

**Program Activities and Progress, 1995-2000**

Demographic and Behavioral Sciences Branch

Center for Population Research

National Institute of Child Health and Human Development

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## **List of Acronyms**

|        |   |
|--------|---|
| AFDC   | Aid to Families with Dependent Children                       |
| ASPE   | Office of the Assistant Secretary for Planning and Evaluation |
| CASI   | Computer-assisted self-interviewing                           |
| CDC    | Centers for Disease Control and Prevention                    |
| CHNS   | China Health and Nutrition Survey                             |
| CPR    | Center for Population Research                                |
| CPS    | Current Population Survey                                     |
| CRMC   | Center for Research on Mothers and Children                   |
| DBSB   | Demographic and Behavioral Sciences Branch                    |
| ECLS-B | Early Childhood Longitudinal Study – Birth Cohort             |
| FDA    | Food and Drug Administration                                  |
| GIS    | Geographical Information Systems                              |
| HPV    | Human Papilloma Virus   |
| HUD    | Housing and Urban Development                                 |
| INS    | U.S. Immigration and Naturalization Service                   |
| MMP    | Mexican Migration Project                                     |
| MTO    | Moving to Opportunity   |
| NACHHD | National Advisory Child Health and Human Development Council  |
| NHANES | National Health and Nutrition Examination Survey              |
| NHLBI  | National Heart, Lung, and Blood Institute                     |
| NIA    | National Institute on Aging                                   |
| NIAID  | National Institute of Allergy and Infectious Diseases         |

|       |  |
|-------|--|
| NICHD | National Institute of Child Health and Human Development |
| NIEHS | National Institute of Environmental Health Sciences      |
| NIMH  | National Institute of Mental Health                      |
| NINR  | National Institute for Nursing Research                  |
| NIS   | New Immigrant Survey                                     |
| NLSY  | National Longitudinal Survey of Youth                    |
| NSF   | National Science Foundation                              |
| NSFH  | National Survey of Families and Households               |
| OAR   | Office of AIDS Research, NIH                             |
| OBSSR | Office of Behavioral and Social Science Research         |
| OBSSR | Office of Behavioral and Social Sciences Research        |
| PA    | Program Announcement                                     |
| RFA   | Request for Applications                                 |
| RLMS  | Russian Longitudinal Monitoring Survey                   |
| SEED  | Science and Ecology of Early Development                 |
| STD   | Sexually transmitted disease                             |
| TANF  | Temporary Assistance for Needy Families                  |

## I. OVERVIEW OF THE DBSB PROGRAM

The National Institutes of Health (NIH) exists to improve the health of our nation's people. Although most people think of this mission in terms of medical intervention in individual lives — a diabetic child treated; a stroke victim rehabilitated — the mission also requires an understanding of the dynamics that underlie health and well-being of groups and populations. A population perspective provides insights that can motivate investments in research on health and social problems, inform strategies for improving health, and contribute to understanding how broad social, economic, and cultural forces affect and are affected by the health of our population.

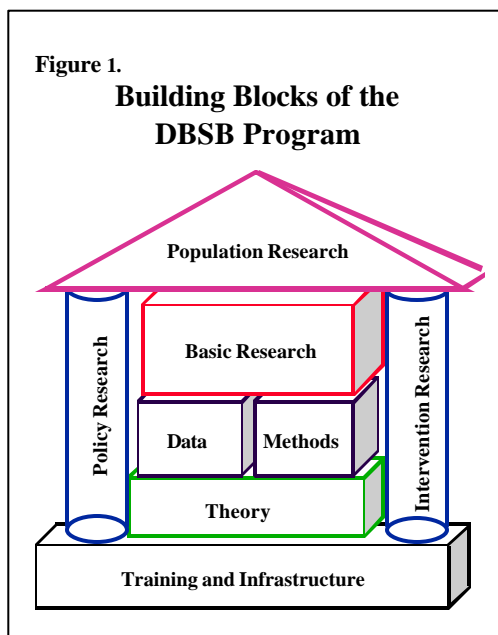
The Demographic and Behavioral Sciences Branch (DBSB) brings unique perspectives and resources to the National Institute of Child Health and Human Development (NICHD) and the NIH at large. Its mission is to provide a better understanding of population dynamics — how populations change in size, composition, and distribution; the complex social, economic, and cultural factors that cause populations to change; and the consequences of population change for health and well-being at the individual and societal levels. While the NICHD intramural researchers develop new vaccines, the DBSB supports research to tailor immunization programs in developing countries to the realities of rapid population growth. While National Heart, Lung, and Blood Institute (NHLBI) researchers study the cardiovascular responses to stress associated with low socioeconomic status, DBSB researchers examine the demographic and societal processes that create and maintain inequalities in our population. While studies supported by the NICHD's Child Development and Behavior Branch examine the impact of parent-child interaction on cognitive development, those supported by DBSB study the changes in the family that have profoundly altered children's experience of parenting and provide information to policy makers seeking to soften the negative effects of family change on the well-being and development of children. The central foci of the DBSB program — fertility, reproductive health, mortality and morbidity, migration, family and household structures, and population distribution and characteristics — are integrally intertwined with population health and well-being. Because the program brings a population-level perspective, it can serve as a complement to research programs that focus at the individual and cellular levels, and as a bridge to the needs of public policy related to health and well-being.

The DBSB accomplishes its mission by stimulating and supporting the “building blocks” essential to a successful extramural research program (Figure 1). The most fundamental of these is *training and infrastructure*. The vitality of population research depends on the interplay of many contributing disciplines, including economics, demography, sociology, anthropology, public health, psychology, history, and, increasingly, geography, medicine, and biology. Population centers and training programs provide a necessary complement to the discipline-oriented structures of universities. Centers furnish and coordinate research infrastructure, promote the cross-fertilization of ideas, and provide an institutional home for population research. The Branch's new “Population Research Infrastructure Program” (R24) expands the capacities of the previously funded P30/P50 Centers Program to include the ability to support seed programs, faculty development, and cooperative and translational activities. Center-based training programs foster the development of new generations of population scientists positioned to take advantage of multi-disciplinary perspectives and

tools. A new program, the Mentored Research Scientist Development Award (K01), will enable those who have recently received Ph.D.s to develop additional skills needed to succeed as independent investigators and will promote cross-training in disciplines relevant to population research. In 2000, the DBSB supported 12 population centers and 11 institutional training programs (see Appendix B). In addition, the Branch provides support for individual pre- and post-doctoral training in population research.

A second set of building blocks necessary for population research includes the development of a strong *theoretical foundation* and the *data* and analytic *methods* needed to test hypotheses suggested by theory. Theoretical development is a key ingredient of most DBSB-funded research, and, occasionally, the focus of such research. The data used in population research derive from censuses, surveys, vital registration, and other administrative record systems, observational studies, experimental and quasi-experimental studies, and computer simulations. Because demographic data are expensive to collect, the Branch emphasizes the use and leverage of existing data systems, and the sharing of all data collected with our support. The Branch also supports research to improve methodologies for measuring key

concepts, collecting data, conducting analyses, and developing inferences. Specific activities of the Branch with respect to theory development, data, and methodology are discussed further in sections II.E and II.F of this report.



The largest share of the Branch's effort and funds is directed toward supporting *basic research* on population processes and their social, economic, and cultural determinants and consequences. Section III of this report provides highlights of these research investments. It also highlights two additional types of research that apply the findings of basic population research to improving lives. The program in *intervention research* focuses mainly on the development and evaluation of theory-based behavioral interventions to reduce the risk of HIV infection and other sexually transmitted diseases. The program in *policy research* supports

research that informs public policy through scientific studies of demographic change, as well as research that assesses the impact of public policies on demographic behavior and population change.

The DBSB has been fortunate to collaborate with many other NIH and federal programs in pursuing its goals. Within the NICHD, the Branch has fostered joint activities with seven other extramural and two intramural programs. The DBSB has collaborated with the Behavioral and Social Research Program at the National Institute on Aging (NIA), the Office of AIDS Research at the National Institute of Mental Health (NIMH), and programs in at least 13 other NIH Institutes, Centers, and Offices. Activities have included the co-funding of grants, co-sponsoring of program initiatives, and organization of conferences and workshops. Branch staff organized a consortium of 17 institutes, offices, and agencies to co-fund a large national study of adolescent health, led an NIH-wide consortium to develop

and support health content for a new national birth cohort study, and chaired an NIH-wide conference on social and cultural dimensions of health.

Collaboration with federal statistical agencies such as the Census Bureau, the National Center for Health Statistics, the Bureau of Labor Statistics, the Department of Education, and the Immigration and Naturalization Service (INS) has promoted the collection of cutting-edge data for demographic research, while collaboration with the Office of the Assistant Secretary of Planning and Evaluation, the Administration of Children and Families, and the Office of Population Affairs has facilitated the translation of demographic research for policy-making and planning. Branch staff have played leadership roles in interagency efforts such as the Federal Forum for Child and Family Statistics, the Federal Fatherhood Initiative, the Federal Forum on Immigration Statistics, the Science and Ecology of Early Development, the National Strategy to Prevent Teen Pregnancy, the Report to Congress on Out-of-Wedlock Childbearing, the Title V Abstinence-Only Evaluation Program, and the follow-up to the Cairo Conference on Population and Development. Many of these activities are described in greater detail in later sections of this report; Appendix I also provides a full list of staff involvement in activities within and outside the NIH.

A final hallmark of the DBSB program is its emphasis on outreach and planning. Branch staff believe strongly that investments in science are most effective when guided by plans developed with input from the scientific communities involved in population research. DBSB staff monitor scientific advances and new opportunities on an ongoing basis by staying abreast of published literature, attending scientific meetings, and communicating with population researchers. The Branch conducts outreach activities in a diverse set of scientific communities (see Appendix H), and its Web site addresses a broad pool of potential applicants. Every five years, the Branch initiates a formal planning process in which top scientists from diverse disciplines are invited to participate in a workshop to discuss the state of our science and promising directions for new research. The last such process took place in the fall of 1996, and resulted in the development of six strategic goals for the Branch:

- Encourage research on fertility and family issues that develops an integrated approach recognizing that “partnering and parenting” are fundamentally interrelated.
- Strengthen the Branch’s involvement in research on population movement, including immigration, internal migration, and interactions with the environment.
- Encourage research that examines the interrelationships among health, socioeconomic status, and demographic processes over the life course.
- Encourage research to improve both the understanding of social, interpersonal, and cultural influences upon individuals’ and couples’ sexual behaviors and the capability to apply research findings in programs for the prevention of unintended pregnancy and sexually transmitted disease (STD)/HIV infection.
- Encourage the broadening and cross-fertilization of theoretical and methodological approaches to pursuing the substantive aims of the program.



- Coordinate needs for NICHD-supported data collection to advance demographic research.

This report highlights the scientific activities and accomplishments of the DBSB program during the period 1995-2000. The six strategic goals listed above serve as an organizing framework for the report, with each of the chapters in Section II describing scientific developments, research findings, and initiatives that have contributed toward formulating and addressing a specific goal. The report is not an exhaustive accounting of program activities and accomplishments, but, rather, a sampling of highlights. Detailed listings of program activities are included in the appendices and lists of all funded projects active in fiscal years 1998-2000 are available on the DBSB Web site at <http://www.nichd.nih.gov/cpr/dbs/dbs.htm>. Appendix A provides a summary of budgetary information for the Branch.

In June 2001, the Branch will convene a long-range planning meeting to review its progress and update its goals. The Branch initiated the new planning process in March 2000, with a panel at the annual meeting of the Population Association of America, in which six newly trained demographers summarized their visions for the future of population research. The June workshop will involve approximately 20 scientists and will address 19 “areas of opportunity” for population research identified by a planning committee that has been meeting periodically beginning in 1999, both in person and by telephone. Recommendations and goals will be summarized in a separate report. The DBSB planning process will complement recently completed Institute-wide planning in the areas of health disparities, reproductive health, and biobehavioral development. Summaries of the NICHD plans in these areas are available on the Web at <http://www.nichd.nih.gov/strategicplan/cells/>.



## **II. RESEARCH HIGHLIGHTS**

### **II.A. FAMILY AND FERTILITY**

*Encourage research on fertility and family issues that develops an integrated approach recognizing that “partnering and parenting” are fundamentally interrelated.*

Studies of fertility and the family have dominated demographic research for decades, reflecting the centrality of these areas to key global and domestic issues. Reducing high rates of population growth has been almost synonymous with reducing fertility in the minds of policy makers and program planners; the goal of empowering couples to “make every child a wanted child” is widely viewed as essential to improving the well-being of families and children as well as integral to women’s rights. The DBSB has a long history of supporting research on fertility trends, the timing of fertility, and the causes and consequences of fertility patterns. As discussed in Section II.D., the Branch has also supported studies of sexual and contraceptive behaviors that influence pregnancy and birth rates.

The ways in which families and households are formed, maintained, and dissolved also have critical implications across many domains, from the development of children and the health and economic security of adults, to policy and economic issues affecting the larger society. During the 1970s, it became apparent that American families and households were changing in novel ways. The number of households was increasing at a rapid rate. More importantly, households were changing in size, composition, and relationship structure. Recognizing that existing demographic measurement schemes and analytic techniques were not well-suited to studying these changes, the DBSB created an emphasis area in family and household structure to develop the scientific capability to understand their magnitude, causes, and consequences. The research funded through this program documented both the transformation of the family, including the new diversity in families and households, and the links between family change and children's life chances.

Traditionally, fertility, family structure, and the status of children each have been treated as separate research areas within the DBSB program and within population research in general. However, in searching for explanations of why families, child well-being, and fertility have changed, the Branch has come to realize that the reasons for having children, subsequent living arrangements, and parenting practices are closely associated and must be examined together if any one aspect is to be fully understood. Hence, the separate programs have given rise to a new focus that highlights the interrelationships of partnering and parenting. The progress the DBSB has made in recent years reflects the new approach of integrating the areas of fertility and family research.

In examining the intersection of partnering and parenting, DBSB grantees have shown that family forms are evolving and diversifying; traditional assumptions about what constitutes a family and exactly what events mark the formation of a family have been challenged. Researchers are now studying how shifts in demographic trends, such as increases in cohabitation and shifting fertility and marriage patterns, have altered family structures and the implications of these changes for the well-being of the parents and children in this society. These studies spotlight families formed outside of marriage, through remarriage, and through cohabiting relationships — families that were previously the subject of little research. This section discusses recent partnering and parenting research that provides a better understanding of how fertility, family, and child welfare intersect.

## CHANGING PATTERNS OF FAMILY FORMATION AND INCREASED FAMILY DIVERSITY

The need for integrated models of fertility and family change evolved from changing demographic patterns that undermined traditional assumptions about the unfolding of the family life course. The measurement and analytic concepts used in previous demographic research tended to assume that family and fertility events followed an orderly and undisrupted process in which people courted, married, created a joint household, had children, and remained married while raising their children to adulthood. The DBSB-supported National Survey of Families and Households (NSFH) was specifically designed to measure a wide variety of relationship structures in addition to the traditional ones usually thought to occur in American households. Analysis of NSFH data has revealed that traditional concepts of family life were seriously limited and inaccurately portrayed family structure and change. At the same time, data from vital statistics and surveys showed

dramatic changes in marriage and in the timing and circumstances of fertility in the United States.

### *Delay of Marriage*

One of the key demographic changes contributing to family change has been the delay in age at marriage. In 1960, women first married at a median age of 20.1 and men at 22.5. By mid-1998, these ages had risen to 25.0 and 26.7. Research by one grantee suggests that marriage delay and nonmarriage are responses to the increased difficulty young men with poor educational backgrounds have in establishing steady employment with an adequate income, factors still essential in family formation. However, other factors, such as changing gender roles, attitudes, and values, were also implicated in a recent NICHD conference focused on changing marriage patterns.

The trend toward delayed or foregone marriage has been especially marked among African American women. As a result, marriage patterns have diverged sharply by race. In the mid-1990s, 80 percent of white women had married by age 30, compared with only 45 percent of African American women. Reasons advanced for this large racial gap in marriage focus on the dearth of “marriageable” men in poor African American populations owing to stagnation in economic opportunities for men lacking college education and experiencing high rates of incarceration. Analysis of historical census data (IPUMS, or Integrated Public Use Microdata Series) and the Panel Study of Income Dynamics also implicates intermarriage patterns: intermarriage among African American men affects the marital prospects of African American women by negatively affecting the pool of economically attractive marriage partners in the metropolitan area. These effects are especially acute for highly educated African American women, whose marriage markets are defined by those African American men who are most likely to intermarry.

### *Cohabitation Outside Marriage*

Coinciding with falling rates and delays in marriage and remarriage and high rates of marital instability, cohabitation has emerged as an antecedent or alternative to marriage. DBSB grantees have documented the growth of cohabitation since 1970, finding that: (1) increasing proportions of the population have lived in a cohabiting relationship at some point in time; (2) the proportion of current unions that are unmarried cohabitations has increased dramatically, nearly doubling in the age range 25-39; and (3) trends in cohabitation continue to be led by the less educated, with the greatest relative increases occurring among high school graduates.

Cohabitation also occurs among same-sex couples, but until recently, national estimates of these households were not available in any detail. DBSB-funded groundbreaking research based on decennial census data documenting the numbers of these households and their characteristics. They found that: (1) 60 percent of partnered gay men in the United States are concentrated in only 20 cities, particularly in cities such as San Francisco, Washington, D.C., Los Angeles, Atlanta, and New York; (2) these men have served in the military in relatively large numbers; (3) many partnered gay men and lesbian women have children; and (4) cohabiting gay and lesbian individuals have higher educational levels than other men and women.

Future research must address the question of whether informal arrangements such as cohabitation have emerged as permanent components of the family. If the answer is yes, then measurement and research agendas should be modified to accommodate these changes. The role cohabitation plays in changing marriage and fertility patterns needs clarification, but such a clarification will be hard to come by until researchers are able to better understand the meaning of cohabitation. Some evidence exists to suggest that cohabitation is not a homogeneous status; it may have different meanings for different couples and these meanings may have cultural variations. If this is true, many of the findings regarding the relationships between cohabitation and marriage, divorce, and fertility may be called into question.

### *Nonmarital Childbearing*

The most dramatic change in fertility behavior over recent decades has been the large increase in the proportion of births that occur to unmarried couples — from 5 percent of all births in 1960, to about one-third of all births today. This increase cannot be understood without examining the factors driving marriage and non-marriage, as well as the sexual and reproductive behaviors of unmarried individuals. Research has demonstrated that both delayed marriage and increased rates of childbearing outside of marriage have driven increases in the proportion of births that occur to unmarried women among non-African American women, whereas increases among African American women have been attributable almost entirely to lower rates of marriage and marriage delay. The decline in the propensity of unmarried pregnant women to marry before a birth occurs has played a major role in the increase in the proportion of births born out of wedlock.

Trends in both the numbers and parity distribution of nonmarital births appear driven by a dramatic increase in first births to married women. In recent years, four of five first births to African American women and fully one of three to white women occurred outside of marriage. First births *outside of* marriage continue to be largely concentrated in the teen years, while first births *within* marriage have become increasingly prevalent among women in their mid- and late-20s. Despite the large numbers of nonmarital first births to African American women, there is little difference over the last 25 years between African American and white unmarried mothers in age at first nonmarital birth. These trends suggest that the gulf between the fertility behavior of married and unmarried has widened, while the divide between racial groups is of declining significance once differences in marriage are taken into account.

Other research documents the extent to which a woman's union status at first birth shapes her subsequent trajectory of childbearing. Findings suggest changes in the likelihood of progressing from a first to second birth may not be very essential in determining overall trends in nonmarital childbearing. Nevertheless, a woman's union status at second birth is highly contingent on her union status at first birth, with marital first births overwhelmingly followed by marital second births, cohabiting first births begetting cohabiting second births, and single first births preceding single second births.

A key factor underlying the increase in nonmarital births is fertility among cohabiting couples. NSFH data indicate that the proportion of births to unmarried women born to

cohabiting couples increased from 29 percent to 39 percent in the period between 1980-1984, and 1990-1994. This change accounts for almost all of the increase in unmarried childbearing. Cohabiting first births quadrupled for white women from below 4 percent to 16 percent between the 1970s and present time. Cohabiting first births have also been common among African American women, but the proportion has been about constant, fluctuating between 10 and 13 percent. Because the prevalence of births to single African American women has risen substantially over time, first births to cohabiting African American women have constituted an increasingly smaller fraction of the pool of all first births to African Americans that occur outside of formal marriage.

Data from the Fragile Families and Child Well-Being Study indicate a high rate of cohabitation among unmarried parents in metropolitan areas — 42 percent of unmarried mothers are living with the father of their child at the time of the child's birth. These studies underscore the fact that nonmarital fertility does not necessarily result in a single-parent family. Many children born to unmarried women actually begin life living with two biological parents.

#### *Delayed Childbearing and Teen Childbearing*

Within the United States, the total fertility rate has remained remarkably stable since the early 1970s. However, the average age at first birth increased across the population during the 1970s and 1980s. The shift to delayed childbearing has been most dramatic among well-educated women, most likely because of the increasing access of such women to career-type jobs. In such jobs, the steep costs of leaving the work force to raise children motivate women to delay childbearing until they have established their careers and are able to afford adequate child care. Delay of childbearing by educated women has thrown the early childbearing of disadvantaged women into sharper relief. Differences in the circumstances of children born into families with more or less education are larger now than when most women had their births in their late teens or early 20s.

On the other hand, fertility differences by race have moderated in recent years, particularly among young women. Between 1991 and 1999, birth rates for African American teenagers declined 30 percent, nearly twice the rate of decline seen among white teens. Rates of teen childbearing reached an all-time low in 1999, after a sharp increase of rates during the late 1980s and rapid declines during the 1990s.

Research has shown that early pregnancy and birth are most likely among adolescents from disadvantaged family backgrounds, and are strongly influenced by poverty, school failure, lack of opportunity, and family disruption. Although recent research shows that improvements in the socioeconomic backgrounds of young women over time have lessened the risk of teen motherhood, changes in their family structure of origin have increased the risk.

Despite declines in rates of teen childbearing, rates in the United States remain higher than in other industrialized countries. Why are these rates so high? One reason is that few unmarried teens get pregnant intentionally. DBSB-supported research finds that the sexual behavior of teens tends to be sporadic, making it more difficult to use contraception effectively and consistently. And despite recent decreases in the proportion of teens who

have had sex, the percent initiating sexual activity before age 15 is still increasing. Findings from DBSB-supported research have led to efforts such as the private National Campaign to Prevent Teen Pregnancy and the Federal National Strategy to Prevent Teen Pregnancy.

### *Public Policy and Family Formation*

An increasing body of evidence suggests that marriage and fertility patterns are responsive to public policies that influence economic incentives or affect access to reproductive services. One project has mapped the pattern of abortion for poor women in North Carolina as a function of the availability of state funding for abortion. The state provided funds for a limited period during each year, providing a natural experiment to estimate the short-term effect of changes in the cost of abortions on the number of abortions and births to poor women. When funds were not available, approximately three in every 10 pregnancies that would have resulted in an abortion had state funds been available were carried to term. Funding cutoffs affected young African American women more strongly than other groups. This could result either because young African American women are more likely to use these programs to a significant degree, or because other women are better able to obtain private funds when public funds aren't available to them.

Another study demonstrated that expanding Medicaid eligibility for poor pregnant women and children in 15 states between 1987, and 1992, resulted in a 5 percent increase in the birth rates of unmarried, non-African American women with less than a high school education and corresponding declines in abortion rates among a subset of the states in the study. Other research confirms that restrictive state abortion policies and reduced access to providers lower the incidence of abortion, while reduced access to gynecological and family planning services increases births. While most studies conclude that public welfare is not a major factor in promoting non-marital childbearing, there is some evidence that poor mothers may be more influenced by the existence of public welfare supports than others. Other studies have suggested that welfare generosity may have a stronger influence on marriage than on childbearing.

### FERTILITY INTENTIONS AND DESIRES

Given the high direct and indirect costs of having and raising children in modern times, many demographers are now asking why people choose to have children at all. These questions take on special significance in the light of the extremely low fertility now observed in many European countries. One grantee recently completed an in-depth study of fertility motivation among middle-class U.S. couples. He found that personality traits, childhood experiences within the family, and exposure to educational, religious, and economic institutions all contributed to predicting motivation to have children in adulthood. He also found suggestive evidence that there may be a biological (genetic) basis for fertility motivation and is currently exploring several competing hypotheses regarding the mechanism of such effects. Another grantee found that the proportion of variation in fertility attributable to heredity changed over time, suggesting that social norms and human volition are also important explanatory variables. In particular, during times of increasing reproductive choice, the influence of heredity in female fertility emerges as increasingly important. In addition, heredity may play a more important role in the onset of childbearing than in total family size.

Another investigator has proposed that the “social capital” value of children may be a previously neglected motivation for fertility. His research suggests that fertility intentions are higher among individuals who view children as a means to greater connectivity to others and increased social rewards. Other research is underway to examine how the value of children affects fertility decisions among stepfamilies in the contexts of choice of cohabitation or marriage at union formation, conversion of cohabiting unions to marriage, and union dissolution.

Not all births result from an intended pregnancy. In 1994, about half of pregnancies to U.S. women and one-third of all births were reported by the mother as unwanted at the time of conception or as conceived at an undesired time. Rates of unintended pregnancy are highest for unmarried women and women in their early 20s. Unwanted pregnancies and births are associated with negative outcomes for women and children. DBSB-supported research documents that women who have unwanted births are less likely to have received adequate prenatal care, more likely to have smoked during pregnancy, and more likely to have babies whose health is compromised. Children born as a result of an unwanted pregnancy are also likely to experience poorer cognitive development and lower self-esteem as adults.

Research funded through a 1994 request for application (RFA) has studied the meaning of the behavioral events that result in unintended pregnancy among young white, Hispanic, African American, and Native American couples. These studies are showing that ambivalence about childbearing is a common antecedent to unintended pregnancy and that unintended pregnancies, more often than not, result in wanted babies if they are carried to term. Moreover, research on the “intendedness” of births suggest that for some groups, the term may simply not be appropriate. A study looking at the fertility goals and behaviors of young Native Americans on two reservations found that for one group, children and connections to the family are highly valued, and the idea that a pregnancy could be unintended is almost unthinkable. However, in the other tribe, planning pregnancies and trying to avoid pregnancy at young ages are important concepts.

Another research project suggests that many, if not most “unintended” pregnancies could be more accurately described as “sub-intended.” The researchers propose a new conceptualization of intendedness, a gradient from intended to unwanted, anchored at one end by those who consciously intend to get pregnant, and at the other by those who become pregnant as a result of contraceptive failure or through coercion or rape. The measurement they propose has three factors: a cognitive factor (awareness of risk), an attitudinal factor (acceptability of a pregnancy/child), and a behavioral factor (contraceptive practice). The researchers are testing these measures, developed through qualitative interviews, with a survey of a sample of women representative of North Carolina.

## WORK, FAMILIES, AND CHILD CARE

Another important change affecting the family has been the widespread participation of mothers in the labor force. DBSB grantees have documented how working parents have adapted by seeking day care for their young children. The use of family, friends, and home-based care and other “informal” types of care are prominent features of the child care

revolution. Frequent changes in arrangements are typical as the children grow older and school-based alternatives increase.

DBSB grantees have pointed out the key role that child care plays in moderating the relationship between involvement in the labor force and fertility. Where child care is affordable and accessible, increased female labor force participation does not necessarily translate to reduced fertility levels. In fact, the income earned by working parents can facilitate family formation by supplying resources to pay for child care. A recently funded study will examine the effect of local variations in child care supply on the timing and level of fertility.

Researchers studying child care markets also find that supply seems to keep pace with increasing demand. However, they also find that low-income and lower middle-class parents typically rely on child care arrangements of mediocre quality and that their choices are quite sensitive to changes in the cost of child care. These findings imply that mandates requiring centers to provide child care of high developmental quality would not necessarily improve the overall child care context. In fact, children might very well be left worse-off if parents choose to switch to arrangements of lower quality in response to a price increase. If quality improvements cannot be accomplished by charging only modest increases in price, parental education and better market information may be more effective ways of improving child care quality.

Increased mothers' labor force participation, particularly among mothers with young children, raises questions not only about how children are taken care of, but also how families juggle work and family responsibilities. DBSB-supported research has begun to investigate how parents and children use their time in an attempt to explain how families balance these two spheres. Researchers plan to investigate how time use affects the well-being of both parents and children.

Research also demonstrates how work life often spills over into family life, making it difficult for parents to be with their children in times of need. A series of studies has demonstrated that sick children fare better when parents are present. Recent research has examined family-friendly work policies that allow parents to spend time with and take care of their children when they are sick. Multivariate results indicate that those parents who had either paid sick or vacation leave were five times more likely to care for their children when they were sick. This is but one example of how workplace policies affect the well-being of families. Policy makers and corporations alike have recently begun to take a hard look at family-friendly workplace policies, in part because of their effects on the well-being of families, and in part because of the relative shortage of skilled workers.

Balancing work and family can be especially difficult for single parents and disadvantaged families. During the 1990s, most of the national policy debate regarding welfare assumed that if middle-income mothers could balance work while caring for their children's health and development, mothers leaving welfare for work should also be able to do so. But research indicates that mothers who had been on Aid to Families with Dependent Children (AFDC) were more likely to be caring for at least one child with a chronic condition compared with mothers who never received welfare, which creates extra challenges. Additional research examines employment benefits parents commonly use to take time off



of work to care for children: paid sick and vacation leave and flex time. Even though mothers who had been on AFDC were more likely to have sick children, they were less likely to have the benefit of sick leave the entire time they worked, and less likely to receive other paid leave or flex time. Thus, if current welfare recipients face similar conditions when they return to work, many will encounter working conditions that make it difficult or impossible to succeed in the labor force at the same time as meeting their children's health and developmental needs.

The area of work and family will grow in importance as the service sector continues to grow, creating jobs that require more skills. In the coming decades, more women will be called upon to fill the jobs vacated by the retiring baby boomers. As these changes occur, families will be confronted with new challenges; the choices they make about how to use their time and how to organize their lives will undoubtedly impact their well-being. Corporations and policy makers will be confronting a work force with increasing proportions of women and minorities. Work place benefits and policies will need to change to adapt to these new realities.

## FATHERHOOD

Males have often been overlooked in research focused on family formation and functioning. An objective of Branch planning over the last five years has been to better understand how males fit into modern family life. No other topic better fits into the DBSB planning motto of "Partnering and Parenting" than does the study of fatherhood. Branch efforts were given a very practical boost in 1995, when President Clinton issued an Executive Memorandum for the federal government to examine what the government was doing in regard to fathers and to improve the government's capabilities to understand and assist fathers. The DBSB assumed a leadership role in the trans-government effort and has, as a result, made substantial investments in data collection to enrich knowledge of the role men play in family life. These investments are discussed below and in Section II.F.

An integrated understanding of fertility and family improves the ability to study the role of men in creating and nurturing families. DBSB research on fertility decision-making demonstrates that the interactions between spouses play an important role in influencing the intention to have a child and subsequent childbearing. Among unmarried women, sexual and contraceptive behaviors and pregnancy outcomes are affected by the nature of the relationship with the baby's father. In Ghana, adoption of contraception is more strongly affected by the husband's support and communication than by the woman's own personal preference.

The DBSB has supported several surveys of male fertility, most notably the National Survey of Adolescent Males and the National Survey of Men. These studies have documented male sexual and contraceptive behaviors, relationships and union formation, and fathering. They paved the way for the development of a male survey within the National Survey of Family Growth, added in response to the Federal Fatherhood Initiative. The Add Health Study and the National Longitudinal Survey of Youth are also building on these initial studies, providing new data resources for studying the process through which men become fathers. The roles that fathers play in the lives of their children are strongly affected by the father's relationship to the mother: the access of fathers to their children is highest when parents are

living with each other. The Fragile Families Study has helped to dispel the myth that fathers of babies born out-of-wedlock have no real interest or contact with their children. Many of the unmarried women giving birth in this metropolitan-area study were cohabiting with the fathers, and most fathers were present at birth and eager to be involved. In one of the sites, 42 percent of the unmarried mothers were living with the father of their child at the time of the child's birth, and another 36 percent were romantically involved with the father but living apart. Nearly seven-in-10 of the unmarried mothers surveyed in this site believed that their chances of marrying the father of their children were 50 percent or better. Additional results show that 83 percent of mothers and 87 percent of fathers indicated that the father contributed financially during the pregnancy. In fact, the overwhelming majority of unmarried parents, including mothers who are no longer romantically involved with their children's fathers, want the fathers to be involved in their children's lives.

Similarly, early findings from a national evaluation study suggest that the majority of fathers of children enrolled in Early Head Start programs are not absent from their children's lives. Most children in this study lived with either a biological or father figure. Most of these men reported that they wanted to raise their child and participated in many child-related activities. Preliminary qualitative results suggest that these men want to "be there" for their children, provide a positive role model for them, and have themselves changed in profound ways as a result of fathering.

Although divorce usually signals important changes in the roles fathers play in their children's lives, a DBSB grantee has shown that divorcing fathers have a high degree of motivation to maintain contact with their children. Data concerning attitudes about non-resident fathers' rights and obligations show that the vast majority of parents believe that non-resident fathers would pay child support if they had greater access to their children, and that fathers who pay support should have the right to visit and make decisions about how their child is raised. Research shows that when non-custodial fathers pay child support, they are also involved in their children's lives, and that both types of support have mutually reinforcing benefits for child well-being. On the other hand, some researchers have suggested that stronger child support enforcement may lead to greater parental conflict about fathers' rights, which, in turn, could have negative consequences for children's well-being.

As NSFH data have shown, a significant proportion of fathers live apart from their children, and many of these fathers go on to form new families. Some studies show that although nonresidential fathers often report reducing visitation as a result of forming a new family, almost one-quarter experience increases in the frequency of visits with their nonresident children. Multivariate analyses indicate that nonresidential fathers who form new unions (marriage or cohabitation) do not subsequently see their nonresident children less often than fathers who do not form new unions. Instead, the number of new children (particularly new biological children) reduces the odds of fathers' frequent in-person contact with nonresident children.

The implication that fathers "swap" families when they form new ones — that is, they shift allegiances from nonresident children to new residential children — has been investigated using the NSFH. Results indicate that fathers do swap families, but only when the trade-off is between new biological children living inside fathers' households and existing biological

children living outside fathers' households. These particular findings have important implications for child well-being, child support policy, and the meaning of fatherhood. Specifically, with respect to child support policy, results also indicate that fathers appear to be adjusting their child-support payments, probably often informally, to accommodate the demands of new biological children. Thus, if a primary goal of child-support policy is to ensure compliance, findings suggest that policies need to explicitly resolve the issue of award modification when fathers have new children.

Male behavior in families has become very important to the research and policy community. The frontier questions with respect to men are: What roles do men play in the events and decisions that lead to childbearing? How do parental relationships condition these events and fathers' relationships with their children? How can researchers better understand parenting practices by adding both the direct and indirect contributions of fathers into the research question? And, how can society strengthen families, especially families with non-coresidential fathers?

## PARTNERING, PARENTING, AND THE WELL-BEING OF CHILDREN AND ADULTS

Events that form and reshape families have important consequences for family members: economically, by affecting family relationships, and by affecting the attitudes, values, and motivation of family members. In recent years, the DBSB has continued to support research on the consequences of early childbearing and divorce for both parents and children and has greatly expanded research on the consequences of family change for child well-being.

A large body of research has documented the association between early childbearing and a variety of adverse outcomes, including poverty and welfare dependency, low educational attainment, and poorer developmental outcomes for children, even after statistically controlling for the disadvantaged backgrounds of teen mothers. Recent research has focused on the methodological challenges of measuring the extent to which these associations reflect *causal* effects of teen childbearing on later life outcomes. While different methodologies and data yield estimates that vary, these studies tend to agree that early childbearing does have adverse effects, but for many outcomes the effects are weaker than originally suggested. In recent years, the effect of early childbearing on high school completion has lessened. In fact, one recent study finds that teen mothers are no less likely to obtain a high school degree — either via a diploma or a graduate equivalency diploma (GED) — than if they delayed their childbearing until adulthood. However studies show that the effect on mothers' college attendance remains large.

Research has also addressed the economic consequences of divorce for women. NSFH data indicate that although divorced women, had they stayed married, would not have maintained an economic status similar to married women, they would have been somewhat better off than in their divorced state. These analyses support the view that women's economic vulnerability outside of marriage is quite ubiquitous.

A large body of research has been supported to identify the pathways through which family instability, single-parent households, and remarried households affect the development and well-being of children. Results documenting the impact of growing up in a single-parent

household on future academic achievement, economic success, early childbearing, and family stability have been very useful in informing public policy concerned with the nation's most vulnerable households. The mechanisms through which children are affected by exposure to a single-parent household can include reduced income, changes in residence, parenting behaviors and supervision, the child's modeling of parental behavior, the stress created by conflict, and frequent changes in household composition. A DBSB grantee has demonstrated that income reductions alone account for about one-half of the impact on the chances of a child's high school graduation. Another grantee compared socialization, supervision, and family instability as competing explanations for high levels of early nonmarital childbearing among children raised in single-parent families. He found that family instability — the sheer volume of changes in living arrangements that children experienced — was the most powerful predictor.

It makes a difference how a single-parent household is created. In the 1970s and 1980s, it was most likely created by a divorce. Longitudinal studies supported by the Branch have demonstrated that while the experience of divorce does have small adverse consequences on children's mental health and behavior well into adulthood, many of the problems experienced by the "children of divorce" can be traced to conditions and characteristics that preceded the divorce. This evidence suggests that conflict among divorcing parents may be an important cause of adverse effects on children, pointing the way to an important lesson for public policy: try to reduce the conflict between parents during and after divorce.

What happens after divorce is also important for children. Research suggests that remarriage after divorce does not ameliorate the adverse effects of divorce on children despite the higher incomes found in stepfamilies. This finding suggests it is the absence of a biological parent, rather than a second income, that affects child outcomes. In co-resident family relationships, stepparents and children report less warmth, but comparable levels of tension as biological parent-child pairs.

Other research investigating the relationship between noncustodial parents and children shows that improving non-custodial parents' control over and access to their children promotes child support payment and improves outcomes for children. Similarly, joint legal custody results in higher child support payments and better child outcomes. But, as noted above, the formation of new families also has implications for the amount of time fathers spend with their nonresident children. Nonresident children spend less time with fathers who have formed new families, with the effect increasing with the total number of both birth and stepchildren in the new family.

During the 1990s, single-parent households have been increasingly formed, not by a divorce, but by a birth outside of marriage. Evidence suggests that single-parent households produced in this way are the most economically disadvantaged and the most problematic for children. Many investigations are now underway to understand why this is so. The Fragile Families Study is examining the nature of the relationships between unmarried parents, in terms of stability, expectations, and experiences of violence. Under the assumption that these relationships lead to fragile family structures, this work will examine the conditions and capabilities of new unwed parents (particularly fathers), their workforce potential, and their involvement in childrearing. This work will also investigate the intersection of family structures and welfare, healthcare, and child care policies.

About two-fifths of all children spend some time in a cohabiting family. The greater instability of families begun by cohabiting means that children are more likely to experience family disruption. These findings were recently discussed at a DBSB-supported conference at the Pennsylvania State University and have led researchers to begin to investigate the links between cohabitation and child well-being. This is a challenging, but important, next step for research in this area.

## CHILD WELL-BEING AND HUMAN CAPITAL FORMATION

A joint focus on fertility and family leads naturally to a more general focus on the status and well-being of children, as well as the social, economic, and policy factors that promote the development of children into healthy and productive adults. Demographic information on the economic, educational, developmental, health, and family status of children is essential for monitoring the future of our population and for informing policy. The Family and Child Well-Being Research Network's early contribution to a benchmark series of indicators of child well-being, now published on an annual basis in *America's Children: Key National Indicators of Well-Being*, is an important highlight of this emerging program.

The NICHD Family and Child Well-Being Research Network was created to facilitate multi-disciplinary research on family and child well-being and to make research findings in this area accessible to the public policy process. The Network has helped the Census Bureau and other federal and state agencies develop research tools for measuring the impact of Welfare Reform, partnered with hundreds of university and governmental colleagues to raise the issue of fatherhood as a high profile topic for public policy, and produced research findings that point to the pre-school and late adolescent years as the periods in a child's life when poverty has the greatest impact on developmental outcomes. Work pointing to the early years of a child's life as an important period for public intervention programs and highlighting the lack of information about developmental trajectories for poor and minority children also led to a new initiative called the Science and Ecology of Early Development 2000 (SEED 2000).

Development of information bases that combine the demographic and child development sciences has vastly improved our ability to understand how events in the lives of parents affect the development of children. A battery of child assessments in the domains of cognitive, social, and affective behavior, assembled by a panel of developmental psychologists, has been fielded within the 1979-cohort of the National Longitudinal Survey of Youth (NLSY79) since 1986. The NLSY79 is a national survey that documents the economic and demographic life course of young people who became adults in the 1980s. The developmental assessments were done on the children of the female members of this cohort. This study has spawned a large volume of research, much of it reflecting collaboration between demographers and developmental psychologists. This strategy has been replicated in the National Child Development Study in Great Britain and in subsequent U.S. studies.

SEED 2000 seeks to establish an integrated research agenda that focuses on the effects of poverty on child development. SEED was designed as a collaborative effort within the NICHD, as well as across other federal agencies and other public and private institutions.

The overarching goal of SEED 2000 is to foster integrated research on the multiple contexts of development — family, child care settings, schools, communities, and broader cultural and policy contexts — to improve outcomes for children from low income families. Part of this goal is to bridge the gap between researchers and policy makers by fostering activities that not only translate research for policy makers, but also serve to guide and inform the questions that researchers are seeking to answer. SEED 2000 has fielded a project to determine how poor fathers are involved with their children within the context of the Early Head Start program. It has also partnered with the Ford Foundation to add an in-depth study of newborns to Early Head Start and has conducted workshops on the problem of making child care available to poor families. A major research initiative on the development of poor children was launched in fiscal year 2000.

DBSB-supported researchers have increasingly addressed the role of education in the development of human capital. Specifically, researchers are interested in examining how investments in education could be made most productive. One method that has been proposed is to reduce the number of pupils-per-teacher in the classroom. In order to evaluate the effect of classroom size on children's achievement, a DBSB-sponsored study used data from the state of Tennessee, where children were randomly assigned to smaller size classrooms. Results from an evaluation of that program indicate that those children performed significantly better than students who were not part of the experiment and were more likely to take (and do well on) college entrance examinations. This effect was particularly large for minority students, with small classes cutting in half the African American/white gap in college test taking. Conversely, other findings show that real variations in pupil-teacher ratios arise from the natural variation in the population of school-age children. These class-size variations have no impact on student outcomes.

Yet another contentious area of education that is indirectly related to child well-being is school choice and the availability of vouchers. Researchers evaluated a targeted voucher program in Milwaukee and found that it had positive effects on student mathematics exam scores, but not on reading scores. In the same vein, research has begun to examine the impact of educational subsidies paid under the Social Security program on the educational attainment of children of deceased parents. Some studies have determined that these grants have led to more college attendance and completion. However, NICHD grantees have concluded that long-term factors such as parental income and educational attainment are most important for determining children's higher educational attainment.

In sum, the status, characteristics, and well-being of children has emerged as a major sub-field in population research. The frontier question in this field is how communities, families, peers, and other environmental factors condition the development of children in ways that alter the population characteristics of children.

## INTERGENERATIONAL RESEARCH

Theories that conceptualize the family as an economic institution have contributed significantly to our understanding of family behavior and change. Several DBSB grantees have led the way in developing an intergenerational framework in which the family adapts to the changing fortunes and needs of its members by moving resources up and down the generational ladder. This perspective helps to explain how families respond to, and, in some

cases, frustrate public policies. For example, when welfare payments are given to a mother for the benefit of her children, the family may divert other resources to family members who are not eligible for public assistance. Attempts to lift poor families out of poverty may be frustrated because an increase in resources can be stretched to the vanishing point when shared broadly within the family. Similarly, cutbacks in Social Security payments to the elderly may actually have the effect of diverting resources from the family's children because of the propensity for economically secure older people to shift resources to younger members of the family. Studies testing these theories of family behavior in Thailand, Indonesia, and Malaysia have shown that in these countries the family behaves as an economic institution much as it does in the United States, although cultural and religious traditions greatly condition the behavioral response.

Within the United States, newly funded studies examining the adaptation of poor families and communities to new welfare policies have begun to add to the understanding of how public policies affect families' investments in adults and children. A major study focused on welfare, children, and families examined women who left Temporary Assistance for Needy Families (TANF) in Boston, Chicago, and San Antonio. Results indicate that women have an average employment rate of 63 percent after leaving TANF. These estimates are comparable to estimates found in similar studies in other states. However, women with: (1) lower levels of education, (2) poor health statuses, (3) younger children, and (4) who are themselves young have considerably lower employment rates and post-welfare income levels than older women with greater levels of education, better health statuses, and older children.

American families face the constant problem of caring for their dependent young and old, while keeping their families prosperous. Public policy is also compelled to balance the needs of young and old, while adding to the nation's wealth. The research community and public policy makers are greatly challenged to keep the interactive aspects of private behavior and public policy jointly in focus. Private actions undertaken by families to accumulate and transfer resources up and down the generational ladder are greatly affected by public policy aimed at the either the young or old. The current public interest in reforming institutions and policies relating to young and old tend to emphasize one age group to the exclusion of the other. Thus welfare reform, child health insurance programs, targeted tax credits, child support and fragile family support, school reform, and substitute child care focus on families with dependent children, while reforms of Social Security, Medicare, prescription drug benefits, estate taxes, and long-term health care focus on families with dependent old. The bifurcation of policies has led to an overspecialization of research.

Moreover, a gap exists between research on intergenerational processes at the micro- and macro- levels of analysis. These levels of analysis should be complementary rather than separate fields. Public policy requires a systematic accounting of these levels as well.

In the 1980s, the DBSB (in partnership with the NIA) sponsored research that encouraged a broad approach to document the existence and implications of intergenerational relationships. This body of research forms a foundation upon which new work can be predicated. Several of the large-scale data collection projects involving the adaptation of families to the age of welfare reform specifically incorporate modules that examine how families invest in children. Last year, the DBSB sponsored a conference on modeling conflict and cooperation within families and outlined the considerable theoretical and

empirical progress in several related fields. These developments indicate that the questions of how families make intergenerational resource decisions, and the consequences these decisions have for children, the elderly, families and society, are ripe for program expansion. A frontier question in this area is how policies and families are interrelated through intergenerational behavior at the individual, family, community, and societal levels.



## **II.B. POPULATION DISTRIBUTION AND MOVEMENT**

*Strengthen the Branch's involvement in research on population movement, including immigration, internal migration, and interactions with the environment.*

The movement and distribution of populations within and across national boundaries affects population growth rates, the diversity of local and national populations, and the pressure of population on local environments. Migration also significantly influences the well-being of individuals and families, as well as sending and receiving communities. Despite its importance, of the three components of population growth — fertility, mortality, and migration — research on migration has been the least developed within the DBSB program. In the early 1990s, the DBSB addressed this disparity by strategically investing in data on migrants and in program initiatives to stimulate research. The initiatives included program announcements (PAs) for Research on U.S. Immigration (in 1995) and for Population Movement: Determinants and Consequences (in 1999, with the NIA). The Branch issued an RFA on Population and the Environment in 1995, with the National Institute of Environmental Health Sciences (NIEHS). Population movement was designated an NICHD Area of High Program Relevance (fiscal year 1996-98) and as a Special Emphasis Area (fiscal year 1999-2000). As a result, spending on DBSB-supported investigator-initiated research projects in population distribution and movement has increased from \$513,000 in fiscal year 1993, to \$6,528,000 in fiscal year 2000.

### **IMMIGRATION AND IMMIGRANTS**

The foreign-born population of the United States is now more than 26 million, an all-time high. Nearly one-in-10 residents is now foreign-born, the highest share since 1930. The large flows and wide diversity of immigrants will significantly affect this country's population size, composition, and growth, and will influence the United States both socially and economically. Immigration will play the dominant role in America's future population growth, both directly — through the addition of new people settling in the United States — and indirectly — through the children born to these new settlers. DBSB-supported research is providing a rich picture of the health and well-being of immigrant children and families in the United States and is triggering reconsideration of conventional wisdom concerning immigrants and immigration.

#### *Children and Families of Immigrants*

Immigrant children are the fastest growing segment of the population. In 2000, one-fifth of U.S. children under age 18 were immigrants themselves or the children of immigrants. The



physical and mental health of children in immigrant families will profoundly affect American society in the 21<sup>st</sup> century. As these children age into adulthood, their experiences as children will affect their labor force productivity, quality of parenting, civic participation, and other central activities of adult life.

With partial support from the NICHD, the National Research Council/Institute of Medicine synthesized past research on immigrant children and commissioned new analyses. Two reports, *From Generation to Generation: The Health and Well-Being of Children in Immigrant Families* (issued in 1998) and *Children of Immigrants: Health, Adjustment, and Public Assistance* (issued in 1999), document that immigrant children are as healthy as or healthier than children of native-born U.S. parents, but that their health appears to decline the longer they have been in the United States. Using new data from a DBSB-supported study, the report showed that first-generation immigrant youth are healthier physically and are less involved in risky behavior (i.e., sexual activity, juvenile delinquency, violent behavior, and substance abuse) than are second-generation and native-born U.S. youth. For some ethnic groups, family and neighborhood factors such as being poor, being raised in a single-parent household, and living in an unsafe or isolating neighborhood reduce the health protection associated with being an immigrant. Children in immigrant families have limited access to health insurance. While only about one-in-10 children with U.S. native-born parents lack health insurance, more than one-in-three noncitizen children and about one-in-five U.S. citizen children in immigrant families are uninsured. Nonetheless, immigrant families are optimistic about their children's chances for upward mobility in the United States.

Most work on migration and the well-being of children has compared migrant children with other groups of children at their destination in the United States, either natives or descendants of migrants from the same place of origin. Recent DBSB-funded research has compared instead child migrants with non-migrants from the same origin. While this research examines the effects of interregional migration within the United States, between Puerto Rico and the mainland (Puerto Ricans are citizens), the research paradigm and findings are relevant to research on the well-being of immigrant children. According to analysis of 1990 Census data, Puerto Rican children who have moved to the mainland United States are less likely to be poor than children living on the island of Puerto Rico. The improvement in child poverty rates is explained partially by the availability of better jobs on the mainland, but mainland-island differences in child poverty rates remain when employment, human capital, family structure, and public assistance are taken into account. The children of migrants who return to Puerto Rico from the mainland experience relatively high poverty rates, however, compared both with the children of migrants who remain on the mainland and with children whose parents have remained in Puerto Rico.

The NICHD is also funding research into the assimilation trajectories of Mexican-American families; the psychological adjustment of children from Southeast Asian immigrant families; patterns of intermarriage and living arrangements of immigrants in early 20<sup>th</sup>-century Chicago; and the transition to early adulthood among youths from immigrant families.

### *Challenging Conventional Wisdom about Immigration*

Findings from DBSB-supported research projects are challenging conventional thinking about how the quality of immigrants has changed over the last several decades and how

immigrants adapt and assimilate in the United States. Researchers and policymakers are becoming increasingly aware that they cannot understand the health, socioeconomic status, or adaptation process of immigrants without distinguishing whether immigrants are citizens or aliens, whether they are legally in the United States, and whether they entered the country as refugees, through special legalization, or through traditional immigration mechanisms.

Recent findings include:

- *Most “new” immigrants are not new.* Among immigrants receiving “green cards” during the summer of 1996 (which grant them permission to reside permanently in the United States), two-thirds had prior experience living in this country. Furthermore, at least one-in-five of these new legal immigrants had entered the United States illegally at least once in the past. These findings suggest that immigration is a process, not a single discrete event. Furthermore, these findings suggest that the “year of entry” question on the decennial census and major national surveys may collect inconsistent information — in some cases year of original entry to the United States and in other cases year during which the individual received a green card.
- *New adult immigrants are three times more likely to have schooling beyond college than native-born U.S. citizens are.* Among individuals aged 25 and older, 20 percent of new legal immigrants have schooling beyond college compared with 8 percent of native-born U.S. citizens. But new immigrants also include large shares of individuals with very low education levels — 20 percent have less than nine years of schooling compared with 6 percent of native-born U.S. citizens.
- *The quality of legal immigrants entering the United States is improving.* Analysis of data on all foreign-born U.S. residents based on 1970-1990 decennial Censuses suggests that the labor market skills of new recent immigrants are low and, relative to native-born U.S. citizens’ skills, have declined significantly. However, DBSB-supported research on legal immigrants over the period 1972-1995, paints a much different picture. During most of the last 25 years, the labor market quality of male legal immigrants rivals or surpasses that of male native-born U.S. workers. In addition, during the last half of the 1980s and throughout the 1990s, the quality of legal immigrants has risen steadily. The changing skill composition of legal immigrants has been influenced by changes in immigration laws and by changing economic conditions in sending countries and the United States. Proposals to reduce legal immigrant flows in response to concerns about declining immigrant quality could produce the opposite result by reducing the number of high quality legal immigrants while encouraging the flow of unauthorized aliens, who tend to have lower skill levels than legal immigrants.
- *Legalized immigrants are upwardly mobile.* Analysis of the Legalized Population Surveys suggests that unauthorized aliens who legalized under the Immigration Reform and Control Act of 1986, have not, as some research has suggested, languished at the bottom of the socioeconomic ladder. Rather, even before legalizing, these immigrants quickly joined the labor force, albeit at the lower end

of the occupational scale. With time in the United States and with the legalization of their status, their jobs improved and, as a group, they experienced upward mobility not unlike that attributed to immigrants who arrived earlier in the 20<sup>th</sup> century.

Many fundamental questions about immigration remain unanswered: whether the skill levels of new cohorts of legal immigrants are changing over time; how many legal immigrants return to their home countries; how immigrants make the transition from unauthorized to legal status; how much immigrants contribute to the economy; and how they adapt and assimilate. Despite the importance of the issues, immigration policy is handicapped by the lack of reliable and relevant longitudinal data. Following a successful pilot study, the NICHD — in partnership with several other federal agencies — funded the New Immigrant Survey (NIS), a study designed to address these data limitations. The pilot demonstrated the feasibility of sampling new green card holders from U.S. INS administrative records, and developed sampling strategies and survey content. Results from the pilot (highlighted above) have provided groundbreaking information about the behavior of legal immigrants. The full NIS, which will follow new legal immigrants and their children over a four-year period (and possibly longer), promises to provide the best information ever on the experiences and impact of new legal immigrants and their families and to provide up-to-date, policy-relevant information on these new Americans. Other federal funders for the NIS are the NIA, the U.S. INS, the National Science Foundation (NSF), the NIH Office of Behavioral and Social Sciences Research (OBSSR), and the DHHS Office of the Assistant Secretary for Planning and Evaluation (ASPE).

The DBSB is also funding several studies examining the health of immigrants, a study on how and when immigrants naturalize, and studies on immigrants to countries other than the United States, including Germany and Israel.

### *Understanding Immigration Processes*

Understanding how and why migration occurs requires research focusing on the communities sending migrants, as well as on the characteristics of migrants and their experiences in receiving communities. Since 1987, the Mexican Migration Project (MMP) has studied legal and unauthorized immigration between Mexico and the United States through ethnographic and survey research on both sides of the border. These data have demonstrated how interpersonal networks give Mexico/United States migration a dynamic momentum that leads to a steadily rising volume of legal and unauthorized migration over time. The data have been used to model the social process of border-crossing, to consider the role that women play in individual and household migration decisions, and to analyze the process of social and economic assimilation among Mexican migrants in the United States. The data also provide valuable information about the selectivity of migrants, crucial in understanding the impact of migration on sending and receiving communities. In 1998, the Latin American Migration Project (LAMP) began applying the MMP methodology to several Latin American migrant-sending nations and Puerto Rico; in 2001, the DBSB awarded a grant to apply the MMP methodology to Fujian Province, China.

Research in Mexico provides some insight into the motivation for migrating from Mexico to the United States. For residents of Zacatecas, Mexico, temporary migration is a popular

method for acquiring capital to invest in Mexico. And migration does, in general, appear to be beneficial for these temporary migrants. While many former migrants experience temporary downward mobility after returning from the United States, overall, they experience upward occupational mobility in business and agricultural land ownership. But MMP research on migration between the United States and Mexico suggests that economic incentives are not the only motivation; social connections play a role as well. And, after more than five decades of nonstop migration back and forth across the U.S.-Mexican border, substantial numbers of western Mexicans have strong social connections to the United States, suggesting that even if economic pressures abate, migration of Mexicans to the United States may continue.

## INTERNAL MIGRATION AND POPULATION DISTRIBUTION

Throughout the nation's history, migration in search of opportunity has been an important part of the American experience. These migration flows continue to play an important role in shaping the populations of cities, states, and regions. Migration within metropolitan areas — among central cities, inner suburbs, and outer suburbs — affects the flavor of metropolitan areas.

In December 1999, the DBSB, along with NIA, issued a PA calling for research on the determinants and consequences of population movement. Internal migration remains an under-researched, crosscutting area that is likely to increase in importance in the future. Among the issues needing further attention are the relationships between geographic and economic mobility, barriers to mobility, how migration affects the well-being and development of children, how family considerations — particularly the location of relatives — affect migration decisions, and how the internal migration patterns of immigrants and natives differ and interact. Since federal welfare reform shifted major responsibility for social welfare programs from the federal government to the states, there is renewed interest in research on how interstate differences in the generosity and accessibility of these programs affect migration decision-making.

### *Interstate and Interregional Migration*

Recent DBSB-supported research has focused on how the interregional migration of African Americans has changed in the last hundred or so years. During the 20<sup>th</sup> century, the distribution of the African American population in the United States changed significantly as millions of African Americans migrated from the South to northern cities. Contrasting descriptions of this migration stream have been presented in the literature — some emphasizing the rural origins and lack of schooling of migrants, others claiming that migrants were positively selected from the southern African American population. DBSB-funded analysis of historical Census data from 1880-1990, shows that African American migrants had significantly higher levels of education than African Americans who stayed in the South, but significantly lower levels of education than the northern-born population. Starting in about 1940, however, the positive educational selection of migrants from the South declined, while their educational disadvantage, relative to native Northerners, was also attenuated. This influx of southern-born African Americans does not appear to have harmed northern African American natives. Between 1920-1970, the influx of southern-

born African American men had no negative effects on the economic activities of their northern-born counterparts.

Overall population redistribution has been a focus of research as well. While population growth through migration is still greatest, as it has been for decades, in the South and West, the details have changed. First, internal migration is increasingly favoring smaller metropolitan areas over larger areas; these high migration areas are concentrated in the Southeast and Western states other than California. Second, reversing decades-long trends, African Americans are returning to the South. In the 1990s, the South gained more African Americans than it lost in exchanges with each of the other three major regions, with net gains seen most strongly in the Southeast, for example, in Florida and Georgia.

DBSB-funded research also suggests that immigration and internal migration affect the geographic distribution of the United States in profoundly different ways. In the 1990s, immigrants clustered, as they have historically, in large, mostly coastal, gateway cities. The five most popular cities in terms of net immigration are New York, Los Angeles, San Francisco, Miami, and Chicago. Native-born U.S. citizens, however, settled in different types of areas, smaller metropolitan areas, especially in the Southeast and Western states other than California. The five most popular metropolitan areas in terms of net internal migration of natives are Atlanta, Las Vegas, Phoenix, Dallas, and Portland, Oregon. The different migration and distribution patterns of immigrants and natives may be linked, as there appears to be a trend towards low-skilled whites leaving areas where large numbers of immigrants settle.

Research on internal migration extends beyond the United States. DBSB-funded research explored internal migration in China between 1982, and 1995, during the rapid transition to a market-oriented economy. During this period, internal migration within China increased. In many cases, this migration was “unofficial,” with migrants remaining registered in their origin households rather than registering in their *de facto* places of residence. Preferred destinations were the South China coast and, especially for rural-origin migrants, cities. Cadres — party and government officials and administrators of state-owned enterprises — appeared to be especially successful at translating their status into new economic opportunity.

#### *Population Distribution in Metropolitan Areas*

NICHD-funded researchers have also examined the distribution of populations *within* metropolitan areas. New research on migration and settlement patterns within metropolitan areas reveals that some African Americans are escaping “distressed neighborhoods,” just as their parents and grandparents escaped the “distressed” Southern Region. While there is general agreement that the exodus from poor urban neighborhoods has been heavier among the African American middle class, the precise magnitude, and impact of the middle class “African American flight” remains a point of disagreement.

Other research suggests that the traditional settlement patterns of immigrants within metropolitan areas have changed. Historically, new immigrants clustered in urban enclaves; then, as they acculturated and achieved socioeconomic success, they moved to ethnically mixed suburbs. Analysis of 1980 and 1990 Census data suggests the emergence of new

patterns. Increasingly, recent immigrants are settling outside urban enclaves. Settlement in suburban areas is not an unambiguous sign of assimilation, as lack of fluency in English no longer appears to be a barrier to suburban settlement.

## POPULATION AND ENVIRONMENT

In 1995, the DBSB initiated a program to assess how population changes affect the physical environment and to investigate how environmental change affects demographic factors such as fertility, mortality, migration, and population distribution. The NICHD issued an RFA jointly with the NIEHS. The NICHD funded four of the six resulting projects, which examine interrelations between population and land use. The NICHD subsequently funded three more projects focusing on land use and, recently, an examination of air quality and infant morbidity.

The sites of population and environment studies are geographically dispersed: the Great Plains of the United States; the rain forests of Brazil, the Ecuadorian Amazon; a rural province of Nepal; the forests of India; an agricultural area in Thailand; and a giant panda reserve in Sichuan Province, China. In addition, along with the National Research Council and the John R. and Katherine T. MacArthur Foundation, the NICHD is supporting a National Academy of Science project bringing natural and social scientists together to explore interactions between population growth and land-use change in China (Pearl River Delta and Jitai Basin), India (Haryana and Kerala), and the United States (South Florida and the Greater Chicago area).

### *Population Growth and the Environment*

While there is a widely held belief that population growth in-and-of-itself degrades the environment, by the early 1990s, scientific evidence had suggested that this relationship is only true in some settings. NICHD-funded research from Thailand may help explain this paradox. In the Nang Rong district, the number of households in an area appears to have more of an effect on land use than the number of people, suggesting that migration and household formation are the key demographic phenomena, not population growth and fertility.

Contrary to expectations that frontier families would be large in order to supply labor for farms, researchers in the Brazilian Amazon have found women on the frontier have contraceptive and sterilization behaviors very much similar to women in urban areas, with more than half of all frontier women aged 30 and older being sterilized. The expected result of these low fertility rates is that families will be increasingly likely to have to hire laborers. In the absence of available labor, marginal farm operations, common on the frontier, will fail, leading to increased migration to urban areas.

### *Economic Factors Affecting the Population-Environment Interaction*

In the Nepalese Himalayas, the environmental effects of moving to a modern economy are mixed. As people increase their social exposure outside the family — for example, by going to school, working in an outside business, or accessing health services — they increase their use of contraception and stop having children. But they are also increasingly more likely to

purchase, rather than gather, their own fuel and firewood, which increases environmental degradation.

In Brazil, the nation's economic situation influences how new settlers on the Amazonian frontier affect the rain forests. Each cohort of migrants to the frontier follows the same basic trajectory: initial high rates of deforestation, followed by declining rates of deforestation and increasing use of secondary growth vegetation. But while the trajectory for each cohort is the same, the magnitude of the initial and subsequent deforestation is influenced by economic factors, with deforestation dampened when inflation is high and credit and commodity prices depressed.

#### *Environmental Impacts on Demographic Processes*

While population processes clearly affect the environment, the reverse is also true. Evidence from Nepal suggests that as environmental conditions decline, the desired number of children increases, and the use of effective methods of contraception decline. As a result, environmental degradation may actually increase fertility and population growth, leading to environmental degradation in agricultural settings. This situation has been referred to as the "vicious circle" of population growth and environmental degradation.

Evidence from villages in the Nang Rong district of Thailand suggests that the more forested land that can be converted to farmland, the less likely it is that young adults will migrate out of the area. Similarly, in the Brazilian Amazon, settlers who pick plots with poor soils to farm are more likely to abandon their land than are those who choose plots with superior soils. Researchers studying the Great Plains of the United States have found that climate change affects demographic processes, including migration, less than broad social and economic conditions.

#### *New Methodologies*

NICHD-funded scientists working in several areas have developed methodologies for linking satellite data, which are spatially continuous, and social survey data, which are spatially discrete. Scientists have also successfully linked satellite data with land tax registers, which has opened up new ways of analyzing soil quality and subsequent land use patterns of farmers.

Researchers have also found that the smaller the social and spatial units they examine, the more likely they are to find relationships between population and the environment. The article describing this finding won first prize in the "Best Scientific Paper in Remote Sensing" from the American Society of Photogrammetry and Remote Sensing. (See "Scale Dependent Relationships between Population and Environment in Northeast Thailand," by Stephen J. Walsh, Tom P. Evans, William F. Welsh, Barbara Entwisle, and Ronald R. Rindfuss, *Photogrammetric Engineering and Remote Sensing*, Vol. 65, No. 1, January 1999, pp. 97-105.)

## **II.C. DEMOGRAPHY AND HEALTH**

*Encourage research that examines the interrelationships among health, socioeconomic status, and demographic processes over the life course.*

The health status and mortality of populations are central determinants of how rapidly populations grow, the burden of dependency within populations, and the well-being of individuals and groups. Demographic methods and approaches are extremely valuable for understanding health trends in the population. Apparent increases or decreases in particular diseases can be anticipated by changes in population composition, for example, by age, race or ethnicity, marital status, poverty status, or immigrant status. Indeed, the estimation of population characteristics provides a critical component for computing the global burden of any particular disease.

Research that improves the understanding of the linkages between early childhood environment and later life outcomes offers the potential of identifying risk factors amenable to change early on. Introducing the population perspective and its associated emphasis on understanding the determinants of population change will improve assessments of relative health risks and costs of illness. The DBSB supports demographic research on general mortality, infant and child mortality, and population health; research on the impact of social, economic, and demographic change on health and mortality; and research on socioeconomic, racial, and ethnic disparities in health and mortality.

### **HEALTH AND MORTALITY IN A CHANGING WORLD**

Around the globe, populations have been changing dramatically. In some areas of the world, rates of natural increase are at an all-time low; in others, populations continue to grow rapidly, both because of above-replacement fertility levels and because of the momentum caused by very young age structures. In some parts of the world, economies are developing rapidly, often accompanied by changes in traditional social and cultural norms and patterns of behavior; in other parts of the world, economies have faltered or failed in response to social or political disturbances. In sub-Saharan Africa and other parts of the world, high rates of HIV prevalence are having serious social, political, and economic consequences; social, political and economic conditions are also influencing the ability to respond to the epidemic. Virtually everywhere, populations are increasingly concentrated in cities. Understanding how these global changes affect health and mortality is critical to understanding future population trends. International studies provide a natural laboratory for demographers to understand how changing social and economic conditions affect demographic and health behavior, yielding insights that can be applied to research in other settings. A number of DBSB-supported studies take advantage of unique economic and social transitions in particular countries in order to study their health and demographic impact.

The Russian Longitudinal Monitoring Survey (RLMS) and the China Health and Nutrition Survey (CHNS) were fielded in 1992-1997, and 1989-1997, respectively. Researchers are using these studies to understand the societal and health consequences resulting from a series of sweeping economic reforms over very short periods of time. Already, these data have documented dramatic shifts in diet and physical activity, with increasing prevalence of



obesity (a major risk factor for cardiovascular disease) and poor nutrition. In the next several decades, it is predicted that China alone will see over 100 million individuals become overweight. The CHNS has been used to show how price changes (based on shifts in subsidies and credits) can shift the diet away from higher fat to lower fat foods without sacrificing protein intake and other critical micro-nutrients.

An important issue in Russia is the rapid increase in mortality of middle-aged adults. The RLMS data suggest that alcohol abuse may be one of the causes. The survey documented a substantial increase in alcohol consumption between 1992, and 1996, among a subset of heavy drinkers. The increase was most marked in a subset of middle-aged men, the very group that has been at greatest risk of mortality during this period.

Analyses of the RLMS, CHNS, and the U.S. National Health and Nutrition Examination Survey III (NHANES III) show a significant association between overweight status and stunting among children in all three countries. Using identical cutoffs for body mass index (85<sup>th</sup> percentile), the prevalence of overweight children in Russia and China ranges from 10.5 to 25.6 percent, while recent NHANES III results indicate this prevalence is around 22 percent in the United States. Stunted growth is also common in the surveyed countries, affecting 9.2 percent to 30.6 percent of all children. Even after controlling for family income, stunted children are more likely to be overweight than other children. This research shows that the rapid change in diet and activity associated with economic development, coupled with fetal and infant insults, has been instrumental in promoting obesity in lower income countries. Rapid urbanization has helped to sustain these trends in diet, physical activity, and obesity.

In Africa, urbanization also may be slowing the pace of mortality decline, according to data from Demographic and Health Surveys collected between 1990, and 1995, for 12 African countries. Before the 1990s, infant mortality had decreased to relatively low levels in African cities, but in recent years has *increased* by over 20 percent. By contrast, infant mortality has continued to decline in rural areas, where rates were initially high. The rising urban infant mortality is attributed to an increasing prevalence of poor nutrition, high diarrheal morbidity, low school enrollment, and rapid population growth. The DBSB grantees responsible for this study also found similar patterns in Latin America and the Caribbean, where aggregate infant mortality levels have barely changed since the late 1970s in the big cities, while small cities, towns, and rural areas have experienced declines of 34 percent to 38 percent. These research results underscore the importance of socioeconomic context on the success of health programs.

In addition to Russia, China, and Africa, other parts of the developing world provide the venue for a number of new studies that explore demography and health linkages in changing contexts. The Indonesian Family Life Survey has revealed that the recent financial shocks to the Indonesian economy significantly affected child health and development. These shocks were greatly modulated through family processes that seemingly sacrificed health among older family members as measured by the body mass index to avoid detrimental child health outcomes. Educational opportunities, however, were affected in an adverse direction. Parallel work examining the effects of economic shocks is underway in Malaysia and South Africa. Another study capitalizes on the dramatic changes in Thailand, where a major economic reversal followed a period of rapid economic expansion and modernization, to

study demographic and social responses at the individual, household, and community levels. Analysis of family and social network responses to Thai families' need for credit or loans, and interaction with formal financial institutions, is augmented by a study of the economic impact of HIV/AIDS.

A study in Bangladesh looks at the role of women's socioeconomic development in hastening health improvement and lessening health disparity. This study takes advantage of a quasi-experimental design in Matlab, with data on micro-credit and health outreach programs between 1992-1998, to try to separate the impact of specific programs from broader secular changes. A final study will examine the impact on mortality from an expansion in government health insurance coverage in Costa Rica. This latter study takes advantage of a natural experiment where public insurance will be introduced for 40 percent of the population and phased in across provinces.

## DISPARITIES IN MORTALITY AND HEALTH

Researchers have extensively documented the significant association between socioeconomic status and a variety of health outcomes such as physical and mental health, morbidity, disability, and mortality. Nonetheless, the causal processes responsible for this association remain a subject of considerable debate. Competing explanations include long-term impacts of early childhood or intrauterine environments; cumulative effects of exposure to life stresses; and the direct effects of rising income inequality. At the same time, economists and demographers are increasingly documenting the impact of health on the various components of socioeconomic status (e.g., education, income, wealth, and occupation) and related demographic behaviors (e.g., marriage) over the life course. There is a growing recognition that longitudinal data and analyses, as well as innovative methods that help isolate economic and health shocks, are required to disentangle the probable bi-directional influences between socioeconomic status and health.

The Year 2001 Early Childhood Longitudinal Study – Birth Cohort (ECLS-B) will follow 10,000 infants during the first years of their lives, thus enabling researchers to study children's physical and cognitive growth and to relate trajectories of growth to variations in the children's home environment, early care, and education. The DBSB has led the NICHD and NIH efforts to partner with the National Center for Education Statistics (Department of Education) and the National Center for Health Statistics to field this birth cohort study. Just as previous British birth cohort studies have spawned a host of insights about associations between social position or socioeconomic status and health over the life course and across generations, the DBSB hopes that a nationally representative ECLS-B will become a major vehicle for investigating these relationships by exploiting multilevel interrelationships among social, economic, and family contexts, infant and child development and health trajectories, and school preparedness.

In 1999, the DBSB participated in the NIH-wide "Mind-Body" initiative and added to the branch program a large, specialized research center entirely devoted to the study of the interaction of socioeconomic status and health. It comprises five, long-term projects all featuring multilevel analyses. Several of the projects are collecting new data on health status using bio-markers. The projects study the following topics: pathways to health and function, social context and inequality as determinants of mind-body interactions, health of

women under economic stress, life-course development and psychosocial function in relation to cardiovascular disease, and pathobiology of depression, socioeconomic status, and cardiovascular disease.

The DBSB has a long history of encouraging research on the health disparities of racial and ethnic groups. For example, in 1988, the DBSB funded a number of projects in response to an RFA (87-HD-06) on “Social & Demographic Research on Infant Mortality & Low Birthweight.” Although progress has been made in understanding the social, behavioral, and environmental factors associated with low birth weight, explanations for differentials by race after controlling for social and economic background characteristics remain elusive.

Another PA, “Low Birth Weight in Minority Populations” (PA-99-045), was jointly issued by NICHD, the National Institute of Nursing Research (NINR), the National Institute of Dental and Craniofacial Research, and the NIEHS on January 22, 1999, and builds in part upon earlier research supported by DBSB. In fiscal year 2000, the Branch co-funded a study of the environmental causes of childhood asthma as part of a trans-NIH initiative on Health Disparities.

Despite substantial socioeconomic disadvantages, some U.S. minority groups experience health outcomes that are, on average, nearly as favorable as in the majority white population. This phenomenon has been termed the “epidemiological paradox.” For example, Mexican-American women, have only slightly higher rates of compromised birth outcomes than do white, non-Hispanic women even though they are much more likely to have low incomes. In recent years, the epidemiological paradox has been observed in other subpopulations, particularly among recent immigrants (see section II.B). Many of the five projects funded in 1994, in response to the RFA (94-HD-08) on “Hispanic Child Health: Social, Behavioral and Cultural Factors,” sought to address the epidemiological paradox to some degree. The proceedings from three annual grantee workshops highlight the need for continued dialogue between social scientists and medical professionals to fully capture the mechanisms underlying observed health disparities.

Studies supported by the DBSB suggest that the relatively favorable Mexican-American experience reflects a higher prevalence of health-promoting behaviors during pregnancy among this group as compared to other minority populations (e.g., better diet and lower rates of smoking) and also suggests the importance of social support during pregnancy for positive infant outcomes. A study of women prospectively interviewed two or three times during pregnancy indicates that Mexican-Americans experience significantly lower levels of stress, more consistent availability of economic support, less pregnancy ambivalence (including consideration of abortion), less high-risk sexual exposure, lower rates of bacterial STDs, and less extreme poverty than African Americans. These psychosocial and other factors were found to account for the higher-risk for idiopathic preterm birth among African American women as compared to Mexican-American and white women.

Most studies of immigrant health have restricted their focus to mainland United States populations. A new study of infant health among Puerto Ricans living in Puerto Rico and the mainland United States sheds new light on the processes linking migration and health. The study sheds light on two competing explanations for the frequently observed health advantage of recent Puerto Rican migrants to mainland United States. The finding that infant mortality is lower for new migrants to the mainland than among families remaining in Puerto

Rico suggests that selective migration is an important explanatory factor. However, the study also found that, among migrants to mainland United States, infant mortality rates rise as time on the mainland increases. Extensive controls for demographic risk factors, socioeconomic status, cultural orientation, family circumstances, stressful life events, social support, health habits, medical risk factors, and prenatal care increased rather than decreased this association between mortality and time on the mainland. One finding supported the hypothesis that adherence to the origin culture was protective; among poorly educated migrants, those who spoke Spanish most of the time had lower infant mortality rates than those who had adopted English.

Socioeconomic status and health over the life course and across generations has developed into an area of special emphasis for the DBSB, and indeed throughout the NICHD and NIH. In 1998, in collaboration with the NIA, NIMH, and other Institutes, the NICHD issued a PA entitled, "Socioeconomic Status and Health across the Life Course" (PA-98-098), to encourage renewed attention to this complex topic. This announcement called for studies on conceptualizing and measuring socioeconomic status; specifying the processes through which socioeconomic status influences health outcomes, both cumulatively and contemporaneously; and understanding how health outcomes affect socioeconomic status. This initiative foreshadowed the trans-NIH initiative to develop a strategic plan on health disparities. The NICHD strategic plan on health disparities is now published and will involve DBSB activities relating to socioeconomic status and health (e.g., SEED, welfare reform research projects, children of immigrants), AIDS, and reproductive health mentioned elsewhere in this report. The DBSB strategy in regard to health disparities is to pursue the social/environmental and biological interactions that are associated with gradients in health and development of children. One aspect of the plan, scheduled to be in the planning phase in fiscal year 2002, would have the DBSB support a multi-site study of community and health interactions. One of the central objectives of the study will be to operationalize both theoretically and empirically the concept of community effects on health for children and adolescents.

## ADOLESCENT HEALTH

Research in adolescent health has been greatly enhanced by the availability of data from the National Longitudinal Study of Adolescent Health (Add Health), a comprehensive study of adolescent health and well-being funded by the NICHD and 17 other federal Institutes, Offices, and Agencies since 1994. The study provides nationally representative information on physical, mental, and emotional health; health-risk behaviors; and use of health services. Moreover, the study yields never before available information on how adolescent health is influenced by the adolescent's environment: parents, siblings, peers, school, neighborhood, and community. Selected findings are summarized below.

### *Youth Violence*

A study of violent behaviors among teens demonstrates that protective factors such as religiosity, school achievement, and having adults who care about the adolescent and have high expectations for him/her, are important predictors of *not* engaging in violence. Risk factors for violent behavior include substance use, poor emotional health, a history of victimization or witnessing violence, having access to guns at home, and feeling

disconnected from school. Even among adolescents with many of these risk factors, the researchers found that the presence of protective factors could play a powerful role in reducing the risk of violence.

Another study focusing on aggressive behavior points to contributing factors in school environments and in family relationships, and individual factors including disorders with a hereditary component. Researchers found that there were lower levels of aggression at schools in which students reported more family warmth, but higher levels of aggression at schools that were more racially and ethnically heterogeneous. School environments affected the extent to which observed violence was traceable to heritable predispositions, with heredity playing less of a role in aggression in schools with poor environments than in schools with positive environments. The researchers stress that violence *per se* is not genetically determined, but may be more common in individuals with certain disorders with a heritable component, such as attention deficit hyperactivity disorder and conduct disorder in childhood.

### *Substance Abuse*

Add Health studies of adolescent substance use have closely examined peer influence and selection effects. Peer effects are largely experienced within school environments, with the prevalence of smoking throughout the school and the popularity of individuals within their peer networks being positively associated with smoking. Using a contagion model to study the “epidemic” of adolescent smoking, researchers found peer effects for the transition from nonsmoking to regular smoking, but less social influence on the transition from experimental to regular smoking.

A comparison of parent and peer influences on the initiation of tobacco use and the transition from experimentation to steady use shows that peer smoking has a stronger influence on both beginning and continuing to smoke than does parental smoking. Furthermore, the influence of peers remains steady throughout the adolescent years, contrary to the conventional wisdom that parent influences decline and peer influences increase as adolescents become older. These findings suggest that while parents may influence their teens’ smoking through establishing warm family relationships and holding high expectations for their children, they exert relatively little influence through their modeling of smoking or nonsmoking behavior.

Peer influences in adolescent drinking are demonstrated by another study that uses Add Health data to estimate the influence of each partner to a friendship on the other partner’s drinking. This study finds powerful influences of a friend’s drinking on how frequently an adolescent gets drunk, both among female friendship pairs and male pairs. In mixed-sex friendship pairs, the male’s drinking has a much stronger influence on the female’s drinking than the female’s does on the male’s. The study also found that protective factors such as religiosity and closeness to mother had a stronger influence in reducing drinking among females than males.

Influence on adolescent decisions regarding health-risk behaviors is as likely to be positive as negative. Researchers hypothesizing that intimate relationships with individuals other than parents provide comfort and support to adolescents who are vulnerable to alcohol use found

this protective effect to be true for relationships with adults outside the family, although more so for adolescent boys than girls. Peer relationships, by contrast, were associated with increased risks of alcohol use. Minority and economically disadvantaged students experience milder effects, both positive and negative.

### *Emotional Health and School Attachment*

As noted, Add Health data cover a broad range of physical, mental, and emotional well-being. A study of the impact of friendship relations on suicidal thoughts and attempts finds that not having friends and not being embedded in an interconnected circle of friends influences suicidality among girls, but not boys. For both sexes, suicidal thoughts and attempts were more likely if the adolescent was depressed, had experience with suicide among friends or family members, drank heavily, was not close to parents, and/or had access to a gun in the home. Females were also more likely to have suicidal thoughts if they had experienced non-consensual sexual relations, were overweight, got into fights, or were poorly connected to school. Boys were less likely to have suicidal thoughts if they played on a sports team at school. A separate analysis examined several theories of attempted suicide, finding evidence of a social contagion effect in addition to expected associations between depression, other problems, and suicide attempts.

Becoming involved in a romantic relationship is associated with a heightened risk of depression among teens. While both boys and girls tend to become more depressed once they have formed romantic relationships, the effect is much stronger for girls. The nature of the romantic relationship has an important influence on the extent to which the risk of depression rises, with relationships involving physical abuse leading to larger increases in depression. However, even non-abusive relationships are associated with a decline in emotional health.

In an investigation of the association between depression and smoking, depression was not found to be a precedent condition for the uptake of smoking among non-current smokers. By contrast, adolescents who were current smokers were very likely to develop highly depressive symptoms. These findings contradict earlier hypotheses that smoking may result from depressive symptoms.

An investigation of the relationship between pubertal development and psychological maladjustment (measured in terms of depression, self-esteem, and somatic complaints) found, not surprisingly, that adolescent girls are more affected by subjective perceptions of being overweight than boys. Moreover, this tendency to be concerned about pubertal weight gains is stronger among Anglo-American girls and boys than among African American or Hispanic American peers.

Adolescents' attachment to school is often studied for its role in academic achievement and risk behaviors. The Add Health Study found that adolescents' attachment to school is associated with better emotional health and lower levels of substance use and violent behaviors. Other research has examined the characteristics of schools that predict school attachment. These analyses are finding that size of school and racial heterogeneity have important effects, net of other characteristics. Student attachment to school is greater in smaller schools and in racially homogeneous schools. Paradoxically, the study finds that

friendship segregation is greatest in schools that are most heterogeneous by race. Attachment and engagement were positively associated with being female, younger, coming from an intact family home, and having parents with more education themselves and greater expectations for their children. Contrary to researchers' hypotheses, ethnicity was not found to play a role in school attachment; in fact, African Americans were more engaged in school than their peers.

### *Sociodemographic and Contextual Influences*

Sociodemographic characteristics are commonly examined for their role in protecting against or increasing health risks. Research using Add Health data shows that immigrant teens have better health and fewer health-risk behaviors than native-born teens, even when compared to teens of the same ethnicity from second- and third-generation immigrant families. Among immigrant youth, health status and health-related behaviors become more negative the longer the young person has lived in the United States.

Consistent negative relationships were found separately between each of three socioeconomic status measures (i.e., parental education, income, and occupation) and self-rated health, depression, and obesity. Further, adolescent suicide attempts were significantly related to parental income, but not the other socioeconomic status measures, while analyses of STDs and asthma consistently did not reveal an socioeconomic status gradient. The research raises questions about differential effects of socioeconomic status during adolescence compared to other periods of life, differential roles of the selected components of socioeconomic status, and potential mediating factors (such as urban life effects on asthma).

Religious homogeneity as a community characteristic has been studied for its protective role in adolescent delinquent behavior, contributing to the discussion of moral capital and moral communities. A multilevel analysis of Add Health data supports prior research in suggesting that aggregate measures of religiosity are important for individual behavior, and may enhance the effects of individual religious behavior.

The study of contextual characteristics is often undertaken as a multilevel analysis. Family processes involving parental control, joint decision-making, and strong parent-child relationships are found to have the expected positive effects on healthy development and adolescents' avoidance of health-risk behaviors. However, the protective effect of parental control is stronger in neighborhoods with less social cohesion, with the implication that parents and/or their children in these neighborhoods know they cannot rely on a community network.



## **II.D. SEXUAL BEHAVIOR AND INTERVENTION RESEARCH**

*Encourage research to improve both the understanding of social, interpersonal and cultural influences upon individuals' and couples' sexual behaviors and the capability to apply research findings in programs for the prevention of unintended pregnancy and STD/HIV infection.*

Basic research on sexual behavior and contraceptive use contributes to the understanding of pregnancy, pregnancy outcomes, fertility and the spread of STDs, and also informs the design of programs and strategies intended to reduce unintended pregnancy, STD, and HIV risk. DBSB-supported research has focused on understanding the factors that influence sexual behaviors and the use of contraceptive methods, with a special emphasis on adolescents. In recent years, the Branch has expanded its effort to understand social and cultural factors in sexual behavior and to support the development and evaluation of behavioral interventions to prevent unintended pregnancy and disease.

### **SOCIAL AND SEXUAL NETWORKS**

Social networks are patterns of relations that tie individuals together. There are many different types of social networks, defined by different types of relations — friendship, kinship, work, etc. Sexual networks are composed of individuals who are linked together (directly or indirectly) by sexual relations. Social and sexual networks are important to research on prevention because they channel social influences (i.e., persuasion, modeling, and normative beliefs). In the field of STD prevention, sexual networks have added importance because they channel microbes. Social networks may also help to shape sexual networks and the course and nature of sexual relationships, so that it is important to study both, while understanding that the mapping is not exact.

The concept of sexual networks has long been important in research on the transmission of STDs, yet the study of such networks is only now emerging from description into what one researcher has termed “mathematical ethnography.” One DBSB-supported study used computer simulation methods to demonstrate that risk of HIV transmission is two-to-three times greater when individuals’ sexual partnerships are concurrent, rather than sequential. The same researcher is also developing methods to estimate the impact of misreporting the number and timing of partners and partner change on estimates of the speed of transmission of HIV in sexual networks.

A study looking at the relationship between characteristics of individuals’ sexual networks and condom use found that men with more sexual partners tend to use condoms more consistently. However, the sexual networks of African American and white men differ in ways that affect their condom use. White men with many partners tend to have serial partners or short periods of concurrency (overlap between partners). Since condom use is higher at the start of new relationships, use of condoms among such men is fairly high. However, African American men with many partners tend to have long-term concurrent partners, a situation not conducive to consistent condom use.

Other studies are investigating the relationships between social ties and sexual contact. One researcher has developed a method to use genetic typing of gonorrhea to enhance the ability to determine what social network characteristics are associated with disease transmission in



individuals' sexual networks. He finds that in this group of low-income men, social networks and sexual networks are almost completely non-overlapping. Another study, using Add Health data, found that patterns of partner choice among African American males differ from those in other groups. This study found that white youth and young African American women who reported a sense of commitment to their partners were more likely to have had sexual intercourse with them. However, the opposite was found among young African American men, who were less likely to initiate intercourse with partners to whom they felt committed.

The concept of a “sexual marketplace” has been used by many scientists to think about how individuals make decisions relating to their choice of partners. A sexual marketplace is primarily local, and is therefore constrained to some degree by geography, age, race, class, and ethnicity. Within these market places, individuals operate in reasonably ordered fashion, making choices based on the market. One analysis of national data has found that while white men tend to choose their partners from a rather circumscribed network of potential partners, African American men are likely to choose partners from a number of different social or sexual networks. These differences may account for the more widespread prevalence of bacterial STD among African American than white men.

Researchers who examined the influence of different types of peer group structures on the likelihood of an adolescent girl initiating sexual intercourse studied the role of social networks in channeling normative influences. They found that the “best friends” (the closest male and female friend) had less influence than the larger circle of friends named by the girl. The girl's peer group — the interacting network of adolescents linked directly or indirectly through friendship ties — was also strongly influential. The “leading crowd,” or most popular students within a school, had no influence on sexual initiation.

As noted above, social networks may also shape sexual networks. In an analysis of romantic relationships among adolescents in a large high school, patterns in the choice of romantic partners produce a network structure that loosely links together many of the school's students. While the degree of linkage creates a substantial potential risk of disease transmission, its looseness also provides many opportunities for interrupting transmission. This network structure is very different from the structures typically envisioned by scientists studying the transmission of STDs and HIV in adult populations.

## PARTNERS, TRUST, AND DISEASE RISK

Risks of HIV and other sexually transmitted infections are strongly influenced by the number and variety of sexual relationships in which an individual participates. The higher risks of casual, as compared to “steady,” or monogamous, relationships are well-known; so it is perhaps not surprising that condom use is higher (although not universally and often not consistently) in casual relationships. However, sexual relationships are dynamic and often fail to conform to either a casual or committed ideal type in the eyes of one or both partners. The introduction of condom use into an ongoing relationship can have strong, negative significance.

Several DBSB studies are examining the issues of sexual trust and sexual jealousy in hopes of understanding better the barriers these concerns create for HIV and pregnancy prevention.

One researcher looking at definitions of trust and the management of suspected infidelity in adolescent peer cultures is finding distinctive male and female patterns. Young men's infidelity is seen as more common and more commonly overlooked than is young women's. Fidelity in both genders is managed by surveillance, watching personally or with friends' assistance, to see if the partner is possibly having sex with others. Another study finds that sexual jealousy is a prime factor in partner violence.

DBSB-supported research finds that trust is a central issue in the intimate relationships of inner-city young men, who tend to respond to lack of trust in their partners with violence, which their partners report reciprocating. Another study finds that the new combination therapies for HIV are magnifying issues of trust in the gay community because the therapies are viewed as increasing the chances that HIV-positive individuals will look healthy and strong and be able to "pass" as uninfected.

Partner characteristics are also important in influencing sexual behavior and the management of risk within relationships. Adolescents with older partners report less use of contraceptives at first sex, and those with a lower level of familiarity with their partner report less use of condoms or other contraceptives overall. About one-third of sexual partners reported by U.S. adolescents are at least two years older; girls are more likely to report older partners than are boys.

One of the complications of studying sexual and romantic partnerships is the difficulty in operationalizing what a partnership is. Add Health data show that adolescent romantic feelings are not always reciprocated by the intended target. Gender, relative age, physical attractiveness, personality attractiveness, sexual experience, religious preferences, and self-esteem all impact the likelihood of reciprocation of romantic feelings. Pairs who were most likely to reciprocate nominations were comprised of individuals who were both sexually experienced. Virgin males and experienced females were unlikely to reciprocate nominations.

## ADOLESCENT SEXUAL BEHAVIOR

Early initiation of sexual intercourse is associated with poorer contraceptive use, more lifetime sexual partners, and higher risks of unintended pregnancy and STD. Thus, understanding the factors that contribute to the timing of sexual initiation among young people is a high priority. Several findings from DBSB-supported studies have contributed new insights, including:

- After controlling for age, pubertal development, and mother's education, a curvilinear relationship between sexual experience and intelligence has been found in adolescents. These findings indicate that teens with higher-than-average intelligence and, to a lesser extent, lower-than-average intelligence are more likely to postpone sexual intercourse. "Early" behaviors, such as hand-holding and kissing, are also delayed by smarter teens. The researchers suggest that the teens who abstain are more goal-focussed and see early sexual intimacy as a deterrent to reaching their educational goals.

- Adolescents who perceive that their mothers disapprove of them having sexual intercourse are less likely to have sex or become pregnant in the following year. Conversely, teens who believe their mothers have a permissive attitude toward their sexual activity are over six times more likely to engage in sexual intercourse. This is true even of adolescents who are already sexually active. However, adolescents are very poor judges of their parents' approval or disapproval of their having sex. Adolescents tend to underestimate their mother's disapproval, especially if they perceive their mothers as approving the use of birth control, if their mother has recommended a method of birth control to them, if they have already had sex, or if they report parent behaviors that allow more autonomy.
- Adolescents whose mothers have recommended a method of birth control to them, or who perceive maternal approval for their using birth control, are more likely to engage in sexual intercourse in the following year. This relationship persists even after controlling for factors related to the adolescent's involvement in romantic relationships and the mother's perception that the teen is moving toward sexual involvement. The effect is strongest for those who are virgin at the beginning of the year.
- The quality of mother-adolescent relationships also influences teen sexual conduct; adolescent boys or girls are three times more likely to engage in sex if they report low satisfaction in their relationship with their mother. Teens who feel close to their parents are less likely to initiate having sex. Interestingly, other parenting practices appear to have relatively little effect on sexual initiation, including parental control of decision-making, democratic parenting, shared activities, and dinner meals.
- Young people who have taken a public or written pledge to remain virgins until marriage are substantially more likely to delay having intercourse, even after controlling for other social and psychological factors associated with both pledging and the timing of first intercourse. This effect is observed for non-African American teens in middle adolescence (ages 16-17) and, conditional on context, among younger non-African American teens (ages 13-15). Among the latter group, the effect depends on school social structure and on how many other students in the same school have also pledged. In most schools, there is no effect if no other students have pledged, but a stronger effect as the percent of students pledging increases. Pledgers are less likely to use birth control at their first intercourse if they break their pledge. About 9 percent of adolescent boys and 16 percent of adolescent girls in grades 7-12 report having taken a virginity pledge.
- Biological and behavior-genetic models have also been used to investigate teens' first sexual experiences. An examination of the role of genetic influence on first sexual intercourse indicates that there are significant genetic contributions to the timing of first sexual experience in whites and males. Conversely, the sexual initiation of African Americans and females is more strongly influenced by environmental characteristics, such as shared home and school settings. Another study supported by the DBSB has found that boys and girls with higher testosterone levels during the early and mid-adolescent years display a greater likelihood of initiating sexual intercourse than teens with lower levels of testosterone.

- Concern about the role of coercion in teen sexual behavior has been spurred by clinicians' reports of histories of sexual abuse among their pregnant teen clients and by national data showing that a high proportion of teen births are fathered by men who are not teens. Data from the 1995 National Survey of Family Growth provided information on whether or not, from the woman's perspective, the first sexual intercourse was voluntary and wanted. Among women age 18 or older at their first sexual experience, the majority, about four out of five, said that sex was voluntary and rated its wantedness as high (at 5 or above on a scale of 1 to 10). About 5 percent of women said that the experience was nonvoluntary and 16 percent said it was voluntary but wanted little or not at all. However, for women having their first sex at 13 or younger, nearly one-quarter report nonvoluntary sex, while less than half rated the wantedness of sex high. The number of women involved here is small, but for these women having sex was much less likely to be a matter of choice.
- In Kenya, girls who drop out of school are often more likely to engage in sex for favors and in other HIV-risk behaviors. A study in that country has linked gender stereotypes to dropout rates, finding that dropout rates for young women are lower for those who are in a secondary school where the teachers think math is important for girls.

The proportion of U.S. teens who are sexually experienced declined during the 1990s, reversing a decades-long trend towards higher levels of sexual involvement. Two DBSB-supported studies conducted in 1995, the National Survey of Family Growth and the National Survey of Adolescent Males, revealed the first evidence of this decline. The decline was later corroborated by evidence from the Centers for Disease Control and Prevention's (CDC's) 1997 Youth Risk Behavior Survey. Analyses of the decline among young men point to two significant contributing factors: the spread of AIDS education in schools (now nearly universal, although of widely varying quality), and increased disapproval of premarital sex, predominantly among religious youth.

Unlike broader studies of adolescents in general, one study of sexuality using Add Health data focuses on adolescents with physical, mental, and/or emotional disabilities. The study examines this population in ten areas: demographics; sex of attraction; experience with sexual intercourse; parental knowledge of their sexual experience; parental conversations about sex and pregnancy; school lessons about sex and AIDS; attitudes about sex, pregnancy, and birth control; birth-control practice; and experience with STDs and pregnancy. Overall, the attitudes and experiences of disabled adolescents are more likely to indicate problems related to sexuality, with mentally disabled adolescents being the most vulnerable, compared to adolescents without disabilities. The types of problems varied among the subgroups by disability and also by gender.

A substantial body of research has documented the saturation of mass media with images that glamorize sex and the lack of images and messages that promote abstinence or responsible sexual behavior. There are persistent assertions, but little research concerning the actual relationship of media use to adolescent sexual behavior, in part because of the substantial methodological challenges of such research. (There has been some work looking at exposure to violence and alcohol and subsequent behavior.) Four longitudinal,

observational studies have recently been funded to examine the relationships between adolescent media use and young peoples' sexual behavior. These studies will advance knowledge about the ways in which adolescents' sexual attitudes and behaviors correlate with their use of media over time, and about the ways in which these associations are mediated and moderated by other factors in adolescents' normative and social environments.

## PROTECTIVE BEHAVIORS

Most HIV-, STD-, and pregnancy-prevention programs aim both to discourage risky sexual behavior (e.g., by promoting abstinence outside of mutually monogamous relationships) and to encourage the use of protective methods among those who are having sexual intercourse. Studies supported by the DBSB help to lay a basic research foundation for these efforts by contributing to knowledge about sexual behavior and the use of methods that protect against disease and unwanted pregnancy. Some of these studies are motivated primarily by a concern for pregnancy prevention, some primarily by a concern for HIV or STD prevention, and some focus on both concerns.

For a number of years the Branch has supported research on women's use of fertility regulation methods. The DBSB funded studies of NORPLANT™ use when it was introduced, studies which also included the introduction and use of depo-provera. Findings suggested that women did not feel coerced into using these new methods, but that negative publicity had a strong influence on their wishes to have the implants removed. Depo-provera proved to be very attractive to younger women wishing to space their pregnancies. With the recent Food and Drug Administration (FDA) approval of emergency contraception, the Branch has just funded a study to look at the determinants and consequences of the distribution and use of these "morning after" pills by women who attend family planning clinics.

A study in Brazil interviewed women early in pregnancy, just before delivery, and a month after delivery to determine their choices for Caesarian (C-section) or vaginal delivery, and their decisions regarding contraceptive sterilization. There are very large differences in the occurrence of C-section between the public and private sector, with women who go to public hospitals much more likely to be given C-sections, though no more likely to have expressed an intention to have one. With regard to subsequent contraceptive sterilization, 68 percent of women at private hospitals desiring sterilization obtained it, whereas only 29 percent of women at public hospitals were able to obtain sterilization upon request. There are large differences between what women say they want and what providers say women want. The researcher was given a special AIDS supplement to examine the intentions and experiences of HIV-positive women, but findings from that study are not yet available.

Barrier methods of contraception offer the potential of protection against both pregnancy and STDs. A project studying the acceptability of barrier methods of contraception (i.e., diaphragm, spermicides, male and female condoms) finds that, given choice and counseling on all barrier methods, a San Francisco Bay area sample of sexually active young women and their partners continue to choose male condoms over the other methods for regular use. The female condom was tried and abandoned as a method. While the population studied is diverse with respect to ethnicity and degree of acculturation, there were no significant differences by either factor in the use of barrier birth control methods.

Couples who require highly effective protection against both STDs and unintended pregnancy are often encouraged to combine use of hormonal contraception and condoms. The DBSB is supporting research to understand the barriers to “dual” method use and to design intervention programs to increase its prevalence among sexually active, at-risk couples. One study of NORPLANT™ users suggests that awareness of the need for dual protection and expectations for conflict in negotiating use of a second method are accompanied by high levels of distrust regarding sexual fidelity. Distrust further increases the sense of the need for dual methods, although women feel that even mentioning condom use complicates the problems people have with achieving trust in relationships. A second researcher is looking at the decision-making process that women at family planning clinics and women at STD clinics follow as they determine whether or not to use dual methods of protection.

Another approach to integrating pregnancy and HIV prevention is to provide contraceptive services in the context of HIV prevention and treatment. In a pilot study with a sample of 251 HIV-discordant couples, 80 percent of Zambian women, when offered culturally appropriate contraceptive services in the context of their HIV counseling, accepted and used oral contraceptives or NORPLANT™. Maternal HIV status was not correlated with the initiation of non-barrier contraceptives, nor was the mistaken belief that all babies born to HIV positive women will die. HIV-discordant African couples can, and do, accept longer-acting, more user-independent methods of protection against pregnancy. By contrast, a U.S. study that tested the efficacy of providing birth control services to women attending an STD clinic reported less promising results. Efforts to improve compliance with contraceptive regimes were not as effective as hoped, particularly for those women who had multiple pressures in their lives as a result of limited economic and educational resources.

In 2000, the Branch issued an RFA inviting research leading to an improved understanding of the acceptability of methods for the prevention of HIV and/or other STDs. While the ultimate goal is to understand the acceptability of microbicidal products, at this stage in the development of such products, few are advanced enough to use with population-based samples. Applicants were therefore encouraged to substitute similar products for microbicides, when necessary. Four studies were funded in fiscal year 2000, to examine the acceptability of specific products or classes of products, the processes and factors that influence acceptability in various populations, the strategies to improve the acceptability of new products, and the development of improved methods for studying acceptability.

## INTERVENTION RESEARCH

The development of effective behavioral interventions is essential for reducing the risk of unintended pregnancy and STD. These interventions should start early enough to reach young people before first sex, continue in developmentally appropriate ways, and provide information and skill-based interventions at all ages. The Branch funds a number of such projects.

- Reach for Health, set in an inner city middle school, tested three different types of interventions — a regular sexuality education program, a program that included a

school-based clinic, and a program that included the sexuality education and a community service program. Assisting middle school youth to provide community service to senior citizens and children in day care has a measurable impact in delaying the young people's sexual debut, as well as reducing their likelihood of engaging in violent acts. The effect continues for up to three years after the end of the intervention. Two other studies participating in the same set of cooperative agreements also found that young people who feel more connected to their communities are less likely to engage in risky behaviors.

Intervention projects recently initiated, but with evaluations not yet completed, include:

- A randomized, controlled trial comparing the efficacy of three alternative interventions for reducing STD risk in middle school youth. One arm of the trial is an abstinence-only program, one is a comprehensive program that has previously proven effective in delaying first sex and increasing contraceptive use, and the third is a control program that does not deal with sexuality issues directly.
- A test of a program to address risk behaviors among youth in foster care. The intervention adds a skills-based HIV curriculum to the ongoing independent living courses provided to youth about to "age out" of the system. The enhanced program will be evaluated over a two-year follow-up and its results will be compared to the usual program. Baseline findings show that sexual abuse is common in this group of young people; further, those who report sexual abuse are more likely to have engaged in risky sexual behaviors. Youth whose foster placement was with a family had more positive attitudes toward condoms than did youth who were placed in group homes.
- A study testing a new intervention for Hispanic gay men, based upon research that links the men's experiences of race and class discrimination to their sexual risk behaviors. Self-knowledge and community organizing to reduce discrimination are integral parts of this "socio-cultural" style of intervention.
- Development of creative, interactive, video educational tools for young people to express their ideas about risk and responsibility.
- Three ongoing studies to test interventions that encourage dual protection against STD/HIV and pregnancy. One study is evaluating a computer intervention (based on the "stages of change" model) placed in clinics where low-income women go for reproductive health, to assist them in initiating and continuing dual protection. Another study is testing a small group intervention with women at a health maintenance organization who had been diagnosed with an STD, to assist them in using dual protection and evaluate their compliance with STD treatment and dual use. A third intervention study, funded in fiscal year 2000, will test the efficacy of an individualized, provider-presented intervention encouraging dual-method use for women attending a community health center in upper Manhattan.
- Evaluation of a small group intervention for adult heterosexual couples to help them reduce risky sexual behavior. Although no results are available yet, the pilot study found

that how couples were recruited for the study made a difference. Recruiting through the male partner rather than the female partner yielded a sample of couples that reported more risky behavior (i.e., drug use and unprotected sex). In addition, in-depth interviews with each of the partners found that the two report very different levels of risky behaviors. These findings have powerful implications for designing interventions.

An RFA funded at the start of fiscal year 2000, called for the replication of effective HIV intervention programs for youth. The primary goals of the initiative are to test the effectiveness of programs in new settings or populations and to gain insight into how interventions may be adapted to new communities while preserving or indeed maximizing the effectiveness of key mechanisms through which they reduce behavioral risks. The more widely known of the four programs being revised for new locales and evaluated under this initiative are Becoming a Responsible Teen (BART) and Be Proud, Be Responsible. These studies are being replicated in suburban settings, in alternative schools, and in regular classroom settings. A fifth replication study, co-funded by the NICHD and the NINR, is replicating BART with young Hispanic mothers and their partners.



## **II.E. METHODS AND THEORY**

*Encourage the broadening and cross-fertilization of theoretical and methodological approaches to pursuing the substantive aims of the program.*

As discussed in the introduction to this report, methods and theory for demographic research are critical building blocks of the DBSB program. As fundamental to research as these elements are, however, they are not always given explicit attention in the process of program development. The competitive nature of the peer-review process creates an effective impetus for the incremental development of theory and methodology. However, peer review often is ineffective in encouraging interdisciplinary or high-risk approaches; few projects target the advancement of methods or theory as a primary goal. This strategic aim was designed to focus the Branch's thinking about ways to encourage creative work in the development of theory and new methodologies.

### **DEVELOPMENT OF METHODOLOGY**

Research on methodology supported by the DBSB spans a wide range of issues, including for example, the development of statistical methods for the analysis of demographic data, the development of innovative survey designs, and the evaluation of new data collection methods. Several specific initiatives have helped to encourage and advance methodological research in recent years. A PA issued by 11 NIH Institutes and Offices in 1998, sent a strong message to behavioral and social science investigators that methodological research was welcome and indeed encouraged at the NIH. Under this initiative, the DBSB has awarded two grants: one to develop statistical methods to operationalize the proximate determinants model of infant mortality and one to investigate the effects of social desirability in creating respondent bias through a comparison of audio-CASI (computer-assisted self-interviewing) and text-CASI techniques. The DBSB coordinated the participation of the



NICHD's behavioral research programs in this PA and has also integrated methodological research into its own PAs and special emphasis areas.

Below, this report summarizes highlights of research that has developed or tested new methodologies in the context of substantive projects, as well as projects that have focused exclusively on methodological aims. The report also highlights research resulting from a 1993 RFA, "Methodological Studies to Enhance Demographic Research."

#### *Developing and Testing Analytic Tools*

A notable contributor to methodological advances is James J. Heckman, who developed methods to account for unobservable characteristics within large samples. Dr. Heckman's methods have been widely adopted in demographic research. Currently, Dr. Heckman is applying them in a study of the effects of earning a high school GED. In October 2000, Dr. Heckman won the Nobel Prize in Economics for his DBSB-supported work.

Multilevel research designs are increasingly becoming the norm in social science research. Ignoring clustering in multilevel studies leads to overly optimistic estimates of precision and can introduce serious biases in parameter estimates. A DBSB grantee is developing and evaluating new statistical methods for the analysis of multilevel data when the response is a binary attribute or a count of events. If successfully completed, these methodological refinements are expected to impact widely on the social science community. The computing tools developed as part of this project will be made freely available to the research community, to allow routine estimation of community, family, and other clustering effects on a variety of health outcomes.

Other Branch grantees are employing new multilevel modeling software to estimate hazards associated with time to first sex, assessing the role of neighborhood, family, household, and individual characteristics in predicting sexual debut. The creation of this software allows for multilevel duration analysis, heretofore not possible. The software developed and used for this analysis may be applied to continuous or discrete outcomes (binary or polytomous), and to failure times and counts.

Life course theory holds that trajectories in different life domains are interdependent. Decisions and events in domains such as education and employment, family formation, and geographic mobility affect and are affected by the course of events in other domains. A DBSB grantee is developing statistical techniques that model these interdependencies. This research will extend existing techniques to handle three or more interdependent processes, each involving three or more states; comparing results to other available approaches; assessing software for applying the new techniques; and testing the new methods using NSLY data.

### *Improving the Quality of Demographic Data*

The development of new computerized techniques for collecting survey data on sensitive topics has led to some of the program's key accomplishments in methodological research. A May 1998, article in *Science* reported results from a DBSB-supported experiment that showed substantially higher levels of reporting of sensitive behaviors by male adolescents using an audio-CASI procedure as compared to a standard paper-and-pencil, self-administered questionnaire. The audio-CASI method allows respondents to listen to questions privately using headphones and to enter their answers directly into a laptop computer. Estimates of male-to-male sexual intercourse, injection drug use, and sexual contact with intravenous drug users were two to three times higher using the new methodology. Comparing the estimates of homosexual behavior against the retrospective reports of older men supported the validity of the higher estimates. Other tests of the audio-CASI technology supported by the DBSB have demonstrated that the new method also reduces the underreporting of abortions in reproductive health surveys, and provides an effective method of interviewing in multi-lingual populations.

CASI techniques can also take the form of text-CASI, in which respondents are prompted by computer text rather than recorded voice questions. This distinction is important both from the perspective of efficiency in large-scale surveys, and from the perspective of relative accuracy. A new DBSB grantee is comparing the accuracy of audio-CASI and text-CASI techniques, validating the self-reports with exogenous data. Factors, such as familiarity with computers and identification of a recorded voice with the perception of a "virtual interviewer," are hypothesized to impact the effectiveness of CASI techniques in reducing self-report errors. This research will also assess the extent of over-reporting of socially desirable behaviors (e.g., voting), and the under-reporting of socially undesirable behaviors (e.g., drug use), as is commonly assumed in error estimation of self-reports.

Other approaches to improving self-reported data rely on cognitive theories to guide the development of questions. One Branch grantee found that retrospective reports of condom use showed substantial validity when compared to daily diary accounts, but that recall was better over moderate (three-to-six month) periods than for shorter or longer periods. The study also evaluated commonly used strategies for measurement of sexual behavior unprotected by condom use, cautioning that flaws in typical scales of condom use consistency could lead to erroneous conclusions.

While methods to improve accuracy in the collection of sensitive self-reported data continue to improve, researchers also strive to evaluate the extent of error in self-reported data. DBSB grantees have identified clarity, complexity, and affective intensity as important elements in influencing the quality of self-reports. In studies of child support payments, fewer than one in four respondents (both payers and receivers) accurately reported child support payments. Distinguishing child support from other court-ordered payments (e.g., alimony, health insurance) and including language that emphasizes the recall of rare events (e.g., "even one") improved the accuracy of recalled information. Increasing frequency and irregularity of payment events led to declines in accuracy. Strong emotions, either positive or negative, affected the reliability of results, as well. In a careful examination of interaction between interviewers and respondents, researchers found that interviewer changes in questioning technique elicited more accurate responses, and that respondent

qualifications/hesitations were associated with less accurate responses. Findings emphasize that instruments should be pretested for clarity, while the complexity of events should be evaluated and accounted for in questionnaire design. Recording interviewer and respondent interaction and comments may also contribute to reliability estimation.

Emotions also affect self-reports of adolescent body size. In an evaluation of the validity of both adolescents' and parents' reports of teens' obesity and body mass, reports of absolute measures of height and weight were found to be valid, but reports of obesity, a condition with strong emotional implications, were poor predictors of actual obese status.

Subjective perceptions of complex relationships and changes in relationships over time affect measurement of family structure and family dynamics. Both complex family structures and subjective feelings reduce consistency in reports of number of siblings. Perceptions of mothering behavior, assessed in terms of time and supervision, harsh discipline, and relationship quality, vary between the children's and mothers' own reports.

An analysis comparing adolescents' reports of their friends' behavior with direct reports from the friends themselves confirms the suspicion that an individual's own behavior can color perceptions of how his or her friends behave. Adolescent self-reports of friends' behaviors overstate the conformity between an individual's behavior and the behavior of his or her peers. Thus, while the important role played by peers is not to be discounted, measurement of that role through reliance on the reports of the target adolescents themselves will overstate the effect of peer influence.

Finally, the NICHD Family and Child Well-Being Research Network has examined a number of topics involving child health. One study has used data from a special disability supplement to the Health Interview Survey to develop new measures of childhood disability. The supplement is the most comprehensive national survey of disability and is the only source for national information on disabled children. An indicator summarizing this work was featured in a recent issue of *America's Children: Key Indicators of Well-Being*.

Other advances in survey methods have evolved out of the Branch's work on fatherhood. Research on ways to improve the representation of individuals who are loosely connected to households (e.g., low-income men) is also underway with support from the Branch. Often, fathers are undercounted in large-scale sample surveys; this project has tested innovative screening techniques to identify and enroll such "missing men." Initial pretesting of the technique did find greater numbers of household residents than traditional techniques; however, this innovative strategy has not yet been widely implemented. Efforts are also underway to develop and standardize survey instruments for the study of fatherhood — both becoming and being a father. This initiative, named DADS for "Developing a Daddy's Survey," will also work to establish the validity and reliability of the final instrument constructs through psychometric analyses.

#### *New, More Powerful Survey Designs*

Another newly emerging standard in data collection is the development of multi-method and multilevel surveys. Moving from traditional questionnaire-based survey research to research that integrates multiple types of measurement has opened the door to research linking

demographic processes to outcomes such as child development, health, and environmental change, as well as to research that considers a broader range of influences on demographic processes.

The integration of ethnographic and observational methods with survey research has advanced to new levels in recent years. A new DBSB-supported study of the adaptation of poor families and children to new welfare policies is innovating by using ethnography as a unifying methodology in a multi-method study. The Three Cities Study combines periodic population surveys with on-going ethnographies of local communities, spatial research techniques, and observational assessments of child development. The study's goal is to understand how public policies, community values and support systems, and family characteristics interact to affect the well-being and development of children in poor communities. The study documents individuals' struggles to negotiate employment, school, and health service visits, in the context of burdensome commutes and limited transportation and time resources. Findings of community anticipation and action preceding welfare reform enactment are indicative of the multilevel interactions that can be uncovered through this methodological approach.

A similar approach is being used to study the role of institutions in the politics of sexuality in Chicago area neighborhoods. Using open-ended interviews of key informants, and a close-ended survey administered to a representative sample of the selected neighborhoods, one analysis from this study explores the role of religious doctrine regarding sexuality across a spectrum of views. The link between denominational policies, neighborhood cultures, and church-specific identities within communities is explored, with a focus on the role of local church leaders as key agents. Researchers note the paucity of open acknowledgement of the prevalence and effect of HIV in the communities. Further work on the social structures and processes that affect the sexual transmission of disease is in progress.

Other examples of multi-method studies include those that complement survey data with the collection of biomarkers. In 1995, a national household survey of sexual behavior among adolescent males collected urine specimens for analysis for infection with gonorrhea and chlamydia. Analyses of potential response bias associated with the approximately one in five respondents who were not willing or able to provide a specimen suggest that these individuals have characteristics that make them slightly less likely than others to be at-risk for an STD. Overall, results of this survey point to a high proportion of unidentified chlamydia cases, pointing to insufficient clinical guidelines for testing and a lack of awareness among young men as to their risk and the benefits of testing. Another study in an urban population also successfully implemented STD screening within the context of a household interview, also finding a high prevalence of undiagnosed and asymptomatic STDs. Presently, plans are in place for the third wave of the Add Health Study (to be fielded in 2001) to incorporate biological measurement of STDs.

Social network data provide another tool for expanding the power of surveys. In the Add Health Study, the collection of global network data on friendships among adolescents has provided a powerful tool for studying the influence of peers on adolescent behavior. Results of this study have documented the greater influence of peers, as compared to parents, on teen smoking. Peer effects on sexual debut are also being studied. In Thailand, researchers are harnessing social network measures to study contraceptive choice and migration

(migratory patterns and migrant remittances). In addition, they are studying the effects of migration on placement in social networks and the effects of gains or losses in household structure on social networks and position. Examining these questions may improve both survey design and analytic strategies, as well as contributing to the substantive fields of research.

Another innovation of the Add Health Study was its inclusion of a full-scale behavior/genetic design that permits testing hypotheses about the influence of family and parental characteristics and behaviors independent of the confounding effects of genetic relatedness. Many of the resulting analyses are revealing complex patterns of interaction between heredity and environment. For example, one study shows that scores on the Peabody Picture Vocabulary Test are strongly influenced by heredity in families with more highly educated parents, but that in families with less educated parents, environment accounts for more variation in scores. Add Health research has also shown that heredity plays a role in aggressive behavior, but that family and school-level contexts moderate the level of aggression. This research is an example of the types of questions that can be addressed by combining different methodologies: genetic research and multilevel techniques. Other studies, including the NLSY and the new ECLS-B, are also including sibling and twin pairs in their samples, to provide analytic leverage in understanding the nature of family effects on outcomes.

#### *Incorporating Spatial Analysis Methods*

The integration of satellite images with demographic data has given added power to studies linking population growth, migration, land use, and environmental degradation. For example, emigration from rural Thai villages has been linked to the decline of available forest cover near the village (which could be cleared for farming), and to patterns of landscape fragmentation in which land is cleared for farming in small, economically inefficient parcels. Satellite time series data with linkages to household survey research have established the importance of initial soil quality on subsequent cropping behavior of farmers, and on farmer persistence on a piece of land. Applications of Geographical Information Systems (GIS) have also been used to develop better measures of accessibility to family planning services in developing countries and to shed new insights into the contextual factors that drive patterns of contraceptive use. The assessment of neighborhood effects on minority health uses GIS to profile environmental health risks and related resources within neighborhoods, to describe the daily routines of minority families within neighborhood contexts, to estimate the level of families' dependency on neighborhoods for health services, and to investigate patterns of "neighborhood use" and related health outcomes. For example, GIS data may include measures of workplace and day care locations and travel time to reach these daily destinations, within a family's array of anchor points.

A further application of GIS technology involves developing and programming new spatial segregation measures, comparing these to traditional segregation measures, and disseminating the program language on the Web for public use. Creation of a health-access GIS database is underway in North and South Carolina. The database will document and spatially locate every health service facility in the two states; incorporate spatial data on health measures such as morbidity, fertility, and mortality; and integrate information from the 2000 Census with this local dataset. The database is itself a product serving a multitude

of research goals and, furthermore, is innovative in its documentation of the health services landscape, enabling new research regarding the relationship among service location, policies, and health outcomes. The DBSB's program of infrastructure support for Population Centers has had an impact on the importing of GIS methodologies into demographic research. Several centers have now established GIS services to facilitate the use of these methods.

#### *Improving Small Area Estimates*

Two new approaches to the estimation of small area populations are being developed for research and commercial use. Using housing-based tax assessor data, housing in South Florida is geocoded to enable users to aggregate local information to any user-defined geography. The adaptation of the housing unit approach adds new variables to the model estimation and improves the quality of demographic data, such as denominators for populations at-risk, sampling frames, inputs to model-based research, and identification of target populations. Remotely sensed data provides another opportunity to advance the field of estimating small area populations. The DBSB supports research to develop, test, and market an automated system for producing current population estimates based on empirical data that is generated by aerial photography and cost-effective, high-resolution satellite imagery.

Quality Assurance (QA) methods used to monitor industrial assembly lines have proven informative for the measurement of rare events in small geographic areas. Two cumulative summary QA techniques — one for short-term changes and the other to capture longer trends — were applied to a study of the role of prenatal care in neonatal outcomes. These methods, found to be very effective, fill a methodological gap in the study of infrequent events and short-term changes, even in spatially limited areas.

#### *Mathematical Demography*

Research in mathematical demography can improve our understanding of population dynamics and also contribute to demographic modeling and estimation. The DBSB has supported work on hyperstable models, that is, stable population models that allow for changing vital rates. Researchers developed a formula that calculates the size of the ultimate birth cohort and resulting population momentum under conditions of gradually declining fertility. This study also quantified the relationship between population momentum and population aging. The Branch also helped to support the development of a new method for forecasting demographic trends. The new methods incorporate probabilistic estimates of possible futures, rather than point estimates of low or high alternatives. These methods are being used by the Congressional Budget Office and the United Nations.

## THEORETICAL DEVELOPMENT

The major impetus for many of the methodological developments discussed in this report has been a parallel expansion of theory within demographic and behavioral population research. As the field has moved from an emphasis on *describing* population processes to an emphasis on *understanding* how they are influenced by and influence social, cultural, economic, and institutional phenomena, it has drawn on and developed a wide range of

theoretical perspectives about human behavior. The theories used in demographic research are drawn from psychology, economics, and sociology, and are influenced by theoretical developments in other fields such as anthropology, biology, public health, geography, and more. One of the Branch's grantees, Gary Becker, was awarded the Nobel Prize in Economics in 1992, for his work on microeconomic theories of the family. Although many funded grants feature theoretical innovation, few other DBSB grants have focused exclusively on theoretical concerns. Some of the key theoretical developments motivating demographic research in recent years have included the following:

- The continuing development of life course theory calls for empirical work that links individual developmental trajectories with social pathways such as school transitions, labor experiences, and social relationships and networks. The historical time and place of this intersection of development trajectories and social pathways remains of central importance to life course research, as do human agency and key transition points. The timing of events is broadly defined to include the timetable of individual physical maturation, as well as relevant external events. Understanding interrelationships is more carefully informed through network analyses rather than relying on individual perceptions. Expanding lifespan research to a broader and more contextualized investigation of developmental trajectories challenges researchers to look for new methods to collect and analyze life course data and to explore new applications of the theory in empirical work.
- Social capital theory, originally developed by James Coleman, is applied increasingly by demographers seeking to understand questions as diverse as why Americans want children and why poor children experience developmental disadvantages. The Family and Child Well-Being Research Network supported an initiative on the measurement of social capital and the application of the theory to studies of child well-being. Direct measurement of social capital remains a challenge. However, an index of social capital that counted positive aspects of five measures (two parents or parent-figures in the home; social support of the maternal caregiver; no more than two children in the family; neighborhood support; and regular church attendance) was found to be more strongly related to positive childhood outcomes than any single indicator.

Several DBSB-supported researchers are testing social capital theory using multilevel data. In addition, in cooperation with the U.S. Department of Housing and Urban Development, the DBSB is supporting the Moving to Opportunity (MTO) program, an experimental effort based on years of research to identify the positive effects of social capital by moving individuals to better environments with different opportunities, social networks, and normative contexts.

- Sociological theory has long placed emphasis on the role of social interaction in bringing about social change. DBSB-supported research in Africa is currently testing quantitative models that examine the effects of social interaction on fertility and contraceptive practice. Preliminary findings in a study of the effects of social interaction on contraceptive use in Ghana are supportive of diffusion theory. In this study, social interaction is measured as exposure to mass media, geographic mobility, contact with health and family planning workers, and social networks, including informal

relationships, school and work contacts, and participation in voluntary organizations. An analysis of data from rural Kenya traces the role of social interaction in mediating family-planning program effects. The analysis demonstrates the potential for social interaction effects to impede rather than enhance a family planning program's effect. Once the effect of a family planning program has filtered through a population, either low or high-fertility equilibria may be reached. Moreover, the degree of interface between program efforts and social interaction may vary by the level of contraceptive use in the population.

- The role of culture in demographic change is often debated, but rarely studied empirically. The DBSB has funded little research that explicitly incorporates culture and cultural change into demographic models. However, several developments point to an increasing interest in this topic. The development of mixed-method study designs that blend ethnographic and survey methods provide tools that could lead to improved ways of measuring cultural models shared by interacting groups and blending these measures into analytic models. A program funded by the Mellon Foundation has promoted the cross-fertilization of demography with anthropology, increasing the exposure of demographers to new, more dynamic, theories of culture. Some family demographers are now exploring the meanings of new family forms and suggesting that concepts such as culture, and the "cultural schema" internalized by individuals, be included in our models. The Branch is funding a new project focused on understanding sources of influence on ideas underlying marriage and fertility behaviors.
- Theories of gender have begun to attract increased attention in demographic research. One DBSB-supported researcher has developed a biosocial theory of gender that integrates hormonal influences with social and environmental influences on gendered behaviors related to fertility, work, and family. This theory draws on a broad range of sciences, including primatology, clinical research, social and developmental psychology, and sociology. DBSB grantees have examined the relation between fertility behavior and women's autonomy, household decision-making power, and status; they have also applied theories of gender to understand the political and social processes through which China's One-Child policy achieved its results. Recently, the Branch issued an RFA calling for research on gender as it related to risk and prevention of HIV.
- Continued development of economic theories of family behavior, by Gary Becker and other economists, stimulates new models of household decision-making processes. Becker's theory posits that the formation of families and the production of children are means by which individuals strive to maximize their own self-interest in creating a prosperous existence for themselves. Bargaining theories underlie investigation of power dynamics in household decisions as a strategy for explaining unitary household decisions. An innovation that bridges Becker's model and bargaining theories models shared inputs to family decisions based on relative power dynamics. This line of research is currently being applied to analyses of the impact of women's education, resources, and political participation on child health and education outcomes in developing countries.



- Recent advances in thinking have extended the concept of family to stepfamilies, cohabiting families, gay families, father-only families, and families formed through nonmarital childbearing. DBSB-supported researchers are examining the dynamic nature of different types of households, including the traditional, heterosexual model, as well as the similarities among the alternative forms of partnerships and families. Research on the meanings of different family forms has attracted increased attention. Cohabitation has been theorized alternatively as a step in the process leading to marriage, a substitute for marriage, or a substitute for singlehood. Researchers are looking at the demography of households, mate-selection processes, and fertility decisions to try to understand how the meaning of cohabitation varies among various populations. Elaboration of definitions, such as what constitutes a two-parent home or a stepfamily, has implications for studies of union formation as well as child outcomes. The implications of alternative family structures are studied from a gender perspective as well, providing new insights into the ways that costs and benefits of membership in different union types may vary for men and women.

### *Encouraging Cross-Fertilization*

Three major activities of the DBSB specifically seek to foster the advancement and cross-fertilization of theoretical perspectives within the demographic and behavioral sciences.

- First, the Centers/Infrastructure program links investigators from diverse disciplinary backgrounds. This interaction facilitates the development of research paradigms that more adequately reflect the complexity of processes influencing demographic events and promotes interdisciplinary research, as well as the borrowing of ideas across disciplines. Examples include Gary Becker's work (see page 53), which is now incorporating mechanisms for feedback on social and cultural effects; the collaborative work of anthropologists and demographers in studying Nepalese families; and the integration of behavioral genetics in demographic research.
- Second, DBSB training programs offer pre- and post-doctoral training in population research to students from many disciplinary backgrounds, including sociology, economics, anthropology, biostatistics, public health, psychology, and more. A newly initiated program offers career development opportunities to junior-level scientists, emphasizing opportunities for cross-training in new disciplines and areas of study.
- Third, the Branch periodically organizes interdisciplinary workshops and conferences to stimulate cross-disciplinary thinking and the development of theory. Virtually all the conferences listed in Appendix F of this document were designed to expose and integrate diverse approaches to understanding demographic phenomena. These strategies will continue to guide the Branch's efforts to stimulate the development of theory for demographic research in the years to come.



## II.F. DATA FOR DEMOGRAPHIC RESEARCH

*Coordinate needs for NICHD-supported data collection to advance demographic research.*

In the context of the demographic and behavioral sciences, collection and dissemination of population-based data is an essential element of the infrastructure needed for advances in knowledge. The most common mechanisms used are censuses, registration systems or systems of administrative records, and surveys. Whereas the former two mechanisms require continuity over time and must be limited in scope to preserve their feasibility, surveys provide a flexible, powerful tool for developing data for demographic studies. This section summarizes the DBSB support for the collection of demographic data and activities that promote the dissemination of data and facilitate their use by researchers.

### COLLECTING NEW DEMOGRAPHIC DATA

Survey-based studies have been central to the development of the DBSB program since its inception. One of the very first projects supported by the NICHD in Population Research was the 1965 National Fertility Survey, which documented the dramatic uptake of oral contraception in the United States. National surveys supported in 1971, 1976, and 1979, documented increases in sexual activity among unmarried teens and created an essential information base for pregnancy-prevention programs. As noted in the previous section, surveys are rapidly evolving to incorporate a variety of important measurement strategies (e.g., collection of biological materials, linked ethnography, collection of social network data, and behavior genetic designs) that strengthen the scientific power of survey methods.

Some of the key surveys supported by the DBSB during the last five years are described below, starting with the most recently funded projects.

- The *New Immigrant Survey* will follow a sample of 11,000 legal immigrants drawn from INS administrative records. This four-year study will gather data about immigrants and their families, including children, with regard to their economic, social, and political adaptation to the United States. Topics to be investigated include pre-immigration work, migration history, family background, current family status, immigration process, mobility and adaptation process, and immigrant cohort comparison. The study, which was piloted in 1996-97, with a sample of 1,227 legal immigrants and temporary immigrants, will fill an important gap in information informing policy in the field of immigration.
- The *Fragile Families and Child Well-Being Study* (Fragile Families Study), which started collecting data in 2000, and will continue through 2004, follows 4,700 new families — including 3,600 unwed couples and 1,100 married couples and their new children. Initial waves of data will inform research in prenatal care, mother-father relationships, expectations about fathers' rights and responsibilities, attitudes toward marriage, social support, knowledge of local policies, and community resources. Follow-up interviews with both parents when the child is 12-, 30-, and 48-months old will investigate access to and use of healthcare and child care services, experiences with local welfare and child support agencies, conflict and domestic violence, incarceration, and mental health.

- The *Three Cities Study of Welfare Reform and the Well-being of Children* (Three Cities Study) studies the effects of the 1996 Welfare Reform Bill on children in three cities, Boston, San Antonio, and Chicago, over the period 1999-2002. The project also addresses the broader issue of the effects of parental time and money resources on child well-being. The conceptual framework motivating the project is the economic household production model, supplemented with perspectives on child development drawn from the developmental psychology literature and informed by insights from ethnographic research.
- The *Los Angeles Family and Neighborhood Survey* (LAFANS) is a longitudinal survey of children, their families, and their communities in 65 neighborhoods in Los Angeles County over a four-year period (2000-2004). Poor neighborhoods and households with children are over-sampled. The LAFANS collects extensive information on family, social and economic status, parenting, social ties, geographic mobility, neighborhood attitudes and involvement, and use of child-related services. The study follows households that remain in the sampled neighborhood, those that move out of sampled neighborhoods, and a sample of new entrants into sampled neighborhoods during each annual wave of the survey.
- The *Early Childhood Longitudinal Study, Birth Cohort* (ECLS-B) is a collaborative effort among several federal agencies and NIH Institutes. A nationally representative sample of approximately 15,000 children born in the calendar year 2001, will be followed longitudinally. The ECLS-B is designed to capture information about children's neighborhoods, families, health care, child care, and early childhood programs to understand the influences on children's developmental outcomes. It is hoped that data collection will continue until the children are of school age.
- The *National Longitudinal Survey of Youth, 97 Panel* (NSLY97) follows a cohort of 9,022 youths who were 12-16 years old as of December 31, 1996, to document their transition from school to work and into adulthood. In addition to extensive information about youths' labor market behavior and educational experiences, the survey collects data on youths' relationships with parents, contact with absent parents, marital and fertility histories, dating, sexual activity, onset of puberty, training, participation in government assistance programs, expectations, time use, criminal behavior, contact with the criminal justice system, and alcohol and drug use.
- The *Panel Study of Income Dynamics* (PSID), *Child Development Supplement* was initiated in 1997 to supplement the PSID core data with information on parents and their 0- to 12-year-old children. The objective is to provide researchers with a comprehensive, nationally representative, and longitudinal database of children and their families with which to study the dynamic process of early human capital formation. Measures include assessments of the cognitive, behavioral, and health status of 3,500 children; parental and caregiver time inputs to children; teacher-reported time use; and measures of other resources, for example, the learning environment in the home, teacher and administrator reports of school resources, and Census-based measurement of neighborhood resources.

- The *National Longitudinal Survey of Adolescent Health* (Add Health) was conducted in two waves in 1994-96, to provide comprehensive data on the personal, familial, and contextual determinants of health and health-related behaviors among adolescents in grades 7-12. Wave III data will be collected in 2001, when participants will be 18-26 years of age. Collection of data in Wave III will be expanded to include high school transcripts and biospecimens for the purpose of identifying cases of STDs, including HIV. Already there are over 110 contractual agreements that list over 600 researchers as data users, 71 known publications or manuscripts in progress, and 35 public and private grants for analysis of the data, including 14 separately funded NICHD grants.
- The *National Survey of Adolescent Males* (NSAM) was conducted in 1988, 1991, and 1995, to study sexual and contraceptive behaviors, HIV risk, and family formation among males ages 15-19. The teenagers first interviewed in 1988, were re-interviewed in 1991, and 1995. In addition a new cohort of teenagers was interviewed in 1995. These data have also been used to track federal health goals and have provided the basis for 60 articles by the researchers who conducted the study, as well as many others by other scientists.
- The *National Survey of Families and Households* (NSFH) was first developed in 1987, to provide national data on the processes through which families and households form, dissolve, and interact. Wave II followup data were collected in 1995, and Wave III data will be collected in 2001. This study has generated over 300 articles in scholarly journals, is in use at over 200 institutions nation-wide, and is the basis for at least 80 grants funded by the NIH and NSF.
- The *National Longitudinal Survey of Youth* (NLSY), *Child Supplement* has tracked the development and well-being of children born to female respondents in the NLSY since 1986. The intergenerational data yielded by this study have now resulted in more than 800 published items and working papers, including 288 journal articles, 45 published reports, 27 book chapters, 11 books, and 75 theses and dissertations.
- The *National Survey of Family Growth* (NSFG) is conducted by the National Center for Health Statistics with partial support from the NICHD. The NSFG provides data from detailed, in-person interviews of a national sample of women 15-44 years of age on sexual activity, contraception, wanted and unwanted fertility, infertility, marriage, divorce, cohabitation, and reproductive health. These data are used in tracking federal health goals, monitoring population trends, and in research. Because of increased needs for reliable national data on HIV-risk behavior, family formation, and fatherhood, the next NSFG will be based on interviews with 7,200 men ages 15-49 and 11,800 women ages 15-44, a total of 19,000 interviews.

A full list of large data collection projects supported since 1990, is included in Appendix C of this document. The substantive findings of many of these studies have been highlighted in previous sections of this report.

In 1996-97, DBSB staff helped to lead a comprehensive review of federal data needs relating to fatherhood. This project emerged out of several initiatives: the Federal Fatherhood

Initiative, the Interagency Forum on Child and Family Statistics, the Branch's "parenting and partnering" strategic goal, and the work of the Family and Child Well-Being Research Network. The review resulted in several initiatives to strengthen federal data on fathers. Men were included in the NSFG, Cycle 6, and fathers were studied in the Early Head Start Research and Evaluation Project. The NLSY97 Cohort included questions on male fertility, fathering behaviors, and relationships with fathers. Questions about fathering were also included in the ECLS-B. Other studies supported by the Branch, including the Panel Study of Income Dynamics and the Fragile Families Study, also included strong fathering components.

## MANAGING INVESTMENTS IN DATA COLLECTION

Nationally representative surveys are very costly to conduct. Careful planning and priority-setting are essential to ensure that investments in such efforts optimally serve scientific needs and goals. The DBSB has evolved a set of principles and practices to guide our investments and to monitor their productivity.

- *General advice about program directions and priorities is solicited from the scientific community through a structured planning process.* As noted in Section I of this report, the Branch last undertook this process in 1996. In 1999, the Branch initiated an annual series of workshops devoted to planning. In 2001, a long-range planning workshop will bring experts from diverse fields to address future directions for the DBSB program, including data needs.
- *Wherever possible, the Branch seeks to meet its scientific goals by supplementing large data collection efforts funded by other agencies rather than funding new studies.* Examples of this strategy include the NLSY-Child Supplement (with the U.S. Department of Labor); supplements to the Current Population Survey (CPS) that provide for data on nativity (with the U.S. Census Bureau); and the new ECLS-B (with the U.S. Department of Education), which the DBSB will supplement to provide for enriched health measures, oversamples of twins and very low birth weight infants, and an experimental module for nonresident fathers. Other examples of interagency cooperation are detailed in Appendix G.
- *New surveys proposed for funding through the investigator-initiated grants process are screened by staff and discussed with the Institute leadership before submission of an application.* Staff discusses potential new applications and discourages those that are not essential to the development of the field. Funding parameters are discussed in advance with the NICHD leadership.
- *Except where time-limited opportunities prevent it, large survey projects are required to build in a substantial planning period during which advice is solicited from other investigators regarding the content and methodology of the proposed survey.* This ensures that studies are designed to be useful to a broad range of investigators with scientific interests related to the subject matter of the survey.
- *All investigators receiving funds from the DBSB program to conduct surveys of interest to the broader scientific community are expected to make their data available for secondary analysis in a timely manner, consistent with the protection of human subjects.* The Branch publicizes the availability of

NICHD-supported survey data through a Web-accessible publication, *Survey Snapshots* (see Appendix C), and supports dissemination activities. Applicants to the DBSB program are strongly encouraged to use existing data to address scientific questions wherever possible.

- *The Branch monitors the balance between investments in data collection activities and other types of research activities.* The Branch's investment in data collection must be balanced appropriately with developmental projects that explore new ideas, address tightly focused research questions, and develop measures and methodologies, and with secondary data analysis projects, which use existing data to test and refine hypotheses. Typically, the DBSB limits investments in large data collection projects to 15-30 percent of the Branch's portfolio.

## DISSEMINATING DATA AND FACILITATING USE

Effective archiving and dissemination of data have an important role in facilitating population research. The DBSB places a strong emphasis on secondary analysis of existing data whenever possible and on the open sharing of data for research purposes. Expansion of data availability on the Web opens new doors for research. The DBSB supports the creation of archives that collect and disseminate high-quality survey data on demographic topics, the development of innovative methods for improving the accessibility of data, as well as high-speed computer applications that ease researchers' access to very large datasets such as those available from population censuses. Examples include:

- Under the Multivariate Interactive Data Analysis System (MIDAS) project, programming is being developed that combines Internet accessibility, a user-friendly design, data analytic power, cost-effectiveness, and access to approximately 150 high-quality datasets. The MIDAS project will overcome obstacles for accessing these datasets, remove compatibility challenges for conducting analyses, and increase the value of the data by improving productive use.
- Data for the period 1964-99, from the CPS — the basic monthly data sets as well as all of the CPS supplements — are being made available both on CD-ROM and the Internet through the CPS Utilities project. The March CPS series is available for the period 1962-2000. Use of the Web-based data is free-of-charge, while data sets received on CD-ROM are partially underwriting the cost of this endeavor. Users of the CPS Utilities have noted its straightforward interface and high-quality extraction system. In the past year, over 1,300 searches have been run and as many data tables provided to users, and nearly 1,200 user-defined data files have been extracted. Users include 36 federal, state, and local government agencies; 163 educational institutions; 56 other U.S.-based institutions; and 23 foreign institutions.
- An interactive tool for analyzing census and large survey files on the Internet, PDQ-Explore is an additional means of expanding researcher access to data sets. Beta versions of the software are available on the Internet. The software allows users to submit statistical queries for selected databases and receives tabular and summary results from the PDQ-Explore processing system. Recent efforts involve development of

bootstrapping techniques for the calculation of confidence intervals for summary statistics.

- Among its numerous data projects, Sociometrics has created with Branch support a Contextual Data Archive containing 27 data sets with information at 13 different geographic levels. Researchers' strong interest in multilevel analysis is indicated by the high proportion of sales (342 out of 371) that include the complete archive, although the data sets are also available individually. Sociometrics provides extraction software with the data sets that guides researchers in initial analytic planning and preparation for advanced analyses. User's manuals and guides have been prepared to support users of the data. In addition, a database of methodological and exemplary research papers regarding contextual data analysis is available for online searches.
- The Integrated Public Use Microdata Series (IPUMS) is an outstanding example of effective data dissemination and its impact on population research. The IPUMS consists of 25 high-precision samples of the American population drawn from 13 federal censuses. Some of these samples have existed for years, while public use samples of the older censuses were created with funding from the DBSB specifically for IPUMS dissemination. The 25 samples, which span the censuses of 1850-1990, collectively comprise a rich source of quantitative information on long-term changes in the American population. With the IPUMS, researchers can now use individual-level data to study trends in economic activity, household formation and structure, fertility and mortality for a significant portion of American history. These data are available through the IPUMS Web site. Since releasing the first integrated dataset in 1995, the IPUMS has distributed over two terabytes of data to approximately 4,800 users around the world. The project distributes about 95 gigabytes of data per month — an average of 130 megabytes per hour, 24 hours a day. Approximately 500 custom data extracts are generated each month. The overwhelming majority of IPUMS studies make use of multiple census years. As a result, the IPUMS is responsible for a dramatic increase in the total number of quantitative studies of long-run social and economic change. In five years the IPUMS has served as the basis for 10 books, 24 completed Ph.D. dissertations, 160 published articles, at least 21 dissertations in progress, and hundreds of working papers, conference presentations, and research reports.



### **III. CONCLUSION**

The Branch's central mission — to understand population dynamics — has remained unchanged since its inception. The Branch's program, however, has evolved markedly as social scientists have striven to understand how demographic change intersects with other forces and as demographic methods have illuminated a broad range of social and health issues. This evolution has fueled collaboration with scientists in other fields, and greatly enriched the demographic and behavioral sciences.

The Branch's progress during recent years owes much to the vision, creativity, and commitment of the scientists it supports. In 1996, a panel of population researchers advised the Branch in developing six strategic goals, which have proven invaluable to Branch staff as they have developed programs and set priorities. This report has summarized highlights of the Branch's continuing progress in addressing these goals. The Branch will reformulate its strategic goals in 2001, with the guidance of scientists participating in a long-range planning activity scheduled for June of this year. The advice and recommendations of the scientists contributing to this activity will be crucial to the program's success during the coming years.







## **APPENDICES**



**Appendix A. Fiscal Summaries**  
**DBSB Projects By Area: Fiscal Year 2000**

|                                     | <b>No. of Projects</b> | <b>Funds</b>        |
|-------------------------------------|------------------------|---------------------|
| <b>Fertility</b>                    |                        |                     |
| Sexual Behavior & Contraception     | 12                     | \$3,551,886         |
| Pregnancy and Birth                 | 15                     | \$4,107,974         |
| Consequences of Pregnancy/Birth     | 5                      | \$972,139           |
| Gender and Status of Women          | 0                      | \$0                 |
| Fecundity and Infertility           | 3                      | \$3,190,278         |
| Subtotal                            | 35                     | \$11,822,277        |
| <b>Families and Household</b>       |                        |                     |
| Fatherhood; Child Support           | 6                      | \$1,654,857         |
| Child Well being                    | 27                     | \$14,100,610        |
| Marriage, Divorce, and Cohabitation | 8                      | \$834,429           |
| Intergenerational Processes         | 8                      | \$3,146,656         |
| Child Care                          | 1                      | \$117,889           |
| Subtotal                            | 50                     | \$19,854,441        |
| <b>Mortality and Health</b>         |                        |                     |
| Infant and Child Health/Mortality   | 12                     | \$2,826,851         |
| Adolescent Health                   | 2                      | \$8,419,737         |
| General Health and Mortality        | 6                      | \$1,784,695         |
| Subtotal                            | 20                     | \$13,031,283        |
| <b>HIV and STD*</b>                 |                        |                     |
| Basic Research                      | 14                     | \$3,543,258         |
| Intervention Research               | 13                     | \$5,699,491         |
| Subtotal                            | 27                     | \$9,242,749         |
| <b>Population and Movement</b>      |                        |                     |
| Internal Migration                  | 4                      | \$521,507           |
| International Migration             | 3                      | \$440,974           |
| Migrant Adjustment                  | 11                     | \$3,634,236         |
| Population and Environment          | 4                      | \$1,554,032         |
| Subtotal                            | 22                     | \$6,150,749         |
| <b>Other</b>                        |                        |                     |
| Institutional Training              | 12                     | \$2,064,488         |
| Other Training                      | 8                      | \$307,955           |
| Centers                             | 12                     | \$8,328,161         |
| Statistics & Formal Demography      | 5                      | \$896,767           |
| Data/Information Dissemination      | 12                     | \$2,821,958         |
| Subtotal                            | 44                     | \$14,419,329        |
| <b>TOTAL</b>                        | <b>203</b>             | <b>\$74,520,828</b> |

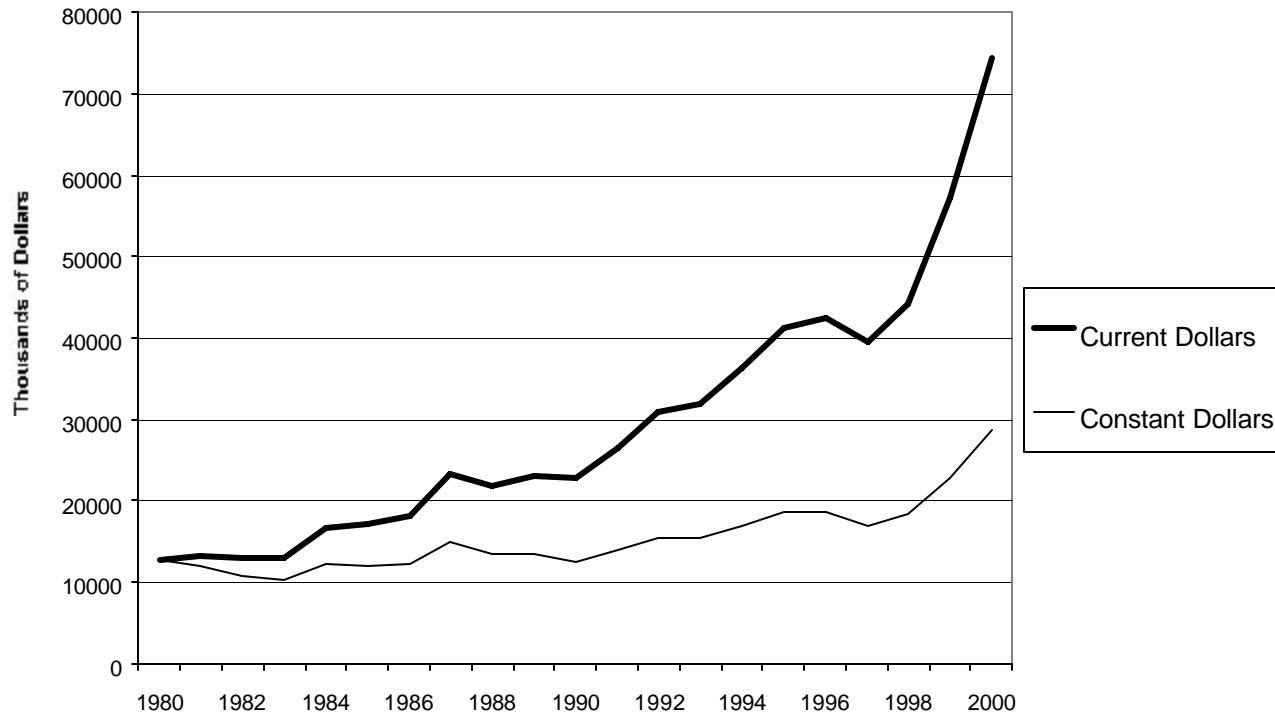
\*Includes only projects 100 percent related to HIV/STD research. Other projects with AIDS relevance are included under fertility and health.

**DBSB Grants & Contracts  
By Budget Category & Activity  
Fiscal year 1994 – Fiscal year 2000**

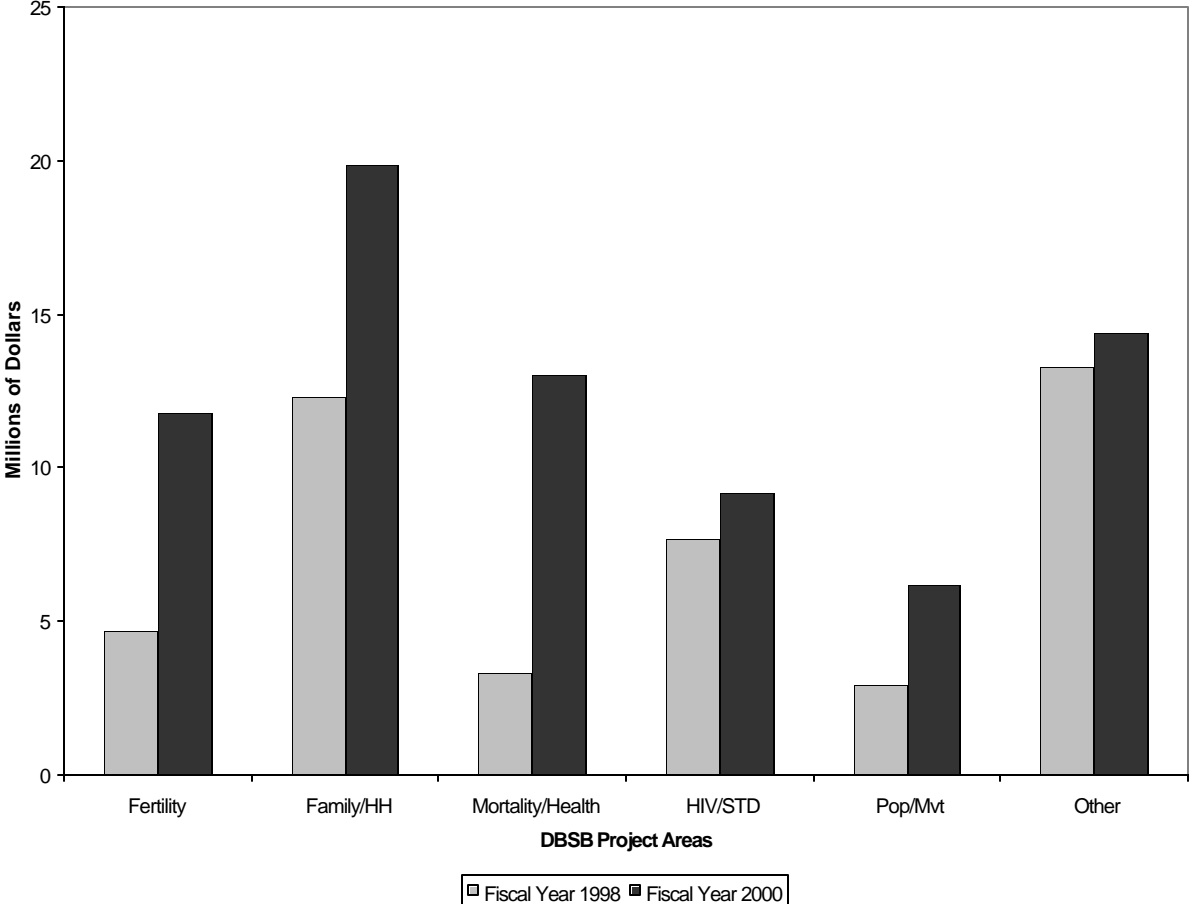
| Grant Type              | Fiscal Year 1994 |                     | Fiscal Year 1996 |                     | Fiscal Year 1998 |                     | Fiscal Year 2000 |                     |
|-------------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|
|                         | No. of Projects  | Funds               | No. of Projects  | Funds               | No. of Projects  | Funds               | No. of Projects  | Funds               |
| P01                     | 4                | \$4,099,682         | 3                | \$4,784,500         | 3                | \$2,431,331         | 2                | \$10,915,892        |
| R01                     | 83               | \$16,260,668        | 84               | \$19,328,501        | 89               | \$22,101,612        | 118              | \$40,760,795        |
| R03                     | 0                | \$0                 | 3                | \$235,094           | 6                | \$414,086           | 12               | \$802,163           |
| R29                     | 4                | \$404,570           | 7                | \$623,669           | 10               | \$1,051,096         | 7                | \$765,371           |
| K23                     | 0                | \$0                 | 0                | \$0                 | 0                | \$0                 | 1                | \$143,337           |
| R37                     | 5                | \$861,765           | 3                | \$652,539           | 2                | \$511,577           | 1                | \$282,211           |
| SBIR/STTR*              | 5                | \$557,854           | 8                | \$1,588,342         | 10               | \$2,289,714         | 8                | \$2,024,977         |
| R55                     | 1                | \$60,000            | 2                | \$100,000           | 0                | \$0                 | 0                | \$0                 |
| U01                     | 10               | \$1,624,042         | 12               | \$1,960,485         | 0                | \$0                 | 9                | \$2,082,818         |
| Other Research*         | 4                | \$85,754            | 1                | \$115,429           | 0                | \$0                 | 2                | \$6,001             |
| P30/P50                 | 12               | \$6,801,668         | 11               | \$7,447,553         | 12               | \$7,818,936         | 12               | \$8,328,161         |
| D43                     | 0                | \$0                 | 3                | \$90,000            | 3                | \$90,000            | 4                | \$200,000           |
| F31/F32/F33             | 2                | \$29,583            | 6                | \$156,120           | 6                | \$163,424           | 7                | \$233,183           |
| T32                     | 13               | \$1,559,868         | 12               | \$1,465,440         | 11               | \$1,349,273         | 12               | \$2,064,488         |
| Contract*               | 3                | \$382,150           | 2                | \$323,242           | 2                | \$316,693           | 2                | \$176,431           |
| Inter-Agency Agreement* | 4                | \$3,539,018         | 6                | \$3,786,211         | 12               | \$5,592,498         | 6                | \$5,735,000         |
| <b>Total</b>            | <b>150</b>       | <b>\$36,266,622</b> | <b>163</b>       | <b>\$42,657,125</b> | <b>166</b>       | <b>\$44,130,240</b> | <b>203</b>       | <b>\$74,520,828</b> |

\*SBIR/STTR includes R41, R42, R43, and R44 grants; Other Research includes R13, R15, and S15 grants; Contract includes N01 and N02 grants; Inter-Agency Agreement includes Y01 and Y02 grants.

**DBSB Funding History**  
**Fiscal Year 1980 - Fiscal Year 2000**  
( Base Year = 1980)



**Project Funding  
Fiscal Year 1998 and Fiscal Year 2000  
By Project Area**



## **Appendix B. Population Centers and Training Programs**

### Population Centers, Fiscal Year 2000

#### P30 Centers:

Brown University — Population Studies and Training Center  
Johns Hopkins University — Hopkins Population Center  
National Opinion Research Center — Population Research Center  
Pennsylvania State University — Population Research Institute  
Princeton University — Office of Population Research  
SUNY-Albany — Center for Social and Demographic Analysis  
University of Michigan, Ann Arbor — Population Studies Center  
University of North Carolina, Chapel Hill — Carolina Population Center  
University of Pennsylvania — Population Studies Center  
University of Texas, Austin — Population Research Center  
University of Wisconsin, Madison — Center for Demography and Ecology

#### P50 Centers:

RAND — Population Research Center

### Training Programs, Fiscal Year 2000

University of Texas Austin — Social Demography  
Brown University — Population and Social Change  
RAND — RAND Postdoctoral Training  
University of California Berkeley — Interdisciplinary Training in Demography  
University of Pennsylvania — Graduate Training in Demography  
University of Chicago — Interdisciplinary Training in Demography  
University of North Carolina, Chapel Hill — Population Research Training  
University of North Carolina, Chapel Hill — Research Training in Population Statistics  
University of Michigan at Ann Arbor — Social Science Training in Population Studies  
Princeton University — Demography  
University of Wisconsin Madison — Demography and Ecology  
Pennsylvania State University — Interdisciplinary Training in Demography



## **Appendix C. Large Survey Projects Supported by the DBSB, 1990-2000**

Add Health: A National Longitudinal Study of Adolescent Health  
British Child Development Survey  
Cebu Longitudinal Health and Nutrition Survey  
Chicago Health and Social Life Survey  
China Health and Nutrition Survey  
Chinese Health and Family Behavior Survey\*  
Current Population Survey — Marriage and Fertility Supplement  
Current Population Survey — Nativity Supplement  
Early Childhood Longitudinal Study – Birth Cohort  
Guatemalan Survey of Family Health  
Fragile Families Study  
Indonesian Family Life Survey  
Intergenerational Panel Study of Parents and Children  
Los Angeles Study of Families and Communities  
Malaysian Family Life Surveys  
Mexican Migration Project/Latin American Migration Project  
Mexican-American Study Project – Follow-Up  
National Longitudinal Survey of Youth — Child Supplement  
National Longitudinal Survey of Youth — Older Child Followup  
National Longitudinal Survey of Youth — 1997 Cohort\*  
National Survey of Adolescent Males  
National Survey of Families and Households  
National Survey of Family Growth  
National Survey of Men  
National Survey of Women  
New Immigrant Survey  
Panel Study of Income Dynamics — Attrition Supplement  
Panel Study of Income Dynamics — Parent-Child Survey  
Puerto Rican Maternal and Infant Health Project  
Russia Longitudinal Monitoring Survey  
Social Change in Nang Rong, Thailand  
Three Cities Study of Welfare Reform and the Well-Being of Children

Note: Further information on all surveys except recently funded surveys indicated by \* is available in the DBSB publication Survey Snapshots 1998, available at <http://silk.nih.gov/silk/dbsb>.

## **Appendix D. DBSB Personnel**

*As of February 2001*

### **Christine A. Bachrach, Ph.D.**

Dr. Bachrach received her Masters in Sociology (Demography) from Georgetown University in 1974, and her Ph.D. in Population Dynamics from John Hopkins University, School of Hygiene and Public Health in 1978. She joined the NICHD in 1988, and assumed her current position in 1992. In addition to serving as Chief of the Branch, Dr. Bachrach is responsible for a grant portfolio in the areas of fertility, infertility, contraceptive use, and adoption, serves as the program official for the Add Health study, and oversees the Branch Centers program.

### **Natasha Cabrera, Ph.D.**

Dr. Natasha Cabrera joined the DBSB in September 1997, as a Society for Research in Child Development Fellow. She now has an Expert Appointment in child development and is the coordinator of the Science and Ecology of Early Development program, co-facilitator of the Family and Child Well-Being Research Network, and coordinator of fatherhood research and welfare studies. Dr. Cabrera's research interests include fatherhood, child care, Head Start, policy, the normative development of low-income children, and the interface between policy and research.

### **Lynne Casper, Ph.D.**

Dr. Casper earned a Ph.D. in Sociology and Demography from the Pennsylvania State University in 1992, an A.M in Sociology and Social Policy Research from the University of Chicago in 1988, and a B.A. in Sociology and Spanish from the University of Wisconsin-Madison in 1984. Dr. Casper manages the extramural research portfolios in family and fertility and is responsible for the Branch's training program. She is an active member of the Interagency Forum on Child and Family Statistics and co-facilitator of the Family and Child Well-Being Research Network. She also serves as the project officer and expert for many of the large data collection efforts including the NLSY, the NSFH, the NSFG, and the ECLS-B. Before joining the Branch in February 2000, Dr. Casper was a senior demographer and statistician at the U.S. Census Bureau, where she conducted research in the area of family and household composition and well-being, child care, and voting.

### **Rebecca L. Clark, Ph.D.**

Dr. Clark received her Ph.D. in Sociology (Demography) from Brown University in 1989. She manages the Branch's extramural portfolios in immigration, internal migration and population distribution, race and ethnicity, population and environment, demographic methods, and oversees several of the DBSB Population Centers. Before joining the Branch in February 2000, she was a senior researcher at the Urban Institute, where she did research on impacts of immigrants on the United States, federal expenditures of children, and other issues related to child well-being.

### **V. Jeffery Evans, Ph.D., J.D.**

Dr. Evans received a Ph.D. in Economics from Duke University in 1973, through which he was also cross-trained in demography. In 1978, he earned a J.D. from the University of Maryland School of Law. He joined the NICHD in 1975, and has served as an administrator of grants, contracts, interagency agreements, and cooperative agreements and centers programs in the population sciences. He directs the Intergenerational Research Program within the DBSB, manages the Branch portfolio in health and mortality, coordinates the NICHD Health Disparities Planning Group, and facilitates the Family and Child Well-Being Research Network.

**Susan F. Newcomer, Ph.D.**

Dr. Newcomer holds a 1983, Ph.D. in Population Studies and Sociology from the University of North Carolina, an M.A. in educational administration from Iowa State University, and a B.A. in psychology and Chinese from Barnard College. She is responsible for managing the Branch portfolio of extramural research on adolescent health, contraception and other fertility-related behaviors, as well as the portfolio of AIDS/HIV risk research. Prior to joining the Branch in 1988, she was the national Director of Education for the Planned Parenthood Federation of America.

**Elizabeth A. Mumford, M.H.S.**

Ms. Mumford holds a 1998, Masters in Health Sciences in International Health and Population Policy from the Johns Hopkins University School of Hygiene and Public Health. She is currently a Ph.D. candidate in Population Dynamics at Johns Hopkins. She joined the Branch in October 2000, and supports the Add Health Study portfolio, the NSFG, and other program activities as needed. Her research interests are currently focused on adolescent smoking behavior and the role of adolescent employment and personal income.

**David A. Cort**

Mr. Cort is currently a second year Masters of Arts student in Urban Sociology at the George Washington University. His thesis research utilizes GSS and 1990 Census evidence to investigate the contextual effects of race differences in attitudes toward immigrants. He joined the Branch in October 2000, and assists in all program activities. His future research interests will focus on the economic attainment of recent immigrants in comparison to their native-born minority counterparts.

**Rickie Lyon**

Ms. Lyon is a Program Assistant at the DBSB. She manages the administrative activities of the Branch and assists in many of its clerical operations.

**Janice Wahlmann**

Ms. Wahlmann has been with the Branch since the beginning of 2000. Her responsibilities include managing grant files, travel, and conference planning. Prior to joining the Branch, she worked for Fogarty International Center.

## **Appendix E. Requests for Applications (RFAs) and Program Announcements (PAs), 1995-2001**

### 2001

RFA-01-002: The Influence of Gender on HIV Risk

### 2000

RFA-00-004 (ES): Health Disparities: Linking Biological and Behavioral Mechanisms with Social and Physical Environments

RFA-00-005: Acceptability Research for HIV/STD Prevention

RFA-00-011: Population Research Infrastructure Program

PAS-00-108: The Science and Ecology of Early Development (SEED)

PA-00-032: Population Movement: Determinants and Consequences

PAS-00-136: Demographic Research on Sexual Behaviors Related to HIV

### 1999

RFA-99-010 (MH): Abstinence and HIV/STD Prevention for Youth

RFA-99-011: Population Research Centers

### 1998

PA-98-098: Socioeconomic Status and Health Across the Life Course

PA-98-079: The Impact of Media on Adolescents' Sexual Behavior

PA-98-031: Methodology and Measurement in the Behavioral and Social Sciences

RFA-98-015: Replication of Community-Based HIV Interventions for Youth

RFA-98-014: Population Research Centers

RFA-98-009: The NICHD Family and Child Well-Being Research Network

### 1997

RFA-HD-97-005: The Use of Dual Methods of Protection from Pregnancy and STDS/HIV

RFA-HD-97-007: Population Research Centers

PA-97-093: Demographic Research on Sexual Behaviors Related to HIV

### 1996

RFA-HD-96-006: Population Research Centers

### 1995

PA-95-036: Research on U.S. Immigration

RFA-TW-95-002: International Training and Research in Population and Health

RFA-HD-95-013: Population Research Centers

## **Appendix F. Conferences and Workshops, 1995-2000**

### Linking Media Exposure and Subsequent Risk Behavior

*November 30-December 1, 2000*

This conference brought together funded grantees under the NICHD's PA. "The Impact of Media on Adolescent Sexual Behavior," as well as other scientists with expertise related to media effects research. The conference considered challenges to developing research designs for studying the causal influence of media exposure on behavioral outcomes. Participants also explored avenues for collaboration. Sponsors included the DBSB, the Center for Population Research (CPR), and the NICHD.

### Improving Acceptability Research

*October 16, 2000*

This meeting examined the potential for innovative approaches to research on the acceptability of new methods for pregnancy and HIV prevention, including microbicides. The goal was to develop a scientific agenda for improved models for research designed to provide "real world" information concerning the possible uptake of new methods of protection. The meeting reviewed existing models for acceptability research and explored the potential for improved approaches that integrate insights from different research traditions. Sponsors included the DBSB and the NICHD Contraception and Reproductive Health Branch.

### Improving Contraceptive Use: Setting an Agenda for Research

*October 2000*

Scientists with expertise in basic and applied research on the use and delivery of contraception in the United States gathered to discuss the development of a new research agenda on improving contraceptive use. The goal was to provide "usable knowledge" that will help to identify feasible new strategies for addressing barriers to effective contraceptive use. Sponsors included: DBSB, CPR, NICHD, PHHS Office of Population Affairs, Division of Reproductive Health, and CDC.

### The Add Health Users Workshops

*1998, 1999, 2000*

This series of annual workshops provides an opportunity for new and experienced investigators using data from the National Longitudinal Study of Adolescent Health (Add Health) to share their research and discuss methodological issues in the use of Add Health data. Sponsors of past workshops have included the DBSB, the Add Health Project at the University of North Carolina-Chapel Hill, the NIH Office of Research on Women's Health, and the OBSSR. Two full-scale workshops open to all Add Health investigators have been held July 7-8, 1999, and August 1-2, 2000; a third is planned for August 2001. A fourth "mini-workshop" focused on topics related to HIV and pregnancy prevention was held April 23, 1998.

### Inclusion of Language Minority Populations in National Studies

*July 2000*

This workshop explored the experience of those involved in large national surveys and other large national research projects in meeting the challenges associated with the diversity of languages and cultures. It also addressed what could be done to improve the inclusion of language minority groups in national studies and developed practice guidelines for their inclusion. Sponsors included the DBSB, the CPR, the Center for Research for Mothers and Children, and the NIA.

### Toward Higher Levels of Analysis: Progress and Promise in Research on Social and Cultural Dimensions of Health

*June 27-28, 2000*

This trans-NIH conference highlighted the contributions of social and cultural factors to health and illness. Results provided the basis for a research agenda to advance the contributions of the social sciences to NIH health research and to promote research on the interdependence of social, behavioral, and biological influences on health. The OBSSR sponsored this conference; the DBSB staff organized and co-chaired the meeting.

Evaluation of Condom Efficacy

*June 12-14, 2000*

This meeting examined the efficacy of condoms for the prevention of a number of STDs, most particularly Human Papilloma Virus. A report summarizing the evidence and outlining research gaps was produced. Sponsors included the National Institute on Allergy and Infectious Disease, the NICHD, the Office of AIDS Research, the CDC, and the FDA.

Addressing Ambivalence: Improving Contraceptive Use

*March 11-12, 1999*

This workshop reviewed scientific evidence related to the ambivalence that U.S. women and couples often feel toward consistent use of contraception. It also considered ways in which this ambivalence could be addressed in the delivery of contraceptive services. This conference was the first of a planned series of meetings co-sponsored with CDC and OPA to explore issues at the intersection of basic research on contraceptive use and unplanned pregnancy, and applied research on the delivery of family planning services. Sponsors included the DBSB, CPR, NICHD, CDC, and OPA.

Unintended Pregnancy in the United States

*March 11-12, 1999*

This meeting focused on the meaning and determinants of unintended pregnancy in the United States. Participants discussed research findings for service delivery, the design of fertility-related surveys, and future research plans.

The Ties that Bind: Perspectives on Marriage and Cohabitation

*June 29-30, 1998*

The goal of the conference was to contribute to new avenues for understanding the decline of marriage rates in the United States and the increase of non-marital union formation by sharing multidisciplinary research perspectives on the formation of intimate unions. The conference was chaired by Dr. Linda Waite, University of Chicago, and co-chaired by Dr. Arland Thornton, University of Michigan, and Dr. Elizabeth Thomson, University of Wisconsin. A volume, titled *The Ties that Bind: Perspectives on Marriage and Cohabitation*, was published in 2000.

Informing Child Care Policy Through Research: Children's Health, Safety, and Development in Child Care in Light of Regulations, Subsidies, and Child Care Quality

*Spring 1998*

This workshop showcased emerging research findings on subsidies, regulations, and quality of care in the context of policy makers' concerns and needs for research that can guide and inform public policies.

Hispanic Maternal and Child Health

*August 1996, 1997*

Two meetings were held on issues surrounding Hispanic Maternal and Child Health, to foster the sharing of information, data, and experiences. Topics included trends in mortality and fertility, infant mortality and low birth rate, adolescent pregnancy, and the impact of migration on health. The first meeting, held in August 1996, involved presentations by grantees supported by the NICHD and by the Maternal and Child Health Bureau, with primary focus on the Mexican-origin and Puerto Rican populations. The second meeting, held in August 1997, was co-sponsored by the NICHD Pregnancy and Perinatology Branch. This meeting sought to increase the sharing of information and insights between the investigators on these projects with clinicians and neonatologists, some of whom are supported by other branches of the NICHD.

Meeting to Inform Child Care Components of State Welfare Waiver Evaluations

*February 1997*

This meeting focused on implications of new federal regulations for child care, new findings on child care contexts, implications of child care participation for families and children, and measures of child care quality that can be used in state-based evaluations.

The Science of Self-Report: Implications for Research and Practice *November 7-8, 1996*

The goal of this conference was to discuss recent developments in the scientific study of self-report. Presentations discussed conditions in which self-report data are likely to be biased and exciting new conceptual and technological approaches to improving self-report data. The OBSSR sponsored this meeting with participation from the DBSB, NIMH, NIA, and the National Institute on Drug Abuse.

Workshop on Population and the Environment *October 28-29, 1996*

Grantees under an RFA issued jointly by the DBSB and the NIEHS met to discuss their progress. This group of researchers is examining topics such as the effect of land use on migration; the effect of population size on environmental change; the interrelation of population change, institutional change, and environmental change; and the effect of population change on soil quality and species diversity. Newly emerging technology and its use in this field was a special focus.

Conference on Fathers' Involvement *October 10-12, 1996*

This conference, organized by the NICHD Family and Child Well-Being Network, examined quantitative research on fathers' involvement in family life. During the first two days of the conference, 14 original research papers were presented and discussed. On the third day, there was a half-day meeting on methodological issues concerning men and fathers in large-scale surveys.

Developmental, Ethnographic, and Demographic Perspectives on Fatherhood *June 11-12, 1996*

This meeting focused on studies using developmental, ethnographic, and anthropological approaches to understanding fatherhood. Ways to integrate qualitative approaches into large-scale surveys were discussed.

Research on Discipline: The State of the Art, Deficits, and Implications *April 25-26, 1996*

This conference brought together some of the country's most well-respected researchers on disciplinary practices. Papers presented focused on discipline research methodology, conceptual and causal issues, and outcomes for children. The discussion sessions addressed issues raised by the papers as well as the current state of our knowledge as it impacts future research possibilities and how to advise parents, clinicians, and policy makers.

Town Meeting on Fathering and Male Fertility *March 27, 1996*

This meeting provided a forum for discussion of needed improvements in data concerning male fertility and fatherhood by researchers, administrators, and representatives of federal statistical agencies.

Research Needs in Understanding Contraceptive Compliance *October 5-6, 1995*

Researchers who study compliance with other medication regimens, as well as researchers whose work is on individuals' perceptions of contraception, explored what is known and what is yet to be examined to improve the skills with which couples protect against unintended pregnancy. Sponsors included the DBSB and the Kaiser Family Foundation.

International Symposium on Fertility Regulation *May 21-25, 1995*

The Symposium, held in Beijing, emphasized both basic research in human reproduction, particularly approaches to regulate fertility and to alleviate infertility, and behavioral, social, and demographic research pertaining to human reproduction, quality of care, and evaluation of family-planning performance. Attendees included more than 250 scientists, clinicians, reproductive health professionals, and representatives of seven international organizations from 21 countries. The proceedings of the symposium, titled *Fertility Regulation: Present & Future*, were published in March 1997. The meeting was organized by the National Research Institute for Family Planning of China and the NICHD.

Consequences of Growing Up Poor

*February 2-3, 1995*

This conference examined the extent to which and the ways in which childhood poverty affects the life chances of children. A group of sociologists, economists, demographers, developmental psychologists, and other social scientists presented data from nearly a dozen different studies, each of which replicated an analysis relating the same set of measures — family income, maternal schooling, family structure — to child outcomes. The conference was organized by the NICHD Child and Family Well-Being Network.



## **Appendix G. Inter-Agency Agreements, 1995-2000\***

### U.S. Bureau of the Census

Nativity Status in the Current Population Survey, 1995-99  
Current Population Survey/Fertility History Supplement, 1995-96  
1990 Census Super Sample, 1998  
Improving the Coverage of Men in Surveys, 1997-99

### Federal Interagency Forum for Child and Family Statistics

The NICHD is a founding agency (1994-present) and is the “bank” for the Forum. The Forum consists of 20 agencies in the federal government; the NICHD provides both substantive leadership and logistical support for the financial operations of the FORUM.

### U.S. Bureau of Labor Statistics

National Longitudinal Survey of Youth-79, 1995-00  
National Longitudinal Survey of Youth-97, 1998-00  
Value of Non-Market Work, 1997  
Key National Indicators of Well-Being, 1997

### National Center for Health Statistics

National Survey of Family Growth-Cycle 6, 1996-00  
National Survey of Family Growth-Cycle 5, 1995

### Health Resources & Services Administration

Girl/Neighborhood Power, 1997-00  
Key National Indicators of Child Well-Being, 1997

### Administration for Children and Families

Early Head Start Fatherhood Project, 1998-2000  
Workshop on Welfare and Child Development, 1995

### Office of the Assistant Secretary for Planning and Evaluation

Conference on Abstinence Program Evaluation, 2000

### National Center for Education Statistics

Early Childhood Longitudinal Study – Birth Cohort, 1998-00  
Forum on Child and Family Statistics, 1998-00

### Agency for Health Care Policy & Research

Development of Child Health Status Measures, 1996-98

### Office of Population Affairs

Achieve Teen Pregnancy Prevention Program, 1995

\* Includes only non-NIH projects supported with NICHD funds. Excludes interagency agreements in which other agencies provided funds to NICHD projects.

## **Appendix H. Outreach at Professional Meetings**

American Anthropological Association  
American Economic Association  
American Public Health Association  
American Sociological Association  
International Conference on Applied Demography, Bowling Green State University  
Population Association of America  
National Council on Family Relations  
Society for Research on Child Development  
Southern Demographic Association  
Third Colorado Conference on Elderly Migration

## **Appendix I. Professional, Federal, and NIH Service: DBSB Staff, 1995-2000**

### Service Outside the Federal Government

National Campaign to Prevent Teen Pregnancy: Effective Programs and Research Task Force, 2000-2002  
American Sociological Association, Population Section: Council 2000-2002; Chair, 2001  
Demographic and Health Surveys Scientific Advisory Board  
NICHD representative to U.S. Man and the Biosphere  
Population Association of America (PAA): Board of Directors, Secretary Treasurer, Editor of PAA Affairs  
Society for the Study of Social Biology: Board of Directors  
Society for Research on Child Development, Science, and Policy Committee  
Southern Demographic Association: Board of Directors  
American Public Health Association: Chair of Population, Family Planning, and Reproductive Health Section  
National Council on Family Relations: Research and Theory Section, Nominations Committee  
Journal of Marriage and the Family: Editorial Board  
Adoption Quarterly: Editorial Board  
Journal of AIDS Education and Prevention: Editorial Board  
The Evaluation Project: Policy Advisory Board  
The MEASURE Project: Advisory Board  
SOROS Foundation: Research Support Scheme  
Journal reviewing: *Demography*, *Studies in Family Planning*, *American Journal of Sociology*, *Journal of Marriage and the Family*, *Journal of Aging & Social Policy*, *The Journals of Gerontology*, *Journal of AIDS Education and Prevention*, *Family Planning Perspectives*, and *Journal of AIDS Population Research and Policy Review: Editorial Board*

### Service Outside the NIH

Steering Committee and Group Facilitator: Surgeon General's Conference on "Promoting Responsible Sexual Behaviors"  
Nonmarital Childbearing: HHS Working Group  
NIH Young Investigators Study with the National Academy of Sciences  
Federal Interagency Forum on Child and Family Statistics: Executive Committee, Data Collection Committee, Reporting Committee  
Nurturing Fatherhood: Planning Committee  
NPR Fatherhood Initiative: DHHS Committee on Research  
Male Fertility and Family Formation: Working Group  
National Strategy to Prevent Teen Pregnancy: Working Group on Male Involvement  
Interagency Task Force on Teen Pregnancy Prevention: Working Group  
Interagency Working Group on the International Conference on Population and Development Follow-up  
DHHS National Committee on Vital and Health Statistics, Subcommittee on Population: Staff  
Federal Interagency Working Group on Immigration Statistics  
Federal Forum on Aging Related Statistics  
DHHS Workgroup for the Healthy People 2000 Progress Review on Asian Americans and Pacific Islanders  
DHHS Asian American and Pacific Islander Departmental Work Group  
DHHS Work Groups for Healthy People 2000 and 2010: Special Populations, Adolescents, and Family Planning.

Technical Advisory Group, Assessment of Major Federal Data Sets for Hispanic and Asian or Pacific Islander Group and Subgroup Analyses, Office of the Assistant Secretary for Planning and Evaluation

DHHS Welfare to Work Initiative  
White House Partnership for Stronger Families  
White House Children's Initiative

Service Within the NIH

NIH Committee on Community Consultation  
Committee on NIH Data Sharing Policy  
Co-Chair, "Toward Higher Levels of Analysis: Progress and Promise in Research on Social and Cultural Dimensions of Health", NIH OBSSR  
NIH Implementation Committee, Office of Management and Budget circular A110 Revision  
NIH Reorganization of Behavioral and Social Science Review  
NIH Behavioral and Social Sciences Lecture Series Planning Committee  
NIH Behavioral and Social Sciences Research Coordinating Committee  
Behavioral and Social Sciences Coordinating Committee, Office of AIDS Research  
OBSSR Science of Self-Report Conference Planning Committee; and Intervention Research Conference Planning Committee  
DHHS Data Council: Advisory committee to Wendy Baldwin  
Trans-NIH Work Group on the Early Childhood Longitudinal Study - Year 2000 Birth Cohort: Chairperson  
NIH EEO Office: Adarand Advisory Committee on Affirmative Action  
Committee to Advise the National Academy of Sciences concerning Biomedical Training Needs

Service Within NICHD

P01/Large Grants Committee  
Minority and Disability Supplement Review Committee  
Small Grants Committee  
NICHD Task Force on External Communications  
NICHD Task Force on Planning  
NICHD Task Force on Internal Communications  
NICHD Task Force on Program Organization  
NICHD Equal Employment Opportunity Advisory Committee  
NICHD Data Sharing Committee  
NICHD Health Disparities Planning Group  
NICHD Child Abuse and Neglect Planning Group  
NICHD Promotion Review Panel

## **Appendix J. Awards, DBSB Staff, 1995-2000**

### External Awards

U.S. Department of Health and Human Services, Research on Fatherhood Award to the NICHD, 2000.

U. S. Department of Health and Human Services, Supporting Fatherhood Leadership Award, 2000, to V. Jeffery Evans, Natasha Cabrera, Christine Bachrach, and Lynne Casper.

National Performance Review Award, Office of Vice President Al Gore, 1999, to Natasha Cabrera.

“Hammer Award” for Reinventing Government, National Performance Review, 1998, given to a collaborative group including Christine Bachrach, Jeffery Evans, Lynne Casper, Susan Newcomer, and Natasha Cabrera for the Fatherhood Initiative.

U.S. Department of Health and Human Services Secretary’s Award, 1998, to V. Jeffery Evans.

Anchor Award — Interagency Forum for Child and Family Statistics Leadership Award — FORUM, 1998, to V. Jeffery Evans.

Hilary E. C. Millar Award for Innovative Approaches to Adolescent Health, Society for Adolescent Medicine, March 1999, to the NICHD for the Add Health Study.

“Hammer Award” for helping the FORUM produce America’s Children presented to V. Jeffery Evans and the NICHD Family and Child Well-Being Research Network.

### NIH Awards

NIH Award of Merit, 2000, to Natasha Cabrera.

NIH Award of Merit, 2000, to V. Jeffery Evans.

NIH Director’s Award, 1997, to Christine Bachrach.

NIH Award of Merit, 1997, to V. Jeffery Evans.

NIH Award of Merit, 1997, to Rose Maria Li.

NIH Award of Merit, 1995, to Tracy S. Springer.