DOCUMENT RESUME

ED 124 476 SO 009 213

AUTHOR	Siegel, Jacob S.; And Others
TITLE	Demographic Aspects of Aging and the Older Population in the United States. Current Population Reports, Special Studies, Series P-23, No. 59.
INSTITUTION	Bureau of the Census (DOC), Suitland, Md. Population. Div.
PUB DATE	May 76
NOTE	77p.; Not available in hard copy due to marginal legibility of original document; For related documents, see ED 107 567 and ED 116 988
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 ($1.60)
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	Age; *Census Figures; Demography; *Economic Status; Educational Status Comparison; Employment Trends; Geographic Distribution; Human Geography; Marital Status; *Older Adults; Population Distribution; Racial Differences; *Senior Citizens; Sex Differences; *Social Characteristics; Sociocultural Patterns; Socioeconomic Status; Statistical Analysis; Statistical Data

ABSTRACT

This report presents a statistical portrait of the demographic aspects of aging and the older population in the Unites States. Most of the estimates are based on data from decennial censuses, the program of nonsurvey population estimates and projections carried out by the U.S. Bureau of the Census, the Current Population Survey, and other census and government statistics. The sample population is divided into four age groups: 55 years and over, 65 years and over, 75 years and over, and 85 years and over. Chapter one presents a brief introduction on the nature of demographic aging. Chapter two examines the numbers and proportions of older persons in the United States. Chapter three breaks the groups down by sex and race composition. Chapter four provides data on geographic distribution and internal migration. Chapter five surveys various factors of mortality and survival including quantity vs. quality of life, life expectancy, sex differences, race differences, causes of death, geographic variation, and prospects for mortality reduction. Chapter six considers the major social and economic characteristics of the older population including marital status and living arrangement, educational attainment, labor force participation, and income level. Appendices include reliability tables of the estimates. (DE)

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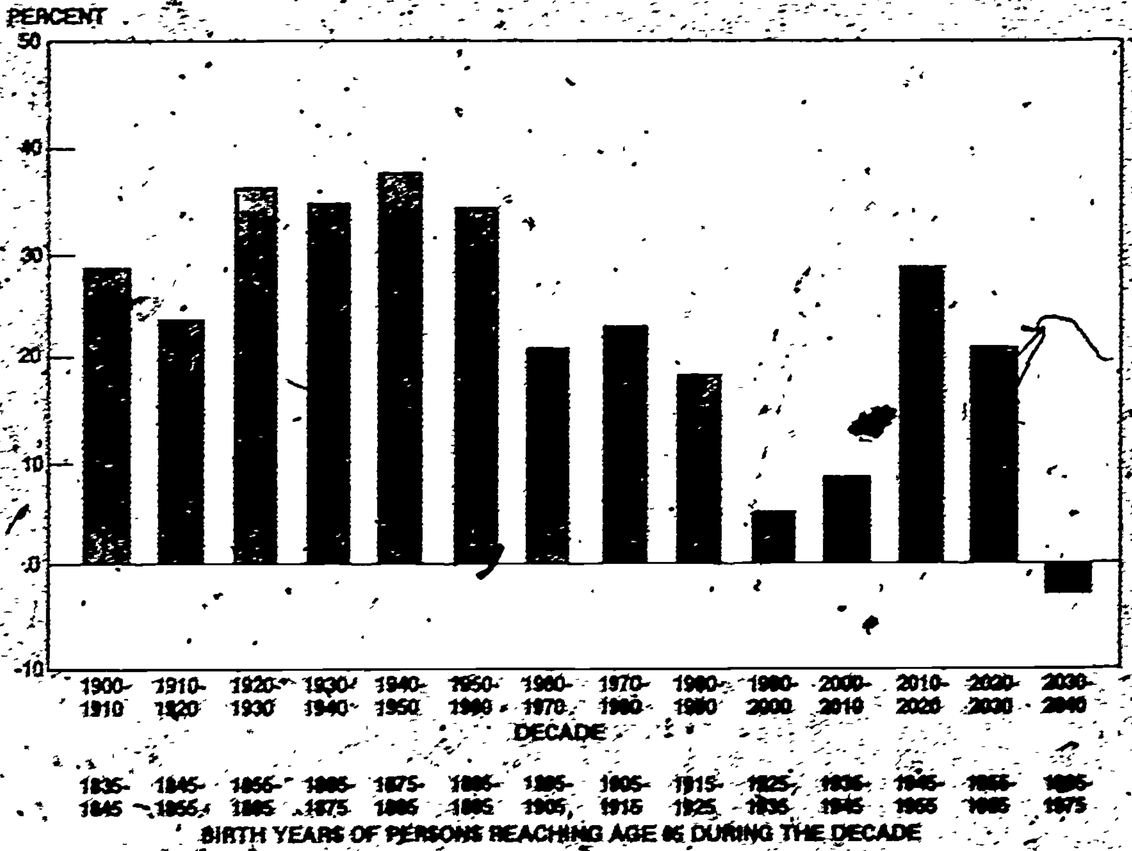
65 YEARS OLD AND OVER: 1900 TO 2040



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by Jacob S. Siegel
with the assistance of
Mark D. Herrenbruck
Donald S. Akers
Jeffrey S. Passel

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Library of Congress Cataloging in Publication Data

United States. Bureau of the Census.

Demographic aspects of aging and the older population in the United States.

(Current population reports. Special studies. Series P-23 ; no. 59)

Bibliography: p. 67
1. Aged—United States—Statistics. I. Title.
II. Series: United States. Bureau of the Census. Current population reports. Special studies. Series P-23 ; no. 59.
HA203.A218 no. 59 [HQ1064.U5] 312'.0973s
[301.43'5'0973] 76-608096

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PREFACE

This report presents and analyzes data on selected topics pertinent to an understanding of the demographic aspects of aging and the older population in the United States. The principal subjects treated relate to age, sex, and race composition, geographic distribution and internal migration, mortality and survival, and certain social and economic characteristics. As an important component of change in the size of the older population, mortality is considered in some detail both historically and prospectively. Fertility, on the other hand, is given only brief treatment in spite of its extremely important role in determining both the numbers and proportions of older persons in a population. A considerable literature is available on the trends in fertility and the factors affecting it, but this material has not been of particular interest to gerontologists and gerontological practitioners. Morbidity is another subject that has been omitted, although it is important for an in-depth analysis of mortality. It bears only a very indirect relationship to the demography of aging in spite of its considerable interest to gerontologists. Summary data on the health of the population and additional data on the socioeconomic characteristics of the older population are presented in a recently issued Census Bureau report, "Social and Economic Characteristics of the Older Population: 1974," Current Population Reports, Series P-23, No. 57.

This report supersedes an earlier publication, Current Population Reports, Series P 23, No. 43, "Some Demographic Aspects of Aging in the United States," issued by the Bureau of the Census in February 1973. The earlier Census Bureau report was originally prepared as a background document for the Conference on the Epidemiology of Aging, sponsored by the National Institute of Child Health and Human Development, National Institutes of Health, held at Elkridge, Maryland, June 11-13, 1972. A slightly modified version of that report was later published by the National Institutes of Health as part of the Summary Report and Selected Papers of the Conference in the volume Epidemiology of Aging, edited by Adrian M. Ostfeld and Don C. Gibson.

The present report represents a substantial revision of the previous report. More recent population and other demographic estimates and projections have been incorporated, the historical and prospective analysis has been extended, and notes on the sources and accuracy of the data have been added. The intercensal estimates of internal migration for States have been revised, and the material on the prospects for increasing longevity and on socioeconomic characteristics has been amplified. In addition, a selected bibliography has been added. The updated version of the report was presented by the author in abbreviated and provisional form in a Symposium on the Demography of Aging, presided over by Paul Paillat of the Institut National d'Etudes Demographiques, Paris, at the 10th International Congress of Gerontology, held in Jerusalem, Israel, June 22-27, 1975.

This report was designed and prepared by Jacob S. Siegel, Senior Statistician for Demographic Research and Analysis, Population Division. Professional assistance was provided by Mark D. Herrenbruck, Donald S. Akers, and Jeffrey S. Passel, demographic statisticians on the Population

PREFACE—Continued

Analysis Staff of the Population Division. Mark Herrenbruck was also responsible for coordination and checking of the text and tables of the report. Rita A. Daly and Gary D. Smith assisted them in carrying out various calculations. Jerome M. Glynn and Signe I. Wetrogan collaborated in preparing the special projections assuming no mortality. The assistance of Mary C. Bland and Barbara J. Glass, who typed the various drafts of the report, is gratefully acknowledged.

The author wishes to thank the following persons for making available various data in advance of publication: Dr. Thomas N. E. Greville, Actuarial Advisor of the National Center for Health Statistics, life tables for the States for 1969-71 and life tables for the United States by cause of death for 1969-71; Robert J. Armstrong, also of the National Center for Health Statistics, death rates by age, sex, race, and cause for 1973 and values for life expectation for 1974; and Howard Fullerton of the Bureau of Labor Statistics, projections of worker proportions for the older population.

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Chapter I.
INTRODUCTION

The Nature of Demographic Aging

Aging marks the inexorable running out of the biological time clock for the individual, given the limited life span of possibly 100 years for humans.[1] Although the aging process goes on steadily throughout life, the term is commonly employed to refer to the changes in later life, following the reproductive age period. Aging proceeds at different rates for different individuals if we define it in physiological or functional terms rather than merely chronological terms. For some, the signs of physiological deterioration or the ability not to function independently come earlier than for others, but they inevitably appear for all as time passes. Demographically, however, aging is defined essentially in terms of chronological age, on the assumption that for large populations the aging process, functional age, and physiological age follow chronological age closely.

A discussion of the demographic aspects of aging could be concerned with how the numbers, composition, and characteristics of the population vary with age over the whole age range. The present report does deal with such age variation to some extent, but it focuses on the older ages, namely those over 55 and particularly those over 60, 65, and 75. At these ages the impact of aging in terms of changes in the individual's physical condition (e.g., life, health) and social and economic characteristics (e.g., labor force participation, income, living arrangements) is most pronounced and of special public concern. These individual changes are collectively reflected in the data on the demographic characteristics of the population.

Since the older ("gerontic") population is not a single homogeneous mass and its characteristics tend to vary sharply with age within the band 55 and over, or even 65 and over, it is desirable in any analysis of the older population to consider the group in terms of component age groups. In this report we distinguish at times the older population (55 and over or 60 and over), the elderly (65 and over), the aged (75 and over), and the extreme aged (85 and over). For convenience and simplicity in the discussion, however, the single broad group 65 and over is often selected for detailed consideration. The attainment of age 65 marks the point of retirement for many workers and a common age of qualification for Social Security benefits and "Medicare" coverage, and figures in several other important pieces of legislation affecting the older population, including Federal and State tax laws. After age 65, the level of many characteristics of the population changes very rapidly (e.g., numbers, proportions, sex composition, living arrangements) and hence differs greatly from that for the ages just below.

A distinction should be made between the aging of individuals and the aging of populations. The demographer is interested in both aspects of aging. His interest in the former is limited to the general experience of population groups with respect to the aging of individuals. This experience is reflected in such measures as life expectancy and the probability of survival from one age to another. Aging of this kind is a function of changes in mortality rates. The aging of a population refers to the fact that a population is "getting older." It may be measured variously in terms of the median age, the proportion of persons 65 years old and over, the ratio of persons 65 and over to children under 15, the proportion of the population above the age corresponding to a life expectancy of, say, 10 years,[2] etc. The various measures of aging may indicate different degrees of aging for the same population and a population may be described as "aging" and "younging" at the same time if, as may occur, the proportion of aged persons and the proportion of children are both increasing.[1] Aging of populations is a function of changes in their mortality, fertility, and migration rates, particularly fertility rates (see below).

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[1] Hayflick maintains that the phenomenon of a limited life span is general for animal life, even in vitro, see Leonard Hayflick, "The Strategy of Senescence," The Gerontologist, Vol 14, No 1, Feb. 1974, pp. 37-45, esp pp 38-39 See also Zhores A Medvedev, "Aging and Longevity: New Approaches and New Perspectives," The Gerontologist, Vol 15, No. 3, June 1975, pp. 196-201, esp. pp. 199-200; and P. R. J. Burch, "What Limits Life Span?", pp. 31-56, in B. Benjamin, P. R. Cox, and J. Peel (eds.), Population and the New Biology, Academic Press, New York, 1974.

[2] The last measure was recently proposed by Norman Ryder in "Notes on Stationary Populations," Population Index, Vol 41, No. 1, Jan. 1975, pp. 3-28, esp. pp. 16-17

Sources and Accuracy of the Data

For the most part, the present study employs official statistics. They come principally from the following sources: Decennial censuses, the program of nonsurvey population estimates and projections carried out by the U.S. Bureau of the Census, the Current Population Survey, the continuing national sample survey conducted by the U.S. Bureau of the Census, and the vital statistics registration system and life tables prepared by the National Center for Health Statistics, U.S. Public Health Service. In addition, use has been made of the statistics of "Medicare" enrollment and death rates from the Social Security ("Medicare") data system.

In general, the figures for the older ages are subject to a substantial degree of error. For some categories of information the degree of error may be much greater than for the younger ages. The figures are affected not only by the failure to count everyone or to register all vital events and migratory movements, but also by the misreporting of age and other characteristics. The nonsurvey population estimates and projections, which are derived by the methods of demographic accounting and demographic analysis, are subject to errors of the measurement model (that is, the general methodological design and the assumptions), in addition to the errors of coverage, response, and processing of the census data and the other data (e.g., birth statistics, death statistics, immigration data) employed in their preparation. The census data, the population estimates and projections, and the death statistics have not been adjusted for coverage errors or errors in reporting. Since these limitations apply to both the population figures and the figures on deaths, they apply also to the death rates and the life table values, although the errors may offset one another wholly or partly.

In addition to coverage, response, and processing errors, the estimates based on the Current Population Survey are subject to sampling error. Like the nonsurvey estimates and projections to which they are adjusted, the estimates from the Current Population Survey are at a level consistent with the census counts by age, sex, and race; that is, they do not contain corrections for census net undercounts in these categories. Further information regarding the derivation of the Current Population Survey estimates and the quality of the data from the Current Population Survey is given in Appendix A of this report and in the original sources cited.

In spite of the stated limitations of the reported data on the older population, it is believed that the general magnitudes, relations, and patterns are reflected satisfactorily by the reported figures, except perhaps for the figures at the very extreme ages. In any case, small differences should be disregarded or at least viewed with caution.

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[1] U.S. Bureau of the Census, The Methods and Materials of Demography, Henry S. Shryock, Jacob S. Siegel, and Associates, U.S. Government Printing Office, Washington, D.C., 1975 (third printing, rev.), pp. 234-235.

Chapter II.
NUMBERS AND PROPORTIONS OF OLDER PERSONS

Number of Older Persons

The older ("gerontic") population of the United States is large and continues to grow rapidly. There are now 42 million persons over 55 years of age, 32 million over 60, 22 million over 65 8.5 million over 75, and 1.9 million over 85 (table 2-1). The latest population projections suggest that the numbers in all of these age categories will be considerably larger by the end of this century and will continue to grow in the early part of the next century.

The population 60 and over numbered 4.9 million in 1900. By 1930, the group had more than doubled in size to 10.5 million. It approximately tripled again to 31.6 million in 1975. In the year 2000, the number is expected to be about 42 million, or about one-third greater than at present. Decennial growth rates for the population 60 and over approximated 30 percent between 1920 and 1960, but then they began a declining trend which is expected to bring the figure down to about 4 percent in the decade 1990-2000.

The population 65 and over numbered 3.1 million in 1900. By 1940, the group had nearly tripled in size to 9.0 million. It more than doubled again to 20.1 million by 1970. In the year 2000, the number of persons 65 and over is expected to be about 31 million. The number has been rising in recent decades by about 3 to 4 million per decade, or roughly 300,000 to 400,000 per year, and is expected to continue rising in the next few decades at the same "rate." The estimated 22.4 million persons over 65 on July 1, 1975, exceeded the July 1, 1970 figure by 2.3 million, a quinquennial increase corresponding to an annual average gain of 460,000 persons.

Table 2-1. TOTAL POPULATION IN THE OLDER AGES AND DECENNIAL INCREASES: 1900 TO 2040

(Numbers in thousands. Estimates and projections as of July 1. Total resident population of the 48 States and District of Columbia (excluding Alaska and Hawaii) for 1900 to 1930. Estimates for 1940 and later years refer to the total population of the 50 States and District of Columbia and include Armed Forces overseas. A minus sign (-) denotes a decrease)

Year	55 years and over			60 years and over			65 years and over			75 years and over			85 years and over		
	Number	Increase in preceding decade		Number	Increase in preceding decade		Number	Increase in preceding decade		Number	Increase in preceding decade		Number	Increase in preceding decade	
		Amount	Percent		Amount	Percent		Amount	Percent		Amount	Percent		Amount	Percent
ESTIMATES															
1900	7,125	(X)	(X)	4,901	(X)	(X)	3,099	(X)	(X)	899	(X)	(X)	¹122	(X)	(X)
1910	9,087	1,962	27.5	6,274	1,373	28.0	3,986	887	28.6	1,170	271	30.1	¹167	45	36.[illegible]
1920	11,548	2,461	27.1	7,952	1,678	26.7	4,929	943	23.7	1,449	279	23.8	¹210	43	25.7
1930	15,182	3,631	31.5	10,484	2,532	31.8	6,705	1,776	36.0	1,945	496	34.2	¹272	62	29.5
1940	19,725	4,543	29.9	13,822	3,338	31.8	9,031	2,326	34.7	2,664	719	37.0	370	²98	²36.0
1950	25,793	6,068	30.8	18,500	4,678	33.8	12,397	3,366	37.3	3,904	1,240	46.5	590	220	59.5
1960	32,299	6,506	25.2	23,828	5,328	28.8	16,675	4,278	34.5	5,621	1,717	44.0	940	350	59.3
1970	38,749	6,450	20.0	28,751	4,923	20.7	20,085	3,410	20.4	7,598	1,977	35.2	1,432	492	52.3
1975	42,180	(X)	(X)	31,643	(X)	(X)	22,400	(X)	(X)	8,527	(X)	(X)	1,877	(X)	(X)
PROJECTIONS³															
1980	45,570	6,821	17.6	34,267	5,516	19.2	24,523	4,438	22.1	9,112	1,514	19.9	2,071	639	44.6
1990	49,412	3,842	8.4	39,127	4,860	14.2	28,933	4,410	18.0	11,402	2,290	25.1	2,487	416	20.1
2000	53,537	4,124	8.3	40,589	1,462	3.7	30,600	1,667	5.8	13,521	2,119	18.6	3,217	730	29.4
2010	65,733	12,196	22.8	48,012	7,423	18.3	33,239	2,640	8.6	13,893	372	2.7	3,841	624	19.4
2020	79,481	13,749	20.9	60,664	12,652	26.4	42,791	9,552	28.7	15,381	1,488	10.7	3,826	-15	-0.4
2030 (II)	82,546	3,065	3.9	67,037	6,373	10.5	51,590	8,798	20.6	20,716	5,335	34.7	4,409	583	15.2
Range (III)	82,418	2,937	3.7												
(I)	82,730	3,249	4.1												
2040 (II)	84,783	2,237	2.7	65,854	-1,183	-1.8	50,266	-1,324	-2.6	24,218	3,503	16.9	5,993	1,584	35.9
Range (III)	79,809	-2,610	-3.2	63,822	-3,215	-4.8	50,149	-1,441	-2.8						
(I)	91,053	8,323	10.1	68,318	1,281	1.9	50,431	-1,158	-2.2						

X Not applicable.

¹Estimates for 1900-30 as of April 1.

²Pertains to 10 1/4 year period.

³Base date of projections is July 1, 1974.

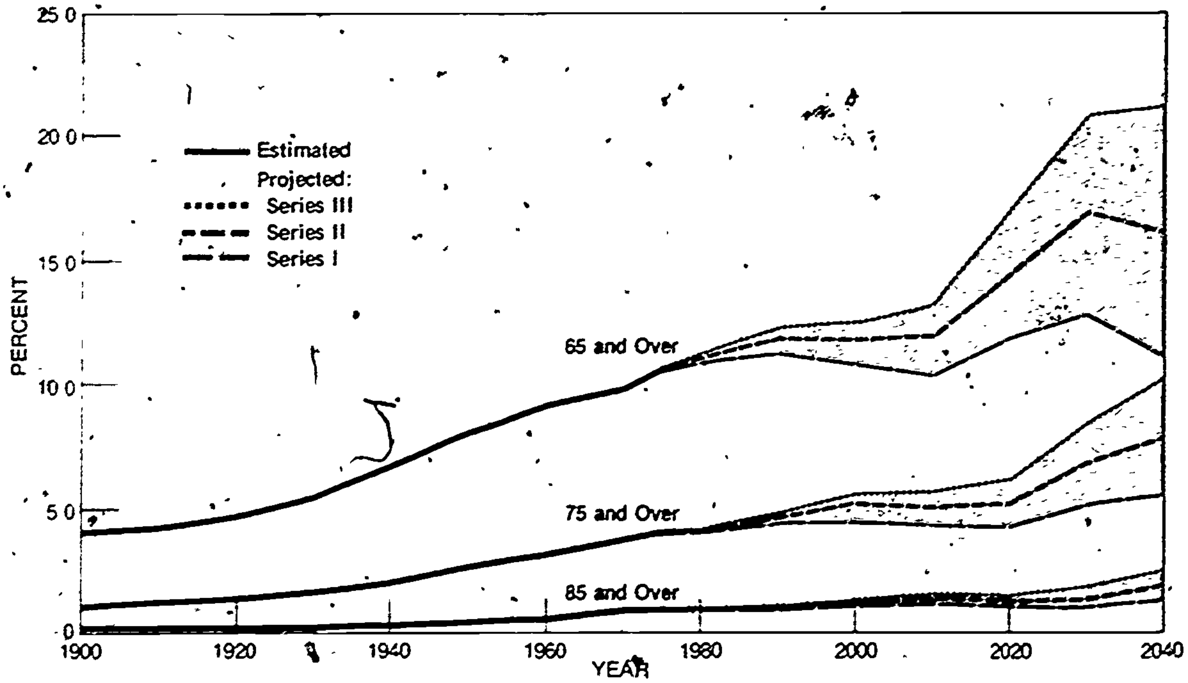
Source: Census of Population, 1930, Population Vol. II, General Report, and Current Population Reports, Series P-25, Nos. 311, 519, 614, and 601.

The population 65 and over increased rapidly during the 1960-70 period (20 percent), much more rapidly than the population as a whole (13 percent). (See table 2 2 and figure 2 1.) Yet, the growth rate of this age group during the 1960's was well below its growth rate during the 1950's (35 percent) and the preceding decades (35 to 37 percent for 1920 to 1950). The population 65 and over is expected to continue to show substantial percentage increases during the 1970's and 1980's (22 percent and 18 percent, respectively), albeit much smaller increases than before 1960.

These changes principally reflect increases in the number of births 65 to 84 years or so before the particular reference date. As these numbers shift, the rate of growth of the elderly population in the appropriate later years fluctuates. The general rise in the number of births in the 19th century and in the first few decades of this century largely accounts for the past and prospective rapid increases in the number of elderly persons up to about 1990.

Of particular interest is the impact of the shift in the trend in the number of births since World War I. As a result of the rapid drop in the number of births during the 1920-30 and 1930-40 decades, we can expect a sharp drop in the amount and rate of increase of the population 65 and over after about 1990, lasting about two decades (6 percent for 1990-2000 and 9 percent for 2000-2010). The births of the post-war "baby boom," 1945-1959, which may be seen moving through the age distribution on the basis of decennial population data (e.g., under 15 years old in 1960 and 10 to 24 years old in 1970), will ultimately have their impact on the size of the aged population. Early in the next century (2010 to 2020) the number of persons 65 and over will leap forward (by 9.6 million, or 29 percent), as these cohorts attain age 65. After about 2020, again the growth rate may be expected to fall off sharply, principally as a result of the rapid deflation in the size of birth cohorts during the 1960's. In fact, the number of persons 65 and over may decline slightly between 2030 and 2040. In the latter year the group is expected to number over 50 million.

Figure 2-2. PERCENT OF THE TOTAL POPULATION IN THE OLDER AGES: 1900 TO 2040



Note Estimates and projections as of July 1, except for 85 and over, 1900-1930, which relate to April 1
Points are plotted for years ending in zero except for 1975
Source Table 2-4 and text p. 6.

The projected numbers of elderly persons cited here should be close to the mark because they are unaffected by future fertility. The people who will be over 65 in the year 2000 or even the year 2020 are now all living, and so are all the people who will be over 65 in the year 2040. The fact that projected fertility is not involved in the projection for this age group is fortunate; fertility is a component of population change that cannot be predicted closely because it tends to fluctuate widely.

Mortality and immigration have an effect on the size of the older population also, however, deaths reducing the initial cohorts of births and net immigration typically increasing it. Mortality is subject to less variation than fertility and has rather steadily removed smaller and smaller proportions of the initial cohorts of births. During the first part of this century, from about 25 to 45 percent of the initial births survived to ages 65 to 84. Population projections assuming a "slight" reduction in future mortality indicate that about 55 percent of the initial births will survive to ages 65 to 84 (e.g., births 1975 to 1995 surviving to ages 65-84 in 2060).[1]

Whether immigration contributes to the growth of the older population depends on the fluctuations in the volume of immigration. These have sometimes resulted in an acceleration of population growth rates and at other times in a deceleration. The large and increasing volume of immigration prior to World War I, particularly of youth, contributed greatly to the rapid increase in the number of persons 65 and over up to about 1960. Because of the general reduction in immigration since World War I, however, this factor has been much less important in the growth of the elderly population since 1960 (even having a negative effect on growth) and is expected to play a minor role in the future.

The past general decline in death rates has contributed to the rapid increase in the number of aged persons but its effect has been much less than the rise in the number of births. Death rates are expected to continue to decline, albeit only slightly. There is the possibility, nevertheless, of substantial future reductions in death rates of the older population. Such a trend could mean a somewhat larger elderly population and greater increases than we have projected. The projection of the population 65 and over for the year 2000 (30.6 million) would be larger by about 2 million, or 7 percent, for example, if "rapidly declining" mortality rates had been used in the calculations rather than "slightly declining" mortality rates.[2]

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[1] Estimated from data in U.S. Bureau of the Census, **Current Population Reports**, Projections of the Population of the United States: 1975 to 2050, by Campbell Gibson and Signe Wetrogan, Series P-25, No. 601, Oct. 1975, tables F-1, F-2, G-1, and 8-1. The projections of mortality in Series P-25, No. 601, assume an ultimate life expectation at birth of 73.8 years as compared with 71.7 years in 1972.

[2] Estimated from data in **Current Population Reports**, Series P-25, No. 381, Dec. 1967, table Z, and **Current Population Reports**, Series P-25, No. 601, Oct. 1975, table 8. Expectation of life at age 40 under "rapidly declining" mortality is 2.4 years greater than under "slightly declining" mortality in the year 2000.

Table 2-2. DECENNIAL PERCENT INCREASE OF POPULATION BY BROAD AGE GROUPS: 1950 TO 2010

(A minus sign (-) denotes a decrease. Periods extend from July 1 of initial year to June 30 of terminal year)

Age and projection series	1950 to 1960	1960 to 1970	1970 to 1980	1980 to 1990	1990 to 2000	2000 to 2010
All ages II	18.7	13.4	8.7	10.0	7.1	6.2
Range III			7.6	6.9	4.0	2.1
I			10.2	14.2	11.4	12.2
Under 15 years II	36.8	3.2	-11.6	13.4	0.8	-0.4
Range III			-15.7	-0.1	-3.8	-8.3
I			-6.5	30.2	7.6	10.2
15 to 24 years II	9.9	48.5	13.7	-16.2	11.8	5.7
Range III				-16.6	-4.0	0.5
I				-16.8	31.2	13.6
25 to 44 years II	3.2	2.7	27.7	25.5	-2.3	-3.5
Range III					-2.5	-10.6
I					2.1	5.5
45 to 54 years	17.9	13.3	-2.9	11.4	41.8	13.1
55 to 64 years	16.6	19.4	12.8	-2.7	12.0	41.7
65 to 74 years	30.1	13.0	23.4	13.8	-2.6	13.3
75 to 84 years	41.2	31.7	14.2	26.6	15.6	-2.4
85 years and over	59.3	52.3	44.6	20.1	29.4	19.4

Source: Current Population Reports, Series P-25, Nos. 311, 519, and 601.

Net and Gross Changes

Because of the relatively high death rates of the older population, membership in this group is relatively short in duration and the identity of the members changes rapidly over relatively short periods of time. "Population turnover" in this group may be measured in several ways. Consider the period of a decade. Most simply, we may examine the percentage of the total population 65 and over at the end of the decade falling in the 65 to 74 year group, the surviving new entrants. Of the population 65 and over in 1970, 62 percent joined after 1960 (table 2-3). We may also examine estimates of the components of change in population during the 1960-70 decade in relation to the initial size of the population. The gross increase rate during the decade 1960-70 was 87 percent. The gross increase rate is the number of persons reaching age 65 during the decade (14.4 million for 1960-70) plus the number of (net) immigrants (0.1 million), expressed as a percentage of the initial population (16.6 million). The gross loss rate—the number of deaths during the decade (11.0 million) expressed as a percent of the initial population—was 66 percent. The difference between the gross increase rate and the gross loss rate is the rate of net increase, or 21 percent.

The percent of the initial population 65 and over who died during the decade was 53 percent. In addition, the new arrivals in the group (i.e., persons reaching age 65 during the decade) sustained a loss of 15 percent by 1970. The resulting gross loss rate for the initial population and the new arrivals combined was 36 percent.

A more sensitive measure of the turnover, or "growth effectiveness," of the elderly population is given by the ratio of (a) the net increase in the population 65 and over to (b) the gross change in this age group (i.e., the sum of the components of change without regard to sign). The lower the ratio, the greater the turnover. For the 1960-70 decade this ratio was 0.14, that is, there was a net addition to the population 65 and over of only 14 persons for every 100 demographic events (additions through aging, net immigration, and deaths) affecting that age group.

During the course of the present decade, 1970-80, the rate ~~of gross gain and the rate of~~ gross loss of the population 65 and over are expected to remain at about the same levels as during the 1960-70 period (88 percent and 65 percent, respectively) although the number of persons reaching age 65 and the number of deaths are expected to increase sharply. The 10-year mortality rate for the initial population aged 65 and over (in 1970) is expected to be about the same as during the 1960-70 decade (55 percent), but the population reaching age 65 during the decade will experience a substantially smaller loss (12 percent, or about 2½ percentage points less) than persons reaching age 65 during the 1960-70 decade.

The rate of turnover for the male population aged 65 and over is much higher than for the female population at these ages, and the rate of turnover for the white population is higher than for the black population. The growth effectiveness ratio of the female population for 1970-80 will be about three-quarters greater than that of the male population (0.178 vs. 0.102) as a result of the higher male mortality. For blacks and whites the figures are expected to be closer, 0.183 and 0.138, respectively.

Proportion of Older Persons

The older population has been growing steadily as a share of the total U.S. population. From 1900 to 1975, the proportion of the population 60 years of age and over more than doubled. Persons in these ages now approximate 14.8 percent of the total population as compared with 6.4 percent in 1900 (table 2-4). Whether this group's share will decline, remain about the same, or continue to increase in the future depends principally on the future course of fertility. The proportion is now expected to fall between 14.1 percent and 16.6 percent at the end of this century. The first figure corresponds to the "high" fertility series (Series I) and the second figure corresponds to the "low" fertility series (Series III),[3] both series incorporate slight decreases in future death rates and a small allowance for net immigration (400,000 annually).

The proportion of the population 65 years and over has been increasing even more rapidly (figure 2-2). It grew 2½ times between 1900 and 1975, from 4.1 percent in 1900 to 10.5 percent in 1975. The proportion may then rise and fall again, or rise steadily, between 1975 and the year 2000, ~~depending mainly on~~ the course of fertility. For example, the proportion may reach a peak of nearly 11.7 percent in 1990 and then stay at about this level to the year 2000 (Series II); it may rise to only 11.1 percent in 1990 and then fall back to 10.7 percent in 2000 (Series I); or it may rise steadily to 12.5 percent in 2000 (Series III). The era of the rapid rise in the proportion 65 and over is past. Even the

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[3] Series I, Series II (the central series of projections), and Series III are the principal series of population projections presented in **Current Population Reports**, Series P-25, No. 601. Series I assumes a total fertility rate of 2,700, Series II a total fertility rate of 2,100 (replacement level), and Series III a total fertility rate of 1,700.

[illegible] ESTIMATES AND PROJECTIONS OF THE DEMOGRAPHIC COMPONENTS OF CHANGE IN THE POPULATION 65 YEARS OLD AND OVER BY RACE AND SEX 1970-80, 1960-70, AND 1950-60

[illegible]

Table 2-4 PERCENT OF THE TOTAL POPULATION IN THE OLDER AGES BY RACE AND SEX 1900 TO 2010

[illegible]

steady rise in the proportion 65 and over that we have seen in the past cannot be taken for granted for the future. Nevertheless, it now seems more likely that the proportion will rise in the next few decades than that it will fall.

The percent of the population 65 years and over as recorded at decennial intervals from 1900 to 1970 and as projected to 2050 is as follows:[4]

Year (July 1)	Percent	Year (July 1)	Percent (range)
1900....	4.1	1980..	11.0 (10.9-11.1)
1910....	4.3	1990...	11.7 (11.1-12.2)
1920....	4.6	2000...	11.7 (10.7-12.5)
1930....	5.4	2010...	11.9 (10.3-13.3)
1940....	6.8	2020...	14.6 (11.8-17.0)
1950....	8.1	2030...	17.0 (12.8-20.9)
1960....	9.2	2040...	16.1 (11.0-21.1)
1970....	9.8	2050...	16.1 (11.3-20.7)
1975....	10.5		

A rise in the proportion of the total population in the 75-and-over age group between now and the year 2000 is even more probable. The proportion is expected to fall between 4.7 percent (Series I) and 5.5 percent (Series III) in the year 2000, as compared with 4.0 percent in 1975.

Even as the proportion of elderly persons in the total population has been rising, so the elderly population itself has been aging and is expected to continue to age (table 2-5). The proportion 65 to 69 of the group 65 and over is getting smaller, while the proportion 75 and over is getting larger, and the trend is expected to continue at least to the end of the century. In 1900 the proportion 75 and over was 29 percent, by 1975 this proportion had risen to 38 percent. We may expect about 44 percent of the 65-and-over group to fall in the 75-and-over group in the year 2000. After the year 2000, the aging trend of the population 65 and over should reverse because of the shift in the trend of fertility after World War I. The greater concentration of the elderly at the higher ages has important implications for the general status of the 65-and-over group and for planning for their needs in view of the different health conditions and living arrangements of the various segments of the older population.

It is of interest to note that, if the population of the United States moves toward and attains a stationary level as a result of, say, replacement level fertility combined with zero net immigration and "slightly declining" mortality rates, the proportion of elderly persons in the population would rise steadily, or almost steadily, and in the stationary condition about 17 percent of the total population would be 65 or over and about 8 percent would be 75 or over.[5] Under the assumptions cited, the population would first reach a near-stationary condition about the year 2025 and there would be about 46 million persons 65 and over, or twice as many as at present. These proportions are far above the corresponding proportions in 1975 and even well above the high (Series III) proportions projected for 2000. They approximate the proportions projected in Series II (replacement-level fertility) for 2030. (The allowance for net immigration in these series has the effect of slightly depressing the proportion of older persons.) If fertility remains well below the replacement level (Series III), the proportion would eventually slide up to 21 percent in 2030 and then maintain this level.

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[4] Ibid., tables 7 to 12, for the projections.

[5] Current Population Reports, Series P-25, No. 601, table F-2.

Table 2-5. PERCENT DISTRIBUTION OF THE POPULATION 65 YEARS OLD AND OVER BY AGE: 1900 TO 2010

[illegible]

Obviously, statements sometimes made in the press and elsewhere that over one third of the population of the United States will be over 65 years of age in another quarter to half century are unfounded. This would be possible only if fertility continued at replacement or subreplacement levels and death rates at the higher ages were reduced to zero or near zero in the next few years. (See the discussion of statistical immortality in a later section.)

In comparison with several other countries in the world, the proportion of persons 65 and over in the United States is relatively low. Countries such as Sweden, France, Belgium, Austria, Norway, and Great Britain have much larger proportions of aged, even as high as 14 percent. The countries of Asia, Africa, and Latin America tend to have much smaller proportions of aged persons, even as low as 3 percent.[6] Again, the principal demographic factor which accounts for these wide differences is the level of fertility. Where, as in the Western world, fertility is relatively low, the proportion of the aged tends to be high, and where, as in the less developed countries, fertility is high, the proportion of aged will tend to be low.

Contribution of Fertility, Mortality, and Immigration

As has been stated, the general rise in the numbers of births up to the early 1920's, declines in age-specific death rates, and the heavy volume of immigrants, especially prior to World War I, have contributed to the increase in the **number** of persons over 65 in this century, and the first two factors will continue to contribute to this increase. The first of these factors, the rise in the number of births, has been of primary importance. However, it has been the general decline in the birth rate which has contributed to the increase in the **proportion** of persons 65 and over. The historical decline in the birth rate, extending up to the mid-thirties, has been reinforced by the recent decline in the rate, that is, from 1957 on, in contributing to the rise in the proportion 65 and over. A decline in fertility always contributes to a rise in the proportion of the older population but, contrary to intuitive judgment, declines in mortality rates do not contribute to a rise in the proportion of older persons unless the declines have been concentrated at the older ages.[7] Between 1900 and 1974, reductions in mortality have been as great at the younger ages as at the older ages; hence, the changes in mortality in this period have had little effect on age composition and the proportion of elderly persons. In fact, improvements in mortality may have contributed to a slight younging of the population, as Hermalin's empirical analysis covering 1900-1960 suggests.[8]

The immigration factor operates like the mortality factor, i.e., it tends to reduce the proportion of older persons unless the migrants are concentrated in the older ages. The empirical analysis by Hermalin also shows that immigration led to a younger population in the United States in the first 60 years of this century.[9] The data on immigration between 1960 and 1975 suggest that this finding could be extended to cover the whole period 1900-1975.

Such theoretical and historical analyses point to the likelihood that fertility levels will be the principal determinant of the future age composition of the U.S. population. Hence, the proportion of the population in the older ages projected for future years will be most importantly affected by the assumptions made regarding future fertility. The proportion will be affected only slightly by changes in mortality unless the improvements are mainly confined to the older ages and are relatively large. Uniform changes in the level of age-specific death rates over time (that is, without changes in the age pattern of death rates) would have no effect on the age structure of the population and under such circumstances the proportion of the elderly would tend to remain unchanged.[10] Because of the relatively low level of mortality at the ages below 50, future substantial reductions in mortality can only occur at the ages above 50. If such substantial reductions do occur—and they are not anticipated—they will contribute to a perceptible aging of the population. Illustrative figures for the proportion 65 and over in the year 2000, assuming Series II or replacement-level fertility with an allowance for net immigration (400,000 per year), are as follows: With constant mortality, 11.5 percent; with "slightly

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[6] United Nations, **Demographic Yearbook, 1974**, Department of Economic and Social Affairs, Statistical Office, New York, 1975, [illegible] 5 [illegible]

[7] Ansley J. Coale, "The Effects of Changes in Mortality and Fertility on Age Composition," **Milbank Memorial Fund Quarterly**, Vol. XXXIV, No. 1, January 1956, pp. 79-114.

[8] Albert I. Hermalin, "The Effect of Changes in Mortality Rates on Population Growth and Age Distribution in the United States," **Milbank Memorial Fund Quarterly**, Vol. XLIV, No. 4, Part I, October 1966, pp. 451-469.

[9] Hermalin, **op. cit.**, p. 461.

[10] In the mathematical relations, this uniformity must apply to the factor by which the age-specific proportions surviving from one date to another change.

"declining" mortality, 11.7 percent and with "rapidly declining" mortality, 12.2 percent.

The proportion in the older ages will be affected only slightly by the net immigration anticipated in future years. Future net immigration is expected to have a slightly reinforcing effect on the proportion over 65. For example, the proportion 65 and over in the year 2000, assuming Series II fertility, will be 12.1 percent for the population without immigration, as compared with 11.7 percent for the population with immigration (400,000 per year).[10]

With the steady low levels of mortality and immigration and the prospect of little significant change in these components, fertility will become even more determinative of future changes in age composition than it has been of past changes. For example, under the assumptions of "slightly declining" mortality and 400,000 annual net immigration, the percent 65 and over in the year 2000 would vary from 10.7 to 12.5, depending on whether the high (Series I) or low (Series III) series of fertility prevails. Since fertility is largely under voluntary control, fertility levels may fluctuate widely, and as a result periods of aging of the population and periods of younging of the population may succeed one another. This possibility is reflected in the combined trends of the various series of population projections for the next half century.

An Index of Aging in Terms of Years Until Death

As a final note in this chapter, it seems of interest to examine also the indications of an alternative measure of population aging suggested by Ryder, the proportion of the population above the age corresponding to a life expectancy of 10 years.[11] In effect, this measure defines old age in terms of years until death and 10 years is arbitrarily selected as the point of entry into old age. Ryder applied the measure to a variety of theoretical stable conditions of fixed mortality and growth rates, excluding immigration.

Interpretation of the results for actual populations is less clear. Under circumstances of declining mortality at the older ages, and hence of rising life expectation at these ages, any upward trend, however slight, in the proportion of the total population above the age with 10 years of average life remaining could be taken as an indication of an aging population, since the rise in the minimal age of the group tends to militate against a rise in the proportion above that age. In fact, the proportions have shown a steady substantial rise from 1900 to 1970 in the United States as the age corresponding to a life expectancy of 10 years in current life tables has risen.

Year	Age at which average remaining lifetime equals 10.0 years	Proportion of total population above this age
1900...	68.6	.0274
1930...	69.[illegible]	.0352
1960...	72.3	.0416
1970...	73.[illegible]	.0436

The actual population has been subject to changing mortality as well as changing fertility and net immigration. Use of generation life tables to determine life expectancy at various ages and dates would be more realistic and precise.

Estimated from data in **Current Population Reports**, Series P-25, No. 601, table 8, and No. 381, table B-2. Series II corresponds to a total fertility rate of 2,100. Expectation of life at age 65 under "rapidly declining" mortality is 3.8 years greater than under "slightly declining" mortality in the year 2000.

[10] **Current Population Reports**, Series P-25, No. 601, tables 8 and F-2.

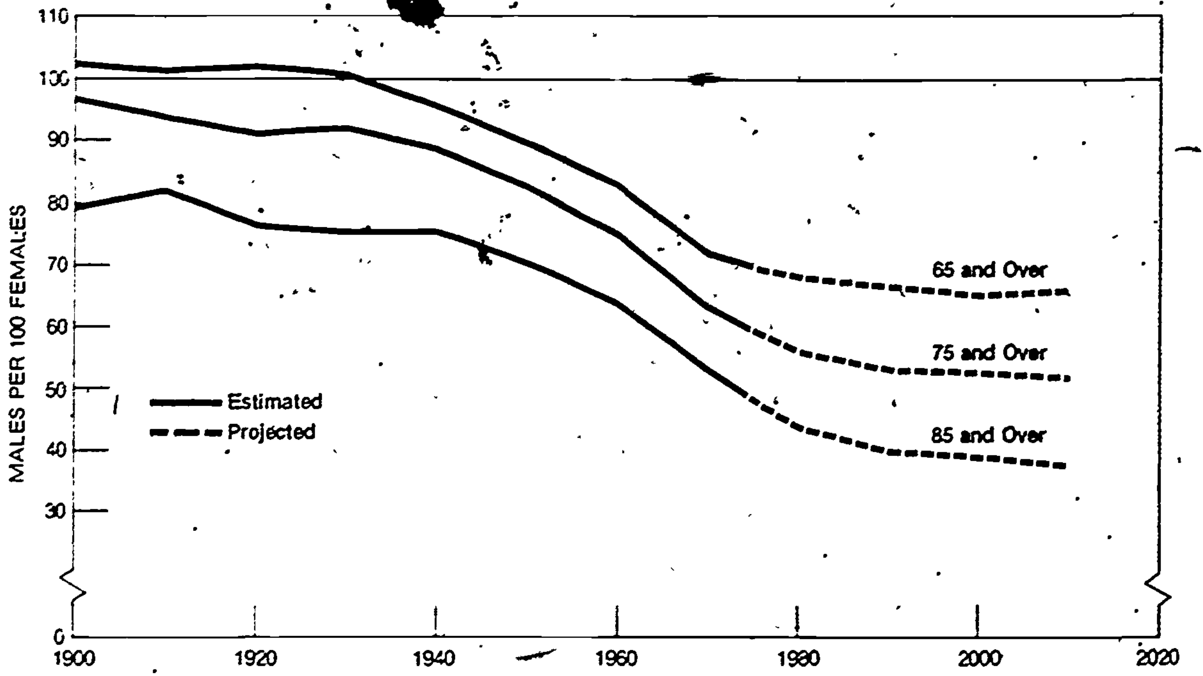
[11] Norman Ryder, "Notes on Stationary Populations," **Population Index**, Vol. 41, No. 1, Jan. 1975, pp. 3-28, esp. pp. 16-17.

Chapter III.
SEX AND RACE COMPOSITION

Sex Composition

A large majority of older persons in the United States are women, whereas at the younger ages there is an excess of males or a small excess of females. The characteristic pattern of sex ratios by age is a generally progressive decline throughout the age span, from a small excess of boys among young children to a massive deficit of men in extreme old age. At the present time there are only 69 males for every 100 females 65 and over in the United States (table 3-1 and figure 3-1). Only forty years ago just as many males as females were reported at ages 65 and over, but there has been a steady decline in the proportion of men and an increasing excess of women since that time. It is now anticipated that the sex ratio of the population 65 and over will continue to fall, reaching 65 males per 100 females in the year 2000. These facts—the low sex ratio of the older population as compared with the sex ratios at the younger ages and the decline in the sex ratio of the older population over time—call for somewhat different but related explanations.

Figure 3-1. SEX RATIOS IN THE OLDER AGES: 1900 TO 2010



Note Estimates and projections as of July 1, except for 85 and over, 1900-30, which relate to April 1. Points are plotted for years ending in zero except for 1975

Source Table 3-1

Table 3-1 SEX RATIOS FOR BROAD AGE GROUPS, BY RACE: 1900 TO 2010

[illegible] Figures for 1950 and later years include Armed Forces overseas

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Projections			
						1980	1990	2000	2010
[illegible]									
All ages	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	94.9 95.0 94.8	[illegible] 94.1 94.2	[illegible] [illegible] 93.8	[illegible] [illegible] 93.3
Under 15 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	104.5	[illegible]	105.2	[illegible]
15 to 24 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	102.5	102.4	103.1	103.2
25 to 44 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	97.3	97.7
45 to 54 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	95.2
55 to 64 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	89.2	90.3	[illegible]	[illegible]
65 to 74 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	75.8	[illegible]	77.3	77.0
75 to 84 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	58.1	[illegible]	57.9
85 years and over	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
65 years and over	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	67.9	66.1	[illegible]	[illegible]
75 years and over	[illegible]	[illegible]	[illegible]	43.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]									
All ages	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Under 15 years	[illegible]	[illegible]	[illegible]	104.5	[illegible]	[illegible]	105.4	[illegible]	[illegible]
15 to 24 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	102.9	[illegible]	103.8	103.7
25 to 44 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100.3
45 to 54 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	97.4	97.2
55 to 64 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	89.7	91.2	92.0	93.3
65 to 74 years	[illegible]	[illegible]	[illegible]	77.2	[illegible]	75.7	[illegible]	[illegible]	77.8
75 to 84 years	[illegible]	[illegible]	[illegible]	65.2	[illegible]	[illegible]	57.3	[illegible]	57.5
85 years and over	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	43.3	38.8	[illegible]	37.0
65 years and over	[illegible]	[illegible]	[illegible]	71.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
75 years and over	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	52.9	[illegible]	51.2
[illegible]									
All ages	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	91.2 91.3 91.1	91.1 [illegible] [illegible]	91.0 91.9 [illegible]	91.1 [illegible] 89.8
Under 15 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	101.8	103.6	104.1	104.4
15 to 24 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	97.4	98.2	99.8	99.9
25 to 44 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	85.2	[illegible]	[illegible]	87.8
45 to 54 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	87.0	[illegible]	[illegible]
55 to 64 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	84.2	[illegible]	[illegible]	[illegible]
65 to 74 years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	71.1
75 to 84 years	[illegible]	93.8	[illegible]	73.4	[illegible]	69.0	[illegible]	[illegible]	[illegible]
85 years and over	73.7	[illegible]	[illegible]	60.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
65 years and over	[illegible]	[illegible]	[illegible]	76.2	72.9	70.7	[illegible]	[illegible]	[illegible]
75 years and over	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	59.3	[illegible]	57.2

[illegible]

[illegible] Statistics in the United States, 1920-1932 and Current Population Reports, [illegible]

The sex ratio at some age group in the resident population of the United States may be viewed as determined by four factors: the sex ratio at birth, differences between the sexes in age-specific survival rates from birth, the balance of males and females among net migrants, and the balance of the sexes among other net movers overseas (e.g., movement to outlying areas, movement of Armed Forces personnel, and Federal civilian employees outside the United States). The proportion of males and females in an age group, as shown by census data or extensions of census data, is also affected by net coverage errors and age reporting errors in census data. These factors operate on specific cohorts of births as they progress through life from birth to their extinction.

The pattern of sex ratios by age noted above reflects essentially the persistent excess of boys among the newborn and the progressive effect of higher death rates for males than for females over the entire age range, both in recent years and in the historical past. This explains the low sex ratio of the older population. Furthermore, in explanation of the second fact, the decline in the sex ratio of the older population over time—males have benefited less than females from the declines in death rates, with the result that there has been a more rapid reduction in the sex ratio over the age span from birth to old age in more recent years than in the past and the sex ratios of the aged have steadily fallen over time. The heavy, predominantly male immigration prior to World War I is still reflected in the sex ratio of the population

65 and over but its influence is small now except in the 75-and-over group. The latest projections of population imply a continuation of the divergence of male and female death rates.

These factors are also reflected in the much more rapid growth of the female population 65 and over than of the male population at these ages (table 3-2). Between 1960 and 1970, for example, the female population grew more than twice as rapidly (28 percent) as the male population (11 percent), and during the present decade the female population is expected to grow nearly 1 . times as rapidly. Since the growth rates for the two sexes during recent decades are more nearly equal at the younger ages, the proportion 65 and over among females has moved well above that for males (figure 3 2). While the proportions for the two sexes were nearly equal in 1930 (5.5 percent and 5.4 percent), in 1975 the proportions were far apart (12.1 percent and 8.8 percent). This pattern of differences is not likely to change much by the year 2000 and is expected to become more intensified (table 2-4).

The sex ratio of the elderly population in 1975 corresponds to an excess of 4.1 million women, or 18 percent of the total population 65 and over. A quarter century earlier, in 1950, the excess was quite small, 0.7 million, or 5.4 percent of the total. A quarter century from now, in 2000, the excess is expected to grow to a huge 6 5 million, or 21 percent of the total

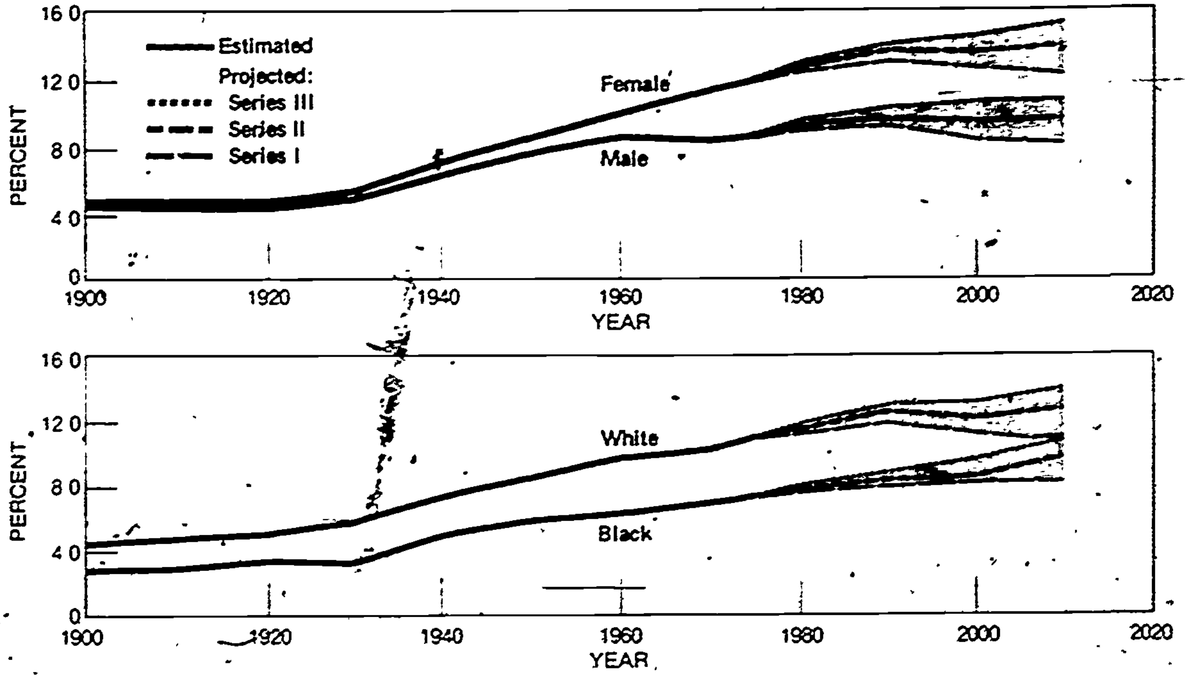
Table 3 2 DECENNIAL PERCENT INCREASE OF THE POPULATION IN THE OLDER AGES, BY RACE AND SEX: 1960 TO 2010

[illegible] A minus sign (-) denotes a decrease)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 2000	2000 to 2010
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	5.8	8.6
[illegible]	[illegible]	[illegible]	[illegible]	4.5	4.3
[illegible]	[illegible]	[illegible]	[illegible]	6.6	8.2
[illegible]	[illegible]	[illegible]	17.2	4.2	6.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.7
[illegible]	[illegible]	[illegible]	18.3	[illegible]	6.3
[illegible]	[illegible]	[illegible]	23.6	15.3	17.9
[illegible]	[illegible]	[illegible]	21.2	[illegible]	17.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	18.1
[illegible]					
[illegible]	[illegible]	[illegible]	22.1	18.6	2.7
[illegible]	[illegible]	[illegible]	[illegible]	16.8	1.8
[illegible]	[illegible]	[illegible]	[illegible]	19.6	3.2
[illegible]	[illegible]	[illegible]	24.2	17.7	0.6
[illegible]	[illegible]	[illegible]	[illegible]	16.4	-0.2
[illegible]	[illegible]	[illegible]	[illegible]	18.6	1.0
[illegible]	[illegible]	[illegible]	[illegible]	23.2	14.7
[illegible]	[illegible]	[illegible]	[illegible]	20.7	14.6
[illegible]	[illegible]	[illegible]	28.7	24.7	14.7
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	19.4
[illegible]	[illegible]	22.1	[illegible]	26.2	17.9
[illegible]	[illegible]	[illegible]	23.7	[illegible]	20.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	18.5
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17.2
[illegible]	[illegible]	[illegible]	[illegible]	30.0	19.2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	18.3	[illegible]	20.2

[illegible]

Figure 3-2. PERCENT OF THE TOTAL POPULATION 65 YEARS OLD AND OVER, BY SEX AND BY RACE: 1900 TO 2010



Source: Table 2-4

Race and Ethnic Composition

A much smaller proportion of the black population is 65 and over (7.4 percent in 1975) than for the white population (11.0 percent in 1975). This difference results principally from the higher fertility of the black population and secondarily from the relatively greater concentration of declines in mortality at the younger ages among blacks and the large immigration of whites prior to World War I.

The black population also shows a low sex ratio at ages 65 and over even though the figures for this group have been substantially higher than those for the white population for many decades. In 1975 the comparative figures were 73 and 69 (table 3-1). The age pattern of sex ratios for the black population is very roughly like that for whites, but the decline with age is less regular and less steep. The "starting" level and the sex ratios at the younger ages are lower than for whites, largely because of the lower sex ratio of births, and the sex ratios as recorded at the older ages are higher, possibly because of the narrower gap between male and female mortality rates in the past and the relatively greater coverage of males than females at the ages above 65 in the census.

The population of Spanish origin currently has a very low proportion of persons 65 and over (3.6 percent in 1975) and a very high sex ratio at these ages (87 males per 100 females in 1975), in comparison with the white population as a whole and even the black population. The relevant explanatory factors may be similar to those applicable in the comparison of the black and white populations. In addition, males have dominated among immigrants of Spanish origin.

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Chapter IV.
GEOGRAPHIC DISTRIBUTION AND INTERNAL MIGRATION

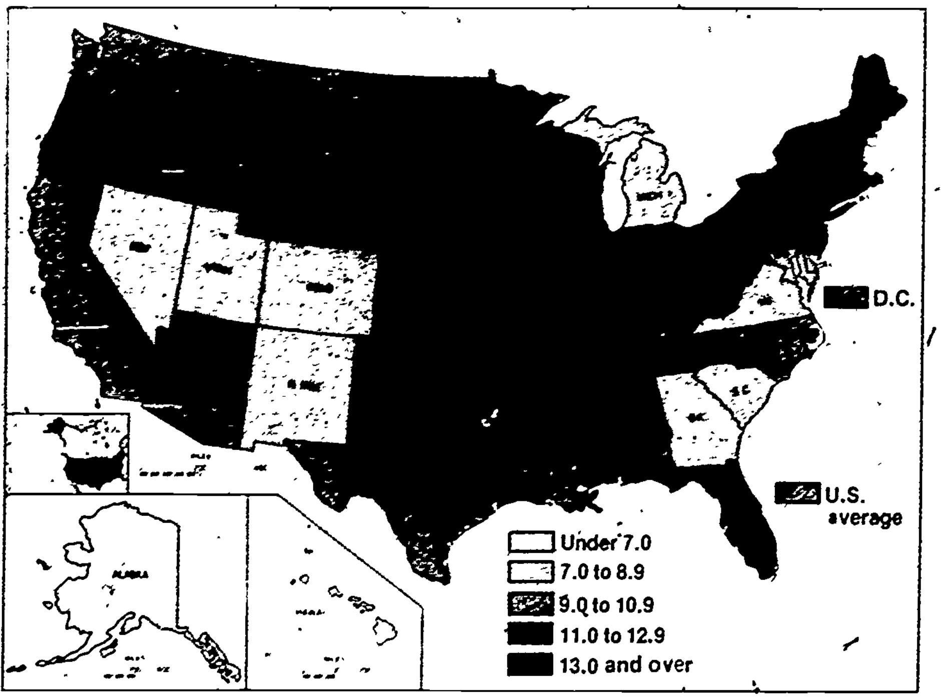
Divisions, States, and Counties

Number of elderly persons. Elderly persons tend to be most numerous in the largest States, of course. New York and California have the largest number of people over 65, with nearly 2 million each in 1975 (table 4-1). They are followed by Pennsylvania, Florida, Illinois, Texas, and Ohio. Each of these five States has over a million people over age 65, and together the seven States account for about 45 percent of the population in this age range.

In all States the number of persons 65 years and over increased between April 1, 1970 and July 1, 1975 and between April 1, 1960 and April 1, 1970. The pattern of percentage increases is roughly similar in both periods but, as expected, the figures are generally about half as great in the more recent period

For the 1960-70 period the population 65 and over in the District of Columbia, Iowa, Maine, Montana, and Vermont grew slowly (i.e., at less than 10 percent of the 1960 population), as compared with 21 percent for the United States as a whole. In other States the growth of the elderly population during this period was rapid (i.e., 30 percent or more of the 1960 population). The population 65 and over in Arizona, Florida, and Nevada grew more than 70 percent between 1960 and 1970. Florida experienced a tremendous growth in the number of elderly persons—432,000 or 78 percent. California

Figure 4-1. PERCENT 65 YEARS OLD AND OVER OF THE TOTAL POPULATION FOR STATES: 1975



Source: Table 4-3.

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Table 4-1 POPULATION 65 YEARS OLD AND OVER, 1960 AND 1970, BY RACE, AND 1975, AND POPULATION 75 YEARS OLD AND OVER, 1960 AND 1970, FOR REGIONS, DIVISIONS, AND STATES

(Numbers in thousands. Estimates as of April 1 for 1960 and 1970 and July 1 for 1975)

Region, division, and State	Population 65 and over: All classes: 1975	1970	1960	Increase 1970-75: Amount	Increase 1970-75: Percent	Increase 1960-70: Amount	Increase 1960-70: Percent	Black: 1970	Black: 1960	Black increase, 1960-70: Amount	Black increase, 1960-70: Percent	Population 75 and over: All classes: 1970	1960	Increase, 1960-70: Amount	Increase, 1960-70: Percent
United States, total	[illegible]	[illegible]	[illegible]	[illegible]	12.2	3,412	[illegible]	1,564	1,164	376	32.2	7,530	5,563	1,967	35.4
Regions															
Northeast	[illegible]	[illegible]	4,490	369	[illegible]	674	15.1	244	156	89	57.3	1,935	[illegible]	472	32.5
North Central	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	625	12.2	282	190	92	47.4	2,222	1,752	499	28.5
South	[illegible]	[illegible]	4,582	[illegible]	[illegible]	1,432	31.2	924	777	14[illegible]	20.6	2,1[illegible]	1,521	[illegible]	41.7
West	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	678	26.3	82	44	37	83.3	1,182	817	365	44.7
Northeast															
New England	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	142	12.7	18	13	5	41.8	499	390	109	28.5
Middle Atlantic	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	534	[illegible]	227	163	64	56.6	1,435	1,073	362	33.8
North Central															
East North Central	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	455	[illegible]	215	144	81	54.7	1,466	1,131	335	29.6
West North Central	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	286	[illegible]	55	45	12	23.6	785	621	164	26.4
South															
South Atlantic	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	823	36.2	433	343	90	26.2	1,028	677	351	51.9
East South Central	[illegible]	[illegible]	[illegible]	177	14.0	211	[illegible]	242	[illegible]	[illegible]	12.3	464	364	102	27.7
West South Central	[illegible]	[illegible]	[illegible]	281	[illegible]	398	[illegible]	260	217	44	20.2	672	492	180	26.6
West															
Mountain	[illegible]	[illegible]	427	155	[illegible]	165	31.3	9	6	3	46.6	261	178	[illegible]	46.8
Pacific	[illegible]	[illegible]	1,673	[illegible]	[illegible]	516	27.5	72	38	34	89.2	822	639	282	44.1
New England															
Maine	[illegible]	[illegible]	[illegible]	11	[illegible]	7	6.7	(Z)	(Z)	(Z)	(B)	45	40	5	12.5
New Hampshire	[illegible]	[illegible]	66	[illegible]	[illegible]	10	14.8	(Z)	(Z)	(Z)	(B)	30	25	6	23.3
Vermont	[illegible]	[illegible]	44	4	9.3	3	7.6	(Z)	(Z)	(Z)	(B)	19	17	2	12.7
Massachusetts	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	61	10.7	[illegible]	7	2	26.9	252	198	54	27.1
Rhode Island	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14	15.4	1	1	[illegible]	54.4	40	[illegible]	10	[illegible]
Connecticut	[illegible]	[illegible]	[illegible]	33	11.6	45	18.3	7	5	2	58.9	113	80	33	41.3
Middle Atlantic															
New York	[illegible]	[illegible]	1,668	79	[illegible]	263	[illegible]	112	65	46	70.9	708	525	183	34.4
New Jersey	[illegible]	[illegible]	560	74	[illegible]	134	[illegible]	40	27	13	49.9	253	175	79	44.9
Pennsylvania	[illegible]	[illegible]	[illegible]	111	[illegible]	138	12.2	75	51	24	47.6	476	372	104	27.8
East North Central															
Ohio	[illegible]	[illegible]	897	73	[illegible]	96	10.7	65	44	21	48.6	388	311	77	24.6
Indiana	[illegible]	[illegible]	444	39	[illegible]	45	10.2	23	16	7	40.2	[illegible]	160	33	20.6
Illinois	[illegible]	[illegible]	975	64	5.9	114	11.7	79	53	26	49.2	416	320	97	30.2
Michigan	[illegible]	[illegible]	628	46	8.8	111	17.6	55	31	25	80.4	282	203	79	38.9
Wisconsin	[illegible]	[illegible]	403	41	[illegible]	68	16.8	[illegible]	2	2	100.4	186	137	49	36.1
West North Central															
Minnesota	[illegible]	[illegible]	354	32	7.9	53	[illegible]	2	2	(Z)	30.9	167	121	46	38.0
Iowa	[illegible]	[illegible]	328	15	[illegible]	21	6.5	2	2	(Z)	20.6	149	122	26	21.7
Missouri	[illegible]	[illegible]	503	43	[illegible]	55	11.0	39	31	8	25.6	221	184	37	20.4
North Dakota	[illegible]	[illegible]	59	7	10.6	7	12.1	(Z)	(Z)	(Z)	(B)	27	21	6	30.1
South Dakota	[illegible]	[illegible]	72	5	6.3	[illegible]	11.5	(Z)	(Z)	(Z)	(B)	33	24	9	36.8
Nebraska	[illegible]	[illegible]	164	12	[illegible]	19	11.4	2	2	(Z)	14.2	77	59	18	31.2
Kansas	[illegible]	[illegible]	240	19	7.2	25	10.6	9	8	1	17.5	111	91	20	22.3
South Atlantic															
Delaware	[illegible]	44	36	7	[illegible]	8	21.2	5	4	1	28.0	16	12	4	34.5
Maryland	[illegible]	[illegible]	227	47	16.0	71	31.4	39	27	12	46.3	106	74	32	42.8
District of Columbia	[illegible]	[illegible]	69	1	[illegible]	1	1.9	29	20	10	49.4	25	23	3	11.7
Virginia	[illegible]	364	289	59	16.3	75	26.0	64	54	10	18.4	131	98	33	33.9
West Virginia	211	[illegible]	[illegible]	17	8.9	21	12.0	10	9	1	15.1	73	61	12	19.1
North Carolina	[illegible]	412	312	81	19.6	100	32.0	79	62	17	28.0	143	102	42	40.8
South Carolina	[illegible]	[illegible]	151	39	[illegible]	39	25.7	53	47	6	12.6	65	47	17	36.9
Georgia	430	365	291	64	17.5	74	25.5	88	76	12	16.0	130	96	34	35.7
Florida	[illegible]	985	553	362	36.8	432	78.2	66	46	20	42.9	338	164	174	106.3
East South Central															
Kentucky	[illegible]	334	292	32	9.6	44	[illegible]	24	22	2	8.1	129	104	25	23.7
Tennessee	[illegible]	382	309	59	15.5	73	23.6	56	46	10	22.5	140	107	[illegible]	30.8
Alabama	[illegible]	324	261	53	16.4	63	24.2	[illegible]	75	10	12.6	116	87	[illegible]	33.1
Mississippi	[illegible]	222	190	32	14.6	31	16.4	79	74	5	6.9	80	66	14	21.6
West South Central															
Arkansas	[illegible]	[illegible]	194	35	14.6	43	22.0	43	38	5	12.2	90	67	23	34.6
Louisiana	[illegible]	305	242	41	13.6	63	26.0	89	77	11	14.8	105	80	25	[illegible]
Oklahoma	[illegible]	[illegible]	249	35	11.8	50	19.9	38	15	3	17.5	116	91	24	[illegible]
Texas	1,154	[illegible]	745	170	[illegible]	243	32.6	111	86	25	28.7	359	252	107	42.6
Mountain															
Montana	[illegible]	68	65	6	9.6	3	5.4	(Z)	(Z)	(Z)	(B)	30	22	7	[illegible]
Idaho	[illegible]	67	58	12	17.3	9	16.2	(Z)	(Z)	(Z)	(B)	27	21	7	[illegible]
Wyoming	[illegible]	[illegible]	26	3	11.3	4	15.7	(Z)	(Z)	(Z)	(B)	12	8	3	41.4
Colorado	[illegible]	187	158	23	12.5	29	18.4	3	2	1	38.6	76	57	18	31.5
New Mexico	[illegible]	70	51	20	28.5	19	37.7	1	1	(Z)	71.0	25	16	9	54.4
Arizona	[illegible]	161	90	63	38.9	71	78.6	4	2	1	44.6	53	27	26	99.3
Utah	91	77	60	14	18.1	17	28.4	(Z)	(Z)	(Z)	(B)	29	21	8	40.3
Nevada	44	31	18	13	43.6	13	71.0	1	(Z)	(Z)	(B)	10	6	4	74.9
Pacific															
Washington	365	[illegible]	279	44	13.8	41	14.6	3	2	1	48.9	129	99	30	29.7
Oregon	[illegible]	[illegible]	184	33	14.6	42	22.7	1	1	1	79.1	90	63	27	42.3
California	[illegible]	1,792	1,376	265	14.8	416	30.2	68	36	32	91.5	686	465	220	47.3
Alaska	[illegible]	7	5	2	25.1	2	36.0	(Z)	(Z)	(Z)	(B)	2	2	(Z)	27.7
Hawaii	57	44	29	13	30.5	15	51.7	(Z)	(Z)	(Z)	(B)	14	10	5	51.8

B Base of percent [illegible] less than 500 Z Less than 500

Source: Census of Population, 1960 and 1970, and Current Population Reports, Series P-25, No. [illegible].

added 416,000, but since it has nearly twice the population of Florida, its growth rate was far smaller (30 percent). Texas added 243,000 in absolute numbers, a gain which represented 33 percent of the 1960 population. Other States showing high growth rates for the population 65 and over during the 1960's are Maryland (31 percent), North Carolina (32 percent), and New Mexico (38 percent). Finally, New York showed a large absolute gain (263,000) but only a small relative gain (16 percent).

Rapid growth of the number of elderly persons also occurred between 1970 and 1975 in Arizona, Florida, Nevada, and Hawaii; each of these States experienced a gain of over 30 percent of its 1970 population as compared with 12 percent for the entire country. Florida added 362,000, Texas 170,000, and California 265,000. Other States with high growth rates (over 15 percent) in the 1970-75 period are South Carolina, New Mexico, and Alaska. Slow growth (under 5 percent) was experienced by New York, Iowa, and the District of Columbia. All four geographic divisions in the North had growth rates well below the national average, and all divisions of the South and West, especially the South Atlantic Division and the Mountain Division, had growth rates above the national average.

Proportion of elderly persons. In 1975 the proportion of elderly persons in the States varied from 2.4 percent (Alaska) to 16.1 percent (Florida), as compared with 10.5 percent for the United States as a whole. Such midwestern States as Iowa, Kansas, Missouri, Nebraska, and South Dakota (that is, much of the midwestern farm belt), as well as Oklahoma, Arkansas, and Rhode Island, show high proportions (i.e., 12.0 percent or more) of elderly persons in 1975 (table 4.2 and figure 4.1). Florida is outstanding as the State to which the elderly migrate in order to retire, drawn by a very favorable climate. The following factors have contributed to a relatively large proportion of older persons in the States: Continued heavy out-migration of young persons, substantial in-migration of older persons in recent years, heavy immigration of foreign-born persons in the years prior to World War I, and relatively low fertility.

The States with low proportions (e.g., 8.5 percent or less) of elderly persons in 1975 fall mainly in the South and West. The list includes several States which have relatively high fertility (i.e., South Carolina, New Mexico, and Utah) and several States which have typically experienced a large net in-migration of persons well under 65 (i.e., Maryland, Virginia, Nevada, and Colorado, and the outlying States of Alaska and Hawaii).

Counties show a much wider variation in the proportion of elderly persons than States. Many counties with extremely high proportions may be found in the States of the West North Central Division. One-fifth of the 105 counties in Kansas had proportions of 20 percent or more in 1970, and nearly one-fifth of the 115 counties of Missouri had proportions of this magnitude.[1] In forty-five percent of the 619 counties in the West North Central Division, 15 percent or more of the population was 65 years old or over.

Internal migration. Although it would have been desirable to develop estimates of net migration for States between 1960 and 1970 and between 1970 and 1975 for the age group 65 and over, it would have taken considerable work to prepare satisfactory estimates of this kind.[2] Instead, estimates of net migration for States between 1960 and 1970 for the age cohort 65 and over in 1965 (i.e., 60 and over in 1960 and 70 and over in 1970) were prepared. For this purpose national census survival rates (rather than death statistics or life table survival rates) were employed in combination with the decennial census data in a residual method. Estimates of net migration derived by "surviving" the age cohort 60 and over in 1960 from 1960 to 1970 (70 and over in 1970) includes the net migration of some persons aged

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[1] See U.S. Bureau of the Census, 1970 Census, United States Maps, GE-50, No. 36, "Older Americans by Counties of the United States, 1970."

[2] If the number of persons 65 and over grew rapidly in a State during a period (e.g., 1960-70)—much more rapidly, say, than the national population in this age group (21 percent in 1960-70)—one would expect that, in addition to the "natural increase" during the period (i.e., persons reaching age 65 less deaths at ages 65 and over in 1960-70), there was a net influx of elderly persons into the State at this age during the period. Hence, estimates of net migration rates for States between 1960 and 1970 could be obtained simply by subtracting 0.21, the U.S. growth rate, from the decennial growth rate for each State. The results would be too rough for general use, however. This method assumes that birth rates 65 or more years earlier, survival rates for these birth cohorts to age 65, and death rates during the 1960-70 decade for the States were similar to the United States rates—conditions which are true only within wide limits—and that net interstate migration since birth has affected the number reaching age 65 between 1960 and 1970 to a similar degree in each State—a condition which is not true even within wide limits.

One could derive much more accurate estimates of the net migration of elderly persons for each State between 1960 and 1970 by subtracting direct estimates of "natural increase" 65 and over for each State from the change in the number of persons 65 and over during the period. Such estimates would require compiling deaths at ages 65 and over for the intercensal years and estimating the number of persons reaching age 65 during these years. It was not possible to complete such estimates in time for inclusion in this report.

Table 4-2 PERCENT 65 YEARS OLD AND OVER OF THE TOTAL POPULATION: 1960 AND 1970 BY RACE AND 1975, AND PERCENT 75 YEARS OLD AND OVER, 1960 AND 1970, FOR REGIONS, DIVISIONS, AND STATES

		thousands		Black	Spanish			White	Black	Spanish		Black		
West North Central	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.8	2.6	[illegible]	[illegible]	[illegible]	[illegible]
Minnesota	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12.4	12.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Iowa	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12.6	11.[illegible]	12.4	8.2	4.[illegible]	11.7	[illegible]	[illegible]	[illegible]
Missouri	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.5	[illegible]	[illegible]	[illegible]	[illegible]
North Dakota	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
South Dakota	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11.3	12.5	[illegible]	2.8	[illegible]	[illegible]	[illegible]	4.2
Nebraska	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11.8	[illegible]	[illegible]	[illegible]	11.0	[illegible]	[illegible]	4.2
Kansas														
South Atlantic														
Delaware	[illegible]	34	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.1	[illegible]	[illegible]
Maryland	[illegible]	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	[illegible]	2.9	7.3	5.2	[illegible]	[illegible]
District of Columbia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.8	[illegible]	[illegible]
Virginia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8.5	7.6	[illegible]	[illegible]	[illegible]	7.3	6.6	[illegible]	[illegible]
West Virginia	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	11.1	[illegible]	14.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
North Carolina	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.0	1.9	[illegible]	[illegible]	[illegible]	[illegible]
South Carolina	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8.1	[illegible]	7.6	6.7	2.2	[illegible]	[illegible]	[illegible]	[illegible]
Georgia	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	7.4	[illegible]	7.6	[illegible]	[illegible]	2.4
Florida	[illegible]	[illegible]	[illegible]	[illegible]	34	14.1	[illegible]	[illegible]	6.4	7.5	11.2	5.3	[illegible]	3.3
East South Central														
Kentucky	[illegible]	336	312	24	[illegible]	11.8	[illegible]	10.5	10.3	3.0	9.6	10.1	[illegible]	3.4
Tennessee	[illegible]	342	[illegible]	[illegible]	[illegible]	10.5	[illegible]	[illegible]	9.0	3.2	8.7	7.8	3.6	[illegible]
Alabama	[illegible]	324	[illegible]	[illegible]	[illegible]	10.4	[illegible]	9.4	9.4	3.4	8.0	7.7	[illegible]	2.7
Mississippi	[illegible]	221	142	[illegible]	[illegible]	10.6	10.0	10.2	[illegible]	4.7	8.7	8.0	[illegible]	3.0
West South Central														
Arkansas	[illegible]	[illegible]	[illegible]	43	[illegible]	12.9	12.3	12.4	12.1	4.3	10.9	[illegible]	[illegible]	3.7
Louisiana	[illegible]	[illegible]	[illegible]	[illegible]	4	9.1	8.4	8.5	8.1	3.3	7.6	7.4	[illegible]	2.5
Oklahoma	[illegible]	[illegible]	272	18	1	11.3	11.7	11.9	10.3	3.5	10.7	9.8	[illegible]	[illegible]
Texas	[illegible]	[illegible]	[illegible]	111	[illegible]	9.5	8.8	9.0	8.0	4.6	7.8	7.3	3.2	[illegible]
Mountain														
Montana	[illegible]	68	67	(Z)	(Z)	10.0	9.9	10.1	4.6	3.2	9.7	7.6	[illegible]	3.3
Idaho	[illegible]	[illegible]	[illegible]	(Z)	1	9.6	9.5	9.5	4.0	[illegible]	8.7	8.4	3.8	3.1
Wyoming	[illegible]	[illegible]	[illegible]	(Z)	[illegible]	9.0	9.0	9.2	5.6	[illegible]	7.8	6.1	[illegible]	2.5
Colorado	[illegible]	147	143	3	13	8.3	8.5	8.6	4.7	4.7	[illegible]	5.7	3.4	3.3
New Mexico	[illegible]	7[illegible]	[illegible]	1	22	7.9	[illegible]	7.2	4.7	5.4	5.4	3.2	2.5	1.7
Arizona	[illegible]	1[illegible]2	153	4	14	10.0	[illegible]	[illegible]	6.6	4.2	6.9	[illegible]	[illegible]	2.0
Utah	[illegible]	77	76	[illegible]	1	7.5	7.3	7.3	4.9	2.6	6.7	4.7	2.7	2.3
Nevada	[illegible]	31	[illegible]	1	1	7.5	6.3	6.[illegible]	3.1	4.0	6.4	[illegible]	2.0	1.9
Pacific														
Washington	[illegible]	[illegible]	313	3	2	[illegible]	9.6	[illegible]	[illegible]	[illegible]	[illegible]	3.9	[illegible]	3.5
Oregon	[illegible]	224	222	1	1	11.3	10.8	10.[illegible]	[illegible]	3.0	10.4	4.1	[illegible]	3.6
California	[illegible]	1,7[illegible]2	1,6[illegible]3	[illegible]	131	9.7	9.0	9.6	4.9	4.2	8.8	4.5	3.4	3.0
Alaska	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.4	2.3	[illegible]	1.1	0.6	2.4	0.7	[illegible]	[illegible]
Hawaii	[illegible]	44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.1	[illegible]	2.2	4.6	[illegible]	[illegible]	[illegible]

Z Less than 500.

² For New York, New Jersey, and Pennsylvania, persons of Puerto Rican birth and parentage only; for five Southwestern States includes other persons of Spanish surname. Note that persons of Spanish origin may be of any race.

Source: Census of the Population, 1960 and 1970, Supplementary Report PC (S1)-29 (persons of Spanish language) and Current Population Reports, Series P-25, No. 619.

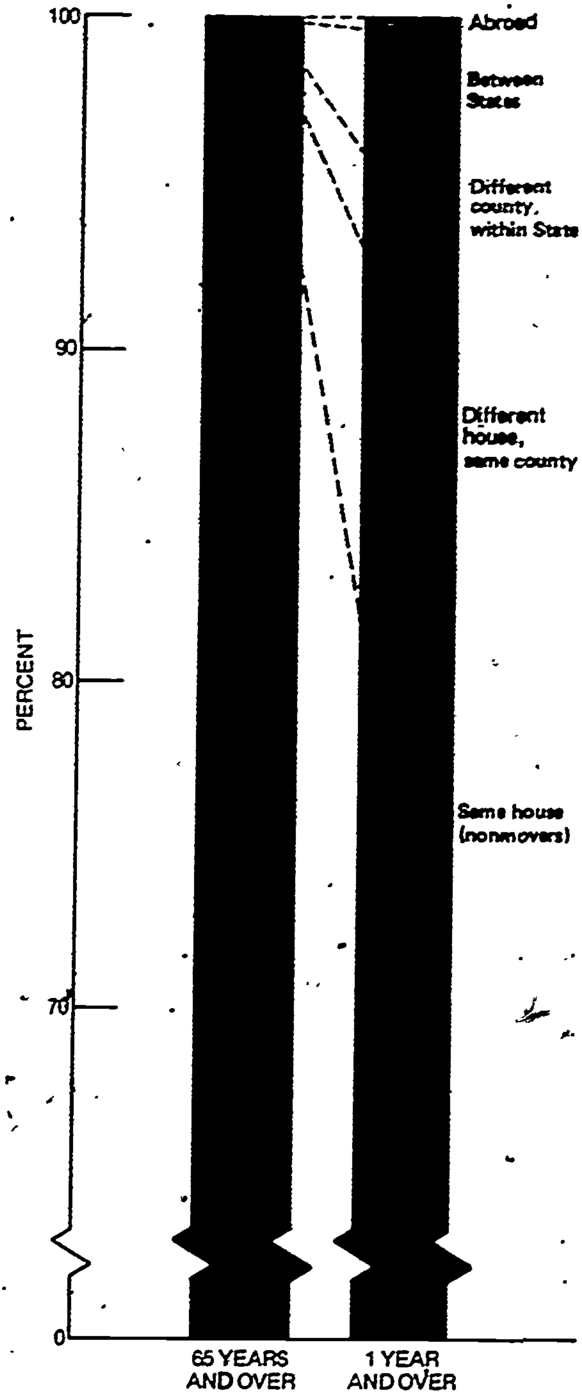
60 to 64 in the early part of the decade prior to reaching age 65 and excludes the net migration of some persons aged 65 to 69 in the later part of the decade after reaching age 65. The two "error terms" would be expected to offset one another to a substantial degree in many States and, hence, net migration for this cohort during the decade should roughly approximate the net migration during the decade for the age group 65 and over

These estimates of net migration reflect a considerable movement of elderly persons out of the Middle Atlantic States and the East North Central States, and a considerable movement of elderly persons into the South Atlantic States, the West South Central States, and Pacific States, during the 1960-70 decade (table 4-3) New York, Pennsylvania, Ohio, Illinois, and Michigan were big losers, and Florida, Texas, and California were big gainers. In relative terms the District of Columbia, Alaska, and Hawaii were the largest losers, and Florida and Arizona were the largest gainers.

In spite of the fact that several States showed relatively high net in- or out-migration rates for the elderly population between 1960 and 1970, this age group moves relatively little. Mobility rates and migration rates show a generally downward progression with advancing age from age group 20 to 24, ~~as may~~ be seen for the years 1970-71 (one-year period) and 1970-75 (5-year period) in table 4-4.[3]

~~In the year 1970-71 the migration rate~~ of interstate migrants 65 and over was only 1.4 percent, or only two-fifths as great as the migration rate for the population one and over (3.4 percent). (See table 4-5 and figure 4-2.) Similar differences appeared for other classes of movers. Mobility rates appear to rise around age 75 as a result, possibly, of institutionalization, changes in marital and household status, and movement to retirement centers.[4]

Figure 4-2. MOBILITY AND MIGRATION RATES FOR THE POPULATION 65 YEARS OLD AND OVER AND ONE YEAR OLD AND OVER: 1970-71



Source: Table 4-5.

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[3] As suggested earlier, mobility rates and migration rates for age cohorts for a span of calendar years, defined by the terminal ages, may not represent the experience at these ages satisfactorily because migration experience at younger ages is included. Therefore, rates for one-year time periods, particularly a series of one-year rates for several years, are preferable for analysis of mobility and migration for age groups. The last one-year time period for which national mobility and migration rates by age are available is 1970-71.

[4] For further discussion of this point, see Lynne R. Heltman, "Mobility of the Aged in the United States," paper presented at the annual meeting of the Population Association of America, Seattle, Washington, April 17-19, 1975

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Table 4-3 ESTIMATED NET MIGRATION OF THE POPULATION COHORT 65 YEARS OLD AND OVER IN 1965, BY RACE, FOR REGIONS, DIVISIONS, AND STATES: 1960-70

[illegible] and over in 1965 [illegible] and over in 1960 and 70 and over in 1970 [illegible] Net migration was computed by [illegible] independent estimates of net immigration for the United States [illegible]

Region, division, and State	Total Amount	Total Rate	White Amount	White Rate	Black Amount	Black Rate
United States	[illegible]	[illegible]	[illegible]	+0.1	[illegible]	+0.6
Regions:						
Northeast	[illegible]	[illegible]	[illegible]	-2.0	-6	+2.2
North Central	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	+3.7
South	[illegible]	[illegible]	[illegible]	[illegible]	-18	-2.2
West	[illegible]	[illegible]	+214	[illegible]	+11	+16.4
Northeast:						
New England		[illegible]	[illegible]	[illegible]	[illegible]	+4.9
Middle Atlantic	[illegible]	[illegible]	[illegible]	[illegible]	-5	-2.8
North Central:						
East North Central	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	+3.7
West North Central	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	+1.1
South:						
South Atlantic	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-2.8
East South Central	[illegible]	[illegible]	[illegible]	-2.2	-8	-3.7
West South Central	[illegible]	[illegible]	[illegible]	[illegible]	-1	-0.3
West:						
Mountain	[illegible]	[illegible]	+39	[illegible]	(Z)	+6.0
Pacific	[illegible]	[illegible]	[illegible]	[illegible]	+9	+18.1
New England:						
Maine		[illegible]	-2	-2.7	(Z)	(B)
New Hampshire	[illegible]	[illegible]	+1	-0.6	(Z)	(B)
Vermont	[illegible]	[illegible]	(Z)	+1.0	(Z)	(B)
Massachusetts	[illegible]	[illegible]	-16	-2.6	-1	+8.5
Rhode Island		[illegible]	-2	-1.9	(Z)	-10.7
Connecticut	[illegible]	[illegible]	-1	-0.3	(Z)	+8.7
Middle Atlantic:						
New York	[illegible]	[illegible]	-161	-7.9	-4	+6.4
New Jersey	[illegible]	[illegible]	-11	-1.8	+1	-3.3
Pennsylvania	[illegible]	[illegible]	-6	-2.5	(Z)	-0.3
East North Central:						
Ohio	[illegible]	-3.7	-37	-4.1	+2	+3.2
Indiana	[illegible]	-2.7	-24	-3.1	+1	+2.9
Illinois	[illegible]	-5.4	-42	-6.3	+1	-0.9
Michigan	[illegible]	-4.[illegible]	-33	-5.0	+3	+8.4
Wisconsin	[illegible]	-0.4	-2	-0.5	(Z)	+16.2
West North Central:						
Minnesota	[illegible]	+1.4	-5	-1.3	(Z)	+7.2
Iowa	[illegible]	(Z)	(Z)	(Z)	(Z)	-1.7
Missouri	-2	[illegible]	-2	-1.0	(Z)	-0.9
North Dakota	[illegible]	[illegible]	(Z)	-3.1	(Z)	(B)
South Dakota	[illegible]	[illegible]	-2	+1.1	(Z)	(B)
Nebraska	-4	-2.2	-4	-2.3	(Z)	-3.3
Kansas	-4	-1.7	-4	-1.7	(Z)	+2.2
South Atlantic:						
Delaware	[illegible]	+1.[illegible]	(Z)	+1.0	(Z)	-2.6
Maryland	+4	+1.4	+3	+1.4	+1	-2.2
District of Columbia	-12	-16.[illegible]	-12	-25.0	(Z)	+1.5
Virginia	[illegible]	+0.6	+6	+1.[illegible]	-2	-4.0
West Virginia	-8	-4.4	-7	-4.0	-1	-9.1
North Carolina	[illegible]	+1.[illegible]	+7	+2.6	-2	-2.3
South Carolina	-3	-2.0	+1	-0.7	-4	-8.5
Georgia	+2	+0.6	+5	+1.9	-3	-4.0
Florida	+200	+29.3	+203	+31.3	+1	+1.1
East South Central:						
Kentucky	-3	-1.6	-2	-3.2	(Z)	-3.7
Tennessee	[illegible]	+1.4	+5	+1.8	(Z)	-0.7
Alabama	+2	+1.2	+5	+2.4	-3	-3.3
Mississippi	-4	-1.8	+1	+0.8	-5	-8.1
West South Central:						
Arkansas	+4	+4.2	+4	+5.1	(Z)	-0.1
Louisiana	-3	-1.0	[illegible]	-0.4	-2	-3.1
Oklahoma	+6	+2.8	+7	+2.6	+1	+4.4
Texas	+37	+4.3	+34	+4.5	+3	+2.6
Mountain:						
Montana	-1	-1.5	-1	-1.0	(Z)	(B)
Idaho	+1	+1.7	+1	+2.0	(Z)	(B)
Wyoming	-1	-3.5	-1	-3.3	(Z)	(B)
Colorado	+6	+3.7	+6	+3.7	(Z)	+8.2
New Mexico	+2	+2.5	+2	+3.3	(Z)	+4.6
Arizona	+24	+21.2	+25	+23.5	(Z)	+4.7
Utah	+2	+3.3	+2	+3.4	(Z)	(B)
Nevada	+2	+9.0	+2	+9.8	(Z)	+11.4
Pacific:						
Washington	+3	+1.2	+4	+1.3	(Z)	+3.5
Oregon	+10	+4.9	+10	+4.9	(Z)	+16.9
California	+92	+5.9	+83	+5.4	+9	+19.0
Alaska	-2	-30.6	-1	-33.3	(Z)	(B)
Hawaii	+6	-17.3	+5	+9.9	(Z)	(B)

B Base (percent average of population 55 and over in 1960 and 70 and over in 1970) less than 500. Z Less than 500 or 0.05 percent.

Table 4.4 MOBILITY RATES AND MIGRATION RATES, BY AGE 1970-75 AND 1970-71

[illegible]

Table 4.5 MOBILITY RATES AND MIGRATION RATES FOR THE POPULATION 65 YEARS OLD AND OVER AND ONE YEAR OLD AND OVER, BY SEX: 1970-71

[illegible]

Size of Place and Urban Rural Residence

The 1970 census showed a gradation in the proportion of persons 65 and over according to the size of the place of residence excluding the farm population ("other rural" areas) and the urban fringe, the larger the place, the lower the percentage of elderly people. The highest proportion of elderly persons (13.6 percent) is found in small towns, i.e. rural places of 1,000 to 2,500 inhabitants (table 4-6). The next highest proportion is found in urban places of 2,500 to 10,000, followed in order by urban places of 10,000 to 50,000, central cities of urbanized areas, "other rural" areas, and the urban fringe. In the urban fringe young families with children predominate. One of the lowest percentages (9.6 percent) is found in "other rural" areas (i.e. the farm population).

The high percentage of aged persons in rural places of 1,000 to 2,500 may result from the high rate of outmigration of young people to the larger places. We should expect this reason to apply also to the "other rural" areas but apparently other factors are dominant. A higher birth rate in the farm population may account for some of the difference. More important, many farmers over 65 can no longer operate their farms and so they migrate, not to Florida or other distant States, but to the town closest to their farm.

Of the 20.1 million persons 65 and over in April 1970, over half (55 percent) lived in urbanized areas. Of the latter group about three-fifths (62 percent) lived in central cities and two-fifths (38 percent) in the urban fringe. Thus, about one-third (34 percent) of all aged persons lived in central cities. About one-quarter (27 percent) lived in rural areas.

The distribution of blacks diverged sharply from that for the population as a whole, principally in their concentration in central cities within urbanized areas. Of the 1.6 million blacks 65 and over in 1970, about 950,000, or three-fifths (61 percent), lived in urbanized areas. Of the latter group 86 percent lived in central cities and 14 percent lived in the urban fringe. Thus, over half (52 percent) of all blacks 65 and over lived in a central city. About one-quarter (24 percent) lived in rural areas, mostly on farms.

The population of Spanish heritage 65 and over is very largely an urban population (86 percent in 1970), much more urban than whites as a whole or blacks at this age. Like the black population, the population of Spanish heritage is heavily concentrated in central cities of urbanized areas (51 percent in 1970) and like the white population in general an important share lives in the urban fringe (20 percent). Correspondingly, the share in rural areas is much smaller (14 percent) than for the white population as a whole or the black population. Data from the Current Population Survey suggest that the urban-rural distribution of the elderly Spanish heritage population is about the same in 1975 as in 1970.

Summary Note

The following generalizations seem to describe the migration tendencies of the elderly in the United States. Their migration rates are relatively low; with increasing age, people migrate less. If the elderly do migrate, they generally go to various retirement areas within the United States, particularly Florida, or to rural places or small towns (from farms), the country of origin (if foreign-born), or other areas abroad (e.g., Mexico) to retire. On the other hand, they may remain "stuck" in rural hinterlands or large urban centers, particularly the deteriorated parts of these areas.

Table 4 6 DISTRIBUTION OF THE WHITE, BLACK, AND SPANISH-HERITAGE POPULATION 65 YEARS OLD AND OVER BY URBAN AND RURAL RESIDENCE AND BY SIZE OF PLACE 1970

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Total	Urban	Rural
[illegible]													
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	432	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(NA)	NA	NA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NA	NA	NA	NA	NA
[illegible]													
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(NA)	(NA)	(NA)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(NA)	(NA)	NA	(NA)	(NA)
PERCENT [illegible]													
Total	[illegible]	[illegible]	[illegible]	[illegible]	21.2	[illegible]	[illegible]	27.1	[illegible]	22.6	[illegible]	69.6	30.4
White	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	27.4	4.4	22.7	100.0	[illegible]	30.3
Negro and other races	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.9	[illegible]	100.0	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20.7	(NA)	(NA)	(NA)
Spanish heritage¹	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(NA)	(NA)	(NA)	(NA)	(NA)

NA Not available.

[1] For New York, New Jersey, and Pennsylvania, persons of Puerto Rican birth and parentage; for five Southwestern States, persons of Spanish language or Spanish surname; for remaining States, persons of Spanish language. Note that persons of Spanish origin may be of any [illegible]

Source: U.S. Bureau of the Census, 1970 General Population Characteristics, Final Report, PC(1)-B1, United States Summary, table 52, and PC(1)-C1, United States Summary, table [illegible]

Chapter V.
MORTALITY AND SURVIVAL

Quantity vs. Quality of Life

Progress in the control or management of the aging process from a demographic point of view is measured principally in terms of the increase in the "quantity" of life, as shown, for example, by reductions in mortality rates and increases in survival rates or in average years of remaining life. Progress may also be measured in terms of improvements in the "quality" of life, as shown, for example, by reductions in the incidence rates and prevalence rates for morbidity, mental illness, and disability, in the proportions of the population hospitalized and institutionalized, and in proportions widowed or living alone. The discussion here is largely concerned with the quantity dimension, and gives little direct consideration to the quality dimension. Some attention is devoted to marital status and living arrangements as social characteristics of the population but health status is not discussed.[1]

The preoccupation with mortality, survival, and longevity should not be interpreted to imply that the quality of life is less important, only that it is a less appropriate and common area of demographic study, which has as its primary interest population size, geographic distribution, and structure. In fact, a principal concern of public and private effort should be to make the later years of life vigorous, healthy, and satisfying, not merely to add additional years of life. Hayflick has suggested that, given a human life span of about 100 years, society's goal might be that all persons should live healthy and active lives until their 100th birthdays and then die peacefully in their sleep as they begin their 101st year.[2]

Life Expectancy

Progress in the reduction of mortality or in extending length of life is often measured by life expectancy at birth. Life expectancy at birth is a capsulized indicator ("standardized" for differences in age composition to a limited degree) of progress in the elimination of premature death at all ages. It has shown a tremendous increase since the beginning of this century, having risen from 49 years in 1900-02 (Original Death Registration States) to 69.5 years in 1955, 71.3 years in 1973, and 71.9 years in 1974. (See table 5-1.) These figures imply a total gain of about 20 years in life expectancy in the first 55 or so years of this century, or an average annual gain of 0.4 year in this period. A plateau was reached about 1954-55, and in the 19 years from 1955 to 1974, life expectancy at birth has advanced haltingly and slowly, with the gain amounting to about 2½ years in this whole period or 0.13 year annually.

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[1] Few satisfactory summary studies giving national analyses of the health, living arrangements, and kinship network of the older population from a demographic point of view are available. Some references which present and analyze basic data relating to health are Erdman Palmore (ed.), Normal Aging Reports from the Duke Longitudinal Study, 1955-1969, Duke University Press, Durham, N.C., 1970, esp. Chapters 2 and 3 U S Bureau of the Census, 1970 Census of Population, Subject Report PC(2)-4E, Persons in Institutions and Other Group Quarters, 1973, and Subject Report PC(2)-6C, Persons with Work Disability, 1973. U.S. Public Health Service, National Center for Health Statistics, Vital and Health Statistics, "Current Estimates from the Health Interview Survey, United States, 1974", by Peter W. Ries, Series 10, No. 100, September 1975, and "Age Patterns in Medical Care, Illness, and Disability, United States, 1968-1969", by Christy Namey and Ronald W. Wilson, Series 10, No. 70, April 1972, and U.S. Public Health Service, National Center for Health Statistics, Health in the Later Years of Life, 1971, and Health in the United States, 1975, 1976.

[2] Leonard Hayflick, "The Strategy of Senescence," The Gerontologist, Vol. 14, No. 1, Feb. 1974, pp. 37 45, esp p 40 and p. 43.

Table 5 . AVERAGE REMAINING LIFETIME, AVERAGE YEARS LIVED IN INTERVAL, AND PROPORTION SURVIVING, FOR VARIOUS AGES AND AGE INTERVALS, BY RACE AND SEX. 1900 TO 1974

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1929-31	1900-02
[illegible]									
[illegible]									
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	68.1	[illegible]	59.2	49.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12.8	12.8	12.3	11.9
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8.4	[illegible]	7.3	7.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]									
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	55.5	52.9	44.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11.1	11.4	10.4	[illegible]
[illegible]									
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	474	[illegible]	529	409
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	424	[illegible]	321	331
[illegible]									
[illegible]									
[illegible]									
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	48.8	59.7	48.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12.8	[illegible]	11.8	11.7
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.2	[illegible]	6.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.9	3.4	3.3	3.3
[illegible]									
[illegible]	56.6	55.2	54.1	5[illegible]	58.8	58.2	51.8	52.9	43.7
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10.5	11.2	10.1	9.9
[illegible]									
[illegible]	.665	663	[illegible]	[illegible]	[illegible]	[illegible]	562	530	392
[illegible]	401	[illegible]	[illegible]	395	[illegible]	276	.341	325	313
Female									
Average remaining lifetime									
[illegible] years	76.6	[illegible]	74.7	74.2	72.6	72.[illegible]	67.[illegible]	62.7	51.1
65 years	17.6	[illegible]	16.3	15.9	15.[illegible]	15.[illegible]	13.[illegible]	12.8	12.2
75 years	10.7	[illegible]	9.[illegible]	[illegible]	9.[illegible]	8.9	7.8	7.[illegible]	7.3
85 years	6.1	[illegible]	[illegible]	6.7	[illegible]	[illegible]	5.9	5.6	5.5
Average years lived in interval[1]									
[illegible] years	62.0	61.[illegible]	61.5	61.4	61.[illegible]	60.5	58.6	54.9	45.7
[illegible] years	12.6	12.[illegible]	12.2	12.2	1[illegible]	11.7	11.1	10.7	10.3
Proportion surviving									
[illegible] years	.827	81[illegible]	811	807	[illegible]	768	687	605	438
[illegible] years	413	397	375	353	[illegible]	495	420	381	350
NEGRO AND OTHER RACES									
Male									
Average remaining lifetime									
0 years	62.9	61.[illegible]	61.1	61.[illegible]	61.[illegible]	58.9	52.3	47.6	32.5
65 years	13.[illegible]	12.9	12.6	12.8	13.[illegible]	12.8	12.2	10.9	10.4
75 years	9.[illegible]	10.2	9.8	8.9	10.4	8.8	8.2	7.0	6.6
85 years	5.3	9.4	8.3	6.9	8.9	7.1	6.6	5.4	5.1
Average years lived in interval									
[illegible] years	55.8	54.[illegible]	54.7	54.9	54.[illegible]	53.1	47.9	44.6	30.6
[illegible] years	10.3	9.8	9.7	10.2	9.8	10.1	9.9	9.3	9.1
Proportion surviving									
[illegible] 65 years	.529	492	504	514	500	458	.354	283	.190
65 to 85 years	.376	338	.353	.389	372	374	.345	.281	254
Female									
Average remaining lifetime									
[illegible] years	71.2	69.[illegible]	67.4	66.5	65.5	62.7	55.6	49.5	35.9
65 years	16.[illegible]	16.1	15.5	15.1	15.5	14.[illegible]	13.9	12.2	11.4
75 years	11.8	12.1	11.2	10.1	12.0	10.2	9.8	8.6	7.9
85 years	9.9	10.1	9.0	7.7	10.1	8.2	8.0	6.9	6.5
Average years lived in interval									
[illegible] years	59.5	58.5	57.7	57.[illegible]	56.8	55.1	49.9	45.7	32.5
[illegible] years	11.6	11.1	11.0	11.3	10.8	10.8	10.6	9.8	9.4
Proportion surviving									
[illegible] years	.699	657	626	604	587	524	466	309	220
[illegible] years	.517	487	493	498	468	453	421	351	305

[1] Negro only for 1929-31 and 1900-02.

Source: Life table published by the National Center for Health Statistics, U.S. Public Health Service, and the U.S. Bureau of the Census. For 1974, see [illegible] Mortality statistics, [illegible], Monthly vital statistics report, Vol. 24, No. 11, February 1976. Derived figures prepared by the U.S. Bureau of the Census.

Since life expectation at birth is a function of death rates at all ages, it does not tell us at what ages the improvement occurred. We want particularly to distinguish progress in life expectation or survival at the ages under 65 from progress at the ages over 65. We can summarize changes in death rates in these and other age ranges in terms of life table survival rates and in terms of "age-bounded expectancy values." According to the life table of 1900-02, 41 percent of the newborn babies would reach age 65, but according to the life table for 1974, 74 percent would reach age 65—a gain of 33 persons aged 65 per 100 babies. The proportion of persons surviving from age 65 to age 80 was 33 percent in 1900-02 and 51 percent in 1974 - a gain of 18 persons aged 80 per 100 persons aged 65. Accordingly, the chance of survival from birth to age 65 and the chance of survival from age 65 to age 80 are both much higher than earlier, but the increase in the survival rate of persons above age 65 has been notably smaller than at the younger ages. The corresponding survival rates for 1955 (71 percent and 45 percent) were, respectively, only a little lower, and substantially lower, than those for 1974.

Changes in "life expectation" for ages below 65, represented here by the average years of life lived between birth and age 65,[3] may be compared with changes in life expectation at age 65, to illustrate these differences further. Average years of life lived below age 65, which can have a peak value of 65, increased from 44 years in 1900-02 to 60 years in 1974 (i.e., by 16 years), while average years of life remaining at age 65 has moved ahead more slowly, from 11.9 years in 1900-02 to 15.6 years in 1974 (i.e., by 3.7 years). According to these measures, "life expectation" values increased relatively little between 1955 and 1974, both for ages under 65 and at age 65. Most or nearly all of the progress in life expectation recorded for the period 1900-02 to 1974 at the younger ages, occurred by 1955, therefore. The modest progress at the older ages was more evenly distributed over the period since 1900. (See figure 5-1.)

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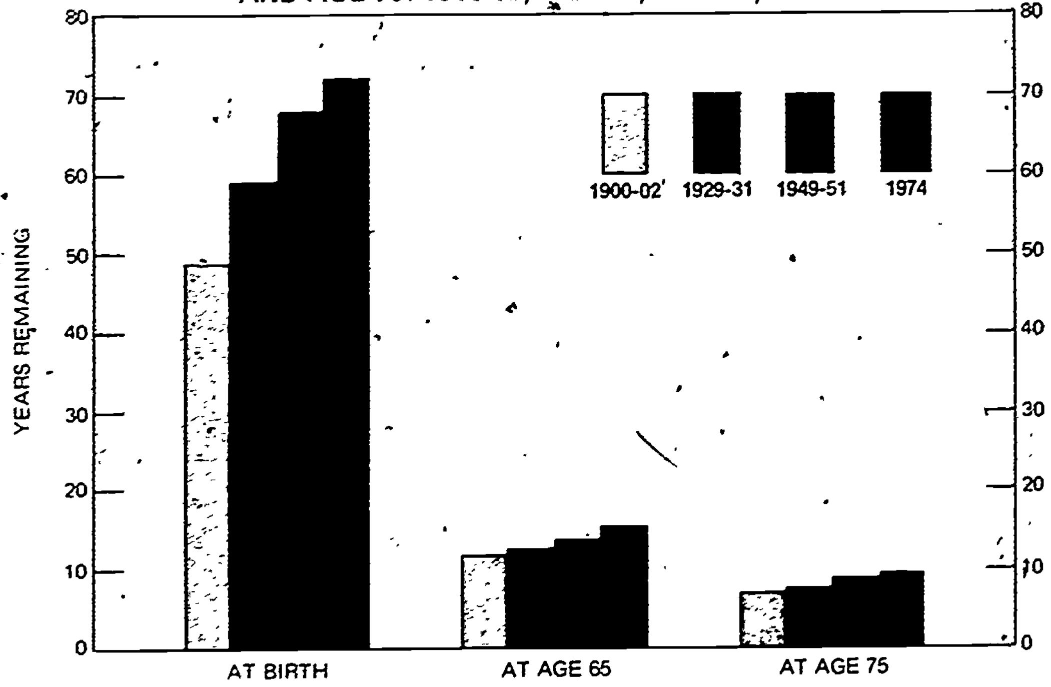
[3] The value for average years of life lived between birth and age 65 is computed by the formula $\frac{T_0 - T_{65}}{l_0}$ from the life table.

Figure 5-1. AVERAGE REMAINING LIFETIME AT BIRTH AND AT AGE 65 AND AGE 75: 1900-02, 1929-31, 1949-51, AND 1974



Source Table 5-1 and National Center for Health Statistics, *Monthly Vital Statistics Reports*, V 23, No. 13

Age specific death rates at the older ages for the years 1940 to 1974 reflect a sharp deceleration of the reduction in mortality among the older population in the late 1950's and the 1960's, as compared with earlier years (table 5-2 and figure 5-2). For example, the death rate at ages 55 to 64, 65 to 74, and 75 to 84 each dropped about 22 percent between 1940 and 1954 but remained nearly unchanged between 1954 and 1968. The annual data for the late sixties and early seventies suggest that another turning point in the trend of mortality at the older ages was reached about 1968 and that mortality at these ages may be on its way down again. The reasons for the fluctuations of the death rates for the older population are not well known. An initial understanding of these changes may be pursued in terms of an examination of death rates specific by sex, race, and cause of death.[4]

Sex Differences

Mortality rates of males in the United States, as well as in other economically developed countries, are now well above those of females throughout the age scale. For the leading causes of death males tend to be the sex more likely to die, although a higher percentage of females have one or more chronic conditions, females have higher disability (restricted activity) rates when ill, and females suffer excess morbidity from acute conditions.[5] Diseases in which males show an excess predominate as causes of death and those for which females show an excess predominate as causes of sickness. As a result, life expectation for females far exceeds that for males, in 1974 there was a difference of nearly eight years (table 5-1). Expectation of life at birth in the United States in 1974 was 68.2 years for males and 75.9 years for females. A large part of this difference is accounted for by the difference in death rates between the sexes over age 65. Expectation of life at age 65 was 13.4 years for males and 17.5 years for females in 1974. The difference in average years of life lived under age 65 is about 2½ years while the difference in average years of remaining life at age 65 is about 4 years.

Males and females have not shared equally in the progress in mortality reduction in this century, particularly at the older ages. In 1900-02 females had only a small advantage over males in life expectation at birth (2.9 years). Between 1900-02 and 1974 expectation of life at birth increased 20 years for males and 25 years for females, so that about 5 years were added to the original difference of almost 3 years.

Table 5-2. DEATH RATES FOR THE POPULATION 55 YEARS OLD AND OVER, BY AGE: 1940 TO 1974

Year and period	55 to 64 years	65 to 74 years	75 to 84 years	85 years and over	65 years and over
RATES PER 1,000 POPULATION					
1940	22.2	48.4	112.0	235.7	72.2
1954	17.4	37.9	86.0	181.6	58.6
1968	17.2	38.5	80.8	196.1	62.1
1973 (prov.)	16.1	34.4	79.8	174.5	58.8
1973	16.3	34.4	79.3	174.3	58.7
1974 (prov.)	15.4	33.4	76.4	164.9	56.8
PERCENT CHANGE					
1940-54	-21.6	-21.7	-23.2	-23.0	-23.2
1954-68	-1.1	+1.6	-6.0	+8.0	+5.6
1968-74	-10.5	-13.2	-5.4	-15.9	-9.3

Source: National Center for Health Statistics, U.S. Public Health Service, various annual volumes of Vital Statistics of the United States; National Center for Health Statistics, U.S. Public Health Service, various issues of Monthly Vital Statistics Report.

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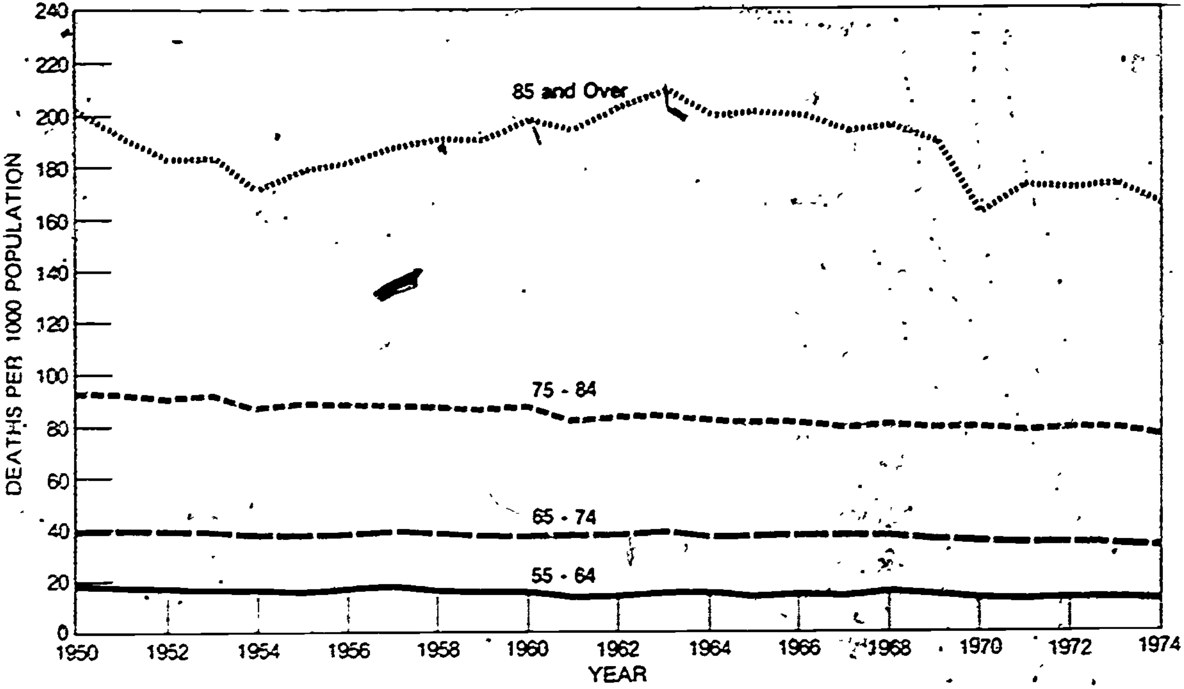
[4] Analysis of mortality data in terms of real birth cohorts, particularly by sex, race, and cause, should provide even more insight into the trends of mortality and the real prospects for survivorship of persons at various ages. Cohort analysis of mortality refers to analysis in terms of the death rates at successive ages in successive years for each group born in the same year or group of years, as contrasted with analysis in terms of the rates at a given age over time, called period analysis. See U.S. Public Health Service, National Center for Health Statistics, "Cohort Mortality and Survivorship: U.S. Death-Registration States, 1900-1968," by Iwao M. Moriyama and Susan O. Gustavus, Vital and Health Statistics, Series 3, No. 16, 1972.

[5] Based on data from the National Health Interview Survey, see National Center for Health Statistics, Vital and Health Statistics, Series 10, op. cit. See also Lois M. Verbrugge, "Sex Differentials in Morbidity and Mortality: A Riddle," paper presented at the annual meeting of the Population Association of America, Seattle, Wash., April 17-19, 1975, abstract published in Population Index, July 1975, pp. 410-411.

Figure 5-2. DEATH RATES FOR THE POPULATION 55 YEARS OLD AND OVER, BY AGE: 1950 TO 1974



Source. National Center for Health Statistics, *Vital Statistics of the United States*, 1960 and 1970, Vol. II, Part A, *Monthly Vital Statistics Reports*, Final Monthly Statistics, 1973, and Annual Summary for the United States, 1974.

As shown by the ratios of male death rates to female death rates for various years since 1900-02 given in table 5-3, reductions in death rates for females have far outpaced those for males at the older ages. In 1900-02 death rates of males at the older ages were only slightly above those for females, the excess averaged 10 percent for ages 65 and over. The progressive divergence of the rates brought the relative difference to over 70 percent in 1974. Death rates for the two sexes at these ages have been moving farther apart for both whites and Negroes-and-other-races. The divergence of the death rates of the sexes has been greater for the white population than for the Negro-and-other-races population, however, so that there is a greater relative difference between the sexes for the whites in 1974.

Life expectation at age 65 showed gains between 1900-02 and 1974 of 1.9 years for males and 5.3 years for females. As a result, 3.4 years were added to the original difference of less than 1 year. The differential gains in life expectation by sex at age 65 for the Negro-and-other-races population have been similar to those for whites. As a result, life expectation for Negro and other-races women at age 65 is also well above that for Negro-and-other-races men (16.7 vs. 13.4).

The life expectation for males and females for 1974 imply that the male female difference in life expectation at birth and at age 65 remained at about the same level between 1970 and 1974, i.e., about 7.7 years and 4.1 years, respectively. The figures also reflect a one-year increase in life expectancy at birth for males and females equal to or larger than any recorded in the last two decades (0.6 year).

The relative importance of "hereditary" (genetic and nongenetic) and "environmental" factors in influencing the relative longevity of males and females is unknown. The tendency of women to live longer than men may result largely or even wholly from differences in the environment, roles, and life-styles of men and women.[6] Generally males are engaged in the more stressful, physically demanding, and dangerous occupations. Many of the changes over time in the differences between male and female death rates are associated with social and environmental factors.[7] There is also strong evidence supporting a biological basis for the difference between the death rates of the sexes. For example, male fetal and

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[6] Erdman Palmore and Frances C. Jeffers (eds.), Prediction of Life Span, Heath Lexington Books, D.C. Heath and Co., Lexington, Mass., 1971, esp. pp. 283 and 285.

[7] Philip E. Enterline, "Causes of Death Responsible for Recent Increases in Sex Mortality Differentials in the United States," Milbank Memorial Fund Quarterly, Vol. 39, No. 2, 1961, pp. 312-328; Frank Godley and David Q. Kruegel, "Cigarette Smoking and Differential Mortality: New Estimates from Representative National Samples," paper presented at the annual meeting of the Population Association of America, Seattle, Wash., April 17-19, 1975, and Robert D. Retherford, "Tobacco Smoking and the Sex Mortality Differential," Demography, Vol. 9, No 2, 1972, pp. 203-216.

Table 5 3 RATIOS OF MALE TO FEMALE DEATH RATES FOR THE POPULATION 55 YEARS OLD AND OVER, BY AGE AND RACE: 1900 TO 1974

Race and year	55 to 64 years	65 to 74 years	75 to 84 years	85 years and over	65 years and over
ALL CLASSES					
1900[1]	1.14	1.11	1.08	1.05	1.06
1940	1.45	1.29	1.17	1.08	1.17
1954	1.82	1.57	1.29	1.06	1.30
1968	2.08	1.88	1.45	1.06	1.42
1974	2.07	1.96	1.55	1.23	1.46
WHITE					
1900[1]	1.12	1.11	1.08	1.05	1.06
1940	1.50	1.30	1.16	1.07	1.17
1954	1.91	1.59	1.29	1.04	1.31
1968	2.19	1.92	1.45	1.08	1.43
1974	2.14	2.02	[illegible]	1.25	1.47
NEGRO AND OTHER RACES					
1900[3]	1.00	1.06	1.16	1.27	1.06
1940	1.11	1.22	1.29	1.25	1.18
1954	1.33	1.30	1.29	1.30	1.24
1968	1.57	1.37	1.40	1.05	1.36
1974[2]	1.73	1.54	1.40	1.17	1.38

[1] For the original Death Registration States

[2] Provisional data.

[3] For the original Death Registration States black population only.

Source U.S. Bureau of the Census, United States Life Tables, 1930, 1936 National Center for Health Statistics, U.S. Public Health Service, annual volumes of Vital Statistics of the United States, 1940, 1954, and 1968 and Monthly Vital Statistics Report, Provisional Statistics, 1974.

infant mortality is greater than female fetal and infant mortality A study of mortality in male and female Catholic teaching orders, whose living conditions are nearly equal, tends to support a biological hypothesis.[8] We may secure an answer to the question as to why women live longer than men if the present tendencies for the environment, roles, and life styles of men and women to be more similar and the present tendencies for sexual differentiation to diminish continue.[9] In the U.S.S.R., where there is less differentiation in the occupational roles of men and women than in the United States, however, there is an even greater gap in life expectation at birth (9.2 years in 1970) in favor of females than here.

One tenable hypothesis regarding the basis of the difference in life expectation of the sexes is that women have superior vitality and, with the virtual elimination of the infectious and parasitic illnesses and maternal mortality and the consequent emergence of the "chronic degenerative" diseases, such as diseases of the heart, cerebrovascular diseases, and malignant neoplasms, as the leading causes, this vital superiority has been increasingly evidenced. Males succumb more frequently and more readily to most of these diseases for reasons that are not well understood. This divergence of male and female death rates is occurring in spite of the fact that the differences in the life-styles and roles of men and women have diminished. Social factors continue to account for an important part of the difference directly, or indirectly by their influence on and interaction with genetic or biological factors. For example, women are more likely to secure earlier diagnosis and appropriate treatment for health conditions, including particularly the serious illnesses.

Race Differences

Life expectation at birth of whites in 1974 (72.7 years) is well above that for Negroes-and-other-races (67.0 years) and most of this difference is accounted for by the lower death rates of whites at the ages below 65. The difference between the races in average years of life lived between birth and age 65 in 1974 is about 3.2 years. For ages 65 and over as a whole, it would appear from the slightly higher life expectancy of whites at age 65 that whites have slightly lower death rates at these ages (table 5-1). Death rates of whites are, in fact, substantially lower at ages 65-69 and 70-74. By ages 75-79, however, the reported death rates have nearly converged and, from ages 80-84 on, blacks appear to have the lower rates. At ages 65-74 in 1974 the recorded death rate for Negroes-and-other-races was a third greater than the death rate for whites, but at ages 75-84 the recorded death rate for Negroes-and-other-races was 10 percent below the death rate for whites (table 5-4).

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[8] Francis C Madigan, "Are Sex Mortality Differentials Biologically Caused?", Milbank Memorial Fund Quarterly, Vol. 35, No 2, 1957, pp 202-223

[9] Palmore and Jeffers, op. cit., p 285

The magnitude, and possibly even the direction, of differences between the death rates of the races at the older ages are subject to uncertainty. The basic data, especially for blacks, are subject to major errors. The differences in recorded death rates of blacks and whites at these higher ages may be in part a result of reporting errors in the census, especially misreporting of age of blacks, and in part a result of reporting errors in death registration, especially misreporting of age on death certificates for blacks. Calculations of death rates based wholly on Social Security ("Medicare") data agree with death rates based on vital statistics in indicating a "crossover" of the rates for the two races at ages 80-84 and a steady divergence of the rates thereafter.[10] On the other hand, the Social Security data reflect smaller differences between the races at the older ages than the vital registration statistics.

At least some, if not most, of the difference between death rates for whites and blacks not explainable by errors in the data may be accounted for by differences in the socioeconomic status (occupation, education, and income) of the race groups. There is evidence of differences in mortality rates according to socioeconomic status. Analysis of deaths and death rates in the four-month period, May-August 1960, based on a match of death certificates and census records, indicates that, in general, death rates vary inversely with educational attainment, income, and occupational level, even considering whites and blacks separately.[11] The pattern is rather consistent among persons aged 25 to 64 but hardly applies to persons 65 and over. The chances of reaching age 65 are clearly better for the more affluent, better educated, and more highly placed persons. In addition to socioeconomic status, other social, economic, and cultural factors may contribute to the difference between the death rates for the races. Genetic factors may also play a significant part; recent investigations have revealed that specific gene-linked diseases have an affinity for certain ethnic and racial

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[10] Francisco Bayo, "Mortality of the Aged," Transactions, Society of Actuaries, Vol. 24, Part I, No. 3, March 1972, pp. 1-24.

[11] Evelyn M. Kitagawa and Philip M. Hauser, **Differential Mortality in the United States: A Study in Socioeconomic Epidemiology**, Harvard Univ. Press, Cambridge, Mass., 1973, esp. pp. 11, 14, and 157.

Table 5-4 RATIOS OF NEGRO-AND-OTHER-RACES TO WHITE DEATH RATES FOR THE POPULATION 55 YEARS OLD AND OVER, BY AGE AND SEX: 1900 TO 1974

Sex and year	55 to 64 years	65 to 74 years	75 to 84 years	85 years and over	65 years and over
ALL CLASSES					
1900[1]	1.56	1.23	0.98	0.82	1.13
1940	1.79	1.08	0.85	0.73	1.01
1954	1.70	1.33	0.82	0.53	0.98
1968	1.69	1.56	0.87	0.54	1.08
1974[2]	1.54	1.32	0.91	0.66	0.98
MALE					
1900[1]	1.48	1.21	1.02	0.93	1.13
1940	1.47	1.16	0.89	0.79	1.02
1954	1.49	1.08	0.80	0.56	0.95
1968	1.49	1.39	0.85	0.54	1.05
1974[2]	1.43	1.17	0.84	0.63	0.94
FEMALE					
1900[1]	1.65	1.24	0.95	0.76	1.13
1940	1.97	1.26	0.80	0.68	1.00
1954	2.13	1.27	0.81	0.60	1.00
1968	2.07	1.82	0.88	0.55	1.10
1974[2]	1.77	1.53	0.94	0.67	1.00

[1] For the original Death Registration States black population only.

[2] Provisional data.

Source: U.S. Bureau of the Census, United States Life Tables: 1930, 1936, National Center for Health Statistics, U.S. Public Health Service, annual volumes of Vital Statistics of the United States, 1940, 1954, and 1968, and Monthly Vital Statistics Report, Provisional statistics, 1974.

groups.[12] The relatively favorable mortality position of blacks as compared with whites above age 65 suggests that socioeconomic differences do not "operate" at the older ages as they do at the ages below 65. One explanatory hypothesis is that those blacks who have survived the excessive environmental stresses of their younger years may be destined by natural selection to live an especially long life.

Cause of Death

"Diseases of the heart" far outranks any other cause of death among persons 65 and over. Rates (per 100,000 population) at ages 65 and over for the 10 leading causes of death in 1973 are shown in table 5-5. Malignant neoplasms (cancer) and cerebrovascular diseases (mainly stroke) hold second and third place, respectively. Taken together, these three causes accounted for three out of four deaths at ages 65 and over in 1973. Other leading causes, in rank order, are influenza and pneumonia, arteriosclerosis, accidents, diabetes, bronchitis, emphysema, and asthma; cirrhosis of the liver, and infections of the kidney. These are all far less frequent than the leading three, however.

Rates for males 65 years and over as a whole for diseases of the heart and malignant neoplasms are far above those for women, as shown by the sex ratios of death rates for the leading causes of death in 1973 (table 5-6). There is a considerable excess of male mortality also for influenza and pneumonia, accidents, and bronchitis, emphysema, and asthma. The cerebrovascular diseases, arteriosclerosis, and infections of the kidney show little preference for one sex or the other. On the other hand, the rate for diabetes is somewhat higher for women. For all 10 leading causes except diabetes and infections of the kidney, the rates for males at ages 65-74 are well above those for females.

Death rates for several leading causes for the ages 65 and over as a whole are rather similar for Negroes-and-other-races and for whites. The rate for Negroes-and-other-races is considerably lower for arteriosclerosis and "bronchitis, emphysema, and asthma" and considerably higher for diabetes and infections of the kidney, but for the other leading causes the rates for whites and Negroes-and-other-races differ relatively little (table 5-7). A striking difference appears for ages 65-74 and 75-84. The rates at ages 65-74 are substantially higher for Negroes-and-other-races than for whites for all the major causes of death except "bronchitis, emphysema, and asthma," and cirrhosis of the liver. At ages 75-84, however, the opposite appears to be the case; recorded death rates for the older age group are lower for Negroes-and-other-races for most major causes. Rates for cerebrovascular diseases, influenza and pneumonia, arteriosclerosis, diabetes, and infections of the kidney are far higher for Negroes-and-other-races at ages 65-74 than for whites and then the differences drop sharply at ages 75-84. As suggested earlier, because of errors of reporting in the census and in the death registration, the real shift from ages 65-74 to 75-84 may be less pronounced than is indicated by these figures.

There were increases in the last few decades in the death rates at the older ages from some causes of death and decreases in the death rates for others. The rates for diabetes, "bronchitis, emphysema, and asthma," and cirrhosis of the liver showed increases, while the rates for diseases of the heart, cerebrovascular diseases, influenza and pneumonia, and arteriosclerosis showed decreases. The rates for malignant neoplasms, influenza and pneumonia, and accidents have not changed much.

Table 5-5 DEATH RATES FOR THE TEN LEADING CAUSES OF DEATH, FOR AGES 65 AND OVER, BY AGE: 1973

[illegible]	65 years and over	65 to 74 years	75 to 84 years	85 years and over
[illegible]	5,871.1	3,5[illegible]0.0	7,[illegible] 1	17,[illegible]
[illegible]	2,643.2	1,461.6	3,6[illegible].2	8,282.1
[illegible]	946.7	768.1	1,187.4	1,531.3
[illegible]	839.3	355.1	1,233.5	3,197.9
[illegible]	210.3	82.1	295.6	910.1
[illegible]	156.0	32.4	170.6	890.2
[illegible]	127.7	77.5	160.6	401.2
[illegible]	39.2	29.1	40.7	34.7
[illegible]	94.5	58.1	114.8	369.5
[illegible]	126.3	85.4	179.7	245.9
[illegible]	97.7	79.1	126.2	133.2
[illegible]	37.4	44.6	28.8	[illegible]
10 Infections of kidney	22.9	11.1	32.2	81.6
All [illegible]	676.4	482.7	887.8	1,728.7

[illegible] Center for Health [illegible] Vital Statistics of [illegible] Mortality, Part A, 1973 (forthcoming). (See table 5-8.)

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[12] Aaron Shiloh and Ida Cohen Selavan (eds.), Ethnic Groups of America. Their Morbidity, Mortality, and Behavior Disorders, Vol. I, The Jews, 1974, esp. pp. xv and xvi, and Vol. II, The Blacks, Charles C Thomas, Publisher, Springfield, Ill., 1975.

Table 5-6 RATIOS OF MALE DEATH RATES TO FEMALE DEATH RATES FOR THE TEN LEADING CAUSES OF DEATH, FOR AGES 65 AND OVER, BY AGE: 1973

Cause of death	65 years and over	65 to 74 years	75 to 84 years
All causes	1.455	1.935	1.540
Diseases of heart	1.434	2.080	1.485
Malignant neoplasms	1.779	1.834	1.878
Cerebrovascular diseases	1.028	1.411	1.146
Influenza and pneumonia	1.555	2.248	1.890
Arteriosclerosis	0.952	1.519	1.201
Accidents	1.516	2.055	1.575
Motor vehicle	2.295	2.085	2.483
All other	1.313	2.036	1.352
Diabetes mellitus	0.860	0.920	0.889
Bronchitis, emphysema, and asthma	5.422	5.361	6.394
Cirrhosis of liver	2.642	2.678	2.354
Infections of kidney	1.063	1.065	1.248
All other causes	1.734	2.064	1.861

Source: Prepared on basis of data from U.S. Public Health Service, National Center for Health Statistics, Vital Statistics of the United States, Mortality, Part A, 1973 (forthcoming). See table 5-8.

Table 5-7 RATIOS OF NEGRO-AND-OTHER-RACES DEATH RATES TO WHITE DEATH RATES FOR THE TEN LEADING CAUSES OF DEATH, FOR AGES 65 AND OVER, BY AGE: 1973

Cause of death	65 years and over	65 to 74 years	75 to 84 years
All causes	0.993	1.340	0.930
Diseases of heart	0.888	1.208	0.838
Malignant neoplasms	1.019	1.157	0.844
Cerebrovascular diseases	1.101	1.937	1.016
Influenza and pneumonia	0.931	1.641	0.915
Arteriosclerosis	0.759	1.669	0.840
Accidents	0.980	1.400	0.896
Motor vehicle	1.033	1.282	0.769
All other	0.962	1.476	0.941
Diabetes mellitus	1.511	2.141	1.217
Bronchitis, emphysema, and asthma	0.449	0.457	0.452
Cirrhosis of liver	0.826	0.841	0.728
Infections of kidney	1.416	2.240	1.295
All other causes	1.305	1.613	1.212

Source: Prepared on basis of data from U.S. Public Health Service, National Center for Health Statistics, Vital Statistics of the United States, Mortality, Part A, 1973 (forthcoming). (See table 5-8.)

Death rates from some leading causes for men have risen in the last few decades (e.g., malignant neoplasms and diabetes), while the death rates for women from these causes have declined. For some other leading causes, the death rates for females have fallen more rapidly than the death rates for men (e.g., diseases of heart and cerebrovascular diseases) or the death rates for men have risen more rapidly than the death rates for women (e.g., "bronchitis, emphysema, and asthma," and cirrhosis of the liver). As a result, the gap between the death rates of men and women aged 65 and over for malignant neoplasms, "bronchitis, emphysema, and asthma," cirrhosis of the liver, diseases of the heart, and cerebrovascular diseases has widened, and the gap between the death rates for diabetes has narrowed. Death rates for specific age groups 55 and over for selected causes by sex and race for 1940, 1954, and 1973 are shown in table 5-8.[13]

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[13] See also U.S. Public Health Service, National Center for Health Statistics. Vital and Health Statistics, "Mortality Trends for Leading Causes of Death, United States–1950-69," by A. J. Klebba, J.D. Maurer, and E.J. Glass, Series 20, No. 16, March 1974, and "The Change in Mortality Trend in the United States," by Iwao M. Moriyama, Series 3, No. 1, March 1964.

Table 5 8 DEATH RATES FOR SELECTED CAUSES OF DEATH FOR THE POPULATION 55 YEARS OLD AND OVER, BY AGE, RACE, AND SEX: 1940, 1954, AND 1973

Rates per 100,000 population

[illegible]	[illegible]			[illegible]			[illegible]			[illegible]		
	1940	1954	1973	1940	1954	1973	1940	1954	1973	1940	1954	1973
[illegible]												
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Negro and other races												
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]												
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]												
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Negro and other races												
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,264.5	[illegible]	[illegible]	1,600	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	608	[illegible]	[illegible]
[illegible]												
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]												
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]												
Male	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	119.4	[illegible]	228.9	[illegible]	1,041.9	774.0	1,324.[illegible]
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	659.4	189.[illegible]	[illegible]	1,935.5	669.4	[illegible]
Male	[illegible]	31.6	[illegible]	147.5	[illegible]	113.6	729.2	254.7	417.8	2,091.3	765.3	1,167.[illegible]
Female	[illegible]	14.2	18.9	[illegible]	[illegible]	[illegible]	663.4	189.[illegible]	222.7	2,015.5	683.2	855.3
Negro and other races												
Male	[illegible]	[illegible]	[illegible]	[illegible]	158.8	178.2	736.4	261.[illegible]	[illegible]	[illegible]	668.2	696.2
Female	[illegible]	51.2	36.6	[illegible]	175.2	65.5	660.6	196.5	184.6	1,299.8	503.1	437.5
ARTERIOSCLEROSIS												
Male	[illegible]	52.9	[illegible]	[illegible]	[illegible]	45.1	464.8	257.9	212.[illegible]	1,664.6	1,374.8	890.1
Female	[illegible]	[illegible]	4.2	[illegible]	48.6	26.6	379.8	298.9	176.9	1,472.3	1,401.8	890.3
White												
Male	[illegible]	11.6	[illegible]	[illegible]	[illegible]	[illegible]	474.2	373.5	[illegible]	1,757.6	[illegible]	929.6
Female	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	24.5	378.3	303.3	178.8	1,558.1	[illegible]	927.8
Negro and other races												
Male	[illegible]	[illegible]	[illegible]	[illegible]	115.1	56.7	[illegible]	289.5	175.6	[illegible]	650.0	646.2
Female	[illegible]	27.2	[illegible]	[illegible]	[illegible]	46.2	[illegible]	224.7	[illegible]	[illegible]	625.3	468.2

See footnotes at end of table.

Table 5-8 DEATH RATES FOR SELECTED CAUSES OF DEATH FOR THE POPULATION 55 YEARS OLD AND OVER, BY AGE, RACE, AND SEX. 1940, 1954, AND 1973—Continued

[illegible]

[illegible]	[illegible] 64 years			65 to 74 years			75 to 84 years			85 years and over		
	1940	1954	1973	1940	1954	1973	1940	1954	1973	1940	1954	1973
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	27.6
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	223.0	[illegible]	142.2	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	188.6
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	222.2	[illegible]	[illegible]
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	229.2	[illegible]	242.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	256.2	[illegible]	[illegible]
[illegible]												
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	177.5	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] diseases [illegible] vascular lesions affecting the central nervous system [illegible] and other renal sclerosis.

Source: [illegible] Public Health Service, Vital Statistics Rates in the United States, 1940-1960, table [illegible] and Vital [illegible]

Some diseases have all but been eliminated statistically speaking, since their actual elimination would add little to life expectancy. For instance, according to life tables for 1969-71 to be published by the National Center for Health Statistics, if tuberculosis were eliminated completely, there would be a mere 0.04 year gain in life expectancy at birth (table 5-9). On the other hand, if the major cardiovascular-renal diseases (principally, diseases of the heart, cerebrovascular diseases, arteriosclerosis, hypertension, and nephritis and nephrosis) were eliminated, there would be an 11.8-year gain in life expectancy at birth, and even an 11.4 year gain in life expectation at age 65. The corresponding figures for heart diseases, the principal component of this category, are 5.9 years and 5.1 years. Second in rank with respect to the possible gain in expectation of life at birth that would be realized if a category of diseases were eliminated is malignant neoplasms, with a gain of 2.5 years, but since these diseases affect a wide span of ages, the gain at age 65 would be only about half as great (1.4 years). The gain at birth from eliminating any other major category amounts to less than one year, e.g., 0.5 year for influenza and pneumonia.

According to the life tables by cause for 1969-71, a newborn infant has a 59 percent chance of eventually dying from a major cardiovascular-renal disease and a 16 percent chance of eventually dying from cancer (table 5-10). The probabilities of eventually dying from diseases of the heart and cerebrovascular diseases, the major components of the former category, are 41 percent and 12 percent, respectively. The probability of eventually dying from any other particular cause is less than 5 percent.

Death rates at ages below 65, except infancy, have fallen so low that the chances of eventually dying from most of the major causes are not grossly different at age

Table 5 9 GAIN IN EXPECTATION OF LIFE AT BIRTH AND AT AGE 65 DUE TO ELIMINATION OF VARIOUS CAUSES OF DEATH, BY RACE AND SEX: 1969-71

Cause of death	Total		White				Negro and other races			
			Male		Female		Male		Female	
	At birth	At age 65	At birth	At age 65	At birth	At age 65	At birth	At age 65	At birth	At age 65
Major cardiovascular-renal diseases..........	11.8	11.6	10.5	9.5	12.0	12.2	10.4	10.4	15.3	15.1
Diseases of the heart.	5.9	5.1	4.1	4.9	5.2	5.0	5.3	4.8	6.3	5.8
Cerebrovascular diseases..............	1.2	1.2	0.9	0.9	1.4	1.3	1.4	1.3	2.2	1.9
Malignant neoplasms¹...	2.5	1.4	2.3	1.4	2.6	1.2	2.3	1.7	2.4	1.2
Motor vehicle accidents..	0.7	0.1	0.9	0.1	0.4	0.1	1.0	0.1	0.4	(Z)
All accidents excluding motor vehicles	0.6	0.1	0.8	0.1	0.4	0.1	1.2	0.2	0.5	0.1
Influenza and pneumonia	0.5	0.2	0.4	0.2	0.4	0.2	0.8	0.2	0.7	0.3
Diabetes mellitus..	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.4	0.4
Infective and parasitic diseases	0.2	0.1	0.1	(Z)	0.1	Z	0.4	0.1	0.1	0.1
Tuberculosis	(Z)	(Z)	(Z)	(Z)	(Z)	Z	0.1	0.1	0.1	Z

Z Less than 0.05 percent.

¹Including neoplasms of lymphatic and hematopoietic tissues.

Source: U.S. Public Health Service, National Center for Health Statistics, "U.S. Life Tables by Causes of Death: 1969-71," by T.N.E. Greville, U.S. Decennial Life Tables for 1969-71, Vol. 1, No. 5, 1976 (forthcoming).

65 from the chances of eventually dying from them at birth. The chance of eventually dying from the major cardiovascular-renal diseases is somewhat higher (67 percent), and the chance of eventually dying from cancer is a little lower (15 percent), at age 65 than at birth. Roughly speaking, a 65 year old has a 50 percent chance of eventually dying from diseases of the heart.

The life tables by cause of death for 1969 71 to be published by the National Center for Health Statistics, in combination with the corresponding tables for 1959 61, imply little change between 1959-61 and 1969 71 in the gains in life expectancy from eliminating such leading causes of death as the major cardiovascular-renal diseases, neoplasms, and "influenza, pneumonia, and bronchitis," and in the probability of eventually dying from these causes.[14] The gains in life expectancy from eliminating the major cardiovascular-renal diseases for 1959-61 are 10.9 years at birth and 10.0 years at age 65, both figures being about a year less than for 1969-71. The gain for malignant neoplasms for 1959-61 was about the same as for 1969-71–2.3 years.

Because of the low death rates at ages under 65 and the rather large proportion of older persons, the average age of persons dying from each of the leading causes is quite high. In 1973 the median age at death of persons dying from cardiovascular diseases was 75 years. The median age at death was 67 for malignant neoplasms, 76 for influenza and pneumonia, 71 for diabetes, and 70 for "bronchitis, emphysema, and asthma." It was somewhat lower for cirrhosis of the liver (56) and much lower for accidents (37). For all causes combined, the median age of persons dying is now 70, in 1900, when infectious and parasitic illnesses were much more common and the population had a much younger age distribution, it was only about 36.

Geographic Variations

Death rates for States have shown a steady, rapid convergence from at least 1929-31 (when the first complete set of life tables for States was prepared) to 1959-61, but little change in their degree of variation since that date. By 1959-61 the variation in life expectation at birth and at age 65 between the States had already become rather small (except possibly for Negroes at birth). The figures indicate a greater State variation for "blacks" than whites in death rates below age 65 but about the same small variation for each race group above age 65. In 1969-71 the variations in life expectation around the U.S. average were very similar to those in 1959-61 and, hence, were rather small. This variation may be represented by the average (mean)

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[14] U.S. Public Health Service, National Center for Health Statistics, "United States Life Tables by Causes of Death: 1959-61," by T N E Greville, Life Tables, 1959-61, Vol. 1, No. 6, 1968. See also Samuel Preston, Nathan Keyfitz, and Robert Schoen, Causes of Death: Life Tables for National Populations, Seminar Press, New York, 1972, pp. 768-771, corrective adjustments have to be made in these life tables, particularly in the table eliminating cardiovascular diseases, for the procedure used to "close out" the table.

Table 5-10 PROBABILITY AT BIRTH AND AT AGE 65 OF EVENTUALLY DYING FROM VARIOUS CAUSES, BY RACE AND SEX: 1969-71

Probability for persons at the indicated exact age of eventually dying from the specified cause	Total	White		Negro and other races	
		Male	Female	Male	Female
AT BIRTH					
Infective and parasitic diseases	.007	.007	.006	.017	.012
Tuberculosis	.002	.003	.001	.008	.004
Malignant neoplasms[1]	.163	.169	.159	.154	.135
Diabetes	.020	.015	.024	.017	.037
Major cardiovascular-renal diseases	.585	.565	.632	.472	.593
Diseases of the heart	.412	.422	.421	.317	.272
Cerebrovascular diseases	.122	.095	.151	.104	.160
Influenza and pneumonia	.034	.032	.035	.040	.035
Motor vehicle accidents	.020	.028	.012	.032	.011
All accidents excluding motor vehicles	.026	.030	.022	.043	.022
AT AGE 65					
Infective and parasitic diseases	.005	.006	.004	.013	.005
Tuberculosis	.002	.002	.001	.007	.003
Malignant neoplasms[1]	.145	.164	.126	.168	.112
Diabetes	.021	.016	.025	.018	.035
Major cardiovascular-renal diseases	.672	.640	.706	.604	.694
Diseases of the heart	.460	.460	.468	.401	.436
Cerebrovascular diseases	.149	.122	.171	.144	.190
Influenza and pneumonia	.037	.037	.037	.041	.034
Motor vehicle accidents	.006	.007	.004	.008	.003
All accidents excluding motor vehicles	.018	.016	.019	.028	.017

[1] Including neoplasms of lymphatic and hematopoietic tissues.

Source: U.S. Public Health Service, National Center for Health Statistics, "U.S. Life Tables by Causes of Death 1969-71," by T.N.E. Greville, U.S. Decennial Life Tables for 1969-71, Vol. I, No. 5, 1976 (forthcoming).

deviation of the values for States around the (unweighted) average (mean) of all the values. The mean deviation in life expectation at birth for States in 1969-71 was about 0.7 year for whites and 1.0 years for blacks (table 5-11); the corresponding figures at age 65 were 0.4 and 0.5 year.

For life expectancy at birth the West North Central Division appears to have the most favorable position and the South Atlantic Division the least favorable one, even though the geographic differences are small (table 5-12). The leading States are Hawaii, Minnesota, Utah, North Dakota, and Nebraska, and lagging States are District of Columbia, South Carolina, Mississippi, Georgia, and Louisiana. For expectation of life at age 65, most States in the West Region, the West North Central Division, and the West South Central Division exceeded the national average, while most States in the Northeast Region, and in the East North Central, the South Atlantic, and East South Central Divisions fell below the national average.

By 1969-71 expectation of life at birth for the leading State had reached 77.3 years for white females and 69.6 years for white males. The corresponding figures for blacks were much lower, 72.3 years for females and 63.7 years for males. As in the case of the United States as a whole, the "best" State showed little difference between the races in life expectancy at age 65: 18.2 years for white females vs. 17.5 years for black females, 14.2 years for white males vs. 14.3 years for black males. Depending on sex and race, expectation values for the worst State were 3½ to 5½ years lower at birth, and 2 to 2½ years lower at age 65, than for the best State (table 5-11).

Prospects for Mortality Reduction

The future number of elderly persons will depend directly on the progress in reducing death rates at the older ages as well as at the younger ages. We are interested, therefore, in the prospects for reduction of

Table 5 11 VARIATION IN LIFE EXPECTATION AT BIRTH AND AT AGE 65, BY RACE AND SEX, FOR STATES: 1969-71 AND 1959-61

Area and age	All classes	White		Black[1]	
		Male	Female	Male	Female
1969-71					
At birth					
High State	73.6	[2]69.6	[2]77.3	[3]63.7	[3]72.3
United States	70.6	67.9	75.5	61.0	69.1
Low State	68.7	[2]65.8	[2]73.7	[3]56.3	[3]67.1
Mean deviation[4]	1.15	0.85	0.56	1.34	[illegible]
At age 65					
High State	16.2	[2]14.2	[2]18.2	[3]14.3	[3]17.5
United States	15.0	13.0	16.9	12.9	16.0
Low State	14.4	[2]12.2	[2]16.1	[3]11.7	[3]15.1
Mean deviation[4]	0.46	.44	.45	.42	[illegible]
1959-61					
At birth					
High State	72.0	[2]69.2	[2]75.7	[5]64.3	[5]67.9
United States	69.9	67.6	74.2	61.5	66.5
Low State	66.4	[2]64.6	[2]72.7	[5]57.3	[5]63.4
Mean deviation[6]	1.05	0.68	0.62	1.13	0.93
At age 65					
High State	15.7	[2]14.3	[2]17.4	[5]13.7	[5]16.3
United States	14.4	13.0	15.9	12.8	15.1
Low State	13.6	[2]12.1	[2]15.0	[5]11.7	[5]13.9
Mean deviation[6]	0.41	0.44	0.47	0.47	0.53

[1] Data actually relate to Negro-and-other-races but figures represent over 90 percent of the total Negro-and-other-races population in the United States.

[2] Forty-eight States, excluding Alaska, Hawaii, and District of Columbia.

[3] Twenty-three States and District of Columbia, excluding California, Hawaii, and Oklahoma.

[4] Mean deviation around U.S. unweighted average 23 States and District of Columbia for black, excluding California, Hawaii, and Oklahoma.

[5] Twenty-one States and District of Columbia, excluding California, Hawaii, and Oklahoma.

[6] Mean deviation around U.S. unweighted average 21 States and District of Columbia for black, excluding California, Hawaii, and Oklahoma.

Source: National Center for Health Statistics, U.S. Public Health Service, State Life Tables, 1959-61, and 1969-71 (forthcoming). (See table 5-12.)

death rates at all ages. In this connection it is useful to consider the prospects for reducing the gap between the rates for the sexes, the races and ethnic groups, socioeconomic groups, and geographic areas in our population.

A number of different approaches may be taken to the task of projecting death rates, survival rates, or life expectation for the United States. One is to extrapolate past trends in mortality experience in the United States in terms of age-sex-race-specific death rates, either on a period or cohort basis.[15] Another is to consider the components of death rates in more analytical terms, for example, in terms of cause of death or, at a more basic level, in terms of the factors affecting specific causes (e.g., morbidity rates by cause, smoking practices, working conditions; atmospheric pollution; dietary habits); and to bring judgment to bear on the possibilities of reducing the rates for particular causes of death or the influence of particular disease-related conditions. Some reductions could be achieved, for example, by extending the application of present medical knowledge relating to the diagnosis and treatment of the major illnesses through public information campaigns, a change in the organization of medical care, mass screening and follow-up, etc.; and by developing new diagnostic and treatment procedures, etc.

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[15] See footnote 4 in this chapter.

Table 5-12 LIFE EXPECTATION AT BIRTH AND AT AGE 65, BY RACE, FOR REGIONS, DIVISIONS, AND STATES: 1969-71

Region, division, and State	All races		White		Negro and other races	
	At birth	65 years and over	At birth	65 years and over	At birth	65 years and over
United States	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14.5
[illegible]	[illegible]	[illegible]	[illegible]	14.7	64.9	14.5
[illegible]	[illegible]	[illegible]	[illegible]	15.3	64.5	14.3
[illegible]	[illegible]	[illegible]	[illegible]	15.3	64.0	14.3
[illegible]	[illegible]	[illegible]	[illegible]	15.6	70.7	16.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	67.5	15.8
[illegible]	[illegible]	[illegible]	[illegible]	14.6	[illegible]	14.4
[illegible]	[illegible]	[illegible]	[illegible]	14.8	64.6	14.2
[illegible]	[illegible]	[illegible]	[illegible]	15.5	63.9	14.5
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	67.3	14.2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	64.1	14.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	14.8	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	15.1	[illegible]	15.8
[illegible]	[illegible]	[illegible]	[illegible]	14.9	(S)	(S)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	67.2	15.9
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	65.1	14.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	64.4	14.2
[illegible]	[illegible]	[illegible]	[illegible]	14.4	63.8	13.8
[illegible]	[illegible]	14.6	[illegible]	[illegible]	[illegible]	14.1
[illegible]	[illegible]	[illegible]	[illegible]	14.8	[illegible]	14.2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14.0
[illegible]	[illegible]	14.7	[illegible]	[illegible]	65.0	14.6
[illegible]	[illegible]	[illegible]	72.6	15.3	(S)	(S)
[illegible]	[illegible]	[illegible]	[illegible]	15.7	(S)	(S)
[illegible]	[illegible]	[illegible]	[illegible]	15.6	(S)	(S)
[illegible]	[illegible]	[illegible]	71.6	15.1	65.9	14.3
[illegible]	[illegible]	[illegible]	[illegible]	15.8	(S)	(S)
[illegible]	[illegible]	[illegible]	[illegible]	15.9	(S)	(S)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(S)	(S)
[illegible]	[illegible]	[illegible]	[illegible]	15.8	(S)	(S)
[illegible]	[illegible]	14.4	71.4	14.6	(S)	(S)
[illegible]	[illegible]	14.5	[illegible]	14.7	64.6	13.8
[illegible]	[illegible]	14.4	[illegible]	15.1	63.5	12.6
[illegible]	[illegible]	14.7	71.4	15.0	64.1	12.6
[illegible]	[illegible]	[illegible]	69.8	14.4	(S)	(S)
[illegible]	[illegible]	14.8	71.1	15.1	63.2	14.0
[illegible]	[illegible]	[illegible]	70.3	[illegible]	62.6	14.6
[illegible]	[illegible]	[illegible]	70.6	14.9	62.9	14.5
[illegible]	[illegible]	14.1	72.2	[illegible]	62.9	14.5
Kentucky	[illegible]	14.8	70.7	14.9	63.6	13.4
Tennessee	[illegible]	[illegible]	71.2	15.7	64.5	13.9
[illegible]	[illegible]	14.8	[illegible]	15.0	63.9	14.2
[illegible]	[illegible]	14.6	[illegible]	14.9	64.0	14.3
Arkansas	[illegible]	[illegible]	71.7	15.5	65.9	15.0
[illegible]	[illegible]	[illegible]	70.7	14.7	64.4	13.9
[illegible]	71.4	15.5	71.8	15.4	67.8	16.0
Texas	70.9	[illegible]	71.7	15.5	65.5	14.9
Montana	[illegible]	15.3	[illegible]	15.4	(S)	(S)
[illegible]	[illegible]	15.7	72.0	15.7	(S)	(S)
[illegible]	[illegible]	[illegible]	70.5	15.3	(S)	(S)
Colorado	72.1	15.7	72.2	15.7	(S)	(S)
New Mexico	[illegible]	15.5	71.0	15.4	(S)	(S)
Arizona	70.6	15.5	[illegible]	15.5	(S)	(S)
Utah	[illegible]	15.7	73.0	15.6	(S)	(S)
Nevada	69.0	14.4	69.4	14.3	(S)	(S)
Washington	[illegible]	15.3	[illegible]	15.2	(S)	(S)
[illegible]	72.1	15.6	72.2	15.5	(S)	(S)
California	[illegible]	15.5	[illegible]	15.5	70.1	16.4
Alaska	[illegible]	13.7	(S)	(S)	(S)	(S)
Hawaii	[illegible]	16.2	(S)	(S)	73.7	16.5

S [illegible] these races were registered in the 3-year period 1969-71

[illegible] Public Health Service, State Life Tables, 1969-71 (forthcoming); figures for divisions and regions [illegible] weighting the official figures for States

In this connection it is important to consider the competing risks of death. Because of the interdependence of the risks of death from various causes, changes in the pattern of mortality rates by cause would result from eliminating or sharply reducing certain causes. Multiple causes are often involved in the event of death; with the elimination of one cause, the other(s) may account for death, though possibly with some lag. Moreover, if deaths from a particular cause (e.g., cancer) were eliminated or sharply reduced, those saved would be subject to death from other causes (e.g., diseases of the heart) and, conceivably but not necessarily, the rates from these causes could rise as a result.

Still another procedure for projecting death rates is to postulate that the United States will attain the level of the most advanced areas, either a State of the United States or foreign country, or some analytical extension of that level, at some specified future date. This concept can be extended, probably with less merit, to encompass socioeconomic class differences and even race differences. Further, one can consider composite mortality patterns combining the record of the "best" State or foreign country at each age.

In spite of the difficulties and uncertainties, the projections of death rates made in 1956 by the Office of the Actuary, Social Security Administration, proved to be rather consistent with actual developments to date, particularly in following a very conservative course. Nevertheless, the projections generally overstated the actual figures, as shown in table 5-13. The actual changes in expectation of life at birth between 1953 and 1972 were below the low projected value for males and just above it for females. Actual changes in "average years lived" at ages under 65 and "average years of life remaining" at age 65 also tended to fall below or close to the low projected values.

Table 5 13 COMPARISON OF ACTUAL VALUES FOR AVERAGE REMAINING LIFETIME AND AVERAGE YEARS LIVED IN INTERVAL WITH VALUES PROJECTED BY THE SOCIAL SECURITY ADMINISTRATION FOR 1970-75

Age, sex, and mortality assumption	Average years of life remaining or in interval			Change	
	Actual, 1953 (base year)	Actual, 1972	Projected, 1970-75	Actual, 1953 to 1972	Projected, 1953 to 1970-75
BIRTH					
Male					
Low	66.0	67.4	70.3	+1.4	+4.3
High			68.0		+2.0
Female					
Low	72.0	75.1	76.5	+3.1	+4.5
High			74.4		+2.4
0 TO 64 YEARS					
Male					
Low	58.0	58.9	60.1	+0.9	+2.1
High			59.2		+1.2
Female					
Low	60.4	61.4	62.0	+1.0	+1.6
High			61.4		+1.0
65 YEARS					
Male					
Low	12.9	13.1	14.3	+0.2	+1.4
High			13.4		+0.5
Female					
Low	15.3	17.0	17.2	+1.7	+1.9
High			16.2		+0.9

Source Prepared on basis of data from U.S. Public Health Service, National Center for Health Statistics, Life Tables of the United States, 1953 and 1972, and U.S. Social Security Administration, Division of the Actuary, "Illustrative United States Population Projections," Actuarial Study, No. 46, by T.N.E. Greville, May 1957.

More recent projections of death rates for the United States were published by the Office of the Actuary in 1966 and 1974.[16] In each case death rates specific in terms of age, sex, and cause of death (10 classes) were analyzed in making the projections. Judgments were then made as to the expected reduction in these rates by the year 2000, taking into account the past trends in the rates and recent and prospective medical and related socioeconomic developments. The projections published in 1974 show little increase in life expectation at birth or at age 65 between 1972 and 2000.

Age and sex	1972 (base period)	2000	Increase, 1972 to 2000
BIRTH			
Male...........	67.4	69.0	1.6
Female..........	75.1	76.9	1.8
65 YEARS			
Male..........	13.1	13.6	0.5
Female.........	17.0	18.1	1.1

They imply an increase of only about 1½ years in life expectation at birth and of only ¾ year in life expectation at age 65 in this period. The assumption of modest future reductions in mortality reflects the trends during the past few decades. The outlook is now assumed to be somewhat less favorable for males, and slightly more favorable for females, than in 1966, when the previous projections were made.

In considering the record of the "best" State as a guide to possible progress for the United States, we may refer to the life tables for States for 1969-71 and 1959-61 published by the National Center for Health Statistics.[17] Life expectation at birth was highest in Hawaii (73.6 years). The figure for Hawaii exceeds the U.S. average (70.8 years) by 2.8 years. The best expectation at age 65 (16.2 years), which relates to Hawaii also, exceeds the U.S. average (15.0 years) by merely 1.2 years. This difference suggests little room for improvement before the United States is as well off as the best State. A similar comparison for sex-race groups indicates that the differences between life expectation at birth in the United States and the best State are only about 1½ years for white males and white females (48 States, excluding Alaska, Hawaii, and District of Columbia) and 2½ to 3 years for black males and black females (23 States, excluding California, Hawaii, and Oklahoma). At age 65 the differences for white males and white females (1¼ years), and for black males and black females (1½ years), are also small and about equal for the sexes. Actual changes in the sixties did not move the values any closer to the "targets" for males, but some progress was made for females. Although these figures suggest that progress in reducing U.S. average mortality toward the level of the leading States would not result in a continuation of the historical trend of increasing disparity between the death rates of males and females, no substantial covergence is suggested either.

Greater possible improvement is suggested by the experience of the countries of very low mortality, principally countries of northwestern Europe and Oceania. Sweden may be selected as the single country with the best overall record, although its death rates are not the lowest at some ages (table 5-14). Expectation of life at birth for females in Sweden in 1973 was 77.7 years, as compared with 75.3 years for females in the United States in 1973 (table 5-15). The difference is only 2.4 years. Most of the difference in death rates occurs at ages under 65, however, since expectation of life at age 65 is about the same. The United States disadvantage is much greater for males, especially at birth. Life expectancy at birth for males in Sweden, 72.1 years, exceeds the United States figure, 67.6 years, by 4.5 years; at age 65, the Swedish figure, 14.0 years, is only 0.9 years higher.

If, further, we combine the lowest death rates at each age in recent years (1969 to 1971) for the countries with reliable data (principally in northern and western Europe, and Oceania) into a single hypothetical life table, the possibility of additional increases in life expectation in the United States is suggested. The differences between the United States and the best-country composite are only moderate ones, however. The values for life expectation for females in the composite table are 78.7 years at birth and 18.0 years at age 65, implying differences of 3.4 years and 0.8 years over the corresponding United States values (table 5-15). Differences for males are a little larger although, of course, the expectancy values themselves for the United States and the composite are much lower than for females. The best-country composite figures for males are 73.5 years at birth and 15.2 years at age 65.

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[16] U.S. Social Security Administration, Office of the Actuary, "United States Population Projections for OASDHI Cost Estimates," Actuarial Study No. 62, by Francisco Bayo, December 1966, and U.S. Social Security Administration, Office of the Actuary, "United States Population Projections for OASDHI Cost Estimates," Actuarial Study No. 72, by Francisco Bayo and Steven F. McKay, July 1974.

[17] See sources of table 5-11 and table 5-12

Table 5-14 DEATH RATES FOR THE POPULATION 55 YEARS OLD AND OVER OF VARIOUS COUNTRIES, BY SEX AND AGE, BETWEEN 1969 AND 1971

(Deaths per 1,000 population in specified group)

Country and year	Male							Female						
	55 to 59 years	60 to 64 years	65 to 69 years	70 to 74 years	75 to 79 years	80 to 84 years	85 years and over	55 to 59 years	60 to 64 years	65 to 69 years	70 to 74 years	75 to 79 years	80 to 84 years	85 years and over
Austria, 1970	14.2	28.4	46.2	71.3	107.6	157.7	261.3	8.1	13.3	23.1	42.2	72.3	122.5	225.3
Belgium, 1969	17.2	28.4	44.8	67.2	100.5	152.6	247.4	7.9	12.8	22.5	39.9	69.0	118.1	211.2
Czechoslovakia, 1970	19.6	29.4	49.8	74.5	112.2	163.7	258.9	8.7	14.6	25.2	45.9	80.3	131.1	222.2
Denmark, 1970	12.8	20.9	33.5	54.2	77.3	119.4	210.7	7.4	12.1	18.7	32.2	55.4	96.5	183.3
Finland, 1970	[illegible]	31.4	46.2	72.4	103.8	178.4		7.5	13.0	22.5	42.7	74.6	154.0	
France, 1970	15.3	23.8	36.3	55.0	85.0	121.7	225.5	6.6	10.0	19.5	28.6	42.0	89.8	181.6
Germany, East 1970	15.7	26.7	[illegible]	68.2	137.6			8.2	13.6	24.4	44.5	79.5	136.3	244.1
Germany, West, 1970	15.2	25.5	43.8	69.4	104.4	159.2	267.1	7.9	12.8	22.9	40.1	107.1		
Hungary 1971	[illegible]	15.9	[illegible]	65.8	106.4	157.8	256.7	8.8	14.5	24.7	44.8	80.0	131.5	231.6
Iceland, 1970	14.8	12.2	27.3	44.4	65.8	109.8	194.8	[illegible]	10.5	18.5	28.3	47.3	96.8	116.6
Italy, 1969	16	22.6	40.9	62.2	89.4	158.2		7.4	12.4	21.6	38.1	65.7	135.4	
Netherlands, 1971	[illegible]	[illegible]	36.8	51.4	81.5	124.2	220.0	6.1	9.8	17.1	31.6	56.0	102.0	196.5
Norway, 1970	[illegible]	[illegible]	32.8	52.2	77.9	123.8	221.4	5.9	8.9	16.9	30.5	53.7	100.1	186.5
Poland, 1970	16	22.8	[illegible]	75.6	129.4			[illegible]	13.2	22.9	41.1	101.4		
Sweden, 1970	[illegible]	16.2	29	49.2	79.2	125.0	218.4	[illegible]	9.5	15.8	29.2	53.6	94	180.0
England and Wales, 1970	[illegible]	15.8	[illegible]	66	103.1	147.2	242.3	8.5	14.4	23.0	36.4	62.2	102.1	193.8
Yugoslavia, 1971	[illegible]	14.9	29	65.4	106.4	151.0	209.0	8.9	15.1	24.9	47.8	79.8	127.2	192.7
Australia, 1970	16	19	[illegible]	54.1	99.9	147.3	240.5	8.4	13.0	20.7	35.9	62.7	102.4	197.2
New Zealand, 1970	18.1	14.0	40.1	62.3	92.9	147.0	243.3	8.4	22.8	19.6	53.2	58.4	98.5	198.8
Japan, 1971	[illegible]	20	34.8	55	89.7	143.0	226.1	6.9	11.2	19.8	33	60.7	108.2	195.0
Canada, 1971	14.8	21.9	34.7	52.9	79.2	118.8	198.6	7.2	11.0	17.3	28.4	48.2	82.4	163.3
United States, 1970[1]	19.4	27.9	41.2	58.9	86.8	123.9	178.2	9.1	13.2	20.4	32.4	53.8	87.7	155.2
United States, 1971[2]	17.8	27.0	39.5	55.7	80.2	122.4	198.1	8.2	12.9	19.0	31.6	53.4	89.4	162.3

[1] From National Center for Health Statistics, U.S. Public Health Service. Vital Statistics of the United States, Part A, 1970 Volume II.

[2] From National Center for Health Statistics, U.S. Public Health Service. Monthly Vital Statistics Report, Volume 23, No. 11 (supplement 2). "Summary Report. Final Mortality Statistics, 1973," table 3.

Source: United Nations, Demographic Yearbook, 1972, table 15.

We can hypothesize, on the basis of the foreign data and the State data, that with present knowledge a life expectancy at birth of 78 years for females and 72 years for males, and at age 65 of 18 years for females and 15 years for males, is attainable in the United States in the near future. Even so, reaching the target cited for males "at birth" will be quite difficult.

There is implicit in these figures as well as in the figures in table 5-15 the prospect that the male-female gap in life expectation for the United States will continue to remain large even though it will narrow somewhat. Male-female differences in life expectation are substantial in all countries with low mortality (table 5-14). Sweden showed a difference of 5.6 years in 1973 and the best-country composite showed a difference of 5.2 years. Differences for States in the United States in 1969-71 are consistently high, varying only negligibly around the national average of 7.6 years.

Historical and comparative analysis suggests, therefore, no great convergence of male and female mortality or life expectation in the United States in the near future. This analysis is also consistent with the view that at least a substantial part of the difference reflects the vital superiority of women. A tenable hypothesis regarding the prospects for convergence of male and female death rates, therefore, is that the difference will shortly reach a maximum at about its present level or decline only a small amount, and then remain essentially unchanged, barring sucessful genetic intervention favoring males or widespread deleterious environmental influences particularly affecting women.[18] In any case, substantial convergence of male and female death rates in the foreseeable future is now considered highly unlikely.[19]

Bourgeois-Pichat has extrapolated the trends in endogeneous mortality in the countries with the lowest recorded rates as an approach to the measurement of the limit of the decline in mortality imposed by the human constitution.[20] The extrapolation takes account of recent and prospective medical developments in the most advanced countries. On this basis, in 1952 Bourgeois-Pichat calculated life expectations at birth of 78.2 years for females and 76.3 years for males, and

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[18] Charles L. Rose, "Critique of Longevity Studies," pp. 13-29, in Palmore and Jeffers, op. cit., esp. p. 19.

[19] George C. Myers, "Changing Mortality Patterns and Sex Imbalances Among the Aged," paper presented at the 10th International Congress of Gerontology, Jerusalem, Israel, June 22-27, 1975.

[20] Jean Bourgeois-Pichat, "Essai sur la mortalité 'biologique' de l'homme," Population, (Paris), Vol. 7, No. 3, pp. 381-394, July-Sept. 1952. Endogenous causes of death are those which have a typically genetic or biological basis and are presumably less amenable to control, as contrasted with the exogenous causes, which are typically environmentally caused.

Table 5 15. COMPARISON OF AVERAGE REMAINING LIFETIME AND AVERAGE YEARS LIVED IN INTERVAL FOR THE UNITED STATES, SWEDEN, AND BEST-COUNTRY COMPOSITE

Area	Male			Female			Excess of female over male		
	e_0	¹e_{0-64}	e_{65}	e_0	¹e_{0-64}	e_{65}	e_0	¹e_{0-64}	e_{65}
United States, 1973[2]	67.6	59.0	13.1	75.3	61.5	17.2	7.7	2.5	4.1
Sweden, 1973[3]	72.1	61.4	14.0	77.7	62.8	17.1	5.6	1.4	3.1
Best-country composite[4]	73.6	61.6	15.2	78.7	63.0	18.0	5.2	1.4	2.8
Difference, U.S. and best-country composite	5.9	2.6	2.1	3.4	1.5	0.8	-2.5	-1.1	-1.3

[1] Computed by $T_0 - T_{65} \div l_0$

[2] U.S. Public Health Service, National Center for Health Statistics, Vital Statistics of the United States, Mortality, Part A, 1973 forthcoming.

[3] Best single country based on data in United Nations, Demographic Yearbook, 1974, table 18 (forthcoming).

[4] Composite of lowest age-specific death rates for countries with reliable data for the years, 1969 to 1971.

expectations at age 65 of 17.6 years for females and 16.3 years for males. Bourgeois-Pichat's projections for females have already been achieved, even exceeded, by the best-county composite. His projections for males suggest that much progress is still possible, both below and above age 65. The figures imply a considerable convergence of male and female death rates—a development previously noted as highly unlikely.

What appears attainable with respect to reduction in mortality is clearly a shifting thing, as the scope and level of exogenous and endogenous mortality shift. A new calculation of the same type prepared currently would undoubtedly raise Bourgeois-Pichat's figures. Calculations such as those of Bourgeois-Pichat are subject to question because of the impossibility of making an exact separation between endogenous and exogenous mortality and because some exogenous causes of mortality (e.g., accidents) cannot be assumed to decline.

The fact that persons at age 65 would live 10 years longer on the average than they are now slated to live if the major cardiovascular-renal diseases were eliminated does not provide a useful basis for projections of mortality. It should be clearly recognized that the cause-of-death life tables which provide such estimates of gains in life expectation are merely analytical tools, providing guides as to where it may be most important and effective to apply effort in extending life expectation. The major cardiovascular-renal diseases are not likely to be eliminated in the foreseeable future although death rates from these causes may be moderately reduced.[21] In sum, there is no sound reason for expecting major increases in life expectation or any significant extension of the life span in the foreseeable future.[22]

Some Theoretical Considerations

Persons who are saved from death due to a particular cause or class of causes (e.g., malignant neoplasms) must die of some other causes, including possibly some new causes to be identified. Nevertheless, death rates at each age by cause may continue to decline indefinitely. With a decline in age-specific death rates more individuals will survive to the older ages and, hence, more persons will die at these later ages (wholly or largely from particular established causes) even though death rates at these ages are lower than they had been.[23] This combination of facts explains the seeming paradox that general age-specific death rates and cause-specific death rates by age may continue to decline while the chances of eventually dying from a particular disease (i.e., the number dying from that disease per 100 persons in the original cohort) may increase.

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[21] See P R J Burch, "What Limits Life Span?", pp 31 56, in B Benjamin, P. R. Cox and J Peel (eds), Population and the New Biology, Academic Press, New York, 1974

[22] This generalization is directly contrary to the premise of Richard A. Kalish, "Added Years Social Issues and Consequences," pp. 273 280, in Erdman Palmore and Frances C Jeffers (eds), Prediction of Life Span, Heath Lexington Books. D.C Heath and Co. Lexington, Mass . 1971.

[23] This fact may be illustrated by a hypothetical life table in which no one dies before age 85 and in which death rates between age 85 and some age such as 120 rise from 0 to 1.0, being always below the present rates until age 120. The fact that death rates below age 85 have fallen to zero means that 100,000 persons survive to age 85. Then, even with lower death rates above age 85, much larger numbers of persons die at the higher ages from the various diseases of later life than in current life tables, until the cohort is extinct by about age 120.

Reference was made earlier to the effect of reductions in mortality on the growth of the elderly population in the United States. Consider now an extreme situation: How much faster would the elderly population and the proportion of elderly persons grow if no one died? The immediate effect on the growth rate of the total population would be quite pronounced if life expectancy at birth were infinite rather than about 71, as at present—an increase in the growth rate equal to the death rate—but in the long run the rate of population growth would hardly be increased.[24] Under conditions of replacement level fertility and a small regular flow of immigrants, such as now roughly characterize the United States population, the immediate achievement of zero death rates would result in a growth rate of about 1.7 percent in the first projection year, 1.3 percent in the year 2000, and 1.1 percent in the year 2025, as compared with 0.8 percent in 1975.[25] Similarly, after the initial tremendous impact of the shift to zero mortality, the growth rate of the elderly population would begin to revert to its former level. The population 65 and over is currently increasing at 2.4 percent annually; with zero death rates the growth rate would jump to 8.3 percent in the first projection year and then gradually fall back to 2.9 percent in 2000, and 2.8 percent in 2025.

Of more importance in the present context is the effect on age composition of the elimination of deaths. Since, with a life expectancy of 71 years, any large reductions in death rates would be limited to ages over 60, the elimination of deaths would tend to add greatly to the proportion of the population in the older ages. The conditions stated above would result in a rise of the proportion 65 years and over to 24 percent in 2000, 38 percent in 2025, and 47 percent in 2050. If zero death rates are achieved more gradually (i.e., by the year 2000 for the white population and by the year 2020 for the black population), the proportion 65 and over would rise to about 18 percent in 2000, 33 percent in 2025, and 44 percent in 2050. Once mortality had been eliminated or had been reduced to very low levels—such that variable changes in mortality by age would have a negligible effect in any case—further changes in age structure would depend almost wholly on the level of fertility.[26] With low fertility (e.g., a total fertility rate of 1.0) the proportion of the aged would tend to rise sharply; with high fertility (e.g., a total fertility rate of 4.0) the proportion would tend to be depressed and, over a long period, would be quite small.

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[24] See also Ansley J. Coale, Increases in Expectation of Life and Population Growth," International Population Conference, Vienna 1959, International Union for the Scientific Study of Population, pp. 36-41.

[25] These calculations were made by the author on the same basis as the Series II projections of the U.S. Bureau of the Census given in Current Population Reports, Series P 25, No. 601, except for the modification in the mortality assumption.

[26] Ansley J. Coale, "Age Composition in the Absence of Mortality and in Other Odd Circumstances," Demography, Vol 10, No. 4, Nov. 1973, pp. 537-542.

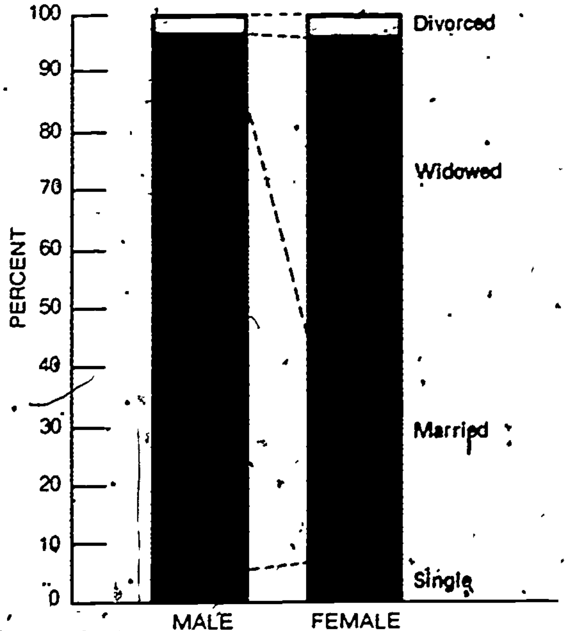
Chapter VI.
SOCIAL AND ECONOMIC CHARACTERISTICS

In this chapter we consider the principal social and economic characteristics of the older population. These characteristics are treated under the following four headings: (1) marital status and living arrangements; (2) educational attainment, (3) labor force participation, and (4) income level. We conclude with a note on the relation of the age composition of the population to intergenerational dependency in families and to economic dependency in our society.

Marital Status and Living Arrangements

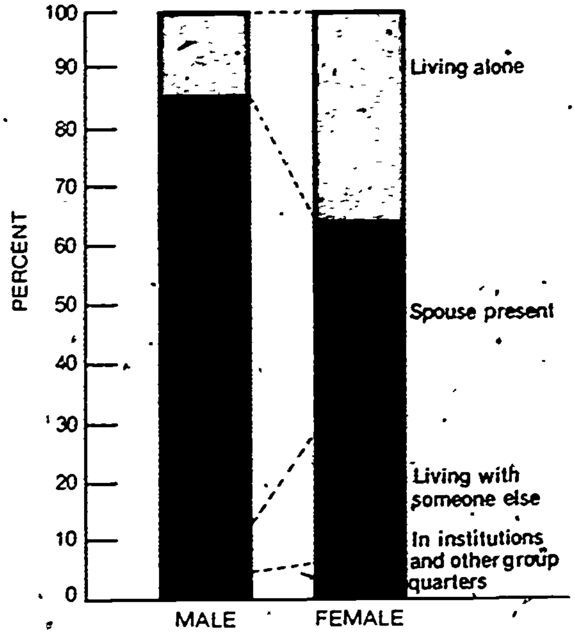
The marital distribution and living arrangements of elderly men differ sharply from those of elderly women (figures 6-1 and 6-2). Most men 65 and over are married and live with their wives, few live alone. In March 1975 three out of four men in this age range were married and living with their wives (table 6-1). Only one out of seven men 65 and over was widowed and only one out of seven was living alone (table 6-2). Women 65 and over are much more likely to be widowed than married and a substantial portion of them live alone. In March 1975 only one out of three women 65 and over was married and living with her husband. Over half of the women were widowed and over one out of three women was living alone. While the distribution of elderly persons by marital status changed little during the 1960's, in the last quarter century, from 1950 to 1975, the cumulative changes have been substantial, especially for men. The proportion married has greatly increased and the proportions single and widowed have fallen sharply.

Figure 6-1. PERCENT DISTRIBUTION OF THE MALE AND FEMALE POPULATION 65 YEARS OLD AND OVER BY MARITAL STATUS: 1975



Source. Table 6-1

Figure 6-2. PERCENT DISTRIBUTION OF THE MALE AND FEMALE POPULATION 65 YEARS OLD AND OVER BY LIVING ARRANGEMENTS: 1975



Source Table 6-2.

Several factors explain the higher proportion of widows among elderly women. The principal one is the much higher mortality rates of married men as compared with their wives—a joint effect of the higher

Table 6.1 DISTRIBUTION OF THE POPULATION 55 YEARS OLD AND OVER BY MARITAL STATUS, BY AGE AND SEX: 1950 TO 1990

[illegible]

[illegible]	Male				Female			
	55 to 64 years	65 to 74 years	75 years and over	65 years and over	55 to 64 years	65 to 74 years	75 years and over	65 years and over
[illegible]								
Percent, total	[illegible]	NA	NA	100.0	100.0	NA	NA	100.0
Single	[illegible]	NA	NA	[illegible]	7.2	NA	NA	[illegible]
Married	[illegible]	NA	NA	66.2	65.0	NA	NA	36.5
Spouse present	[illegible]	NA	NA	63.3	62.8	NA	NA	34.3
Spouse absent	[illegible]	NA	NA	[illegible]	2.2	NA	NA	[illegible]
Widowed	[illegible]	NA	NA	[illegible]	23.5	NA	NA	55.3
Divorced	[illegible]	NA	NA	[illegible]	[illegible]	NA	NA	[illegible]
[illegible]								
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Widowed	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	64.3	[illegible]
[illegible]	3.5	[illegible]	[illegible]	[illegible]	3.2	[illegible]	[illegible]	[illegible]
[illegible]								
Percent, total	100.0	[illegible]	100.0	100.0	100.0	100.0	100.0	100.0
Single	7.8	[illegible]	6.6	7.5	6.8	7.8	7.5	7.7
Married	85.2	[illegible]	64.3	73.1	67.9	45.2	21.0	35.6
Spouse present	82.3	[illegible]	61.4	69.9	63.8	43.5	19.1	33.9
Spouse absent	[illegible]	2.8	[illegible]	3.2	3.6	1.6	1.9	1.7
Widowed	4.1	11.3	27.7	17.1	21.2	44.0	70.3	54.4
Divorced	3.0	2.7	[illegible]	2.3	4.6	3.0	[illegible]	[illegible]
1975								
Percent, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Single	6.2	4.3	[illegible]	4.7	5.1	5.8	[illegible]	[illegible]
Married	[illegible]	83.9	[illegible]	79.3	69.3	49.0	23.4	39.1
Spouse present	[illegible]	[illegible]	[illegible]	77.3	66.7	47.3	22.3	37.6
Spouse absent	[illegible]	[illegible]	[illegible]	[illegible]	2.6	[illegible]	1.1	1.5
Widowed	[illegible]	[illegible]	23.3	13.6	[illegible]	41.9	[illegible]	52.5
Divorced	[illegible]	3.1	1.2	2.5	5.3	3.3	[illegible]	2.6
1990								
Percent, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Single	[illegible]	6.7	[illegible]	[illegible]	4.5	[illegible]	5.7	6.3
Range	[illegible]	7.2-5.7	3.8-5.6	6.0-5.6	4.2-5.3	[illegible]	5.3-6.4	6.1-6.7
Married, spouse present	[illegible]	77.1	65.3	73.0	70.4	46.1	20.2	35.1
Range	[illegible]	78.3-78.[illegible]	66.8-62.5	73.0-73.1	71.8-67.6	46.4-45.6	19.8-20.8	35.1-35.0
Other ever married	[illegible]	16.2	[illegible]	21.1	25.1	47.1	[illegible]	58.6
Range	[illegible]	16.5-15.7	29.4-31.9	21.0-21.3	24.0-27.1	46.9-47.6	74.9-72.8	58.4-58.3

NA Not available.

Source: [illegible] Population Reports, Series P-20, Nos. 33, 105, 255, and 287, and Series P-25, No. 607.

mortality rates of men than women and the fact that husbands are typically older than their wives by a few years. An indication of the difference may be secured by comparing the annual death rates (per 100,000) for married females at various older ages with those for married males at slightly higher ages for a recent year (1959-61):[1]

Female		Male		Ratio
Age	Rate	Age	Rate	Male/Female
60-64..	1291.2	65-69.	3663.5	2.837
65-69..	1998.9	70-74.	5236.5	2.620
70 and over.	4646.7	75 and over.	9905.9	2.132

As a result of these differences in death rates, most married women outlive their husbands and they tend to outlive them by many years. Currently in the United States, women who become widowed at age 65 outlive their husbands, on the average, by about 16 years. Men who become widowed at age 70 outlive their wives by about 10 years. On the other hand, the expectation of life at age 65 of married women exceeds that of their husbands at age 70 by about 9 years (without specification of a particular age at death or the sex of the first decedent.)[2]

A second factor accounting for the higher proportion of widows than widowers is the higher remarriage rates of widowers, who often take wives from among women under 65 and single or divorced women over 65 as well as widows over 65. An indication of the difference in the remarriage rates of the sexes may be secured by comparing the marriage rates of males 65 and over with those for females at these ages. In 1971 the annual marriage rate (per 1,000 unmarried persons) for females 65 and over was 2.4 while the rate for males was 16.7; these figures reflect a 7 to 1 difference in the rate.[3] They also indicate the relative rarity of marriage of elderly persons. The vast majority of marriages at these ages are marriages of widowed persons. The higher remarriage rate of widowers is a result of social norms supporting marriage to younger women (and discouraging the opposite), a stronger motivation to remarry, and a male demographic advantage in the fact of a surplus of women in the marriage market. In 1975 the proportion of unmarried women 65 and over was three times as great as the proportion of unmarried men 65 and over (table 6-1).

The distribution of the population by marital status and by living arrangements shifts notably with increasing age. For women the proportion married falls sharply and the proportion widowed rises sharply in the age range 55 and over. Corresponding to these changes, there are increases in the proportions living alone or with someone other than one's spouse (son, daughter, other relative, nonrelative). In March 1975 only one out of five women 75 and over was married and living with her husband, as compared with two out of three for ages 55 to 64 years. Two out of five women 75 and over lived alone, as compared with one out of six for ages 55 to 64 years. For men the changes are similar but not as dramatic. About seven out of ten men 75 and over were married and living with their wives, and only one out of seven lived alone. At ages 55 to 64 the corresponding figures were four out of five and one out of thirteen.

About 80 percent of the men 65 and over and 56 percent of the women 65 and over were members of families in 1975 (table 6-3). Most men (76 percent) were family heads but only a minority of the women were wives of family heads (35 percent) or family heads themselves (9 percent). The distribution of the elderly by family status has shown marked shifts during recent years. The overall proportions of persons, especially women, living in families has been decreasing. The proportions of male heads was substantially lower (71 percent), and the proportions of female heads somewhat higher (11 percent), in 1965. The decrease of females in families between 1965 and 1975 resulted largely from the decrease in "other relatives" (i.e., persons in families

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[1] U.S. Public Health Service, National Center for Health Statistics, "Mortality from Selected Causes by Marital Status, United States. Vital and Health Statistics, Series 20, No. 8a and 8b, by A. Joan Klebba, 1970.

[2] The first figure is approximated by the expectation of life of females at age 65, adjusted for the difference between the mortality level of widowed women and all women, the second figure is approximated in the same way for males, and the third figure is approximated by the difference between the expectation of life of females at age 65 and the expectation of life of males at age 70, the male expectation being adjusted for the difference between the mortality level of married males and all males and the female expectation for the corresponding difference and the shift from married status to widowhood. See also Robert J. Myers, "Statistical Measures in the Marital Life Cycles of Men and Women. International Population Conference, Vienna, 1959, International Union for the Scientific Study of Population, pp 229-233.

[3] U.S. Public Health Service, National Center for Health Statistics, Vital Statistics of the United States, 1971, Vol III, Marriage and Divorce, 1975, table 1-7. See also Judith Treas and Anke Van Hilst, "Marriage and Remarriage Among the Older Population," paper presented at the Annual Meeting of the Gerontological Society, Oct. 27, 1975, Louisville, Ky.

Table 6.2 LIVING ARRANGEMENTS OF THE POPULATION 55 YEARS OLD AND OVER, BY AGE AND SEX: 1965, 1970, AND 1975

[illegible]	[illegible] years and over
[illegible]	[illegible]
[illegible]	12,376
[illegible]	4,718
[illegible]	[illegible]
[illegible]	2,996
[illegible]	729
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	5.4
[illegible]	[illegible]
[illegible]	46.0
[illegible]	33.8
[illegible]	33.9
[illegible]	27.6
[illegible]	5.5
[illegible]	100.0
[illegible]	45.3
[illegible]	28.6
[illegible]	34.1
[illegible]	32.6
[illegible]	4.7

[illegible]

Table 6.3 FAMILY STATUS OF THE POPULATION 65 YEARS OLD AND OVER, BY SEX: 1965, 1970, AND 1975

[illegible] Figures are for March of year indicated

[illegible]	1975		1970		1965	
	Male	Female	Male	Female	Male	Female
[illegible]	[illegible]	[illegible]	100.0	[illegible]	100.0	100.0
In families	[illegible]	56.3	79.2	[illegible]	80.3	62.9
Head	76.1	[illegible]	72.9	[illegible]	71.3	10.7
Wife	[illegible]	[illegible]	[illegible]	33.3	[illegible]	33.3
Other relative	3.7	[illegible]	6.3	[illegible]	9.0	18.9
[illegible]	[illegible]	[illegible]	11.9	35.2	13.9	30.6
[illegible]	1.2	[illegible]	2.1	[illegible]	2.3	2.2
[illegible]	3.2	[illegible]	3.6	[illegible]	3.5	4.3

[illegible]

[illegible]

other than the heads or their wives), for males the decrease in other relatives was offset by a rise in heads. The proportion of all men 65 years old and over who were "other relatives" in families dropped from 9 percent in 1965 to 4 percent in 1975, and the proportion for women dropped from 19 percent to 13 percent.

In the last decade there has been an increase in the proportion of elderly individuals who maintained their own households, living either alone or with nonrelatives. Such primary individuals represented about 15 percent of the men 65 years old and over and about 37 percent of the women 65 and over in 1975. During the same period there was a pronounced decline in the proportion of elderly persons living with relatives other than spouses. Nearly all (about 96 percent) primary individuals 65 years old and over occupied their own house or apartment entirely alone as "one-person households" in 1975.

Contrary to the popular view, only a small proportion of the elderly population lives in institutions. Slightly less than 5 percent of the population 65 and over resided in institutions in 1975. According to 1970 census data, the proportions of institutional residents are at a minimum at about ages 40 to 44 for males (1.0 percent) and at ages 20 to 29 for females (0.3 percent), and then rise steadily with increasing age. For example, the figures for males and females aged 75 and over are 6.9 percent and 10.9 percent, respectively. The proportion of the elderly population residing in institutions has been rising, as the proportions of widowed females and extreme aged among the elderly have been rising. In 1960 only 3.7 percent of the population 65 and over resided in institutions. In 1960 most institutionalized elderly persons lived in mental hospitals, today most live in homes for the aged.

Educational Attainment

The educational attainment of older persons is well below that of adults in general, as measured in terms of the percent of high school graduates and the median years of school completed. In March 1975 the percentage of the population 65 and over which had graduated from high school was only about three-fifths as great as the percentage of high school graduates in the entire population 25 years and over (table 6-4). A little over one-third of the elderly population were high school graduates, as compared with three-fifths of all persons 25 and over. Half of those 65 and over had completed less than nine years of school, but over half of all adults 25 and over had completed 12 years of school or more.

The negative relationship between age and educational attainment reflects the widening opportunity available to each new cohort of students and the increasing aspiration for, and achievement of, greater education on the part of the new cohorts. These factors have been associated with the rising socioeconomic status of the United States population and the concomitant intergenerational influences. Another factor has been the special history of immigration to the United States, which now accounts for a much larger proportion of foreign-born persons among the older population than at the younger ages. In 1970, 15 percent of those 65 and over were foreign-born, with the proportion showing a steady rise with increasing ages among the older population. This group has higher proportions of illiteracy and lower educational attainment than the native population.

The level of educational attainment of the elderly population has been increasing rapidly, just as it has for the entire adult population, as younger persons with more education move into older age groups. The proportion of high school graduates among those 65 and over was only 18 percent as recently as 1952. By 1990 about half of the population over 65 is expected to be high school graduates and, in view of the slower rise in educational attainment expected for adults below 65, the relative gap between the educational attainment of the group 65 and over and the educational attainment of the total population 25 years and over will be substantially reduced. It is expected that in 1990 the percent of high school graduates 65 and over will be only about one-third below the percent for the entire adult population. The deficit in educational attainment is less for the elderly female population today than for the elderly male population and is expected to remain so in 1990.

Labor Force Participation

Labor force (worker) proportions for elderly males have been dropping rapidly over the past quarter century. In 1950 almost half of all men 65 and over was in the labor force, but by 1960 only one-third of the men in this age range was working or looking for work. Only about one-fifth of the men 65 and over (22 percent) works today (table 6-5). The decline reflects the joint effect of the increase in voluntary retirement

Table 6.4 EDUCATIONAL ATTAINMENT OF THE POPULATION 65 YEARS OLD AND OVER AND 25 YEARS OLD AND OVER, BY SEX: 1952 TO 1990

(Figures are for March of year indicated)

[illegible]	Median school years completed			Percent high school graduates		
	65 years old and over	25 years old and over	Ratio, 65 and over to 25 and over	65 years old and over	25 years old and over	Ratio, 65 and over to 25 and over
BOTH SEXES						
[illegible]	8.2	10.1	0.81	18.4	38.5	0.48
[illegible]	8.3	11.0	0.75	19.4	42.9	0.45
[illegible]	8.5	11.8	0.72	23.5	49.0	0.48
[illegible]	8.7	12.2	0.71	28.3	55.2	0.53
[illegible]	9.0	12.3	0.73	35.2	62.6	0.56
[illegible]	[illegible]	12.4	0.76	37.9	[illegible]	[illegible]
[illegible]	[illegible]	12.5	0.87	44.0	70.2	[illegible]
[illegible]	[illegible]	12.6	[illegible]	54.6	[illegible]	[illegible]
MALE						
[illegible]	[illegible]	9.7	[illegible]	[illegible]	34.4	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	41.2	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	22.4	[illegible]	[illegible]
[illegible]	[illegible]	12.2	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	12.4	0.72	[illegible]	63.1	[illegible]
[illegible]	[illegible]	12.5	0.75	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	12.6	[illegible]	43.0	[illegible]	[illegible]
[illegible]	[illegible]	12.7	[illegible]	48.7	76.3	[illegible]
FEMALE						
[illegible]	[illegible]	10.4	[illegible]	21.1	40.2	[illegible]
[illegible]	[illegible]	11.2	0.75	20.4	44.4	[illegible]
[illegible]	8.6	12.0	0.72	24.7	[illegible]	[illegible]
[illegible]	[illegible]	12.1	0.73	30.1	[illegible]	[illegible]
[illegible]	[illegible]	12.3	0.75	35.5	62.1	[illegible]
[illegible]	[illegible]	12.4	[illegible]	[illegible]	[illegible]	0.60
[illegible]	11.2	12.4	[illegible]	44.7	68.7	0.65
[illegible]	[illegible]	12.5	0.96	[illegible]	72.3	[illegible]

Source: Current Population Reports, Series P-20, Nos. 45, 99, 158, 207, and forthcoming report for 1975, and Series P-25, No. [illegible]

programs, the implementation of more stringent retirement rules by employers, and the drop in self-employment. A secular decline already appears at ages as low as 55 to 59 and is reflected in each older age group with increasing intensity. Still, six out of seven men (84 percent) at ages 55 to 59 and two out of three men (66 percent) at ages 60 to 64 work today. At ages 70 and over, on the other hand, only about one out of six men (15 percent) are working. These trends are expected to continue, so that by 1990 only 17 percent of the male population 65 and over and only 10 percent of the male population 70 and over are expected to be in the labor force.

The worker proportions for older women, on the other hand, have experienced little change. The proportions for women 65 and over have fluctuated over the past quarter century at around 8 to 11 percent although a steady decline seems to have occurred in the last decade: today 1 out of 12 women (8.3 percent) 65 and over work. The prospects are for a moderate decline in this proportion to 7.5 percent in 1990. On the other hand, during the 1950-75 period women 55 to 64, especially those 55 to 59, have left their homes in generally increasing proportions to join the work force. The worker proportion for women 55 to 64 has risen from 27 percent in 1950 to 41 percent in 1975 and is expected to climb to 43 percent in 1990. Many women who have completed rearing a family or who have become divorced or widowed are returning to the work force, some of these formerly would simply have remained as homemakers.

Worker proportions for older blacks have been historically distinguished by the higher level of the proportions for black women over those for white women. The worker proportions for black women for ages 55 to 64 have been converging so rapidly with those for white women during the past quarter century, however, that by 1975 the difference was rather small. For ages 65 and over the difference became quite small after a sharp convergence at the beginning of the period.

Table 6 5 WORKER PROPORTIONS FOR THE POPULATION 55 YEARS OLD AND OVER, BY AGE, RACE, AND SEX: 1950 TO 1990

(Figures are monthly averages. Total noninstitutional population)

Age, race, and sex	1950	1955	1960	1965	1970	1975	1980	1990
ALL CLASSES								
Male								
55 to 64 years	86.9	87.9	86.8	84.7	83.0	75.8	74.7	73.1
55 to 59 years	NA	91.5	91.6	90.2	89.5	84.6	83.0	80.8
60 to 64 years	(NA)	82.1	[illegible]	78.0	75.0	65.7	63.0	57.2
65 years and over	41.6	39.6	33.1	27.9	26.8	21.7	20.1	16.8
65 to 69 years	(NA)	57.0	46.6	43.0	41.6	31.7	29.9	25.1
70 years and over	(NA)	28.1	24.8	19.1	17.7	15.2	12.9	10.3
Female								
55 to 64 years	27.0	32.5	37.2	41.1	43.0	41.[illegible]	42.[illegible]	42.6
55 to 59 years	(NA)	35.6	42.2	47.1	49.0	47.[illegible]	46.9	51.1
60 to 64 years	(NA	29.0	31.4	34.0	36.1	33.[illegible]	33.4	33.4
65 years and over	9.7	10.6	10.8	10.0	9.7	8.3	[illegible]	[illegible]
65 to 69 years	(NA)	17.8	17.6	17.4	17.3	14.5	14.6	13.9
70 years and over	NA)	6.4	6.5	6.1	5.7	4.9	4.4	4.1
BLACK AND OTHER RACES								
Male								
55 to 64 years	83.9	83.1	82.5	78.8	79.2	68.7	(NA)	(NA)
55 to 59 years	(NA)	(NA)	(NA)	(NA)	83.5	76.9	(NA)	(NA)
60 to 64 years	(NA)	(NA)	(NA)	(NA)	73.6	59.3	(NA)	(NA)
65 years and over	45.5	45.0	31.2	27.9	27.4	20.9	(NA)	(NA)
65 to 69 years	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
70 years and over	[illegible]	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Female								
55 to 64 years	40.9	40.7	47.3	46.9	47.1	43.8	(NA)	(NA)
55 to 59 years	(NA)	(NA)	(NA)	(NA)	53.4	52.1	(NA)	(NA)
60 to 64 years	(NA)	(NA)	(NA)	(NA)	39.0	34.6	(NA)	(NA)
65 years and over	16.5	12.1	12.8	12.9	12.2	10.5	(NA)	(NA)
65 to 69 years	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
70 years and over	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

NA Not available.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Vol. 22, No. 7, January 1976. Special Labor Force Report 156, The U.S. Labor Force: Projections to 1990, 1973, and projections to be published in a forthcoming Special Labor Force Report.

Worker proportions for black males 65 and over are similar to and have been changing in the same pattern as those for white males. The proportions at ages 55 to 64 have also been changing in the same pattern as those for whites but they are substantially lower.

Income Level

Families with heads 65 and over have relatively low incomes as compared with all families (figure 6 3). The median income of families with heads 65 and over in 1974 ($7,298) was less than three-fifths (.57) the median income for all families ($12,836) in 1974 (table 6-6). This ratio has fluctuated between about .49 and .57 for the last few decades. The sex of the head of the family makes an important difference in the relative position of families with heads 65 and over. Families headed by females 65 and over have higher median incomes than all female-headed families; but for families headed by males, median incomes are relatively much lower for families with heads 65 and over. The median income of families with heads 65 and over increased nearly 300 percent over the period 1950-74 and more than 100 percent over the period 1965-74 in current dollars, but grew much less rapidly in constant dollars.

Table 6 6 MEDIAN INCOME OF FAMILIES WITH HEADS 65 YEARS OLD AND OVER, BY TYPE OF FAMILY AND RACE OF HEAD, AND OF UNRELATED INDIVIDUALS 65 YEARS OLD AND OVER, BY RACE AND SEX: 1950 TO 1974

(Persons as of March 1975, March 1971, March 1968, March 1966, March 1961, and March 1951)

[illegible]	Families					Unrelated individuals		
	Total	Male head			Female head	Total	Male	Female
		Total	Married, wife present	Other marital status				
[illegible]								
[illegible]								
[illegible]	[illegible]	[illegible]	7,177	[illegible]	7,722	[illegible]	[illegible]	2,869
[illegible]	[illegible]	[illegible]	[illegible]	6,722	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	2,617	[illegible]	[illegible]	1,477	1,404	[illegible]
[illegible]	3,[illegible]	NA	NA	(NA)	NA	1,37[illegible]	(NA)	(NA)
[illegible]	[illegible]	2,857	[illegible]	[illegible]	[illegible]	1,052	[illegible]	960
[illegible]	[illegible]	(NA)	(NA)	(NA)	NA	[illegible]	(NA)	(NA)
[illegible]								
[illegible]	[illegible]	[illegible]	[illegible]	11,60[illegible]	[illegible]	[illegible],373	2,730	2,959
[illegible]	[illegible]	[illegible],177	[illegible]	7,320	[illegible]	2,00[illegible]	2,365	1,937
[illegible]	4,953	[illegible]	3,907	4,955	4,75[illegible]	1,514	1,897	1,437
[illegible]								
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4,602	2,112	2,385	1,998
[illegible]	[illegible]	3,393	3,259	B	2,878	1,443	1,706	1,357
[illegible]	[illegible]	[illegible]	2,556	(B)	2,805	1,127	1,299	1,056
[illegible]								
All races								
[illegible]	12,836	13,748	15,847	11,737	6,413	4,439	5,996	3,493
[illegible]	9,867	10,480	10,516	9,012	5,093	3,137	4,540	2,423
[illegible]	7,933	8,358	8,398	6,904	4,269	2,379	3,514	1,917
[illegible]	6,917	7,310	7,330	6,515	3,535	2,153	3,194	1,767
[illegible]	5,620	5,857	5,873	4,860	2,968	1,720	2,489	1,377
[illegible]	3,319	3,435	3,446	3,115	1,922	1,045	1,539	846
White								
1974	13,356	14,055	14,994	12,438	7,363	4,636	6,357	3,723
1970	10,236	10,697	10,723	9,524	5,751	3,283	4,861	2,615
1967	8,231	8,557	8,588	7,353	4,855	2,470	3,881	1,998
Black								
1974	7,848	10,365	10,530	7,942	4,465	3,059	4,627	2,343
1970	6,279	7,766	7,816	6,751	3,576	2,117	3,320	1,651
1967	4,875	5,737	5,808	4,478	3,004	1,760	2,756	1,358
[illegible]								
All Races								
1974	0.569	0.535	0.518	0.791	1.204	0.665	0.568	0.821
1970	0.512	0.478	0.472	0.746	1.051	0.628	0.496	0.760
1967[1]	0.493	0.460	0.455	0.659	1.033	0.621	0.513	0.735
1965[1]	0.505	(NA)	(NA)	(NA)	(NA)	0.640	(NA)	(NA)
1960	0.515	0.488	0.480	0.836	1.058	0.612	0.529	0.697
1950	0.573	(NA)	(NA)	(NA)	(NA)	0.618	(NA)	(NA)
White								
1974	0.562	0.526	0.519	0.853	1.158	0.663	0.587	0.795
1970	0.514	0.484	0.476	0.769	1.027	0.611	0.486	0.741
1967	0.491	0.461	0.455	0.675	0.982	0.613	0.489	0.719
Black								
1974	0.629	0.489	0.482	0.630	1.031	0.703	0.515	0.853
1970	0.523	0.437	0.430	(B)	0.805	0.682	0.514	0.825
1967	0.53[illegible]	0.45[illegible]	0.450	(B)	0.935	0.690	0.471	0.779

B Base less than 75,000. NA Not available. X Not applicable

[1] Revised.

Source: *Current Population Reports*, Series P-60, Nos. 9, 37, 59, 97, and 101.

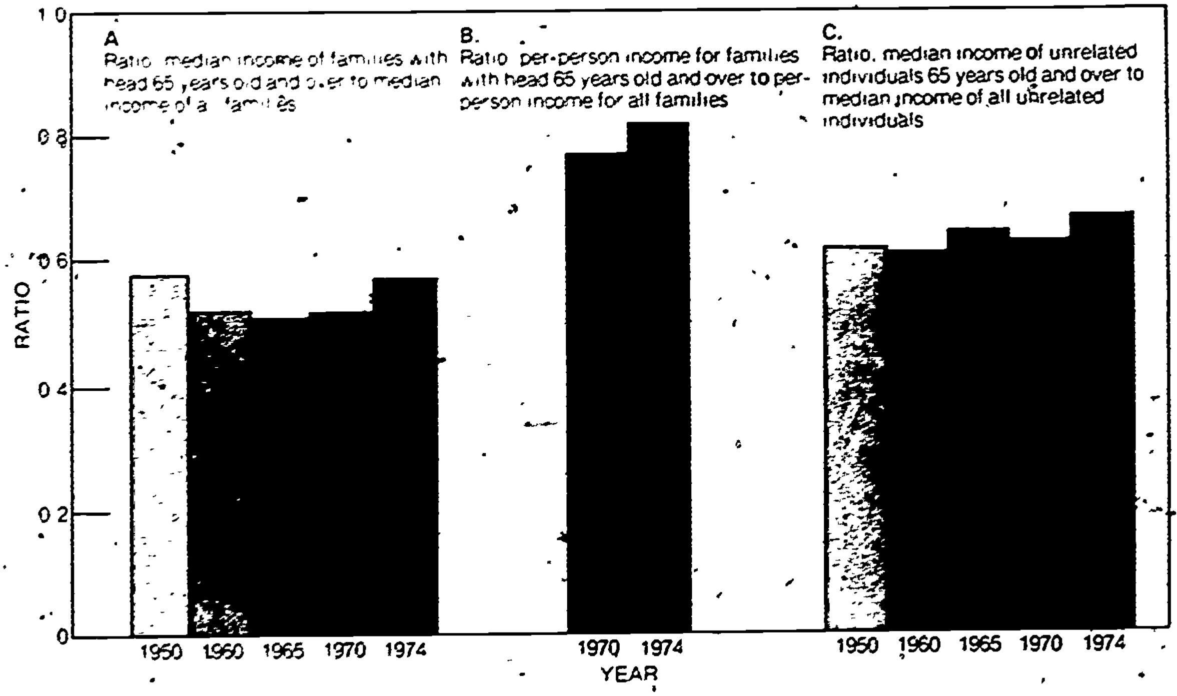
The median income of unrelated individuals (i.e., those not living with any relatives) over 65 more than doubled in the 1965-74 period but is still quite low ($2,956 in 1974). Unrelated individuals over 65 have a median income only about two-fifths as great as families with heads over 65. Similarly, families headed by blacks 65 and over have much lower incomes than families headed by whites 65 and over. The median income of families with black heads over 65 ($4,909) is only two-thirds as large as that of families with white heads over 65 ($7,619).

A more realistic view of the relative income status of elderly persons is secured by adjusting the income data for families by the number of persons in the family. A comparison of the per-person income for families with heads 65 and over with the per-person income for all families provides a much more favorable picture of the relative position of elderly persons than a comparison based on the total income of families. Since families headed by persons over 65 are smaller in size than families headed by persons under 65, the family income has to be spread over fewer persons in the former group of families than in the latter group. In 1974 the per-person income of the families with heads 65 and over was only about 18 percent below the corresponding figure for all families (table 6-7 and figure 6-3), as compared with the 43 percent disadvantage shown by data on total family income. This more favorable situation pertains whether the family is headed by a male or female or by a black or white. The relative advantage of families headed by females 65 and over, over all families headed by females, noted earlier is increased by the adjustment; persons in families headed by females 65 and over had an average income 42 percent greater than persons in all families headed by females.

The adjustment of family income data to a per-person basis magnified the observed gap between the income of whites and blacks in families headed by persons 65 and over. The income of blacks in "elderly" families now appears to be only one-half (52 percent) as large as the income for "elderly" families of all races. The disadvantage is particularly great when the family is headed by a female, in this case the income of blacks is only 45 percent as great as the income of all races.

A substantial segment of family heads 65 and over (9.5 percent in 1974) have incomes below the poverty level (table 6-8). The sex and race of the family head is an important factor in the poverty status of families. Over a third of black female family heads 65 and over have incomes below the poverty level. A far greater proportion of black female unrelated individuals (about two-thirds) have incomes below the poverty line. In fact, for each sex race group the percent below the

Figure 6-3. RATIO OF MEDIAN INCOME FOR FAMILIES WITH HEADS 65 YEARS OLD AND OVER TO MEDIAN INCOME FOR ALL FAMILIES: 1950 TO 1974



Source: Tables 6-6 and 6-7

[illegible] INCOME PER PERSON BASED ON MEDIAN INCOME OF FAMILY, FOR ALL FAMILIES AND FAMILIES WITH HEADS 65 YEARS OLD AND OVER, BY TYPE OF FAMILY AND RACE OF HEAD: 1960 TO 1974

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Female head
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	2,213	[illegible]	[illegible]	2,006
[illegible]	[illegible]	[illegible]	[illegible]	(NA)	(NA)
[illegible]	[illegible]	[illegible]	[illegible]	(NA)	(NA)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3,410
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	(NA)	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	1,162	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,048
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,314
[illegible]	[illegible]	[illegible]	[illegible]	1,722	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	3,428	1,931
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	1,713	[illegible]
[illegible]	[illegible]	0.782	[illegible]	0.814	1.421
[illegible]	[illegible]	0.748	0.716	[illegible]	1.295
[illegible]	[illegible]	(NA)	0.725	(NA)	(NA)
[illegible]	[illegible]	(NA)	0.732	(NA)	(NA)
[illegible]	[illegible]	0.787	0.788	[illegible]	[illegible]
[illegible]	[illegible]	0.751	[illegible]	0.763	1.195
[illegible]	[illegible]	[illegible]	[illegible]	0.681	1.111
[illegible]	[illegible]	[illegible]	0.661	(NA)	[illegible]

[illegible]

[illegible] P-20, Nos. 33, 106, 173, 218, 276, and 287, and Series P-60, Nos. 9, 37, 74, 97.

Table 6-8 FAMILY HEADS AND UNRELATED INDIVIDUALS 65 YEARS OLD AND OVER BELOW THE POVERTY LEVEL, BY RACE AND SEX: 1974

(Numbers in thousands. Persons as of March 1975)

Family status and sex	All races			White			Black		
	Total	Below poverty level		Total	Below poverty level		Total	Below poverty level	
		Number	Percent		Number	Percent		Number	Percent
FAMILY HEADS									
Total	8,0[illegible]4	76[illegible]	9.5	7,319	567	7.7	641	177	27.6
Male	6,92[illegible]	616	8.9	6,410	493	7.7	454	108	23.9
Female	1,1[illegible]	144	13.0	909	74	8.1	187	69	36.8
UNRELATED INDIVIDUALS									
Total	[illegible]	2,06[illegible]	31.8	5,874	1,697	28.9	577	349	60.5
Male	1,45[illegible]	39[illegible]	26.8	1,233	292	23.7	195	86	44.3
Female	[illegible],047	1,675	33.2	4,641	1,406	30.3	381	262	68.8

NOTE.—The weighted average income threshold at the poverty level in 1974 is $2,364 for an unrelated individual 65 years of age or over, and $2,982 for a family of two persons with a head 65 years or over.

Source: *Current Population Reports*, Series P-60, No. 99, July 1975, table [illegible].

poverty level for unrelated individuals 65 and over is about two to three times as great as that for heads of families in the corresponding sex-race category. The percent below the poverty level for black family heads over 65 (28 percent) is between three and four times that for white family heads (8 percent). Yet, because of the very great difference in the age distribution of the two races, elderly family heads and elderly unrelated individuals comprised about 31 percent of all poor white family heads and unrelated individuals in 1974, but only about 21 percent of all poor blacks of this family status.

The proportion of the elderly population below the poverty level has been falling sharply in the last decade and a half. In 1974 only 16 percent of the elderly were poor, as compared with 35 percent in 1959, and for those living in families the proportions fell from 27 percent in 1959 to 8.5 percent in 1974 (table 6-9). On the other hand, 36 percent of elderly blacks were still below the poverty level in 1974.

Familial and Societal Dependency

Much interest has been expressed in the relative size of the dependent-age population, particularly the elderly, and the productive age population, and the effect of changing dependency ratios on the support of the elderly population. The implication is that the older segment of the population constitutes an economic burden on the younger segment, that is, each "generation" is obliged to support a previous "generation," which was obliged to support a still earlier generation, etc. This note identifies some of the facets of this question and presents some pertinent data.

A number of different types of dependency ratios can be distinguished. First, intergenerational familial dependency ratios can be distinguished from societal dependency ratios. The former represent essentially the relative numbers of "dependents" in one generation defined by an age range at a given date to a specific age group in a later generation, presumably their children. This measure is analogous to a fertility measure "in reverse." Instead of relating children to parents, we relate parents to children, in this case, of course, the parents are elderly or aged, and their children adults. Dependency may be measured more analytically in terms of actual economic and social dependency. Psychological, social, and economic support (e.g., kinship network) of the older generation by their children is represented by such measures.

Ratios relating persons 65 to 84 to their children 45 to 49 and persons 80 and over to their children 60 to 64 can be used to illustrate intergenerational familial age-dependency ratios. The "burden" on their children of supporting the extreme aged (80 and over) increased greatly in the last quarter century after only a slight increase in the first four decades of this century (table 6-10). The series is expected to move irregularly in the next several decades, with peaks in the year 2000 and 2030. There were about 21 to 24 persons 80 or over

Table 6-9 FAMILY STATUS AND RACE OF PERSONS 65 YEARS OLD AND OVER BELOW THE POVERTY LEVEL: 1959 TO 1974

(Numbers in thousands. Persons as of March 1975, March 1971, March 1967, and April 1960)

Family status and race	Number below poverty level				Percent below poverty level			
	1974	1970	1966	1959	1974	1970	1966	1959
All persons 65 years old and over	3,308	4,793	5,114	5,481	15.7	24.6	28.5	35.2
In families	1,243	2,013	2,507	3,187	8.5	14.8	19.2	26.9
Head	760	1,188	1,450	1,787	9.5	15.5	20.9	29.1
Male	616	980	1,218	1,507	8.9	15.9	20.9	29.1
Female	144	209	231	280	13.0	20.1	20.4	28.8
Other family members	483	825	1,057	1,400	7.3	13.0	17.2	24.6
Unrelated individuals	2,065	2,779	2,607	2,294	31.8	47.2	53.8	61.9
Male	390	549	563	703	26.8	38.9	44.5	59.0
Female	1,675	2,230	2,044	1,591	33.2	49.8	[illegible]	63.3
White	2,64[illegible]	4,021	4,357	4,744	13.8	22.6	26.4	33.1
Black	626	725	722	711	36.[illegible]	47.7	55.1	62.5

Source: Current Population Reports, Series P-60, Nos. 86, 91, and 99, and unpublished data for 1966.

Table 6-10 FAMILIAL INTERGENERATIONAL DEPENDENCY RATIOS AND SOCIETAL AGE AND ECONOMIC DEPENDENCY RATIOS: 1900 TO 2010

(Figures are for July of year except as noted. Ratios for 1940 and later years include Armed Forces overseas)

Year	Familial dependency ratios		Societal dependency ratios			
	Population 80 years and over / Population 60 to 64 years	Population 65 to 84 years / Population 45 to 49 years	Population 65 years and over / Population 18 to 64 years	Population 60 years and over / Population 20 to 59 years	Population 65 years and over / Males 20-64 yrs. and females 35-59 yrs.	Nonworkers 65 years and over / Workers 20 to 59 years
ESTIMATES						
1900	[2]0.21	[2]0.86	0.07	0.13	0.11	(NA)
1910	[2]0.22	[2]0.85	0.07	0.13	0.11	(NA)
1920	[2]0.21	[2]0.82	0.08	0.14	0.11	(NA)
1930	[2]0.22	[2]0.90	0.09	0.16	0.13	(NA)
1940	[2]0.24	[2]1.05	0.11	0.19	0.15	[3]0.21
1950	[2]0.28	[2]1.30	0.13	0.23	0.18	[3]0.25
1960	0.36	1.44	0.17	0.27	0.23	[3]0.28
1970	0.43	1.54	0.17	0.29	0.25	[3]0.29
1975	0.49	1.74	0.18	0.29	0.26	[3]0.29
PROJECTIONS[1]						
1980	0.49	2.04	0.18	0.29	0.26	[3]0.29
1990	0.59	1.91	0.19	0.30	0.27	[3]0.30
2000	0.73	1.44	0.19	0.28	0.25	(NA)
2010	0.55	1.46	0.19	0.32	0.26	NA
2020	0.45	2.35	0.24	0.40	0.33	NA
2030	0.70	2.33	0.29	0.41	0.39	NA

NA Not available.

[1] Series II projections.

[2] Figures are census data for April 1.

[3] Labor force data are monthly averages based on or consistent with the Current Population Survey.

Source: Based on Current Population Reports, Series P-25, Nos. 311, 519, 614, and 601. Census of Population, 1950, 1960, and 1970. Special Labor Force Report 119, The U.S. Labor Force: Projections to 1985, 1970. Special Labor Force Report 156, The U.S. Labor Force: Projections to 1990, 1973, and projections to be published in a forthcoming Special Labor Force Report.

for every 100 persons 60 to 64 in 1900 and in 1940; but by 1975 the ratio had approximately doubled to 49 for every 100. By the year 2000 the ratio will have increased by another quarter to 73 persons 80 and over for every 100 persons 60 to 64. The past trend in the ratio of younger parents (65 to 84) to their children (45 to 49) has been roughly similar, with the increase between 1900 and 1940 being somewhat greater and the increase between 1940 and 1975 somewhat smaller. Peaks will be reached in 1980 at 200 persons 65 to 84 per 100 persons 45 to 49 and in the year 2020 with "235 per 100," as compared with 174 in 1975.

Societal dependency ratios represent essentially the relative burden of older "dependents," defined either by age or economic status, on "productive" persons, also defined either by age or economic status. When we are considering economic support by the community, a relatively wide band of ages must be used to represent "producers." Age-dependency ratios, relating the number of persons of "dependent" ages to the number of persons of "productive" ages, are intended to show how age composition contributes to economic dependency in a given population. A number of different age-dependency ratios may be considered. For example, the age factor in economic dependency may be represented by the ratio of persons 65 and over to persons 18 to 64. This ratio showed a nearly steady rise between 1900 and 1975, having more than doubled, but is expected to level off or increase slowly in the next several decades. The ratio was 0.07 in 1900 and 0.18 in 1975, and is expected to be about 0.19 in the year 2010 (Series II projections). A sharp rise in the ratio is then anticipated in the next few decades (to 0.29 in 2030) as the large postwar birth cohorts reach 65 years of age.

In view of the trend toward later entry into the labor force, the trend toward earlier retirement, and the large proportion of part-time workers under 20 and over 60, it is useful to examine also the trend in the ratio of persons 60 and over to persons 20 to 59. The upward progression in this series is roughly about the same as that for the series just discussed; the values are much larger, however, since there are more "dependents" and fewer "producers." We see again the sharp net rise in the ratio, from 0.29 in 1975 to 0.44 in 2030.

At many ages the proportions of women in the labor force are low (less than 50 percent) and a large share of those who work work part-time. Accordingly, a dependency ratio has been constructed relating persons 65 and over to the sum of males 20 to 64 and females 35 to 59. This "sex-adjusted" measure shows nearly the same fluctuations as the last two series considered and approximates the second of these closely in magnitude.

Measures relating actual workers and nonworkers may be viewed as more realistic for measuring economic dependency than are age-dependency ratios. For this purpose, the ratio of nonworkers 60 and over to workers 20 to 59 has been examined. This series has shown a moderate rise in recent past decades, but is expected to remain relatively unchanged to 1990. Currently there are about three nonworkers 60 and over for every ten workers 20 to 59 years of age. This series is almost identical to the age-dependency series based on the same ages and may be expected to show a similar pattern of increase after 1990, barring sharp changes in worker proportions.

In theory, the difference between an economic dependency ratio and the corresponding age-dependency ratio represents the net contribution of the proportions of nonworkers at each age of each sex to economic dependency. Specifically, the difference reflects the extent to which persons of working age are not actually workers and to which persons of nonworking age are workers. These adjustments may balance out, as in the present case. Even the economic dependency ratio, as we have defined it excludes the effect of weeks worked in a year, hours worked in a week, and productivity—all of which affect the economic product available for supporting the dependent population—and it excludes the economic contribution of homemakers in rearing children and managing the affairs of the home and of volunteer workers.

It may be maintained that the concepts of age dependency and even economic dependency of the elderly will become increasingly less significant as more and more workers participate in effective retirement plans, in addition to Federal Social Security, to which they contribute a share of their income. These plans represent a postponement of current satisfactions of goods and services, so that the retiree has a claim on goods and services at a future period; and this "claim" should be gradually augmented by the current market interest rate (including an adjustment for inflation). The contributions to retirement funds and the size of the retirement funds will increasingly reflect the changing size of the cohorts of retirees since larger elderly cohorts will have made larger contributions to the funds when they worked. Such larger cohorts will also have saved larger sums in pursuit of their own "personal" retirement plans.

Increases in life expectation and the continuation of the trend of a rising age of entry into the labor force and a falling age of retirement are other demographic changes which have actuarial implications for the conduct of the Social Security program and should be considered when decisions are being made about the

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level of contributions, these demographic changes are expected to be modest, however. The trend of expanding public services to the elderly may also create special demands on the retirement system if the level of such services is not correctly anticipated. Prospective changes can be financially covered by an additional period of work before or after "retirement," higher general taxes, or larger contributions to the retirement system on the basis of a higher rate of worker contributions or a broader income base for the present rate of contributions.[4] Opportunities for productive work on the part of the elderly may also be expanded.

Nevertheless, because of the difficulties of anticipating the total consumption requirements of the elderly and because of changes in the age composition of the population, particularly a sharp rise in the ratio of elderly persons to persons of working age, subsidies from the current crop of workers (i.e., intergenerational transfers) may be necessary through general taxation and an increase in payroll contributions. However, the view that changes in the age distribution of the population will be the dominant factor affecting the condition of the Social Security System, and specifically the view that an increase in the age-dependency ratio will necessarily have a seriously adverse affect on the system, are misleading, if not erroneous. Finally, it may be maintained that the Social Security System is not to be viewed strictly as an insurance fund and that it is "backed up" by the taxing power and economic solvency of the U.S. Government.

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[4] James N. Morgan "Welfare Economic Aspects of Prolongation of Life" Congress Abstracts, Vol. I, 10th International Congress of Gerontology, Jerusalem, Israel, June 22-27, 1975, pp 25-27

Appendix A.
QUALITY OF DATA ON THE OLDER POPULATION

Population Statistics

Census data. Like all data on age, the statistics on the older population are subject to errors of coverage and errors of misreporting of age and other characteristics. Information on the quality of the age data in the 1970 census comes from a number of sources. These are demographic analysis, which provides estimates of net errors (combining both net coverage error and net age reporting error) in the census statistics, a match study of the census and the Current Population Survey (CPS), which provides information on the inconsistency of the reporting of age in the two data collection systems of persons who were enumerated in both, and a match study of the census and the "Medicare" enrollment files, which provides information on the extent of the gross omissions of persons 65 years of age and over from the census as well as data on differences in age reporting between the census and Medicare.[1]

The estimated percents of net error in the 1970 census for the population 55 years and over, by age, sex, and race, as derived by demographic analysis, are shown in table A-1. The age groups 55-59, 60-64, and 65 and over show moderate net undercounts—2 percent, 3 percent, and 2 percent, respectively. The group 65-69 separately shows a net overcount, which is quite pronounced for black males and black females. A net overcount can only result from age misreporting, and in the present case many persons in the group 60-64 appear to have reported into the group 65-69.

The 1970 Census-Medicare Match Study indicates a gross omission from the census of 4 percent of the population 65 and over (table A-2). Considered in combination with a net census undercount of 2 percent derived by demographic analysis, this percent of gross omission implies an estimate of 2 percent net reporting into the age group 65 and over. This pattern of gross omission and age overreporting is most pronounced for the Negro-and-other races male population. For this group, a gross omission of 12 percent and a net census overcount of 3 percent, combined with a net error in sex-race misreporting of about 2 percent, imply that 12 percent of the population reported as 65 or over in the census may actually have been under 65. A consequence of this pattern of gross errors is that the characteristics of a substantial part of the population reported as 65 and over in the census relate in fact to persons under 65.

The 1970 CPS Census Match Study provides information on both gross "errors" in reporting age (i.e., gross inconsistency) and net "errors" in reporting age (i.e., the balance of erroneous reporting into and out of any age group). Gross inconsistency in reporting age shows a general tendency to increase with age. Estimated indexes of inconsistency (a measure of gross error) for ages 60-64, 65-69, 70-74, and 75 years and over are 10 percent, 12 percent, 10 percent, and 8 percent, respectively, as compared with 7 percent for the population of all ages.[2] Inconsistency in reporting age for blacks at the older ages appears to be much higher than for the general population. The indexes are 50 to 140 percent greater. Percents of net difference (a measure of net error) for the age classification in 5-year age groups by sex and by race are all small and do not provide definite evidence of any substantial bias.

Part of the error in the age data in the 1970 census, particularly for the elderly, may have resulted from the assignment of ages to persons who were enumerated but whose ages were not reported in the census. While 9.8 percent of all persons whose ages were reported in

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[1] U.S. Bureau of the Census, 1970 Census of Population and Housing, Evaluation and Research Program PHC(E)-4, Estimates of Coverage of Population by Sex, Race, and Age: Demographic Analysis; PHC(E)-7, The Medicare Record Check: An Evaluation of the Coverage of Persons 65 Years of Age and Over in the 1970 Census; PHC(E)-11, Accuracy of Data for Selected Population Characteristics as Measured by the CPS-Census Match.

[2] U.S. Bureau of the Census, PHC(E) 11, table 11, op. cit.

Table A 1 Estimated Percents of Net Census Error for the Population 55 Years Old and Over, by Age, Race, and Sex: 1970 and 1960

(A minus sign (-) denotes a net undercount and a plus sign (+) a net overcount)

Year and age	All classes			White		Black	
	Both sexes	Male	Female	Male	Female	Male	Female
1970							
All ages........	-2.5	-3.3	-1.8	-2.5	-1.4	-9.9	-5.5
55 to 59 years........	-2.4	-3.0	-1.9	-2.1	-1.3	-10.9	-8.2
60 to 64 years........	-2.9	-2.8	-3.0	-2.3	-2.7	-7.0	-5.5
65 years and over......	-1.8	-0.9	-2.4	-1.2	-2.2	-3.1	-4.2
65 to 69 years......	-1.5	-0.8	-2.1	-0.2	-1.1	-10.1	-14.5
70 to 74 years......	-0.4	-0.2	-0.9	-0.1	-0.4	+2.2	-5.6
75 years and over......	-5.5	-3.5	-6.7	-3.6	-5.9	-4.3	-19.0
1960							
All ages........	-2.7	-3.3	-2.2	-2.4	-1.6	-9.7	-6.3
55 to 59 years........	-0.3	-0.7	-2.1	+0.9	-0.3	-3.4	-6.5
60 to 64 years........	-4.0	-4.1	-5.5	-2.1	-3.3	-14.6	-17.4
65 years and over......	-1.9	-	-3.5	-0.5	-3.5	-5.8	-2.8
65 to 69 years......	-2.8	-1.6	-3.8	-1.8	-3.7	+0.2	-5.0
70 to 74 years......	-0.9	+1.1	-2.6	-0.7	-2.6	+6.6	-3.6
75 years and over......	-1.8	-1.0	-3.8	+0.1	-4.1	+13.9	+1.2

- Represents zero.

Source: U.S. Bureau of the Census, 1970 Census of Population and Housing: Evaluation and Research Program, PHC(E)-4, Estimates of Coverage of Population by Sex, Race, and Age: Demographic Analysis, 1973.

the census were reported in the group aged 65 and over, 13.8 percent of the allocated ages fell into this group.[3] Overall, age was allocated for 2.7 percent of the population but, for the population 65 and over, age was allocated for 3.6 percent.

Some gerontologists have shown special interest in the number and characteristics of centenarians, since this group has clearly achieved success so far as the quantity of years lived is concerned and knowledge of their characteristics may provide clues as to the factors conducive to longevity. Census data tend to overstate greatly the true number of centenarians in the United States. Available estimates for recent census dates suggest that the true number of persons 100 years old and over in the United States does not exceed several thousand.[4] The number of persons shown as 100 years and over in the 1970 census—106,000—grossly overstated the true number, therefore. Alternative estimates of the number of centenarians in 1970 vary from 3,500 to 8,000. The preferred estimate is 4,800, or only about .002 percent of the total population of 203 million. The extreme error in the count of centenarians in 1970 is

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[3] U S Bureau of the Census, 1970 Census of Population, General Population Characteristics, PC(1) B1, U S Summary, table B 2

[4] Jacob S Siegel and Jeffrey S Passel, "Alternative Approaches to the Estimation of the Number of Centenarians in the United States," Proceedings of the Social Statistics Section, 1975, American Statistical Association

Table A 2. Comparison of Percents of Net Census Error Based on Aggregate Medicare Data and Percents of Gross Omission Based on the Census-Medicare Match Study, for the Population 65 Years Old and Over, by Sex and Race: 1970

(Errors per 100 corrected population. A minus sign (-) denotes net undercount, omission, or net understatement due to sex-race or age misreporting, and a plus sign (+) denotes a net overcount or net overstatement due to sex-race or age misreporting)

Sex and race	Net census error percent[1]	Gross omission percent[2]	Difference		
			Total[3]	Part due to sex-race misreporting[2]	Remainder[3]
Total	-1.8	-4.0	-2.2	-	+2.2
White male	-1.2	-4.0	-2.8	-0.3	+3.1
White female	-2.2	-3.1	-0.9	-0.4	-1.3
Negro-and-other-races male	-2.7	-11.7	+14.4	+2.4	+12.0
Negro-and-other-races female	-4.0	-7.4	-3.4	+5.3	-1.9

- Represents zero.

[1] Based on comparison of census counts and aggregate Medicare data. Figures have been adjusted for underenrollment in Medicare.

[2] Based on the Census-Medicare Match Study. Figures have been adjusted for census imputations.

[3] Derived by subtraction. Age misreporting is presumably a major contributor to the "total difference" and the "remainder," which also include sampling error, errors due to matching problems, and omissions in Medicare enrollment not already allowed for in the net census error percents.

Source: U.S. Bureau of the Census, 1970 Census of Population and Housing: Evaluation and Research Program, PHC(E)-4, Estimates of Coverage of Population by Sex, Race, and Age: Demographic Analysis, 1973.

believed to have resulted principally from a misinterpretation by some persons of the instructions relating to the placement of responses on age on the census questionnaire, which generally was filled by the respondent or a member of the respondent's household.

The census does not provide any information regarding the demographic or other characteristics of centenarians. For purposes of gerontological research this is no great loss. The census does have a fair amount of data on persons 85 years and over and they have certainly achieved sufficient longevity to serve as a population for study of the characteristics of persons successful in living to extreme old age.

Estimates and projections. The nonsurvey population estimates and projections were derived by the methods of demographic accounting and demographic analysis. The national estimates by age, sex, and race of this type are based on statistics from the population censuses, statistics and estimates of births, deaths, and net immigration, and statistics on the strength of the Armed Forces. They are affected both by errors in the census data (coverage and age-sex race misreporting) and by errors in the estimation of population change for the period since the census. For the national estimates, the components of change particularly subject to error are the deaths in age classes, which suffer particularly from misreporting of the age of decedents, and net immigration. For the older population the former component is far more important than the latter one. The component of births in projections of population is especially subject to error because of its great variability, but for projections of the number of older persons, especially over a long period, the component of deaths is a principal area of concern, in spite of its considerable stability. The three principal series of population projections presented in this report (I, II, and III) vary only as a result of alternative projections of fertility.

The estimates of the socioeconomic characteristics of the national population shown in this report are sample estimates based on the Current Population Survey. The Current Population Survey has undergone many changes in sample size and design in the last three decades.[1] In 1975 the sample was spread over 461 areas comprising 923 counties and independent cities, with coverage in each of the 50 States and the District of Columbia. Approximately 47,000 occupied housing units are eligible for interview each month.

The estimates based on the Current Population Survey are subject to sampling, response, and processing errors and to errors in the assumption used to estimate the final figures from the weighted (i.e., inflated) sample. After inflation by the sampling weight, the aggregate figures for each age-sex-race category from the Current Population Survey are subject to an adjustment for consistency with the postcensal nonsurvey estimates of the civilian noninstitutional population of the United States in each age-sex-race category. This adjustment is aimed at decreasing sampling variability, but also allows for coverage errors and age-sex-race reporting errors in the survey in relation to the census-based population estimates. It does not allow for errors of coverage and misreporting that characterize these estimates, however.

For the data collected in the Current Population Surveys in the years 1962 to 1971, the independent (nonsurvey) estimates used were based on the 1960 Census of Population; for data collected in the years 1952 to 1961, the independent estimates were based on the 1950 census, and for 1947 to 1951 data, the independent estimates were based on the 1940 census. The adjustment factors generally reflect undercoverage in the Current Population Survey. The percent differences of the weighted CPS figures from the independent estimates for the population 65 and over, by age, sex, and race for 1974 (monthly averages) are as follows:

Age	All classes	White		Negro-and-other-races	
		Male	Female	Male	Female
65 years and over	-2.0	-0.6	-2.0	-7.2	-7.9
65 to 69 years	-3.4	-2.1	-2.5	-8.4	-17.4
70 to 74 years	-2.5	-0.8	-1.9	-5.6	-18.2
75 years and over	-3.8	-	-4.3	-18.6	-24.5
Total, 14 years and over	-5.4	-3.8	-3.2	-13.6	-8.0

This type of adjustment makes the underlying assumption that the percent in a given socioeconomic class of each age-sex-race category, indicated by the Current Population Survey (e.g., percent widowed of white males 65 to 69 years of age), applies to the population that was missed by the survey in the field, as well as to the population that was enumerated by the survey. If the population omitted by the survey has a different distribution (e.g., by marital status) within the age-sex-race category than the population enumerated, the results are biased. There is no firm evidence regarding the socioeconomic characteristics of the persons missed by the Current Population Survey, as compared with those enumerated in the survey. The accuracy of the absolute estimates from the Current Population Survey also depends on the validity of this assumption. In addition, the absolute estimates understate (or overstate) the numbers in any class (e.g., widowed white males 65 to 69 years of age in April 1975) to the extent that the age-sex-race category concerned was understated (or overstated) in the census (e.g., when the age group was 60 to 64 years of age).

Death Statistics

The death statistics used in this report were accepted as reported in the official sources, without any adjustment for underregistration, the misreporting of the age, sex, or race of the decedent, or misclassification according to cause. Some deaths may not be registered but a more important problem may be the misreporting of the characteristics of decedents, particularly age. There is the further possibility that there is a difference between the age pattern of net misreporting for decedents and the age pattern of net errors for the population; any difference would tend to distort age-specific death rates and life table survival rates calculated from the data.

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[1] U.S. Bureau of the Census, **The Current Population Survey—A Report on Methodology**, Technical Paper No. 7, 1963 (revision in preparation). Marvin H. Thompson and Gary Shapiro, "The Current Population Survey: An Overview," **Annals of Economic and Social Measurement**, Vol. 2, No. 2, pp. 105-129, 1973.

No national test of the completeness of death registration in the United States has ever been conducted. It is very probable that registration is complete or nearly complete, in view of the strict legal requirements for registration and the needs of the survivors for proof of death. Beneficiaries of older decedents especially would tend to comply with death-registration procedures. (Conversely, requirements for registration could be evaded more easily in the case of infants.) Hence, there is probably extremely little, if any, underregistration of the deaths of older persons.

Two national studies, covering relatively brief periods provide evidence of the misreporting of age on death certificates: the so-called Chicago Mortality Study, a match of death certificates in the four months May-August 1960 and census records,[6] and a comparison of death rates based on the Social Security ("Medicare") files and death rates from the registration system in 1968.[7] The former study indicates that, at ages 45 and over, inconsistency of age reporting is particularly great for Negroes and other races (table A-3). A substantially smaller number of deaths would have been classified

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[6] U.S. Public Health Service, National Center for Health Statistics, "Comparability of Age on the Death Certificate and Matching Census Record, United States, May-August 1960," **Vital and Health Statistics, Series 2, No. 2, by Thea Z. Hambright,** June 1968, tables B and 8. See also Evelyn M. Kitagawa and Philip M. Hauser, **Differential Mortality in the United States: A Study in Socioeconomic Epidemiology,** Vital and Health Statistics Monographs, American Public Health Association, Harvard University Press, Cambridge, Mass., 1973.

[7] Francisco Bayo, "Mortality of the Aged," **Transactions,** Society of Actuaries, Vol. 24, Part 1, March 1972, pp. 1-24.

Table A-3. Percent Differently Reported and Percent Net Difference Between Deaths During May-August 1960 by Age as Stated in the 1960 Census Record and as Stated on the Death Certificate, by Race, Sex, and Specified Age Intervals

(A plus sign (+) denotes an excess of deaths reported on death certificates; a negative sign (-) denotes a deficit of deaths reported on death certificates)

Age	All classes	White		Negro and other races	
		Male	Female	Male	Female
PERCENT DIFFERENTLY REPORTED					
Single years	33.6	27.3	36.0	57.0	65.9
Interval, 5-year groups	15.7	11.3	16.3	32.5	42.0
Interval, 10-year groups	11.2	8.1	11.4	23.8	30.3
PERCENT NET DIFFERENCE					
1 to 4 years	-1.7	-1.0	-2.7	-2.4	-
5 to 14 years	-1.0	+1.4	-3.9	-2.9	-4.1
15 to 24 years	-2.4	-1.1	-4.2	-1.2	-11.0
25 to 34 years	-7.5	-3.3	-11.9	-5.6	-8.2
35 to 44 years	-5.5	-6.0	-7.0	-4.7	+2.4
45 to 54 years	+0.8	-1.0	-0.9	+7.2	+18.1
55 to 64 years	+0.7	-1.1	-2.0	+14.4	+24.2
65 to 74 years	-0.3	-1.1	-1.8	+0.6	-7.5
75 to 84 years	+1.1	+0.6	+3.9	-15.2	-14.7
85 years and over	+1.1	+3.0	+2.4	-14.9	-28.2

- Represents zero.

Source: Thea Z. Hambright, "Comparison of Information of Death Certificates and Matching 1960 Census Records: Age, Marital Status, Race, Nativity, and Country of Origin," Demography, Vol. 6, No. 4, November 1969, table 2, pp. 413-423.

in each of the age groups 45 to 64 on the basis of the age given in the census than on the basis of the age given on the death certificate and a substantially larger number would have been classified in each of the age groups over 75 years. The comparison of deaths according to "certificate" age and deaths according to "census" age suggests that the reported death rates for Negro and other races males and females aged 45 to 64 years may be seriously biased upward and the death rates for Negro and other races males and females aged 75 and over may be seriously biased downward. Taking into account net census errors in the population figures might affect this conclusion.

The second study shows wide differences for Negroes and other races between death rates calculated from Social Security ("Medicare") records and conventional death rates based on the registration system for ages 65 and over. It shows generally higher rates from the registration system than from the Medicare tabulations at ages 65-69 and 70-74 and generally lower rates at the older ages (table A-4). For the white population the "Medicare" death rates are rather similar to the "vital statistics" death rates. The set of rates based on Medicare records is believed to represent mortality levels more accurately because coverage of the population and deaths is essentially complete or consistent, the ages of

Table A-4. Comparison of Death Rates for 1968 Based on Registration Data and Death Rates Based on Social Security Data

Race and age	Registration data[1]		Social Security data[2]		Ratio	
	Male	Female	Male	Female	Male	Female
ALL CLASSES						
65 to 69 years..................	0.0426	0.0221	0.0417	0.0203	1.022	1.089
70 to 74 years..................	0.0645	0.0349	0.0604	0.0327	1.068	1.067
75 to 79 years..................	0.0856	0.0549	0.0879	0.0548	0.984	1.002
80 to 84 years..................	0.1207	0.0909	0.1305	0.0926	0.925	0.982
85 years and over..............	0.2037	0.1917	0.2203	0.1792	0.925	1.070
WHITE						
65 to 69 years..................	0.0410	0.0202	0.0413	0.0195	0.993	1.036
70 to 74 years..................	0.0629	0.0335	0.0599	0.0318	1.050	1.053
75 to 79 years..................	0.0869	0.0549	0.0874	0.0540	0.994	1.017
80 to 84 years..................	0.1235	0.0923	0.1307	0.0926	0.995	0.997
85 years and over..............	0.2156	0.2001	0.2223	0.1813	0.970	1.104
NEGRO AND OTHER RACES						
65 to 69 years..................	0.0598	0.0440	0.0464	0.0283	1.289	1.555
70 to 74 years..................	0.0859	0.0526	0.0659	0.0427	1.303	1.232
75 to 79 years..................	0.0820	0.0546	0.0914	0.0652	0.897	0.837
80 to 84 years..................	0.0904	0.0722	0.1290	0.0956	0.701	0.755
85 years and over..............	0.1156	0.1099	0.1962	0.1562	0.589	0.704

[1] U.S. Public Health Service, National Center for Health Statistics, Vital Statistics of the United States, 1968.

[2] Based on midyear population estimated by interpolation from data for the beginning and end of calendar year 1968. The rates for white persons and Negro-and-other-races persons are based on data recorded for these two broad race groups. The rates for total persons include these data and also data for cases of nonrecorded race.

Source: Francisco Bayo, "Mortality of the Aged," Transactions, Society of Actuaries, Vol. 24, Part 1, March 1972, pp. 1-21.

the decedents and the population are identified from the same record, and the ages are validated to a limited extent.

Reporting of the age of decedents among the extreme aged (85 years and over) in the vital registration system is believed to be quite inaccurate. The exact or even approximate age of most decedents at these ages is not known to surviving relatives, friends, or neighbors, and their reports tend to be a guess, with a tendency towards exaggeration of age. Because of serious errors in the count of population of these ages also, death rates by age among the extreme aged as conventionally computed are highly unreliable and death rates based on Medicare tabulations should be preferred at those ages.

The medical certification of death is made by a physician, a medical examiner, or a coroner. The reliability and accuracy of cause-of-death statistics are, to a large extent, governed by the ability of the medical attendant to make the proper diagnosis and by the care with which he or she completes the death certificate. Standard classification lists have been developed to upgrade the accuracy and completeness of cause-of-death reporting but do not insure their achievement or strict comparability of the tabulated figures.

One study of the quality of the basic data reported on the death certificate involved an inquiry to physicians regarding a sample of deaths occurring in Pennsylvania during three months of 1956. In almost two-fifths of the cases included in the study the supporting diagnostic data provided by the physician was sketchy, and for less than three-fifths of the cases the diagnostic data given was considered good or very good.[8] The quality of the diagnostic information varied considerably with the cause of death. In this study the diagnostic data for many disease categories appeared to provide an adequate basis for medical certification of cause of death. On the basis of another "follow-back" study involving a sample of all deaths which occurred in the United States in July and August 1960, the National Center for Health Statistics estimated that 70 to 75 percent of the deaths classified as caused by cardiovascular renal diseases as a single category were reasonable inferences on the basis of the diagnostic information provided by the physician.[9]

One indicator of the quality of cause-of-death reporting is the proportion of deaths assigned the cause "symptoms and ill-defined conditions." Although in some cases it is not possible to determine the cause of death, this proportion may be taken as a measure of the care given to the certification by attending physicians. It may also be used as a rough measure of the specificity of the medical diagnosis made by the medical attendants in various areas. In 1971, 1.3 percent of all reported deaths in the United States were assigned to ill-defined or unknown causes. this percentage varied among the States from 0.2 to 7.1 percent.

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[8] For a more complete report, see I.M. Moriyama et al., "Inquiry into Diagnostic Evidence Supporting Medical Certifications of Death," American Journal of Public Health, Vol. 48, No. 10, Oct. 1958, pp 1376-1387

[9] I.M. Moriyama et al., "Evaluation of Diagnostic Information Supporting Medical Certification of Cardiovascular Disease Deaths," paper presented at the meeting of the American Public Health Association, Kansas City, Mo., Nov 13, 1963.

Note A document is available upon request providing information on the reliability of the estimates based on the Current Population Survey that are given in this report.

Appendix B.

LIST OF SOURCES OR GUIDES TO SOURCES OF CENSUS BUREAU DATA ON THE OLDER POPULATION

Guides to Sources Specifically Concerned with the Older Population

Beth J. Soldo and Aydin Awad, Center for Demographic Studies, Duke University "Gerontologist's Guide to Published Reports from the U.S. Bureau of the Census 1970-1974," report prepared for the Summer Institute in Psychological and Social Aspects of Aging held at the Battelle Seattle Research Center, Seattle, Washington June 27-July 6, 1974.

U.S. Administration on Aging, Department of Health, Education, and Welfare, **Guide to Sources and Uses of Current Data on the Aging**, prepared under contract to Westat, Inc., by Rose V. Siegel and Doris N. Krug, August 1974.

U.S. Bureau of the Census and U.S. Administration on Aging, **Social Statistics for the Elderly, Area Level System, Stage 1: Omaha, 1975.**

2. General Guides to Census Data

U.S. Bureau of the Census, "Publication and Computer Summary Tape Program," 1970 Census of Population and Housing, June 1973.

U.S. Bureau of the Census, "Public Use Samples of Basic Records From the 1960 and 1970 Censuses," Data Access Descriptions DAD No. 24, May 1971.

U.S. Bureau of the Census, "Subject Reports from the 1970 Census of Population and Housing," Data Access Descriptions DAD No. 32, May 1973.

U.S. Bureau of the Census, "1960 Census of Population and Housing. Availability of Published and Unpublished Data," Data Access Descriptions DAD No. 35, February 1974.

U.S. Bureau of the Census, "Microdata from the Current Population Survey—The Annual Demographic File," Data Access Descriptions DAD No. 37, December 1974.

U.S. Bureau of the Census, "Current Survey Statistics Available From the Bureau of the Census," Data Access Descriptions DAD No. 38, July 1975.

U.S. Bureau of the Census, "Reports Related to the 1970 Census of Population and Housing," Data Access Descriptions DAD No. 39, August 1975.

3. General Sources of Data on the Older Population

a. Three series of national and State reports based on the 1970 Census of Population

PC(1) B	General Population Characteristics
PC(1) C	General Social and Economic Characteristics
PC(1) D	Detailed Characteristics

b. Forty special subject reports based on the 1970 Census of Population, including

PC(2)-4A	Family Composition
PC(2)-4C	Marital Status
PC(2)-4E	Persons in Institutions and Other Group Quarters
PC(2)-8A	Sources and Structure of Family Income
PC(2)-9A	Low-Income Population

c. Two series of reports based on the 1970 Censuses of Population and Housing:

PHC(1)	Census Tracts [each SMSA]
PHC(3)	Employment Profiles of Selected Low-Income Areas [76 low-income areas in 51 cities and 7 rural poverty areas]

d. Three series of reports based on the 1970 Census of Housing.

HC(2)	Metropolitan Housing Characteristics [each SMSA]
HC(3)	Block Statistics [each urbanized area]
HC(4)	Components of Inventory Change [United States, each region, 15 selected SMSA's]

e. Several special subject reports based on the 1970 Census of Housing, including:

HC(7)-2	Housing of Senior Citizens

f. Five series of Current Population Reports based on the Current Population Survey, the current program of nonsurvey population estimates and projections, and the current program of special censuses:

P-20	Population Characteristics
P-23	Special Studies. See especially "Social and Economic Characteristics of the Older Population," No. 57, November 1975
P-25	Population Estimates and Projections
P-28	Special Censuses
P-60	Consumer Income

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