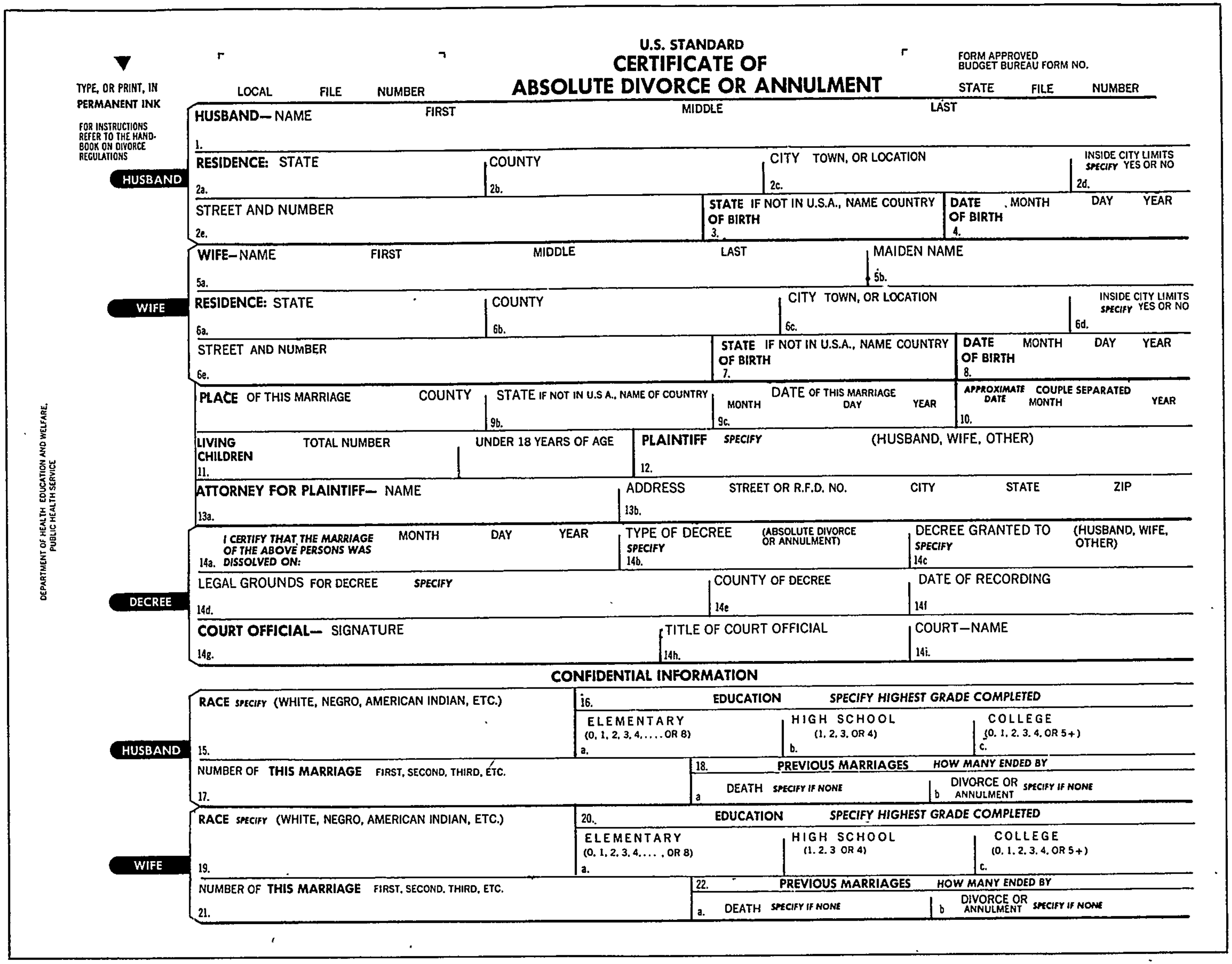
This project is being supported by the Division of Health Interview Statistics. The questionnaire development phase has been completed and a full-scale field trial has been conducted. The study will help to:

1. Determine the success of the questionnaire in identifying the known problem drinkers for statistical purposes and any failures of the questionnaire through the identification of "false positives;"
2. Evaluate the general reaction of respondents to questions regarding drinking; and
3. Judge the relative merits of individual questions and groups of questions as indicators of problem drinking and to draft a brief, revised questionnaire for further pretesting.

If field-test results indicate that the questionnaire provides reliable data on the prevalence of problem drinking, further pretests and developmental work will be undertaken. If the results indicate that this information cannot be reliably obtained by this method, attempts to obtain such estimates by the regular household interview survey may have to be abandoned.

The Public Health Service's National Center on Prevention and Control of Alcoholism in the NIMH would be interested in research relating to alcoholism and divorce. Such research could involve and could be developed in cooperation with State vital statistics officers and State alcoholism agencies as well as State welfare agencies and others.

The State vital statistics officers have an important place in the "partnership for health" program in which the prevention and control of alcoholism is one important element.



U.S. STANDARD
CERTIFICATE OF ABSOLUTE DIVORCE OR ANNULMENT

FORM APPROVED
BUDGET BUREAU FORM NO.

TYPE, OR PRINT, IN PERMANENT INK

FOR INSTRUCTIONS REFER TO THE HANDBOOK ON DIVORCE REGULATIONS

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE,
PUBLIC HEALTH SERVICE

LOCAL FILE NUMBER

STATE FILE NUMBER

HUSBAND

1. **HUSBAND—** NAME FIRST MIDDLE LAST
2a. **RESIDENCE:** STATE
2b. COUNTY
2c. CITY TOWN, OR LOCATION
2d. INSIDE CITY LIMITS *SPECIFY* YES OR NO
2e. STREET AND NUMBER
3. **STATE OF BIRTH** IF NOT IN U.S.A., NAME COUNTRY
4. **DATE OF BIRTH** MONTH DAY YEAR

WIFE

5a. **WIFE—**NAME FIRST MIDDLE LAST
5b. MAIDEN NAME
6a. **RESIDENCE:** STATE
6b. COUNTY
6c. CITY TOWN, OR LOCATION
6d. INSIDE CITY LIMITS *SPECIFY* YES OR NO
6e. STREET AND NUMBER
7. **STATE OF BIRTH** IF NOT IN U.S.A., NAME COUNTRY
8. **DATE OF BIRTH** MONTH DAY YEAR

PLACE OF THIS MARRIAGE COUNTY
9b. STATE IF NOT IN U.S.A., NAME OF COUNTRY
9c. DATE OF THIS MARRIAGE MONTH DAY YEAR
10. *APPROXIMATE DATE* COUPLE SEPARATED MONTH YEAR
11. **LIVING CHILDREN** TOTAL NUMBER UNDER 18 YEARS OF AGE
12. **PLAINTIFF** *SPECIFY* (HUSBAND, WIFE, OTHER)
13a. **ATTORNEY FOR PLAINTIFF—** NAME
13b. ADDRESS STREET OR R.F.D. NO. CITY STATE ZIP

DECREE

14a. *I CERTIFY THAT THE MARRIAGE OF THE ABOVE PERSONS WAS DISSOLVED ON:* MONTH DAY YEAR
14b. TYPE OF DECREE *SPECIFY* (ABSOLUTE DIVORCE OR ANNULMENT)
14c. DECREE GRANTED TO *SPECIFY* (HUSBAND, WIFE, OTHER)
14d. LEGAL GROUNDS FOR DECREE *SPECIFY*
14e. COUNTY OF DECREE
14f. DATE OF RECORDING
14g. **COURT OFFICIAL—** SIGNATURE
14h. TITLE OF COURT OFFICIAL
14i. COURT—NAME

CONFIDENTIAL INFORMATION

HUSBAND

15. **RACE** *SPECIFY* (WHITE, NEGRO, AMERICAN INDIAN, ETC.)
16. **EDUCATION** *SPECIFY HIGHEST GRADE COMPLETED*
a. ELEMENTARY (0, 1, 2, 3, 4, ... OR 8)
b. HIGH SCHOOL (1, 2, 3, OR 4)
c. COLLEGE (0, 1, 2, 3, 4, OR 5+)
17. NUMBER OF **THIS MARRIAGE** FIRST, SECOND, THIRD, ETC.
18. **PREVIOUS MARRIAGES** *HOW MANY ENDED BY*
a DEATH *SPECIFY IF NONE*
b DIVORCE OR ANNULMENT *SPECIFY IF NONE*

WIFE

19. **RACE** *SPECIFY* (WHITE, NEGRO, AMERICAN INDIAN, ETC.)
20. **EDUCATION** *SPECIFY HIGHEST GRADE COMPLETED*
a. ELEMENTARY (0, 1, 2, 3, 4, ... , OR 8)
b. HIGH SCHOOL (1, 2, 3 OR 4)
c. COLLEGE (0, 1, 2, 3, 4, OR 5+)
21. NUMBER OF **THIS MARRIAGE** FIRST, SECOND, THIRD, ETC.
22. **PREVIOUS MARRIAGES** *HOW MANY ENDED BY*
a. DEATH *SPECIFY IF NONE*
b DIVORCE OR ANNULMENT *SPECIFY IF NONE*

Exhibit 2

THE FIRST REVISION OF THE STANDARD RECORD OF DIVORCE OR ANNULMENT

The Standard Record of Divorce or Annulment is now being revised along with all other standard forms for vital events. The present record went into effect in 1954, and this is its first revision. The projected changes may be classified into two categories:

1. Revisions specific to the Standard Record of Divorce or Annulment and
2. Revisions made in one or more standard certificate forms, as well as in the standard divorce record.

● The following revisions belong to the first category:

A. The name of the form was changed to read "U.S. Standard Certificate of Absolute Divorce or Annulment." The term "certificate" was substituted for "record" because the former term is used in other standard forms for vital events, and it was felt that consistency was desirable. The word "absolute" was added in order to emphasize the fact that various types of limited decrees, such as divorces from bed and board, legal separations, etc., are not included in the national divorce statistics program. Interlocutory divorce decrees are not included in this category of limited decrees because eventually almost all of these become final; though it is preferable to complete the divorce certificate at the time when such decree becomes final, this is often not feasible and in some States the certificate is filed when the interlocutory decree is granted. It is generally believed that few interlocutory decrees do not become final, and the overcount of divorces is not significant.

B. Four new items were added to the certificate:

1. *Approximate date couple separated.* The breakdown of the family as a functioning unit occurs when husband and wife separate for the last time (there may have been previous separations followed by reconciliations). In many respects the date of the separation is more important than the date of decree. The number of children born to the couple depends more on the number of years husband and wife lived together than on the interval between marriage and divorce. The need of assistance from welfare agencies begins when the husband and wife separate rather than when they divorce. Living arrangements and the number and type of families and of households as economic units change when husband and wife separate. The date of separation makes it possible to divide the total duration of marriage into two periods, from marriage to separation and from separation to decree. The duration of the latter period depends in part on legal grounds for divorce and procedural rules in force in a State.

2. The twin items, *Name of the Attorney for Plaintiff* and *Address.* In many States the plaintiff's attorney is responsible for completing the divorce record, and his name and address will be useful to the State offices of vital statistics that have a query program for incomplete and inaccurate entries on the divorce certificate, as well as to other persons or agencies that have a legitimate interest in the case. The information about the attorney will be particularly valuable in cases when the parties to divorce cannot be reached readily.

3. *Name of Court.* This item is of importance for purposes of identification in States that include counties where more than one court has jurisdiction in divorce and annulment cases. It will also make easy to locate, in case of need, the documents connected with the divorce suit.

C. Three items on the present standard record were reworded.

1. The item, *Number of children under 18,* was reworded to read "Number of living children: Total ——; under 18 years of age ——." The question on the total number of children will make it possible to differentiate between childless couples, couples with all children under 18 years of age, and couples that have children 18 years old and older. Entries on the present Standard Record may have very different meanings: the entry "none" can either mean that the couple is childless or that all children have completed their 18th year of age; an entry of one, or more, does not indicate

whether the couple has older children. Though grownup children may not be affected by the divorce of their parents to the same degree as are minor dependent children, the information about them is necessary to study the influence of childlessness and of children reaching adulthood on marital stability. The age of husbands and wives at time of decree and the duration of their marriages are related to the total number of their children rather than with that of children under 18. The value of the information on all children does not detract from the value of data on children under 18, because the latter data represent the number of young children directly involved in the breakup of their parents' marriage, and this is one of the most important items in divorce statistics.

2. The item, *Number of this marriage* was amplified to include a question on the number of previous marriages that ended by death and of those broken by divorce. This question will make it possible to differentiate between previously divorced persons and those for whom the current divorce is the first one, to classify divorced husbands and wives by the number of their divorces, and to find out whether the likelihood of divorce for persons who were previously divorced is higher than that for previously never-divorced persons.

3. The questions on residence of bride and groom were reworded in order to elicit more accurate information and to make them similar to comparable questions on other vital records. In the present record these questions read: *Usual residence: a. city, b. county, c. State.* The revised version reads: *State of residence; County of residence; City, town, or location; Inside city limits? (Specify yes or no); Street name and number.*

- The standard divorce certificate was redesigned as were certificates for other vital events.

A. A section on confidential information was introduced. This section includes items that are useful for statistical purposes, but are not recommended for inclusion in the certified copies in States where such copies are issued by the State office of vital statistics. Four items are included in the "confidential information" section of the Standard Certificate of Absolute Divorce or Annulment:

1. Race,
2. Education,
3. Number of this marriage, and
4. Number of previous marriages ended by death and by divorce.

B. A major revision in the standard divorce form, as well as in other revised forms of vital events, is the change in the items used as indicators of the socioeconomic status. The items, *Occupation* and *Usual business or industry,* are being deleted and replaced by the item, *Education.* The same change was made on other standard forms, except the Standard Certificate of Death. These revisions were made because the use of the item "occupation" presents difficulties in the proper wording of the entries; e.g., terms like "clerk" and "engineer" have many different meanings. In addition, information about business or industry is often given under the term "occupation" or information on occupation under "business or industry." The very large number of occupational titles makes the coding of this item extremely difficult, and up to now no national divorce statistics by occupation have been compiled. On the other hand, questions on education are easy both to answer properly and to code. The experience of other Federal agencies, e.g., the Bureau of the Census, indicates that information about education can be obtained without particular difficulties.

C. In addition to the major revisions of the record, several comparatively minor changes were made in the wording of some items. The item *Race or color* was changed to *race* in order to emphasize the importance of the information about the actual race of the parties and to avoid the use of the term "nonwhite." The item *Place of birth* was changed to *State of birth* because the detailed information about the locality where a person was born is of minor value for our programs.

Exhibit 3

Items on Divorce Records Tabulated by NCHS Showing Deficiencies in Areas With Central Files, June 1966

Area	Residence (1)	Date of birth or age (2)	Race (3)	Number of this marriage (4)	County of divorce (5)	Date of divorce (6)	Legal grounds (7)	Number of children (8)	Date of marriage (9)	Plaintiff (10)	To whom decree granted (11)	State of marriage (12)
Arkansas	(1)	X	(1)	X	—	—	—	—	—	—	X	X
California	—	—	—	—	—	—	—	—	—	(1)	—	—
Connecticut	—	X	X	X	(1)	—	—	—	—	(1)	—	(1)
Delaware	X	X	X	X	—	—	—	X	—	(1)	X	X
District of Columbia	No statistical reporting form											
Florida	(1)	X	X	X	(1)	—	—	—	—	—	—	—
Illinois	—	—	—	—	—	—	—	—	—	—	—	—
Kentucky	—	—	—	—	—	—	—	—	—	—	—	—
Louisiana	—	—	—	—	—	—	—	—	—	—	—	—
Maine	—	X	X	X	(1)	—	—	—	—	—	—	—
Massachusetts	—	X	X	X	—	—	—	X	(1)	—	(1)	X
Mississippi	X	X	—	X	—	—	—	—	—	(1)	(1)	X
New Hampshire	(1)	X	X	X	—	—	—	—	—	—	(1)	(1)
New Jersey	No statistical reporting form											
New York	—	X	X	X	—	—	X	—	—	—	X	(1)
North Carolina (Ledger)	(1)	X	(1)	X	—	—	—	—	X	(1)	X	X
North Dakota	X	X	X	X	—	—	—	—	—	—	X	—
South Carolina	—	—	—	—	—	—	—	—	—	—	—	—
Vermont	—	—	—	—	—	—	—	—	—	—	—	—
Puerto Rico	—	—	X	—	—	—	—	—	—	—	—	—

[1] Item not explicitly requested.

NOTE. —=Item on form. X=Item not on form.

Exhibit 4a

STATUTORY REQUIREMENTS AND INSTRUCTIONS FOR COMPLETING AND FILING FORM VS-243A, B AND C

Statutory requirements are that the triplicate three-part record (Form VS-243A, B and C) be completed with information obtained from the plaintiff and be furnished to the county clerk at the time of filing* of an initial complaint action for divorce, annulment or separate maintenance (Section 426a, Code of Civil Procedure and Chapter 6.5 of Division 9, Health and Safety Code).

Confidentiality—Provision is made in the statutes that these records shall not be open to public inspection in the Office of the State Registrar of Vital Statistics or the offices of the county clerks, and that certified copies or certification of information shall exclude selected personal data (Sections 10361 and 10584, Health and Safety Code).

Items 1, 2, and 5 through 33 are to be completed on Forms VS-243A, B and C prior to filing the initial complaint with the county clerk. The county clerk will complete items 3 and 4 at the time of filing the initial complaint. These records will be considered completed when all blank spaces are filled in either with the requested information or the notation unknown (unk.) or not available (n.a.). However, provision is made whereby complete revised information shall be furnished in all cases where more complete and accurate information becomes available to the plaintiff subsequent to the filing of the initial complaint (Section 10367, Health and Safety Code).

The Attorney's Record of Divorce, Annulment or Separate Maintenance Information (Form VS-242) is furnished as a working record for the use of the attorney and his staff in completing Forms VS-243A, B and C and may serve as the attorney's record of information in the action.

*Or within ten days thereafter and before the date of the first hearing.

ATTORNEY'S RECORD OF DIVORCE, ANNULMENT OR SEPARATE MAINTENANCE INFORMATION

3. CASE NUMBER

	1. TYPE OF COMPLAINT (SPECIFY DIVORCE, ANNULMENT OR SEPARATE MAINTENANCE)		2. COUNTY IN WHICH ACTION FILED	4. DATE COMPLAINT FILED—MONTH DAY, YEAR
HUSBAND PERSONAL DATA	5A. NAME OF HUSBAND—FIRST NAME	5B. MIDDLE NAME	5C. LAST NAME	6. DATE OF BIRTH—MONTH DAY, YEAR
	7A. PRESENT ADDRESS—STREET AND NUMBER	7B. CITY OR TOWN	7C. COUNTY (IF OUTSIDE CALIFORNIA, GIVE STATE)	7D. LENGTH OF STAY IN CALIFORNIA______YEARS
	8. BIRTHPLACE (STATE OR FOREIGN COUNTRY)	9. SOCIAL SECURITY NUMBER	10A. PRESENT OR LAST OCCUPATION	10B. KIND OF BUSINESS OR INDUSTRY
	11. HIGHEST SCHOOL GRADE COMPLETED	12. COLOR OR RACE	13. RELIGIOUS DENOMINATION	14. NUMBER OF PREVIOUS MARRIAGES DISSOLVED BY. DEATH______ DIVORCE______ ANNUL-MENT______
WIFE PERSONAL DATA	15A. MAIDEN NAME OF WIFE—FIRST NAME	15B. MIDDLE NAME	15C. LAST NAME	16. DATE OF BIRTH—MONTH, DAY, YEAR
	17A. PRESENT ADDRESS—STREET AND NUMBER	17B. CITY OR TOWN	17C. COUNTY (IF OUTSIDE CALIFORNIA, GIVE STATE)	17D. LENGTH OF STAY IN CALIFORNIA______YEARS
	18. BIRTHPLACE (STATE OR FOREIGN COUNTRY)	19. SOCIAL SECURITY NUMBER	20A. PRESENT OR LAST OCCUPATION	20B. KIND OF BUSINESS OR INDUSTRY
	21. HIGHEST SCHOOL GRADE COMPLETED	22. COLOR OR RACE	23. RELIGIOUS DENOMINATION	24. NUMBER OF PREVIOUS MARRIAGES DISSOLVED BY DEATH______ DIVORCE______ ANNUL-MENT______
PLACE AND DATE OF MARRIAGE	25A. PLACE OF MARRIAGE—CITY OR TOWN	25B. COUNTY (IF OUTSIDE CALIFORNIA, GIVE STATE)		26. DATE OF MARRIAGE—MONTH, DAY, YEAR

LIVING CHILDREN OF THIS MARRIAGE

27. NAMES, BIRTHPLACES, AND BIRTHDATES OF LIVING CHILDREN OF THIS MARRIAGE (BORN OR ADOPTED)

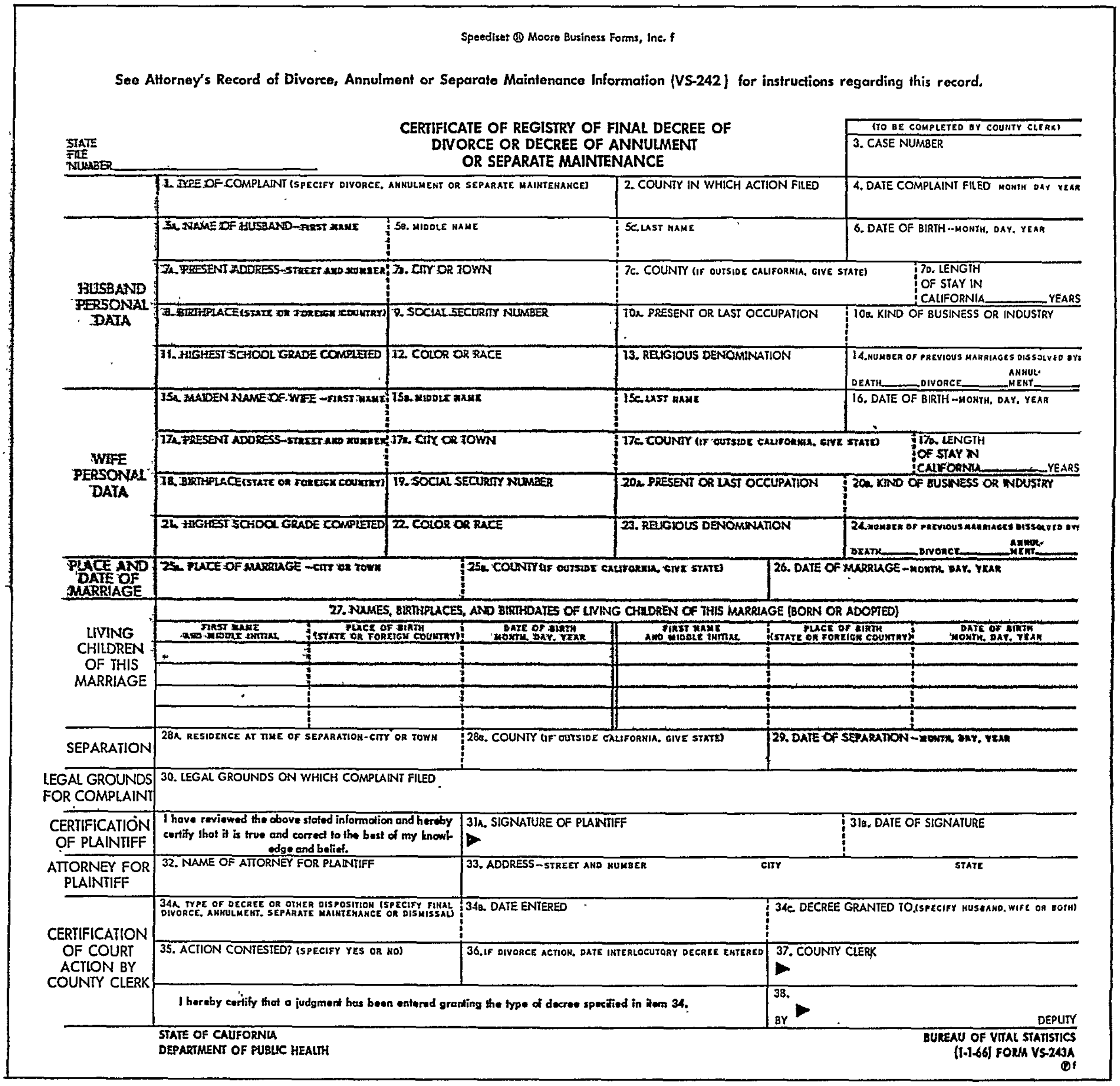
FIRST NAME AND MIDDLE INITIAL	PLACE OF BIRTH (STATE OR FOREIGN COUNTRY)	DATE OF BIRTH MONTH DAY, YEAR	FIRST NAME AND MIDDLE INITIAL	PLACE OF BIRTH (STATE OR FOREIGN COUNTRY)	DATE OF BIRTH MONTH DAY, YEAR

SEPARATION	28A. RESIDENCE AT TIME OF SEPARATION—CITY OR TOWN	28B. COUNTY (IF OUTSIDE CALIFORNIA, GIVE STATE)	29. DATE OF SEPARATION—MONTH, DAY, YEAR
LEGAL GROUNDS FOR COMPLAINT	30. LEGAL GROUNDS ON WHICH COMPLAINT FILED		
CERTIFICATION OF PLAINTIFF	I have reviewed the above stated information and hereby certify that it is true and correct to the best of my knowledge and belief.	31A. SIGNATURE OF PLAINTIFF ▶	31B. DATE OF SIGNATURE
ATTORNEY'S NOTES			

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

BUREAU OF VITAL STATISTICS
(1-1-66) FORM VS-242

Exhibit 4b



Speediset ® Moore Business Forms, Inc. f

See Attorney's Record of Divorce, Annulment or Separate Maintenance Information (VS-242) for instructions regarding this record.

CERTIFICATE OF REGISTRY OF FINAL DECREE OF DIVORCE OR DECREE OF ANNULMENT OR SEPARATE MAINTENANCE

STATE FILE NUMBER ____________________

(TO BE COMPLETED BY COUNTY CLERK)
3. CASE NUMBER

1. TYPE OF COMPLAINT (SPECIFY DIVORCE, ANNULMENT OR SEPARATE MAINTENANCE)
2. COUNTY IN WHICH ACTION FILED
4. DATE COMPLAINT FILED MONTH DAY YEAR

HUSBAND PERSONAL DATA

5a. NAME OF HUSBAND—FIRST NAME
5b. MIDDLE NAME
5c. LAST NAME
6. DATE OF BIRTH—MONTH, DAY, YEAR
7a. PRESENT ADDRESS—STREET AND NUMBER
7b. CITY OR TOWN
7c. COUNTY (IF OUTSIDE CALIFORNIA, GIVE STATE)
7d. LENGTH OF STAY IN CALIFORNIA ______ YEARS
8. BIRTHPLACE (STATE OR FOREIGN COUNTRY)
9. SOCIAL SECURITY NUMBER
10a. PRESENT OR LAST OCCUPATION
10b. KIND OF BUSINESS OR INDUSTRY
11. HIGHEST SCHOOL GRADE COMPLETED
12. COLOR OR RACE
13. RELIGIOUS DENOMINATION
14. NUMBER OF PREVIOUS MARRIAGES DISSOLVED BY: DEATH ____ DIVORCE ____ ANNULMENT ____

WIFE PERSONAL DATA

15a. MAIDEN NAME OF WIFE—FIRST NAME
15b. MIDDLE NAME
15c. LAST NAME
16. DATE OF BIRTH—MONTH, DAY, YEAR
17a. PRESENT ADDRESS—STREET AND NUMBER
17b. CITY OR TOWN
17c. COUNTY (IF OUTSIDE CALIFORNIA, GIVE STATE)
17d. LENGTH OF STAY IN CALIFORNIA ______ YEARS
18. BIRTHPLACE (STATE OR FOREIGN COUNTRY)
19. SOCIAL SECURITY NUMBER
20a. PRESENT OR LAST OCCUPATION
20b. KIND OF BUSINESS OR INDUSTRY
21. HIGHEST SCHOOL GRADE COMPLETED
22. COLOR OR RACE
23. RELIGIOUS DENOMINATION
24. NUMBER OF PREVIOUS MARRIAGES DISSOLVED BY: DEATH ____ DIVORCE ____ ANNULMENT ____

PLACE AND DATE OF MARRIAGE

25a. PLACE OF MARRIAGE—CITY OR TOWN
25b. COUNTY (IF OUTSIDE CALIFORNIA, GIVE STATE)
26. DATE OF MARRIAGE—MONTH, DAY, YEAR

LIVING CHILDREN OF THIS MARRIAGE

27. NAMES, BIRTHPLACES, AND BIRTHDATES OF LIVING CHILDREN OF THIS MARRIAGE (BORN OR ADOPTED)

FIRST NAME AND MIDDLE INITIAL	PLACE OF BIRTH (STATE OR FOREIGN COUNTRY)	DATE OF BIRTH MONTH, DAY, YEAR	FIRST NAME AND MIDDLE INITIAL	PLACE OF BIRTH (STATE OR FOREIGN COUNTRY)	DATE OF BIRTH MONTH, DAY, YEAR

SEPARATION

28a. RESIDENCE AT TIME OF SEPARATION—CITY OR TOWN
28b. COUNTY (IF OUTSIDE CALIFORNIA, GIVE STATE)
29. DATE OF SEPARATION—MONTH, DAY, YEAR

LEGAL GROUNDS FOR COMPLAINT

30. LEGAL GROUNDS ON WHICH COMPLAINT FILED

CERTIFICATION OF PLAINTIFF

I have reviewed the above stated information and hereby certify that it is true and correct to the best of my knowledge and belief.
31a. SIGNATURE OF PLAINTIFF ▶
31b. DATE OF SIGNATURE

ATTORNEY FOR PLAINTIFF

32. NAME OF ATTORNEY FOR PLAINTIFF
33. ADDRESS—STREET AND NUMBER CITY STATE

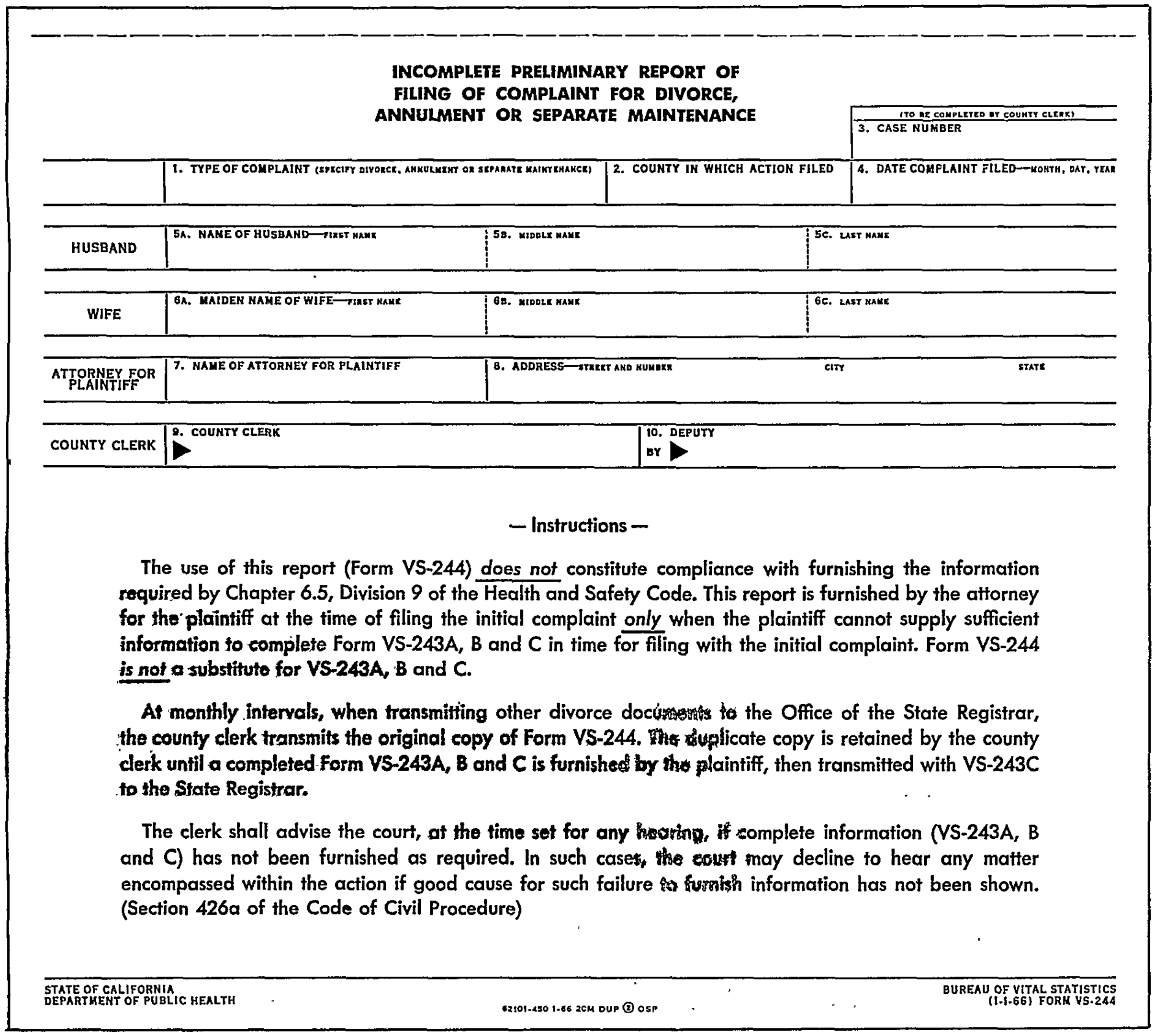
CERTIFICATION OF COURT ACTION BY COUNTY CLERK

34a. TYPE OF DECREE OR OTHER DISPOSITION (SPECIFY FINAL DIVORCE, ANNULMENT, SEPARATE MAINTENANCE OR DISMISSAL)
34b. DATE ENTERED
34c. DECREE GRANTED TO (SPECIFY HUSBAND, WIFE OR BOTH)
35. ACTION CONTESTED? (SPECIFY YES OR NO)
36. IF DIVORCE ACTION, DATE INTERLOCUTORY DECREE ENTERED
37. COUNTY CLERK ▶
I hereby certify that a judgment has been entered granting the type of decree specified in item 34.
38. BY ▶ DEPUTY

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

BUREAU OF VITAL STATISTICS
(1-1-66) FORM VS-243A
®f

Exhibit 4c



INCOMPLETE PRELIMINARY REPORT OF FILING OF COMPLAINT FOR DIVORCE, ANNULMENT OR SEPARATE MAINTENANCE

(TO BE COMPLETED BY COUNTY CLERK)
3. CASE NUMBER

	1. TYPE OF COMPLAINT (SPECIFY DIVORCE, ANNULMENT OR SEPARATE MAINTENANCE)	2. COUNTY IN WHICH ACTION FILED	4. DATE COMPLAINT FILED—MONTH, DAY, YEAR
HUSBAND	5A. NAME OF HUSBAND—FIRST NAME	5B. MIDDLE NAME	5C. LAST NAME
WIFE	6A. MAIDEN NAME OF WIFE—FIRST NAME	6B. MIDDLE NAME	6C. LAST NAME
ATTORNEY FOR PLAINTIFF	7. NAME OF ATTORNEY FOR PLAINTIFF	8. ADDRESS—STREET AND NUMBER CITY STATE	
COUNTY CLERK	9. COUNTY CLERK ▶	10. DEPUTY BY ▶	

— Instructions —

The use of this report (Form VS-244) does not constitute compliance with furnishing the information required by Chapter 6.5, Division 9 of the Health and Safety Code. This report is furnished by the attorney for the plaintiff at the time of filing the initial complaint *only* when the plaintiff cannot supply sufficient information to complete Form VS-243A, B and C in time for filing with the initial complaint. Form VS-244 *is not* a substitute for VS-243A, B and C.

At monthly intervals, when transmitting other divorce documents to the Office of the State Registrar, the county clerk transmits the original copy of Form VS-244. The duplicate copy is retained by the county clerk until a completed Form VS-243A, B and C is furnished by the plaintiff, then transmitted with VS-243C to the State Registrar.

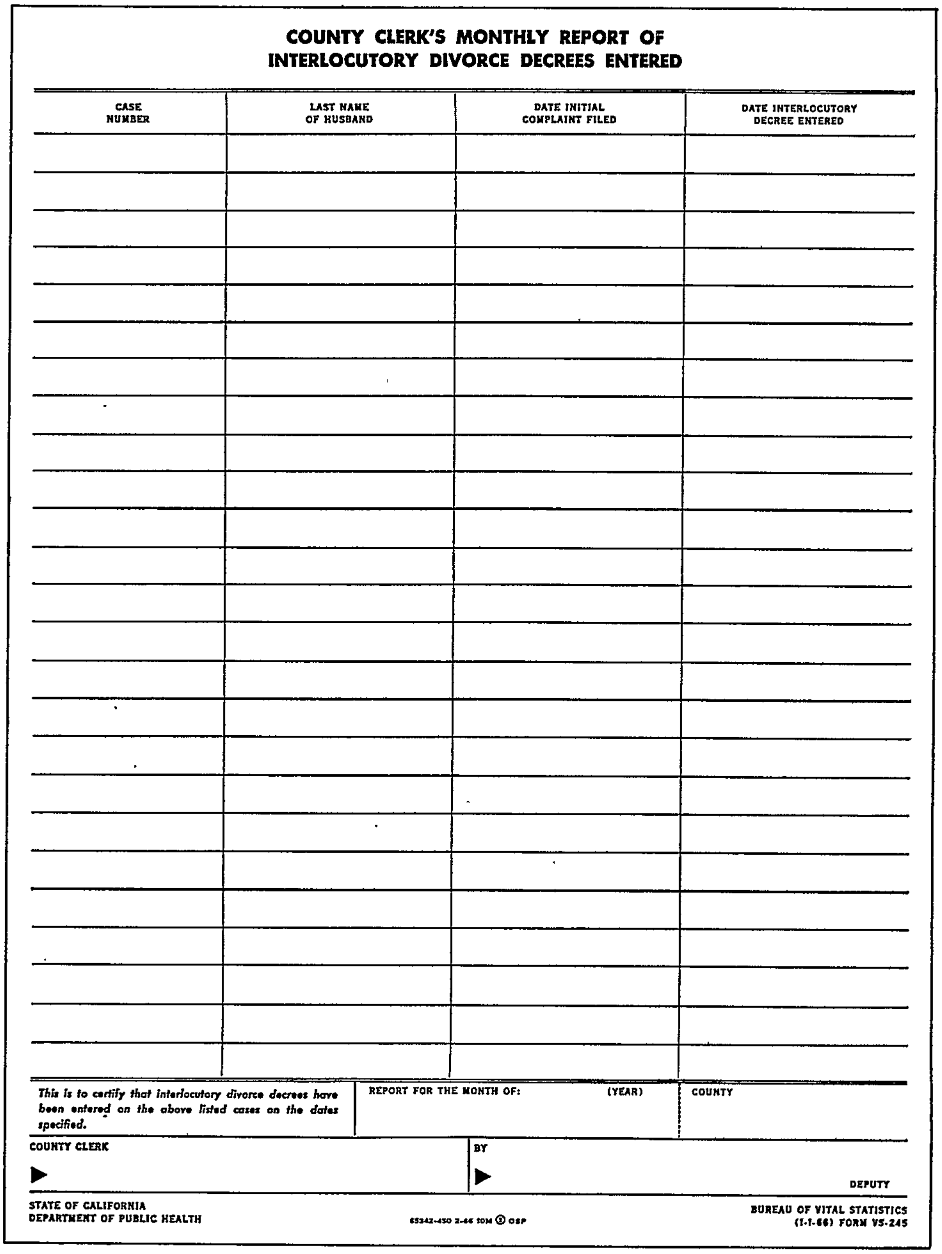
The clerk shall advise the court, at the time set for any hearing, if complete information (VS-243A, B and C) has not been furnished as required. In such cases, the court may decline to hear any matter encompassed within the action if good cause for such failure to furnish information has not been shown. (Section 426a of the Code of Civil Procedure)

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

62101-450 1-66 2CM DUP ② OSP

BUREAU OF VITAL STATISTICS
(1-1-66) FORM VS-244

Exhibit 4d



COUNTY CLERK'S MONTHLY REPORT OF INTERLOCUTORY DIVORCE DECREES ENTERED

CASE NUMBER	LAST NAME OF HUSBAND	DATE INITIAL COMPLAINT FILED	DATE INTERLOCUTORY DECREE ENTERED

This is to certify that interlocutory divorce decrees have been entered on the above listed cases on the dates specified.

REPORT FOR THE MONTH OF: (YEAR)

COUNTY

COUNTY CLERK

▶

BY

▶ DEPUTY

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

65342-450 2-66 10M ⓢ OSP

BUREAU OF VITAL STATISTICS
(1-1-66) FORM VS-245

Exhibit 4e

TRANSMITTAL OF FEES

DIVORCE, ANNULMENT AND SEPARATE MAINTENANCE ACTIONS

(To be used for Initial Complaints Filed
after January 1, 1966)

County of:____________________

Date:____________________

TO: State Department of Public Health
2151 Berkeley Way
Berkeley, California 94704

ATTENTION: Accounting Officer

Fees Transmitted for the Month of:____________________

Amount Enclosed: *$____________________

Number of initial complaints
filed during the month:____________________

CERTIFICATION

I certify that I am the duly qualified and authorized official of the reporting county responsible for the examination and settlement of accounts and that the amount transmitted is the due and proportionate share pursuant to Section 26859 of the Government Code.

▶______________________________
County Auditor - Controller

I certify that I am a duly qualified and authorized official of the reporting county and that the number of initial complaints filed during the month is as reported.

▶______________________________
County Clerk

*Warrant should be made payable to the State Department of Public Health and is required to be transmitted by the 10th day of each month for fees collected during the immediately preceding month, relative to initial complaints filed after January 1, 1966.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

BUREAU OF VITAL STATISTICS
(1-1-66) FORM VS-246

Exhibit 4f

TRANSMITTAL OF REPORTS
DIVORCE, ANNULMENT AND SEPARATE MAINTENANCE ACTIONS

(To be used for Initial Complaints Filed
after January 1, 1966)

TO: State Department of Public Health
Bureau of Vital Statistics
1927 - 13th Street
Sacramento, California 95814

County of: ______________________

Date: ______________________

REPORTS TRANSMITTED FOR THE MONTH OF: ______________________

TYPE OF REPORT	NUMBER OF REPORTS TRANSMITTED				
	DIVORCE	ANNULMENT	SEPARATE MAINTENANCE	DISMISSAL	TOTAL
*Preliminary Reports of Filing of Complaint (VS-243C)				▨	
*Incomplete Preliminary Reports (VS-244)				▨	
TOTAL				▨	
Certificates of Registry of Final Decree (VS-243A)					
Preliminary Reports (VS-243C) for which Incomplete Reports (VS-244) were transmitted in a previous month				▨	
Complete revised Preliminary Reports (VS-243C) for which Preliminary Reports (VS-243C) were transmitted in a previous month				▨	
Interlocutory Decrees (Number of Decrees entered on Form VS-245)	▨	▨	▨	▨	

CERTIFICATION

I certify that I am a duly qualified and authorized official of the reporting county and that the number of complaints filed and decrees entered during the month is as reported.

▶ ______________________
County Clerk

*Filing fee required at time of filing of initial complaint.
NOTE: Fees should be transmitted with Form VS-246, Transmittal of Fees.

TO: Accounting Officer

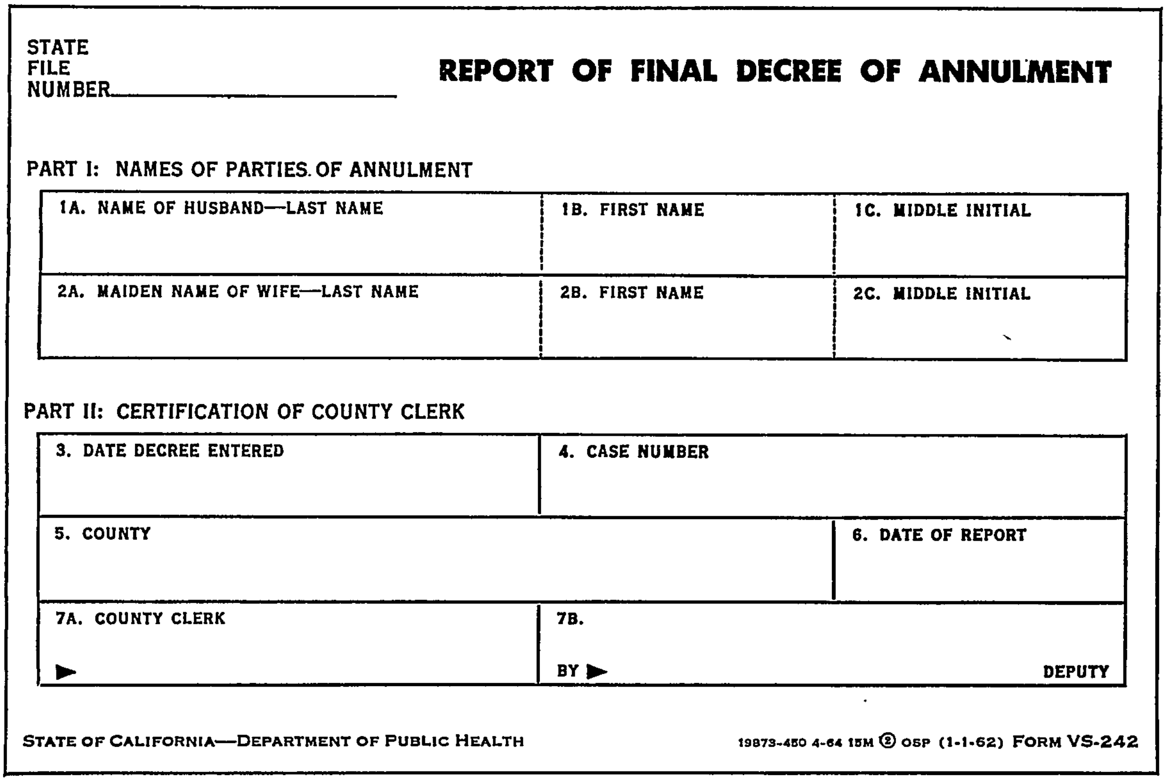
The number of complaints filed as reported on this form has been verified to the reports.

▶ ______________________
Chief, Bureau of Vital Statistics

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

BUREAU OF VITAL STATISTICS
(1-1-66) FORM VS-247

Exhibit 4g



STATE
FILE
NUMBER________________

REPORT OF FINAL DECREE OF ANNULMENT

PART I: NAMES OF PARTIES OF ANNULMENT

1A. NAME OF HUSBAND—LAST NAME	1B. FIRST NAME	1C. MIDDLE INITIAL
2A. MAIDEN NAME OF WIFE—LAST NAME	2B. FIRST NAME	2C. MIDDLE INITIAL

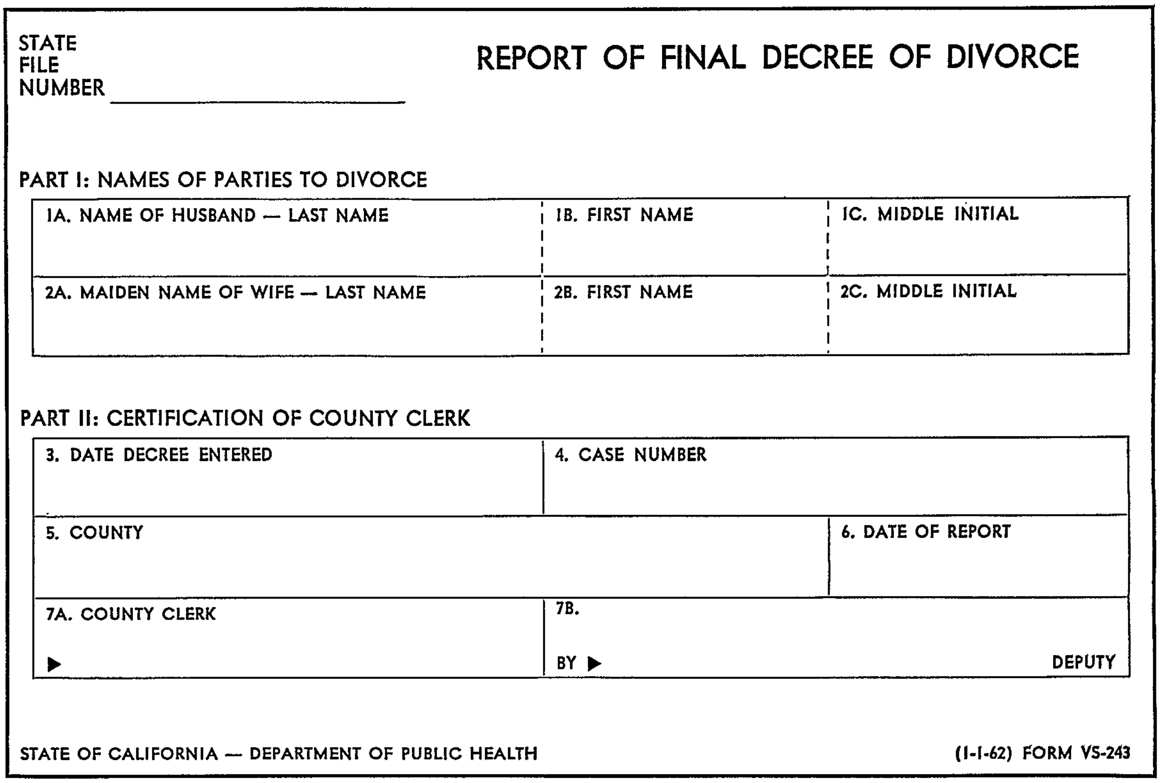
PART II: CERTIFICATION OF COUNTY CLERK

3. DATE DECREE ENTERED	4. CASE NUMBER
5. COUNTY	6. DATE OF REPORT
7A. COUNTY CLERK ▶	7B. BY ▶ DEPUTY

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC HEALTH

19873-450 4-64 15M ② OSP (1-1-62) FORM VS-242

Exhibit 4h



STATE
FILE
NUMBER ____________________

REPORT OF FINAL DECREE OF DIVORCE

PART I: NAMES OF PARTIES TO DIVORCE

1A. NAME OF HUSBAND — LAST NAME	1B. FIRST NAME	1C. MIDDLE INITIAL
2A. MAIDEN NAME OF WIFE — LAST NAME	2B. FIRST NAME	2C. MIDDLE INITIAL

PART II: CERTIFICATION OF COUNTY CLERK

3. DATE DECREE ENTERED	4. CASE NUMBER
5. COUNTY	6. DATE OF REPORT
7A. COUNTY CLERK ▶	7B. BY ▶ DEPUTY

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC HEALTH (1-1-62) FORM VS-243

Exhibit 4i

TRANSMITTAL OF FEES

FOR FINAL DECREES OF DIVORCE AND OF ANNULMENT

(To be used for those cases where initial complaints were filed prior to January 1, 1966)

County of:____________________

Date:____________________

TO: State Department of Public Health
2151 Berkeley Way
Berkeley, California 94704

ATTENTION: Accounting Officer

Amount enclosed: *$____________________

Transmittal of fees for the month of:____________________

Number of final decrees (initial complaints were filed prior to January 1, 1966) entered during the month:

DIVORCES (1-1-62 Form VS-243)____________________

ANNULMENTS (1-1-62 Form VS-242)____________________

CERTIFICATION

I certify that I am the duly qualified and authorized official of the reporting county responsible for the examination and settlement of accounts and that the amount transmitted is the due and proportionate share pursuant to Section 26859 of the Government Code, relative to final decrees for which the initial complaints were filed prior to January 1, 1966.

▶______________________________
County Auditor - Controller

I certify that I am a duly qualified and authorized official of the reporting county and that the number of final decrees for which the initial complaints were filed prior to January 1, 1966, and entered during the month is as reported.

▶______________________________
County Clerk

*Warrant should be made payable to the State Department of Public Health, and is required to be transmitted by the 10th day of each month for fees collected during the immediately preceding month, relative to final decrees for which the initial complaints were filed prior to January 1, 1966.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

BUREAU OF VITAL STATISTICS
(REV. 1-1-66) FORM VS-194

Exhibit 4j

TRANSMITTAL OF REPORTS

FINAL DECREE OF DIVORCE AND OF ANNULMENT

(To be used for those cases where initial complaints were filed prior to January 1, 1966)

County of: ______________________

Date: ______________________

TO: State Department of Public Health
Bureau of Vital Statistics
1927 - 13th Street
Sacramento, California 95814

Reports of Final Decree (initial complaint filed prior to January 1, 1966) enclosed for the month of: ______________________

NUMBER OF DIVORCES (1-1-62 Form VS-243) ______________________

NUMBER OF ANNULMENTS (1-1-62 Form VS-242) ______________________

CERTIFICATION

I certify that I am a duly qualified and authorized official of the reporting county and that the number of final decrees for which the initial complaints were filed prior to January 1, 1966, and entered during the month is as reported.

▶ ______________________________
County Clerk

NOTE: Fees should be sent with Form VS-194, (Rev. 1-1-66), Transmittal of Fees.

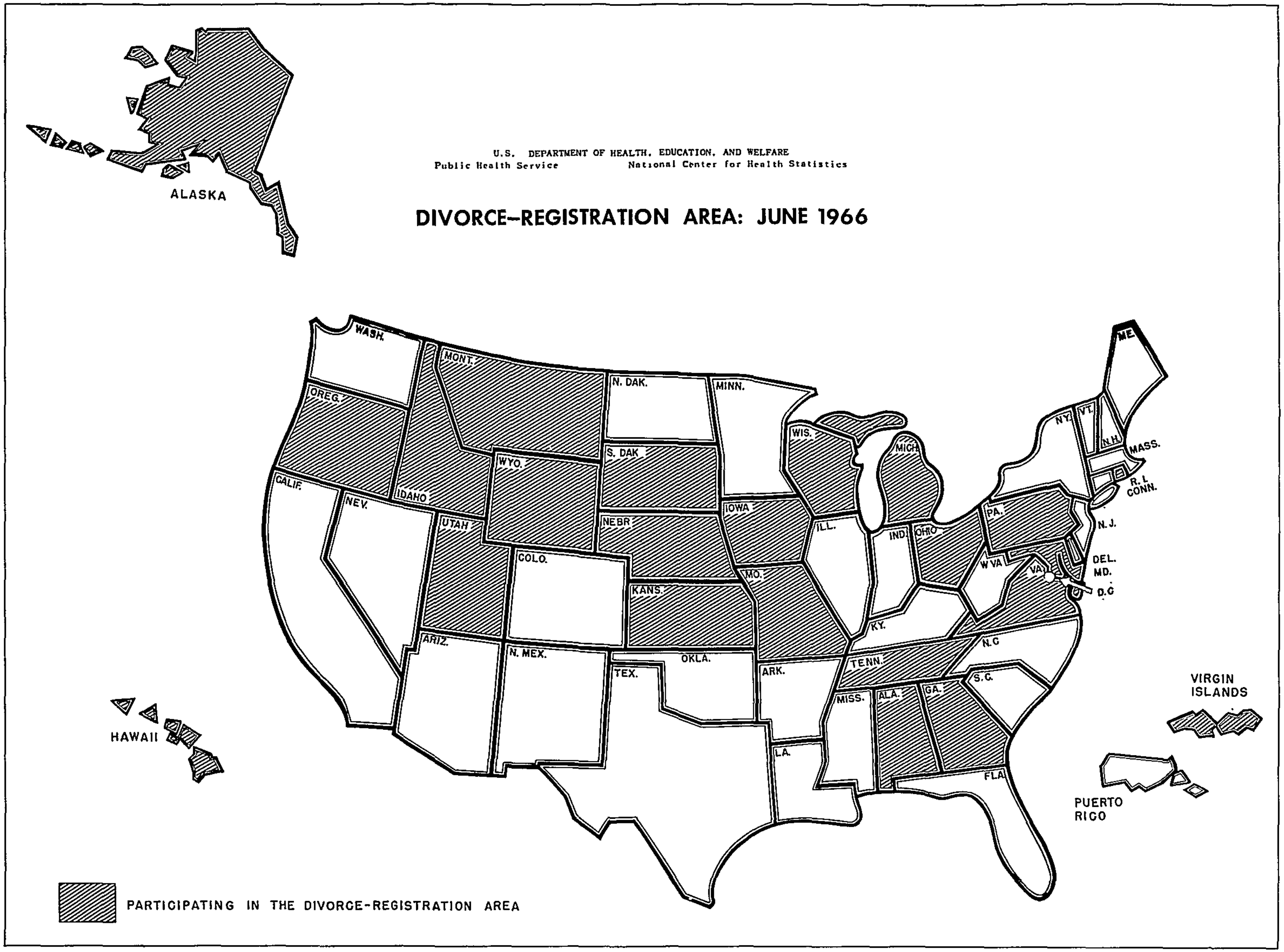
TO: Accounting Officer

The number of final decrees as reported on this form have been verified to the reports.

▶ ______________________________
Chief, Bureau of Vital Statistics

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

BUREAU OF VITAL STATISTICS
(REV. 1-1-66) FORM VS-195

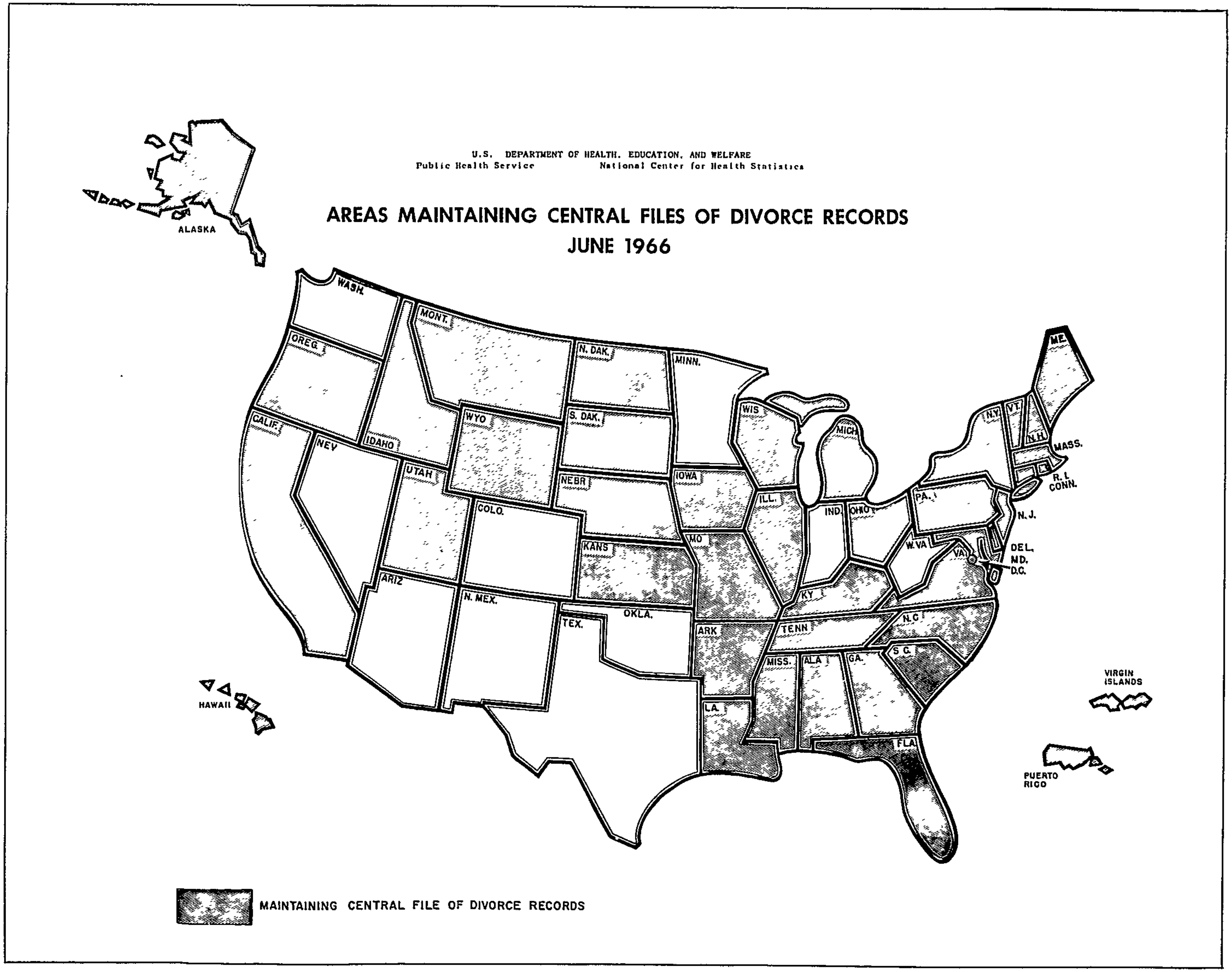


U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Center for Health Statistics

DIVORCE–REGISTRATION AREA: JUNE 1966

▨ PARTICIPATING IN THE DIVORCE-REGISTRATION AREA

Exhibit 5



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Center for Health Statistics

AREAS MAINTAINING CENTRAL FILES OF DIVORCE RECORDS
JUNE 1966

▨ MAINTAINING CENTRAL FILE OF DIVORCE RECORDS

Exhibit 6

Appendix

CONFERENCE PARTICIPANTS

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Akhihiero, Mr. Kingsley, Statistician, Midwestern Nigeria Government, Ministry of Economic Development, Nigeria

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Fox, Mr. M. Glenn, Director, Vital Records Service, Georgia Department of Public Health

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*Deceased, June 24, 1966.

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Riley, Mr. R. H., Assistant to the Commissioner, Bureau of Indian Affairs, Department of Interior

Roberts, Mr. Ralph W., State Registrar and Director, Bureau of Vital Statistics, Alabama Department of Public Health

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Schaffer, Alexander J., M.D., The Johns Hopkins Hospital, representing the Committee on Fetus and Newborn, American Academy of Pediatrics

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Schor, Stanley, Ph. D., Director, Department of Biostatistics, American Medical Association

Seigel, Daniel G., Sc. D., Statistician, Biometrics Research Branch, National Heart Institute, NIH, PHS

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