

VITAL and HEALTH STATISTICS
DOCUMENTS AND COMMITTEE REPORTS

Migration, Vital, and Health Statistics

A Report of the United States National Committee on Vital and Health Statistics

An assessment of the needs for migration statistics; the procedures whereby statistics might be secured; the interrelations of vital processes and health with the movements of people; and the steps required to secure data and advance research.

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FOREWORD

The United States is a Nation built by a migrant population. The population of the country continues to be mobile through internal as well as international migration. The resulting migration patterns influence and are in turn influenced by marriage, birth, illness, and death.

This report, prepared under the auspices of the U.S. National Committee on Vital and Health Statistics, calls attention to the opportunity, especially in the 1970 census period, for the study of migration and the vital processes by official agencies—Federal, State, and local—and by research workers in universities and foundations. Recommendations are made for the improvement of vital records and statistics to provide the adequate statistical base needed for the formulation of national policy, plans, and programs.

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IN THIS REPORT a Subcommittee of the U.S. National Committee on Vital and Health Statistics presents its findings on the needs for migration statistics as related to health and recommends the development of data for the study of migration and health. These recommendations relate to definitions, procedures, and tabulations; measures of risks; sources of vital and health statistics and migration statistics; marriage, birth, and migration statistics; and to studies of special populations, including the disadvantaged and migratory labor and migrant families. The Subcommittee also proposes an analytical and research program for the 1970 census period, when migration data will become available.

MIGRATION, VITAL, AND HEALTH STATISTICS

INTRODUCTION

The National Committee on Vital and Health Statistics noted the diverse but little explored relations between vital processes, the movements of people, and health and appointed a Subcommittee on Migration and Health Statistics. The tasks of the subcommittee involved the assessment of the needs for migration statistics; the procedures on how statistics might be secured; the interrelations of vital processes and health with the movements of people; and the steps required to secure data and advance research.

The frequencies of migration, the places of origin and destination of migrants, the types of movements, the characteristics of migrants, and the stabilities and mobilities within areas of residence influence and are influenced by marriage, birth, and death. Health is related in varying ways to natural movements and to migrations. Technically, migration is a component of and a disturbing factor in the definitions of numerators and denominators in vital and health statistics. Analytically, migration can be viewed as an independent or a dependent variable in population dynamics.

The needs for data and analysis of population dynamics influence the National Center for Health Statistics (NCHS), the U.S. Bureau of the Census, other governmental agencies, and universities and research institutions.

The field of migration, vital, and health statistics is broad. Perhaps the goal of the Subcommittee on Migration and Health Statistics should have been a survey of activities and studies relating vital and health statistics and migration

variables. This would have yielded an assessment of needs, feasibilities, and priorities, with reference both to special or recurrent surveys and to the inclusion of migration or mobility variables in the continuing registrations of a vital statistics system. There was neither time nor resources for this substantive and methodological survey. Therefore, the subcommittee assessed the state of the data and the needs for analysis in three time perspectives.

In the short run, advances must be keyed to the vital records as now secured in the States, the decennial census as now planned, and the possibilities of integrated analysis with partial linkages of vital and census statistics. In the intermediate period, there may be supplements to the basic data through the National Health Survey and the Current Population Survey. In the long run, there may be special studies of processes and populations, improved and expanded data collection, and incisive analyses.

The crises in the cities, the movements toward equal opportunities for all, and the unequal distributions of population, economic resources, and social facilities create urgent needs for social as well as economic statistics and analyses. The most neglected resource as a statistical base in the national search for policy, plan, and program is the vital records system, with major statistical needs in improving the collection, tabulation, and analysis of its records. The most neglected areas are those of most immediate relevance to the national needs: marriage and natality.

The time is appropriate for advance in the fields of migration, vital, and health statistics. There is a developing background in analysis and

theory. Current surveys, queries of samples from vital records, and other sources supplement census and vital statistics. There are regional and local differences in problems and in resources for analysis. There are technical facilities that permit the coordinated and multiple uses of basic data.

Comprehensive activities in the years 1969 through 1971 would provide information and analysis significant in science and relevant to policies and plans. Concerted drives in previously neglected fields of vital and health statistics would yield evaluations of current data and improvements in vital rates while contributing to ongoing and projected programs and the cooperative efforts of the National Center for Health Statistics, State and city statistical organizations, and research institutions.

SUMMARY OF RECOMMENDATIONS

1. Definitions, Procedures, and Tabulations

1.1 Definitions, procedures, and tabulations of variables and for areas should be comparable with those of the Bureau of the Census so that vital and health statistics can be related to census base populations and data from both sources can be available for integrated analysis. This requires a mechanism for continuing consultation and coordination between the agencies both in general planning and in specific operational details of relevant programs.

1.2 The National Center for Health Statistics and the State organizations should adopt the following procedures to insure the availability of the data now needed:

1.2.1 Identification and tabulation of data specifically for Negroes, instead of grouping them under the heading of "nonwhite" as previously done.

1.2.2 Coding and tabulating data on State and country of birth on vital rec-

ords, and distinguishing Puerto Ricans and identifying the countries of birth of the foreign-born.

1.2.3 Coding educational data when available and taking all possible steps to insure the inclusion of educational queries on standard forms in all States.

1.2.4 Coding of legitimacy status when data are included in birth records.

1.2.5 Devising procedures for the continuing integration of reports of infant deaths and births.

1.2.6 Urging the States and cities to use the 1970 geographic codes of the Bureau of the Census for allocations of areas within standard metropolitan statistical areas or cities, as feasible.

1.2.7 Exploring the use of supplementary statistical forms in selected standard metropolitan statistical areas, cities, or other special areas in 1970 or 1969 through 1971, with queries on health, migration, mobility, and stability along with the regular information on marriage, natality, or mortality.

2. Rates, Risks, and Models

2.1 Mobilities associated with vital and health processes should be defined in relation to the specific process and the research or analytical need.

2.2 The National Center for Health Statistics should work with the Bureau of the Census on problems of allocations of residence for the Armed Forces, students, institutional inmates, and other problem groups and on allocations of migrant status to those not reporting it.

2.3 The National Center for Health Statistics in cooperation with the Bureau of the Census should provide for a technical

study of definitions of migrants, migration and other movements, problems of denominators for migration and vital rates, and appropriate bases for rates. Such a study should also assess migration as a longitudinal process, the temporal relations of movements with vital events, and the development of needed techniques for measurement and analysis.

- 2.4 There is need for a comprehensive and critical review of migration models and of general demographic models that include migration, with specifications of concepts, events, and probability distributions to be considered in future models.

3. Sources for Health, Vital, and Migration Statistics

- 3.1 The definition, testing, and validation of procedures to secure information on health through census and survey procedures are essential. Health questions should be included in population surveys, mobility questions in health surveys.
- 3.2 Pilot studies on the uses and limitations of hospital records are indicated. There should also be explorations of the techniques, feasibilities, and difficulties in combining such records for local areas and regions.

4. Marriage, Natality, and Migration Statistics

- 4.1 The national needs for marriage and natality statistics and analysis require expansions in geographic detail and analytic depth.
- 4.2 The steps that can be taken in the near future require the utilization of information now on registration forms. This involves emphasizing the importance of completing all items on the forms, check-

ing the coverage of the data, and testing the precision and validity of entries.

- 4.3 The upgrading of marriage and natality data, tabulations, and analyses to levels coordinate with those of mortality requires an expansion of the national data system, not a reallocation of efforts within it.
- 4.4 The measurement of the health dimensions in marriage, fertility, family stability, and individual and family mobilities should be subjected to intensive research and field experimentation.
- 4.5 The extent and nature of the current and longitudinal relations of migration and mobility with marriage and reproduction should be explored in field studies and in special queries of samples of those reporting events.

5. Special Populations

- 5.1 Economic deprivation, social retardation, marital instabilities, high rates of childbearing, and high morbidity and mortality are concentrated in certain segments of the population in limited areas. The greatest numerical concentrations of the problem groups and the problem environments are in the centers of the great cities. There are also serious difficulties in Appalachia and in parts of the Deep South and the Southwest. The largest of the disadvantaged groups is the Negro, but there are also major problems among other ethnic and cultural minorities such as the Puerto Ricans in the Northeast and the Spanish Americans in the Southwest. Modern facilities for the storage of data on tapes and their processing permit the development of these regular and special tabulations that are needed. Planning for these developments should be initiated even prior to the provision of additional staff and finances.

5.2 The responsibilities for vital, health, and migration statistics extend to special groups where new procedures are essential to the procurement of the data needed in plans and programs.

5.2.1 In the study of migratory labor and migrant families, the continuing focus is on agricultural labor, but similar problem groups may be involved in current difficulties with vital records and census enumerations in urban settings.

5.2.2 Indians, particularly those on reservations, and the Aleuts, Eskimos, and Indians of Alaska remain the most economically retarded in the American population. The associations of migration with the declining mortality and the very high fertility should be measured in vital and health statistics.

6. Essential Bases for Research and Development

The bases essential for research, development, and experimentation require not only the direct involvement of the National Center for Health Statistics but also its stimulation of work in universities and research institutions through grants and contracts.

7. Plans and Programs for the 1970 Census Period

7.1 Concentration of activities.

7.1.1 Coordination of vital records and census tabulations.

7.1.2 Detailed tabulations in selected areas and for special groups.

7.1.3 Special tabulations of vital records as needed.

7.1.4 Collation of infant death records with birth records.

7.1.5 Special topical, area, and group studies.

7.2 Guidelines to types of approach and studies.

7.2.1 Relevance and significance not only to research but to public policy and program.

7.2.2 Additions to rather than replacements of activities or analyses regularly carried out by the government.

7.2.3 Contributions to knowledge, whether evaluations of data, exploration of relations, or advances of concepts and methods.

7.2.4 Incisive studies in depth, often directed to State, city, regional, or special groups rather than the national population.

7.2.5 Cooperation with State and local health departments, as with universities and research institutions.

7.3 Contributions.

7.3.1 A forward thrust in data, record utilization, and research.

7.3.2 A movement for comparability in and cumulative contributions from the many special tabulations, surveys, and analyses that will be made on the basis of or in relation to the 1970 census.

7.3.3 Major contributions to knowledge of the interrelations of vital processes, health, and migration.

FINDINGS AND RECOMMENDATIONS

1. Definitions of Migration

Migration is a change of residence from one area to another. A migrant is a person resident in an area who moved in from another area. If a change of residence involved crossing national boundaries, the person is an international migrant. If a change of residence involved cross-

ing a boundary within the country, the person is an internal migrant.

The definitions of migrant status prevalent in official statistics and in most studies are those developed by the U.S. Bureau of the Census. Movements from one residence to another are classified according to whether a county boundary was crossed. Changes of residence within counties are referred to as short-distance mobility, those from one county to another as migration. Migrants are further classified as movers within States or between States.

The census of 1970 will include questions on State or country of birth of the person; country of birth of the parents; place of residence, activity, occupation, and industry 5 years prior to the census; year moved into present house; place of work; and, if foreign-born, year of immigration.

The vital registration forms include State or country of birth, with place of birth of parents included in the marriage forms.

Definitions of migration and of migrants in relation to the crossing of political boundaries are generally practical and operational. There may be questions about the differing sizes of areas and about the length of time a person who has entered an area must remain a migrant. There may also be questions about the definition of residence and what constitutes a change of residence.

If vital and health variables are to be used directly in conjunction with census data on migrant status, the technical demographic definitions of migrant status must be utilized. The products of analysis pertain to the characteristics of area populations and the associations of variables in such populations. This is relevant in studies of areal distribution and ecological association. There are other dimensions, however, even more significant in the analysis of the interrelations of health, mobility, and the various vital events. These are the associations and sequences of events in the lives of individuals.

The frequencies, types, and timings of movements differ according to age, economic status, and place in the family cycle. Migration is related in many ways to fertility; place of birth and movements during childhood or adolescence influence marriage and reproduction. Family size

itself influences movement within the area of residence or between the central city and fringe areas.

The movements that influence health and disease, survival and death may be current or they may have occurred at earlier periods in the life cycle. Analysis of lifetime residential histories has clarified some of the relations between migration, smoking, and cancer. It has also shown the cumulative effects of residence and population movement on disease, health, and mortality.

The relations of seasonal or recurrent movements to vital and health variables may be major. The journey to work may alter the ecological milieu and influence home and community relations.

The difficulties in analysis are greater for morbidity and other health hazards than for vital statistics. Since morbidity is not included in the vital records system, there are limitations to the data. Information of this type may be collected in special studies. There may be inquiries within or outside the National Center for Health Statistics and the State health departments. Migration questions may be included in the Health Survey and health questions in the Population Survey. If indicators of health status, needs, and services can be validated, data can be procured in census, survey, and general questions.

2. Rates, Risks, and Models

If migration is a variable used jointly with marriage, natality, and health analysis, the specific questions of area populations and types of rates assume central interest in planning for data acquisition and tabulations. Rates in which migrants are related to the population of their areas of origin have probability connotations. If migrants are related to populations in the areas of destination, the statements are limited to those of relative frequencies. If the primary orientation of the analysis is the vital or health question rather than migration, decisions as to bases become aspects of the research.

The problems of the bases of rates for types of places within geographic areas present special difficulties. Census delineations of urbanized areas provide meaningful data for description and analysis within census contexts, but the allo-

cation of vital events for the fringes of urbanized areas presents major if not insuperable difficulties. Definitions of the rural population are dependent on definitions of the urban populations. If the fringes of urbanized areas cannot be delineated in vital records, the fringe populations must be part of the rural nonfarm rather than the urban population. This compounds the problems of a type of area that includes military installations, college dormitories, homes for the aged, and labor camps. The rural farm population itself presents complexities in vital and health statistics contexts, particularly those associated with the aging population, the erosion of the younger productive ages, the prevalence of marginal groups, and the inclusion of seasonal workers wherever they are at the date of enumeration.

The 1970 census will include questions on place of residence and type of activity at a date 5 years before the census. This will permit the construction of alternate populations for areas through differing allocations of the Armed Forces and college populations. Tabulations of detailed characteristics for alternate populations of the geographic areas may be a major problem.

Alternate total populations would provide only limited solutions for the problems of health and vital rates. The base populations that are required from the decennial census include not only numbers by sex but by such characteristics as age, marital status, race, nativity, place of birth, and highest grade of high school completed, with cross-tabulations for specified areas. It is essential that the definitions of these characteristics in numerators be identical with those in denominators. It is also essential that tabulations of numerators and denominators be available for identical areas. Differences in definitions and in forms of reporting as between the vital records and the census systems are particularly serious in the areas of marriage and natality. Census queries on marital status are *de facto*, the vital records *de jure*. Census questions about the number of children ever born are asked only of women who state that they are or have been married; vital records concern all births. The questions on the reporting of marital status of mothers who have illegitimate births and the

childbearing of the legally single pose serious problems in the computation of vital rates, as in marriage and fertility analysis.

The problems of migration as a demographic process or of migrant status in a census enumeration are significant to the National Center for Health Statistics, but they are not its responsibility. Nevertheless, rates for groups classified by migrant status are essential in vital and health statistics. Thus the Center is concerned with definitions of residence, types of mobilities, and the planning of tabulations that yield consistency in numerators and denominators. If the entry on State of birth in vital records is coded and utilized in descriptive and analytical tabulations and studies, cooperative planning with the Bureau of the Census is imperative.

The problems of comparabilities in data, rationality in the type of population base, and the impact of migration on size and structure of population are all involved in the determinations of numerators and denominators for vital and health rates. Given the most appropriate and feasible decisions with reference to these problems, there remains the specific question of the time reference of the denominator. The usual procedure of estimating a midyear population assumes implicitly an even distribution of change throughout the year or period of time. Migration that is episodic or otherwise changing often makes this assumption invalid.

The difficulties in defining the proper bases for vital and migration rates are major. There is often a time lag between migration and the risk of a vital event or between a vital or health event and migration. The probabilities of moving seem to be related to previous movements and length of residence in particular places. Multiple decrement life tables and other analytic methods may be appropriate.

There are no simple answers to the proper denominators for vital and health rates. Rather, there are different measures and different denominators appropriate for special purposes. A technical study is needed on definitions of migrants, migration, and other movements and on problems of denominators to be used for migration and vital rates. Such a study should assess migration as a longitudinal process,

temporal relations with vital events and health, and developing needed techniques for measurement and analysis.

The constraints imposed by the complexities of the phenomena and the data are barriers to the development of concepts, hypotheses, and experimental designs for relating migration, vital processes, and health. The development of integrated stochastic approaches to marriage, births, deaths, and migration should be investigated. A review of the assumption, methods, uses, and limitations of models should emphasize the difficulties in, and the possibilities for, the inclusion of migration in general demographic models.

3. Sources of Data

The vital records form.—The major resource for analysis of migration in relation to vital processes is the vital records system. Curiously, many of the data on the vital record forms are largely, if not wholly, unexploited. All the vital record forms include place of birth and current residence. All forms except mortality now include highest grade of school completed. Marriage forms include marital history; birth certificates include details of the present and previous deliveries along with reproductive history and present status of each live birth (whether living or dead). It is the possibilities inherent in these and related data that underlie our later suggestions for concentrated studies in population dynamics at the time of the 1970 census.

Followback query.—The technique of the followback query for small samples of vital events permits probing analyses beyond the scope of the national record system as a whole. In 1958 the National Vital Statistics Division collected residence histories for a sample of lung cancer deaths; the Bureau of the Census collected residence histories for a sample of the population at risk of this event. Residence histories have been included in some later followback studies of vital records conducted by the National Center for Health Statistics.

Queries of samples of marriage and birth reports during a census period using the migration and mobility questions of the census would permit significant analysis. It would also provide experimental testings of responses to migration

and mobility questions in followback queries and in census enumerations.

The National Health Survey and the Current Population Survey are major potential sources for the probing needed to extend knowledge of movements and their relations to specific sectors of population dynamics. Health questions can be added to the Current Population Survey or used as supplements to it, along with specific mobility questions as needed. Questions on migration or mobility can be included in the National Health Survey.

Expansion and experimentation, State and cities.—The standard vital record forms of the States yield minimum comparable data for the United States. At periodic intervals when forms are revised, individual States and cities or other civil divisions could ask additional questions. The responsibility for analysis would then lie with the State or local departments of health along with universities or other institutions collaborating with them.

The advances in regions, States, and cities, if they occur, will be in response to local needs and will not reduce the potential for advances in data collection and analysis. The statistical and procedural problems of measuring migration, the adjustment of migrants, and the impacts of migration on vital processes, health, and health needs are major in California. The death certificates of California include length of residence in the State. If this were to be included on marriage and birth certificates, forceful arguments could be advanced to include questions on length of residence in sample surveys of the population of California. Analysis of data for this populous State would contribute to the knowledge of method, technique, and interrelations of vital processes whose values are not limited to California. The advances in a State where specific relations are prevalent and specific needs recognized could serve as pretests for national assessments, modifications, and advances.

The analytical exploitation of the almost experimental diversities that characterize the United States must proceed through the concentrated efforts and the intensive studies of local, State, and regional institutions. The national data, tabulations, and analyses can only be a least common denominator insofar as geographic, eco-

nomic, social, and cultural diversities are concerned.

The needs, functions, and contributions of statistical and research organizations in localities, States, and regions are complementary rather than competitive with the national organizations. The pattern of governmental and university or research institute cooperation is appropriate at all administrative and geographic levels.

Special surveys and studies.—In principle, the National Center for Health Statistics or State and local health departments could undertake studies with migration as a primary focus. In practice, migration is likely to be included in studies of marriage, natality, morbidity, or mortality. Similarly, analyses of migration or mobility are usually framed in demographic, economic, and social rather than in health and vital statistics contexts. These diversities in approach could become major channels for the advance of research in migration, vital processes, and health, and the associations among these and other variables.

Perhaps the simplest way to discuss the role and contribution of special surveys and studies is by illustration. Longitudinal studies and continuing registers of heart disease or cancer, of twins, and of persons with radioactive exposure could include changes of residence and other indications of mobility. In recurrent surveys such as the 10-city study of trends and changes in morbidity and mortality from cancer, there could be probes of the type and extent of associations with migration, local mobility, and such special movements as commuting. Conversely, given technical and methodological advances, health variables or indicators of health could be included not alone in studies of migration but in other studies in which some or all of the migration and vital statistics variables are included.

There are possibilities for innovation in direction and technique. In special studies and surveys, whether governmental or private, the vital events registered for a sample or panel of informants could be secured through cooperation with local registration offices. Followback or query procedures would then add new dimensions

to data and analysis. Or, to pursue potentialities further, special questions on migration or other movements could be attached as supplemental schedules to vital record forms.

Hospital and health service records and queries.—Hospital and health service records have practical but limited potential as data resources. Hospital records are administrative rather than statistical. There is no routine procedure for the collation of records on the same person from different hospitals or health agencies. The Regional Medical Program and the introduction of regional medical centers may lead to interhospital linkages of records among institutions in the same region. With the requirements of Medicare and increasing computerization, the use of Social Security numbers may become routine. If so, intraregional and eventually interregional linkages of hospital records may provide unparalleled sources of data on the movements of patients. Since most births occur in hospitals, analyses of mobility, morbidity, and reproductive history would be possible. Interregional linkage to a national system is so speculative a prospect as to merit only the comment that pilot tests of the feasibilities of such linkages and methodological analyses of form, feasibility, and relevance should be supported when possible.

Clinic, hospital, and health service records are sources for many types of special studies, prior to or quite apart from overall record systems. Relations between migrant status and the demands, receipt, and results of medical care or health services may be studied in individual institutions or areas. Hospital records may provide bases for intensive followup studies. The mental health and cancer registers represent another type of research activity associated with medical and hospital records.

The population laboratory.—The use of designated area populations as human study centers or laboratories in vital and medical research has been productive. A continuing series of studies was inaugurated in Hagerstown, Maryland, in 1921; health, vital events, and migrations of the Eastern Health District in Baltimore were subjects of studies by or associated with the School of Hygiene and Public Health of The Johns Hopkins University. More recently, population labora-

tories as omnibus resources have been established in Tecumseh County, Michigan, and Alameda County, California.

Epidemiological studies in the human population laboratory context often require residence histories or information on types (other than migration) and frequencies of movement. Therefore, studies of the relations of migrant status or mobility to the disease or vital process under investigation yield byproduct information on movements in community settings.

The utilization of materials collected in human population laboratories for studies of the movements of people should continue to receive emphasis. Residence histories can be collected retrospectively; information on changes in residence can be secured prospectively when the populations are under surveillance. Probabilities of subsequent moves can be investigated in relation to a range of demographic characteristics, including previous residential histories.

Perhaps the most significant feature of the population laboratory is the continued accessibility of the study group. Marriage, reproduction, health, and mortality can be studied intensively for in-migrants, out-migrants, the locally mobile, and the stable within a circumscribed and generally known area.

The associations of sources.—The difficulties in the concepts and definitions of rates, the lack of comparability in data from different systems, and the approaches to theoretical and empirical studies of interrelations can be simplified by efficient use of data from various sources. If vital and health records and census and survey schedules were collated, direct analysis could replace much of what is now achieved by indirect or aggregate techniques.

Given modern data processing and storage facilities, many plans once envisioned as ideal are operationally feasible. The development of national registers of deaths has been explored in the past. The development of interpenetrating registers of marriages, divorces, births, and deaths would permit analyses of population dynamics at specific times. Once such a system was operative, longitudinal studies that encompassed the vital events from birth to death would be possible. Place of birth would be in each record; the places of residence at succes-

sive events would yield new measures of mobility. For instance, place of birth, place of marriage, and place of birth of each child would be available for each woman who had ever been married. Any information on place of birth and on birth-place of each child would be available for each woman, whether single or married. Information from a variety of registration certificates would be available for the subject of any vital event report, whether birth, marriage, divorce, maternity, fetal death, or mortality.

The technique of matching infant death and birth records was developed in the 19th century. Use of this technique has increased in recent decades, with a corresponding increase in the utility of integrated data. Perhaps a total integrated system of vital records is visionary, but some further progress in integration should be feasible in the coming years.

4. Marriage, Natality, and Migration Statistics

The registration of vital events is the responsibility of the States, but responsibility for coordination and national tabulation is discharged by the National Center for Health Statistics. The allocation of responsibilities to health services is obviously appropriate for morbidity and mortality statistics. It is equally appropriate for natality statistics because of the associations of doctors and hospitals with delivery. In most States, the State health departments are the custodians of the marriage and divorce records.

The national needs for marriage and natality statistics require expansions in geographic detail and analytic depth. The initial step is the improvement and utilization of the information now included on the registration forms. This involves emphasizing the significance of the information and the importance of completeness in filling out the certificates. There should be checks of the coverage and tests of precision and validity of entries.

The advances of marriage and natality data, tabulations, and analyses to levels coordinate with those of mortality statistics should be a forward movement of the vital statistics system, not a reduction of the levels and details of the mortality statistics.

There are special difficulties in the development of marriage and divorce statistics because of their peripheral interest to many medical and health personnel. The Public Health Service has the responsibilities for the collection, processing, and tabulation of statistics that are needed primarily in other sectors of the Department of Health, Education, and Welfare, in other departments of government, and in the academic and research community. The measurement of the health dimensions in marriage, fertility, family stability, and individual and family mobilities should be subjected to intensive research and field experimentation. Similarly, the measurement of the mobility dimensions in marriage, fertility, mortality, and health should proceed through intensive research and field experimentation.

The nature and extent of the current and longitudinal relations of migration and mobility with marriage and reproduction should be explored in field studies and special queries of samples of those reporting events.

5. Special Populations

The metropolitan population.—The critical problems in or associated with population dynamics and health are those of the metropolitan areas. The critical population is the Negro. The long stability, lethargy, and social and economic retardation in the South resulted in an extraordinary exodus in the last half century. That exodus, still in process, was not the conventional migrant interchange. It began, rather, as movement of an ill-prepared people to the central cities of large metropolitan areas. It occurred in a period when mechanization and automation were reducing the needs for unskilled labor to low levels. A subculture, with unstable family relations, female dominance, and limited male responsibility, had persisted since the period of slavery. Transferred to the cities, high fertility and illegitimacy became major problems, intensified by the failure of urban society to overcome racial discriminations.

In recent decades there were major movements of Negroes to central cities and of white persons to outer areas. Migrations between metropolitan areas are now replacing movements

from rural to urban areas as a central process. The metropolitan populations are composed largely of migrants and the children of migrants.

The major questions for research concern marriage, marital status, and family instability; childbearing within and outside marriage; their variations by education and duration of residence; and the trends of the generations born in metropolitan areas. The basic variables in marital and reproductive history are included in the vital registration forms. These forms also include place of birth and highest grade of school completed.

Thus the priority problems in research can be probed if data now on the registration records are given with completeness and accuracy. It is unlikely that items long unused are filled in carefully in all or even in most metropolitan areas. Moreover, the marriage-registration area is not nationwide and many of the States do not note legitimacy on the birth certificate. Questions on education have been added to the standard forms as of 1968. Thus some analyses can be nationwide, while others may involve studies of particular metropolitan areas or clusters of such areas. The concentration of effort to secure complete records combined with the demonstration of the scientific values and policy relevance of the data should yield improvements in the records.

Analysis of the population dynamics of a metropolitan population is deficient if it involves only a dichotomy of central city and outer ring. There are major differentiations within the metropolitan area itself and, particularly, with the central city. Insofar as possible, vital records should be coded for the geographic areas of the 1970 census, and tabulations should be made in as much geographic detail as possible. The essential requirement is consistency of vital statistics and census tabulations for standard metropolitan statistical areas (SMSA's).

Basic requirements and recommendations are as follows:

1. Identification and tabulation of data specifically for Negroes, instead of grouping them under the heading of "nonwhite" as previously done.
2. Coding and tabulating data on State and country of birth on vital records, and

distinguishing Puerto Ricans and identifying the countries of birth of the foreign-born.

3. Coding of highest grade of school completed.
4. Integration of infant death reports with birth records.
5. Use of the 1970 geographic codes or other procedures for allocation to areas within SMSA's, insofar as possible.

There should be explorations of the use of supplementary statistical forms in selected SMSA's for 1970 or for 1969 through 1971, with questions on health and on migration, mobility, and stability.

Special areas and groups.—Types of mobilities and the associations among them differ by age and place of residence. Moreover, the relations of vital or health variables to migration sometimes differ significantly for males and females. Furthermore, measurable divergences in subcultural and social psychological factors dictate that all analyses be made specifically for white and Negro persons.

The counterpart of metropolitan growth is rural depopulation. The population dynamics of the rural areas with aging and eroded age structures present special problems in definition and measurement as well as topical approaches. For instance, the selectivities in past out-migrations leave aging groups whose vitality and longevity must have been affected along with their educational and economic characteristics. Questions of the residual populations in rural areas assume a new significance as government policy turns toward investment in the rural areas and smaller places with a view toward arresting, if not reversing, the urbanward movement.

Analysis of the population dynamics and health of Appalachia and other problem areas is needed. The critical questions are not so much the cross-sectional analysis of retardation as the dynamic analysis of exodus and metropolitan influence. The focus should be the developments in the younger ages rather than those among the aging and aged. Major analysis of Appalachia and other areas would be possible with the coding, tabulation, and utilization of information from vital records

and the 1970 census. The basis would have to be agglomerations of counties rather than combinations of States. Special surveys and studies could be formulated efficiently on the basis of this analysis.

The areas for special study should not be limited to recognized problem areas. Comparative analyses are essential; both the areas of origin and the areas of destination of the migrants should be examined. For example, studies of the Negro population still in Mississippi would be significant in research and program. For comparative purposes, there might be similar studies of the residual white populations in the rural areas of the Dakotas or the northern region of the States on the Great Lakes.

The foreign stock.—One of the most neglected of the resources for measuring the associations of marriage and divorce, natality, morbidity and mortality, and mobility itself with the migrations of past periods is the foreign stock, including both those born in foreign countries and those of foreign or mixed parentage. General or specific analyses for populations of various national origins could contribute to the measurement of the cultural aspects and the chronological attenuations of migrant differentiations and adaptations.

Ongoing studies of foreign-born populations suggest other possibilities. The cohorts of residents in the United States who were born in Norway and the United Kingdom from whom residence histories have been collected are representative samples of migrants from these countries. Materials for migrants in the United States can be compared with findings for living sibs of migrants and for probability samples of the general populations in Norway and the United Kingdom.

Populations of Spanish or Mexican origin.—The problem minorities moving to the central cities of metropolitan areas include the Negroes (classified in vital and census statistics as non-white). They also include the Puerto Ricans in the East and the populations in the West with Mexican or Spanish surnames, the majority of whom are classified in vital and census statistics as white.

Vital records include State or country of birth and thus permit identification of those born in Puerto Rico and in Mexico. Marriage

forms include an item on place of birth of parents of bride and groom, but the birth and death forms do not include this item. Thus if vital records are used without linkage to each other or to the census, analysis would include persons born in the United States of Puerto Rican or Mexican parentage and would be limited largely to those born in Puerto Rico or Mexico. The mobilities and adjustments of the second generation would be lost.

The dynamics of the Puerto Rican population are particularly significant, for the entire population of Puerto Ricans is included in the American statistical system. Analysis can cover the population in Puerto Rico, persons born in Puerto Rico and now living in the United States, and persons born in the United States of Puerto Rican parentage. If vital records for centers of concentration such as San Juan and New York could be linked to census schedules, the resultant analysis would be highly significant to the United States and to the Commonwealth of Puerto Rico. It would also contribute to the knowledge of a demographic transition in process. Comparable analyses for Puerto Ricans, Negroes, and southern white immigrants in New York could probe the distinctive aspects of race, culture, origin, and socioeconomic status in metropolitan adjustment.

The problem of identifying populations of Spanish or of Mexican origin is difficult. Mexican immigrants can be identified by country of birth, but this is not possible with persons of Mexican parentage or descendants in later generations. Then there are the descendants of the Spanish inhabitants who were once subjects of Spain or Mexico. Movements of these populations of Spanish origin from Texas to California is major; so is the dispersion from the Southwest to the metropolitan regions of the Great Lakes.

To identify persons of Spanish origin, the Bureau of the Census coded from a list of Spanish surnames in 1950 and 1960 for the five Southwestern States. Such coding may be undertaken again in 1970; the needs of the National Center for Health Statistics would be a factor in the decision. Experimentation and analysis of the list of names and the tasks of coding in California provide a basis for assessment and decision as to procedures for the 1970 census period.

Indians and other indigenous groups.—Another subcommittee of the U.S. National Com-

mittee on Vital and Health Statistics is considering the Indian population. It should be noted, however, that the Indian population and the Alaska Natives are among the most economically retarded of the American minority groups. Characteristic of the population are the high birth rates and the almost modern death rates that yield high rates of natural increase. This international problem with which the U.S. Government is concerned also exists within the United States.

The question for analysis and the feasibility of analysis break logically and practically into two studies. The first would be that of the Indian in the conterminous United States. The second would be that of the Alaska Native population. If the Department of Health of Alaska required racial designation such as Aleut, Eskimo, or Indian on the vital records and the Bureau of the Census required similar designations in the census of Alaska, studies of these population groups would be possible. If census schedules and vital records were linked, evaluation of the ethnic designations and measurement of coverage would be possible. The linked records and schedules would permit incisive analysis of this small but significant subgroup in the population.

Hawaiians, Chinese, and Japanese.—The analysis of the population dynamics of the Alaska Natives concerns indigenous groups remote from the larger population. The analysis of the dynamics of the population of Hawaii and of the Chinese and the Japanese in California concerns the assimilation and integration of peoples of diverse Asian backgrounds. In comparative demography the mobilities, the ages at marriage, the limited fertility, and the very low mortality of the Chinese and the Japanese in Hawaii and California permit analyses both of the potentialities of the peoples of China and Japan and of the conditions associated with the realization of those potentialities. Again the requirement for analysis is a comparable racial designation on vital records and census forms. The designations are now included in the registration forms of Hawaii; Chinese and Japanese are noted in the forms of California. The use of racial designations on census schedules and the collation of vital records and census schedules would permit direct analysis of this blending population in the Pacific. Such collation would also permit the evaluation of the

comparability of the ethnic classifications in the separate sources.

Migrant labor.—The problems of migrant labor merit and receive special attention from many agencies and committees. The neglected sector is the relation of marriage and fertility to the origin and persistence of the patterns of migration, poverty, and deprivation. Exploration of the direction of relations and the crucial points in breaking the cycles of the generations should receive priority in future analyses. Rather, marriage, natality, reproductive wastage, and family dynamics should be major components in studies of the economic and health status of the migrant groups.

6. Essential Bases for Research and Development

Resources for research may be defined as present and potential sources of data. This approach dominated the preceding discussion. In a more basic sense, resources for research may be defined as the professional personnel and facilities that constitute the research staffs of universities and research institutions. Pioneer studies on the interrelations of migration, vital processes, and health are undertaken by these researchers. Further advances that are outward thrusts of inquiry, method, and knowledge are likely to be based in universities or research institutes or to involve their cooperation.

Today there is a growing need for increasingly intricate and intensive research. There are increasing numbers of research specialists and research facilities. There are new technologies that permit analyses that have been impractical in the past. There are professional statistical organizations and research staffs in government. These coincidences made feasible approaches to research that would have been visionary a few years ago.

Any dichotomy of governmental and academic approaches and responsibilities has increasing components of artifact. The National Center for Health Statistics is considering increasing involvements with universities and research institutions.

This Committee's sketch of areas of research and the suggestions for priorities in research con-

cerned a field of activities rather than a directive to specific organizations within or outside Federal or State Governments. The essential bases for development, research, and experimentation require not only the direct involvement of the National Center for Health Statistics but also its stimulation of work in universities and research institutions through grants and contracts.

7. Plans and Programs for the 1970 Census Period

The responsibilities of the National Center for Health Statistics dictate major emphasis on data collection, tabulation, and analysis for the years around the 1970 census. The fields in which knowledge is needed most urgently include marriage, natality, and infant mortality in the populations formed largely of migrants and the children of migrants. The field of concentration in the period of the 1960 census was mortality; the fields of concentration in the period of the 1970 census should be marriage, natality, and migration.

The advances of statistics and research, the technological developments, and the widely ranging activities already in process are further arguments for the feasibility and productivity of a flexible program in the period when 1970 census results and queries recently added to vital records are both available. There is emphasis on migration in the 1970 census. Tabulations will be oriented toward metropolitan distribution and process; the problems of central cities and disadvantaged rural areas; and the relations of racial, economic, and social variables to these demographic components. The records of marriage, divorce, natality, and fetal death include information on place of birth, ethnic group (including the Negro specifically), and educational level.

For the first time in the 20th century, the census of 1970 will include a direct question on the presence, nature, and duration of disability. One may also anticipate the inclusion of questions on health in the current population and health surveys, followbacks of reported vital events, and other special studies.

The concentration on marriage, fertility, and migration in the period of the 1970 census

has an immediate justification in today's problems of population, health, and welfare. In longer perspective, this is an appropriate period for advances in the comprehensive analysis of population dynamics. Natality cannot be analyzed meaningfully apart from marital status, family instability, and illegitimacy. Fetal, neonatal, and infant losses are aspects of the reproductive process, as of mortality. The changing relations of mortality of men and women at various ages may be described but not explained through mortality statistics alone. Health and vitality and disease and disability are related not only to rates of dying but to reproduction and mobility. Migrations and changing distributions alter the locus if not the levels of births and deaths and complicate problems of vital rates.

The involvement of the National Center for Health Statistics can be summarized in four categorical statements:

1. Major advances in vital, health, and migration statistics are essential to the analysis of the population dynamics of present and future, overall and for areas and groups within the population.
2. The analysis of levels and changes in marriage, natality, mortality, and migration involve the interrelations of the specific variables in population growth and distribution with the demographic, economic, and social characteristics of the population.
3. Measures of health and vitality should be included within or related closely to the vital statistics system.
4. Migration statistics should be components in a system of population dynamics.

There are major problems in the evaluation, tabulation, and utilization of information on the vital record forms that is not now used or that is used only sparsely. The problem of procedure is the joint planning of tabulations from vital records and census enumeration. There is then further exploration and decision as to what current surveys or special procedures supplement the resources of the vital records system and the census.

Outline of Resources

1. Vital Records

1.1 *Marriage*.—The certificate requires information on the State of birth of the bride and groom and of the father and mother of each. Race is specified. Queries include order of marriage and, if previously married, type of termination. Education is included for groom and bride. The major problem is allocation by residence when the system covers only 38 States.

1.2 *Divorce or annulment*.—This certificate includes State of birth of husband and wife but not of parents. Place and date of marriage are included, as is date of separation by total number of living children and by number of children under 18. Number of the marriage and type of dissolution of previous marriage or marriages are secured separately for husband and wife.

1.3 *Live birth*.—The certificate includes State of birth of father and mother, race of each, and whether or not the birth was legitimate (38 States). Details on the birth include date, place, and attendant; pregnancy care; weight of infant; injuries; and malformations. There is a reproductive history, with the date of the last live birth or fetal death together with previous deliveries by the number now living, those born alive and now dead, and those born dead.

1.4 *Fetal death*.—This certificate includes State of birth, race, and education of the father and the mother. Reproductive history of the mother is included, with date of last live birth, date of last fetal death, and previous deliveries by whether now living, born alive but now dead, or born dead.

1.5 *Infant mortality*.—The information on infant death includes State of birth of the infant but neither the States of birth nor the education of the father and the mother. Analysis in the context of reproduction requires matching with the birth certificate.

2. The 1970 Census

Information on age, race or nativity, place of birth, and highest grade of school completed is included in the census schedule as in vital records. The 1970 census will have complete enumeration, a 25-percent sample, and then 20- and 5-percent samples; these latter will be comparable to the 25-percent sample but not to each other. The question of marital status is included in the 100-percent enumeration and marital history in the 5-percent sample. Marriage is defined *de facto*. Numbers of children ever born to women ever married are included in the 25-percent sample.

Migration or mobility questions on the census forms are as follows: State or country of birth (25 percent); country of birth of parents (20 percent); mother tongue (20 percent); year moved into present house (20 percent); place of residence 5 years prior to census (20 percent); place of work and means of transportation (20 percent); year of immigration (5 percent).

New questions on labor force status 5 years ago (25 percent) and occupation and industry 5 years ago (5 percent) permit the allocation or reallocation of college students, the Armed Forces, and work groups to secure the most appropriate denominators for vital rates of various types.

A question on the presence and duration of disability introduces direct health query into the census and provides an empirical

test of the quality and value of the data thus secured.

The housing questions include six items used by the Housing and Urban Development to delineate areas for housing programs: water supply, toilet, bathtub or shower, complete kitchen facilities, heating equipment, and rent or value.

3. National Health Survey and Current Population Survey

The inclusion of migration or mobility questions in the National Health Survey and the inclusion of health and mobility questions in the Current Population Survey supplement vital statistics and the census enumeration. The regular *Employment Earnings and Monthly Report on the Labor Force*, which is the core of the Current Population Survey, includes illness or disability as reason for not working.

4. Followback Queries

The retrospective query of vital reports may supplement information and evaluation.

5. State Vital Record Systems

Analyses from the vital records systems of the States are relevant to future developments of the national systems. For instance, California and Alaska ask about length of residence in the State. There has been work in California on the use of Spanish surnames in vital records.

6. Special Surveys, Queries, and Studies in States

State or municipal health departments, perhaps in cooperation with universities and research institutes, may undertake studies not feasible at regional or national

levels. For instance, North Carolina might develop studies of the data and the dynamics of marriage, fertility, and legitimacy in the native white and Negro populations.

7. Other Government Surveys or Series

An illustration: an ADC (Aid to Dependent Children) survey was conducted in 1967. Another may be undertaken in 1970. If so, there could be supplementation with the tabulations and analyses of marriage, family formation, fertility, pregnancy wastage, and illegitimacy in the general and in this special population.

8. Universities and Research Institutions

The major developments of population research and training centers and the increases in demography in university departments, including public health, provide sources for analysts who would utilize the data generated by the special activities of the 1969-71 census period. Representatives should be included in the planning of the activities.

Procedures

Tabulations of the usual types of vital statistics for areas within central cities and standard metropolitan statistical areas require that the geographic codes of the census be used in the relevant vital statistics records. Tabulations of the information on place of birth require assessment of the quality of the information on the basis of previous tabulations and uses of these data. Tabulations of the information on educational levels require evaluation of the completeness and accuracy of the data. If detailed data on reproductive patterns and histories are to be secured from birth reports, special efforts should be made to insure completeness and care in the filling out of birth records. Similar attention should be given to legitimacy status in States where the information is collected.

These considerations indicate that the National Center for Health Statistics and State registrars should be asked to assess the adequacy

of data and where feasible take the following actions:

1. Use geographic codes for address of residence at time of vital event.
2. Code place of birth.
3. Code educational level.
4. Request the completion of all items on present and previous deliveries and on legitimacy in the natality reports.
5. Emphasize the importance of completeness and accuracy in all items noted above, plus the specific designation of race.

Types of Products

1. Tabulation of Vital Records.
 - 1.1 Tabulations of the usual types of marriage, divorce, and natality data, with allocations to geographic subareas within metropolitan areas and with sufficient detail by age and other relevant demographic characteristics to permit refined measures.
 - 1.2 Tabulations of vital statistics variables by migrant status as indicated by State of birth, with major emphasis on places of origin of the metropolitan in-migrants and places of residence of the out-migrants from rural areas. The prime focus involves the exodus of Negroes from the South and the marriages and births of Negroes in metropolitan areas whether born locally, elsewhere in the North and West, or in the South.
 - 1.3 Tabulations of marriage and natality by educational level, place of residence, and place of origin.
2. The Linkage of Infant Death Reports With Birth Records.
 - 2.1 Tabulations of fetal deaths, neonatal, and later infant mortality by place

of residence and place of origin for Negro and white populations.

- 2.2 Tabulations of fetal and infant deaths by educational levels of the parents.
- 2.3 Tabulations of infant deaths by age in relation to the reproductive history of the mother and various characteristics of the parents.
3. The Matching of Census Schedules for Infants Born Near the Census Date With Birth Records.
 - 3.1 The basic goal would be the testing for completeness of birth registration, particularly in the Negro population. Careful design would permit analytical use.
 - 3.2 If infant deaths are linked to birth records, the matching of census schedules for infants and birth records provides census data for the infant and the family, detailed mortality information, reproductive histories, and legitimacy status.
 - 3.3 The comparison and evaluation of information on age, race, marital status, place of birth, and educational level in census enumeration and vital records is thus feasible.
 - 3.4 The evaluation of data from census queries on children ever born to women ever married on the basis of births reported from all women giving birth without reference to marital status is essential.
 - 3.5 The analytical possibilities of matched and fully utilized natality

reports and census enumerations are so diverse and potentially so productive that no statements are required beyond the noting of the fact.

Statistical Publications and Studies

The various tabulations would permit many types of analyses now and in future years. Special tabulations or access to tapes should be available to responsible users. Thus the program would include

1. Statistical publications, perhaps in part as a joint series with the Bureau of the Census.
2. Tapes or other access to data.
3. Special studies or monographs.

It would not be appropriate to outline a monograph series in advance of the work of the committee that develops the project. The Subcommittee on Migration and Health Statistics viewed the analytical publications as a series of special studies in significant fields. In many fields, monographs on the total population of the United States would mean reduction to least common denominators. Geographic coding for metropolitan areas will not be nationwide. Illegitimacy is not noted in all States. The marriage-registration area is not nationwide. Moreover, there are social, cultural, and regional dimensions to population dynamics. Social change is not a uniform process.

The special statistical activities in the current health and population surveys and other sources will be undertaken in light of the analytical problems judged most significant. They will be related to the analyses that are projected.



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