

VITAL and HEALTH STATISTICS
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The 1970 Census and Vital and Health Statistics

A Study Group Report of the Public Health Conference on Records and Statistics

A study of the plans for the 1970 Census of Population being developed by the Bureau of the Census; their relation to vital and health statistics; and recommendations for ways to incorporate Census data in State and national statistical programs.

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

This report was prepared by the Study Group on the 1970 Census and Vital and Health Statistics under the auspices of the Public Health Conference on Records and Statistics. Dr. Clyde V. Kiser, Chairman of the Study Group, was the principal author of the report. He was assisted by other members of the Study Group.

The central purpose of the Study Group was "to study the plans for the 1970 census, as being developed by the Bureau of the Census, to consider how they relate to vital and health statistics, and to recommend ways to incorporate census data in State and national statistical programs."

It is hoped that this report will encourage State health officials and students of vital statistics, demography, and the social sciences to take advantage of the 1970 census year, or the 1969-71 census period, to carry out studies of small areas and special population groups.

For her help as rapporteur and coordinator, a special word of thanks to Mrs. Stephanie J. Ventura.



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IN THIS REPORT the plans for the 1970 Census of Population are described, their potential relationship with vital and health statistics is considered, and ways of incorporating census data in State and national statistical programs are recommended.

The decennial Population Census offers rich research opportunities to the public health analyst, demographer, and sociologist, and to analysts in other related fields. The 1970 census in particular will offer a number of important innovations, including greater provision of small area data and more detailed information on the health and economic characteristics of the population.

The usefulness of vital statistics has been enhanced by the introduction of the new standard certificates. With the introduction of questions on educational attainment to the birth certificate, for example, it will be possible to calculate fertility rates by education for the total population and for population subgroups of the 36 States which have items on educational attainment on their birth certificates.

Plans by State and local health departments for using the 1970 census data in combination with their own vital statistics data are described and recommendations are made for additional tabulations both on the national and the State or local level.

Matching operations using census and vital statistics data are discussed and recommendations made concerning them.

It is urged that existing differences in definitions between the National Center for Health Statistics and the Bureau of the Census be eliminated as soon as possible.

Finally, the concept of an integrated and comprehensive approach to the critical questions of population dynamics in relation to health is endorsed.

THE 1970 CENSUS AND VITAL AND HEALTH STATISTICS

INTRODUCTION

The forthcoming decennial census, scheduled for April 1970, will make possible a great variety of research projects in health and demographic fields. Federal government interest and participation in health programs operated at the local government level has had an important impact on the special innovations proposed for the 1970 census. Of particular interest to public health authorities and demographers alike is the greater provision for small area data. This will permit, particularly with reference to the census year or census period, detailed analyses of health problems at the local level and demographic analyses of small areas and special population groups.

Other important innovations planned for the 25-, 20-, or 5-percent samples of the 1970 census include (1) obtaining additional information on place of work by detailed area to learn more about commuting patterns; (2) obtaining information on activity 5 years ago; (3) some expansion of income data to obtain more information on sources of income; and (4) obtaining information on presence and duration of a "health or physical condition which limits the *kind* or *amount* of work" a person can do at a job, and on whether the condition kept him from working at all. Clearly, the 1970 census offers rich research opportunities to the public health analyst, demographer, and sociologist, and to those in related fields.

OVERVIEW: AREAS FOR INVESTIGATION

In 1967, the Public Health Conference on Records and Statistics established a Study Group to investigate these opportunities:

to study the plans for the 1970 census, as being developed by the Bureau of the Census, to consider how they relate to vital and health statistics, and to recommend ways to incorporate census data in State and national statistical programs.

Three specific proposals were originally suggested, as follows:

Consider new items being proposed for inclusion in the census, or to propose such items, and make recommendations concerning them as related to the field of public health statistics.

Consider and recommend special vital statistics and health tabulations to be prepared for the census year and around the census year. Also, consider special tabulations of population data from the census.

Consider and recommend special studies matching vital records with census records.

In addition, the Study Group agreed to add a fourth proposal:

Consider the gaps in uniformity of census and registration definitions and procedures, and make recommendations concerning them.

Provision for a decennial census was written into our Constitution at the beginning of our Nation's history. It arose from the need to have a periodic reassessment of the number of congressional representatives to which the several States were entitled. Still serving this purpose, the census also has become our chief method and source of periodic inventory of the changing size, distribution, and characteristics of our population. Collectively, the Censuses of Population and Housing and those of Agriculture and Manufacture, provide periodic assessment of our economic and social resources. Of particular relevance here, the census provides the population bases or denominators needed to compute our annual series of vital and health statistics.

The central theme of this report is to urge State health officials and students of vital statistics, demography, and the social sciences to take advantage of the 1970 census year or the 1969-71 census period to carry out studies of small areas and special population groups. It is during the census period that solid population data are available. At other times intercensal estimates must be relied upon.

Furthermore, although those planning the 1970 census probably have received more requests for special data and special tabulations than any of their predecessors, they continue to show a commendable sensitivity to the needs of the States for population data for small areas and special population groups and for denominators for vital and health statistics.

In a paper "Planning the 1970 Censuses to Meet State and Local Needs,"¹ A. Ross Eckler, Director, Bureau of the Census, stated: "Statistics for small areas are a unique contribution of a census and this feature is receiving special attention as the Census Bureau prepares for the 1970 Censuses of Population and Housing. In a series of 22 regional meetings held with groups of representative users of census data about a year ago there was a strong expression of interest in data for small areas, reflecting State and local interest in the many legislative programs relating to economic opportunity, economic development, transportation, housing, and health programs.

"A mail population and housing census requires a complete file of residential addresses

coded to reflect the geographical detail to be observed in the census. A major advance of the 1970 censuses will be the geographic coding system being developed which will permit us to account for all the addresses located on each side of each city block.

"For assigning geographic codes in the major urban areas, we are preparing computerized address coding guides which will include street names, block face identification, intersecting streets, the range of address numbers for each block face according to census tract and zip code area, and the area identification codes required for census tabulations."

However, it may be well to differentiate between what will be available and what will be published in the way of population data for small areas. Also, whereas population counts will be available for small areas, the detail regarding population characteristics will naturally decrease with the size of the area considered. Dr. Henry S. Shryock, Jr., Assistant Chief, Population Division, Bureau of the Census, stated the attitude of the Bureau of the Census on this matter as follows: "The Bureau is putting a high premium on speed of publication and on simplifying the programming and table preparation in the computer. Thus, we have tried to simplify the overall pattern of the reports, recognizing only a few different levels of detail and dropping a good many historical figures and percent distributions that were carried in 1960. There still remains more detail for States than for their component areas; but, at a number of points, we postponed the presentation of further State detail until Series P-D, Individual SMSA's, urbanized areas, and places of 25,000 or more, as well as counties, are given the same type of treatment. Less detail is given for urban places of fewer than 25,000 inhabitants and the rural-farm and rural-nonfarm parts of counties. In the last few censuses, the cutting score for this differential treatment of cities had been at 10,000 rather than at 25,000, but the number of urban places has been growing and there are competing needs for space for additional subject matter. Moreover, after Series P-A, we are proposing dropping published data for Minor Civil Divisions."²

FINDINGS AND RECOMMENDATIONS

Addition of New Items Into the 1970 Census

With respect to the first specific charge to the Study Group, only a few new items will be introduced into the 1970 census. Of perhaps main interest is the likelihood of a question on presence and duration of a "health or physical condition which limits the *kind* or *amount* of work a person can do at a job," and on whether the condition kept him from working at all. This question probably will be asked of persons 14-64 years old in the 5-percent sample. Other items scheduled for the 5-percent sample are whether married more than once, date of first marriage, whether first marriage ended because of death of the husband (or wife), occupation-industry 5 years ago, citizenship, vocational training completed, and year of immigration of foreign-born persons. (See appendix I.)

Among the new housing items tentatively scheduled for the 100-percent sample is one concerning the presence of "complete kitchen facilities." There are related questions in the proposed 5-percent sample about washing machines, dishwashers, and ownership of a "second home." These and other housing items might be of value in relating health conditions to housing. They also provide some measure of the level of living.

Special Vital and Health Statistics Tabulations

In general, the special relevance of the 1970 census for vital statistics consists not so much in new items as in greater provision for small area detail. Systematic sets of tabulations on counties, census tracts, and other small areas will probably be made and published for each State. It is likely that some unpublished tabulations will also be available, for the cost of reproduction. Other tabulations may be available at the costs involved in getting them produced. Those who wish population bases or denominators for studies of vital events for small areas, for special population groups, or for specific subdivisions of the population should communicate with the

Census Bureau^a and inquire about the possibility of securing appropriate population bases from the 1970 census. In some cases it is possible that complete tabulations of the desired detail will be published. In other cases, the Census Bureau may suggest that the consumer modify the detail in the numerators in order to accommodate them to the available denominators. In still other cases, other arrangements or compromises may be indicated.

Whatever the final nature of the tabulations, the 1970 census probably will produce a greater volume of small area data at an earlier date than any previous census. The availability of these data presents an excellent opportunity for those who are responsible for vital records systems to produce complementary data necessary for health planning, demography, and general social research. For many States and cities this will require expanded place coding of vital events. Tabulations for places above 2,500 population and balance of county will not be adequate. Tabulations should be extended at least to villages beyond a certain size (perhaps 500 or more population). For areas that are census-tract, births, deaths, marriages, and divorces should be tabulated from vital records by census tract for 1969-71. This is of particular value for programs focusing on poverty areas. Vital records systems can provide data quickly for these areas and reduce the need for more time-consuming special surveys. This is of special importance to persons primarily interested in action programs.

For small areas of low population density the number of events is likely to be too small to calculate meaningful rates, but small areas can be combined to provide regional data that are more sensitive to a particular need. The current stress in public health on local, regional, and comprehensive health planning and on the delivery of services emphasizes the need for such small area data.

The 1970 census should provide more and better data for small areas as early as late 1970.

^aDr. Henry S. Shryock and Dr. Paul C. Glick of the Population Division, Bureau of the Census, were consultants to the Study Group. Inquiries regarding data availability may be directed to either of them.

In particular, the Bureau of the Census has given much attention to improving poverty area data. If vital statistics show similar improvement, maximum benefits can be obtained in combining data from the two sources.

Because of the small frequency problem it may generally be impractical to tabulate mortality for small areas by detailed cause, but this does not preclude the use of a few major causes such as heart disease, cancer, stroke, accidents, and all other causes; or the system used in Alaska which groups deaths into four broad classifications: *Preventable*—those causes which show a rapid decline with concerted medical and public health attention; *Violent*—accidents, suicides, homicide and alcoholism; *Chronic and Old Age*—those deaths for which the age-specific rate rises very rapidly with advancing age; and *All Other Causes*.³

Such cause groupings along with perinatal and infant death data should also be tabulated by race or color for small areas having appreciable nonwhite populations. If rates become too variable for comparative analysis it may be advisable to combine areas or to extend the analysis to 3 years centered on the census year. Birth and death data by race or color should also be tabulated to show patterns of hospital use and to determine whether births and deaths are concentrated according to color in particular hospitals serving an area. Similarly, studies can be conducted on relative proportion of births occurring in hospitals, attendance at birth by a physician, prenatal care, prematurity, cause of death, and a number of other topics.

Demographers have long recognized the value of census and vital statistics data in combination. If a vital records system provides birth and death data for small areas within a State, it becomes possible to determine natural increase or decrease for the area, and it becomes more feasible to attempt population estimates and projections for individual or, at least, for grouped areas. When such data are available from two successive decennial censuses, imputed net migration can also be calculated for the decade by combining data from the two sources.

The introduction of the new standard birth certificate provides additional opportunities for demographic research, particularly in combina-

tion with census data. The new standard birth certificate, adopted as of January 1968, contains a question on education of mother and father with response categories that conform to census population groupings. Education is a variable of great interest to demographers in fertility research. For a large segment of the national population and for population subgroups, it will become possible to calculate fertility rates on an annual basis by education, thus supplementing the data by education on the number of children ever born which is available from the census. Possibly special arrangements for tabulations of all women and married women of childbearing age by age and educational attainment will be needed if age-specific birth rates by educational attainment are to be computed for the 36 States which have this item on their birth certificates.

Tabulations by States

The State health offices vary greatly in the extent to which they have planned special studies during the census period. Replies to a brief inquiry sent to the State offices indicated a range from virtually no plan to very extensive plans. For instance, extensive plans for special studies are being made by Robert Dyar in California, Franklin D. Yoder and Clyde A. Bridger in Illinois, Robert A. Calhoun in Indiana, Sandra H. Kinch in New York State and Carl L. Erhardt in New York City, Glenn A. Flinchum in North Carolina, R. H. Hutcheson and Ann Dillon in Tennessee, Donald J. Davids in Colorado, Marian M. Colby in New Hampshire, Raymond D. Nashold in Wisconsin, and Margaret E. Rice in Mississippi.

Dr. Dyar's description of California's previous experience may be chosen as an example of extensive activity: "For earlier census years we have calculated all vital rates for the State in great detail; cause-specific rates, rates by race, etc. For 1959-61 deaths, a study of occupational mortality by county is still underway, for which unpublished denominator data were purchased from the [Bureau of the] Census.

"In addition, life tables, on a State and county basis, by single years of age as well as five-year groups have been developed for each census year."

Dr. Dyar's suggestions of needs for the future are also of interest: "For comprehensive health planning there are several kinds of areas for which data for planning are needed. These are: cities of 100,000 or more; counties; regions—i.e., groupings of counties; metropolitan areas; urban areas; central cities; cities of areas with concentrations of Negro and Spanish American populations; and areas where unusual poverty exists. These are needed both to describe populations of concern as well as for denominator use.

"In addition there is increasing interest in data for subparts of counties, e.g., tracts, groups of tracts, and health districts. We know of at least eleven local health departments which tabulate at least part of their data by census tract on an ongoing basis.

"In order to fulfill our program needs we are hoping for additional types of data than those which were available in 1960."

Dr. Dyar lists as examples of specific tabulations needed for California:

- a. Data on each of the nonwhite groups separately--down to city and county level.
- b. More cross-classifications of race with socioeconomic variables, especially for areas involved in antipoverty programs.
- c. Place of work versus place of residence is needed for occupational health studies.
- d. Separation of public and private water systems.
- e. Additional data which would be useful include:
 1. Manpower in relation to education and occupation.
 2. Per capita income.
 3. Ethnicity.
 4. Historical changes of census tract boundaries.
 5. More cross-tabulations by income, education, and age, by county.
 6. Data related to family planning and patterns of living, e.g., number of children by age of mother, women working by age, place of birth by age.
 7. Place of migration in relation to socioeconomic variables.
 8. Address coding guides for as much of the State as possible.

Most of the census-related studies described above by Dr. Dyar were also mentioned by respondents from other States. Several additional comments by others are of interest. Dr. Calhoun of Indiana stated: "Perhaps one of our most important activities was the organization of the Indiana Census - Vital Statistics Committee in 1960. This group consisted of membership essentially from the State Board of Health and State Universities.... This group met on a quarterly basis from 1960 through 1962 and we plan to reactivate it next year."

Dr. Erhardt of New York City stated: "In 1950, we embarked on some studies of vital statistics utilizing health areas ranked by economic status (an index number) for analysis of data. We should like to pursue this idea further when 1970 population data become available. This need would require that we have population and family characteristics by health area and comparable accumulative data for health districts for 1970. We hope that the Bureau of the Census can be prevailed upon to produce these materials and to publish them for New York City in addition to census tract data which are very costly for us to use in the manner described."

Mr. Davids of Colorado stated: "We will use the age and sex data for age- and sex-specific and adjusted rates. There is demand for fertility rates and both natality and mortality data by socioeconomic status by census tract and county as well as by State; much of our data will be analyzed by socioeconomic status and census tract, especially for the Denver Metropolitan area. Also there will be demand for vital statistics data by race and [for persons of] Spanish surname and census data will provide the denominators for these data."

Mrs. Colby of New Hampshire said: "We plan to use the 1970 data in preparing all of our vital statistics rates and the data will be invaluable for use in the regional medical programs and in supporting programs concerned with comprehensive health planning."

From Florida came a report by Mr. Oliver H. Boorde: "We also use the decennial census data to adjust inter-censal crude birth rates, crude death rates, age-race-sex-cause specific death rates, and birth rates by age of mother for State and counties, which are initially based on population estimates.

"In addition to the above, for 1970 we plan to compute age-adjusted birth rates and total and cause-specific death rates for this State and counties. These latter computations are now practical because of the added capability provided by the 1401 computer which has been installed since the 1960 Census."

Finally, a paragraph from E. L. Wittenborn and Mr. Bridger of Illinois may be noted: "What we specifically need from the 1970 census is summarized in this excerpt from our 1963 Annual Report: 'The principal population characteristics needed in public health planning are age, sex, color, education and income. In addition, occupation, industry and marital status are needed for some programs. Data on income cross-classified by education, age, sex, and color are generally not available in sufficient detail for effective planning. The presence in Illinois of nearly a million persons 65 years of age and over, many of them widows with small income, and the presence of nearly a million nonwhite persons, many of them with educational attainments too low to compete effectively in the labor market, underscore the problems in just two of the many areas where health programs must be tailored to fit the needs.'"

Tabulations by NCHS

The National Center for Health Statistics has frequently conducted various types of special studies during the census year or period. For example, in 1960 it cooperated with the University of Chicago and the Bureau of the Census in planning the matching of death certificates with census data for the deceased persons. The Center assumed responsibility for the detailed mortality tabulations and special tabulations of divorce for the census period 1959-61 for the American Public Health Association (APHA) *Vital and Health Statistics Mongraphs*. NCHS also made some special mortality tabulations for the Public Health Service, and it prepared the decennial life tables for 1959-61. The birth registration tests of the 2 previous census years were not repeated, but the Center began a matching of death and birth certificates for infants born in 1960 for a study of infant mortality.

The Study Group has made a number of recommendations to the Center concerning special

tabulations and studies that should be made, taking special advantage of opportunities offered by the 1970 census. Some of these recommendations have already been adopted by NCHS. For example, the Study Group recommended that NCHS prepare life tables for the Nation and for the States for the period 1969-71, in the same detail as used in the 1959-61 census period. The Division of Vital Statistics has already made plans to implement this recommendation.

The Study Group also recommended a comparison of causes of death as classified by the Seventh and Eighth Revisions of the *International Classification of Diseases*. Such a comparison, similar to one carried out in 1950, is urgently needed because of changes in the Eighth Revision. The Division of Vital Statistics has already completed a preliminary investigation of the comparability of the two revisions based on a sample of deaths. The results of this study were reported in a recent issue of the *Monthly Vital Statistics Report*.⁴ The Division expects to conduct a more detailed study of the comparability of the two revisions in the future.

Mortality rates, age-specific and age-adjusted, from the total of all causes and from selected specific causes by sex and race for the United States, geographic regions, and States should be calculated for the census period 1969-71. Tables of this type were made for 1949-51 and are of great value to the States.

Since marriage and divorce data, especially the latter, need improvement in coverage, advantage should be taken of the census period to demonstrate the potential value of these data. Studies of marriages and divorces for States in the registration areas, specific for color, age, and education should be made. Cooperation between the Center and the Bureau of the Census was important in producing the APHA monograph on marriage and divorce based on the 1960 census period; further cooperation of this kind is to be encouraged.

Likewise, continued cooperation of these two agencies for the collection and utilization of natality and fertility data is desirable. Fertility rates by color, age, and education should be computed for all women and for married women for the United States, regions, and States. Again, a pattern for this type of cooperation was set by the APHA Monograph Series.

Some type of repetition of the APHA *Vital and Health Statistics Monographs* is recommended. It is not necessarily advisable that the exact format be duplicated. For example, the detailed analyses of 12 separate causes of death might be postponed for another decade. Also, some other method of funding and recruitment of authors might be considered. However, in view of the rapid changes taking place in marriage, fertility, and in morbidity and mortality from certain causes, it would seem well to have a series of at least a half dozen monographs on vital and health statistics based upon the 1970 census period.

Matching Studies

The Kitagawa-Hauser study (discussed in some detail in appendix II) has demonstrated that a valid analysis of mortality differentials can be carried out from a carefully planned and executed matching operation of death and census records. However, such a matching operation is lengthy and expensive, particularly in view of the sampling design of the census. The analysis must await the matching operation; thus the results are not available to users of the data until an even later date.

New techniques for matching records by computer have been designed by the Bureau of the Census and are described in "Data Access Descriptions,"⁵ These techniques hold promise of significantly reducing the time and cost of such operations. Although the method described will not in itself yield all of the detail desired in a study of mortality differentials, it should be explored as an aid in such studies.

The inclusion of the Social Security Number in the census for persons 14 years and older would assist the matching operation for deaths in that population. However, it has been decided not to include the Social Security Number in the 1970 census. Some of the States added the Social Security Number of the mother to the revised birth certificate and of the bride and groom to the revised marriage certificate for use in matching records for analysis. These studies are encouraged.

Results of matching studies, such as the Kitagawa-Hauser Study, are of great interest

and value to the States. It is recommended that they be distributed to the State health departments by the National Center for Health Statistics if not by the contract agency.

Although a nationwide birth registration test similar to those of 1940 and 1950 is not recommended, such a test for nonwhite births would be advisable in the 1970 census period. However, in lieu of a full birth registration test during the census period, it has been decided to conduct a limited test in 1969 in conjunction with the Current Population Survey. It is planned to sample an equal number of births in the white and nonwhite population, thus effectively oversampling the nonwhite population.

Gaps in Uniformity of Definitions

There are a few differences in definitions between the National Center for Health Statistics and the Bureau of the Census; these should be eliminated as soon as possible. There are troublesome differences relating to the assignment of residence of military personnel, crews of vessels of the U.S. Navy and Merchant Marine, and inmates of institutions. Another area of inconsistency relates to assignment of residence of students of colleges and prep schools. (For a more detailed discussion, see appendix III.) A third inconsistency is the assignment of marital status to persons whose only marriage was annulled; these persons are regarded by the Bureau of the Census in the strict legal sense as never married, but they are combined with the divorced in vital statistics. This is a minor inconsistency which will probably become even less of a problem now that New York has relaxed its divorce laws, and annulments there are expected to decline.

The Bureau of the Census maintains a strict urban-rural dichotomy, but the National Center for Health Statistics does not. The Study Group suggests that attention be given to the possibility of having the geographic-area coding specify whether an address outside incorporated limits is urban or rural. Vital statistics data continue to be available for individual cities and other urban places of 10,000 or more population. (For more detail, see appendix III.)

Endorsement of Comprehensive Approach

Finally, in addition to the several specific recommendations given in this report, the Study Group wishes to endorse enthusiastically the related recommendations of the Subcommittee on Migration and Health of the National Committee on Vital and Health Statistics. The Subcommittee, under the Chairmanship of Dr. Irene B. Taeuber, has pointed up the need for an integrated and comprehensive approach to the many critical questions of population dynamics in relation to health. Emphasizing that States are the collection agencies for registration data and that some of the States collect materials beyond those required for membership in the registration area, the

Subcommittee urged the States to take advantage of the census period to develop the full potential of their data. It also urged that States be amply represented in any planning for a comprehensive approach on a national basis. As a result of the Subcommittee's report, "the Executive Secretary of the National Committee on Vital and Health Statistics was directed to prepare a memorandum to the Surgeon General describing the proposed program of special activities in relation to 1970 data and proposing that he ask the Bureau of the Census, the National Center for Health Statistics, and the National Institutes of Health to form a group to plan and carry out these activities."⁶ Work has begun on this activity and plans are being developed for a monograph series.

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APPENDIX I

PROBABLE NEW ITEMS IN THE 1970 CENSUS AND THEIR RELATION TO PUBLIC HEALTH STATISTICS

NEW ITEMS

In planning content for the 1970 census, the Bureau of the Census made intensive efforts to obtain suggestions and comments for new items for inclusion in the census schedule.

From among the many elicited, only a limited number could be chosen. Among criteria for selection of an item were:

It must be in the broad public interest.

It must not be too complex or too personal.

It must be appropriate for the large scale coverage implicit in the census rather than for a national sample survey.

The entire schedule must fall within the limits of available resources and not impose an unreasonable burden on the respondent.

The final schedule of items for 1970 does not differ strikingly from the 1960 items. The dominant theme in 1970 is greater exploration of existing subjects and provision of additional data for small areas.

New material includes:

<u>Population Items</u>	<u>Sample Rate</u> Percent
Activity 5 years ago-----	25
Occupation-industry 5 years ago-----	5
Citizenship-----	5
Year of immigration -----	5
Vocational training completed -----	5
Presence and duration of disability ----	5

Parts of the following questions:

Income last year ----- (Self-employment income was a single item in 1960; in 1970 there will be a two way separation by farm-nonfarm income. "Other income" was a single item in 1960; in 1970, there will be a 3-way separation of this item--by Social Security, public welfare, and all other sources.)	25
---	----

Housing Items

Number of units at this address-----	100
Complete kitchen facilities-----	100
Second home-----	5
Dishwasher-----	5

Parts of the following questions have been changed also:

Native language
Marital history

The Social Security Number, proposed to facilitate matching studies, was finally eliminated because of great concern for protection of the confidentiality aspects of the census.

The new items on activity (working, attending college, and/or serving in the Army) and occupation-industry 5 years ago may provide useful data for health activities. The year of immigration may be helpful in estimating the migration component of the population. The presence and duration of disability will provide a useful measure of this serious health and economic problem in the general population. At present the incidence of disability is one of the many health unknowns. In general, however, most of the new items finally selected do not provide very much useful new material for public health statistics.

RESULTS OF THE NEW HAVEN PRETEST

At the present time data from the New Haven pretest are not available in a single document. (Statistics on the color and sex of the population of the SMSA and its central City of New Haven were published as a regular report.)⁷ Some of the highlights were presented by David Kaplan (1970 Census Coordinator, Bureau of the Census) at the 1967 American Statistical Association meeting. They are abstracted below:

Field Office Operations

"The essential purpose of the New Haven pretest was to refine further the mail-out/mail-back system which will be used for the collection of information from a majority of the population in 1970.... The

New Haven experience emphasized very forcefully that the regional staff must be prepared for close and frequent contact with the local office and that our staffing and budgetary plans should be adjusted accordingly....

"The New Haven experience showed that the administrative complexities of the centralized technique used for handling the mail returns outweighed its anticipated advantages except in very large local offices.... Plans for 1970 now call for the centralized New Haven-type of mail census to be used in only about 40 of the largest offices and the decentralized Louisville-type approach to be used in the remaining 150 or so mail census offices....

Mailing List for Rural Areas

"...the mailing addresses for rural areas were obtained through a special listing by the rural carriers. One of the objectives of the New Haven test was to help determine whether this approach was more desirable than having census employees do a special canvass.... The New Haven experience confirmed the growing belief that using census employees would be more desirable. There are a number of important advantages in using the letter carrier but they are outweighed by such difficulties as relating carrier routes to census areas and the administrative complexities of interrelating the operations....

Subject Content

"...an expanded [questionnaire] approach was taken to try to meet the demands of census users. On the 25 percent questionnaire were added social security number, vocational training, college degree, marital history, a considerably expanded set of income questions, employment activity five years ago, and facilities included in rent....

"As a result of the New Haven experience and certain associated factors, the content of the long-form questionnaire now planned for 1970 has been reduced so that its scope is only slightly greater than the 1960 level. For example, social security number and facilities included in rent were dropped, and the expansion in income detail cut back. However, to accommodate the most pressing demands for information on additional subjects, the 25-percent sample has been split into two panels: 20 percent and 5 percent.... This technique adds to operational complexities and does not permit cross-tabulation between the 20-percent and 5-percent items. But it does allow us to cover more subjects without adding to the burden on the respondent, an issue which the New Haven experience indicated might become a serious obstacle in conducting a successful 1970 census....

Coverage Improvement

"The findings of two coverage-improvement experiments performed in New Haven can be reported at this time, although further analyses are still being made.

"One technique involves the use of lists of names of people who appear to have an above-average chance of being missed. ...the checklist technique appears to be a costly and time-consuming operation for the small amount of coverage improvement it actually yields.

"Another coverage-improvement procedure tried out operationally for the first time in New Haven (after some evaluative experiments in Louisville and Cleveland) involved the use of the post office change-of-address cards.... The impact on the population count was an increase of about 0.2 percent.... However, the operation is a complex and costly one, and there are a number of technical questions about the validity of the procedure. An intensive review of this procedure is being undertaken to determine whether it should be utilized in 1970 if the funds are available."

These tests incorporate the experience of the New Haven pretest.

1968 "DRESS REHEARSALS"

The "dress rehearsal" program for the 1970 census included three test censuses conducted during 1968 in Dane County, Wisconsin (the Madison SMSA); Trenton City, New Jersey; and Chesterfield and Sumter Counties, South Carolina. The first two dress rehearsals utilized the mail-out/mail-back procedure with addresses maintained in an address register. Under one mail-out/mail-back procedure, edit and followup was decentralized; that is, enumerators working from their homes edited questionnaires and followed up for incomplete information and nonresponse. In the centralized mail-out/mail-back procedure office personnel edited and followed up for incomplete information. Enumerators were responsible only for visiting households from which a questionnaire was not received or where a personal visit followup was necessary to collect additional information.

The third dress rehearsal utilized "conventional" enumeration procedures in which a short-form questionnaire was left at each household prior to census day. The respondent was asked to complete the form and hold it until the enumerator's visit. At that time, the enumerator either picked up the completed questionnaire or, if necessary, completed one. At every fourth household, the enumerator conducted a long-form interview. (Four out of every five sample households were enumerated on the 20-percent schedule; one out of every five sample households was enumerated on the 5-percent schedule.) By this means the Bureau of the Census hopes to obtain more extensive data without making the questionnaire any longer.

APPENDIX II

REVIEW OF 1960 MATCHING STUDY OF DEATHS AND CENSUS RECORDS

(Kitagawa-Hauser Study)

Nationwide information on mortality differentials by important social and economic characteristics has been restricted, due to the limited information contained on death certificates. In addition, the occupation item which formerly appeared on the death certificate did not correspond by definition with that item as collected on census records, thus the usefulness of the occupation item for analysis was limited. There are other items subject to lack of correspondence or to difficulty in matching the death-certificate information to the proper census classification, for example, residence and allocation of address as urban or rural.

In order to assess the possibility of circumventing these difficulties by matching death certificates with the corresponding census records, a pilot study was carried out in Memphis, Tennessee at the time of a special census as of January 31, 1958. This study⁸ yielded a match rate of 83 percent. It was concluded that a large-scale study of mortality according to characteristics of the decedent as given in the census enumeration record was feasible, provided the study design included a means for estimating the characteristics of the unmatched decedents.

Accordingly, plans were made for such a study following the 1960 census. The study is being conducted through the Population Research and Training Center of the University of Chicago with the cooperation of the National Vital Statistics Division (currently the Division of Vital Statistics of the National Center for Health Statistics) and the Bureau of the Census. Following is a brief review of the study and preliminary results as taken from two published papers.^{9,10}

Deaths Included in Study

Those occurring May-August, 1960, selected by age and race as follows:

White: All decedents under 65 years of age
50 percent of those 65-74 years of age
20 percent of those 75 years and older
Nonwhite: All decedents regardless of age

Of the 536,000 deaths which occurred during the 4 months of May-August, 1960, some 340,000 were included in the study and searched in the 1960 census records.

Matching of Deaths to Corresponding Census Records

The matching operation was conducted in two stages.

Stage I (100-percent enumeration).—The deaths were searched in these records using Census Enumeration District codes assigned to addresses listed on the death certificates to guide the search. Of the 340,000 records, 263,000 or 77 percent were matched. The percentage of match failures varied by race with about 30 percent for nonwhite and about 20 percent for white. Also, the percentage of failures was slightly higher for males than for females in both white and nonwhite deaths.

Stage II (25-percent sample).—The decedents that were matched in Stage I and coded on the census records as in the 25-percent sample were then searched in those records. This sample contained more of the socioeconomic data collected in the census. Of the 263,000 decedents matched in Stage I, 62,400 were located in the 25-percent sample. This was some 2,000 less than expected.

The matching procedures were completed during the summer of 1962 and produced four sets of data:

A deck of 263,000 mortality punchcards to which data from the 100-percent census enumeration records were added.

A magnetic tape duplicating census data from the 25-percent sample for the 62,400 decedents located in the sample.

A magnetic tape collating selected data from the above tape and from the mortality punchcards for the 62,400 decedents.

A deck of 77,000 unmatched mortality punchcards to which census urban-rural geographic codes had been assigned.

Special Sample Survey

This survey was designed to provide information on the social and economic characteristics of a sample of the unmatched decedents. A sample of 9,500 decedents was selected at random from the Current Mortality

Sample for the same months as the study, May-August, 1960. Questionnaires containing items similar to those in the census, requesting information regarding the decedent, his family and the household, were sent to informants listed on the death certificate. The survey was initiated in the summer of 1960 and completed in June 1961. Thus, the survey was carried out on a sample of all deaths included in the Study, both matched and unmatched.

The response rate was 88 percent from the mail survey and increased to 94 percent after followup by personal interview. There were higher response rates for the questionnaires concerning white decedents and female decedents than for those concerning nonwhite decedents and male decedents.

Reporting of various items on the questionnaire was not uniform. For decedents 25 years and older, the education item was completed on 82 percent of the questionnaires returned; family status of the decedent was indicated on 93 percent of the questionnaires; and some information on family income was reported for 96 percent of the decedents who were classified as family members. In each instance the item completion was higher for white decedents than for nonwhite decedents. The apparently high response for family income was tempered by further analysis which indicated that the income section of the questionnaire was "least often adequately completed."¹¹

Measures of "match bias" showed that the proportions of decedents whose death records were not matched with census records were substantially higher for those 25-44 years of age than for older persons. Men with low family incomes tended to have high "non-match" rates. For women, the proportion not matched was higher for those with less education, particularly after age 65. The wide variation found in nonmatch rates substantiated the need to estimate the social and economic characteristics of unmatched decedents in order to measure mortality differentials by such characteristics.

The sample survey produced the following sets of data: For matched decedents, data from death certificates, census records, and survey questionnaires; and for unmatched decedents, data from death certificates with census geographic codes and survey questionnaires.

In addition to providing a basis for estimating the social and economic characteristics of the unmatched decedents, the survey allows comparison of response to the same questions on census and survey questionnaires for the matched decedents. Thus, some evaluation of the adequacy of the survey data as a substitute for census data will be available.

Analysis of Data

The matched deaths will be inflated to "total deaths in 1960" by use of ratio-estimation procedures controlled for color, sex, age, cause of death, and geographic area. This will tend to minimize the sampling variance.

Mortality measures based on tabulations of matched deaths will be adjusted for two sources of bias: the social and economic characteristics of the unmatched decedents and the seasonality of the deaths included in the study.

Mortality differentials will be determined on the basis of age-adjusted measures, using indirectly standardized mortality ratios. Separate analyses are planned for three age groups, 25-44 years, 45-64 years, and 65 years and over.

Results of Analysis—Education and Income

Differentials

Estimates of white mortality differentials by education and family income as reported in the second of the two papers are summarized as follows:

Education and income were inversely related to mortality in the white population.

Education differentials in mortality were larger than income differentials for women, but the opposite appeared true for men.

Both income and education differentials were much greater prior to age 65 than after age 65.

In the judgment of the authors, in this country in 1960, education differentials were better than income differentials as indicators of socioeconomic differentials in mortality.

Estimates in the process of preparation for the white population include the following factors:

- Major occupation groups (males)
- Marital status (population 25 years and older)
- Nativity and parentage
- Country of origin (for foreign stock)
- Number of children ever born (for ever-married women)

Separate estimates for the nonwhite population will be made insofar as the quantity and quality of the data permit.

Limitations of the Study Data for Analysis

Incompleteness of the data, both in matching the two sets of records and in the data contained on the records, poses problems. The special sample survey compensated for some of these difficulties, but not for all of them.

The sampling design of the 1960 census, in which most of the social and economic data were collected on a 25-percent sample basis, depleted greatly the number of records available for analysis in certain categories. There was no way to compensate for this.

The restricted time period from which the death records were taken also required adjustment of the data.

APPENDIX III

GAPS IN UNIFORMITY IN CENSUS AND REGISTRATION DEFINITIONS AND PROCEDURES

CENSUS—(1960)¹²

Place of Residence

Military.—Persons in the Armed Forces quartered on military installations were enumerated as residents of the States, counties, and minor civil divisions in which their installations were located. Members of their families were enumerated where they actually resided. The crews of vessels of the U.S. Navy and the American Merchant Marines in harbors of the United States were counted as part of the population of the ports in which their vessels were berthed on April 1, 1960.

Institution.—Inmates of institutions, who ordinarily live there for long periods of time, were counted as inhabitants of the place in which the institution was located.

Type of Residence

Urban definition, 1960.—The urban population comprises all persons living in (a) places of 2,500 inhabitants or more incorporated as cities, boroughs, villages, and towns (except towns in New England, New York, and Wisconsin); (b) the densely settled urban fringe, whether incorporated or unincorporated, of urbanized areas; (c) towns in New England and townships in New Jersey and Pennsylvania which contain no incorporated municipalities as subdivisions and have either 25,000 inhabitants or more or a population of 2,500 to 25,000 and a density of 1,500 persons or more per square mile; (d) counties in States other than the New England States, New Jersey, and Pennsylvania that have no incorporated municipalities within their boundaries and have a density of 1,500 persons or more per square mile; and (e) unincorporated places of 2,500 inhabitants or more. The Bureau of the Census delineated boundaries for unincorporated places.

Rural definition, 1960.—The population not classified as urban constitutes the rural population.

Marital Status

Data on marital status were based on replies to the question, "Is this person married, widowed, divorced, separated, or single (never married)?" Persons classified as "married" comprised, therefore, both those who had been married only once and those who had remarried after having been widowed or divorced. Persons reported as separated (either legally separated or otherwise absent from the spouse because of marital discord) were classified as a subcategory of married persons. The enumerators were instructed to report persons in common-law marriages as married and persons whose only marriage had been annulled as single.

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Place of Residence¹³

The item showing length of stay was deleted from the Standard Certificate of Death in January 1968. *The Funeral Directors' Handbook on Death and Fetal Death Registration* specifies that "Residence of the deceased is the place where he or she usually slept. This is not necessarily the same as 'Home State,' 'Voting Residence,' or 'Legal Residence.' Never enter a temporary residence such as one used during a visit, business trip, or a vacation. Place of residence during a tour of military duty or during attendance at college is not considered as temporary. If deceased lived in a hospital, sanatorium, nursing-convalescent home, or other institution at the time of death, the place of residence before admission is reported. If deceased is a child, residence is given as that of the mother, legal guardian, or custodian."

Although the above rules were first published in 1968, they have been in effect since 1961.

Type of Residence^{14,15}

Urban definition, 1960-1963.—Consists of inhabitants residing in the following places: Each incorporated city, borough, village, and town of 2,500 inhabitants or more (except towns in New England, New York, and Wisconsin). Each town in New England and each township in New Jersey and Pennsylvania that had no incorporated municipality as a subdivision and had either 25,000 inhabitants or more, or a population of 2,500 to 25,000 and a density of 1,500 persons or more per square mile. Each county, in States other than the New England States, New Jersey, and Pennsylvania, that had no incorporated municipality within its boundary and had a density of 1,500 persons or more per square mile.

Urban definition, 1964.—Changes made in 1964 eliminate the classification of vital statistics into "urban" and "rural" categories. Vital statistics are now classified into population-size groups. Beginning in 1964, the group of cities and other urban places of 2,500 to 10,000 population has not been separately identified, but has been included with areas formerly classified as rural. Data are still available for the individual

cities and other urban places of 10,000 population or more.

Urban places other than incorporated cities for which vital statistics data are still shown include: Each town in New England and each township in New Jersey and Pennsylvania that had no incorporated municipality as a subdivision and had either 25,000 inhabitants or more, or a population of 10,000 to 25,000 and a density of 1,500 persons or more per square mile. Each county, in States other than the New England States, New Jersey, and Pennsylvania, that had no incorporated municipality within its boundary and had a density of 1,500 persons or more per square mile. (Arlington County, Virginia is the only county classified as urban under this rule.)

Rural definition.—Consists of inhabitants residing in places not classified as urban.

Marital Status¹²

Enter the marital status of the deceased at time of death. Specify one of the following: married, never married, widowed, or divorced.



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