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VITAL and HEALTH STATISTICS

DATA EVALUATION AND METHODS RESEARCH

Health Interview Responses Compared with Medical Records

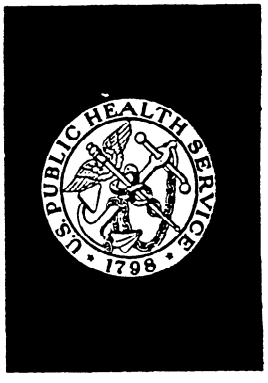
A study of illness and hospitalization experience among health plan enrollees as reported in household interviews, in comparison with information recorded by the physicians and hospitals

Washington, D.C. July 1965

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Anthony J. Celebrezze
Secretary

Public Health Service
Luther L. Terry
Surgeon General

This report was originally published in the series "Health Statistics from the U.S. National Health Survey," which has since been replaced by the "Vital and Health Statistics" series. It presents findings from a methodological study pertaining to improved techniques in data collection in the Health Interview Survey. Because this material is of continuing importance, and is relevant to data currently being released from the Survey, the report is being reprinted in its present form.



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COOPERATION OF THE HEALTH INSURANCE PLAN OF GREATER NEW YORK

Under legislation establishing the National Health Survey, the Public Health Service is authorized to use, insofar as possible, the services or facilities of other Federal, State, or private agencies. The methodological study in this report was performed under a contractual arrangement with the Health Insurance Plan of Greater New York.

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PREFACE

From its inception in 1957, the National Health Survey has been deeply concerned with studies to evaluate the efficacy of data yielded by the Survey. This report presents the fruits of a research contract with the Health Insurance Plan of Greater New York (H.I.P.) for an evaluation study of household interview reported information on medically attended illness using medical records information as a yardstick. It is recognized that the concepts of illness represented by these two approaches are far from identical. The concept of morbidity used in the Health Interview Survey has been explained in an earlier report[1] and an exposition of applicable measurement principles for the H.I.P. record check study has also been published.[2]

Despite the fact that interviews and records cannot yield identical information on the subject of medically attended illness, it is highly important to learn the scale and nature of their agreements and disagreements. Considerable light has now been shed on this problem by the H.I.P. study. However, these comparisons are not suitable for the establishment of conversion factors, whereby statistics from one source can be used to estimate statistical findings obtainable from the other source.

As is so often the case, the present study tends to raise more questions than those it actually resolves. The virtue of the H.I.P. study is that it has sharpened the hypotheses that can be fruitfully tested in subsequent studies. Also, material contributions to the methodology of research studies in this area have been made. The National Health Survey plans to conduct further evaluation studies based on this general approach.

Since the continuing Health Interview Survey of the National Health Survey is conducted for the Survey by the Bureau of the Census, the Bureau is constantly and deeply interested in evaluative and comparative studies. In this study, the Bureau of the Census carried out the household interviews and guided the attempts to obtain comparability with the national household interview procedures. This was accomplished under the supervision of Katherine G. Capt, Abbott Ferris, Ph.D., Samuel C. Dennis, and Harold Nisselson.

* * * * *

In its "Developmental and Evaluation Studies" conducted under contract, the National Health Survey staff not only develops the general specifications for the study but works closely with the contractor on methodology and on technical decisions during the course of the study. At the time this study was conducted this activity was directed for the Survey by O.K. Sagen, Ph.D.

One staff member is assigned for liaison with the contracting research organization. This liaison person is responsible for keeping closely informed on the study progress and conveying the National Health Survey viewpoint in decisions on methodology. For this study, James T. Baird, Jr. discharged these responsibilities. He also programed the variance computations for the computer.

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[1] U.S. National Health Survey. *Concepts and Definitions in the Health Household-Interview Survey*. Health Statistics. Series A-3. PHS Publication No. 584-A3. Public Health Service, Washington, D.C., September 1958.

[2] Sagen, O.K.; Dunham, R.E.; and Simmons, W.R.: Health Statistics From Record Sources and Household Interviews Compared. *Proceedings of the Social Statistics Section*. American Statistical Association. Washington, D. C., 1959. pp. 6-14.

CONTENTS

SYMBOLS AND NOTES

Category not applicable (three dots)	...
Quantity is zero (one dash)	-
Magnitude greater than zero but less than one half of the unit used	0.0
Computation not made—weighted base less than 15	(*)

Note: Detailed figures within tables do not add to totals whenever a characteristic is involved which was unknown or unreported for some interviewed persons. For example, the total number of chronic conditions is greater than the sum of those in self-respondents and in relatives of respondents because it includes conditions in persons for whom relationship to respondent was unknown, or in persons unrelated to respondent.

HEALTH INTERVIEW RESPONSES compared with MEDICAL RECORDS

The following report was prepared in the Division of Research and Statistics, Health Insurance Plan of Greater New York (H.I.P.), by Mrs. Eve Salamuth, who supervised the research project. Mr. Sam Shapiro replaced Dr. Paul M. Densen as Project Director when the latter's association with H.I.P. ended in December 1959. Throughout the entire study, both contributed to the formulation of the major study concepts and the general management of the investigation. The study was conducted under a contract with the U. S. National Health Survey. The methodology, findings, and conclusions are those of the investigators.

INTRODUCTION

This methodological study is largely concerned with the relationship between information obtained from two sources on chronic illness in a defined population: (1) reports from physicians of the Health Insurance Plan of Greater New York (H.I.P.) on their patients who sought care during a period of 12 months, and (2) reports on chronic illness made at the end of this 1-year period by respondents to household interviews of these patients and their families by the National Health Survey (NHS). The comparison between the data from these two sources is directed in the main toward examining which of the conditions diagnosed by physicians are reported by the respondents on household interview.

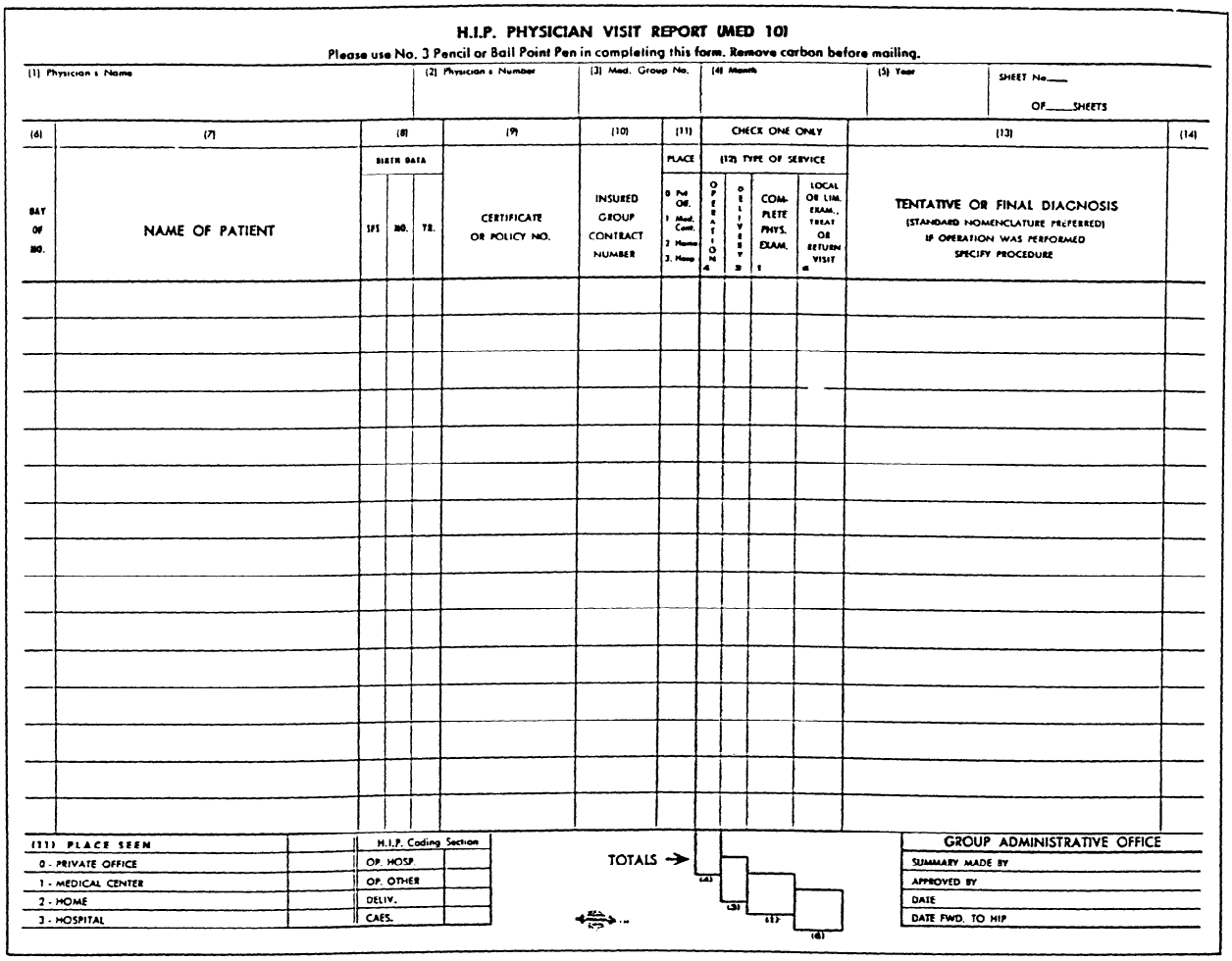
Previous methodological studies, such as that which was undertaken as a part of the Hunterdon County Study,[1] have devoted special attention to the comparison of morbidity information produced by household interviews with data derived from clinical examination of samples of the interviewed population at some time after the household interview. These studies have shown that only a small proportion of the chronic conditions diagnosed by physicians on such clinical examinations had been reported by the respondents on interview.

In the present study the voluntary seeking of medical care for a condition during the course of one year is established from a source independent from the household interview, and the information collected through the interviews is examined in relation to this criterion source. The objectives of the study are:

1. To describe discrepancies between medical records data and information obtained in household interviews.
2. To provide a basis for:
   a. the development of hypotheses as to the nature and causes of such discrepancies, with identification of the most severe problems, and
   b. a more precise description of the nature of information on illness which may be elicited in a household interview.
3. To suggest means of improving methodology for later record check studies of similar character.

The study population is a sample of families resident in the five counties of New York City and Nassau County who are enrolled in the Health Insurance Plan of Greater New York, a prepaid insurance plan providing medical care through group practice of 31 medical groups in the geographical area specified. The routine physician reports on medical services to insured persons constituted the basic record source—the Med 10 form (fig. 1). Each face-to-face contact between an insured patient and an H.I.P. physician is reported, with identification of patient and physician, of medical group, date and place of service, and diagnosis made by the physician at the time of rendering the service. Through collation of all the physician services reported as rendered in the year preceding the household interview, an independent determination of medically attended illnesses in this

[1] Trussell, R. E., and Elinson, J.: *Chronic Illness in a Rural Area.* The Hunterdon Study (Chronic Illness in the United States. Vol. III). Harvard University Press, Cambridge, Mass., 1959.



H.I.P. PHYSICIAN VISIT REPORT (MED 10)

Please use No. 3 Pencil or Ball Point Pen in completing this form. Remove carbon before mailing.

(1) Physician's Name | (2) Physician's Number | (3) Med. Group No. | (4) Month | (5) Year | SHEET No.___ OF___SHEETS

(6)	(7)	(8)	(9)	(10)	(11)	CHECK ONE ONLY				(13)	(14)
		BIRTH DATA			PLACE	(12) TYPE OF SERVICE					
DAY OF MO.	NAME OF PATIENT	MO. DA. YR.	CERTIFICATE OR POLICY NO.	INSURED GROUP CONTRACT NUMBER	0 Pvt. Off. 1 Med. Cent. 2 Home 3. Hosp.	OPERATION (A)	DELIVERY (B)	COMPLETE PHYS. EXAM. (1)	LOCAL OR LIM. EXAM., TREAT OR RETURN VISIT (2)	TENTATIVE OR FINAL DIAGNOSIS (STANDARD NOMENCLATURE PREFERRED) IF OPERATION WAS PERFORMED SPECIFY PROCEDURE	

(11) PLACE SEEN	H.I.P. Coding Section		TOTALS →	GROUP ADMINISTRATIVE OFFICE
0 - PRIVATE OFFICE	OP. HOSP.			SUMMARY MADE BY
1 - MEDICAL CENTER	OP. OTHER			APPROVED BY
2 - HOME	DELIV.			DATE
3 - HOSPITAL	CAES.			DATE FWD. TO HIP

Figure 1.

period became available for comparison with morbidity and hospitalization information obtained through National Health Survey interviews.[1]

A special study on a subsample of the interviewed population was carried out in the course of this project. This consisted of physicians interviewing the H.I.P. physicians who had rendered the services for specified conditions to persons in the subsample. These physician interviews attempted to relate the comparisons of physician and survey reports both to the clinical chart and to the expressed judgments of the physician in response to the interview questionnaire. Analysis of the results of these physician interviews is not a part of this report, but reference is made to some of the findings pertinent to the record comparison.

This study was carried out in only one geographical area, New York City, in a population receiving medical care in a special setting. The field operation, although done by the Regional Office of the Bureau of the Census, which is responsible for the regular NHS interviews in the area, differed in some details from the normal enumeration procedure. Another limitation, discussed below in some detail, is introduced by the nature of the criterion document for physician reports, particularly with respect to definitions of "chronic" conditions. It is accordingly not possible to use the results here presented as measures of "underreporting" in the total National Health Survey, or any part of it. The findings are, however, useful in any attempt to clarify major problems in the interpretation of morbidity data derived from household interviews.

A pilot comparison of data inferred from the H.I.P. physician reports (Med 10's) and household interview information collected on a sample of the H.I.P. population in 1952 served both to emphasize the need for a study with the actual NHS interview

[1]Only minor modifications of the NHS schedule were adopted for this survey: identification of physicians named as attending illness or as "usual doctor," and obtaining information on occupation and on pregnancy history. The pertinent questions used appear as Appendix I.

and to demonstrate the feasibility of the procedures necessary to process such data. The 1952 interviews were carried out by a private research agency under contract to "The Committee for the Special Research Project in the Health Insurance Plan of Greater New York."[1] The questionnaire had been designed to elicit information about health and medical care in the 8-week period preceding interview, about the existence of a selected list of chronic conditions, and about hospitalization in the calendar year 1951. When the interview data were compared with the H.I.P. physician reports for the 8-week period preceding date of interview, it was found that only 42 percent of the conditions inferred from the physician reports were correspondingly reported by the household respondents.

STUDY SETTING AND MEDICAL RECORDS

The Health Insurance Plan of Greater New York is a prepaid comprehensive medical care plan, organized on a group practice basis. Enrollees in the Plan are entitled to receive medical care from family physicians and specialists in the office, home, or hospital. Coverage is for preventive and diagnostic medical services and for treatment of illness. There are no waiting periods for service or exclusions from enrollment because of preexisting conditions, and no limitations on the number of services or duration of medical care. Medical services are provided by physicians associated with 31 medical groups distributed throughout New York City and Nassau County, and one medical group in Columbia County.

On June 30, 1957, shortly after the start of the second decade of H.I.P.'s operations, and the date for selection of the sample for this study, there were 513,052 persons enrolled in the Plan. About 67 percent were employees of New York City and their dependents, 19 percent were insured through health and welfare plans established by labor groups, 7 percent were persons who had converted to individual policies, and the remaining 7 percent came from a variety of small employment groups and housing projects. Enrollment in H.I.P. is on a group basis, the usual requirement being that at least 75 percent of the eligibles enroll. Contracts with these groups ordinarily provide for coverage of the employee, spouse, and dependent children under 18 years of age. A type of contract providing coverage only for the employee, undertaken by a number of union health and welfare plans, accounted for 7.2 percent of the enrollment on the specified date.

The independent record source in this study consists of the basic reporting document which H.I.P. physicians are required to submit to the central office in the normal course of the operations of the Plan. The entries on a single line of this "Med 10" form (fig. 1) represent a single face-to-face contact between a patient and a physician. H.I.P. physicians also make entries in clinical charts, so that medical records relating to H.I.P. enrollees exist in the files of the H.I.P. medical group centers and, frequently, in the private offices of H.I.P. practicing physicians. The question may reasonably be raised why the Med 10 was chosen as the criterion record source for this study rather than the clinical record, since the Med 10 does not provide detailed information which one might expect to find in a clinical record.

The Med 10 gives no medical history, no evaluation of symptoms or disability, and no weighing of differential diagnoses. Diagnostic entities must be inferred from the Med 10's by examining the terminology used by physicians in the context of the dates and places of service and the identification of the physician-specialties of those rendering the services. Error can be introduced in the numerical identification of the patient either at the source, where the Med 10 is originally filled, or in the course of processing to collate all services for a given individual. It was nevertheless more feasible to use the Med 10 as the basic record source rather than the clinical chart. Because of the wide geographic dispersal of the medical groups, and the variety of methods of recordkeeping, great difficulties would have been encountered in an effort to examine all physician entries for a given individual. In addition, administrative difficulties would have been raised through the demands on group centers and private offices of physicians to make records available.

Because the Med 10's have served as the source of data for a number of studies made in the Division of Research and Statistics of H.I.P., evidence has accumulated on their reliability. All observations made in the past on the validity of the Med 10, both with respect to the clinical records existing in the medical groups and physicians' offices and with respect to more general considerations, have indicated that the Med 10 is a reliable document for the statistical purposes for which it has been used. A systematic study to validate the

[1] Health and Medical Care in New York City, A Report by The Committee for the Special Research Project in the Health Insurance Plan of Greater New York, Harvard University Press, Cambridge, Mass., 1957.

Med 10's with respect to the clinical records was part of an earlier research project, which examined the enrollment, morbidity, and utilization experience of a 10 percent sample of H.I.P. enrollees over the years 1948-1951. Here it was found that the total number of services reported on the Med 10's was slightly greater than that found in the clinical records, with the largest discrepancy produced by failure to enter home visits on the clinical charts. Inferences on number of cases of specified diagnostic categories were substantially the same from both record sources, except that more respiratory conditions were inferred from Med 10 reporting (a reflection of more complete entering of home visits), and more symptomatic complaints were inferred from the clinical records (possibly a reflection of the requirement that the physician enter a diagnosis, definite or tentative, on the Med 10).

Later studies made in the Division of Research and Statistics have substantiated inferences made from the Med 10's on hospitalization, on the prevalence of cancer, and on the number of deliveries in H.I.P. When estimates of prevalence of specific diagnostic entities made from the Med 10's are compared with similar data from other sources, generally good agreement is found.[1]

The interviews with H.I.P. physicians, noted above as a special development of this study, were directed toward illuminating the circumstances under which respondents in the household interview either reported or failed to report conditions inferred from the Med 10's. They thereby furnished information relating the inference made from the Med 10's to the knowledge that the physician, aided by his clinical chart, had regarding the patient's illnesses. The results of these interviews with 280 H.I.P. physicians, about 600 conditions in 341 patients, again provide strong evidence of the reliability of the Med 10's. Over 98 percent of the diagnoses inferred from the Med 10's appeared at some time in the clinical record, and only 4 percent of the inferred conditions had in fact been ruled out by the physicians after the entry had been made on the Med 10.

METHODOLOGY

The Sample

The sample for this study provided about 1,400 interviewed families. Sampling was restricted to subscribers and their covered dependents who were enrolled in H.I.P. on June 30, 1957 under family coverage and affiliated with a medical group. Persons who were not continuously insured for the 12 months preceding date of household interview were excluded from the sample. In order to increase the volume of chronic conditions for study the sample was stratified as follows:

Stratum 1: families in which one or more persons had received one or more Med 10-reported services related to a selected list of conditions during the 6-month period April 1 through September 30, 1957.

Stratum 2: families in which no person had received such services in the stated period.

The selected list of conditions consisted of medical terminology which approximated the conditions on the NHS interview checklists (fig. 2). Stratum 1 was sampled roughly three times as intensively as stratum 2. The stratum 1 families submitted to the Regional Office of the Bureau of the Census constituted roughly 2.0 percent of all H.I.P. subscribers in this category, while the stratum 2 families were approximately 0.7 percent of subscribers as defined.[2] The tables presented in this report are all based on frequencies inflated to the extent necessary to give each element equal weight (referred to as the weighted sample), in order to present a representative picture of the segment of the H.I.P. population defined above.

Each study family submitted to Census for interviewing was identified by a 5-digit serial number which was a translation of the H.I.P. 8-digit certificate number. Addresses obtained from the H.I.P. enrollment files had been confirmed by a preinterview mailing of a piece of educational material (provided by the American Heart Association), with arrangements made with the Post Office for notification on changes of address.

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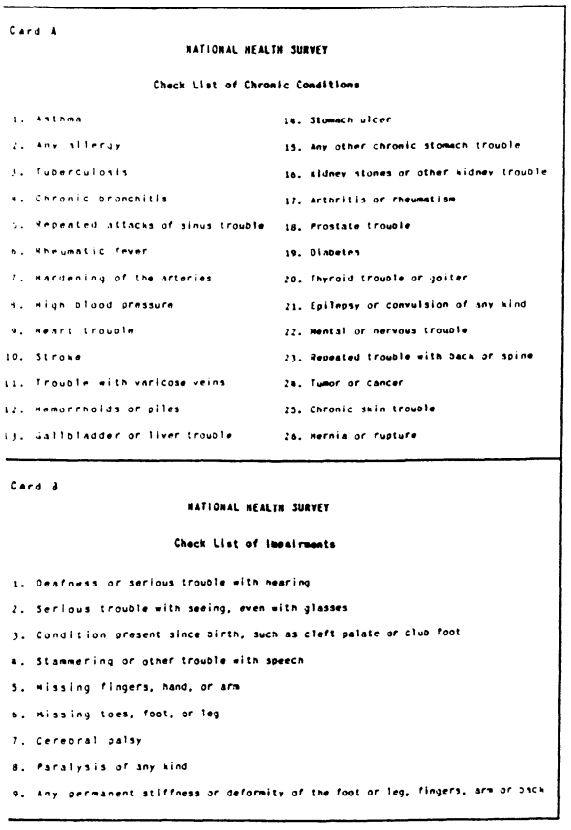
[1] Densen, P.M.; Balamuth, E.; and Deardorff, N.R.: Medical Care Plans as a Source of Morbidity Data. The Prevalence of Illness and Associated Volume of Service. *The Milbank Memorial Fund Quarterly* 38: 48, January 1960.

[2] Precise details of universal delineation and sampling fractions on which computation of weights was based are not presented in this report because of space limitations but are available and may be obtained upon request. Appendix III contains a few illustrative sampling errors.



Card A

NATIONAL HEALTH SURVEY

Check List of Chronic Conditions

1. Asthma
2. Any allergy
3. Tuberculosis
4. Chronic bronchitis
5. Repeated attacks of sinus trouble
6. Rheumatic fever
7. Hardening of the arteries
8. High blood pressure
9. Heart trouble
10. Stroke
11. Trouble with varicose veins
12. Hemorrhoids or piles
13. Gallbladder or liver trouble
14. Stomach ulcer
15. Any other chronic stomach trouble
16. Kidney stones or other kidney trouble
17. Arthritis or rheumatism
18. Prostate trouble
19. Diabetes
20. Thyroid trouble or goiter
21. Epilepsy or convulsion of any kind
22. Mental or nervous trouble
23. Repeated trouble with back or spine
24. Tumor or cancer
25. Chronic skin trouble
26. Hernia or rupture

Card B

NATIONAL HEALTH SURVEY

Check List of Impairments

1. Deafness or serious trouble with hearing
2. Serious trouble with seeing, even with glasses
3. Condition present since birth, such as cleft palate or club foot
4. Stammering or other trouble with speech
5. Missing fingers, hand, or arm
6. Missing toes, foot, or leg
7. Cerebral palsy
8. Paralysis of any kind
9. Any permanent stiffness or deformity of the foot or leg, fingers, arm or back

gure 2. National Health Survey Check Lists of chronic conditions.

he Field Operation

Interviewing of sample families was carried ıt by the Regional Office of the Bureau of the ensus over the 9-week period from May 2 ırough July 6, 1958. The interview questionnaire ielected sections appear as Appendix I) was sub-:antially the same as the schedule in use at the me by the National Health Survey. Several items ı the regular questionnaire not readily amenable ı record check in the context of this study were nitted from the study questionnaire, while others ecessary for the record check—such as the name attending physician—were added.

The enumerators were for the most part not e regular NHS interviewers employed in the ea, but were specially employed for this study. terviewers attended the standard Census inter-ewer training course as modified for the study. ıey were supervised by the regular Census re-onal supervisory personnel, and a reinterview ıte of 20 percent was scheduled.

In order to meet the time requirements of the eld operation and to provide the basis for dealing th the nonresponse, a subsample was drawn by e Census Bureau in the final stages of the enumeration. This subsample, 105 of 309 uncompleted households, was composed of families who had moved from the original H.I.P. address, other noninterviews, and unassigned questionnaires. Completed interviews were obtained on 3,937 H.I.P. enrollees insured continuously under family contract for the full 12 months preceding interview and distributed in 1,388 households. The weighted count, adjusting for stratification of the sample and nonresponse, was 6,609 individuals in 2,488 households.

General Outline of Data Processing

The completed interviews collected by the Census Bureau were sent to Washington and subjected to the usual NHS processing—editing, coding, and punching of the standard decks of cards. Both the processed schedules and the decks of punch cards were then forwarded to H.I.P. Here the first task was to identify individuals in the study both on the NHS schedules and in the H.I.P. sample file. A "Demographic File" was created by combining selected data from three sources: (1) the Persons File routinely punched by the National Health Survey, (2) the H.I.P. sample file of insured persons, and (3) the NHS schedules. This file became the source of data on personal characteristics established on household interview and on insurance information for all decks of cards used in the study tabulations.

All Med 10 reports on interviewed persons for the period April 1, 1957 through June 30, 1958 were processed to produce a listing of services to each individual in chronological order. These listings, which included the physician's terminology for diagnosis, abbreviated in accordance with a standard glossary, were edited to eliminate all identifiable error. Services in the 12 months preceding interview ("study year") and those in the 2 weeks specified in the NHS schedule (ending on the Sunday preceding interview) were marked off for coding. Figure 3 gives a specimen of the listing as prepared for coding for two persons in the study. Information on morbidity, medical care, and hospitalization experience as reflected in the Med 10 reports was coded. The coded Med 10 listing was then examined in conjunction with the matching NHS interview, and correspondence in household interview reporting of medical conditions and hospitalizations was coded. Conditions and hospitalizations reported on interview which did not correspond with data inferred from the Med 10's were also entered from the interview schedules. Additional data on hospitalizations were obtained from individual hospitals and from the files of Associated Hospital Service of New York (AHS) (Blue Cross) and coded.

	Patient	Abbreviated Med-10 terminology	Place of service[3]	Date of service	MD identification[4]	Birth data[5]	Contract number	Certificate number	Medical group	Physician's original terminology, MED 10
	1-59172[1]	5/20[2]								
	SMITH MARY	TOOTH ABSC R JAW	2	05 05 7	2310 01	51 07 13	4000	8967493	304	Tooth abscess, right jaw
STUDY YEAR	SMITH MARY	INDIG POSS GB DIS	1	07 30 7	2310 01	51 07 13	4000	8967493	304	Indigestion, possible gallbladder disease
	SMITH MARY	CHR CH & CHLITH	1	09 02 7	2310 01	51 07 13	4000	8967493	304	Chronic cholecystitis and cholelithiasis
	SMITH MARY	X GB SER	1	08 07 7	1736 11	51 07 13	4000	8967493	304	Gallbladder series
	SMITH MARY	GAST COMPL REF TO X 31 & 8A	1	08 23 7	1319 50	51 07 13	4000	8967493	304	Gastric complaints, refer to X-ray, GI and barium
	SMITH MARY	X 8A EN	1	08 30 7	1736 11	51 07 13	4000	8967493	304	Barium enema
	SMITH MARY	X 31 SER	1	09 11 7	1736 11	51 07 13	4000	8967493	304	GI series
	SMITH MARY	CHLITH & CHR CH	1	09 27 7	2310 01	51 07 13	4000	8967493	304	Cholelithiasis and chronic cholecystitis
	SMITH MARY	X CST	1	08 19 8	1736 11	51 07 13	4000	8967493	304	Chest X-ray
2 Wks	SMITH MARY	PX NEG	1	05 12 8	2310 01	51 07 13	4000	8967493	304	Physical exam, negative
	SMITH MARY	MYAL	1	05 25 8	2310 01	51 07 13	4000	8967493	304	Myalgia
	1-41863[1]	5/13[2]								
STUDY YEAR	JONES JOE	COR INSUF	1	06 05 7	1484 01	11 04 31	4405	8900639	102	Coronary insufficiency
	JONES JOE	EKG	1	06 14 7	2559 01	11 04 31	4405	8900639	102	EKG
	JONES JOE	COR INSUF	1	07 17 7	1484 01	11 04 31	4405	8900639	102	Coronary insufficiency
	JONES JOE	PAROX FIBRILLATION	2	01 03 8	1464 01	11 04 31	4405	8900639	102	Paroxysmal fibrillation
	JONES JOE	MYOC DAM	2	01 09 8	1484 01	11 04 31	4405	8900639	102	Myocardial damage
2 Wks	JONES JOE	HYDRO	1	05 03 8	1484 01	11 04 31	4405	8900639	102	Hydrocele
	JONES JOE	EKG	1	05 15 8	1081 01	11 04 31	4405	8900639	102	EKG

[1]Stratum and serial number

[2]Date of household interview

[3]Place of service: 1 - office; 2 - home

[4]First 4 digits identify individual MD; last 2 digits identify physician specialty: 01 - family physician 11 - radiologist; 50 - General surgeon

[5]First 2 digits are sex and family status: 51 - female, spouse of subscriber; 11 - male subscriber
Last 4 digits are month and year of birth

NOTE: All data shown are exactly as they appear on the listing except for fictitious patients' names and certificate numbers.

Figure 3. Specimen of coding listing.

Coding: General Considerations and Classification of ISC-PHS Codes

The central interest of this study was to compare morbidity from chronic conditions as inferred from a criterion source—physician reports—with that reported by respondents in the NHS interview. The essence of the proposed comparison can be summarized:

> Is the diagnosis of an H.I.P. physician, as established through his reporting on the Med 10's regarding a specified medical condition, reflected in any way by the reporting of the respondent in the NHS interview? Secondarily, if this diagnosis is reflected in the interview, how closely does the condition as reported correspond to the physician's diagnosis?

In order to understand the meaning of answers to these questions obtained from processing data from the two sources a number of considerations must be carefully weighed. The most important of these are the circumstances under which a respondent report on a given condition might be expected, and conceptual differences in classification of morbidity from the two sources. The design of the NHS schedule is such that a report on interview of any condition, chronic or not, which produced symptoms or the need for medication or treatment in the two weeks preceding interview could be elicited through the battery of questions about these two weeks (Questions 11-14, Appendix I). But if no symptoms were present during the two weeks, and there was no related therapy or medication, reports of conditions would have to be elicited either through Question 15, which probes for conditions that have been present "a long time," through the checklist questions (16 and 17), or through the question on hospitalization in the year preceding interview (25).

The physician reports on the Med 10's furnish no information on date of onset. It is therefore not possible to define which conditions inferred from physician reports are to be considered chronic in terms of the duration of the symptoms or diagnoses. NHS practice in classifying interview-reported conditions is to consider a condition chronic either if it appears on the checklists of chronic conditions and impairments (fig. 2), or if the onset of the condition is stated by the respondent to be three months or more before the date of interview (except for pregnancies). But in the case of conditions inferred from the physician reports it was necessary to define chronicity solely on the basis of the terminology used. Physicians on the research staffs of both NHS and H.I.P. came to agreement on a list of all ISC-PHS codes which were to be accepted as descriptive of conditions which, in the clinical experience of physicians, could be chronic. It should be noted that the direction of judgment was to include the maximum number of conditions in the "possibly chronic" list, and a minimum number in the "nonchronic" list.

The diagnoses expressed by these "possibly chronic" codes which were to be inferred from

H.I.P. physician reports for the year preceding household interview were grouped into the following classes:

Class 1: those which are covered by NHS terminology for the checklists without any qualifications introduced by modifying adjectives.

Class 2: those which might be suggested by checklist terminology, but there are qualifications arising for the most part from the use of modifying adjectives ("repeated," "chronic," etc.).

Class 3: those which would not in any obvious way be suggested by checklist terminology, but which had been judged "chronic" or "possibly chronic" on the basis of the clinical experience of physicians.

These three "classes of condition" constitute a major axis of analysis in the study. A priori they present varying probabilities of eliciting responses with the NHS schedule, not only between the classes, but within a given class. Class 1, for example, or "checklist unqualified," includes mainly conditions in connection with which misunderstanding on the part of the respondent is unlikely—such as diabetes, asthma, high blood pressure, and heart trouble. On the other hand, because of item 9 on Card B (any permanent stiffness or deformity of the foot or leg, fingers, arm, or back), NHS impairment codes for "specified deformity of limbs, trunk, or back" were classified as Class 1 conditions. Flatfoot thereby became a Class 1 condition, but it is worth pondering what proportion of respondents would think of flatfoot as a "deformity." Similarly, item 3 on Card B specifies "condition present since birth, such as cleft palate or clubfoot." For this reason all congenital malformations were classified as Class 1. But it again remains a question whether, for example, such conditions as extroversion of the bladder or cryptorchism, coded as congenital malformations according to ISC rules, would be suggested to a respondent by this probe.

Conditions were assigned to Class 2, or "checklist qualified," usually on the basis of adjectives in the checklist terminology which might produce different subjective responses among respondents. Examples are "repeated trouble with back or spine," "any other chronic stomach trouble.". Other qualifications could arise from the classification of a disease as a checklist condition because of a reasonable inference about an impairment that would be produced by the disease diagnosed by the physician, for example, glaucoma assumed to produce "serious trouble with seeing." Still other qualifications could stem from the differential meaning which conditions assignable to the same ISC code could have for laymen and for physicians: for example, a physician-diagnosed "fibrositis," although codable to the same ISC code as "rheumatism," is not necessarily the kind of condition suggested to the layman by the term "rheumatism" which appears on the checklist.

The conditions included in Class 3 ("non-checklist") are those which were judged by the NHS and H.I.P. physicians to be "possibly chronic" for which no obvious probe appears on NHS cards A and B. Reports of these conditions could therefore be theoretically expected on interview only if (1) they produced symptoms, et cetera, in the two weeks preceding interview, (2) the respondent was reminded of them on the basis of Question 15 (conditions present for "a long time"), or (3) they had produced a hospitalization during the 12 months preceding interview. This class includes a wide variety of conditions, some of them unquestionably chronic (multiple sclerosis, peripheral vascular disease), but others actually ailments delimited in time—acute conditions—which the respondents should not have reported in response to any of the questioning during the interview (for example, an acute bursitis experienced several months before interview, with no residual symptoms).

It is clear that the selection of conditions to be considered "possibly chronic" and the grouping of these conditions into the three defined classes contain many arbitrary elements. The classification nevertheless provided a useful analytical tool and may serve to suggest more refined designs for future studies of this nature.[1]

Because of the potentially wide variety of conditions included within each class, another axis of classification of conditions was introduced. This combined the "class of condition" concept with two other variables: the number of physician services in the study year and the time spread over which services for the condition were rendered during the year. Four grades of condition were defined as follows:

Grade I: Identical with Class 1, checklist without qualification.

Grade II: Class 2 conditions, checklist with qualification, for which more than one service was rendered in the study year and for which there was an interval of more than one month between the first and last related service.

Grade III: Class 3 conditions, nonchecklist, with the same stipulations as to volume and spread of related services as for Grade II.

[1]The detailed categories included in each of the three classes of conditions discussed above, and those considered nonchronic for purposes of this study, may be obtained upon request.

Grade IV: Conditions assignable either to Class 2 or Class 3 (checklist with qualification or nonchecklist) with either only one related service in the study year or a time spread of one month or less between the first and last related service.

Coding: Specific Procedures

All possibly chronic conditions inferred from Med 10's—coding from listing of Med 10 services.—Each possibly chronic condition, as defined above, which was inferred from the listing of Med 10 services rendered in the year preceding interview of a person in the study, was characterized by a 4-digit code. Selection of this code followed current (July 1, 1958) NHS coding practice as closely as possible, using the 1955 Revision of the International Statistical Classification (ISC) as modified by the Public Health Service (PHS). In inferring conditions from the listing of Med 10 services, a not infrequent problem was to decide how many different ISC-PHS codes were required to describe the total morbidity experience. Here the principle followed was to lean in the direction of the greatest economy in the number of "conditions" to which code numbers were assigned. In those cases where terminology assignable to different codes appeared on the listing, and it was reasonable to conclude, in the context of the listing, that such diverse terminology applied to the same set of complaints, the choice of code was determined by examining the relative date when a term was used and the specialty of the physician who used the term. Diagnoses made later in time—that is, in the natural course of establishing a definitive diagnosis—were preferred over those made earlier in time, and diagnoses made by specialists were preferred over those made by family physicians. Within the framework of these two considerations, a more fundamental diagnosis was preferred to a symptom consistent with the diagnosis. All diagnoses which remained tentative at the date of interview were identified as such in the coding.

For each possibly chronic condition coded in this way to the ISC-PHS code, additional coding specified the class of condition and an indication of the volume of related Med 10 services in the study year, of the time spread between the first and last services for the condition in the study year, and of the time interval between the last service for the condition and the date of the household interview.

Coding of correspondence of survey data with possibly chronic conditions inferred from Med 10's.—A determination was now made of whether any condition was reported on interview to correspond with each possibly chronic[1] condition inferred from the Med 10's. This decision was made from parallel examination of the interview schedule and the coded Med 10 listing, and, wherever a survey-reported condition was judged in correspondence, the type of match was also noted, defined as follows:

Type 1 match: A condition is reported on household interview (HHI) which was coded by NHS to the same Recode No. 1[2] category as the H.I.P.-coded Med 10 services, or the Recode No. 1 codes from the two sources would have been the same had it not been for arbitrary coding decisions made for the H.I.P. data.[3]

Type 2 match: A condition is reported on household interview which was coded by NHS to a different Recode No. 1 category but to the same Recode No. 3 category as the H.I.P.-coded Med 10 services.[4]

Type 3 match: The NHS schedule contains no report coded by NHS to the same Recode No. 3 category as the H.I.P.-coded Med 10 services, but there is a description in the schedule of a condition or symptom which is consistent with or could be associated with the diagnosis inferred from the Med 10's.

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[1] It is to be noted that the criteria for match made it possible to judge a survey-reported condition *not coded chronic by NHS* to be in correspondence with a "possibly chronic" condition inferred from the Med 10's. Of the total survey-reported conditions matched to those inferred from the Med 10's, 14 percent fell into this category--7 percent having been coded "nonchronic" by NHS and 7 percent not having been designated either "chronic" or "nonchronic." The last group, not designated by NHS, consisted almost entirely of survey-reported hospitalizations, matched to conditions inferred from the Med 10's, but not entered as illness reports on Table I of the interview schedule.

[2] Recode No. 1--278 titles defining selected ISC-PHS codes and groups of such codes.

[3] In all instances where NHS coding practice differentiates between codes to be selected on the basis of stated date of onset, it was impossible to pattern H.I.P coding practice in this way. For purposes of coding the Med 10 services the "chronic" code was usually preferred over the "nonchronic" code. If the condition was reported on household interview and coded by NHS to the nonchronic code because of onset within the 3 months preceding household interview it was nevertheless still considered a Type 1 match. All possible instances where such discrepancies could arise had been organized into a special chart to facilitate coding.

[4] Recode No. 3--43 categories with specified Recode No. 1 inclusions.

No match: Nothing is reported on survey which could correspond in any way with the condition inferred from the Med 10's.

To make the determination on type of match defined above the entire schedule was examined. The procedure was to start with the conditions in the Schedule's Table I which had been coded by NHS and to proceed to examine all other entries on the schedule related to the given individual—hospitalizations, enumerator notes, et cetera. The listing of Med 10 services was referred to in order for the coder to have clearly in mind the terminology which had been used by physicians.

Once a condition reported on interview was judged to be in correspondence with a condition inferred from the Med 10's, selected data relating to the condition were transcribed from the interview schedule to the code sheet. These included the question number which produced the household interview report, related medical care and disability, reported date of onset of the condition, the NHS code for type of condition (chronic, nonchronic), date of last doctor consultation, and H.I.P. status of last doctor consulted, as previously coded on the schedule. Provision was made for noting the number of Med 10 conditions to which a given survey-reported condition was matched.

In summary, it should be noted that the current analysis of survey-reported morbidity in comparison with that inferred from physician-reporting is directed primarily toward ascertaining whether the respondent told the enumerator anything which can reasonably be judged to correspond with the diagnostic entity inferred from the physician's Med 10 entries. In terms of the coding conventions adopted, this can be expressed as the total proportion of conditions inferred from the Med 10's matched by survey-reported conditions in any way—i.e., the sum of all Types 1, 2, and 3 matches. Of secondary interest is an examination of the way in which what the respondent told the enumerator, as coded by NHS, corresponds to the data coded from physician reports.

Coding of nonchronic conditions.—Med 10 services codable to ISC-PHS codes which had been classified as nonchronic in the review of codes by staff physicians were assigned codes only if the dates of these services fell within the two-week period ending on the Sunday preceding the household interview. Provision was made for classifying these conditions into five broad diagnostic groups and for indicating the number and place of related services in the two-week period. The interview schedules were examined in conjunction with the coded Med 10 listing to determine whether any condition or symptom was noted by the enumerator which was consistent with or could be associated with the nonchronic condition inferred from the Med 10's. No attempt was made to distinguish different types of match for these conditions. If a corresponding condition was reported on interview, selected information about the condition was transcribed from the interview schedule, as described above for chronic conditions.

Coding of morbidity and medical care expressed as experience of persons.—The coding so far described was designed to make possible comparison of conditions reported on survey with those inferred from the criterion source. The issues in this study may also be posed in terms of the experience of persons. For example: what proportion of persons with medical services for one or more chronic conditions reported at least one of these conditions on interview? To make possible analysis along these lines a card summarizing morbidity experience during the study year was coded for each person. Information coded into this card included number of chronic conditions inferred from the Med 10's and number correspondingly reported on interview, and data on the number of H.I.P. physician services received during the study year and during the two-week period. An indication of whether a physician contact during the two-week period had been reported on survey was entered from examination of the interview schedule.

Coding of survey-reported conditions not in correspondence with conditions inferred from Med 10's.—Information on all survey-reported conditions was coded from the interview schedules, including the H.I.P. status of the physician reported by the respondent to have last attended the condition. The nature of the study materials restricts the investigation to determining the extent to which conditions medically attended in a defined setting were correspondingly reported to the enumerators on survey. This one-way process is concerned with "underreporting." There is, of course, a general interest in the reverse process—the extent to which respondents report chronic conditions to be present which through some independent source could be shown never to have been medically diagnosed. Since some H.I.P. members seek medical care outside the Plan, conditions reported on survey for which no corresponding condition was inferred from the Med 10's cannot be assumed to be overreports. Although the data do not provide the basis for an analysis of overreporting to parallel that of underreporting, certain characteristics of the unmatched survey-reported chronic conditions are described in the findings of this report.

Coding of hospitalization experience.—Since the place of each service reported on the Med 10's is noted by the H.I.P. physician (home, office, or hospital), episodes of hospitalization for given conditions can be inferred from the listing of Med 10 services. An opportunity was thus provided to

examine the extent to which hospitalizations established from an independent record source were reported by the respondents on interview. The Med 10's do not, however, provide exact dates of admission and discharge, since the physician reports only the dates on which he sees the patient in the hospital. For this reason the study design provided for a follow-back to hospital records and, in some cases, to the records of the Associated Hospital Service, in order to obtain accurate data on duration of stay. In all instances where the hospitalization inferred from the Med 10's had been correspondingly reported on interview, the hospital queried was that named by the respondent. Where there was failure to report a hospitalization on survey, either the name of the hospital to be addressed was obtained from the physician's clinical record, or all hospitals in which the given physician had admitting privileges were queried.

Of all episodes of hospitalization inferred from Med 10 services reported rendered in the hospital, the hospital follow-back confirmed 95 percent as involving at least one night in the hospital. The hospitalizations thus confirmed were used (a) to examine underreporting of the fact of hospitalization on household interview, and (b) to study accuracy in reporting the duration of stay on interview in comparison with the primary record source.

Hospitalizations reported on interview which had not been inferred from the Med 10's were also checked against an independent record source—the hospital named by the respondent or Associated Hospital Service files. Through this follow-back, part of the problem of overreporting of hospitalization was studied, and an additional set of records became available to examine accuracy in reporting duration of hospital stay.

Inquiries were directed to a total of 112 hospitals (97 in New York City and 15 outside the City), and, with intensive follow-up by mail and telephone, responses were obtained from all of them. Episodes for which the hospital was unable to locate an admission were further cleared with AHS files.

Data pertaining to all hospitalizations inferred from the Med 10's which had been confirmed by the hospital or AHS records as involving at least one night in a hospital in the study year were coded. Diagnosis was coded from the listing of Med 10 services, duration of stay and date of admission from the hospital or AHS record. The interview schedule was examined for reports of hospitalizations corresponding to those inferred from the Med 10's. A hospitalization reported on survey was considered in correspondence with that inferred from the Med 10's if the respondent's stated reason for hospitalization was judged consistent with the Med 10-inferred diagnosis producing the hospitalization. Interview-reported data relating to the matched hospitalization were transcribed (survey-reported diagnosis, date of admission, and duration of stay). All survey-reported hospitalizations not matched to episodes inferred from the Med 10's were also coded. Data on diagnosis, date of admission, and duration of stay were coded from the hospital record, and interview-reported data were again transcribed. Survey-reported hospitalizations for which there was failure to confirm the fact of hospitalization from the independent record source were identified.

GENERAL CHARACTERISTICS OF THE STUDY POPULATION

The study population is a representative sample of H.I.P. subscribers and their covered dependents insured under family contract for the full 12 months preceding household interview in the spring of 1958. This is essentially a population of New York City residents in the labor force and their dependents. Some of the more important demographic characteristics are shown in tables 1 and 2, while table 3 gives the proportion of persons with specified characteristics for whom one or more possibly chronic conditions were inferred from the Med 10's.

The H.I.P. population contains a slightly higher proportion of males than of females (table 1), whereas the reverse is true for New York City as a whole. As would be expected in a working population, the H.I.P. subscribers and their families are younger than the total City population. H.I.P. is substantially deficient in persons aged 65 and over (3 percent compared with 9 percent found in the 1957 special census of New York City), and has a higher proportion of children under 15 (31 percent compared with 23 percent for the City). The deficiency in aged persons is especially marked in the case of women—only 1 percent of the H.I.P. population are women aged 65 or older, compared with 5 percent for New York City.

The distribution of H.I.P.'s population by race is practically identical with that found for New York City as a whole in the special 1957 census, where 12.6 percent of the population was classified as nonwhite.

Slightly more than one fourth of the H.I.P. enrollees are members of families in which the fam-

ily head had completed at least one year of college; less than one fourth are in families whose head had not completed one or more years of high school (table 2).[1]

H.I.P. families have a somewhat higher income than families in New York City as a whole. More than half of H.I.P. enrollees (56 percent) are in families whose income is between $5,000-9,999. Except for enrollees aged 65 and over, the proportion of H.I.P. members in families with incomes under $4,000 is roughly 10 percent (table 2). But 22 percent of the aged enrollees are in this category. If the subscribers, rather than total enrollees, are distributed by family income, comparison is possible with the special census of New York City carried out in 1957, which provided a distribution of families by 1956 income.[2] Of all H.I.P. families reporting income only 13 percent reported incomes under $4,000 in the current NHS survey (1957-1958 income), whereas 27 percent of the New York City families fell into this category for 1956. Approximately the same proportion of H.I.P. and New York City families fell into the $4,000-4,999 bracket, while the proportion of H.I.P. families was greater in all income classes of $5,000 and over.

The percentage of enrollees in white families in which the family head had completed more than 12 years of schooling was twice that found in the nonwhite group (29 percent compared with 14 percent). Roughly five times as many nonwhite H.I.P. members were in families with incomes under $4,000 (37 percent compared with 7 percent).

Practically all males aged 25-64 in the study population were working in the year preceding interview, while slightly over a third of those 65 and over were retired. Almost one third of the women aged 25-44 were in the labor force, and this proportion rose to some 45 percent in women aged 45 to 64. Roughly one fourth of all H.I.P. members are in families where the subscriber's occupation is classified as professional or managerial. One third of all enrollees are in families whose subscriber is classified as a professional, managerial, clerical, or sales worker. Less than 5 percent are in families headed by laborers, while 18 percent are in families for whom the subscriber is a fireman or policeman.

FINDINGS

Correspondence in Household Interview Reporting of Possibly Chronic Conditions Inferred From Med 10's

General considerations.—A total of 4,648 possibly chronic conditions was inferred from H.I.P. physician reports on the interviewed population for the year preceding interview.[3] Some 40 percent of these were Class 1 conditions (checklist unqualified), slightly more than one fourth were Class 2 (checklist qualified), while one third were Class 3 (nonchecklist). The proportion of conditions in these classes correspondingly reported by the respondents on interview in no case reached half of those inferred from the Med 10's—44 percent of the Class 1 conditions were reported, 28 percent of Class 2, and 20 percent of Class 3 conditions.

Discrepancies of such magnitude immediately raise a question about the possibility that factors unrelated to the accuracy of reporting may have been responsible. Within the setting of this study, such factors might be, for example:

1. Conditions inferred from the Med 10's may in fact have been errors, or diagnoses no longer maintained by the physicians for their patients.
2. A substantial proportion of the conditions classified as "possibly chronic" may in reality have represented nonchronic conditions for which the NHS schedule was not designed to elicit reports.
3. The deficiency in survey-reported conditions corresponding to those inferred from the Med 10's may reflect a poor quality of enumeration in this survey, attributable to the relative lack of training or experience of the interviewers.

The reliability of the Med 10 relative to the physician's clinical record has already been discussed briefly. It will be recalled that the interviews of H.I.P. physicians carried out as a development of this study showed that there was no mention in the physician's record of the Med 10-inferred condition in less than 2 percent of the conditions about which physicians were questioned. The interviewed physicians characterized

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[1] In the 1952 household survey which compared a sample of the H.I.P. population with a representative sample of New York City, 27 percent of the H.I.P. enrollees aged 25 or over had completed more than 12 years of schooling, compared with 14 percent of the comparable N.Y.C. group. "Health and Medical Care in New York City." Harvard University Press, 1957.

[2] Characteristics of the Population of New York State, 1956 and 1957, Interdepartmental Committee on Low Incomes, Bulletin No. 1 (Part 1), October 1958.

[3] Seventy-five conditions for which the diagnosis inferred from the Med 10's was designated as tentative or questionable as of the date of interview are not included in the analysis.

86 percent of the conditions about which they were asked as definite diagnoses, 8 percent as tentative, and 4 percent as ruled out after being considered tentative. Accordingly, the finding that only a low proportion of the conditions inferred from the Med 10's were reported on interview cannot be attributed to Med 10 error or unreliability.

Questions related to the chronicity of the conditions under discussion emphasize the distinct character of the two universes of conditions being compared. On the one hand there is the universe of conditions inferred from physician reports on the Med 10's in terms which, in the judgment of NHS and H.I.P. staff physicians, are likely to represent largely chronic—i.e., long-standing, or continuously present, or recurring—disease. On the other hand, there is the universe of conditions reported on interview in response to a questionnaire which probes about (1) conditions which produced symptoms or the need for medication or medical care in the two weeks preceding interview; (2) conditions which have been present "for a long time" or which produced a hospitalization in the year before interview; and (3) a specific list of conditions and impairments.

In comparing information from the two sources an assumption that complete reporting by respondents would duplicate the universe of conditions inferred from physician reports can never be made. There are nevertheless two considerations relevant to the problem raised here. The first is that the results of the interviews of H.I.P. physicians, while not definitive, suggest that relatively few of the conditions unreported by respondents were considered "nonchronic" by the patients' physicians.[1] The second is that some control on chronicity is provided throughout the analysis by examining the data in relation to axes of classification which tend to segregate nonchronic conditions included—such as, class of condition, number of related physician services, and specific diagnosis.

The reinterview program carried out by the Bureau of the Census provided some data for examining the quality of the enumeration as a factor influencing the proportion of Med 10-inferred conditions reported on interview. The data are fragmentary, since only 80 reinterviews were available on persons for whom one or more possibly chronic conditions had been inferred from the Med 10's. One can only state that the order of magnitude of improvement obtained after reconciliation of these reinterviews with the original interviews would not account for any substantial part of the underreporting found.

The evidence on hand therefore supports the general conclusion that it is not possible to explain the failure of respondents to report such a large proportion of the conditions inferred from the Med 10's as the effect of recognizable factors unrelated to reporting.

Class of condition.—The gradient found in respondent reporting of conditions in the three classes (44 percent for Class 1, 28 percent for Class 2, and 20 percent for Class 3) is consistently maintained no matter what other variable is simultaneously examined. Whenever one compares the percentage of Class 1 and Class 3 conditions reported, the proportion for unqualified checklist conditions is one and a half to two and a half that for nonchecklist conditions. This is true for a large number of variables with which class of condition has been crossed: volume of service; interval between first and last related service; interval from last service to household interview; relationship to respondent, and sex and place of birth of respondent; age, sex, and race; education of family head, family income and family size; whether or not permission to review medical records was granted. (Many of these may be examined in detail in tables 4 through 16.) The proportion of Class 2 conditions (checklist with qualification) reported in relation to these other variables is usually somewhere between that for Class 1 and Class 3, although on occasion there is little difference between the percentages for qualified checklist conditions and those considered to be nonchecklist.

There is no question that in this study the respondents reported most completely a group of medically attended conditions about which the interviewer had asked specifically and unequivocally. But it does not follow from this that the production of an interview report to correspond with a medically attended condition inferred from a physician record source is a simple matter of including specific terminology for that condition on an interview checklist.

The design of the NHS schedule is such that the first probes are for conditions which produced symptoms, or disability, or the need for medication or treatment within the two weeks preceding interview (Questions 11-14). Next, the respondents are questioned about any ailments or conditions that have lasted "a long time" (Question 15), and

[1] The interviewed physician's judgment on chronicity was not systematically obtained for every condition subject to interview. Interviewed physicians volunteered opinions on chronicity in connection with the two following questions on the physician-interview schedule:

Question 1: As of (date of household interview) was the diagnosis definite, tentative, or ruled out?

Question 10: As you know, our chief interest in this study is in discovering, if we can, reasons why people might not report chronic conditions in an interview regarding health. That's what my questions have been directed to. In such an interview the patient did not report.... Considering the things we have talked about and any other reasons that might suggest themselves to you, what do you think is the possible explanation for the patient's not mentioning these to the interviewer?

then they are queried with the checklists (Questions 16 and 17). Thus it may be argued that chronic illnesses which produce symptoms, or for which medication is regularly taken, or which have been present for relatively long periods of time, have a better chance of being elicited from the respondent than conditions without these characteristics even before the checklists have been mentioned by the interviewer.

It is worth examining here the proportion of the survey-reported conditions in correspondence with Med 10-inferred conditions for which the interview report was in response to the checklist questions, shown in table 20. One third of all interview-reported conditions which were matched to conditions inferred from the Med 10's were mentioned by the respondents in response to the checklist questions. Although this percentage differed somewhat in the three classes of condition (Class 1, 32; Class 2, 41; Class 3, 29), the more important observation is that the use of the checklists improved correspondence in reporting for all classes of condition. This is true even for those conditions (Class 3) where no obvious stimulus to response can be identified on the checklists. It is possible to estimate what the percent of conditions correspondingly reported on interview would have been in the absence of checklist questions by assuming that all conditions mentioned in response to the checklist questions would then have remained unreported:

Percent of Med 10-inferred conditions correspondingly reported

	Observed	Without questions 16 and 17
Class 1----------	44.1	29.8
Class 2----------	27.6	16.4
Class 3----------	20.4	14.6

Clearly, the conditions grouped in Class 1—checklist without qualification—would have been reported roughly twice as efficiently as those in the other classes even without the use of any checklist question. The general significance of the checklists is that without these probes the proportion of conditions correspondingly reported on interview would have been substantially lower in all three classes of conditions.

In summary, it is important to bear in mind throughout this report that, although the three classes of condition were set up originally on an a priori basis related to the terminology of the NHS checklists, the gradient found in correspondence of reporting cannot be simply interpreted as a reflection of the efficacy of checklist terminology. Rather, we are dealing with three groups of conditions which are reported with varying efficiency for many complex reasons. Class 1 is heavily weighted with very specific diagnostic entities, predominantly chronic, many of which have a high probability of producing disability or symptomatic complaints and of thereby producing the need for more intense medical care. Succeeding sections in this report present data specifically related to these issues.

Volume of related physician services.—There is a strong relationship between the number of physician services rendered for a specified condition in the year preceding interview and the probability of that condition's being reported by the respondent. Among Class 1 conditions, 3 out of 10 (27 percent) seen only once by a physician were reported on survey, compared with 9 out of 10 (88 percent) which had required 10 or more services. Intermediate levels of service show intermediate rates for correspondence in reporting (table 4). Similar relationships prevail for conditions in Classes 2 and 3.

The data in table 4 also clarify one of the issues discussed above—the nature of Class 1 conditions as compared with those in the other classes. It will be noted that almost three fourths of the conditions with 10 or more Med 10 services are Class 1 conditions. About a fourth of the Class 1 conditions received at least 5 medical services during the year, but only a tenth of the conditions in the other two classes had this many services. Variability in correspondence cannot, however, be explained by a comparatively simple factor such as number of physician services. Within each level of service category there is evidence of the gradient in percent of conditions correspondingly reported between the three classes of condition.

Time interval: date of last service to date of interview.—Conditions last attended by a physician shortly before the date of interview are better reported by the respondents than those last attended at earlier times in the study year. Two thirds of Class 1 conditions seen by a physician within the two weeks preceding interview were reported in contrast with one third of these conditions last seen by a doctor four months or more before the date of interview (table 5). For conditions in Classes 2 and 3 there was an even larger disparity between the proportion of recently attended conditions reported and that for conditions seen at the longer interval from the interview date. It is worth noting that, although the NHS schedule could be expected to elicit reports of all conditions medically attended in the two weeks

preceding interview, without regard to the question of chronicity, a very substantial proportion of such Med 10-inferred conditions remained unreported—almost one third of the Class 1 conditions, one half of the Class 2 conditions, and 58 percent of the Class 3 conditions.

Table 5 shows a strong inverse relationship between correspondence in reporting and the duration of the time interval between last physician service for a condition and date of household interview. This, however, is greatly affected by differential distributions in volume of service. As would be expected by chance alone, conditions with comparatively high volumes of service are more likely to have services on dates close to the household interview date. Actually, almost half of the conditions for which the last service had been rendered within the two weeks preceding interview had received five or more services during the study year. The corresponding proportion for conditions last attended four months or longer from the date of interview was one tenth, while that for the intermediate time interval was one fifth.

The gradient in reporting between the three classes of condition is maintained when these classes are examined for specific time intervals between last physician service and household interview. Checklist unqualified (Class 1) conditions are reported more than twice as efficiently as nonchecklist (Class 3) conditions in both of the longer interval classes, and more than one and a half times as efficiently when the last service occurred in the two weeks preceding interview.

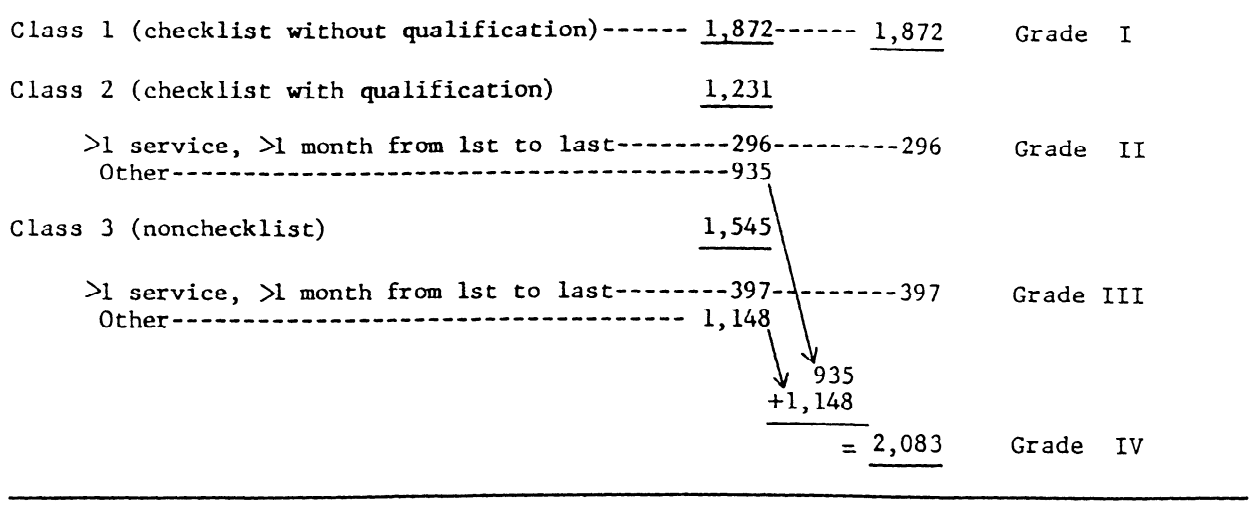
Time spread from first to last related service.—In planning the variables to be examined in this study there was interest in any axis of classification which might throw light on the difficult question of defining chronicity. It was reasoned that a condition requiring physician services over a relatively long period was more likely to be "chronic" than one for which the physician services were concentrated in a brief time span. For this reason a dichotomy was provided for distinguishing conditions for which the interval from first to last service was one month or less from those with an interval of more than one month. This dichotomy is, of course, inapplicable to conditions for which only one physician service was noted during the study year—49 percent of all Med 10-inferred possibly chronic conditions.

Conditions with physicians' services spread over a period of more than one month constituted 61 percent of all conditions with more than one service. These conditions were somewhat better reported on interview than those for which all services rendered were concentrated within a period of one month or less (table 6). But there is, of course, a relationship between the time span over which services are rendered and the actual number of services. Almost one fourth (24 percent) of the conditions with services spread over more than one month had received 10 or more related services in the study year, while only 2 percent of the conditions with concentrations of services within one month or less had received this many services. While there is at times more complete reporting of conditions for which services are spread over the longer interval within a given volume of service level (table 6), the total number of services related to a condition seems to be a much more important factor in relation to the reporting on household interview.

In summary it can be said that the arbitrarily defined variable here discussed is not viewed as one of great intrinsic importance, as studied in the above context. In this study its chief usefulness has been to serve as one factor in the definition of "grade of condition."

Grade of condition.—Reference has already been made to the introduction of the concept of "grade of condition" as a means of combining class of condition with both volume of services and the time spread for services in the study year. In this classification Grade I is identical with Class 1 (checklist without qualification). Grade II selects from Class 2 (checklist with qualification) those conditions which received more than one service in the study year spread over a period of more than one month. Conditions are selected from Class 3 (nonchecklist) on the same basis to constitute Grade III, and Grade IV is made up of the conditions from Classes 2 and 3 which either had only one service or, if more than one, a time spread between first and last service of one month or less. The distribution of all possibly chronic conditions inferred from the Med 10's by class and grade is shown in the following:

Schematic relationships between grade and class of condition



It is seen from examination of the first line of table 7 that the over-all effect of this reclassification on correspondence in reporting is to wipe out the differential previously noted between Classes 1 and 2. The percentage of Grade II conditions correspondingly reported is 42 compared with 44 percent for Grade I (or Class 1), whereas only 28 percent of all Class 2 conditions as a whole are reported. There is an improvement of similar magnitude in the reporting of Grade III conditions in comparison with that previously noted for Class 3 conditions (31 percent compared with 20 percent).

When correspondence in reporting conditions in Grades I, II, and III is examined for specific levels of service, it is apparent that the effect described above is largely a reflection of the removal of conditions with only one service from Classes 2 and 3 in order to produce Grades II and III. The gradient in correspondence between Grades I, II, and III is very similar to that for Classes 1, 2, and 3 (table 4) at all applicable service levels. With regard to Grade IV, the important point to bear in mind is that 71 percent of the conditions in this category received only one service in the study year.

Respondent status.—Self-respondents report Med 10-inferred chronic conditions on interview to a somewhat greater extent than proxy respondents (table 4). But while there is some improvement in reporting when a person responds for himself, the change is not major. It would appear that the low over-all correspondence in reporting cannot be attributed to the fact that over half of the possibly chronic conditions were in persons for whom a relative responded on household interview.

Despite the moderate over-all influence of respondent status there are a number of relationships worth noting. When conditions are examined in specific volume of service categories, the largest differential in reporting between self-respondents and others is found for conditions with only one physician service in the study year. It is of interest too that the largest difference between self-respondents and others is found for Class 2 conditions. These are conditions which had been classified as "checklist with qualification" because of the use of modifying terminology which might produce different subjective reactions in different respondents. And these conditions were reported almost twice as well by self-respondents as by proxy respondents—36 compared with 20 percent. Class 1 conditions were reported only slightly more completely for self-respondents than for others (48 compared with 41 percent, but the difference is statistically significant[1]), and there was no differential at all with respect to respondent status in the case of nonchecklist conditions (Class 3).

Differentials in correspondence by respondent status for conditions in the four specified grades (table 7) are consistent with these findings. Here the effect of better self-respondent reporting of Class 2 conditions with only one service is to produce the largest difference between self-respondents and others for Grade IV conditions.

Relationship to respondent.—Classification of the conditions in relatives of respondents by actual relationship to the respondent (table 8)

[1]Statements on statistical significance throughout the text refer to a probability level of 0.05.

shows that the differential favoring self-respondents over others is largely a matter of poorer reporting of conditions in children. Nonchecklist conditions (Class 3) are reported very similarly in self-respondents, spouses, and children (21, 21, and 18 percent, respectively). Class 1 conditions (checklist without qualification) are reported equally well in spouses and in self-respondents, but somewhat less well in children. The largest differential, in Class 2 conditions, shows these to have been reported twice as well in self-respondents as in children, and one and a half times as well in self-respondents as in spouses. When reporting by relationship to respondent is examined for the four grades of condition, the differential between self-respondents and children is reflected both in Grade II and Grade IV conditions (table 9).

It is clear that limiting the NHS interviewing to persons responding for themselves would have produced no impressive increase in the percent of conditions inferred from the Med 10's which were correspondingly reported on interview. The differential found between self-respondents and children cannot, moreover, be interpreted as a simple reflection of the status of the respondent, since the chronic conditions to be found in children are apt to have a very different diagnostic distribution from those found in adults.

Age and sex.—Chronic conditions inferred from the Med 10's in mature and older adults are reported more completely than in children and young persons. This is true to a greater or lesser extent for all three classes (table 10). It is also true for all four grades of conditions. The gradient with age is more pronounced for conditions other than those classified as checklist unqualified (Class 1).

Conditions in Class 2 (checklist with qualification) are better reported on interview in females than in males, the direction of the difference favoring females at every age except 15-24. This difference is of statistical significance for the age groups 25-44 and under 15 years. The reverse applies to Class 1 conditions, which are somewhat better reported in males at every age, although the difference is statistically significant only for ages 15-24. There is little difference between the sexes in the case of nonchecklist conditions (Class 3).

Respondent status and age.—Examination of completeness of reporting of the three classes of condition by age crossed with respondent status (table 11) emphasizes the earlier observation on the relative efficiency of reporting by self-respondents of Class 2 conditions (checklist with qualification). The differential in favor of self-respondents is found at every age, and holds also for both male and female self-respondents. Interpretation of the relatively more accurate reporting on Class 2 conditions in females, noted above, must be made bearing in mind the large preponderance of females responding for themselves as well as for others.

Race.—There is no consistent difference in the reporting of chronic conditions between whites and nonwhites. Conditions in white children are better reported in this study than those in nonwhite, but the difference lacks statistical significance.

Education.—There is no consistent pattern in percent of possibly chronic conditions reported when examined in relation to the years of schooling completed by the family head (table 12). Nor is there any apparent relationship between correspondence in interview reporting and the educational attainment of the individual with the condition (table 13).

Family income.—No regular relationship between family income and the percent of chronic conditions reported on interview is found which is applicable to all three classes of condition (table 14). Class 2 conditions are, however, distinctly better reported in families of the lowest income class (under $4,000) than among all other families, while Class 1 conditions are somewhat better reported in the lowest income families. This finding is a reflection of the much better reporting of Class 2 conditions and the somewhat better reporting of Class 1 conditions by self-respondents in the lowest income class, and of the relatively higher proportion of conditions reported on by self rather than proxy respondents in comparison with all other income classes. The families with income under $4,000 are known to contain a higher proportion of aged persons than those with higher incomes. The relatively high proportion of persons responding for themselves also suggests that the conditions in this income class are more heavily weighted with disabling illness.

Family size.—The number of family members covered on the H.I.P. policy as of the date of drawing the original sample (June 30, 1957) is examined in relation to correspondence in reporting in table 15. Since H.I.P. enrollees, especially young unmarried adults, can be living with their parents and other family members who are not members of H.I.P. and therefore not in the study population, the "number of H.I.P.-covered persons" cannot be strictly equated to family size. With this qualification in mind, it is noted that the data show a decline in correspondence in reporting nonchecklist (Class 3) conditions with increasing number of H.I.P.-covered persons, from two persons on. That this decline is not solely due to the larger proportion of children in the larger family units is seen from the fact that the decline occurs for self-respondents

as well as for others. It is therefore possible that the need to respond for a large number of individuals reduced the probability that a condition inferred from the Med 10's for which there was no specific probe in the schedule would be reported to the interviewer. But perhaps of greater interest in this connection is the negative finding: the fact that there is no loss in percent of conditions correspondingly reported for any conditions appearing on the checklists (Classes 1 and 2) with increasing number of persons in the household.

Permission to review medical records.—In planning for the interviews with H.I.P. physicians already mentioned it was recognized that these interviews would have to be restricted to patients who authorized the release of findings from their medical records to the National Health Survey Each respondent was accordingly asked to sign an authorization form. Permission for review of medical records was granted for 89 percent of the persons interviewed, and 87 percent of the possibly chronic conditions inferred from the Med 10's were in these persons. Completeness of reporting was examined in relation to whether the authorization had been signed, since it was reasoned that refusal to grant such permission might be positively correlated with a generally unco-operative attitude on the part of the respondent. The data do suggest (table 16) slightly higher correspondence in reporting in persons for whom the requested permission was granted. This improvement applies almost wholly to nonchecklist conditions (Class 3), where the rates were 21 percent for those with permission granted, and 14 percent for those with refusals, but the difference is not statistically significant. One must conclude that any influence on completeness of reporting which this variable may reflect is of a comparatively minor nature.

Diagnosis.—The focus in presentation of the findings up to this point has been on relatively broad classifications of disease categories which had been designated "possibly chronic" in the a priori review of all ISC-PHS codes by staff physicians described above. By using the broad groupings (class or grade of condition) it has been possible to examine completeness of reporting in relation to aspects of the medical care received from H.I.P. physicians (number of services, dates of service) and in relation to demographic and other characteristics of the interviewed population. At the same time, the variation in the findings among the three different classes of condition has served as a constant reminder of the influence of the differing diagnostic contents of each class on the percent of conditions correspondingly reported on interview. It has also been pointed out that within each of the three classes there is a wide variety of inclusions, with varying distributions in the population in relation to age and sex.

Some interest, therefore, attaches to analysis in terms of more specific disease entities. This interest centers both on more detailed examination of the diagnostic content of each of the three classes of condition and on the findings for certain specific diagnoses of public health importance. The diagnostic data to be presented are for the most part organized into the categories of NHS's Recode No. 3[1] as modified for the study. While many of the Recode No. 3 categories are very specific entities defining a single 3- or 4-digit code according to the ISC (such as diabetes), others are still relatively broad groupings which may include a heterogeneous collection of disease entities. For example, "other diseases of the digestive system" includes both ulcerative colitis, a serious chronic disease, and any symptoms referable to the abdomen or gastrointestinal tract. The diagnostic tables are presented specifically by class of condition as well as by NHS Recode No. 3 category. When the inclusions in a single Recode No. 3 category fall into more than one of the three classes of condition, the inclusions within each class are shown separately. Some of the frequencies which result are very low, and the general principle of not computing a percentage correspondence for a total of less than 15 conditions inferred from the Med 10's has been followed. Because of the low frequencies in some of the diagnostic categories shown, care must be exercised in interpreting some of the differences found. For example, the difference between correspondence in reporting asthma (269 cases, 76.2 percent correspondingly reported) and that for diabetes (60 cases, 61.7 percent) is not of statistical significance. But the difference between the figure for asthma and that for heart disease (162 cases, 60.5 percent) is statistically significant.

In general, examination of correspondence in interview reporting of specific disease categories emphasizes once again the substantial number of possibly chronic conditions which remain unreported by respondents. There are only eight diagnostic categories (Recode No. 3) for which more than half of the conditions inferred from the Med 10's were correspondingly reported on interview:

[1] NHS Recode No. 3, as modified for this study, consists of 43 selected categories of chronic conditions.

Diagnosis	Class of condition	Percent correspondingly reported
Asthma and hay fever	1	76.2
Diseases of gallbladder	1	66.7
Bronchitis(chronic)	2	65.0
Diabetes mellitus	1	61.7
Heart disease	1	60.5
Ulcer of stomach and duodenum	1	60.0
Back conditions	2	56.4
Hernia	1	54.4

In terms of the finest diagnostic breakdowns available, hay fever was the best reported disease, with 79 percent of the cases inferred from the Med 10's correspondingly reported on interview. This is a very specific disease entity, with identical physician and layman terminology, for which it is possible that a good number of the persons so diagnosed were receiving desensitization treatment at a time not too far removed from the date of household interview.

Correspondence in household interview reporting of Med 10 conditions in detailed diagnostic terms is shown in table 17. The large variation in percent of conditions reported by respondents within a given NHS Recode No. 3 category assigned to a single class of condition is readily apparent. For example, 41 percent of the cases of benign neoplasm of the uterus and other female genital organs (predominantly fibroid uterus) were correspondingly reported, compared with only 13 percent of all other benign and unspecified neoplasms. Heart disease, cited above as one of the best reported categories, shows variation when examined by specific etiology, with the degenerative types better reported than either rheumatic heart disease or "other" heart disease.

The distortions which can be introduced through the weighting of a specified NHS Recode No. 3 category in a given class of condition with a large number of one very poorly reported condition are illustrated by examination of NHS Recode No. 3 category 30 (Other conditions of muscles, bones, and joints) in table 17. For this category as a whole it appears that conditions assigned to Class 1 are reported less completely than those in either of the other two classes (19 percent compared with 32 and 26). Examination of the detailed inclusions shows that this is due to the fact that more than half of the cases in this category assigned to Class 1 are cases of flatfoot, only 6 percent of which were correspondingly reported on interview. The other Class 1 conditions falling into this recode are reported to the same extent as the Class 2 conditions.

In general, however, the gradient found in percent of conditions reported in each of the three classes, discussed earlier in this report, is again found for specific Recode No. 3 categories which contain conditions assigned to more than one class. For example, "arthritis," considered a Class 1 condition, and "rheumatism," assigned to Class 2, are combined in NHS Recode No. 3 category 28. Forty-eight percent of the cases of arthritis were correspondingly reported, but only 18 percent of the cases of rheumatism. Or, in the case of category 26, "other diseases of genitourinary system," 47 percent of the diseases of the kidney, ureter, and prostate (Class 1) are reported, compared with 18 percent of the variety of conditions in this grouping which were assigned to Class 3.

Qualifications similar to those which have been expressed above about the interpretation of correspondence rates for specific categories of disease of course apply to all statistical considerations of morbidity, even in the finest possible groupings of disease entities. A case of coronary heart disease where the diagnosis rests solely on electrocardiographic evidence obtained in the course of routine examination is not to be equated with a hospitalizing myocardial infarction. The total complex of factors which may influence reporting in the household interview cannot be lost sight of even in the most detailed diagnostic approach to the data available.

Ranking the diagnostic categories within each class of condition by level of correspondence in interview reporting (table 18) demonstrates the wide range in percent correspondingly reported to be found within each class of condition. Class 1 conditions range from a correspondence rate of 76 percent for asthma and hay fever to 4 percent for ill-defined mental and nervous trouble. Percent correspondingly reported for Class 2 conditions ranges from 65 to 0, while that for Class 3 conditions is from 34 to 0. More than half of the specific disease categories in Class 1 have correspondence rates of 40 percent or more (11 out of 20), while only 4 out of the 13 Class 2 categories, and none of the 14 Class 3 categories are reported this well on interview.

Differentials in completeness of reporting of specified disease categories by respondent status are presented in table 19. If the categories are classified into three groups defined with respect to the magnitude of the difference between the percent reported by self-respondents and others, it is seen that the rate for self-respondents is above

that for relatives to the defined extent in 21 of the 32 categories.

Correspondence ratios by magnitude and class of condition

Percent for self-respondents exceeds that for others by 25 percent or more	Percent for relatives exceeds that for self-respondents by 25 percent or more	No difference of specified magnitude between the two rates
CLASS 1		
Diabetes mellitus Mental illness Heart disease Benign and unspecified neoplasms Arthritis Ulcer of stomach and duodenum Other conditions of muscles, etc. Ill-defined mental	Other allergies Hypertension without heart involvement	Asthma and hay fever Hernia Hemorrhoids Varicose veins
CLASS 2		
Skin infections and diseases Impairment of hearing Back conditions Other diseases of digestive system Other conditions of muscles, etc. Rheumatism Sinusitis Other diseases of genito-urinary system	Infective and parasitic NEC	
CLASS 3		
Other diseases of respiratory system Anemia Diseases of brain, spinal cord etc. Other diseases of genito-urinary system Headache and migraine	Other diseases of digestive system Other conditions of muscles, etc.	Obesity Diseases of eye and ear NEC

The differential in favor of self-respondents with respect to Class 2 conditions, discussed earlier for the class as a whole, is seen to apply to all individual diagnostic categories within the class with the single exception of "infective and parasitic diseases NEC."

Specificity of Match Between Conditions Correspondingly Reported on Interview and Those Inferred From Med 10's

It has already been mentioned that, although the central interest of this study was an examination of the extent to which respondents in the household interview reported anything in correspondence with conditions inferred from the Med 10's, there was a secondary interest in the way in which these corresponding reports matched the conditions which had been inferred from the physicians' terminology. For this reason each interview report matched to a Med 10 condition was characterized by one of three types of match, defined in relation to the inclusions in NHS Recodes No. 1 and No. 3. The types of match are precisely defined above (see Methodology), but may be briefly summarized here:

Type 1 match: A condition is reported on household interview which falls into the same Recode No. 1 category as the H.I.P.-coded Med 10 services.

Type 2 match: A condition is reported on household interview which falls into a different Recode No. 1 category but into the same Recode No. 3 category as the H.I.P.-coded Med 10 services.

Type 3 match: The NHS schedule contains no report coded by NHS to the same Recode No. 3 category as the H.I.P.-coded Med 10 services, but there is a description in the schedule of a condition or symptom which is consistent with or could be associated with the diagnosis inferred from the Med 10's.

It must be recognized that the proportion of survey-reported matching conditions which fall into "Type 1" is influenced not only by the specificity of the respondent in describing the nature of the condition, but also by the number of inclusions in the specified recode category as constituted by NHS. For example, NHS Recode No. 3 category 06 includes only diabetes mellitus, which is also a discrete Recode No. 1 category. It is apparent that if the respondent reports anything to match this condition as inferred from the Med 10's, the probability of that report being a "Type 2" match is zero, since by definition the Recode No. 1 and No. 3 categories are identical. On the other hand, an NHS category with a wide range of inclusions, such as "other conditions of the muscles, bones, and joints" offers many chances for a survey-reported condition to be matched to the Med 10 condition in ways that would be designated "Type 2" or "Type 3." The examination of "type of match" for survey-reported conditions should therefore be viewed not as any absolute rating of the accuracy of respondents, but rather as an indication of the way in which respondent specificity affected the matching of survey-reported conditions to the groupings of disease categories used by NHS in tabulating.

Data pertinent to this question are presented in Appendix II. Survey-reported conditions which were matched to conditions of each class and specified diagnostic category inferred from the Med 10's are distributed by type of match in table A. It is seen that Class 1 conditions have a higher proportion of type 1 matches than those in Class 2 or 3. But within Class 1 there is great variation in this distribution: all matches for diabetes, hemorrhoids, and hernia are type 1 matches,

while of the mental illness correspondingly reported on interview only 18 percent is couched by the respondent in terms assignable to the same Recode No. 1 category as the physician's terminology on the Med 10's.

It is of some interest to examine the net effects of differences in physician and respondent terminology applied to chronic conditions reported on household interview. Table B of Appendix II presents the frequencies in each NHS Recode No. 3 category obtained from the two sources—H.I.P. physician and respondent—with the categories arranged in order of decreasing ratio of frequency from the respondent source to frequency from the physician source. Such a net table can only give an impression of the over-all effect of differences in terminology from the two sources. For example, if one views the relative preponderance of cases of mental illness (Recode No. 3 category 09) from the physician source together with the relative preponderance of cases of ill-defined mental and nervous trouble (Recode No. 3 category 10) from the respondent source, it is reasonable to conclude that the more precise terminology of physicians is being replaced on interview by vague terminology which nevertheless refers to the same condition. To a certain extent this is true, but a more complete understanding of what has happened in the interview process can be obtained by case study of respondent and physician terminology in specific instances.[1]

While there are many ramifications demonstrated by the "matched" diagnoses from the two sources, it is possible in some cases to make some generalization about the differences arising in this study from application of a set of coding rules to respondent terminology on the one hand and to that of physicians on the other. For example, a wide variety of orthopedic conditions—characterized by physicians as osteomyelitis, Paget's disease, sacroiliac sprain, degenerative disc syndrome, or undiagnosed and referred to by physicians simply as "pains in legs" or "metatarsalgia"—are matched in the household interview with a respondent report of arthritis. Many specific dermatological diagnoses made by physicians (eczema, seborrheic dermatitis, contact dermatitis, psoriasis, neurodermatitis, lichen simplex, alopecia) were matched on survey by a respondent report of a skin disorder stated to be due to allergy. An appreciable number of cases of arteriosclerotic and/or hypertensive heart disease were matched on interview by respondent reports, simply, of high blood pressure. Further examples of this sort can be adduced from study of the unpublished detail.

Duplication of match.—In establishing the criteria for judging a survey-reported condition in correspondence with a possibly chronic condition inferred from the Med 10's, there was no insistence in this study on a one-to-one match. One condition reported on interview was theoretically allowed to be matched to any number of conditions inferred from the Med 10's, provided that the substantive criteria were fulfilled. Data on the extent to which one condition reported on interview was matched to more than one condition inferred from the Med 10's are to be found in table A of Appendix II. Some 14 percent of all the matched Med 10 conditions were considered matched by survey-reported conditions which had also been matched to other Med 10-inferred conditions. This percentage was lowest for Class 1 conditions and highest for Class 3 conditions.

In assessing the importance of duplication of match it is necessary to have in mind the distribution of multiple diagnoses inferred from the Med 10's among the persons in the study. Of all persons sustaining a diagnosis of a possibly chronic condition inferred from Med 10 reporting during the study year, 62 percent had only one such condition, two conditions were inferred in 25 percent, and three or more conditions in 13 percent of these persons. There were 1,116 persons for whom more than one condition was inferred from the Med 10's; for 616 of these at least one condition was correspondingly reported on household interview. Duplication of match was a factor in only 92 of these persons. Study of the content of the duplicated matches shows a wide diagnostic range and establishes that these matches are not attributable to any systematic error which could be characterized as "overcoding" from the Med 10 services.

The Total of Chronic Conditions Reported on Household Interview

This report has so far dealt with possibly chronic conditions inferred from physician reports and those conditions reported on household interview which were judged in correspondence with them. Although it is the relationship between these two frequencies that furnishes the main

[1] For example, of the 55 cases of mental illness (Recode No. 3 category 09) inferred from physician reports on the Med 10's and matched by some respondent report, 45 were "type 3" matches. Reference to the terminology used by the respondents shows that 13 of these 45 were reported on interview in terms codable to ill-defined mental and nervous trouble (Recode No. 3 category 10). The remaining 32 "type 3" matches in this category were reported by respondents with a variety of terminology codable to headache and migraine, hypertension, other diseases of the digestive system, menopausal disorders, other diseases of the genitourinary system, endocrine disorders, et cetera. Conversely, for all conditions reported by respondents in terms codable to mental illness, it was found that in 7 instances these reports were judged to correspond to physician diagnoses of a variety of gastrointestinal conditions (duodenal ulcer, gallbladder disease, gastritis, mucous colitis, spastic colon), and in one instance to a physician's diagnosis of contact dermatitis.

focus of the study, some interest also attaches to respondent-reported conditions—possibly chronic in accordance with the criteria applied to physician reporting—which remained unmatched to any diagnoses inferred from the Med 10's. Such survey-reported conditions could theoretically be any of the following types:

1. Conditions for which no H.I.P. physician service was rendered in the study year and for which no H.I.P. physician service in this period was reported on interview.
   a. Conditions reported on interview as not medically attended, or medical care not stated.
   b. Conditions reported on interview as last medically attended before the study year.
   c. Conditions reported on interview as last medically attended in study year by physician unaffiliated with H.I.P.
2. Conditions for which no Med 10 service was reported in study year, but appearing on survey as last attended by H.I.P. physician in this time period.
   a. Errors (respondent or interviewer) in date of last physician service—i.e., actually last seen by H.I.P. physician before study year.
   b. Errors (respondent, interviewer, or coder) in status of last physician seen—i.e., condition actually attended by non-H.I.P. physician.
   c. Errors (respondent or interviewer) in substance—i.e., condition not present in this person.
   d. Med 10 underreports—i.e., condition actually seen by H.I.P. physician in study year but Med 10's as listed for coding failed to reflect this fact.

In contrast with the conditions reported on interview which remained unmatched to any inferred from the Med 10's, those survey-reported conditions judged to correspond to Med 10-inferred conditions were all presumably attended by H.I.P. physicians within the study year. One would therefore expect that the two groups of conditions, matched and unmatched, would differ in important respects. The data support this conclusion when comparison is made between the two groups along whatever lines are possible.

Some of these differences are shown in tables 20-22. The source of the household interview report was a checklist question (Questions 16 and 17) for 56 percent of the conditions remaining unmatched to Med 10 conditions, compared with 33 percent of the matched reports (table 20). Conversely, the battery of questions on the two-week period (Questions 11-14) produced the respondent reports for 37 percent of the matched conditions, but for only 20 percent of the unmatched. Both for Class 1 and Class 2 conditions a higher proportion of the unmatched survey reports were obtained in response to the checklist questions, and a lower proportion in response to the questioning on the two-week period. The chief differences between matched and unmatched Class 3 conditions were found in the proportion mentioned in response to the questions on hospitalization (15 percent of the matched conditions but none of the unmatched) and in the relatively larger number of unmatched reports produced by question 15 ("ailments or conditions that have continued for a long time").

Findings on medical care and disability for the matched and unmatched survey reports are consistent with those on the source of the survey report. It would seem reasonable that a higher proportion of nonmedically attended conditions would fail to produce symptoms or the need for medication in the two-week period, and, consequently, would be elicited on interview by the checklist questions.[1] A distinctly higher percentage of the unmatched survey-reported conditions was in fact stated never to have been medically attended—12 percent, compared with 2 percent for the matched group (table 21). As would be expected, many more of the unmatched conditions were reported to have been last seen by a physician at some time before the study year—29 percent, compared with 6 percent for the matched group. Care by a non-H.I.P. physician was reported as the last medical contact for 16 percent of the unmatched conditions but for only 7 percent of the matched conditions reported on interview. A higher proportion of the matched survey reports had associated disability, bed disability, and time lost from work or school in the two weeks preceding interview than was the case for the unmatched survey-reported conditions (table 22).

In summary, the findings on the general nature of the survey-reported possibly chronic conditions which were not in correspondence with any conditions inferred from the Med 10's are consistent with the theoretical description of the possible contents of this group of conditions. They are conditions less likely to be mentioned on interview in response to questioning about symptoms or medication in the two-week period than the matched survey-reported conditions. A higher proportion of them are not medically attended at all, or last medically attended before the study year, or last medically attended by a non-H.I.P. doctor. A lower proportion of them is associated with disability

[1] Tabulation of the source of the household interview report separately for medically attended conditions and others was not available.

or time lost from work or school. Consistent with these findings also are the differences seen in diagnostic distribution between the two groups of survey-reported conditions. Frequencies by individual diagnosis, as reported by the respondent, are shown for the matched and unmatched survey-reported conditions in table 23. Categories relatively more heavily represented in the group of matched conditions include neoplasms, diabetes, and heart disease. The unmatched group has relatively more varicose veins, hemorrhoids, sinusitis, bronchitis, back conditions, deafness, and headache and migraine. In the main, the latter group contains conditions which are more likely either to be self-diagnosed or to remain unattended by a physician for relatively long periods of time.

The description of underreporting which is documented in this study by the percentage of survey-reported conditions in correspondence with possibly chronic conditions inferred from the Med 10's cannot be complemented by an equally direct examination of overreporting. The NHS schedule attempted to elicit respondent reports of conditions whether medically attended or not, and, if medically attended, whether by H.I.P. physicians or others, in the study year or before the study year. Under these circumstances, before a condition could be classified as an "overreport," it would have been necessary to check medical charts in H.I.P. for physician services at times preceding the study year and to have access to the records of physicians not associated with H.I.P. Such an investigation was beyond the scope of the present study.

Relationship Between the Diagnostic Experience of Persons and the Percent of Med 10-Inferred Conditions Reported on Interview

Correspondence between interview reporting and physician entries on the Med 10's has so far been expressed as the percent of inferred conditions with specified characteristics which were correspondingly reported on household interview. Some characteristics of the persons in whom the conditions were diagnosed have been considered in relation to these proportions—age, sex, education of family head, family income, respondent status, et cetera. But a number of questions may be posed which require analysis other than one restricted to qualifying the conditions by the characteristics of the persons in whom they are found.

To what extent does the over-all low proportion of conditions correspondingly reported on interview reflect the existence of a group of persons for whom there is failure to report any condition on interview? What is the relationship between the number of conditions for which persons have received care and the proportion of persons for whom no condition is reported to the enumerator? Does the number of conditions medically attended during the year influence the proportion which is correspondingly reported on survey?

Before dealing with these questions, it is worthwhile examining the distribution of the possibly chronic conditions inferred from the Med 10's among the persons in the study. The 4,648 conditions were diagnosed in a total of 2,934 patients, or 44 percent of the total number of interviewed H.I.P. members. Of these persons who had sustained a diagnosis by an H.I.P. physician of a possibly chronic condition during the study year, 62 percent had only one such condition, 25 percent had two, while three or more conditions were inferred in 13 percent. The persons with only one condition accounted for 39 percent of all the Med 10-inferred conditions; persons with two conditions contributed 32 percent, while those with three or more conditions accounted for 29 percent of the total conditions.

Considerable light on the issues raised here is provided by the data in tables 24 and 25. Persons for whom there were no reports on household interview of Med 10-inferred chronic conditions represent major segments of the total group with Med 10 conditions. The figures are 60 percent for all persons, 53 percent for self-respondents, and 64 percent for relatives of respondents. The need for examining this situation becomes even clearer when it is realized that 78 percent of all the unmatched Med 10-inferred conditions are attributable to these persons.

To a considerable extent the percentages of persons with no corresponding reports of Med 10 conditions on interview are influenced by the comparatively large group with only one Med 10 condition. Obviously, for this category either all conditions are reported or no condition is reported. However, even when attention is directed at persons with more than one Med 10-inferred condition, it is found that a substantial proportion did not report any of these conditions on household interview. As seen in table 24, the percentage for whom no matching conditions are reported on interview does decline with increasing number of diagnosed conditions, but it does not fall below 25 percent even for those persons with five or more conditions inferred from the Med 10's.

It might be argued that the percentages of persons with no conditions in correspondence with those inferred from the Med 10's only reflect a generally poor relationship between physician reports and survey data, and that there is therefore no special concentration of persons for whom the interview process produces no corresponding information. This is examined below by comparing

Percent of persons reporting none or all of Med-10 inferred chronic conditions by number of conditions and respondent status

Number of Med 10 chronic conditions	Percent of persons with specified number of Med 10 conditions correspondingly reported on household interview			
	None		All	
	Expected[1]	Observed	Expected[1]	Observed
All persons				
2	47.1	51.1	9.9	13.9
3	29.0	36.7	3.9	8.9
4	19.2	26.8	1.3	4.1
Self-respondents				
2	39.6	43.8	13.8	18.0
3	24.6	33.1	5.2	11.3
4	14.5	17.2	2.2	3.1
Relatives				
2	54.6	57.9	6.8	10.1
3	35.2	40.8	2.5	5.8
4	31.6	45.5	0.4	6.1

expected[1] and observed proportions of persons with no reports for Med 10-inferred possibly chronic conditions. The data show that one might well expect a fairly high proportion of persons with no conditions reported, even among those for whom four conditions were inferred from the Med 10's. However, the expected figure is not as high as the observed in any of the cells examined. It would therefore appear reasonable to conclude that the comparatively high percentages that failed to have any condition in correspondence are more than chance phenomena.

It is also of interest to examine the data for any special tendency for persons to report all of the Med 10-inferred conditions. This is the other end of the scale in correspondence. The above table indicates that here too the observed percentages are consistently greater than might be expected by chance—i.e., given the over-all percentages of conditions in correspondence.

[1] "Expected" proportions are obtained from the binomial distribution $(p+q)^n$, where p = percent of Med 10 condition correspondingly reported within each category of persons. That is, p = 31.4 for all persons with 2 Med 10-inferred conditions, 33.8 for persons with 3 or 4 Med 10-inferred condition, et cetera. See table 25.

Table 25 demonstrates that the number of conditions for which a person has received H.I.P. physician services during the year has no influence on the over-all completeness of reporting of conditions. The proportion of all conditions inferred from the Med 10's which are correspondingly reported by respondents remains quite constant no matter how many Med 10 diagnoses were sustained by the given individual.

Correspondence in Reporting Nonchronic Conditions Inferred From Med 10's on Household Interview

Although the chief interest of the study centered on problems of chronic disease, advantage was taken of the opportunity to examine accuracy of reporting of nonchronic conditions for which H.I.P. physician services had been reported as rendered in the two weeks preceding date of interview. Nonchronic conditions were defined as all conditions codable to ISC-PHS codes which had not been designated "possibly chronic" in the review of codes made prior to processing the data. Services recorded by H.I.P. physicians on the Med 10's for dates falling within the two-week period

ending on the Sunday preceding interview were examined and coded to such conditions whenever appropriate.

A total of 143 (unweighted) nonchronic conditions for which service appeared on the Med 10's in the specified time interval was inferred in the original coding. There was failure to report any condition in correspondence in 58 of these 143. The weighted figure was a failure to report in 106 out of a total of 233 nonchronic conditions inferred. Because of the possibility that errors in entries on the Med 10's for nonchronic conditions, often attended only once by the physician, might play a larger role than in the case of chronic conditions, for which the relevant period of service was the whole year preceding interview, the 58 cases in which there was failure to obtain an interview report were all searched in the clinical records at the medical groups or physicians' offices in an effort to confirm the diagnosis inferred from the Med 10's. In this way the Med 10-inferred diagnosis was confirmed for the date specified in 44 of the 58 cases. The 14 cases for which confirmation was not obtained (no entry was found in the clinical chart in 6 of these; in 8 a different diagnosis appeared) were eliminated from the analysis. There remained a total of 129 unweighted, or 201 weighted, conditions which had been inferred from the Med 10's and confirmed in the clinical record in all instances where there was failure to report the condition on interview.[1]

Correspondence in reporting these 201 conditions on household interview is given in tables 26 and 27. Of the total, 63 percent were correspondingly reported by respondents. Conditions for which one or more services in the two weeks had been rendered at home or in the hospital were better reported (77 percent) than those for which services had been rendered only in the physician's office (56 percent). And conditions seen by the physician more than one time within the two weeks were somewhat better reported than those which had been seen only once. By broad diagnostic category, the best reporting was for acute respiratory conditions (73 percent), and the least complete for acute conditions of eye and ear (40 percent). Nonchronic conditions medically attended within the two weeks preceding interview were reported best in children (67 percent) and least accurately in spouses (47 percent); 60 percent of these conditions in self-respondents were correspondingly reported on survey (table 27).

In evaluating these data on nonchronic conditions medically attended in the two-week period, it is worth noting that possibly chronic conditions for which Med 10 services were rendered in the same time period were reported on interview to a similar extent—58 percent of the total conditions in Classes 1, 2, and 3 (table 5), compared with the over-all figure of 63 percent for the nonchronic conditions. In other words, roughly 40 percent of all conditions inferred from H.I.P. physician reports for the two weeks preceding interview remained unreported by the respondents.

Reporting of Medical Care on Household Interview

Data from the study provide information on the proportion of persons stated by H.I.P. physicians to have received a service in the two weeks preceding interview for whom a doctor contact in this period was reported by respondents. The report of having seen a doctor in the two weeks is not in any way tied to reports on illness. All H.I.P. physician services on the Med 10's within this time period were noted—whether associated with a diagnosis, or simply a physical examination, or any other type of service. Correspondence in survey reporting of physician contact was judged solely on the basis of whether any doctor contact in the two weeks was reported (answers to Question 18 of NHS schedule). There was no requirement that the physician named on interview be identified as an H.I.P. physician, nor that the reason for the doctor contact (Question 19: "What did you have done?") be matched in any way to the nature of the Med 10 service reported by the H.I.P. physician.

Of all persons for whom H.I.P. physicians noted a service during the two weeks on the Med 10's, 64 percent were reported on interview to have seen a doctor in this period (table 28). There was no difference in this proportion between males and females, and no over-all difference between proxy and self-respondents. Neither was there any clearcut variation with age.

Similarly, the data were processed to determine the extent to which persons noted on the Med 10's as having received at least one H.I.P. physician service during the year preceding interview reported their last contact with any doctor as within the study year. The survey report on date of last physician contact was derived from answers to Question 20: "How long has it been since you last talked to a doctor?" Eighty-one percent of the persons for whom H.I.P. physicians entered services on the Med 10's in the study

[1] It is recognized that had the clinical records been checked for verification of *all* conditions inferred from the Med 10's in the two weeks, whether survey reported or not, the total number of matched conditions might have been reduced to some extent. But it was not possible to carry out the same checking procedure for such a large number of conditions. The effect is therefore to give a somewhat higher figure for correspondence in reporting nonchronic conditions than would have been obtained had more conditions been eliminated from both the numerator and the denominator of the correspondence rate.

year were reported on interview to have had their last doctor contact within this period. This proportion shows little variation when examined in connection with a number of demographic characteristics. A slightly higher proportion of females than of males (83 compared with 79 percent) were reported as having last seen a doctor within the year, and the percentage for children under 15 was slightly higher (86 percent) than that for persons of other ages. Negroes for whom H.I.P. physicians had noted Med 10 services reported their last doctor contact as within the year to a greater extent than whites (88 compared with 80 percent, a statistically significant difference). The proportion of persons for whom doctor contact within the year was correspondingly reported varied directly with the education of the family head—from 75 percent where the family head had completed less than nine years of schooling to 88 percent where more than 12 years of schooling had been reported. There was no variation in this percentage with family income.

One may conclude that there is some underreporting of physician contacts both in the two-week period and in the year preceding household interview. Data from the current study do not however provide any measures of the contrary question—the extent to which medical care is reported on household interview as occurring in a given time interval although in fact it was not received during that period.

Reporting of Hospitalization on Household Interview

In contrast with the level of correspondence in reporting medically attended conditions, hospitalization experience was very well reported by the respondents in this study. A hospitalization is here defined as an episode involving one or more nights in a general or allied hospital ("short-stay" institutions) in the study year. Of such episodes which had been inferred from the Med 10's and confirmed by the hospital or Associated Hospital Service record as meeting the study definition, 87 percent were correspondingly reported on household interview. There is a difference of only 2 percent between average duration of stay as computed from the dates of admission and discharge furnished by the record source (hospital or Blue Cross) and that obtained from respondent reporting. The number of nights in the hospital was exactly stated on interview for almost half the episodes (49 percent) reported on interview, and was in agreement by plus or minus one night with the duration obtained from the record source in an additional 35 percent of the survey-reported episodes. Agreement on duration of stay within one hospital day is therefore shown for almost 85 percent of the episodes reported.

Correspondence in reporting the fact of hospitalization.—The episodes of hospitalization under the care of H.I.P. doctors which had been inferred from the Med 10's were confirmed from hospital or AHS records through the hospital follow-back procedure described in the Methodology section. A total of 350 such episodes[1] was available as the base for examining correspondence in reporting the fact of hospitalization (or rate of underreporting) presented in tables 29 and 30.

There is no difference in the proportion of hospitalizations correspondingly reported in self-respondents (88 percent) and others (87 percent), nor is there any demonstrable variation in relation to the sex of the respondent or the specific relationship to the respondent (table 29). There is also little over-all variation with respect to the age of the hospitalized person, but self-respondents aged 45 and over show a somewhat higher correspondence (89 percent) than others of this age (77 percent). Hospitalizations among women are slightly better reported by female respondents (89 percent) than by male respondents (81 percent). None of these differences is statistically significant.

Education of the family head shows no consistent pattern with the percent of hospitalizations correspondingly reported by self-respondents, but the percent reported by proxy-respondents appears to increase with increasing education of the family head.

Hospitalizations in families in the lowest income class, less than $4,000, were reported less completely than those in all other families—73 percent compared with roughly 90 percent for families in all other income groups (table 30). This difference reflects less complete reporting for both proxy and self-respondents in the lowest income class.

The time interval elapsing from date of admission to the hospital to date of household interview has a distinct influence on the proportion of episodes reported on survey. Admission to hospitals eight months or more before the date of interview were deficiently reported both in self-respondents and in others (table 30). Only half of the admissions before July 1957 (10 to 11 months before interview) were reported on interview, compared with four fifths of those from July-September 1957, and with 97 percent of all the remaining (more recent) admissions.

[1] Three of these episodes were actually not inferred from the Med 10's, but were reported by the hospitals queried for dates of admission and discharge for the 347 episodes which had been obtained from the Med 10's. For convenience, the total 350 are referred to in the report as those inferred from the Med 10's.

Exactly the same duration of stay from the record source and the household interviews is found for 49 percent of all hospitalizations here examined; for hospitalizations in children this proportion is 61 percent. The difference between duration of stay as computed from the two sources is no greater than one hospital day in 86 percent of the hospitalizations of self-respondents, 81 percent of those of relatives as a whole, and 94 percent of those of children of respondents. Female self-respondents reported duration more accurately than males responding for themselves, with 90 percent of their hospitalizations differing in reported duration from the record source by no more than one day, compared with 74 percent as the comparable figure for male self-respondents.

In summary, the distribution by number of nights in the hospital of all episodes reported on interview and confirmed by the record source is substantially the same whether based on the duration obtained from the record or the interview source (table 32).

Overreporting of hospitalization.—A total of 470 hospitalizations in general and allied hospitals which were reported on interview was confirmed through the hospital follow-back procedure as involving one or more nights in the hospital in the study year. Of these episodes, 306 had been inferred from the Med 10's. These represented 87.4 percent of the 350 episodes which had been inferred from the Med 10's and confirmed by an independent record source as involving at least one night in the hospital in the study year. If it is assumed that the same extent of underreporting applied to the hospitalizations attended by non-H.I.P. physicians—that is, that the 164 such episodes reported on interview represented 87.4 percent of a total of 188 such hospitalizations—then the estimated total universe for this population in the study year is 538 hospitalizations.

There were 17 interview reports of hospitalizations as having occurred in general or allied hospitals in the study year for which the independent record sources provided no confirmation. Of these, four were overreports which had been telescoped into the study year from the preceding year,[1] while no confirmation of any kind could be obtained for the remainder. Relating these overreports to the estimated universe of hospitalizations produces an overreporting rate of 3 percent.

Net reporting of hospitalization and of hospital days on interview.—It is apparent that even with the relatively good correspondence in reporting the fact of hospitalization which was found in this study, overreporting was so small that a net underreporting rate of episodes of hospitalization of 9 percent remains. Net underreporting of total nights in the hospital in the study year is somewhat lower (5 percent) because of the slight inflation in duration of stay for reported episodes.

[1] It is of interest that for 3 of the 4 telescoped episodes the month of admission to the hospital was correctly stated by the respondents, who erred in reporting the year as 1957 rather than 1956.

Nights in hospital by source of hospital episode

Source of hospital episode	Nights in hospital	
	From hospital record	Reported on household interview
Total	5,016	4,780
Episodes confirmed by hospital or AHS record		
Inferred from Med 10's and reported on household interview	2,376	2,397
Inferred from Med 10's, not reported on household interview	258	-
Not inferred from Med 10's, reported on household interview	2,149	2,223
Estimated episodes not inferred from Med 10's, not reported on household interview* (estimated underreports, hospitalizations by non-H.I.P. doctors)	233	-
Overreports (reported household interview, not confirmed by hospital or AHS as involving time in hospital in study year)	-	160

*Estimate is made by assuming same relationship between unreported and reported days as for hospitalizations by H.I.P. doctors, i.e., $\frac{x}{2,149} = \frac{258}{2,376}$; $x = 233$.

SUMMARY AND DISCUSSION

This report has presented a methodological study undertaken by the U. S. National Health Survey in an effort to improve understanding of the data obtained from its household interview survey on health. The study, carried out under contract by the Division of Research and Statistics, Health Insurance Plan of Greater New York, was focused in the main on an examination of the relationship between the conditions reported in the household interview and conditions diagnosed by physicians among these persons as they received medical care during the year prior to interview.

The chief emphasis of the study is a comparison of chronic conditions inferred from a set of physician reports with survey-reported conditions. Additional data are presented on correspondence in reporting acute conditions attended by H.I.P. physicians in the two weeks preceding interview, the reporting of medical care, and the reporting of hospitalization experience. The available data lend themselves best to expressions of the underreporting on interview of H.I.P.-medically attended conditions. Since it is known that some medical care is obtained outside the H.I.P. setting by persons enrolled in H.I.P., the total universe of medically attended illness to be inferred from physician records was not available for comparison with the total universe of survey-reported conditions. The data therefore do not provide the possibility of an analysis of overreporting to parallel that presented for underreporting.

The study population is a stratified sample of families enrolled in the Health Insurance Plan of Greater New York who were residents of the five counties of New York City and Nassau County. H.I.P. is a prepaid insurance plan providing medical care through group practice of 31 medical groups in the geographical area specified. Physician reports on medical services to these persons in the year preceding household interview were obtained from the routine H.I.P. physician reports on medical services to insured persons, submitted in the H.I.P. reporting document known as the Med 10. Household interviews were obtained with an interview schedule containing minor modifications of the regular NHS document. Interviewing was carried out by the Regional Office of the Bureau of the Census which is responsible for the regular NHS interviews in the area.

The procedures adopted provided for a priori selection of all International Statistical Classification-Public Health Service codes to be classified as "possibly chronic." A determination was then made, for each interviewed individual, of all conditions codable to these categories which could be inferred from the Med 10 services in the year preceding household interview. Correspondence in survey reporting of these categories was established on the basis of a case-by-case comparison of the coded Med 10 services and the interview schedule. Chronic conditions reported on interview which had not been inferred from the H.I.P.-physician reports were also noted and their characteristics compared with those survey-reported conditions judged to match those inferred from physician reporting. A separate study, referred to briefly in this report, consisted of interviews of H.I.P. physicians who had rendered the services for specified conditions to a subsample of the interviewed population. The purpose of this study was to relate the comparison of physician record and survey data to the physician's total knowledge of the patient.

For analytical purposes all chronic conditions were grouped into three classes, defined with respect to the checklist questions on the NHS schedule, as follows:

- Class 1: conditions covered by NHS terminology for the checklists (Cards A and B) without any qualifications introduced by modifying adjectives
- Class 2: conditions which might be suggested by checklist terminology, but there are qualifications arising for the most part from the use of modifying adjectives ("repeated," "chronic," etc.)
- Class 3: conditions which would not in any obvious way be suggested by checklist terminology, but which had been judged "chronic" or "possibly chronic" on the basis of the clinical experience of physicians

Highlights of Findings

Chronic conditions

Respondents on household interview furnished statements in correspondence with the "possibly chronic" medically attended conditions inferred from H.I.P.-physician reports for the year preceding interview in the following proportions: 44 percent of Class 1 conditions (checklist unqualified), 28 percent of Class 2 conditions (checklist qualified), and 20 percent of Class 3 conditions (nonchecklist). This relationship of level of reporting to class of condition persisted when reporting was examined by demographic variables such as age, sex, respondent status, socioeconomic status, and by a number of variables related to medical care received.

One third of all interview-reported conditions which corresponded to conditions inferred from

the Med 10's were mentioned in response to the checklist questions. The use of the checklists improved correspondence in reporting for all classes of condition, even for those (Class 3) where the likelihood of stimulating response from the checklists seemed comparatively small.

There was a strong relationship between the number of physician services rendered for a given condition in the year preceding interview and the probability of that condition's being reported by the respondent. Eighty percent of conditions for which 10 or more physician services had been received were reported on interview. For Class 1 conditions (checklist unqualified) 57 percent of those with more than one service were reported, 27 percent of those with only one service.

Chronic conditions last attended by a physician within the two weeks preceding interview were better reported than those with the last physician service further removed in time. Of the former group 58 percent were reported, compared with 24 percent of those for which no service had been given in the four months preceding interview.

While reporting of chronic conditions by persons responding for themselves was somewhat more complete than that by persons responding for other family members, the magnitude of the differential was small. Poorer reporting of conditions in children was largely responsible for the differential.

Little difference was found between male and female respondents in the percent of chronic conditions reported in correspondence. Somewhat more complete reporting of conditions in mature and older adults was obtained than for children and young persons. Conditions in males and females were reported to the same extent, although some differences by sex appeared when specific classes of condition were examined.

There was no difference in the percent of chronic conditions reported on household interview by race; nor was any consistent pattern found by education of the family head or education of the individual with the condition. The figure varied little in all income classes except the lowest (under $4,000), where a somewhat higher percent of chronic conditions was correspondingly reported.

The percent of Class 1 and Class 2 conditions reported was not affected by family size, but a decreasing percent of Class 3 (nonchecklist) conditions was reported with increases in family size.

Permission to review medical records was granted for almost 90 percent of the persons interviewed. Completeness of reporting of chronic conditions did not appear to be associated with this variable.

Great variation was shown in percent of conditions reported on interview by specific diagnostic categories. This variation appeared in each of the three classes of condition, with no clear pattern discernible in relation to diagnostic terminology alone. There were relatively few categories for which more than half of the conditions inferred from the Med 10 physician reports were correspondingly reported.

Conditions reported on interview which corresponded to those inferred from the Med 10's were further characterized by "type of match"—an indication of the degree of similarity of the terminology used by the physician and the layman. Of all matching survey-reported conditions, 37 percent were reported by the respondents in terms which did not permit coding to the same diagnostic category (NHS Recode No. 3) as the physician's report. The proportion of matches of this type ("Type 3") varied greatly with the specificity of the particular disease category.

There were many conditions reported on interview, chronic according to the ISC-PHS code designation, which did not correspond to any diagnoses inferred from the H.I.P. physician reports. Sixty percent of the total 3,739 interview-reported chronic conditions fell into this category. In comparison with the survey-reported conditions matched to Med 10-inferred conditions, a larger proportion of these unmatched conditions were not medically attended, or were reported last medically attended before the study year or by a non-H.I.P. doctor. A smaller proportion of the unmatched conditions was associated with disability or time lost from work or school in the two weeks preceding interview. This study did not provide for the examination of any medical records which might be applicable to this group of unmatched conditions.

There was somewhat greater concentration both of persons for whom no chronic condition was correspondingly reported on interview and of persons for whom all chronic conditions were reported than might have been expected by chance alone.

The number of conditions for which a person received H.I.P.-physician services during the study year had no influence on over-all completeness of reporting.

Nonchronic conditions

Respondent reports in correspondence with 63 percent of nonchronic conditions, attended by H.I.P. doctors in the two weeks preceding interview, were obtained on survey. This figure did not differ by much from the 58 percent of chronic conditions, attended by H.I.P. doctors in this interval, which were reported on household interview.

Medical Care

A doctor contact within the two preceding weeks was reported on interview for 64 percent of the persons for whom an H.I.P. physician service had been noted in this time period.

Of the persons for whom physician services were noted on the Med 10's in the year preceding household interview, 81 percent were reported to have had their last doctor contact within this period.

Hospitalization

Eighty-seven percent of the episodes of hospitalization under the care of H.I.P. physicians during the study year were reported by the respondents on household interview.

A distinctly lower proportion of hospitalizations which had taken place relatively long before the interview was reported than for more recent admissions. About 97 percent of admissions within eight months of the date of interview were reported, compared with 50 percent of those which had taken place almost a year before the interview date.

Duration of hospital stay was reported with a high degree of accuracy, with the mean duration of stay as computed from interview reports only 2 percent higher than that computed from the record source. Agreement on duration of hospital stay within one hospital day was shown for almost 85 percent of the episodes reported on survey.

Overreporting of the fact of hospitalization was estimated to be very small, leaving a net underreporting of 9 percent of the episodes which took place in the year preceding interview. Net underreporting of total nights in the hospital was somewhat lower (5 percent) because of the slight inflation in duration of stay for the episodes reported.

* * * * *

The results of the current study illustrate the complex problem posed by attempts to interpret data on chronic diseases collected through the household interview process. They suggest strongly that the survey information does not conform even moderately well to the universe of conditions inferred from physician reporting. It would appear that this lack of conformity cannot be explained by simple population attributes and characteristics of the interview situation. Age, sex, socioeconomic status, respondent status, ethnic background, and other conventional demographic attributes exert surprisingly little influence on the degree to which the knowledge that a physician has about the existence of illness is reflected in a household interview. Furthermore, the fact that a physician has recorded a diagnosis of a disease usually thought of as serious, or containing all the elements of chronicity (for example, diabetes or heart disease), by no means gives assurance that the condition will be identified by the respondent in an interview.

There is reason to conclude from this study that the lack of conformity does not result from an extreme reluctance on the part of the respondent to talk about illness. Such reluctance is difficult to postulate in the face of the large numbers of chronic conditions which were in fact reported on household interview. It will be recalled that only 40 percent of all chronic conditions reported by respondents were matched to conditions inferred from the Med 10's. The design of this study precluded an analysis of the 60 percent unmatched interview-reported conditions in relation to relevant independent physician record sources. While respondent failure cannot be dismissed as an important reason for lack of correspondence between the H.I.P. physician and the household interview information, the specific circumstances which accompany an illness may exert an even greater influence.

The study does throw some light on this issue. The completeness and accuracy with which hospital episodes are reported is particularly relevant. Here, the respondent is asked to report a circumstance which can only be considered as a fact. There is no speculation about the question, nor are there differences in interpretation or changes in circumstance that may confuse the issue. Either the person spent a night in the hospital or he did not. Added to this factual context is the unusual, dramatic character of the event. The combination of unequivocal meaning and sharp deviation from the ordinary pattern of living is not often present in illness that does not require hospitalization. But it is important that in situations where such combinations are likely a high degree of correspondence does result. For example, a very high proportion of conditions for which large volumes of medical services had been rendered were reported.[1] When such conditions (with 10 or more physician services) were those specified on the checklists without qualification (Class 1), almost 9 out of 10 were correspondingly reported on interview. Under what circumstances would an individual see a physician many times in relation to one condition during a year? Certainly, in most such cases the condition must have been very ac-

[1] Good correspondence in survey reporting of these conditions was not merely a reflection of the high proportion of hospitalizing conditions in this group. Although one third of all chronic conditions for which 10 or more services were rendered did involve a hospitalization, correspondence for those without related hospitalization was still 74 percent.

tive and the patient must have acknowledged his illness as a fact. It seems reasonable, too, that such a patient would in most instances have viewed his experience as unusual, either in relation to his own past history or in relation to that of his family and friends.

The preceding observations must be viewed as tentative until additional information can be gathered in other settings. A number of conditions that prevailed in the current study make this particularly important. First, the use of comparatively unseasoned interviewers raises the question of the extent to which interviewer failure contributed to the poor correspondence between physician and interview reports of chronic diseases. Although the fragmentary evidence on this issue suggests that this factor is not of great significance, further testing is required.

Another special characteristic of this study is the population covered—a cross-section of families enrolled in a health insurance program in the New York area. Coverage by health insurance of itself is not a limitation. But it would be hazardous to generalize from the experience with a population in one urban area to the national sample covered by the National Health Survey. Also, while H.I.P.'s population includes a wide range of occupations and ages, it is drawn largely from one type of employment group (municipal employees).

Perhaps the most important qualifications arise from the nature of the criterion source and the restricted scope of the study. The criterion source for physicians' diagnoses in this study was the H.I.P. Med 10 form. This is not the physician's record on the patient, but a secondary document in which the physician notes the diagnosis, definite or tentative, associated with each face-to-face contact with an insured H.I.P. member. Much processing of these routine Med 10 reports is necessary to collate all medical care rendered within H.I.P. over a given time period. Although the reliability of the Med 10 as a statistical document has been demonstrated in the past, and was again emphasized by the results of the physician interviews carried out in connection with this study, it is still true that the Med 10's cannot provide details which one might expect to obtain from a complete clinical record. Information on the history of a given condition, on treatment and progress of associated symptoms or disability, questions related to differential diagnosis, observations which might make possible a less arbitrary definition of chronicity than that of necessity used in this study—all these cannot be provided by the Med 10's.

Further, the fact that the criterion source reflects only a part of all medically attended illness in the study year, and, by definition, none of the illnesses unattended during the year, results in a restricted "one-way" analysis. The meaning of survey-collected information can never be fully understood until the conditions reported on household interview and not found on any doctors' records relating to the reference period are carefully studied.

Additional opportunities for testing the findings in this study are needed. Further observations would be desirable in settings permitting some changes from the design of the present study—notably, the direct use of physicians' detailed clinical notes rather than a secondary summary document for establishing the universe of physician-reported conditions; provision for study of respondent reports of illnesses, the existence of which is not apparent from the physician's record covering the reference period; and extension of the inquiry into the role of the interviewer. New studies should also break into presently unexplored areas. Until now the emphasis in methodological study has been on determining how well the household interview reports mirror the reports of physicians. But if this relationship should, on repeated study, prove to be a poor one, the need to know what it is that survey information does in fact reflect will still remain. Through follow-back studies to physicians and patients some understanding could be obtained regarding the influence on respondent reporting of doctor-patient communication, the assessment and interpretation the patient made of his illness, and the circumstances that make the respondent aware of and ready to report a given condition in an interview situation.

DETAILED TABLES

DETAILED TABLES--Continued

DETAILED TABLES--Continued

Table 1. Number and percent distribution of interviewed H.I.P. enrollees by age and sex

Age	Sex					
	Both sexes	Male	Female	Both sexes	Male	Female
	Number of persons			Percent distribution		
All ages	6,609	3,358	3,251	100.0	50.8	49.2
Under 15	2,046	1,060	986	31.0	16.0	14.9
15-24	466	215	251	7.1	3.3	3.8
25-44	2,281	1,096	1,185	34.5	16.6	17.9
45-64	1,632	871	761	24.7	13.2	11.5
65+	184	116	68	2.8	1.8	1.0

Table 2. Percent distribution of interviewed H.I.P. enrollees by selected demographic characteristics and age

Demographic characteristic	Age					
	All ages	Under 15	15-24	25-44	45-64	65+
All persons						
Number	6,609	2,046	466	2,281	1,632	184
Percent	100.0	100.0	100.0	100.0	100.0	100.0
	Percent distribution					
Education of family head						
Under 9 years	22.7	15.2	22.3	17.1	37.6	46.2
9-12 years	47.0	55.9	45.5	51.8	32.0	25.5
12+ years	26.8	26.0	29.0	27.8	26.1	23.9
Unknown or unreported	3.4	2.9	3.2	3.3	4.2	4.3
Family income						
Under $4,000	10.6	10.4	12.4	9.3	10.8	22.3
$4,000-4,999	15.3	17.6	9.2	17.1	11.8	15.2
$5,000-6,999	37.2	45.8	31.3	40.3	25.7	20.1
$7,000-9,999	18.5	13.8	21.7	18.1	23.7	22.3
$10,000+	11.7	7.4	14.2	9.3	20.0	8.2
Unknown or unreported	6.6	4.9	11.2	5.8	8.0	12.0
Race						
White	87.3	85.6	86.9	84.3	92.8	96.2
Nonwhite	12.7	14.4	13.1	15.7	7.2	3.8
Occupation of subscriber						
Professional, managerial	22.2	18.6	26.6	20.8	27.1	23.9
Clerical and sales	12.5	10.3	14.2	11.5	16.3	10.3
Craftsmen	13.3	11.9	14.2	11.0	18.2	12.5
Transit operatives	7.2	8.8	9.0	6.2	6.6	3.8
Other operatives	12.5	13.3	9.2	15.3	9.7	0.5
Firemen, policemen	18.0	25.4	14.2	22.3	6.0	-
Other service, private household	4.2	3.6	3.4	3.7	5.5	7.1
Laborers	4.7	4.7	5.2	3.8	5.8	6.0
Unknown or unreported	1.0	0.6	1.3	1.3	1.2	-
Not working	4.3	2.8	2.8	3.9	3.7	35.9

Table 3. Percent distribution of H.I.P. enrollees with specified characteristics for whom possibly chronic conditions were inferred from Med 10 services in the study year by type of condition inferred

Characteristic	All persons		One or more possibly chronic conditions inferred from Med 10's			No possibly chronic condition inferred from Med 10's
	Number	Percent	Total	Checklist unqualified	Other only	
			Percent distribution			
All persons	6,611	100.0	44.4	23.0	21.3	55.6
Education of family head						
Under 9 years	1,501	100.0	40.8	22.9	18.0	59.2
9-12 years	3,112	100.0	42.4	21.3	21.2	57.6
12+ years	1,771	100.0	51.5	27.3	24.2	48.5
Unknown or unreported	227	100.0	38.8	15.4	23.3	61.2
Sex						
Male	3,360	100.0	43.5	23.3	20.2	56.5
Female	3,251	100.0	45.2	22.7	22.5	54.8
Age						
Under 15 years	2,046	100.0	33.2	15.2	18.0	66.8
15-44 years	2,751	100.0	45.9	20.7	25.2	54.1
45+ years	1,814	100.0	54.6	35.4	19.2	45.4
Relationship of respondent						
Self-respondents	2,428	100.0	51.9	28.1	23.8	48.1
Relatives	4,140	100.0	40.1	20.1	20.0	59.9
Spouse	1,411	100.0	49.3	26.6	22.6	50.7
Child	2,429	100.0	34.9	15.0	19.9	65.1
Other relative	300	100.0	39.0	31.0	8.0	61.0
Unrelated and unknown relationship	43	100.0	34.9	16.3	18.6	65.1
Survey report on hospitalization, study year						
Yes	471	100.0	60.5	37.8	22.7	39.5
No	6,090	100.0	43.2	21.9	21.3	56.8
Unknown or unreported	50	100.0	38.0	22.0	16.0	62.0
Permission to review medical records						
Yes	5,882	100.0	43.9	22.3	21.6	56.1
No	729	100.0	47.9	28.7	19.2	52.1

Table 4. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by number of related Med 10 services in study year, respondent status, and class of condition

Number of related Med 10 services and respondent status	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Unqualified Class 1	Qualified Class 2	
All services						
Total	1,872	1,231	1,545	44.1	27.6	20.4
Self-respondents	878	605	739	47.7	35.7	21.1
Relatives	987	621	801	41.0	20.0	19.9
1 service						
Total	802	685	796	27.2	20.0	14.3
Self-respondents	377	323	376	30.0	27.2	18.6
Relatives	421	358	415	24.7	13.7	10.6
2-4 services						
Total	594	414	541	40.9	33.3	18.1
Self-respondents	266	212	244	45.9	41.0	15.6
Relatives	327	201	297	36.7	25.4	20.2
5-9 services						
Total	210	114	131	62.4	48.2	45.8
Self-respondents	116	58	69	67.2	58.6	42.0
Relatives	93	56	62	57.0	37.5	50.0
10+ services						
Total	266	18	77	88.0	55.6	55.8
Self-respondents	119	12	50	89.1	(*)	38.0
Relatives	146	6	27	87.7	(*)	88.9

Table 5. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by interval between last related service and household interview, number of related Med 10 services in study year, and class of condition

Interval between last service and household interview and number of related Med 10 services	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Unqualified Class 1	Qualified Class 2	
Two weeks or less						
Total	246	87	124	67.9	50.6	41.9
1 service	45	32	43	33.3	46.9	30.2
2-4 services	53	28	42	50.9	46.4	28.6
5-9 services	26	22	20	53.8	50.0	75.0
10+ services	122	5	19	91.0	(*)	63.2
More than two weeks but less than four months						
Total	714	413	602	49.3	34.1	22.1
1 service	247	174	304	28.3	21.3	17.1
2-4 services	262	184	204	43.1	40.8	20.6
5-9 services	109	47	52	74.3	53.2	40.4
10+ services	96	8	42	91.7	(*)	42.9
Four months or more						
Total	912	731	819	33.7	21.2	15.9
1 service	510	479	449	26.1	17.7	10.9
2-4 services	279	202	295	36.9	24.8	14.9
5-9 services	75	45	59	48.0	42.2	40.7
10+ services	48	5	16	72.9	(*)	81.3

Table 6. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by number of related Med 10 services in study year, interval between first and last related service, and class of condition

Number of related Med 10 services and interval between first and last related service	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Unqualified Class 1	Qualified Class 2	
All services						
Total	1,872	1,231	1,545	44.1	27.6	20.4
One service	802	685	796	27.2	20.0	14.3
More than one service	1,070	546	749	56.8	37.2	26.8
One month or less	313	250	352	35.1	32.0	22.4
More than one month	757	296	397	65.8	41.6	30.7
2-4 services						
Total	594	414	541	40.9	33.3	18.1
One month or less	272	232	323	32.7	31.5	18.3
More than one month	322	182	218	47.8	35.7	17.9
5-9 services						
Total	210	114	131	62.4	48.2	45.8
One month or less	30	18	24	53.3	38.9	70.8
More than one month	180	96	107	63.9	50.0	40.2
10+ services						
Total	266	18	77	88.0	55.6	55.8
One month or less	11	-	5	(*)	...	(*)
More than one month	255	18	72	89.8	55.6	55.6

Table 7. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by number of related Med 10 services in study year, respondent status, and grade of condition

Number of related Med 10 services and respondent status	Number of conditions inferred from Med 10's				Percent correspondingly reported on household interview			
	Checklist no qualification Grade I	All other			Checklist no qualification Grade I	All other		
		>1 service and >1 month from 1st to last		1 service only or 1 month or less from 1st to last Grade IV		>1 service and >1 month from 1st to last		1 service only or 1 month or less from 1st to last Grade IV
		Checklist qualified Grade II	Non-checklist Grade III			Checklist qualified Grade II	Non-checklist Grade III	
All services								
Total-------	1,872	296	397	2,083	44.1	41.6	30.7	19.7
Self-respondents--	878	162	187	995	47.7	47.5	28.3	24.3
Relatives---------	987	134	210	1,078	41.0	34.3	32.9	15.6
1 service only								
Total-------	802	...	...	1,481	27.2	...	...	16.9
Self-respondents--	377	...	...	699	30.0	...	...	22.6
Relatives---------	421	...	...	773	24.7	...	...	12.0
2 to 4 services								
Total-------	594	182	218	555	40.9	35.7	17.9	23.8
Self-respondents--	266	97	85	274	45.9	41.2	16.5	25.9
Relatives---------	327	85	133	280	36.7	29.4	18.8	21.8
5 to 9 services								
Total-------	210	96	107	42	62.4	50.0	40.2	57.1
Self-respondents--	116	53	57	17	67.2	56.6	40.4	58.8
Relatives---------	93	43	50	25	57.0	41.9	40.0	56.0
10+ services								
Total-------	266	18	72	5	88.0	55.6	55.6	(*)
Self-respondents--	119	12	45	5	89.1	(*)	35.6	(*)
Relatives---------	146	6	27	-	87.7	(*)	88.9	...

Table 8. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by relationship to respondent, sex of respondent, and class of condition

Relationship to respondent and sex of respondent	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Unqualified Class 1	Qualified Class 2	
All conditions						
Total	1,872	1,231	1,545	44.1	27.6	20.4
Male respondent	560	333	369	46.6	27.6	21.7
Female respondent	1,308	895	1,169	43.1	27.7	19.8
Self-respondent						
Total	878	605	739	47.7	35.7	21.1
Male	299	184	142	52.5	29.9	19.7
Female	579	421	597	45.3	38.2	21.4
Spouse						
Total	462	283	343	46.8	22.6	21.0
Male respondent	128	65	106	43.0	23.1	21.7
Female respondent	334	218	237	48.2	22.5	20.7
Child						
Total	403	293	411	36.5	16.7	18.0
Male respondent	73	54	89	37.0	27.8	19.1
Female respondent	330	239	319	36.4	14.2	16.9
Other relative						
Total	122	45	47	34.4	24.4	27.7
Male respondent	60	30	32	36.7	23.3	37.5
Female respondent	62	15	15	32.3	26.7	6.7

Table 9. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by relationship to respondent, sex of respondent, and grade of condition

Relationship to respondent and sex of respondent	Number of conditions inferred from Med 10's				Percent correspondingly reported on household interview			
	Checklist no qualification Grade I	All other			Checklist no qualification Grade I	All other		
		>1 service and >1 month from 1st to last		1 service only or 1 month or less from 1st to last Grade IV		>1 service and >1 month from 1st to last		1 service only or 1 month or less from 1st to last Grade IV
		Checklist qualified Grade II	Non-checklist Grade III			Checklist qualified Grade II	Non-checklist Grade III	
All conditions								
Total-------	1,872	296	397	2,083	44.1	41.6	30.7	19.7
Male respondent---	560	104	114	484	46.6	34.6	18.4	23.8
Female respondent-	1,308	192	283	1,589	43.1	45.3	35.7	18.4
Self-respondent								
Total-------	878	162	187	995	47.7	47.5	28.3	24.3
Male----------	299	56	39	231	52.5	32.1	17.9	25.1
Female----------	579	106	148	764	45.3	55.7	31.1	24.1
Spouse								
Total-------	462	68	105	453	46.8	29.4	38.1	16.8
Male respondent---	128	20	46	105	43.0	30.0	19.6	21.9
Female respondent-	334	48	59	348	48.2	29.2	52.5	15.2
Child								
Total-------	403	47	96	561	36.5	31.9	29.2	14.3
Male respondent---	73	13	21	109	37.0	38.5	19.0	21.1
Female respondent-	330	34	75	449	36.4	29.4	32.0	12.0
Other relative								
Total-------	122	19	9	64	34.4	57.9	(*)	18.8
Male respondent---	60	15	8	39	36.7	46.7	(*)	28.2
Female respondent-	62	4	1	25	32.3	(*)	(*)	4.0

Table 10. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by age and sex of person with the condition and class of condition

Age and sex	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Unqualified Class 1	Qualified Class 2	
All ages						
Total	1,872	1,231	1,545	44.1	27.6	20.4
Male	944	555	610	46.8	22.7	19.7
Female	928	676	935	41.4	31.7	20.9
Under 15 years						
Total	344	191	326	36.0	17.3	17.5
Male	214	91	173	39.3	9.9	18.5
Female	130	100	153	30.8	24.0	16.3
15-24 years						
Total	81	112	96	38.3	19.6	10.4
Male	33	36	40	54.5	19.4	10.0
Female	48	76	56	27.1	19.7	10.7
25-44 years						
Total	600	469	625	46.7	29.2	19.4
Male	252	181	188	48.4	20.4	19.1
Female	348	288	437	45.4	34.7	19.5
45-64 years						
Total	707	381	455	44.8	32.3	25.5
Male	359	202	179	47.9	29.7	22.9
Female	348	179	276	41.7	35.2	27.2
65+ years						
Total	140	78	43	52.9	32.1	25.6
Male	86	45	30	53.5	28.9	23.3
Female	54	33	13	51.9	36.4	(*)

Table 11. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by age and respondent status of person with the condition and class of condition

Age and respondent status	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Unqualified Class 1	Qualified Class 2	
All ages						
Total	1,872	1,231	1,545	44.1	27.6	20.4
Self-respondents	878	605	739	47.7	35.7	21.1
Relatives	987	621	801	41.0	20.0	19.9
Under 15 years						
Total	344	190	326	36.0	17.3	17.5
Self-respondents	-	1	3	...	(*)	(*)
Relatives	340	189	319	36.5	17.5	16.9
15-24 years						
Total	81	112	96	38.3	19.6	10.4
Self-respondents	22	25	26	22.7	24.0	0.0
Relatives	58	85	70	43.1	18.8	14.3
25-44 years						
Total	600	469	625	46.7	29.2	19.4
Self-respondents	340	299	414	47.4	37.1	20.3
Relatives	259	169	211	45.6	15.4	17.5
45-64 years						
Total	707	381	455	44.8	32.3	25.5
Self-respondents	421	226	271	46.3	35.4	23.2
Relatives	285	154	183	42.8	27.9	29.0
65+ years						
Total	140	78	43	52.9	32.1	25.6
Self-respondents	95	54	25	61.1	35.2	24.0
Relatives	45	24	18	35.6	25.0	27.8

Table 12. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by education of family head, respondent status, and class of condition

Education of family head and respondent status	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Unqualified Class 1	Qualified Class 2	
Under 9 years						
Total	448	254	318	44.6	29.1	22.0
Self-respondents	243	126	184	46.9	42.9	21.2
Relatives	205	128	134	42.0	15.6	23.1
9-12 years						
Total	807	557	690	39.2	28.0	16.8
Self-respondents	369	272	310	42.8	32.0	17.1
Relatives	434	282	376	36.2	24.5	16.8
12+ years						
Total	571	370	490	49.9	25.9	22.2
Self-respondents	242	194	225	55.8	35.1	24.0
Relatives	326	174	264	45.7	16.1	20.8

Table 13. Percent of possibly chronic conditions inferred from Med 10's, persons aged 15 years or older, reported on household interview by age and education of person with the condition and class of condition

Age and education of person with condition	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Non-qualified Class 1	Qualified Class 2	
All ages-15+						
Total	1,528	1,040	1,219	45.9	29.5	21.2
Under 9 years	388	222	242	48.2	28.4	27.3
9-12 years	690	521	586	41.0	30.1	17.4
12+ years	420	283	371	51.0	28.3	22.6
15-24 years						
Total	81	112	96	38.3	19.6	10.4
Under 9 years	1	6	2	(*)	(*)	(*)
9-12 years	67	93	80	34.3	17.2	12.5
12+ years	13	13	14	(*)	(*)	(*)
25-44 years						
Total	600	469	625	46.7	29.2	19.4
Under 9 years	57	44	65	52.6	20.5	15.4
9-12 years	361	279	365	41.8	31.5	15.9
12+ years	180	141	186	54.4	27.7	26.3
45-64 years						
Total	707	381	455	44.8	32.3	25.5
Under 9 years	270	144	160	46.7	31.9	32.5
9-12 years	237	132	128	40.9	35.6	24.2
12+ years	183	101	156	46.4	25.7	19.9
65+ years						
Total	140	78	43	52.9	32.1	25.6
Under 9 years	60	28	15	50.0	28.6	26.7
9-12 years	25	17	13	48.0	35.3	(*)
12+ years	44	28	15	54.5	32.1	26.7

Table 14. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by family income, respondent status, and class of condition

Family income and respondent status	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Unqualified Class 1	Qualified Class 2	
Under $4,000						
Total	223	130	167	49.3	44.6	16.8
Self-respondents	125	88	108	59.2	56.8	12.0
Relatives	98	42	59	36.7	19.0	25.4
$4,000-4,999						
Total	292	182	186	46.6	19.2	22.6
Self-respondents	162	96	91	50.6	28.1	25.3
Relatives	130	86	95	41.5	9.3	20.0
$5,000-6,999						
Total	577	437	546	43.5	27.7	22.3
Self-respondents	246	176	239	46.3	36.9	24.7
Relatives	327	259	303	41.6	21.6	20.8
$7,000-9,999						
Total	380	234	316	44.5	30.8	17.4
Self-respondents	168	126	178	38.7	31.7	19.7
Relatives	211	108	138	48.8	29.6	14.5
$10,000+						
Total	271	166	205	42.8	24.1	23.9
Self-respondents	127	88	84	48.8	27.3	29.8
Relatives	142	75	120	38.0	21.3	20.0

Table 15. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by number of H.I.P.-insured persons in household, respondent status, and class of condition

Number of H.I.P.-insured persons (as of 6/30/57) and respondent status	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist Class 3	Checklist		Non-checklist Class 3
	Unqualified Class 1	Qualified Class 2		Unqualified Class 1	Qualified Class 2	
One person						
Total	228	141	144	43.0	31.2	18.1
Self-respondents	151	94	95	45.7	34.0	14.7
Relatives	76	47	49	36.8	25.5	24.5
Two persons						
Total	554	295	365	45.3	33.9	23.8
Self-respondents	335	192	236	47.8	38.0	24.2
Relatives	219	103	129	41.6	26.2	23.3
Three or four persons						
Total	761	579	703	41.8	23.8	21.1
Self-respondents	305	252	277	47.5	32.5	22.4
Relatives	454	325	423	38.1	17.2	20.3
Five or six persons						
Total	279	176	269	49.8	24.4	18.2
Self-respondents	69	57	108	52.2	33.3	18.5
Relatives	208	117	160	49.5	20.5	18.1
Seven + persons						
Total	50	40	64	40.0	37.5	7.8
Self-respondents	18	10	23	50.0	(*)	13.0
Relatives	30	29	40	33.3	17.2	5.0

Table 16. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by respondent status, indication of permission to review medical records, and class of condition

Respondent status and indication of permission to review medical records	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Checklist		Non-checklist	Checklist		Non-checklist
	Unqualified Class 1	Qualified Class 2	Class 3	Unqualified Class 1	Qualified Class 2	Class 3
All respondents						
Total	1,872	1,231	1,545	44.1	27.6	20.4
Permission granted	1,619	1,070	1,374	44.8	27.5	21.2
Permission not granted	253	161	171	39.5	28.6	14.0
Self-respondents						
Total	878	605	739	47.7	35.7	21.1
Permission granted	749	528	656	48.6	36.2	22.5
Permission not granted	129	77	83	42.6	32.5	14.5
Relatives						
Total	987	621	801	41.0	20.0	19.9
Permission granted	863	537	713	41.7	19.2	20.6
Permission not granted	124	84	88	36.3	25.0	13.6

Table 17. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by diagnostic category and class of condition

Diagnostic category ISC broad classification NHS Recode #3 (NHS Recode #1)	Number of conditions inferred from Med 10's				Percent correspondingly reported on household interview			
	All classes	Checklist		Non-checklist Class 3	All classes	Checklist		Non-checklist Class 3
		Unqualified Class 1	Qualified Class 2			Unqualified Class 1	Qualified Class 2	
Infective and parasitic diseases-	70	7	46	17	12.9	(*)	13.0	-
01 Tuberculosis, all forms----------	4	4	-	-	(*)	(*)	...	...
51 Infective and parasitic diseases NEC----------	66	3	46	17	12.1	(*)	13.0	-
Dermatophytosis (039)----------	46	-	46	-	13.0	(*)	13.0	-
All other (005,029,038,040,041)	20	3	-	17	10.0	(*)	...	-
Neoplasms----------	171	171	-	-	23.4	23.4	...	...
02 Malignant neoplasms----------	33	33	-	-	33.3	33.3	...	...
03 Benign and unspecified neoplasms-	138	138	-	-	21.0	21.0	...	...
Uterus and other female genital organs (063,064)----------	42	42	-	-	40.5	40.5	...	...
Other (060-062,065-080)--------	95	95	-	-	12.5	12.5	...	...
Allergic, metabolic, endocrine, nutritional----------	684	485	-	199	47.7	62.5	...	11.6
04 Asthma and hay fever----------	269	269	-	-	76.2	76.2	...	...
Asthma (082)----------	97	97	-	-	71.1	71.1	...	...
Hay fever (081)----------	172	172	-	-	79.1	79.1	...	...
05 Other allergies----------	125	125	-	-	37.6	37.6	...	...
06 Diabetes mellitus----------	60	60	-	-	61.7	61.7	...	...
58 Obesity----------	177	-	-	177	9.6	...	...	9.6
52 Endocrine, metabolic and nutritional diseases NEC----------	53	31	-	22	37.7	45.2	...	27.3
Diseases of thyroid (087-089)--	31	31	-	-	45.2	45.2	...	...
Other (091-096)----------	22	-	-	22	27.3	...	...	27.3
Diseases of blood and blood-forming organs----------	52	-	-	52	17.3	...	...	17.3
07 Anemia----------	49	-	-	49	18.4	...	...	18.4
53 Other----------	3	-	-	3	(*)	...	...	(*)
Mental, psychoneurotic, personality disorders----------	285	285	-	-	20.4	20.4	...	...
09 Mental illness----------	214	214	-	-	25.7	25.7	...	...
10 Ill-defined mental and nervous trouble----------	71	71	-	-	4.2	4.2	...	...
Diseases of nervous system and sense organs----------	506	31	105	370	22.7	35.5	39.0	17.0
54 Diseases and conditions of brain, spinal cord and nerves NEC, including impairments due to them, except paralysis-------	147	31	6	110	31.3	35.5	(*)	26.4
Vascular lesions of the central nervous system (107)---------	15	15	-	-	40.0	40.0	...	...

Table 17. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by diagnostic category and class of condition—Continued

Diagnostic category ISC broad classification NHS Recode #3 (NHS Recode #1)	Number of conditions inferred from Med 10's				Percent correspondingly reported on household interview			
	All classes	Checklist		Non-checklist Class 3	All classes	Checklist		Non-checklist Class 3
		Unqualified Class 1	Qualified Class 2			Unqualified Class 1	Qualified Class 2	
54 Dis. and cond. of brain--Con.								
Sciatica, neuritis, and neuralgia (113-115)	80	-	-	80	28.8	...	...	28.8
Other (108-110,112,116,227, X10-X19)	52	16	6	30	32.7	31.3	(*)	20.0
31 Impairment of vision	33	-	33	-	33.3	...	33.3	...
32 Impairment of hearing	34	-	34	-	41.2	...	41.2	...
55 Diseases of eye and ear NEC	292	-	32	260	15.1	...	31.3	13.1
Diseases of circulatory system	457	422	-	35	47.9	49.1	...	34.3
11 Heart disease	162	162	-	-	60.5	60.5	...	...
Chronic rheumatic heart disease (128)	24	24	-	-	54.2	54.2	...	...
Arteriosclerotic heart disease (129)	91	91	-	-	68.1	68.1	...	...
Hypertensive heart disease (133)	26	26	-	-	73.1	73.1	...	...
Other heart disease (131,132)	21	21	-	-	19.0	19.0	...	...
12 Hypertension without heart involvement	118	118	-	-	45.8	45.8	...	...
13 Varicose veins	52	52	-	-	42.3	42.3	...	...
14 Hemorrhoids	76	76	-	-	38.2	38.2	...	...
15 Other diseases of circulatory system	49	14	-	35	32.7	(*)	...	34.3
Diseases of respiratory system	360	-	84	276	31.4	...	52.4	25.0
16 Sinusitis	64	-	64	-	48.4	...	48.4	...
17 Bronchitis	20	-	20	-	65.0	...	65.0	...
18 Other diseases of respiratory system	276	-	-	276	25.0	...	...	25.0
Chronic tonsillitis (153)	80	-	-	80	47.5	...	...	47.5
Chronic pharyngitis, nasopharyngitis and laryngitis (154)	76	-	-	76	11.8	...	...	11.8
Other diseases of upper respiratory tract (156)	43	-	-	43	18.6	...	...	18.6
Pleurisy (157)	19	-	-	19	-	...	...	-
Symptoms referable to respiratory system (229)	51	-	-	51	21.6	...	...	21.6
All other diseases of the respiratory system (159)	7	-	-	7	(*)	...	...	(*)
Diseases of digestive system	422	160	163	99	35.5	58.8	19.0	25.3
19 Ulcer of stomach and duodenum	60	60	-	-	60.0	60.0	...	...
20 Hernia	57	57	-	-	54.4	54.4	...	...
21 Diseases of the gallbladder	33	33	-	-	66.7	66.7	...	...
22 Constipation	17	-	17	-	-	...	-	...
23 Other diseases of the digestive system	255	10	146	99	23.9	(*)	21.2	25.3
Diseases of teeth, buccal cavity, esophagus (161,162)	42	-	-	42	4.8	...	...	4.8
Gastritis and duodenitis (164)	47	-	47	-	6.4	...	6.4	...

Table 17. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by diagnostic category and class of condition—Continued

Diagnostic category ISC broad classification NHS Recode #3 (NHS Recode #1)	Number of conditions inferred from Med 10's				Percent correspondingly reported on household interview			
		Checklist		Non-check list Class 3		Checklist		Non-Check list Class 3
	All classes	Unqualified Class 1	Qualified Class 2		All classes	Unqualified Class 1	Qualified Class 2	
23 Other diseases of the digestive system								
Disorders of function of stomach (165)	51	-	51	-	17.6	...	17.6	...
Chronic enteritis and ulcerative colitis (169)	8	-	8	-	(*)	...	(*)	...
Other functional disorders of intestines (171)	40	-	40	-	46.2	...	46.2	...
Symptoms referable to abdomen and gastrointestinal tract (233)	17	-	-	17	41.2	...	...	41.2
All other (173,174,178)	50	10	-	40	42.0	(*)	...	40.0
Diseases of genitourinary system	349	38	33	278	21.8	47.4	3.0	20.5
24 Menstrual disorders	40	-	-	40	25.0	...	...	25.0
25 Menopausal disorders	37	-	-	37	29.7	...	...	29.7
26 Other diseases of genitourinary system	272	38	33	201	20.2	47.4	3.0	17.9
Diseases of kidney and ureter (179,180,183)	22	22	-	-	54.5	54.5	...	...
Diseases of the prostate (184)	16	16	-	-	37.5	37.5	...	...
Other male genital, male breast (185,186)	30	-	-	30	13.3	...	...	13.3
Female breast conditions (187)	21	-	-	21	42.9	...	...	42.9
Diseases of the ovary, Fallopian tube and parametrium (188)	22	-	-	22	27.3	...	...	27.3
Diseases of the uterus (189)	108	-	-	108	12.0	...	...	12.0
Other diseases of the female genital system (192)	19	-	-	19	21.1	...	...	21.1
Symptoms referable to genitourinary system (234)	21	-	21	-	4.8	...	4.8	...
All other (194,X38)	13	-	12	1	(*)	...	(*)	(*)
Diseases of skin and cellular tissue	446	-	446	-	19.5	...	19.5	...
27 Skin infections and diseases	446	-	446	-	19.5	...	19.5	...
Other dermatitis (not due to plants) (206)	132	-	132	-	21.2	...	21.2	...
Other diseases of skin (207)	314	-	314	-	18.8	...	18.8	...
Diseases of bones and organs of movement	771	255	354	162	33.7	34.1	36.7	26.5
28 Arthritis and rheumatism	229	114	115	-	33.2	48.2	18.3	...
Arthritis, all forms (210)	114	114	-	-	48.2	48.2	...	...
Rheumatism (212)	115	-	115	-	18.3	...	18.3	...
29 Back conditions	137	4	133	-	56.2	(*)	56.4	...
Displacement of intervertebral disc (213)	5	-	5	-	(*)	...	(*)	...
Nonparalytic orthopedic impairment back (X70,X71)	128	-	128	-	54.7	...	54.7	...
Specified deformity of back (X80,X81)	4	4	-	-	(*)	(*)	...	...

Table 17. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by diagnostic category and class of condition—Continued

Diagnostic category ISC broad classification NHS Recode #3 (NHS Recode #1)	Number of conditions inferred from Med 10's				Percent correspondingly reported on household interview			
	All classes	Checklist		Non-checklist Class 3	All classes	Checklist		Non-Checklist Class 3
		Unqualified Class 1	Qualified Class 2			Unqualified Class 1	Qualified Class 2	
30 Other conditions of muscles, bones, and joints	393	128	106	159	25.4	18.8	32.1	26.4
Nonparalytic orthopedic impairment, except of back (X73-X76)	11	-	11	-	(*)	...	(*)	...
Flatfoot (X82)	70	70	-	-	5.7	5.7	...	...
Specified deformity, limbs or trunk (X83-X89)	55	55	-	-	30.9	30.9	...	...
Synovitis and bursitis (215)	120	-	-	120	25.0	...	...	25.0
Symptoms referable to limbs and back (235)	95	-	95	-	31.6	...	31.6	...
All other (X31,214,216,217,251)	42	3	-	39	35.7	(*)	...	30.8
33 Paralysis of extremities and/or trunk	9	9	-	-	(*)	(*)	...	...
57 Residuals of injuries NEC	3	-	-	3	(*)	...	...	(*)
Congenital malformations	18	18	-	-	27.8	27.8	...	...
56 Congenital malformations	18	18	-	-	27.8	27.8	...	...
Symptoms and ill-defined conditions	57	-	-	57	24.6	...	...	24.6
08 Headache and migraine	47	-	-	47	14.9	...	...	14.9
59 Symptoms and ill-defined conditions NEC	10	-	-	10	(*)	...	...	(*)

Table 18. Percent of possibly chronic conditions inferred from Med 10's reported on household interview by Recode #3[1] categories ranked within each class by percent of conditions correspondingly reported and diagnosis and class of condition

Conditions on National Health Survey checklist					
Without qualification (Class 1)			With qualification (Class 2)		
Recode #3 category	Number of conditions inferred from Med 10's	Percent correspondingly reported on household interview	Recode #3 category	Number of conditions inferred from Med 10's	Percent correspondingly reported on household interview
04 Asthma and hay fever	269	76.2	17 Bronchitis	20	65.0
21 Diseases of the gall bladder	33	66.7	(29) Back conditions	133	56.4
06 Diabetes mellitus	60	61.7	16 Sinusitis	64	48.4
11 Heart disease	162	60.5	32 Impairment of hearing	34	41.2
19 Ulcer of stomach and duodenum	60	60.0	31 Impairment of vision	33	33.3
20 Hernia	57	54.4	(30) Other conditions of muscles, bones and joints	106	32.1
(28) Arthritis and rheumatism	114	48.2	(55) Diseases of eye and ear NEC	32	31.3
(26) Other diseases of genitourinary system	38	47.4	(23) Other diseases of the digestive system	146	21.2
12 Hypertension without heart involvement	118	45.8	27 Skin infections and diseases	446	19.5
(52) Endocrine, metabolic, and nutritional diseases NEC	31	45.2	(28) Arthritis and rheumatism	115	18.3
13 Varicose veins	52	42.3	(51) Infective and parasitic diseases NEC	46	13.0
14 Hemorrhoids	76	38.2	(26) Other diseases of genitourinary system	33	3.0
05 Other allergies	125	37.6	22 Constipation	17	-
(54) Diseases and conditions of brain, spinal cord and nerves NEC, including impairments due to them, except paralysis	31	35.5			
02 Malignant neoplasms	33	33.3			
56 Congenital malformations	18	27.8			
09 Mental illness	214	25.7			
03 Benign and unspecified neoplasms	138	21.0			
(30) Other conditions of muscles, bones and joints	128	18.8			
10 Ill-defined mental and nervous trouble	71	4.2			

Conditions not on National Health Survey Checklist (Class 3)		
Recode #3 category	Number of conditions inferred from Med 10's	Percent correspondingly reported on household interview
(15) Other diseases of circulatory system	35	34.3
25 Menopausal disorders	37	29.7
(52) Endocrine, metabolic and nutritional diseases NEC	22	27.3
(30) Other conditions of muscles, bones and joints	159	26.4
(54) Diseases and conditions of brain, spinal cord and nerves NEC, including impairments due to them, except paralysis	110	26.4
(23) Other diseases of the digestive system	99	25.3
18 Other diseases of the respiratory system	276	25.0
24 Menstrual disorders	40	25.0
07 Anemia	49	18.4
(26) Other diseases of genitourinary system	201	17.9
08 Headache and migraine	47	14.9
(55) Diseases of eye and ear NEC	260	13.1
58 Impairments NEC (predominantly obesity)	177	9.6
(51) Infective and parasitic diseases NEC	17	-

[1]Recode No.3 categories within a given class of condition with less than 15 conditions inferred from the Med 10's have been omitted from this table.
( )Recode No. 3 category components of which have been assigned to more than one class of condition.

Table 19. Differentials in percent of Med 10 conditions reported on household interview by respondent status—Recode #3 categories [1] within each class of condition by magnitude of correspondence ratio between proxy- and self-respondents

Class of condition; diagnostic category (Recode #3)	Number of conditions inferred from Med 10's			Correspondence on household interview			
					Reported		Ratio, percent correspondence, relatives to self-respondents
	Total	Self-respondents	Relatives	Total	Self-respondents	Relatives	
Checklist without qualification (Class 1)							
05 Other allergies	125	39	81	37.6	25.6	43.2	1.69
12 Hypertension without heart involvement	118	67	51	45.8	40.3	52.9	1.31
14 Hemorrhoids	76	52	24	38.2	36.5	41.7	1.14
13 Varicose veins	52	29	23	42.3	41.4	43.5	1.05
04 Asthma and hay fever	269	85	183	76.2	77.6	76.0	0.98
20 Hernia	57	20	37	54.4	55.0	54.1	0.98
06 Diabetes mellitus	60	35	25	61.7	68.6	52.0	0.76
09 Mental illness	214	113	101	25.7	29.2	21.8	0.75
11 Heart disease	162	80	82	60.5	71.3	50.0	0.70
03 Benign and unspecified neoplasms	138	74	64	21.0	25.7	15.6	0.61
(28) Arthritis and rheumatism	114	61	53	48.2	59.0	35.8	0.61
19 Ulcer of stomach and duodenum	60	37	23	60.0	73.0	39.1	0.54
(30) Other conditions of the muscles, bones and joints	128	24	104	18.8	45.8	12.5	0.27
10 Ill-defined mental and nervous trouble	71	44	27	4.2	6.8	0.0	0.00
21 Diseases of the gallbladder	33	23	10	66.7	69.6	(*)	(*)
(26) Other diseases of genito-urinary system	38	27	11	47.4	51.9	(*)	(*)
(52) Endocrine, metabolic and nutritional diseases NEC	31	22	9	45.2	45.5	(*)	(*)
(54) Diseases and conditions of brain, spinal cord and nerves NEC, including impairments due to them, except paralysis	31	6	25	35.5	(*)	20.0	(*)
02 Malignant neoplasms	33	14	19	33.3	(*)	31.6	(*)
Checklist with qualification (Class 2)							
(51) Infective and parasitic diseases NEC	46	25	21	13.0	8.0	19.0	2.38
27 Skin infections and diseases	446	168	276	19.5	22.6	17.8	0.79
32 Impairment of hearing	34	17	17	41.2	47.1	35.3	0.75
(29) Back conditions	133	88	45	56.4	63.6	42.2	0.66
(23) Other diseases of the digestive system	146	87	58	21.2	27.6	12.1	0.44
(30) Other conditions of the muscles, bones and joints	106	60	44	32.1	43.3	18.2	0.42
(28) Arthritis and rheumatism	115	51	64	18.3	29.4	9.4	0.32
16 Sinusitis	64	28	36	48.4	85.7	19.4	0.23
(26) Other diseases of genito-urinary system	33	18	15	3.0	5.6	0.0	0.00
17 Bronchitis	20	5	15	65.0	(*)	73.3	(*)
31 Impairment of vision	33	22	11	33.3	36.4	(*)	(*)
(55) Diseases of eye and ear NEC	32	21	11	31.3	33.3	(*)	(*)

Table 19. Differentials in percent of Med 10 conditions reported on household interview by respondent status—Recode #3 categories[1] within each class of condition by magnitude of correspondence ratio between proxy- and self-respondents--Continued

Class of condition; diagnostic category (Recode #3)	Number of conditions inferred from Med 10's			Correspondence on household interview			
					Reported		Ratio, percent correspondence, relatives to self-respondents
	Total	Self-respondents	Relatives	Total	Self-respondents	Relatives	
Nonchecklist (Class 3)							
(23) Other diseases of the digestive system	99	32	66	25.3	18.8	28.8	1.53
(30) Other conditions of the muscles, bones and joints	159	59	100	26.4	22.0	29.0	1.32
58 Obesity (impairments, NEC)	177	104	73	9.6	9.6	9.6	1.00
(55) Diseases of eye and ear NEC	260	101	158	13.1	13.9	12.7	0.91
18 Other diseases of respiratory system	276	77	196	25.0	29.9	23.5	0.79
07 Anemia	49	27	22	18.4	22.2	13.6	0.61
(54) Diseases and conditions of brain, spinal cord and nerves NEC, including impairments due to them, except paralysis	110	66	44	26.4	31.8	18.2	0.57
(26) Other diseases of genitourinary system	201	141	60	17.9	20.6	11.7	0.57
08 Headache and migraine	47	22	25	14.9	31.8	0.0	0.00
(15) Other diseases of circulatory system	35	14	21	34.3	(*)	47.6	(*)
25 Menopausal disorders	37	28	9	29.7	21.4	(*)	(*)
(52) Endocrine, metabolic, and nutritional diseases NEC	22	19	3	27.3	26.3	(*)	(*)
24 Menstrual disorders	40	29	11	25.0	31.0	(*)	(*)

[1] Categories with less than 15 conditions in both self-respondents and relatives of respondents have been omitted from this table.

( ) Recode #3 category components of which have been assigned to more than one class of condition.

Table 20. Percent distribution of all survey-reported conditions by question number producing household interview report—all possibly chronic conditions according to ISC designation—by class of condition and whether or not matched to conditions inferred from Med 10's

Class of condition and correspondence with Med 10's	Total number	Question number producing household interview report								
		11	12	13	14	15	16	17	25	Other
		Percent distribution								
All possibly chronic conditions	3,739	10.0	0.3	2.0	14.3	23.8	39.4	7.5	2.7	0.1
Matched to Med 10's	1,481	15.5	0.5	0.9	19.9	23.3	30.0	3.4	6.3	0.1
Unmatched to Med 10's	2,258	6.3	0.1	2.7	10.6	24.1	45.6	10.1	0.3	0.1
Checklist without qualification (Class 1)	2,185	7.6	0.2	0.8	16.1	22.7	45.3	5.3	2.0	0.0
Matched to Med 10's	826	13.6	0.2	0.6	24.3	23.8	31.6	0.8	4.8	0.1
Unmatched to Med 10's	1,359	4.0	0.2	0.9	11.0	22.0	53.6	7.9	0.3	-
Checklist with qualification (Class 2)	898	9.4	-	3.5	6.2	25.6	41.1	13.3	1.0	-
Matched to Med 10's	340	15.9	-	1.8	10.3	29.7	33.8	6.8	1.8	-
Unmatched to Med 10's	558	5.4	-	4.5	3.8	23.1	45.5	17.2	0.5	-
Nonchecklist (Class 3)	656	18.6	0.8	4.1	19.4	24.8	17.7	7.0	7.2	0.5
Matched to Med 10's	315	20.3	1.6	1.0	18.7	14.9	21.9	6.7	14.9	-
Unmatched to Med 10's	341	17.0	-	7.0	19.9	34.0	13.8	7.3	-	0.9

Cuestion 11. Were you sick at any time last week or the week before?
12. Last week or the week before did you have any accidents or injuries, either at home or away from home?
13. Last week or the week before did you feel any ill effects from an earlier accident or injury?
14. Last week or the week before did you take any medicine or treatment for any condition (besides ... which you told me about)?
15. At the present time do you have any ailments or conditions that have continued for a long time? (If "No") Even though they don't bother you all the time?
16. Has ... had any of these conditions during the past 12 months? (Card A)
17. Does ... have any of these conditions? (Card B)
25. During the past 12 months has ... been a patient in a hospital overnight or longer?

Table 21. Medical care reported in relation to conditions reported on household interview—all possibly chronic conditions according to ISC designation—by class of condition and whether or not matched to conditions inferred from Med 10's

Class of condition and correspondence with Med 10's	Total number of conditions	Percent of survey-reported conditions					
		Medically attended ever[1]		Last seen by doctor[2]		Last seen in study year by doctor of specified status[3]	
		Yes	No	Within study year	Before study year	H.I.P.	Non-H.I.P.
All possibly chronic conditions-----	3,739	91.4	7.9	58.8	19.7	44.3	12.6
Matched to Med 10's----------	1,481	97.6	1.7	74.8	6.1	65.6	7.2
Unmatched to Med 10's----------	2,258	87.4	12.0	48.3	28.6	30.3	16.2
Checklist without qualification (Class 1)--	2,185	90.9	8.3	62.3	19.5	47.5	12.9
Matched to Med 10's----------	826	98.4	0.8	81.4	6.8	73.8	5.9
Unmatched to Med 10's----------	1,359	86.4	12.9	50.8	27.2	31.5	17.1
Checklist with qualification (Class 2)-----	898	90.9	8.9	52.3	24.4	37.3	13.0
Matched to Med 10's----------	340	97.9	1.8	72.9	7.1	59.7	10.3
Unmatched to Med 10's----------	558	86.6	13.3	39.8	34.9	23.7	14.7
Nonchecklist(Class 3)----------	656	93.9	5.0	55.8	14.0	43.1	11.1
Matched to Med 10's----------	315	95.2	3.8	59.7	3.5	50.5	7.0
Unmatched to Med 10's----------	341	92.7	6.2	52.2	23.8	36.4	15.0

[1] Percent for which fact of medical attendance was unknown or unreported is not shown in table.

[2] Percent last seen by doctor within study year, plus percent last seen by doctor before study year, plus percent for which date of last doctor contact was unknown or unreported, not shown in table, equal total medically attended conditions.

[3] Percent last seen in study year by H.I.P. doctor, plus percent last seen in study year by non-H.I.P. doctor, plus percent last seen in study year by doctor of unknown H.I.P. status, not shown in table, equal total conditions last seen by doctor in study year.

Table 22. Percent of conditions reported as producing disability, bed disability, and time lost in two weeks preceding household interview—all possibly chronic conditions according to ISC designation—by class of condition and whether or not matched to conditions inferred from Med 10's

Class of condition and correspondence with Med 10's	Total number of conditions	Percent of conditions								
		Disability			Bed-disability			Time lost		
		Yes	No	Unknown	Yes	No	Unknown	Yes	No	Unknown or inapplicable[1]
All household interview-reported conditions	3,739	8.7	87.7	3.6	4.6	91.6	3.8	3.2	0.6	96.2
Matched to Med 10's	1,481	11.2	81.7	7.1	6.2	86.5	7.3	5.0	0.9	94.1
Unmatched to Med 10's	2,258	7.1	91.6	1.3	3.6	95.0	1.5	2.0	0.4	97.6
Checklist without qualification (Class 1)	2,185	6.6	90.2	3.2	3.0	93.5	3.5	2.6	0.3	97.1
Matched to Med 10's	826	9.8	84.5	5.7	4.5	89.5	6.1	4.4	0.6	95.0
Unmatched to Med 10's	1,359	4.6	93.7	1.7	2.1	96.0	2.0	1.5	0.1	98.4
Checklist with qualification (Class 2)	898	11.2	87.5	1.2	6.3	92.4	1.2	3.9	0.3	95.8
Matched to Med 10's	340	15.0	82.6	2.4	9.4	88.2	2.4	7.1	0.6	92.4
Unmatched to Med 10's	558	9.0	90.5	0.5	4.5	95.0	0.5	2.0	0.2	97.8
Nonchecklist (Class 3)	656	12.3	79.6	8.1	7.8	84.1	8.1	4.3	1.8	93.9
Matched to Med 10's	315	10.8	73.3	15.9	7.3	76.8	15.9	4.4	1.9	93.7
Unmatched to Med 10's	341	13.8	85.3	0.9	8.2	90.9	0.9	4.1	1.8	94.1

[1] "Time lost" is inapplicable if no disability was associated with condition, if person (adult) with condition would not have been working or going to school, or if person with condition was less than 6 years of age.

Table 23. All household survey-reported conditions coded "chronic" by National Health Survey by diagnosis reported on household interview and by whether or not matched to conditions inferred from Med 10's

	Survey-reported diagnosis (Recode #3)	Total	Matched to Med 10-inferred conditions	Unmatched to Med 10-inferred conditions
	All household survey-reported conditions coded chronic-	3,523	1,275	2,248
01	Tuberculosis, all forms	12	-	12
02	Malignant neoplasms	5	4	1
03	Benign and unspecified neoplasms	45	24	21
04	Asthma and hay fever	470	228	242
05	Other allergies	161	64	97
06	Diabetes mellitus	53	37	16
07	Anemia	17	7	10
08	Headache and migraine	60	10	50
09	Mental illness	44	17	27
10	Ill-defined mental and nervous trouble	59	22	37
11	Heart disease	126	71	55
12	Hypertension without heart involvement	152	70	82
13	Varicose veins	128	23	105
14	Hemorrhoids	178	35	143
15	Other diseases of circulatory system	53	20	33
16	Sinusitis	204	38	166
17	Bronchitis	75	12	63
18	Other diseases of respiratory system	75	20	55
19	Ulcer of stomach and duodenum	76	31	45
20	Hernia	64	27	37
21	Diseases of the gallbladder	42	20	22
22	Constipation	3	3	-
23	Other diseases of the digestive system	54	21	33
24	Menstrual disorders	12	4	8
25	Menopausal disorders	35	20	15
26	Other diseases of genitourinary system	63	29	34
27	Skin infections and diseases	70	30	40
28	Arthritis and rheumatism	304	137	167
29	Back conditions	173	50	123
30	Other conditions of muscles, bones and joints	199	50	149
31	Impairment of vision	28	11	17
32	Impairment of hearing	107	24	83
33	Paralysis of extremities and/or trunk	25	8	17
34	Absence of extremities except fingers and toes	4	-	4
35	Other chronic conditions	346	107	239
*51	Infective and parasitic diseases NEC	13	4	9
*52	Endocrine, metabolic, and nutritional diseases NEC	76	27	49
*54	Diseases and conditions of brain, spinal cord and nerves NEC, including impairments due to them, except paralysis	114	33	81
*55	Diseases of eye and ear NEC	82	22	60
*56	Congenital malformations	1	1	-
*57	Residuals of injuries NEC	18	3	15
*58	Impairments NEC	20	5	15
*59	Symptoms and ill-defined conditions NEC	22	12	10
XX	Uncoded	1	1	-

* Breakdown of National Health Survey category 35 of Recode No. 3 for this study.

Table 24. Persons classified by number of possibly chronic conditions inferred from Med 10's by number of these reported on household interview and respondent status

Number of possibly chronic conditions inferred from Med 10's in study year and respondent status	Total persons		Percent of total persons for whom specified number of conditions were correspondingly reported on household interview					
	Number	Percent	0	1	2	3	4	5+
All persons								
One or more conditions	2,934	100.0	59.7	32.2	6.3	1.4	0.3	0.0
1	1,818	100.0	68.9	31.1	...	...	...	...
2	734	100.0	51.1	35.0	13.9	...	...	...
3	237	100.0	36.7	34.2	20.3	8.9	...	...
4	97	100.0	26.8	34.0	20.6	14.4	4.1	...
5+	48	100.0	25.0	18.8	33.3	10.4	10.4	2.1
Self-respondents								
One or more conditions	1,260	100.0	53.4	33.9	9.8	2.4	0.4	0.1
1	674	100.0	67.4	32.6	...	...	...	...
2	356	100.0	43.8	38.2	18.0	...	...	...
3	133	100.0	33.1	33.1	22.6	11.3	...	...
4	64	100.0	17.2	35.9	26.6	17.2	3.1	...
5+	33	100.0	24.2	12.1	39.4	12.1	9.1	3.0
Relatives of respondents								
One or more conditions	1,659	100.0	64.3	31.2	3.7	0.6	0.2	-
1	1,130	100.0	69.6	30.4	...	...	...	...
2	378	100.0	57.9	32.0	10.1	...	...	...
3	103	100.0	40.8	35.9	17.5	5.8	...	...
4	33	100.0	45.5	30.3	9.1	9.1	6.1	...
5+	15	100.0	26.7	33.3	20.0	6.7	13.3	-

Table 25. Percent of possibly chronic conditions inferred from Med 10's reported on household interview in persons classified by number of conditions inferred from Med 10's and respondent status

Number of possibly chronic conditions inferred from Med 10's in study year and respondent status	Number of persons	Number of conditions inferred from Med 10's	Percent of conditions correspondingly reported on household interview
All persons			
One or more conditions	2,934	4,645	31.9
1	1,818	1,818	31.1
2	734	1,468	31.4
3	237	711	33.8
4	97	388	33.8
5+	48	260	31.5
Self-respondents			
One or more conditions	1,260	2,222	35.6
1	674	674	32.6
2	356	712	37.1
3	133	399	37.3
4	64	256	38.3
5+	33	181	33.1
Relatives of respondents			
One or more conditions	1,659	2,406	28.5
1	1,130	1,130	30.4
2	378	756	26.1
3	103	309	29.4
4	33	132	25.0
5+	15	79	27.8

Table 26. Percent of nonchronic conditions inferred from Med 10's for two weeks preceding interview reported on survey by broad diagnostic category, volume, and place of service

Number of Med 10 services in two weeks and diagnostic category	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Total	Place of service		Total	Place of service	
		Office only	1 or more home or hospital services		Office only	1 or more home or hospital services
All conditions						
Total	201	132	69	63.2	56.1	76.8
One service only	163	111	52	62.0	55.9	75.0
More than one service	38	21	17	68.4	57.1	82.4
Infective and parasitic diseases						
Total	28	20	8	64.3	60.0	(*)
One service only	26	19	7	61.5	57.9	(*)
More than one service	2	1	1	(*)	(*)	(*)
Acute conditions of eye and ear						
Total	25	19	6	40.0	36.8	(*)
One service only	22	19	3	45.5	36.8	(*)
More than one service	3	-	3	(*)	...	(*)
Acute respiratory conditions						
Total	86	41	45	73.3	63.4	82.2
One service only	75	40	35	70.7	65.0	77.1
More than one service	11	1	10	(*)	(*)	(*)
Accidental injuries						
Total	33	30	3	57.6	53.3	(*)
One service only	17	16	1	58.8	56.3	(*)
More than one service	16	14	2	56.3	(*)	(*)
All other nonchronic conditions						
Total	29	22	7	58.6	59.1	(*)
One service only	23	17	6	52.2	52.9	(*)
More than one service	6	5	1	(*)	(*)	(*)

Table 27. Percent of nonchronic conditions inferred from Med 10's for two weeks preceding interview reported on survey by volume of service, relationship to respondent, and sex of respondent

Relationship to respondent and sex of respondent	Number of conditions inferred from Med 10's			Percent correspondingly reported on household interview		
	Total	Number of Med 10 service in 2 weeks		Total	Number of Med 10 service in 2 weeks	
		One only	More than one		One only	More than one
All conditions						
Total	201	163	38	63.2	62.0	68.4
Male respondent	37	24	13	70.3	58.3	(*)
Female respondent	164	139	25	61.6	62.6	56.0
Self-respondent						
Total	58	44	14	60.3	54.5	(*)
Male	14	9	5	(*)	(*)	(*)
Female	44	35	9	56.8	54.3	(*)
Relatives of respondents						
Total	143	119	24	64.3	64.7	62.5
Male respondent	23	15	8	69.6	60.0	(*)
Female respondent	120	104	16	63.3	65.4	50.0
Spouse	17	13	4	47.1	(*)	(*)
Child	124	104	20	66.9	65.4	75.0
Other relative	2	2	-	(*)	(*)	...

Table 28. Correspondence in reporting doctor contact in the two weeks preceding household interview by respondent status, sex, and age

Respondent status and sex	Number of persons for whom H.I.P. doctor noted Med 10 service				Percent for whom doctor contact in 2 weeks was reported on household interview[1]			
	All ages	Under 15	15-44	45+	All ages	Under 15	15-44	45+
Both sexes								
Total	840	240	352	248	63.9	59.2	69.9	60.1
Self-respondents	370	-	203	167	64.6	-	72.9	54.5
Relatives of respondents	467	238	149	80	63.4	59.2	65.8	71.3
Male								
Total	367	130	130	107	62.9	58.5	63.1	68.2
Self-respondents	83	-	32	51	69.9	-	75.0	66.7
Relatives of respondents	283	129	98	56	61.1	58.9	59.2	69.6
Female								
Total	473	110	222	141	64.7	60.0	73.9	53.9
Self-respondents	287	-	171	116	63.1	-	72.5	49.1
Relatives of respondents	184	109	51	24	66.8	59.6	78.4	75.0

[1] Doctor contact in the 2 weeks was unknown or unreported on household interview in only 2 of the 840 persons noted on the Med 10's as seen by an H.I.P. doctor. No doctor contact in the 2 weeks was reported for 301 persons.

Table 29. Percent of hospitalizations reported on household interview by age of person hospitalized, respondent status, and sex of respondent

Relationship to respondent and sex of respondent	Number of episodes				Percent correspondingly reported on household interview			
	All ages	Under 15	15-44	45+	All ages	Under 15	15-44	45+
All respondents								
Total	350	49	211	90	87.4	87.8	88.6	84.4
Male respondent	77	6	38	33	85.7	(*)	89.5	84.8
Female respondent	273	43	173	57	87.9	90.7	88.4	84.2
Self-respondents								
Total	205	-	150	55	87.8	...	87.3	89.1
Male	38	-	9	29	86.8	...	(*)	86.2
Female	167	-	141	26	88.0	...	87.2	92.3
Relatives of respondents								
Total	145	49	61	35	86.9	87.8	91.8	77.1
Male respondent	39	6	29	4	84.6	(*)	89.7	(*)
Female respondent	106	43	32	31	87.7	90.7	93.8	77.4
Child	51	49	2	-	88.2	87.8	(*)	...
Male respondent	6	6	-	-	(*)	(*)	...	...
Female respondent	45	43	2	-	91.1	90.7	(*)	...
Spouse	87	-	53	34	85.1	...	90.6	76.5
Male respondent	28	-	24	4	85.7	...	87.5	(*)
Female respondent	59	-	29	30	84.7	...	93.1	76.7

Table 30. Percent of hospitalizations reported on household interview by family income, date of hospital admission, duration of hospital stay, and respondent status

Family income, date of hospital admission, and duration of hospital stay	Number of episodes			Percent correspondingly reported on household interview		
	All	Respondent status		All	Respondent status	
		Self	Other		Self	Other
Family income						
Under $4,000	55	36	19	72.7	77.8	63.2
$4,000-4,999	66	44	22	89.4	88.6	90.9
$5,000-6,999	138	73	65	90.6	93.2	87.7
$7,000+	67	36	31	88.1	83.3	93.5
Date of hospital admission[1]						
Before July 1957	42	26	16	50.0	46.2	56.3
July-September 1957	75	56	19	80.0	83.9	68.4
October-December 1957	82	41	41	96.3	100.0	92.7
January-March 1958	82	43	39	97.6	97.7	97.4
April-June 1958	69	39	30	95.7	97.4	93.3
Duration of hospital stay						
1 night only	36	10	26	88.9	(*)	92.3
2 nights	19	6	13	89.5	(*)	(*)
3-4 nights	62	38	24	83.9	81.6	87.5
5-7 nights	127	83	44	85.0	85.5	84.1
8-14 nights	70	47	23	91.4	95.7	82.6
15+ nights	36	21	15	91.7	95.2	86.7

[1] The interviewing took place over a period of roughly 2 months--from May 2-July 6, 1958. If the dates of hospital admission are to be expressed as approximate intervals from date of admission to hospital to date of household interview, there are overlaps in the classes, but rough equivalents are as follows:

Date of admission to hospital	Approximate interval to household interview
Before July 1957	10 to 11 months
July-September 1957	8 to 11 months
October-December 1957	5 to 8 months
January-March 1958	2 to 5 months
April-June 1958	Less than 1 to 2 months

Table 31. Comparison of average duration of hospital stay from record source with that from household interview reports by selected characteristics

Characteristic	Number of episodes	Average number of nights in hospital		Percentage difference (household interview average minus record average as percent of latter)
		Hospital record or AHS	Household interview	
All respondents	470	9.63	9.83	2.1
Male respondent	103	14.45	14.58	0.9
Female respondent	367	8.28	8.50	2.7
Self-respondents	258	9.16	9.32	1.7
Male	49	14.92	15.98	7.1
Female	209	7.81	7.76	-0.6
Relatives of respondents	212	10.20	10.45	2.5
Male respondent	54	14.02	13.31	-5.1
Female respondent	158	8.89	9.47	6.5
Spouse	118	12.24	12.61	3.0
Male respondent	30	14.77	13.73	-7.0
Female respondent	88	11.38	12.23	7.5
Child	70	5.04	5.17	2.6
Other relative	24	15.21	15.21	0.0
Education of family head				
Under 9 years	94	12.50	12.51	0.1
9-12 years	228	8.52	8.82	3.5
12+ years	125	9.97	10.06	0.9
Date of hospital admission				
Before July 1957	31	9.48	9.81	3.5
July-September 1957	107	12.02	12.52	4.2
October-December 1957	111	8.95	9.16	2.3
January-March 1958	132	8.90	9.17	3.0
April-June 1958	89	8.72	8.42	-3.4

Table 32. Comparison of percent distribution of survey-reported hospitalizations by duration of stay from record source and from respondent reports

Nights in hospital	Hospital record or Associated Hospital Service	Household interview reports
All episodes		
Number	470	470
Percent	100.0	100.0
1 night	10.0	10.4
2 nights	4.9	3.4
3-4 nights	13.6	16.0
5-7 nights	32.3	30.6
8-14 nights	24.5	25.1
15-30 nights	11.5	11.3
31+ nights	3.2	3.2

APPENDIX I

SELECTED PARTS OF STUDY QUESTIONNAIRE

Form NHS-1-S-3 (N.Y.)
(3-13-58)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
ACTING AS COLLECTING AGENT FOR THE
U.S. PUBLIC HEALTH SERVICE

NATIONAL HEALTH SURVEY

3. Race (Check one box for each person)	☐ White ☐ Negro ☐ Other
4. Sex (Check one box for each person)	☐ Male ☐ Female
5. How old were you on your last birthday?	Age: ☐ Under 1 year
6. Where were you born? (Record state or foreign country)	State or foreign country
If 14 years old or over, ask: 7. Are you now married, widowed, divorced, separated or never married? (Check one box for each person)	☐ Under 14 years ☐ Married ☐ Divorced ☐ Widowed ☐ Separated ☐ Never married
If 14 years old or over, ask: 8. What is the highest grade you completed in school? (Circle highest grade completed or check "None")	☐ Under 14 years Elem: 1 2 3 4 5 6 7 8 High: 1 2 3 4 College: 1 2 3 4 5+ ☐ None

We are interested in all kinds of illness, whether serious or not -- 11. Were you sick at any time LAST WEEK OR THE WEEK BEFORE? (a) What was the matter? (b) Anything else?	☐ Yes	☐ No
12. Last week or the week before did you have any accidents or injuries, either at home or away from home? (a) What were they? (b) Anything else?	☐ Yes	☐ No
13. Last week or the week before did you feel any ill effects from an earlier accident or injury? (a) What were these effects? (b) Anything else?	☐ Yes	☐ No
14. Last week or the week before did you take any medicine or treatment for any condition (besides ... which you told me about)? (a) For what conditions? (b) Anything else?	☐ Yes	☐ No
15. AT THE PRESENT TIME do you have any ailments or conditions that have continued for a long time ? (If "No") Even though they don't bother you all the time? (a) What are they? (b) Anything else?	☐ Yes	☐ No
16. Has anyone in the family - you, your--, etc. - had any of these conditions DURING THE PAST 12 MONTHS? (Read Card A, condition by condition; record any conditions mentioned in the column for the person)	☐ Yes	☐ No
17. Does anyone in the family have any of these conditions? (Read Card B, condition by condition; record any conditions mentioned in the column for the person)	☐ Yes	☐ No

MEDICAL CARE

18. (a) LAST WEEK OR THE WEEK BEFORE did anyone in the family - you--, your--, etc.-talk to a doctor or go to a doctor's office, or clinic? Anyone else?
If "Yes"
(b) How many times during the past 2 weeks?

☐ Yes ☐ No (Skip to q.20)

_____ No. of times

(c) Where did you talk to the doctor?
(d) How many times at --(home, office, clinic, etc)?
(Record total number of times for each type of place)

Place	Times
At home	
At office	
Hospital clinic	
Company or industry	
Over telephone	
Other (Specify)	

(e) What is the doctor's name and address?
(Enter full name, street address and borough or town. Enter State if outside New York)

19. What did you have done?
If more than one visit or telephone call:

What did you have done on the { first / second / etc. } visit (or telephone call)?

1	2	3	
☐	☐	☐	Diag. or treatment
☐	☐	☐	Pre/post-natal care
☐	☐	☐	Gen'l check-up
☐	☐	☐	Immun./Vacc.
☐	☐	☐	Eye exam.(glasses)
☐	☐	☐	Other (Specify

Table I - ILLNESSES, IMPAIRMENTS AND ACCIDENTS

Line No.	Col. No. of person (a)	Question No. (b)	Did you ever talk to a doctor about ...? (c)	What did the doctor say it was? -- did he use any medical terms? (If doctor not talked to - "No," in col.(c) - record respondent's description) (If ill-effects of earlier accident also fill Table A) For an accident or injury occurring during past 2 weeks, ask: What part of the body was hurt? What kind of injury was it? Anything else? (Also, fill Table A) (D-1)	If an impairment or symptom, ask: What was the cause of ...? (If cause is already entered in (d-1) circle "X" without asking the question) (If accident or injury, fill Table A) (d-2)	(If eye trouble of any kind and 6 years old or over, ask): Can you read ordinary newspaper print with glasses? (d-3)	What kind of ... trouble is it? (If kind of trouble already entered in col. (d-1), circle "X" without asking the question) (d-4)	What part of the body was affected? (If part of body can be determined from entries in cols. (d-1) through (d-4), circle "X" without asking the question) (d-5)	LAST WEEK OR THE WEEK BEFORE did... cause you to cut down on your usual activities for as much a day? Check one: No (go to col. (k)) (e)	Yes (f)
1			☐ Yes ☐ No	X	X	☐ Yes ☐ No	X	X		

Table II - HOSPITALIZATION DURING PAST 12 MONTHS

Line No.	Col. No. of person (a)	Question No. (b)	When did you enter the hospital? (Month, Year) (c)	How many days were you in the hospital, not counting the day you left? (d)	To Interviewer: How many of these--days were in the past 12 months? (e)	To Interviewer: How many of these--days were during the past 2 weeks, ending last Sunday (f)	To Interviewer: Was this person still in the hospital last night? (Verify that no hosp. days after Sun. are in col. d) (g)	What was the matter? Anything else? (Record each condition in same detail as called for in Table I. If condition is result of accident or injury, also fill Table A) (h)
1			Mo. _____ Year _____	_____ Days	☐ All or _____ Days	_____ Days	☐ Yes ☐ No	

Card A

NATIONAL HEALTH SURVEY

Check List of Chronic Conditions

1. Asthma
2. Any allergy
3. Tuberculosis
4. Chronic bronchitis
5. Repeated attacks of sinus trouble
6. Rheumatic fever
7. Hardening of the arteries
8. High blood pressure
9. Heart trouble
10. Stroke
11. Trouble with varicose veins
12. Hemorrhoids or piles
13. Gallbladder or liver trouble
14. Stomach ulcer
15. Any other chronic stomach trouble
16. Kidney stones or other kidney trouble
17. Arthritis or rheumatism
18. Prostate trouble
19. Diabetes
20. Thyroid trouble or goiter
21. Epilepsy or convulsion of any kind
22. Mental or nervous trouble
23. Repeated trouble with back or spine
24. Tumor or cancer
25. Chronic skin trouble
26. Hernia or rupture

MEDICAL CARE--Continued

20. If "No" to q. 18a, ask: How long has it been since you last talked to a doctor?	_____ Mos. or _____ Yrs. ☐ Less than 1 mo. ☐ Never
21. Do you have a doctor you USUALLY go to? If "Yes" (b) What is his name and address? (Full name and street address, borough or town Enter State if outside New York)	☐ Yes ☐ No
23. How long has it been since you went to a dentist?	_____ Mos. or _____ Yrs. ☐ Less than 1 mo. ☐ Never

HOSPITAL CARE

25. (a) DURING THE PAST 12 MONTHS has anyone in the family been a patient in a hospital overnight or longer? If "Yes": (b) How many times were you in the hospital?	☐ Yes (Table II) ☐ No _____ No. of times
26. (a) During the past 12 months has anyone in the family been a patient in a nursing home or sanitarium? If "Yes": (b) How many times were you in a nursing home or sanitarium?	☐ Yes (Table II) ☐ No _____ No. of times

27. During the past 12 months in which group did the total income of your family fall, that is your's, your --'s, etc.? (Show Card H) Include income from all sources, such as wages, salaries, rents from property, pensions, help from relatives, etc.	Group No.

Table I - ILLNESSES, IMPAIRMENTS AND ACCIDENTS

How many days including the 2 week-ends? (g)	How many of these -- days were you in bed all or most of the day? (h)	If 6 years old or over, ask: Last week or the week before would you have been working at a job or business (going to school) except for ...? (i)	If "Yes" in col. (i): How many days did ... keep you from work (going to school)? (j)	Did you first notice ... DURING THE PAST 3 MONTHS or before that time? Check one: Before 3 months (Go to col. (n)) (k)	During 3 months → (l)	Did ... start during the past 2 weeks or before that time? (If during past 2 weeks, ask): Which week, last week or the week before? (m)	To interviewer: If Col. (k) is checked or the condition is on either one of Cards A or B, continue; otherwise; STOP (aa)	Did you first notice ... DURING THE PAST 12 MONTHS or before that time (If during past 12 months, ask): Which month? (n)	When did you last talk to a doctor about ...? (Month and year - Year only if prior to 1956) (o)	What is the doctor's name and address? (Enter full name and street address and borough or town. Enter State if outside New York) (X)	Have you talked to any other doctors about ... during the past 12 months? (Y)
_____ Days	☐ Days or ☐ None	☐ Yes ☐ No	☐ Days or ☐ None			☐ Last ☐ Before 2 wks. ☐ Week before		Mo._____ Yr._____ ☐ Before ☐ Birth	Mo._____ Yr._____ ☐ No Dr.	☐ No Dr.	☐ Yes ☐ No ☐ No Dr.

Table II - HOSPITALIZATION DURING PAST 12 MONTHS

Were any operations performed on you during this stay in the hospital? If "Yes": (a) What was the operation? (b) Any other operations? (i)	What is the name and address of the hospital you were in? (Enter name, borough or town and State, if outside New York) (j)	Line No.
☐ Yes → ☐ No		1

Card B

NATIONAL HEALTH SURVEY

Check List of Impairments

1. Deafness or serious trouble with hearing
2. Serious trouble with seeing, even with glasses
3. Condition present since birth, such as cleft palate or club foot
4. Stammering or other trouble with speech
5. Missing fingers, hand, or arm
6. Missing toes, foot, or leg
7. Cerebral palsy
8. Paralysis of any kind
9. Any permanent stiffness or deformity of the foot or leg, fingers, arm or back

APPENDIX II: DETAILED DIAGNOSTIC TABLES

Table A. Specificity of match and duplication of match—percent distribution of household interview-reported conditions in correspondence with Med 10-inferred conditions by type of match, and by number of Med 10-inferred conditions to which household interview report was matched, each class of condition and diagnostic category[1]

Class of condition and diagnostic category (recode #3)	Total number of conditions	Type of match[2]			Number of other Med 10 conditions matched by household interview report			
		1	2	3	None	1	2	3
All Med 10-inferred conditions matched by household interview reports	1,481	51.5	11.3	37.2	86.1	13.3	0.4	0.2
Checklist without qualification (Class 1)	826	63.3	11.0	25.7	89.6	9.8	0.4	0.2
03 Benign and unspecified neoplasms	29	41.4	20.7	37.9	75.9	17.2	3.4	3.4
04 Asthma and hay fever	205	76.6	13.2	10.2	94.6	5.4	-	-
05 Other allergies	47	27.7	-	72.3	85.1	14.9	-	-
06 Diabetes mellitus	37	100.0	-	-	100.0	-	-	-
09 Mental illness	55	18.2	-	81.8	80.0	18.2	1.8	-
11 Heart disease	98	43.9	29.6	26.5	98.0	2.0	-	-
12 Hypertension without heart involvement	54	85.2	-	14.8	87.0	11.1	1.9	-
13 Varicose veins	22	86.4	-	13.6	77.3	22.7	-	-
14 Hemorrhoids	29	100.0	-	-	96.6	3.4	-	-
19 Ulcer of stomach and duodenum	36	72.2	-	27.8	83.3	16.7	-	-
20 Hernia	31	100.0	-	-	100.0	-	-	-
21 Diseases of the gallbladder	22	72.7	18.2	9.1	95.5	4.5	-	-
(26) Other diseases of genitourinary system	18	55.6	22.2	22.2	94.4	5.6	-	-
(28) Arthritis and rheumatism	55	69.1	5.5	25.5	83.6	16.4	-	-
(30) Other conditions of muscles, bones and joints	24	29.2	41.7	29.2	75.0	25.0	-	-
Checklist with qualification (Class 2)	340	34.7	15.3	50.0	83.5	16.5	-	-
16 Sinusitis	31	74.2	-	25.8	87.1	12.9	-	-
(23) Other diseases of the digestive system	31	6.5	48.4	45.2	87.1	12.9	-	-
27 Skin infections and diseases	87	19.5	8.0	72.4	88.5	11.5	-	-
(28) Arthritis and rheumatism	21	4.8	42.9	52.4	66.7	33.3	-	-
(29) Back conditions	75	44.0	9.3	46.7	86.7	13.3	-	-
(30) Other conditions of muscles, bones and joints	34	14.7	14.7	70.6	82.4	17.6	-	-
Nonchecklist (Class 3)	315	38.7	7.6	53.7	79.7	19.0	1.0	0.3
(54) Diseases and conditions of brain, spinal cord and nerves NEC, including impairments due to them, except paralysis	29	6.9	3.4	89.7	62.1	37.9	-	-
(55) Diseases of eye and ear NEC	34	38.2	8.8	52.9	64.7	35.3	-	-
18 Other diseases of respiratory system	69	56.5	8.7	34.8	85.5	14.5	-	-
(23) Other diseases of the digestive system	25	20.0	16.0	64.0	96.0	4.0	-	-
(26) Other diseases of genitourinary system	36	27.8	13.9	58.3	72.2	19.4	5.6	2.8
(30) Other conditions of muscles, bones and joints	42	45.2	4.8	50.0	90.5	9.5	-	-
58 Impairments NEC	17	29.4	-	70.6	82.4	17.6	-	-

[1]Recode #3 categories within a given class of condition with less than 15 conditions reported on household interview in correspondence with Med 10-inferred conditions have been omitted from this table.

[2]Definition, type of match:

Type 1 - Survey-reported condition falls into the same recode #1 category as the Med 10 diagnosis.

Type 2 - Survey-reported condition falls into the same recode #3 category as the Med 10 diagnosis, but not into the same recode #1 category.

Type 3 - Survey-reported condition or symptom is consistent with or associated with the Med 10 diagnosis, but is not codable to the recode #1 or #3 category to which the Med 10 diagnosis belongs.

( ) Recode #3 category components of which have been assigned to more than one class of condition.

Table B. Comparison of frequencies of specified diagnostic categories, physician's diagnoses, and respondent diagnoses—all possibly chronic conditions inferred from Med 10's for which conditions were correspondingly reported on household interviews, coded chronic by National Health Survey, ranked by magnitude of ratio between number from respondent and number from physician, each diagnostic category[1]

Diagnostic category (recode #3)	Number of conditions in specified category according to diagnosis from		Ratio, household interview frequency to Med 10 frequency	Rank
	Med 10's	Household interview		
10 Ill-defined mental and nervous trouble	3	22	7.33	1
25 Menopausal disorders	8	20	2.50	2
15 Other diseases of circulatory system	10	20	2.00	3
28 Arthritis and rheumatism	73	137	1.88	4
32 Impairment of hearing	14	24	1.71	5
*52 Endocrine, metabolic, and nutritional diseases NEC	16	27	1.69	6
05 Other allergies	46	64	1.39	7
12 Hypertension without heart involvement	51	70	1.37	8
16 Sinusitis	28	38	1.36	9
14 Hemorrhoids	26	35	1.35	10
03 Benign and unspecified neoplasms	18	24	1.33	11
13 Varicose veins	19	23	1.21	12
20 Hernia	23	27	1.17	13
04 Asthma and hay fever	204	228	1.12	14
06 Diabetes mellitus	37	37	1.00	15
21 Diseases of the gallbladder	20	20	1.00	15
19 Ulcer of stomach and duodenum	34	31	0.91	16
35 Other chronic conditions	129	108	0.84	17
*54 Diseases and conditions of brain, spinal cord and nerves NEC, including impairments due to them, except paralysis	42	33	0.79	18
26 Other diseases of genitourinary system	37	29	0.78	19
11 Heart disease	93	71	0.76	20
29 Back conditions	70	50	0.71	21
30 Other conditions of muscles, bones and joints	85	50	0.59	22
18 Other diseases of respiratory system	35	20	0.57	23
*55 Diseases of eye and ear NEC	39	22	0.56	24
23 Other diseases of the digestive system	45	21	0.47	25
27 Skin infections and diseases	67	30	0.45	26
09 Mental illness	45	17	0.38	27

[1] Omitted are diagnostic categories with less than 15 conditions from both physician-source and respondent-source.

* Subdivision of category 35 of recode #3.

APPENDIX III
SAMPLING

Most statistics in the study are combined ratio estimates of the form

$r = \frac{X'}{Y'}$ where X' and Y' are estimates of universe aggregates. In many cases this will be the proportion of conditions of a specified type reported on household interview. The appropriate statistical model for variance estimation is, therefore, a stratified sample of families with a combined ratio estimate statistic. The estimating formulas used are fully discussed in Section 4, Chapter 5, of Sample Survey Methods and Theory, Volume I, Hansen, Hurwitz, and Madow, and in other modern statistics textbooks.

Modern electronic processing equipment (UNIVAC) was used to accumulate the data necessary for variance estimation and to perform the necessary computations. A general UNIVAC program was supplemented by a series of short instruction programs which specified the variable or variables to be processed. This specification usually required about five minutes of programing time for each variance. Using this method, it was possible to produce variances for those variables which seemed most useful for such examination as indicated by the basic punch card tabulations.

Although a large number of variances were computed for use in specific areas of the analysis, those shown in the following table are sufficient to indicate the ranges of values commonly encountered in the study. In general, the magnitudes of these were satisfactory, making it possible to consider differences having relvariances of less than one percent for many groups of interest.

Correspondence in reporting on household interview and variances, selected classifications

Chronic conditions	Number of chronic conditions in sample*	Proportion reported on household interview	Variance of proportion reported
Class 1 among male respondents	560	.465	.000686
Two weeks or less between last service and household interview	457	.575	.000880
Ten or more related Med-10 services during study year	361	.795	.001295
Asthma and hay fever	269	.762	.001008
Diabetes mellitus	60	.617	.008008
Menopausal disorders	37	.297	.012847
Persons	**Number of persons in sample***	**Proportion of people reporting doctor contact in corresponding period**	**Variance of proportion reporting**
Self-respondents age 45 and over seen by H.I.P. physician during two-week period prior to household interview	167	.545	.002690
Persons in families in which the family head completed less than 9 years of schooling, seen by a H.I.P. physician during study year	1,013	.753	.000521
Hospitalization episodes	**Number of hospitalization episodes in sample***	**Proportion reported on household interview**	**Variance of proportion reported**
Among males for whom female responded	94	.862	.001640
Among females for whom male responded	31	.805	.012494

*Replicated to give each unit equal weight.

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