CONSEQUENCES OF CHANGING U.S. POPULATION:

Demographics of Aging

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON POPULATION
OF THE
HOUSE OF REPRESENTATIVES

AND THE

SELECT COMMITTEE ON AGING

NINETY-FIFTH CONGRESS

SECOND SESSION

MAY 24, 1978

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U.S. GOVERNMENT PRINTING OFFICE
32-473 O WASHINGTON : 1978

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WEDNESDAY, MAY 24, 1978

HOUSE OF REPRESENTATIVES,
SELECT COMMITTEE ON POPULATION
AND SELECT COMMITTEE ON AGING,
Washington, D.C.

The committee met, pursuant to notice, at 10:10 a.m., in room 210, Cannon House Office Building, Hon. Claude Pepper (Chairman of the Select Committee on Aging) and Hon. James Scheuer (Chairman of the Select Committee on Population) presiding.

Members in attendance: Select Committee on Population: Mr. Scheuer; Mr. Akaka; Mr. Stockman; Mr. Gephardt. Select Committee on Aging: Mr. Pepper; Mr. Beard; Mr. Burton; Mr. Biaggi; Mr. Cohen; Mr. Hughes.

Also present from the Select Committee on Aging: Mr. Robert S. Weiner, staff director; Ms. Kathleen Gardner, professional staff member; Ms. Merrill Randol, professional staff member; Ms. Maureen Hamilton, secretary; Ms. Robetta Bretsch, minority professional staff member; Dr. Walter Guntharp, minority staff director; Aging Subcommittee on Health and Long-Term Care: Ms. Cynthia Hilton, minority staff director. Select Committee on Population: Dr. Michael Teitelbaum, staff director; Dr. Anne Williams, task force director; Dr. Linda Martin, research associate; Ms. Catherine Parks, special assistant; Ms. Lisa Stolp, research assistant; Ms. Stephanie Tames, research assistant; Mr. James Lieberman, intern.

Mr. SCHEUER. The joint hearing between the Select Committee on Aging and the Select Committee on Population will commence. It has been the policy of the Select Committee on Population, when it contemplates holding hearings which impinge on the jurisdiction of another committee, to involve that other committee and have joint hearings. We organized a hearing which was chaired by our distinguished and beloved colleague, Mel Price, chairman of the Armed Services Committee. We are very happy to follow that precedent today in a hearing developed jointly by the staffs of the Select Committees on Population and Aging, and which our distinguished senior colleague and beloved friend, Congressman Claude Pepper, will chair.

As most of you know, it is the practice of the Select Committee on Population that the member who has organized and directed the task force chair the hearing. Congressman Dan Akaka of Hawaii has been directing this task force. When he comes back from

answering the quorum, he will be the chairman of the Select Committee on Population for this task force.

So, it is a very great pleasure to commence these hearings and a great honor for me to turn over the chair to my great friend, the distinguished Claude Pepper of Florida, chairman of the Select Committee on Aging.

[Prepared statement of Mr. Scheuer follows:]

OPENING STATEMENT OF CHAIRMAN JAMES H. SCHEUER

As Chairman of the Select Committee on Population, it is my pleasure to welcome you to this second day of hearings on the consequences of population change for the United States. Today's hearing will emphasize the future size and location of the elderly population and its implications for social policies. I am especially honored that the Select Committee on Aging, chaired by my distinguished and long-standing friend, Claude Pepper, will join us for this day of hearings.

The Select Committee on Aging has an impressive record of accomplishments as they continue their comprehensive study and review of the problems of older Americans and make recommendations to the Congress. I feel it is especially important that Congressman Pepper and the other Members of the Select Committee on Aging join us today as we examine two basic demographic processes—mortality and migration—and their impact on the size, structure and location of the U.S. elderly population.

The drastic, fast moving, and virtually unanticipated shifts in the size and structure of our population due to the baby boom of the 1950's and the baby bust that we are now experiencing, have led to major disruptions in our society. Institutions such as schools have had first to expand quickly to handle the baby boom generation and then to reverse the adjustment process to cope with the declining enrollments of the baby bust. As the baby boom has aged the upheavals have moved from the schools to the labor markets, and will shortly move on to affect the retirement years and the institutions and programs which serve older people. Retirement of the baby boom generation will start to swell the retired population around 2010. At that time the elderly population will begin a period of rapid growth. From a total of 24 million today, the elderly population is projected to grow to 34 million by 2010 and then to 52 million by 2030. The proportion of the elderly in the total population, which is 10.8 percent today, will start to rise rapidly in 2010. It will peak in the year 2030 somewhere between 14 and 22 percent of the population.

While the baby boom will be an important force affecting the future size of the elderly population, recent increases in life expectancy are contributing to the rapid growth of the elderly population before the turn of the century. This growth will have important social implications not only because of the size but also the composition of the elderly population. Of the almost 9 million increase in the elderly population from 1970 to 1990, almost 4 million will be in the 75 and older age group. Those over 75 are more apt to have fewer resources, be institutionalized and be more dependent on either their families or society. We can also expect the imbalance of 3 women to 2 men to continue and increase in the future if female mortality rates continue to fall faster than those for males. Housing and family relationships are greatly affected by the differential survival of men and women.

It is clear that careful examination of demographic variables are extremely important for policymakers today and in the future. In order to create policy, we must understand the future size, structure, and location of our elderly population.

Mr. Pepper, and Members of the Select Committee on Aging, thank you for joining us today as we explore this important aspect of our population.

Mr. PEPPER. Thank you very much.

You are the chairman of this committee, as far as I am concerned, Mr. Scheuer.

I want to thank my distinguished colleague from New York, Mr. Scheuer, for extending to the House Select Committee on Aging the opportunity to join his Select Committee on Population in their continuing investigation into the consequences of domestic population change in the United States. Today's hearings on the "Demographics of Aging: Future Trends and Implications" will focus on

how society can prepare and plan for the predicted explosion of our elderly population.

We are pleased to have here from our Select Committee on Aging, Mr. Edward Beard of Rhode Island.

It is a particular pleasure for me to take part in this hearing with Jim Scheuer because I know of his deep commitment to the elderly. When our antimandatory retirement bill faced floor scheduling difficulties last fall, he was extremely gracious in postponing action on legislation he sponsored to create this Select Committee on Population, in order to assure that prompt action on the mandatory retirement bill was secured.

During my service as chairman of the House Select Committee on Aging, it has become abundantly clear to me that we must improve the ability of the Congress to anticipate potential problems resulting from economic, social, and political changes that will occur in the population over the next 50 years. If present trends continue unabated, by the year 2025 the population of over-65ers will more than double.

The demographic shifts which have precipitated recent mandatory-retirement and social security legislation in this country are being felt throughout the world. The world's elderly population will increase by more than 100 percent by the year 2000, and will pose crucial social policy questions, not only for policymakers in the United States, but worldwide. Therefore, I introduced a resolution last fall, which was unanimously adopted, urging the President to instruct the U.S. delegation to the United Nations to work with other member nations to call for a World Year and a World Assembly on Aging. On December 6, 1977, the General Assembly accepted the U.S. resolution asking member nations to make their views known to the Secretary-General by July 1, 1978, concerning the desirability of having a World Assembly and World Year on Aging. Several weeks ago, an amendment I offered to provide for the U.S. contribution to the World Assembly and World Year on Aging was adopted unanimously by my colleagues in the House.

It is appropriate that the United States has taken the lead in recognizing the need to collect and thresh through the gerontological research and practical experience of other countries in order to determine how best to serve and be served by our senior citizens. The economic and political well-being of the United States cannot be assured if the rest of the world is ignored. Hopefully, the United States can serve to alleviate some of the pressure and strain for other nations by beginning now to identify and address the phenomenon of an increasing elderly population.

Last fall, our Aging Subcommittee on Human Services, chaired by the Honorable Mario Biaggi, began a series of hearings on "Aging in the World of Tomorrow." The four hearings held thus far by the subcommittee have provided us with valuable information. Testimony has revealed that we must begin immediately to recruit properly trained personnel if we expect to meet the ever increasing health care needs of the future elderly; that life expectancy will increase from its present 72 years to 86 by the year 2025; and that tomorrow's senior citizens will be healthier, better educated, more affluent, and more active.

But, do we have enough information upon which to formulate policies and to develop services for the elderly if we do not know where these services should be located? Where will our elderly be located geographically in the year 2000, and will they tend to reside in urban, suburban, or rural settings? How accurate are our statistical gathering processes with regard to mortality and morbidity rates of older persons? Will improved health and mechanisms for mobility enable elderly to relocate near their families? And, what responsibilities will future families assume with regard to the care of their elderly family members?

I am hopeful that this hearing will shed light on these unanswered questions, complement our Aging subcommittee's investigation into the future of aging, and provide our policymakers with more than educated guesses about what lies ahead.

It is a particular pleasure, therefore, for our Select Committee on Aging to work with this distinguished committee, headed by its able chairman, Mr. Scheuer, to deal with the worldwide problem of population, because it must be dealt with worldwide if it is to be dealt with at all.

I have mentioned that we are pleased to have a representative of our committee in the house, Mr. Ed Beard. Would you like to say something?

Mr. BEARD. Yes, Mr. Chairman, I am also delighted to have this joint hearing on a very important issue, and I look forward to the testimony.

Mr. PEPPER. We are also pleased to have another distinguished member, John Burton of California. Mr. Burton, would you like to say anything?

Mr. BURTON. I would like to associate myself with your remarks and commend the staffs of both committees in putting together this work.

Mr. PEPPER. Chairman Scheuer, will you proceed.

Mr. SCHEUER. It is my very deep wish that you chair this hearing.

Mr. PEPPER. I want you to be the chairman.

Mr. SCHEUER. You are just being a cantankerous old man.

Mr. PEPPER. A stubborn old man.

Mr. SCHEUER. A very beloved old man.

With your permission, I will turn this over to Mr. Akaka, who organized the task force. I think he has a very brief statement. Then we will proceed with the testimony.

Mr. AKAKA. On behalf of our committee, I wish to welcome you, Chairman Pepper, and members of your committee, to this hearing on the demographics of aging.

Demographic discontinuities, when unanticipated, cause serious problems of adjustment and accommodation for institutions and policies. The great failure of the past is that policymakers and problem solvers have ignored these discontinuities and, consequently, have failed to recognize their underlying contribution to problems currently at hand until too late. The baby boom and bust have required and will continue to require large changes in most Government programs and policies. In addition, policies must respond to the changing geographical distribution of the population, as Government seeks to locate facilities such as schools for youth

and health services for the elderly in different areas on the basis of need.

The testimony which we receive today and throughout these hearings will increase our awareness of the impact of demographic change and thus enable us and future Congresses to cope more effectively with the problems arising from population change.

I will now turn the hearing over to Congressman Pepper to proceed.

Mr. PEPPER. You go ahead.

Mr. AKAKA. We have statements, from Congressmen Grassley and Cohen which will be inserted in the record at this point.

PREPARED STATEMENT OF HON. CHARLES E. GRASSLEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IOWA

I wish to commend Chairman Pepper of the Select Committee on Aging and Chairman Scheuer of the Select Committee on Population for scheduling this hearing today on the important subject of the Demographics of Aging, an issue of major importance to the development of responsive national policy in aging.

I wish to extend my sincere appreciation to each of our distinguished witnesses who will discuss such issues as demographics and the health status of the elderly, living arrangements, the regional location of the elderly and changing patterns in family life.

The decline in mortality rates and increased longevity will have an impact upon the future use and demand for medical services to meet the special health needs of an increasing older population. Today we hope to obtain your recommendations for the development of public policy responsive to the health status of the elderly.

A review of past and current socioeconomic and cultural trends will certainly provide the committees with data necessary to develop public policy options responsive to the changes in family conditions and the problems of isolation of older persons within society.

Of major importance to today's review of the demographics of aging is the issue of the future location of the elderly population within metropolitan areas. Today we hope to obtain the observations of the witnesses on the geographical redistribution of the aging population in the four basic geographic regions of the United States, especially the demand for social services and housing for the elderly in areas of growing population.

We are also interested in obtaining your views on the special problems of the geographic and social isolation of older persons, as trends suggest that older persons will continue to reside in separate concentrated areas, particularly within the cities.

Chairman Scheuer, I trust that your Committee will continue to review this problem and take into consideration the socioeconomic problems of separation of older persons from younger persons, if current migration trends continue, as expected.

I certainly agree with Chairman Pepper's observation regarding the need to examine the reliability of available data and methodology which form the basis of demographic projections. If necessary, we should concentrate resources on this type of research, as well as continue Congressional investigations on the public policy implications of future demographic projections.

I am optimistic that hearings of this nature and the ongoing oversight functions of our Committees will provide the impetus necessary for legislative reform to insure that the elderly population of today and tomorrow will be provided with the security and independence which they deserve in the later years.

PREPARED STATEMENT OF HON. WILLIAM S. COHEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MAINE

Under Mr. Biaggi, the Subcommittee on Human Services of the Select Committee on Aging has conducted a very informative series of hearings on the impact of the increasing elderly population on our society. My Subcommittee on Health and Long-Term Care participated in that series last week when we considered the future of health care and the elderly. I would like to commend Mr. Biaggi for his leadership and to express my gratitude to Chairman Pepper and Chairman Scheuer for joining

the efforts of the entire Select Committee on Aging and the Select Committee on Population in the continuation of this task.

One of the achievements of this century is an increased life expectancy for Americans. As a result of having eradicated most of the diseases which prematurely end the lives of the young and cause the death of the old and having improved treatment of chronic conditions and diseases in the elderly, we have seen an increase in life expectancy of approximately 25 years since 1900. Further, according to Census Bureau projections, the percentage of our population 65 and over is expected to increase from 10.8 percent at present to 12.2 percent by the year 2000 and to 17.2 percent by 2025.

Older persons require a variety of supports to enable them to cope with the health, economic, and environmental conditions which are a part of aging. Greater flexibility in family relationships has increasingly shifted the responsibility of caring for the elderly to the public sector. This is evidenced by the growth of government programs to serve older Americans. However, the population and the needs of the elderly are growing faster than our ability to respond.

In 1976, older people represented almost 11 percent of the population, yet accounted for 29 percent of total personal health expenditures. Medicare alone paid for only 43 percent of the total per capita cost of health care for older citizens.

It is estimated that at least 2.4 million elderly persons would benefit from the provision of health care, social services, and housing together. The lack of these services in combination forces many elderly people to be prematurely and inappropriately institutionalized, or to remain homebound without adequate care. This year, Congress has taken the first step toward the provision of congregate services in housing for the elderly by reporting from committees of the House and Senate legislation which authorizes funds for this purpose.

An increased life span has placed a greater burden on elderly persons to make their retirement savings stretch over a protracted period. Moreover, the growth in the elderly population will increase the stress on the Social Security system to provide a minimum floor of protection for the elderly in retirement. A recently released GAO report stated that by the year 2030, the ratio will be about two workers for every beneficiary under the Social Security system.

Additional problems will surely arise if we are not equipped to deal with the projected increase in the older population. Given the limited nature of our resources, we must have an accurate and precise assessment of the economic, health and social status of older Americans so that the Federal Government, as well as State and local governments, may respond to their urgent and special needs.

As I mentioned, Congress has initiated a number of important programs to serve the elderly. However, unless the government has an accurate understanding of the status of older citizens, these programs cannot be fully effective. Federal data-gathering agencies have little valid information on the social, economic and health needs of the elderly.

In this regard, I introduced a resolution in September 1977, declaring that the Departments of Commerce, Labor, Agriculture and HEW should develop methods for improving and expanding the collection, analysis, and publication of information on Americans over 65 in increments of five years, at least through age eighty.

If demographic data are accurate predictors of social needs, then I believe that we should make public, data on the elderly at least with the same specificity that we do for younger age groups. Furthermore, these data are critical in creating social policy to meet these needs.

Mr. AKAKA. We welcome the witnesses we have today. For your benefit as well as ours, we would like to expedite matters. Therefore, without objection, we will enter your testimonies in total into the record and ask that each witness take 5 to 10 minutes to summarize his or her testimony.

After all the initial presentations are finished, the members will be asking you questions individually and as a panel.

With that, I would like to introduce our panel this morning. We would like to welcome Mr. Jacob S. Siegel, Senior Demographic Statistician, Bureau of the Census; Ms. Mary Grace Kovar, Chief, Analytical Coordination Branch, National Center for Health Statistics; Dr. Tamara Hareven, professor of history, Clark University, Worcester, Mass.; Dr. Donald Cowgill, professor of sociology, Uni-

versity of Missouri; and Dr. Beth Soldo, senior research associate, Center for Population Research, Georgetown University.

Please proceed.

STATEMENT OF MR. JACOB S. SIEGEL, SENIOR DEMOGRAPHIC STATISTICIAN, BUREAU OF THE CENSUS

[Prepared Statement in Appendix on p. 76.]

Mr. SIEGEL. I would like first to outline the principal topics that are covered in the statement which you have before you. The statement is concerned with the prospective trends in the size and structure of the elderly population, the impact of mortality trends, and some implications. The expected changes are considered to the year 2020 for the most part. The statement is concerned with the relative numbers of the aged as well as the absolute size of the aged population. It notes also the changes in the composition by age of the elderly within the broad band of the older population, and the sex composition of the elderly.

There is considerable treatment of the role of mortality and fertility in the changes described and of the general trends in mortality, particularly as to sex differences. The research which relates to the basis of the male-female mortality differences is summarized. We then present some projections of mortality and try to make some statements as to what the prospects are with respect to the increase in life expectancy and how any reasonable increase in life expectancy would affect the number and proportion of the elderly population. In order to do this, various hypothetical assumptions are made to assess the impact of mortality and fertility on age structure. Finally, the statement deals with the implications of these changes.

Let me then, rather than summarize the paper, make some general remarks relating to the more important points in the paper. From a demographer's point of view, the most important factor which creates social problems is the fluctuation in the number of births. That is true whether we are talking about the number of elderly, the changes in the number of elderly, or changes in the percent of the elderly population. In every case where we anticipate rapid increases in the number of elderly, we can point back to an upward trend in the numbers of births 65 or so years earlier. The smaller rate of growth of the elderly expected in the next few decades is related to the smaller increase of births 65 or so years earlier. The very rapid increase in the number of elderly which will occur in the second decade of the next century, is related to the postwar baby boom, and then beyond that, the prospective decline in the growth of the elderly is due to the era of the falling numbers of births of the post-1960 period.

The research to date also indicates that any reasonable projection of mortality doesn't essentially affect the percentage of the elderly, and that the percent is primarily determined by recent trends in the birth rate and by changes in the number of births long past; that is, 65 years ago. You can track the fluctuations and the percent of the elderly principally in relation to those two factors, the numbers of births and the birth rate.

Now, in spite of that, mortality is quite important in the analysis of the situation of elderly people. Of course, it does determine. ' ı a

sense, what the numbers of elderly will be at any date, once you have identified what the numbers of births were which started the whole cohort off. So, I am concerned very much about mortality, and note happily that in the last 8 years there has been a considerable reduction in the death rates of elderly, as well as for other ages. This reduction perhaps creates a new "technical" environment for demographers to think about when they make projections as to the numbers and proportions of elderly.

What it means is that the longtime assumption of one series of mortality figures for making population projections is not a wise procedure, and that it would be wiser to have a range which reflects our uncertainty, because we may in the future have either sharp declines or increases in mortality.

There is little reason to anticipate a major increase in life expectation. As life expectation gets higher, it takes larger and larger declines in death rates to effect a given increase in life expectation. I give several examples that are worked out in the prepared testimony to illustrate that we had better keep our eye on fertility more than mortality. A 50-percent cut in death rates by the year 2020, which is a very large percentage decline in death rates, corresponds to only a 15-percent increase in life expectancy, but it is a substantial addition to the number of years of life expected. It would raise the present life expectancy at birth from 73 years to 84.

One of the concomitants of mortality change has been the differential improvement in the death rates of the sexes. The advances for females have far exceeded those for males, to the point where we now have an expectation of life at birth for females 8 years in excess of that for males. The difference has been growing through all the recorded years of U.S. mortality history; that is, say, since 1900. I am not implying anything as to what happened before that; I am using that year simply as a base date.

I view this difference in the mortality rates as having some rather serious consequences for our society. Of course, it makes for the massive excess of women among the elderly, an excess which rises rapidly with each additional age bracket as one goes up the age span. It accounts in large part for the tremendous proportion of widows and paternal orphans. The price in human dissatisfaction is tremendous. In my prepared statement, I am concerned with that issue and with ways in which some approximation of male-female rates can possibly be achieved.

Finally, let me just say—and it's not a new matter to stress—that with increasing numbers of elderly, with increasing proportions of elderly—and the proportion is likely to rise moderately in the years to come, although that is not altogether certain and there may be fluctuations—with the aging of the elderly, and with the related fact that per capita demand for medical resources is greater for elderly people, we can visualize a tremendous increase in health resources and in the proportion of the health budget that will be needed to accommodate the health requirements of the elderly. However, I don't have any dollar values to offer.

Thank you.

Mr. AKAKA. Will you please continue, Ms. Kovar.

STATEMENT OF MS. MARY GRACE KOVAR, CHIEF, ANALYTICAL COORDINATION BRANCH, NATIONAL CENTER FOR HEALTH STATISTICS

[Prepared Statement in Appendix on p. 122.]

Ms. KOVAR. When I was asked to address the health status of the elderly today, there seemed to be two questions which were terribly important to answer. Given the things that Jay Siegel has told us as to the changes and composition of the elderly population and the increasing proportion of those who will be 75—or 85 and older—in contrast to those 65 to 74, the first question is: Are there differences in the health status and differences in the utilization of health services between the younger and older people which may result in future increases in the use of medical services because of the projected change in the age compositon?

The answer is yes, there are differences by age within the elderly population.

For example, a smaller proportion of the people 65 to 74 are limited in major activity compared to those 75 and over. Smaller proportions of the younger people are functionally disabled. We know the problems of most chronic conditions increase with age. So on a population basis, we can expect people to have more need for health care services as they grow older.

The utilization of health care services differs enormously by age within the elderly population. We quote quite frequently that there are about 4,000 days of short-care hospital stay for every 1,000 people 65 and over. We very seldom look at the differences within that age group.

The statistics show that for people in their late 60's there are about 3,000 days of short-care hospital stay. For those in their 70's, 3,470. For 75 and over, it's about 8,300 days of short-care hospital stay.

Mr. SCHEUER. I would appreciate it if all the witnesses would focus their attention on making policy and program recommendations to the Congress. We have two committees here who are deeply concerned with the aged. Our mandates are to advise the other standing committees of Congress and the Executive Branch on legislative and program recommendations.

What does it all mean on the bottom line for us? We are not statisticians or technicians. We are policymakers. If you can translate what 4,000 short-care hospital days mean or what the trends mean with regard to policy and program recommendations, then we will be achieving our purpose in these hearings.

Ms. KOVAR. I can understand; I apologize. As a statistician, I find it very difficult to try to tell someone else how to make policy. That is stepping over a line——

Mr. SCHEUER. I appreciate your position. You were invited here for your wisdom, your judgment, and counsel.

Ms. KOVAR. What I can tell you, sir, is that we expect to have a much higher proportion of the elderly people 75 or over. I can tell you that those people use more inpatient care than the younger portion of the elderly population, and far more than the younger portion, the under-65 population. It is the inpatient health services, as you probably know, which are extremely expensive now, and where the costs are rising very fast.

Many of us have some doubts as to whether the current inpatient health care system is the best way to furnish care to older people.

Mr. SCHEUER. Are you saying that because of the cost of health care, as well as the quality and appropriateness of health care, that we should consider converting most of these services from inpatient, tertiary hospital beds to some kind of home-based system?

Ms. KOVAR. Yes; I am telling you, that you should consider it.

Also, I am telling you that older people, and all of us as we grow older, need more health care and social services. You don't get rid of the chronic conditions you accumulate as you go through life. And, at least as well as we can demonstrate, it's the people who need health care services who are using them—much more so than the people who are in a better health condition.

Secondly, we can expect a higher proportion of women in the future elderly population. With regard to inpatient care, women use nursing homes at a far greater rate than men do.

I think those are really the critical things that have to be said, that the age and the sex composition do make a difference in inpatient utilization. Therefore we can expect utilization to increase unless we change our patterns of utilization.

Mr. AKAKA. Thank you.

Before you start, Dr. Hareven, I would like to introduce two more members of the Select Committee on Aging: Congressman Mario Biaggi, and Congressman William Hughes.

From the Select Committee on Population, the cochairman of this task force is Congressman Dave Stockman.

Please proceed.

STATEMENT OF DR. TAMARA HAREVEN, PROFESSOR OF HISTORY, CLARK UNIVERSITY, WORCESTER, MASS.

[Prepared Statement in Appendix on p. 178.]

Dr. HAREVEN. A historical perspective is particularly applicable to our understanding of the status and position of the aged in American society, since the elderly themselves are walking history. They bring to old age their own historical experiences of earlier life. These particular experiences condition their needs, their problems, and the kind of policy requirements which they have. Rather than treating the elderly as a homogeneous age group, they should be viewed as age groups moving through historical time. Each group, as it is aging will be bringing to old age its specific experiences and needs. History can also inform policy by helping us understand how we got to where we are and by sorting problems unique to our time from recurring ones. Finally, there are also important precedents from the past, which could be revived and utilized in present policy planning. I will proceed now to discuss some of the important historical developments affecting the conditions of the aged and to examine their policy implications.

First, the isolation and segregation of the elderly which we are witnessing today is in itself a product of the long historical process of the isolation of age groups from each other within the American society. This isolation is partly the result of public-policy programs which have generated separate policies for children, youth, and the elderly. While it is important to have policies directed toward the

specific needs of different age groups, it is also very important to realize how these age groups coincide within the family unit and what needs arise within the collective framework of the family. Future policy will have to differentiate between measures passed specifically for the various age groups and those which are needed in order to strengthen the family unit so that it can carry some of the responsibilities in assisting the elderly.

The current segregation of the elderly in American society is part of age segregation within the family, which has been emerging over the past century. In the past, families experienced much greater age diversity within the family unit itself than they do today. The family encompassed a greater age diversity because of the age range of the children. The basic family unit today consists of parents and, on the average, two children, who are close together in age, rather than the larger families in the past, with a wider age spread among children. Thus, age segregation starts at an early age. It is further reinforced by the empty nest, which most families are experiencing in our time: Children leave home when their parents are still in middle age. So, in a sense, what we identify as a symptom of old age starts in middle age.

For this reason, in the very near future, policy will have to concern itself not only with old age, but also with the overall life course and with the kind of policies needed for middle-aged people as well. As we move into the future, parents will be entering the empty nest earlier and its duration will extend later into old age. A larger proportion of the couple's life, and especially that of a surviving widow, will be spent without children. At the same time, the increase in the proportion of parents who are childless or who have only one child will further contribute to the isolation of people in old age.

The next important point to consider in terms of historical changes as they affect the family involves understanding what a family is. For a long time, we have been living and operating under the myth that we have lost the great extended family of the past. We have assumed that in earlier times and especially before industrialization, three generations were coresiding in the same household and the elderly were integrated within the family unit. This is not true. Except for a small portion of the population, the basic residential unit in American society has been the nuclear household. Elderly people rarely lived in the same households with their children.

The major difference in family structure between previous centuries and our time is in the disappearance of strangers from the family. Until the 1920's, and actually through the 1930's, a major portion of the population in American society had boarders and lodgers living in the household, or themselves boarded with other people at some point in their lives. They were either paying or performing services which enabled all heads of households or widows, whose own children left home, to continue to head their own households and avoid isolation. This particular practice has disappeared from American life because of the increasing availability of housing over the past century and also because of a growing commitment to privacy as a family value.

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The historical example of having strangers in the family has important policy implications. It may be worth our while to consider reviving some of these practices. As we are now facing the increasing residential isolation of older people, especially women, we should think about policy which would support so-called foster care of the elderly, placing elderly people in other people's households with proper supports to the families which are boarding the elderly. This would require serious supervisory mechanisms so there would be no abuse.

This leads to the next issue; namely, the role of kin in the support and care of the elderly. We have already established that only a small proportion of the elderly coreside with relatives. But there is evidence for interaction between the aged and kin outside the household. Many of the traditions of mutual assistance among kin members, especially during difficult life situations, have survived to the present day.

Dr. Ethel Shanas has documented such patterns among the elderly today. She has shown that a significant proportion of the aged still rely on assistance from their relatives especially if they have no children. It is important for us to take notice that this kind of pattern survives in American society. But, we must not exaggerate its pervasiveness, especially in terms of future planning. At this point in time we cannot rely on kin as a substitute for governmental support for a number of reasons:

First, the very quality of kin relations has changed. Family life is now more individualistic than it has been in time past. High population mobility separates the elderly from their kin more than it has in the past; and, more importantly, it will be difficult for the very old to rely on their own children for support, because the children will be old themselves. People in the 1970's and 1980's will have children in their fifties or early sixties. So, in a sense we will end up, as we move on in time, with a situation where aging children will have to support very old parents.

Also, with the decline in the birth rate and disappearance of children altogether from certain families, except for the baby boom generation, the aged of the future will have a much smaller network to rely on as far as assistance from their children or siblings is concerned. We must think, therefore, of the kind of policy which, on the one hand, would effectively utilize the very valuable role that family and kin could play in caring for the elderly in a way in which agencies, institutions, and asylums never could. On the other hand, in order to use the family creatively for the care of the elderly, we will have to come up with support mechanisms for the family itself which would enable the family to carry its burdens.

For example, a tax policy could be an important way of assisting in formalizing mutual assistance between elderly kin and family members. If a grandmother fulfills child-care functions, there should be some mechanism to recognize that financially and to formalize the exchange between elderly kin and their family members. Currently, families receive support only if they have an aged relative living in the household; but since most elderly prefer to live alone, but near their children, there should be programs supporting families which assist aged relatives, even if they are not residing in the same household.

We must utilize creatively whatever kin functions are surviving in American society, but we must provide adequate supports for kin to fulfill these functions, rather than assume that they would take care of their own.

Finally, the historical trend over the past century and a half has been one where the family has gradually transfered its functions of welfare for dependent children, the aging, and for other needy members to other institutions. In the 17th century, the family itself performed the functions and was paid by the state, the commonwealth, to take care of the dependent, the poor, and the aged. This is not possible in current society. Most of the functions of care and support have been transferred to public agencies and institutions. We have now gone to the other extreme, where the institution has become too much of a permanent feature in American society.

Perhaps in the long run it might be cheaper to revive some of the historical patterns by supporting the family and also by providing financial support for the placement of elderly in other people's households as "foster" elderly, than to keep people in institutions. Certainly it would be more humane.

Also, in looking at historical change, we must ask ourselves: "Why is it that today the elderly seem to be isolated and feel so helpless?" One reason is that there is a certain ambiguity in policy at the moment. The children, faced with the problems of aging parents, think some of this assistance or most of this assistance should come from the Government; while the Government still assumes that some of the supports have to come from the family. It is because of this ambiguity that many needs of the elderly, such as transportation to shopping areas and getting to medical services, are in limbo. I know that some of this is being dealt with on the State level, but having interviewed 400 elderly people over the past 5 years, I have been frequently struck by the degree to which they still experience this isolation and ambiguity.

In conclusion, I think that any kind of creative future policy should rescue what has been very successful in the family setting in the past and incorporate that into a more systematic public policy which in the long run would have to be structured not only to deal with the elderly. The problem of the elderly is obviously urgent right now; but in order to have an effective policy for people in old age, we have to have an effective policy for children, youths, and people in middle age, and for the entire family, because when a person finds himself in old age, he is a product of his entire life course.

Therefore, when one reaches old age it is too late to deal with all the problem emerging in old age, unless one has received proper supports in earlier stages of life as well. This is so because many of the problems appearing in old age, actually are results of earlier life course developments. In this respect, we must focus our attention on a constructive policy toward the aged and the family while continuing a crisis oriented policy. We need a policy which supports not only family units when they are broken down, but a policy which supports family units as they go through life.

Thank you.

STATEMENT OF DR. DONALD COWGILL, PROFESSOR OF SOCIOLOGY, UNIVERSITY OF MISSOURI—COLUMBIA

[Prepared Statement in Appendix on p. 199.]

Dr. COWGILL. Some 20 years ago I called attention to the presence in many and, in fact, most of our large cities, of some concentrations of elderly which later became called "gray ghettos." Followup research just completed indicates this tendency for older people to live in separate, somewhat segregated residential areas in our metropolitan areas has increased markedly over the last 30 years. This has resulted in relatively high concentrations of older people in the core areas of the central cities of most of our metropolitan areas. These include older residential areas from which the younger population has moved out, some new high-rise apartments built for older people, some former transient hotels converted to residences for older people; as well as some boarding homes and nursing homes designed to serve elderly people in proximity to central-city medical facilities.

This tendency for older people to be unusually concentrated in the core areas is likely to continue in the future. Presently it is most marked among the white population, but it will probably become evident also in the black population as younger blacks are able to move in increasing numbers to our suburbs.

Such concentration is not necessarily bad. It has the advantage, of course, of being near to most community services. Delivery of services to such concentrations could be more efficient. In addition, older people living among their age peers tend to be more active.

However, most of these areas are so crime-ridden today that fear of crime effectively imprisons these older people. Further, most of the housing in these areas is old, deteriorated, and ill-suited for occupancy by the elderly. Perhaps the greatest disadvantage is that such locations often separate or isolate older people from other members of their family. One very frequently expressed wish of older people in Western societies is to live near, but not with, their children. An Austrian sociologist calls this "intimacy at distance." To my knowledge, public policy has never taken account of this strongly expressed wish. To do so would be a noble experiment.

Beyond this, the major recommendation I would make is that we must always recognize that the older people are a quite diverse population. No one solution will serve all of the needs of all the older people. As far as housing is concerned, perhaps the most efficacious form of assistance to older people is some type of cash subsidy. Given adequate income, most of them can arrive at their own solutions.

Thank you.

Mr. AKAKA. Thank you very much.

STATEMENT OF DR. BETH SOLDO, SENIOR RESEARCH ASSOCIATE, CENTER FOR POPULATION RESEARCH, GEORGETOWN UNIVERSITY

[Prepared Statement in Appendix on p. 208.]

Dr. SOLDO. Thank you. As requested by the staffs of the committees, my summary will focus on patterns of living arrangements

among the elderly and comments on the policy implications of expected change.

Strictly defined, living arrangements refer to the position an individual occupies in a residential setting. Living arrangements, in this sense, indexes the social dimension involved in meeting the universal and basic need for shelter. Housing, on the other hand, usually refers to the physical characteristics of a dwelling unit—its size, location, facilities, et cetera. While these definitions are correct, per se, adherence to these strict definitions in reference to older persons masks the interplay not only between living arrangements and housing, but also between these factors and individual characteristics in delineating the overall quality of life for older persons.

Although the gerontological literature frequently reminds its readers that the majority of elderly persons lives in some type of family household, where social and physical supports are readily available, this statement pertains less to females than to males, and not at all for the unmarried elderly. In 1970, 60 percent of all women 60 years of age and over were living in a household without a spouse. Approximately 85 percent of these unmarried women; that is, those widowed, divorced, separated, or never married, were heading their own nonfamily household and frequently, they were living alone. In the past, patterns of independent living among the elderly have been interpreted to mean that the elderly are the desolate, lonely wreckage of the demise of the archetypal extended family. Results from a number of small surveys indicate, however, that older persons prefer to live independently. In good health, living independently, even alone, is the arrangement consistently preferred to that of living with relatives. Most older persons, particularly women, advocate maintaining their own homes or apartments while residing near to an adult child and sustaining close contact with kin.

What factors affect living arrangements at the older ages? I raise this question because projecting future trends presupposes, I believe, some understanding of the determinants of current patterns and the factors responsible for aggregate change in the past. For the last 4 years, George Myers, my colleague at Duke University, and I, have conducted research that sheds some light on these questions.

At the beginning of old age, that is, 60 to 74 years of age, most older persons are in living arrangements associated with an independent lifestyle. Most married older persons live with their spouse in their own household; the majority of unmarried elderly in the younger age groups head nonfamily households. For 9 out of 10 older persons, this means living alone. At the extremes of old age, increasing proportions of older persons reside in arrangements associated with physical dependency. In contrast to the 6 percent of persons 60 to 64 living with a relative other than a spouse, 28 percent of those 85 years of age and over in 1970 shared a relative's home. Most often this relative was an adult child. Rates of institutionalization increase with age, as well. Comparing the youngest and oldest age groups once again, we found that in 1970 only 1 percent of those 60 to 64 were institutionalized, but almost one in five of those 85 years of age and over lived in some type of

custodial-care arrangement. Age differences are more dramatic for women than men because most older men, even at the extremes of old age, are likely to be married and consequently live with a spouse.

Our research also demonstrates the importance of income for living arrangements. Income sets realistic limits on the number and kinds of housing options available. "Doubling up," in households tends to be associated with either financial or physical problems. The effect of income was second only to that of health.

Older persons with chronic conditions that restrict functional ability, either by sensory or physical impairments, tend to have living arrangements quite different from persons of their age in comparatively good health. For the most part, the severity of limitation is positively correlated with the extent of support provided by the housing environment. A recent study conducted in Representatives' Rooney and Marks home State of Pennsylvania shows, however, that individuals of similar levels of impairment are located in the community as well as in long-term care facilities.

The availability of a care unit, either in the household or in the immediate neighborhood, is the primary factor that distinguishes between those disabled older persons that are able to stay in the community and those that are institutionalized. In our work we have found that unmarried childless women and women of low parity have a considerably greater chance of being institutionalized than women of the same age with two or more children. Family support networks also are effective for postponing institutionalized placements. In Britain, older persons admitted to a long-term facility from a relative's home tended to be older and more severely impaired than those who lived alone prior to admission.

In summary, we have found that those factors that affect living arrangements at the older ages are also the ones that are likely to change as the population ages. Our research highlights the importance of changes in the size and composition of the older population for future trends and patterns. In reviewing changes in the distribution of living arrangements for the periods 1960–70 and 1970–75 we found that changes in population composition were primarily responsible for generating changes in observed patterns of living arrangements.

Changes in the sex ratio, racial composition, and marital-status composition of the older population proved to be relatively minor, and had comparatively inconsequential effects on aggregate changes. Almost all of the observed changes in living arrangements were attributable jointly to changes in the size and age structure of the older population.

Our analysis also clearly indicates that patterns of living arrangements at the older ages are much more sensitive to shifts in economic status of the older population than they are to demographic changes per se. This immediately suggests an intervention point, as Dr. Hareven mentioned.

If we accept the conventional wisdom about where we should be demographically in the year 2020, I think most of my colleagues would agree that there will be a trend toward independent living. Separate residences for older married couples and single person households for older unmarried persons will continue into the

future. Our research indicates that the implications of an "aging" older population are likely to be offset by improvements in the financial status of tomorrow's elderly, particularly improvements in the financial status of older women as they accumulate their own labor force history and become eligible for their own social security and pension benefits.

A lifetime of interaction with various bureaucratic structures is also likely to give tomorrow's elderly a decided edge over today's in identifying and using different Federal, State, and local assistance programs. In addition, there is no reason to suggest that the housing attitudes of older persons in the future will contradict what we observe today, that is, a decided preference for living independently of one's own family.

While I believe the direction of the overall trend is fairly certain, age-specific patterns are considerably less so. If advancing age continues to be associated with declines in functional health and reductions in physical mobility, the very old will continue to need assistance either from within or from outside the household in order to remain in the community at the advanced ages.

Today the primary servicer of the older, frail elderly is the family. A recent study released by the Comptroller General of the United States I think clearly documents in the areas of personal care, bathing, dressing, and food preparation that it is the family, either living with or in the nearby vicinity, that primarily provides for its older members.

To give you one example, with respect to personal care, the survey that the Comptroller General conducted indicated that about 58 percent of the elderly required assistance in personal care. Fifty-six percent receive that service from family, 1 percent from a community service program, and an additional 1 percent by some combination of the community service program and family members. As Dr. Hareven said, we should address the issue of how we can support the family and independent living for the older population.

We are frequently told one of the implications of a declining birth rate is that in the near future older persons will have a substantially smaller support network available to them. But the fertility rates are only half the picture in determining the future size of family support systems.

Equally important is the extent to which children survive until their parents' old age. A study recently completed by Gray at the University of Southern California compared the survivorship of female children born under the 1920, 1930, and 1970's fertility regimes and exposed to the mortality schedule of the same years. Not surprisingly, she found that the mothers of the 1920's had more daughters born than the mothers of the 1970's. Because of improvements in mortality, however, the hypothetical 1970 mothers would actually have more surviving daughters at the age of 70 than the 1920 mothers. This research suggests that geographic proximity of surviving children will be the key to predicting kin availability in the future.

Rates of institutionalization at the older ages are also likely to increase if the options that are currently available define the alter-

natives in 2000–2020. Childless women tend to be particularly vulnerable to institutionalized placements.

The effect of increasing financial resources for these childless women is likely to take the form of postponing rather than precluding an institutionalized episode. Unless the supply and training of home-health aides is dramatically increased, higher incomes will not be able to purchase the services needed for a seriously impaired older person to remain in the community indefinitely. Today the demand for qualified home-health and personal care assistants goes unmet, and the demand is likely to exceed supply to an even greater extent after the turn of the century.

What then are some of the directions in which we should consider changing our thinking and priorities so we can accommodate tomorrow's elderly and their increased demand for independent living?

One of our first considerations must be to improve sources of data. Although this may seem like the perennial cry of researchers it is, I believe, particularly important for studies of aging and adaptation. Our theoretical models and results from local area longitudinal studies, such as the Duke studies, point us in the direction of viewing aging as an ongoing and multidimensional process and demonstrate the foolishness of separating old age from the proceeding life cycle. All of our national data bases, however, are cross sectional which allow us to only take "snapshots" of the older population at a single point in time. Frequently researchers resort to comparing different age groups in a given time period to suggest life cycle patterns of development or change.

Why do some elderly stay in one place and others move? Is income the only predisposing factor? Why do some elderly and their families utilize services and others do not? I suspect, if longitudinal data were available, we would find that living arrangements represent a sequential adaptation. Sequential data bases would afford us the opportunity to examine the reasons why individuals have different adaptation paths and why changes in living arrangements occur when they do. Such analyses would also suggest in more concrete terms, potential intervention points in the process of age and health-related adaptations.

The necessary use of cross-sectional data qualifies what I have discussed in this presentation. An additional qualifier is that I have discussed future patterns assuming that the options currently available define the alternatives in 2000 or 2020. I hope I am wrong in this assumption. There is a tremendous need to expand the options available to the elderly. Only in a few places do transitional residential environments exist in the form of day or night care centers or congregate community houses offering gradations of personal care services.

Programs and policies concerned with the welfare of older citizens must be re-evaluated in another important respect. The medical model of service delivery is of questionable value. Medicare and medicaid provide funds for the diagnosis and medical treatment of disease. But social factors may be just as important in the treatment of disease. Kane and Kane in this week's Science argue that institutionalization is a last resort for a variety of problems, not all

of which are medical. An unknown proportion of older persons are institutionalized for want of personal care service, not the lack of medical services. Nonmedical ways of accomplishing the same objective should be investigated. In my prepared statement I noted that it is somewhat absurd that costs are absorbed for medical expenses, such as a hip replacement operation, but not relocation expenses for an arthritic woman who could live independently if a unit without stairs could be found and afforded. Efforts must be made to define the types of living arrangements in housing most appropriate for different levels of disability and to identify the real limit of appropriateness and costs of programs oriented toward maintaining independent living.

Extensive reliance on the medical model has another consequence which I believe is at odds with our data because the emphasis is on diseases of the older person, and not on the older person as an individual and a family member. As Dr. Hareven has noted, the family is the main provider of services. Efforts must be made to shore up the family's ability to be involved. Among alternatives, as Dr. Hareven noted, are tax incentives for caring and supporting the older person either within or without the household.

If services or cash transfers are made and the older person lives outside the household, no option is available to the middle-aged adult children to relieve some of their financial burdens. Also, if younger family members provide direct cash transfers to the older person, they have to be very careful that they do not exceed the social security income eligibility limits of the older person.

I think increased supports also need to be directed toward establishing, on a nationwide basis, vacation care, day care, and chore services. The family is functioning to a large extent as an untrained unit. Efforts must be made to train families in the care of its older members. In my own experience I have been surprised at the lack of information available to families in dealing with the recovery of a stroke victim. Very little information is provided on how best the family can participate in and facilitate the adaptation of the older person subsequent to a stroke.

In addition, I think the committees could consider the value of programs aimed at preventing physical impairments. Incentives for installing supportive devices or, even at the extreme, remodeling homes so as to add a first floor bedroom, might be considered.

The real challenge before the Committees on Population and on Aging and for the other committees concerned with program development is to evaluate services and service delivery packages. This could include tax incentive programs, which would have an impact on the older person as a family member, not simply as an individual. The challenge is to orchestrate service delivery in the future so as to mimic the flexibility of the family support network.

Mr. AKAKA. Thank you very much Dr. Soldo. At this time I would like to have questions from the members of both select committees. Before we do that, I would like to invite Herman Brotman, consulting gerontologist, to join the panel and respond to some of the questions.

Let me call on the members of the Select Committee on Aging for any questions they might have. Congressman Ed Beard.

Mr. BEARD. Thank you very much, Mr. Chairman.

I tried to follow along on the various points you brought out in your statistics. Let me give you my own summary of how I see the situation in regard to our elderly. Before the war, during depression years, people had very little money. The family took on the responsibility that the Government has taken on. Before social security the family took care of their children or the children took care of their elderly parents. It was a customary thing for elderly parents to live in the homes with children growing up. They took on the expenses.

Then medicare and later on medicaid came along; the various medical programs, and nursing homes became a fashionable thing. I do not think we have to go back a century. I think 10 years ago it was a disgrace for an elderly person to be in an institution. What has happened I think is that the Government has taken on the responsibilities the children used to do prior to the war. The Federal and State governments provide the house, the funds for transportation, and the funds for the medicare and medicaid programs. Despite all the statistics you have read, the children have in most cases pushed it off very conveniently to the Government to handle this. That is my opinion.

In touring institutions in my own State, one of the biggest killers of elderly people in these institutions is not necessarily disease; it is the loneliness. It is because of the lack of concern by many of the children of these elderly parents.

In reference to population and future trends, I would like to know from any one of the panel members, what about the factor that women are working today? What does this mean as far as longevity goes? In most cases women do outlive men, but will this have an effect in the future?

Mr. SIEGEL. I would like to answer the second question. It is true, of course, that we would have expected the death rates of the two sexes to have converged rather than diverged by now. We would have expected this with the rapid entry of women into the labor force and their taking up smoking as a habit to a greater extent than they had, particularly since World War II. So it is a surprise that convergence has not happened. I can only suggest that complete convergence may not occur in the foreseeable future, but that some convergence may occur at such time as whole generations of women have been raised in the work ethic of men; that is, "work or die," to paraphrase the "publish or perish" phrase, and as men are more liberated from this ethic.

Of course, very few women have that philosophy. Even those who are maintaining their own households were reared under an entirely different philosophy of life and some of them are supported by alimony and other benefits from divorce settlements. They often do have the possession of the original family house or whatever. I am simply saying that I do not understand the persistence of the wide difference, but I do anticipate some convergence both on the basis noted above and on the basis of comparative international demographic analysis.

There are countries with narrower differences. But I cannot understand the fact, in relation to what I have just said, that in the Soviet Union, where the work roles of men and women are

closer than they are in the United States, the male-female gap in life expectancy at birth is the largest in the world, at 10 years.

Mr. BEARD. Thank you very much.

Dr. HAREVEN. I would like to respond to Mr. Beard's first question.

First, on the question of women's work, I think the continuing entry of women into the labor force will have an impact on the ability to support aging parents as well, because women will not have the time. Much of the link in the support for the elderly is daughter-mother.

Mr. BEARD. This is the very point I am trying to make. Before we had all the programs that we have, and thank God we have them, the attitude of a younger person in the depression years was to take care of his elderly parents. Especially in ethnic groups, it was a disgrace to put someone in a nursing home.

Dr. COWGILL. It still is. All the data point in the opposite direction. All the data indicate that the family is still very, very much concerned and solicitous of their older members.

Mr. BEARD. I do not believe that is true by practical life. I think today the trend is if somebody starts to slide financially, they stick him into a nursing home and hope to God the State or local government or Federal Government will take care of the burden.

Dr. HAREVEN. Mr. Beard, I think you might be exaggerating. However, you are illustrating a historical trend. There is a decline. A lot of the support that people give for the elderly is really voluntary. But the question is: Where were the elderly taken care of during the depression when children were much more concerned as you suggest.

Because the problems of caring for the elderly arise to a level where no matter how willing the family members are and how concerned they are, they cannot care for an elderly parent without sacrificing, for example, the care of their own children. You have a situation where people are caught between supporting their own children and supporting their own parents. Much of the statistics on poverty in the United States, even before the 1930's, was due to the fact that people were not able to take good care of their aged parents even if they wanted to.

Mr. BEARD. One last comment. I still think that during that period of time prior to the uprising of nursing homes all over, an elderly person was a lot better off when they got sick to be in the family and in their own homes at that point. Most of them died with the comfort of their own children during that era. Today quite a few of them die in an institution, many times away from the children because everyone is so busy today, everyone has so many things going on today they just do not have the time. That is the trend. That is the reality of 1978.

Ms. KOVAR. The number of elderly people in State and county mental hospitals—which many of us remember as snake pits a few years ago—has gone way down. People were dying in those hospitals; people were dying in old people's homes which had no medical certification whatsoever. The proportion of elderly people in institutions has changed remarkably little. The kind of institution has changed enormously.

Dr. COWGILL. I think it is more appropriate to look at the family network today as operating under great stress, under great difficulties. It is not that children are intentionally neglecting their older family members. It is more that they are having great difficulty operating as a family because many things have happened since the 1930's, and by the way, I am probably the only member of the panel that can qualify as aged. I just celebrated my 67th and I went through that Depression.

But the urbanization of our society since then, the increase of mobility in our population, the change in the way in which our society operates and in which families operate has been enormous. In addition, the kind of data that I referred to in my paper, showed that children are moving out to the suburbs while older people in old housing stay in the central city. The children are effectively isolated most of the time from their older members, and are having difficulty getting in to serve those older people. This is the kind of social world that we are dealing with.

What I think many of us were stressing to you is that a great element of public policy is to assist the younger members in doing the job that they are trying to do now and having great difficulty doing.

Mr. AKAKA. Mr. Brotman.

STATEMENT OF HERMAN BROTMAN, CONSULTING GERONTOLOGIST

Mr. BROTMAN. May I suggest we are seeking a simplistic answer to a very complicated question the Congressman has raised. Our society and economy have changed considerably. If you look back far enough, the family took care of everything, including the education of their children. Finally, the costs for children reached proportions where they had to transfer some of this responsibility to a public body. So we have had responsibility for education assumed first by the community, then with State participation, and now we are getting into Federal participation because it is getting beyond the capacity of the family to take total care of the children.

The same thing was true of children's illness and hospitalization, and so on. That has now become a more public responsibility with the construction of hospitals, and so on. Simultaneously, the grandparents' role as babysitters has disappeared.

In addition, with industrialization which has been mentioned, and urbanization, people have moved close to their place of business. You have the construction of complicated dense urban areas where housing becomes very expensive, so you have smaller and smaller apartments with less multigeneration housing. At the same time we have had a tremendous expansion of consumer credit through installment payments, and so our standard of living has increased tremendously.

What we have is that the middle generation has mortgaged its future income by installment payments so as to enjoy housing, vacations, and furniture and everything at this moment. Therefore, the resources of the nuclear family are very much strained. This has been popularly encouraged. Look at the advertising industry, look at the tremendous expansion. Just imagine what would happen to the United States if the consumer credit business died

all of a sudden. Mass production, for example, would come to a grinding halt.

In terms of older people, you have to remember there are several things that have happened. First, the number of people reaching old age has increased tremendously even since the 1930's. Second, they are reaching a much later age even after they reach old age. You have a complication in the responsibility of the family toward its younger people, toward the older people, and we now have four generations of members in a family, that is, the retired people have living older parents. All of these have changed our society.

So to talk about going back, to the nice old colonial days of filial responsibility, I think is very unrealistic. It is going to have to be a combination.

Mr. BEARD. I am not saying go back; I am just saying the family was more of a family.

Mr. BROTMAN. We have made it impossible for that kind of family situation. What we have to do, as some of the speakers have indicated, is to supply community and neighborhood resources to replace the things the family cannot do, and to keep people out of institutions as long as possible through all kinds of home- and day-care programs, and finally to make the institution a more desirable place for those people who need full-time medical care or services that nobody in the community can provide.

But it is a very complicated area and it is going to take action and taxes and public programs and family supports and improvements in health. We have to do a lot more in preventive health services, and so on, in order to solve these problems. But one thing we have to remember is that the demographics show we cannot avoid these problems. The numbers of older people have increased, their proportion will increase no matter what birth assumptions you make, and I do not believe their affluence will increase to the same extent so they are able to take care of themselves. It is going to have to be a combination of public and private programs.

Mr. STOCKMAN. Couldn't part of this be solved by demography itself? I have noticed in your charts that there is a striking difference in the rate of institutionalization and nursing home care as you reach the higher age intervals. The fact that life expectancy has increased and the absolute proportion of those 80 and over has risen may have given rise to the circumstances our friend from Rhode Island is discussing here.

What I am suggesting is that if we look at the underlying demographics, we could resolve part of the dispute we are having here. Would that be an accurate analysis?

Ms. KOVAR. I think that is a very accurate statement in many respects. We have a much higher proportion of the population living to be 85 and over. Thus, we are more aware of them. The chances of living to be 85 are beginning to be rather good. There is a definite increase in utilization with old age. There is an increase in the need for help as you age. Whether that help has to come in the present form or whether, as Herman Brotman has just said, we need to start developing different ways to provide help is another question.

As we have increasing numbers of people of very old age, we have increasing numbers of people who need help. I think this is

the critical question that will not go away and we have to face. There are people who are going to need health care, social services, community supports, and that need exists.

Mr. AKAKA. At this point I would like to introduce a member of the Select Committee on Population, Congressman Gephardt.

Let me ask another member of the Select Committee on Aging to offer any questions. Congressman Cohen.

Mr. COHEN. Thank you, Mr. Chairman.

I would like to insert a statement in the record at the beginning of these hearings and apologize to the panel because I was unable to be here to hear your testimony.

Mr. COHEN. I would like to pick up the question raised by Congressman Beard which I think has to be addressed, and perhaps it is an oversimplification in terms of the way it has been discussed so far.

The extent to which we contribute to that historical trend, I think, has been conceded by certain governmental policies. For example, yesterday we had a debate on the House floor dealing with a measure that would have set up an office within the Department of HEW to provide some sort of relief or place for wives who are abused by husbands in domestic confrontations. Traditionally, I suppose, the criminal law courts would take out an assault charge against the husband who abused his wife, or vice versa. You are shaking your head, but I used to be a prosecutor, and I did prosecute such cases.

The church would provide some sort of help in that kind of instance, but here yesterday we were considering having the Government provide relief or, in my opinion, to intervene in a domestic situation.

To what extent does that sort of policy contribute to a certain historical trend. I think that is what Congressman Beard was talking about. The question is, to what extent can we either alter those trends or direct them in different ways?

There was a suggestion made that nonmedical ways ought to be devised for accomplishing home living. Congressman Pepper had an article in the New York Times this past week about a concept which I support, home health care. I am working on legislation to reverse the policy we have had in the past of simply classifying anyone over the age 65 as healthy and therefore not entitled to government benefits, or very little, or classified as being sick and disabled and therefore institutionalized in order to qualify for medicare and medicaid.

To what extent should we try to reverse that drift by helping to keep people in their homes through adequate home health care, home aides, that kind of service? To what extent can we devise a program that would deal with that? So I think it is a responsibility of the Federal Government, as such, to try to reverse certain historical trends which we find to be detrimental.

The debate on mandatory retirement, to me, went far beyond the employment aspect of it. To me it was a breakthrough in trying to change attitudes which are deeply imbedded in our national conscience. Once people are 65 they take one long step into old age regardless of their individual attributes. We have classified people without regard to their individual needs. So, I welcome the aboli-

tion of mandatory retirement at the age of 65 for Federal workers and hopefully, eventually in the private sector. But, much more important is that we change the attitudes about our older citizens—that they are indeed individuals and have individual needs to be dealt with.

Another measure we are dealing with is this long-term care bill in which I advocate that we have a single entry point in which our State agencies make an evaluation of human needs. What kind of care does this person need? Would it be homemaker services? If that need changes, then we ought to change the type of service that is available by following those individuals through the health care system. So, there are policies we can adopt to change the direction we are going in.

I think Dr. Cowgill suggested housing as an example where people would choose their own forms of housing if finances were adequate. Wouldn't that apply across the board? I guess we have to resolve this philosophical dilemma currently taking place.

To what extent should we not provide individual taxpayers across the country with tax cuts to give them more money in their own pockets so they can start making decisions which will affect their lives? Or, is the alternative to have more and more taxes collected by the Federal Government and then to decide in the way of giving relief back to the elderly, for example, to allow them more income security as determined by the Federal Government. Is that the direction we should go?

So, you have raised some interesting questions, and you have suggested, I believe, if the elderly just had enough income support they could make their own determinations, their own housing decisions. I would expand that concept philosophically to say probably it would apply to other segments of our population as well.

Then, again, this committee has heard testimony that income support is not enough, that we have to have more because it has not been enough in the past. I think there is an important philosophical concept that has to be dealt with as well as the demographics. That is, to what extent should the Federal Government take certain courses of action? Should we try to provide relief to give an individual a choice?

We have heard witnesses come before the committee saying we no longer want to see integrated housing. At one time there was a notion that we should have a certain percentage set aside for low-income and elderly housing, and now they are becoming victims of young thugs and they want to have separate housing. We have to deal with that kind of issue as well.

I have not asked you any questions. I have made a statement, but I will read your testimony with interest.

Dr. COWGILL. I agree with your statement.

Dr. SOLDO. I am sure you have heard this from numerous witnesses, that there are problems created by the lack of a national U.S. policy on aging. My understanding is there are efforts to have such a policy either before or coincident with the 1981 Conference on Aging. Some of the things you are talking about raise questions as to what are our objectives in dealing with the elderly population. We first have to make those decisions. But until we reach a consensus as to where we want to intervene and what we see as

the role of government and family, and what are the overall objectives, I think we are constantly implementing "band-aid" solutions. I support your ongoing effort to formally adopt a policy on aging.

Dr. HAREVEN. I would like to address your point concerning reversing trends. From a historian's point of view that is a welcome direction. I am especially pleased that the retirement trend is reversing and older people have the option to work. I would like to relate this to a broader issue; that is, the diversity of backgrounds, cultural preferences, and appearances in different age groups as they reach old age. In that sense, we need to make a variety of options available to people rather than just thinking simplistically about the family, the state, and the institution.

In reference to Mr. Stockman's demographic observation, I would like to point out that the age groups that will be reaching old age in the next few decades and beyond the year 2000 will not have a strong immigrant background. There will not be any more first-generation immigrants. They will come to old age with an entirely different outlook on what their expectations are from the family. They will come with a whole different outlook on ways of life, and their cultural traditions will be different. This has to be taken into account.

I think we also have to take into account the age groups that will be reaching old age in the year 2000. Except for the baby boom, they will not have sufficient familial support regardless of family feelings. So any kind of diversified policy in this respect would more effectively meet these different needs.

Mr. AKAKA. Are there any further responses?

Mr. BROTMAN. Congressman Cohen, we have been debating the income strategy versus the public support strategy since the New Deal days, and there are really no answers except that you can think of certain general principles. Where everybody in the group is subject to about the same kind of risk and the same need and can take care of it through that procedure, you can develop an income strategy like social security payments and supplemental supports.

Mr. COHEN. There is a classic example of this type of debate about to take place where the Congress has just passed a bill which would net $227 billion in new taxes starting next January. The question comes up because more of the young workers say: When social security first went into effect we had roughly 10 workers for every person 65 or older; that is now down to 2½. By 1990 it will be 2 to 1, so you have an increasingly heavy load to be borne by the workers. I think that these debates are all separate but somehow they all have to be dealt with in terms of our older people.

Mr. BROTMAN. They are very much interrelated. When we set up the social security system, we set it up as a transfer between generations. It is really not insurance in the commercial insurance sense. But every generation that receives social security receives more in nominal dollars than they paid in.

This is partly as a result of inflation, partly as a result of improvement in the level of social security payments and the standard of living they provide. It is a transfer of payments between generations.

The promise to those who pay now is that when they reach old age and are no longer in the labor force, they will receive a decent level of income. We did not anticipate at the time that we were writing the Social Security Act that we would have this wide variation in fertility rates. We did not anticipate that the proportion of people in the labor force compared to those outside the labor force due to age, would change this rapidly.

There are many complicated factors in regard to the total economy. As long as an economy is based primarily on maximizing profits, job opportunities will not be created in numbers fast enough to employ all of the people who should be in the labor force. If the major objective of the economy may some day be ameliorated, we may get into inducements to industry to provide more jobs, because obviously we cannot live in a society where 40 percent of the black teenagers are unemployed and have no prospects for jobs.

All these things tie together. To complete the other side of the statement I was making on income versus service strategies, just imagine if we tried to provide every older person with enough money to cover all of his potential medical expenses. It would be a tremendous financial burden that would probably bankrupt the country. So what we do is take an insurance approach and say we will pay the bills for certain medical procedures, and so on, instead of giving every older person an income sufficient for him to pay his own potential medical expenses.

These are the two extremes. It gets much more complicated with everything in between, and we are going to continue to have a combination of support and income strategies.

Before I finish let me add one more statement that no one here has discussed, that is, the aging of the population in our suburbs. Almost all of our suburbs were started in the 1930's and 1940's and have a uniform population of about the same age and same economic status.

Just imagine what is going to happen in these huge suburban areas when everybody in the community is 65 and over and shopping, social facilities, and so on, are not available or are a tremendous distance away. That is another angle we are going to have to consider in our projections and programs for the future.

Mr. AKAKA. Thank you very much.

Dr. COWGILL. May I comment on another aspect of the demographics that I think is neglected in this ratio of older people to working force. That is the decline in the proportion of children in that same population. If you use a fraction which shows the proportion of the population not in the labor force rather than this overly simple aged dependency ratio, the decline in the child population means that there has been and continues to be an overall decline in the proportion of the population which is dependent on that labor force.

Mr. COHEN. One final point. The Senate had a different version in the social security legislation than the House. In my opinion, that would have contributed to less employment in the future because at the same time we are pursuing policies of giving tax incentives for investing in equipment and machinery and yet loading up on social security as far as the contribution. Clearly, it

would have been a governmental policy to encourage more investment in equipment and less investment in getting jobs.

It is all integrated, and I think we do have to have a comprehensive strategy all across the board.

Dr. COWGILL. I agree. I think too often we frighten ourselves with this increasing proportion of older people. Actually, the proportion of the population dependent on the labor force and not in the labor force is going down.

Mr. AKAKA. Congressman Gephardt.

Mr. GEPHARDT. My question is to Professor Cowgill. It ties into some of the questioning that has gone on about social security and income maintenance and housing. I think one of your suggestions is that we need to address the issue of income maintenance if we are to successfully deal with the housing issue. I think that is your general suggestion.

Are you saying that in terms of government policy we ought to rethink programs like section 8: Housing for the elderly or, section 236: Housing for the elderly, and redirect that money into the social security system, for instance, so that we increase income?

Dr. COWGILL. I am not necessarily implying a decreased emphasis on other ways of assisting older people. I merely wanted to make the point that if they have adequate income, many of their problems can be solved on their own initiative, but we have developed a variety of approaches to this, and I do not know that we can drop any one. I am not familiar enough with the particular ones that you mention to comment intelligently.

Mr. AKAKA. Let me hold up here and call on the chairman of our Select Committee on Population, and I will get back to Mr. Gephardt.

Mr. SCHEUER. I yield to Mr. Gephardt.

Mr. GEPHARDT. I am through.

Mr. COHEN. I would like to come back to this issue. I do not know what the solutions are. We all raise the same questions and we depend upon you as historians and sociologists and even futurists to try to give this group of men and women some blueprint that we ought to be trying to draft so that we can try at least to redesign the Federal programs which are totally inconsistent or are conflicting. As Churchill once said, "the pudding has no theme"—I am not sure our programs have a theme as such.

After listening to the testimony today, which I will read over carefully, what would your recommendations be in the field of housing, for example? What should our policy be, to provide tax relief to the elderly so they can continue to live in their own homes?

Is home health care the direction we should go? It is certainly less expensive on a person-to-person basis. It will not be less expensive as a program. While we talk about the desirability to go into home health care, we should not mislead the public to believe it is going to lower costs because there will be more people needing that service.

You are going to see a less expensive mode of care, but the cost ultimately is not going down. So what do we want to do in the way of home care? Are we still going to strive for integrated housing? Are we going to let the individuals make the choice themselves?

Do we provide a tax cut so the money never flows to Washington?

These are issues I think we have to address before we can draw that blueprint, rather than talking academically as to what we do with this particular problem. I am not sure I am any better equipped to go to the drafting board to come up with a blueprint.

Dr. COWGILL. I cannot give you a blueprint. I would say that from the vantage point of my formal paper, I was trying to stress that we take account of this often expressed wish, on the part of elderly people, to live near but not with their children.

Our developing urban pattern has tended to pull those apart and separate them, and if there is any way of taking account of that wish, I would hope we could build it in to public policy. This will assist in the process of home health care because the family, as the point was made here, still does most of that.

Mr. COHEN. To what extent would a Federal program, which allowed older citizens to stay near but not with younger people, create a separate society? Is that desirable in the long-term goal? In other words, you have all older people living together but near their families——

Dr. COWGILL. That really does not follow, I think.

Mr. COHEN. Let me ask you, do we do it through a Federal program which somehow allows the individual to stay within the urban area? Is that it? If they have a home in an urban area, we provide the necessary health care, et cetera; would that still not be the social problem they have in New York City? This committee had hearings and one of the critical problems is older people being victimized by young gangs.

Dr. COWGILL. If those older people want to get out of there, if that is what they really want to do; and in the process, if they want to live near one or more of their children, then I think some way of assisting them in that desire is in order.

If they want to stay there, and if they want the children to live near them in that setting, then this is another approach to it. The only point is that so far our public policy has tended to drive them away from each other.

Mr. COHEN. But as I understand the thrust of your remarks, it is kind of a freedom of choice to provide them with enough resources to make their own decisions as to where they want to live and how they want to live and what kind of medical care they should receive, whether they decide to stay in the home or go into an institution if they need that level of intensive care?

Dr. COWGILL. That would be my first recommendation.

Mr. COHEN. That comes back to the great philosophical debate which is going to take place on this issue. I have more than exhausted my time on this but we cannot argue this measure without dealing with that philosophical measure as to how that is to come about.

Mr. STOCKMAN. I was rather intrigued by the suggestion made by someone on the panel that we ought to look at the overall dependency ratio. One of the scariest scenarios is that of a continued very low fertility rate and increasing life expectancy. If you look at the retired or elderly population compared to the rest of the population or the workforce, you have numbers that are almost absurd

or impossible. But if that is true, it equally implies the number of children in school has dropped substantially, and with that a lessening of the fiscal burden of education. There may be other social and economic costs to families, and economic and social costs to society that are reduced as well.

Has anybody tried to put together an overall dependency ratio in terms of people in the society who are in the workforce versus those who are not under various population projections? In other words, we may have some very large compensating influences here that will make it possible to finance the burden of an aging population more easily than might appear to be the case if we just look at the retired population ratios.

Dr. COWGILL. That is precisely my point. The answer to your question is yes. It is the dependency ratio that I would urge to be used in lieu of the simple ratio between age groups. In all of our advanced societies we have figures on the labor force, and I assume that the dependent portion of the population is those not in the labor force. This proportion has been going down over the decades.

Mr. COHEN. For the entire population of the 18-to-65 age group?

Dr. COWGILL. For the entire population it has been going down. The labor force has been increasing as a total of the total population.

Mr. COHEN. Primarily because of the participation in the labor force by women?

Dr. COWGILL. That is one factor, but the primary factor is the decrease in the proportion of children.

Mr. COHEN. The baby boom has entered the labor force.

Mr. SIEGEL. In the long run, of course, as the population approaches a stationary condition, as it probably will about the middle of the next century, we will no longer have these changes in age distribution that we are talking about. As we approach those years toward a stationary condition, it is true that the overall dependency ratio shows a more favorable picture than the dependency ratio of aged to people in the workforce, but at the moment however, it is the people in the workforce who are contributing the moneys to the social security fund that have to be transferred to the elderly, and it is because of the imbalance right at this point that there is need to raise social security taxes or, alternatively, to go to general revenue.

When the baby boom cohort comes along, into the older ages, you are going to see a problem reflected even in the total dependency ratio. Come 2025, this large cohort may more than compensate for the low numbers of young people and the overall dependency ratio will be rising.

Mr. GEPHARDT. Are you saying, even when the baby boom hits elderly years in 2025, we will have a social security crunch much worse than we have today?

Mr. SIEGEL. Oh, yes.

Mr. GEPHARDT. But if the population indeed stabilizes, as you think it might by the beginning of the next century, then looking out to 2075, hopefully, the social security problem could right itself again?

Mr. SIEGEL. Yes. Under conditions of continuing low fertility and even with moderate declines in mortality, we would reach a sta-

tionary condition—apart from immigration—under which the picture would change only slightly as far as the age balance is concerned—trivially, in fact. Yes, the situation could reach a balance in which there would be no change in age composition or even in numbers.

Mr. GEPHARDT. I thank the gentleman for yielding.

Mr. STOCKMAN. Does anybody have any rough number on the social support cost of a median elderly person via social security and other forms of assistance versus the support cost for education and maybe some other ancillary services for an 11-year-old? Is it a complete wash?

Dr. COWGILL. I think I have seen a figure on that, and of course all of this merely takes account of the ways in which we have opted to support the different age levels. Obviously, in our type of society we have opted for a Government support program for the older segment of our population which goes way beyond what we do for the child population. Most of the child support is absorbed in family incomes, whereas in the case of the elderly we have opted for this public system.

Taking all that into account, I think the figure that I have seen is that the support of older people from the public coffers is about 3 times that going in the direction of support of a child.

Mr. SCHEUER. We appreciate your testimony. I must confess I am still a little bit frustrated by the absence of specific recommendations for policies and programs. I am going to suggest that we hold the record open for 10 days or 2 weeks in the event any of you want to give us a laundry list of policy and programmatic recommendations. Several of the panelists suggested that at the point where the family is overstressed with social service needs and health needs, then the older person is forced into an institution. What are the alternatives? What are our options? How do we fill the gap between the family, when it is burdened beyond its capacity to cope, and the institution? Do we try to create some middle-ground arrangements or do we shore up the family?

If it is a question of supporting the family, how do we do that? Do we provide cash benefits, or perhaps a visiting nurse service similar to the program operating in England?

In England if an elderly person is in the family, the Government will pay 100 percent of the capital cost of building an addition to the house, a bedroom and bathroom and cooking unit. The British apparently feel that this is not only cheaper but more satisfactory for the elderly person. That is an approach to helping the family to cope, to provide the physical structure, plus some assistance from a visiting nurse service or neighborhood social worker. Someone talked about congregate living arrangements. What should be included in this type of assistance? Would it include the provision of health and social services?

In other words, what are the options? What are the maximum mix of aids to the family? If a family cannot cope, what should be included in the intermediate step that Dr. Soldo discussed?

Dr. SOLDO. I think perhaps you now have learned the frustrations that we who have worked in aging for some years have withstood. I think we are all flattered that you think we can provide such specific answers. I know I cannot.

Mr. SCHEUER. What are congregate living arrangements?

Dr. SOLDO. I think we can intelligently amplify on that.

We have a good theoretical idea of what aging is all about. Our hands are tied frequently because we lack national data on which to analyze the effects of aging and study the feasibility of various intervention strategies. At Duke University they have done several longitudinal studies. Are you willing to accept that information as being representative of not only North Carolina but also California and Maine and Minnesota?

Mr. SCHEUER. Let's assume that it is reasonably typical. Where do we go from there? What kind of policy implications and programmatic implications does this imply? We have heard testimony concerning the number of days an elderly person stays in the hospital. What does all that mean to us? What are the programmatic and policy implications of x number of thousands of days in bed?

Ms. KOVAR. I think we could answer your questions better if we had a better idea of where you want to go, what you want to do. What kind of national policy for older people do we want? What kind of national policy do all people in the United States want? Then we can help you learn how to get there. But where are we all trying to go?

Mr. SCHEUER. Why don't you tell us what the options are? Define the policy and program choices. You have been thinking about this for a long time, and we need your advice and counsel.

Mr. BROTMAN. Mr. Scheuer, a word of apology. I helped your staff plan this meeting and it was my understanding that you wanted a group of analysts and statisticians who would give you the background on which to base policy decisions and policy options. These people were not invited to analyze the situation and present proposals on what programs to encourage and what the costs will be. So I want to apologize for that; we misunderstood the mission of this session of the hearing.

If we were going to get policy recommendations, we would have invited additional people who have operating experience in applying the basic information to various situations in determining costs and different ways of accomplishing these purposes. But these people are primarily analysts. They have enough experience so they can give you ideas, but this is not what they were asked to do.

Mr. STOCKMAN. I think there has been some misunderstanding on both sides. Let me suggest this. I think the frustration that I share with Mr. Scheuer is the fact that we are not really in a position to interpret raw demographic data. When I see 4,000 bed-days per 1,000 population versus 8,000, it does not really have any significance for me in terms of the policy decisions I should make. But I know $1 billion when I see it. I know what it might mean in terms of our ability to finance things.

What I would like to ask is whether or not it might be possible to refine some of these very raw demographic variables into dollar terms that would help us look at the policy choices ahead.

It is clear when we look at the aging population that the health care costs per capita must rise rather steeply with the age curves. In other words, if it is only 2,000 days or 3,000 days, at age 65 to 69, then the cost is x; but when a person reaches the more advanced

ages, the number of hospital days, increases. Therefore, the costs must rise enormously. Could someone give us basic figures as to inpatient costs as they correlate with increasing age and then do a projection as to what this might imply in dollar terms and cost to the Government as the absolute size and proportion of the various ages in the aging population increases over time? Those would be statistical background numbers that would be helpful to me.

You would not be making a specific recommendation as to what we ought to do about medicare, but certainly it would give us some feel for what may occur in the next 10 years, if these demographic changes take place in terms of some very tangible policy choices which will have to be made.

Do you put the extra money into health care versus housing and some of these other things? We have to know what kind of costs we are facing before we can make these choices. This is the kind of help I think you can easily provide by translating raw statistics into dollar parameters.

Mr. SIEGEL. You are quite right. It should not be much of a job relating various assumptions or estimates of costs to age to convert them to dollar amounts.

Mr. STOCKMAN. Beyond that, we are dealing with hospital cost containment, and we know hospital costs have been rising with tremendous rapidity. Give us a 20-year scenario in which that continues, in which the population continues to increase, and tell us what we are looking at in terms of hospital costs.

Mr. SCHEUER. Dr. Hareven talked about the right of people to die at home. Unfortunately, this is not the case today. Families are becoming accustomed to placing their elderly parents in a hospital or institution. They do not want to be bothered with the care of elderly parents. What are the health service delivery systems whereby an elderly person can stay at home and get good health care?

What are the kinds of geriatric diseases for which home health care is appropriate? How do we set up treatment delivery systems that do take care of people in their home environments where they have love and company? We know that people are going to live longer; we know that as life is extended, they are going to be suffering from the kinds of illnesses that plague the elderly.

How do we analyze which of those illnesses are appropriate for home care, and then, how do we design an alternative to institutionalization? Maybe it is congregate living facilities, or perhaps support for the home, but what are the specifics of doing that? You must consider the costs to the taxpayer as well as the national elements looking ahead over 10 years.

Mr. Stockman's comment concerning hospital costs is absolutely correct. Our annual health costs now exceed 10 percent of GNP. No other country spends more than 6 percent of their GNP for health, yet we still rank 7th in female life expectancy and 15th in male life expectancy. For all those health dollars, we are not getting that much in the way of health output.

How do we combine some kind of cost-benefit analysis here, and how do we house and care for our elderly with the human compassion and concern that all of us have?

Dr. HAREVEN. One of the policy recommendations I made earlier, Mr. Scheuer, is really to revive a historical practice. That is, to take strangers into the home or to place the elderly in trusted care in other households. This would include not just the elderly who are sick but also people who are not capable of living alone. I think this might be an area that could be explored.

Mr. SCHEUER. That is a very interesting and thoughtful suggestion. That is the kind of creative thinking that we need.

Mr. SIEGEL. A question that is becoming difficult but important is the allocation of funds for research and treatment between the various major illnesses and causes of death. We are beginning to come into knowledge which suggests, for example, how many years of life might be added if a certain cause of death were eliminated versus other causes, and how the cause pattern of deaths might shift if certain causes were eliminated. But each cause has a cost. Certain major illnesses involve much greater expenditures of money than others. They hit people at different ages.

The time is arriving when one could begin this kind of analysis, although it is quite difficult. This kind of analysis might lead to the conclusion, say—and this is illustrative—that it is far more important to plow the next unit dollar into heart disease and not into cancer, because by reducing the illness and mortality from heart disease you save more years of life with less money, and particularly, of course, part of the working life of many men.

Mr. STOCKMAN. Has anybody put together any hard numbers on those things? For instance, what is the cost per year of life added as a result of hospital care provided to an acute pneumonia patient who might have died 20 years ago but who is put back in shape today? Are those things available?

Mr. SIEGEL. I do not know of any such studies, but I confess I have not attempted to explore them. I am familiar with studies that are needed for the first part of that analysis, that is, the extension of life through elimination of one or another cause of death and how the cause pattern of death might change. I do know of a major study at Georgetown University, the Public Services Laboratory, which is concerned with projection of costs for medical care and which is being built upon a fairly intensive historical study concerned with costs and the factors that have gone into the pattern of illness and death through the years since 1900.

Ms. KOVAR. A fair amount of that material is available. I would be very glad to send it to you. If it doesn't answer your question, we can try again.

Dorothy Rice, Director of the Natonal Center for health Statistics, who is a health economist, in a very recent paper on the burden of illness, gave some of that information.

Mr. STOCKMAN. It is a very grisly-sounding subject, but like the Federal Highway Administration which ranks accident prevention policies in terms of cost per death averted, it seems that, since we are dealing with the elderly, it is entirely a matter of public information.

We ought to develop that type of data.

Ms. KOVAR. Things like the years of life that whould be gained if specific causes of death were eliminated have been done. We are beginning to approach the kind of question you are asking. I don't

think we have gotten there yet, but we are more than willing to try. It might help to take a look at what we have done and tell us what else is needed.

Mr. SCHEUER. One question that has been brought to our attention is the migration of the elderly population. What proportion of the elderly move? Why do they move? What are the motivating forces? Is it fear of crime, the desire to go to a warmer climate, or a desire to move where they have family ties? Also, can we predict where they are going? What does this tell us from the point of view of long-term planning for institutional facilities and service delivery programs?

Mr. SIEGEL. The first thing I want to say to that, even though it seems to give an entirely different emphasis, is that the elderly are the least mobile of all age classes in our population. They hardly move. Much of the movement which does occur is near the communities in which they previously lived.

Of course, we are aware of spectacular movements to States like Florida and perhaps Arizona, and there is some evidence that at the very oldest ages, there is an increase in the migration rate, but I would suggest this probably results simply from short moves to institutional arrangements of a sort.

Dr. HAREVEN. There seems to be a misception that the elderly want to live in an elderly community and separated from other age groups. This may be true to a certan extent because the elderly are afraid they will become a burden. They feel they don't want to impose on their children. Therefore, they say, "We want to segregate ourselves and live separately." We have to see through that and not mistake the motives of the elderly who move away.

Dr. COWGILL. The migration patterns referred to represents a small proportion of the total elderly.

In amplifying on your question as to the various reasons for migration, the answer to your question is yes, they migrate for all those reasons, different people for different reasons. This comes back to the point which I made earlier, that older people constitute a great variety of people. There will undoubtedly be some continuation of migration of the elderly to the Sun Belt. But that again is, for the proximate future, going to be a small proportion of the total. There will undoubtedly continue to be some migration from farms into small towns around the country. This has been going on for several generations now. There will undoubtedly be some continuation of migration out of the central city towards the suburbs. As Herman Brotman was saying, some of those suburbs will just age in place. I don't see any precipitate reason for a change in the ongoing migration patterns, because most of the concentrations of older population result from older people not moving, rather than from migration, Florida being a notable exception to that statement.

I think the concentrations of older people will be pretty much the same into the future, except they are going to spread; they are going to spread through some of the suburbs as well.

Ms. KOVAR. There is something else which needs to be considered. There is some migration to the Sun Belt, places like Arizona. We need to consider the impact of the population on the area they are moving to. People tend to move around the age of retirement

when they are relatively healthy and in good shape. Therefore, a community fills up with a group of people all about the same age. Ten or fifteen years later, you will have a group of people in great need of a lot of social and health services. Little thought has been given to the impact on these developing communities. That is also necessary as part of your planning process.

Mr. SIEGEL. While the general distribution of the elderly may differ somewhat from that of the rest of the population, you have, in relation to the question of provision of health care, many of the same distributional problems that you have for the general population, that is, the inadequacy of health facilities for poor people in the inner city, the inadequacy of health facilities in the open country, and other rural areas. This applies as well to the elderly, but particularly to the elderly, since the elderly are concentrated, relative to the rest of the population, in the small towns, the places of 2,500 to 10,000. That concentration, as Dr. Cowgill says, results not so much from their going there but from the young people leaving.

So I am saying that the problem of the distribution of health resources is not terribly different. It is a basic problem for the elderly as it is for the rest of the population.

Ms. KOVAR. The basic problem is about the same. However, the elderly don't have trained geriatricians to look after them. We don't have physicians trained for the complex treatment of older people.

Mr. SCHEUER. If we are really going to do anything meaningful about providing health care for the elderly on a preventative health care model, a lot of that care is not going to be provided by geriatricians but by paraprofessionals. Those people with a year or two of postsecondary education can provide health care to the elderly.

I would like to address a question to the entire panel. Do you think it is possible to develop a program to provide a paraprofessional who is in touch with elderly people, could provide counseling and diagnose a serious problem. After the diagnosis, he would, of course, bring in a doctor. These paraprofessionsls could be the elderly themselves.

Can you see the design of such an auxiliary program?

Ms. KOVAR. The paraprofessional person has to be trained to know when there is a treatable or a serious health problem.You probably need the good diagnostic services to begin with and then, yes, I think your paraprofessionals can be very, very helpful, because we will never have the highly trained manpower to provide the critical care.

The ability to diagnose and decide what is needed is a highly specialized field, and we need more of both. I think we have very good examples of this in the care of children. The pediatricians are using paraprofessionals in their practices and offices and are using them extremely successfully. They are being trained to know that "I should get help on this," and that training is critical.

Mr. SCHEUER. You think that model is just as important in the care of the elderly as in pediatric care?

There is nothing intrinsic in the care of elderly which requires an M.D. with a geriatric specialty——

Ms. KOVAR. Elderly people suffer with a complex set of conditions, and disentangling those to determine the cause of a symptom is much more difficult. I think that is a very critical difference between children and old people. The careful diagnosis definitely has to be built into the system.

Dr. SOLDO. I think perhaps it is more recommended in the care of elderly than in pediatric care.

When you are talking about an older person's health, you are talking about a social dimension, inevitably, imbedded in it. The United States can look to the British experience, which is organized on the district level, to monitor small changes in their condition—for instance, the way in which they use services when they are lonely. Normally it is a female; she is evaluating the person as a whole person and not in the diseased state.

Mr. SCHEUER. Do you see the elderly who are in good health as people who could provide all kinds of assistance to the elderly who need health or social services? This could include helping in bathing, dressing, and shopping. Do you see the elderly as a great potential source of manpower?

Dr. HAREVEN. It has been done in Britain.

Dr. COWGILL. The senior companion program aims at that particular thing, but it is rather spotty.

With reference to your question as to whether it is possible to train paraprofessionals, I would say definitely, yes. I am just back from mainland China, where I had an opportunity to observe some of the operations of the so-called "barefoot doctors." In most specific reference to the point you are raising, I visited a "home of respect"—that's their term for an old folks' home—in a commune outside of Peking. The medical person on duty and carrying on the work at the clinic within this home of respect was one of these barefoot doctors.

I think it is an interesting model to explore.

Mr. SIEGEL. Perhaps it isn't too far afield from policy, then, to suggest that support for training in this field in the important educational institutions would be desirable. We are talking about fields called geriatric nursing, geriatric social work, and other geriatric specialties, and also geriatric physician assistance.

Ms. KOVAR. I am somewhat concerned because we still hear it said by a physician to an older person, "You have to expect this kind of thing as you get older." There is evidence you don't always have to expect "this kind of thing" as you get older. Something can be done about a lot of these "things," so both good medical care and social support need to be operating at the same time. I wouldn't like to see the elderly people have second-rate health care when really useful and helpful things can be done to improve their function.

Mr. AKAKA. The Chair recognizes Congressman Burton.

Mr. BURTON. I have no questions.

Mr. AKAKA. I was concerned about a statement that the relative number of women to men is increasing as they grow older, and I also understand that widowed and divorced males experience higher mortality than married men.

Can you explain what the causal relationship between marital status and health and mortality is?

Mr. SIEGEL. I will first give you a sort of disclaimer on the subject or employ an avoidance tactic. We don't know to what extent the difference is caused by marriage or by the selection of marriage partners; that is, whether healthy persons are more likely to be selected for marriage or tend to remain married, or whether marriage is a protective social environment. It must surely be some of both since, we can argue, people in ill health or having tendencies toward ill health may be less desirable marriage partners. In terms of effect, marriage is certainly an experience that forces an organization to one's life with a kind of sounding board in the form of other household members on how to keep well, whereas an unmarried individual may very well live an irregular or dissolute life and may not follow a pattern of good personal habits with regard to eating, resting, and so forth.

Mr. AKAKA. Mr. Siegel, you stated that one way of reducing the sex differential in mortality would be by preferential treatment of men in health care.

I would like you to explain that. Also if you could, explain why the mortality rates are lower in Scandinavia than in the United States.

Mr. SIEGEL. Overall?

Mr. AKAKA. On sex differentials.

Mr. SIEGEL. First, as to the idea of an equal health opportunity program. The material you have read shows my strong feeling that this is a serious issue and has very grave consequences for us. It would be useful to think of ways of reducing either the differential or ameliorating its effects.

One could ask on the other side, what can we do to encourage men to marry women much older than themselves or women to marry younger men? That's a different approach to the consequences of the differential death rates, in which case there wouldn't be such early widowhood and such long years of widowhood, and the partners might expire at a more common date.

The equal health opportunity proposal is simply an unstructured one which draws on the ideas of the concept of equal employment opportunity—which may be defined not merely as providing equal opportunity for employment but securing equal results—to find a way to achieve equal results in life expectancy.

In this context, I am saying that achieving equal results between the sexes in the matter of longevity and health is important. I mentioned in the document that you read some relatively unrefined ideas as to how that could be achieved. I wouldn't want to defend them individually, but more generally one could think of special actions benefiting men. There might be larger deductions for medical expenses in tax returns for men than women; there should be specific encouragement and inducements for men to secure medical help where today they avoid it.

The other question, as to the higher longevity in the Scandinavian countries, this is true even though we deal only with, let us say, the white population, to avoid the question of racial heterogeniety in the longevity picture. I am not sure I have an answer.

I only suggest that the public concern for the social security of its population has been more traditional and is more established in

the Scandinavian countries, so that they have had lower infant mortality rates and lower death rates at most stages.

Let me point out, however, that this is true only up to the ages of 65. Above 65, it doesn't quite matter where you live. The Fiji Islands perhaps have the greatest length of life at age 65 according to the records. So, we are talking mostly about longevity or death rates at younger ages. I would suppose that greater concern for maternal care and for infancy in particular, has been a part of Scandinavian public policy.

Mr. AKAKA. Ms. Kovar.

Ms. KOVAR. May I add two things, the first on the equality of health opportunity. Women do use more medical care up to the age of 65, than men do. After that you start getting some reversal. Women are receiving more medical care from age 15 through 64. A lot of that utilization is related to fertility and childbearing. There is the possibility that in the course of pregnancy and the visits for fertility related reasons you do pick up the beginning of hypertension, the beginning of diabetes, and you do get those conditions under medical care. Preventive medicine can't begin when you get old. It begins much, much earlier if you are going to have an impact in older age.

The second point is that the variation in life expectancy and in mortality rates and in access to medical care within this country is enormous. We do not have a homogeneous country in those respects at all. That again is something that needs to be addressed. The longest expectation of life in the United States is in Hawaii. We have some places in this country where access to medical care and length of life are low, infant mortality rates are very high, and the variation is quite large.

Mr. AKAKA. Thank you very much for those comments.

At this time I want to express the gratitude of both the Select Committee on Aging and the Select Committee on Population for your time, your testimony and your statements. We look forward to your responses to the chairman's questions.

At this time I would like to ask the staff for any questions they may have.

Dr. TEITELBAUM. I have three questions, and I will try to be brief.

The first question concerns underestimates of the elderly population. Since the Government has to rely heavily on estimates to predict service needs such as hospitals and nursing homes, can you tell us what the cost to our society would be if the elderly population in 1990 has been underestimated by, let us say, a million or so? What is your estimate of the current undercount of the elderly population? What would be the cost if we erred in the other direction and overestimated the elderly population? Can you elaborate on some of the special reasons for any undercounts of the elderly population?

Mr. SIEGEL. The elderly population taken as a whole is not one, strangely, which is seriously undercounted in the census. A part of the reason for that seems to be that enough persons under 65 report themselves as over 65, so the count comes through higher. That is significant because for some groups, particularly black males, that overreporting of ages produces an estimated overcount of the number of elderly people.

With respect to a possible underestimate in the future, of course it depends very much upon the accuracy of our projections of mortality and immigration from here on out, provided we accept the age distribution in the last census. It is possible that the present projection could be as much as a million low, but I doubt it very much at this point. Yet I acknowledge that the projected mortality covering the last year is less favorable than the actual events, that is, mortality has continued to fall more sharply than was anticipated a year ago.

The way to avoid a cost problem now is to begin to handle the elderly population in the same way that we do the total population, and, that is, to recognize more clearly the uncertainties in the projections of mortality and immigration and of the count in the censuses that will come, and therefore provide alternative projections which would permit you to then make more cost-effective judgments. For example, when it was seriously expensive to overestimate, you would use the low figures, and when it was a serious prospective loss to underestimate, you would use the high figure, such as we would advise any user.

Dr. TEITELBAUM. Is the Census Bureau in fact producing such alternative projections?

Mr. SIEGEL. At the moment and up to this date, that has not been the case. There certainly is an intention to do that now, and the document that you have in front of you now describes some initial experimentation to see what the effects of alternative assumptions of mortality might be on population size and change. It tries to establish the impact on the population numbers, changes, and percents that alternative assumptions on mortality might produce.

Dr. TEITELBAUM. Ms. Kovar, do you have a comment? Perhaps you could, in the course of your comment, make some reference to the inaccuracy of our guesses in the past about the decline in mortality among the elderly, and what impact future inaccuracies might have for our projections.

Ms. KOVAR. You might have to repeat that in pieces so I can get them all one at a time. First, we have been aware that the recent declines in mortality have been greater than projected. There is no question that the mortality rates have declined faster than anyone had really anticipated. Demographers do not always predict what is going to happen next with any great degree of accuracy.

Second, it is not only the decline in the death rate among the elderly that increases the size of the future elderly population. It is also the decline in the middle ages. The decline in heart disease is almost as if we had an epidemic which is ending, and the death from heart disease is really going down.

This decline in death rates among people age 45 to 54 has an impact later on for the elderly population.

Dr. TEITELBAUM. Has this change been enough to change the form of the age-specific mortality schedule?

Ms. KOVAR. No, that has remained. The death rates after the initial high death rate in the neonatal period decrease and then continues to rise.

Dr. TEITELBAUM. I do not mean in the shape of the curve in general, but the specific shape, the rate of change, the relation among mortality rates of various age groups.

Ms. KOVAR. Are you asking if the rate of decline has been constant across age groups? I would like to go back and recheck for a precise answer, but I will give you an answer at the moment. As you know, the early decline, of course, was with the infectious and parasitic diseases, and that was primarily among the younger age groups.

The heart disease decline is primarily from about age 45 on because those are the years in which heart diseases have become the major killers.

I would really have to look, but I will be more than glad to do so and come back with a better answer. There has certainly been a decline in the middle ages as well as older ages. There have been some changes in the very young ages due to the accidental death rates. There have been increases as well as decreases in some of those age-specific rates over the past few years.

Incidentally, this is going on in the European countries, not just the United States.

Dr. TEITELBAUM. If heart disease has been a major factor in the unexpectedly rapid decline in mortality, then the form of the life table used for future projections might have to be modified if there is a continuing trend in this direction, because that will change the shape of the life table. The change is not sufficient, is that the point?

Mr. SIEGEL. As I recall, declines in death rates have occurred right through the age distribution. While I do not recall the percent declines as being equal, the shape of the curve for the United States remains essentially what it has been but with lower rates.

When we talk of the life table, you have to remember that the way the rates are applied in making projections does not fix any particular pattern or level, that, in effect, the equivalent of generation life tables are secured by patching together survival rates for different ages and dates, which are extensions of current mortality into the future, so that with each revision of the projections one can take account of recent changes.

Whether this suggests having more rapid declines in mortality is another question. The answer is, it might under one series, but not necessarily for another series. As I said, in spite of what has happened in the past several years, the possibilities for sharp increases in survival rates (as compared with sharp reductions in death rates—and they have different mathematical functions) is not too great.

Dr. WILLIAMS. You mentioned a few minutes ago the unanticipated decline of the 1970's in death rates continuing to a further unanticipated decline in the last year. At what point do we start to anticipate further declines? Furthermore, the Select Committee on Aging has recently held hearings on life extension possibilities. Would you comment on how you use, in constructing the projections, this information coming out of the biomedical field about possible advances in survival of the elderly?

Mr. SIEGEL. Any new set of projections would of course take account of the current level. We would recognize the recent rate of

decline and could extend that in an alternative mortality series, and I would hope that would be done.

Your other question, Dr. Williams.

Dr. WILLIAMS. How do you use information coming out of the biomedical field concerning possible advances in survival of the elderly?

Dr. SIEGEL. It is very difficult to take such information into account in a direct fashion since the biomedical people differ greatly as to what they say. Some give what might be called fairly visionary projections of what can happen. In the final analysis, having met with demographers and biomedical people on these matters, I find that the biomedical people have little to suggest that is of concrete value on how to extend mortality for purposes of population projections and that it is the demographers and actuaries who have had to take the lead in making decisions on this matter.

I am simply saying that the biomedical people talk in such generalities that the information is not easily usable.

In the final analysis, we have to resort to fairly arbitrary choices, such as, the assumption that death rates may be reduced by 50 percent in 75 years. Beyond a further reduction, we are really positing the concept of immortality. Although I am willing to experiment with such assumptions, it is hard to use them as serious alternatives in making projections.

In short, in answer to your question, we try to take account of this information, but it is difficult to do so. In the past, the Census Bureau has done it indirectly through working with the Actuary's Office of the Social Security Administration, which has had to make this decision. In the future, however, I think the Census Bureau will have to develop its own projections and accept responsibility for doing the job that has to be done.

Dr. TEITELBAUM. One last question. This is for Ms. Kovar. Do the National Center for Health Statistics surveys enable us to determine how many of the elderly currently suffer from untreated but easily correctable health problems, such as, hearing, or visual, or dental problems?

Ms. KOVAR. In most cases probably not. In a few cases, yes. Let me give you an example of one that I think is a probable yes. We have estimates, for example, of the number of people who have been given a physical examination and were found to have high blood pressure. You can define high blood pressure any way you choose, but the point is that the estimate is not derived from an individual saying he has high blood pressure; it is from taking blood pressure readings during a physical exam.

In the course of a medical history survey which was done totally independently, we asked elderly patients if they had a whole series of conditions. We found that a fair proportion of the people who had definite hypertension on examination reported that they had never been told by a physician that they did.

Obviously, they may have been told that, but it may not have been in such a fashion that they recognized the problem. Hypertension is a condition where we do have treatment. It is possible for most people to control high blood pressure, and so in that case, yes, we probably would make a reasonable estimate.

There are some other conditions, such as, specific eye problems and dental problems, where we have given a physical examination. For those things I think we could probably give you a fairly good answer to your question.

For other things it is much, much more difficult partly because the medical profession itself does not agree terribly well on what is a treatable condition or what could be done, and partly because the reporting is not that accurate in terms of the diagnosis.

People themselves usually cannot give you a very specific diagnosis which you can then take to a group of doctors and say, "Can this be treated?"

We could probably make some assumptions. For example, we know the proportion of people who report they have a certain condition, and we ask them when was the last time that they saw a doctor about that condition. You might want to assume that if they have not seen a doctor for diabetes in 2 or more years it is possible that something could be done to bring that condition under control.

On the other hand, if they say they have arthritis and they have not seen a doctor in 2 years or more, I do not think that tells you very much of anything about the possibility of treatment.

So it is a very, very mixed bag. We would have to do a great deal of thinking about what kinds of assumptions we would want to make almost on a condition-by-condition basis before we would want to tackle that one.

Dr. TEITELBAUM. In the first category of conditions, those generally agreed to be treatable, could you provide both select committees with estimates drawn from your surveys of the proportion of the elderly population suffering from such easily correctable conditions. Second, if you could provide us with "guestimates" of the second category of conditions, recognizing all of the assumptions that would be involved, or at least a range of estimates based upon different assumptions.

The first category sounds, if I hear you correctly, to be a do-able enterprise without too much trouble. I think it would be of great interest.

Ms. KOVAR. I am not sure how doable it all is or how quickly it can be done. I think that is a problem. Hypertension, I think, could serve as an example of the kind of thing that is doable, and since that is highly associated with heart disease, I think it might be a very useful one.

You may know that the health examination survey only includes people through the age of 74, and therefore it is rather limited for older people. Also, it only includes the kinds of physical examination which can be done without an internal exam because of considerations of privacy and response.

Dr. TEITELBAUM. We would welcome anything you could provide us.

Do you plan to extend that age limitation of your surveys, given the greater survival of people over 74?

Ms. KOVAR. That particular examination survey?

Dr. TEITELBAUM. Whatever future rounds there might be.

Ms. KOVAR. It has been discussed. The mandate for the survey is the monitoring for health and nutrition. It does not say that it has to be the entire population at any given time or anything like that.

It has actually been a matter of discussion whether it could be done specifically for the elderly population. The whole survey procedure would have to be completely revised to do that.

One of the difficulties is that we have much lower response rates for the older people. The way it is done now involves people leaving home and coming into a mobile unit for a physical exam, and people are sometimes reluctant to do that. They are wary, they do not know what to expect. The response rate problem is one of the reasons we limit it to age 74. If we were to redesign it to include people age 75 and older, it would probably have to be a redesign that would make it possible to take the examination to the person rather than the person to the examination.

Mr. TEITELBAUM. Thank you very much.

Let me thank the witnesses again on behalf of the chairmen and members of both select committees for their testimony and advice.

The hearing stands adjourned.

[Additional questions asked of the witnesses by the chairman:]

ADDITIONAL QUESTIONS ASKED OF MR. JACOB S. SIEGEL BY THE CHAIRMAN OF THE SELECT COMMITTEE ON POPULATION

Question 1. Could you explain the difference between the Census and Social Security projections of mortality?

Answer 1. It is not possible to answer this question without specifying which set of projections we are talking about. Let us consider the latest published sets of Census Bureau (*Current Population Reports,* Series P-25, No. 704, July 1977) and SSA (*Actuarial Study No. 76,* June 1977) projections.

The Census Bureau's projections of mortality were based on assumed percent reductions in the death rates of the total population by age and sex between 1974 and 2050 developed by the Actuary's Office, Social Security Administration. Because the SSA mortality projections are for the total population (i.e., all races), it was necessary to adapt the SSA mortality projections in order to prepare projections for race groups. The Census Bureau applied the percent reductions in the SSA death rates to death rates by age and sex for 1976 for Whites and Other Races (i.e., races other than White or Black), to derive a new set of death rates by age and sex for 2050 which were assumed to apply to all races. In other words, it was assumed that the resulting ultimate levels of mortality would be attained in 2050 by Blacks as well as by Whites and Other Races.

The Census Bureau developed death rates by age, race, and sex for 1976 on the basis of data from the National Center for Health Statistics on final death statistics for 1974 and provisional death statistics for 1975 and 1976. These data were converted into death rates by use of estimates of the population for 1976 corrected for net census undercounts. The distribution of deaths by age above 65 was made according to patterns shown in "Medicare" data for 1972 obtained from the Social Security Administration. After the Census Bureau prepared its projections, the Actuary's Office updated the death rates for 1974 to 1976, but by a cruder procedure than the Census Bureau used. Because the rates for 1976 in the two projection models differ only slightly and the death rates for Whites and Other Races are lower than the all-races rates (except at ages above 80), the ultimate death rates for 2050 produced by the Census Bureau are lower than the death rates for 2050 produced by the Actuary's Office.

The projected values for life expectancy at birth used by the Census Bureau for 2050 and the projected values given in the report of the Acturay's Office for 2050 follows:

Males:	
Census	71.8
SSA	70.8
Female:	
Census	81.0
SSA	79.1

Question 2. How do mortality differentials by socioeconomic status affect the structure of the elderly population?

Answer 2. Substantial socioeconomic differentials in mortality exist at ages below 65.[1] Although three components, educational attainment, occupation, and income, are involved in defining and measuring socioeconomic status, educational attainment is believed to be the more reliable indicator of socioeconomic status at the older adult ages. Survivorship for any birth cohort to age 65 is directly related to socioeconomic status, so that the proportion of persons of "higher" socioeconomic status reaching age 65 is greater than the proportion of persons of "lower" socioeconomic status. Socioeconomic differentials in mortality over age 65 are less pronounced and they may have disappeared by age 75, in view of the apparently lower mortality of Blacks than Whites at the ages over 75 or 80 (assuming that "Black" and White mortality may serve as surrogates for mortality of the population of lower and higher socioeconomic status, respectively). Any particular birth cohort (e.g., groups born on 1895–1910) probably has a slightly higher educational attainment at the elderly ages than when it was younger. (In the actual recorded data this generalization would be affected by net immigration, excess (war) mortality, and errors in census data.)

In spite of the underlying tendency for selective survival to old age, any particular group of elderly persons tends to be of lower socioeconomic status than younger age groups at the same date because of the intergenerational trend toward greater educational attainment and "higher" occupational status. The present elderly population arose from cohorts which are generally less educated and of lower occupational status than the new cohorts coming along. Furthermore, economic status drops sharply with old age. Future prospects in the composition of the elderly population according to socioeconomic status depend in part on the extent to which socioeconomic differentials in mortality persist, but the intergenerational and intragenerational trends in educational attainment (including education after youth) will be more important.

Question 3. Why do age-specific mortality rates differ across States?

Answer 3. First, we should note that the differences in age-specific mortality among the States are substantial but not extreme. The variation from the U.S. average is in fact small. An important share of the differences can be explained by differences in the race composition of the States. Life expectancy at birth for Blacks is several years less than that for Whites so that there is a tendency for life expectancy to be lower in States with large Black populations. In 1959–61, the latest period for which summary figures on longevity for States are available, life expectancies in the high and low States were as follows (in years):

Area	All races	White	Black
High State	[1] 73.6	[2] 73.1	[3] 67.7
United States	70.8	71.4	65.0
Low State	[4] 65.7	[2] 69.4	[3] 62.6
Mean deviation [5]	1.2	.7	1.1
Range	7.9	3.7	5.1
Relative range [6]	11.3	5.2	7.8

[1] Hawaii.
[2] Based on 48 States, excluding Alaska, Hawaii, and the District of Columbia.
[3] Based on 23 States and the District of Columbia, excluding California, Hawaii, and Oklahoma.
[4] District of Columbia.
[5] Mean deviation around U.S. unweighted average.
[6] Difference between the values for the high State and the low State as percent of their average value.

The differences among the State figures for Whites and Blacks separately reflect differences in the availability, delivery, and quality of health and other social services, in geographic environment, population density, and metropolitan-nonmetropolitan residence, and in the socioeconomic characteristics of the population, including differences in educational level, occupational and industrial structure, and economic level. The higher mortality in some States is in large part a reflection of the inverse correlation between death rates and socioeconomic status and the larger proportion of persons of lower socioeconomic status in these States. The differences in the State figures for all races combined are affected by these factors as well as by the association between race and socioeconomic status and the possible contribution of genetic factors to race differences in mortality.

[1] Evelyn M. Kitagawa and Philip M. Hauser (1973), Differential Mortality in the United States: A Study in Socioeconomic Epidemiology, Harvard University Press, Cambridge, Mass., esp. Chapters 2 and 8.

Differences in longevity at age 65 among the States are small and the race composition of the States has little effect on the figures since the life expectancy at age 65 for Blacks and Whites are roughly the same.

Question. 4. In your oral statement, you seem to imply that by 2075 the Social Security System would be in balance if the population stablizes under the Series II projection. What is the proportion aged in this projected population after stabilization? If it is greater than the proportion aged today, would we not need an increase in social security taxes?

Answer 4. The population does not technically achieve a stationary condition according to the Series II assumptions even in 2075 since there is a constant net immigration of 400,000 to the United States each year and fertility is exactly at the replacement level. The proportion of the population 65 and over does not change much, however, from the early part of the century in the Series II projections.

As of July 1, 1977 persons 65 and over represented 10.8 percent of the total U.S. population. The proportion rises slowly under Series II to 12.2 percent in 2000. It rises to 17 percent in 2025 and increases a little further to 18 percent in 2030. Perhaps a more relevant base for measuring effects on the Social Security System is the population 16 and over. As of July 1, 1977, persons 65 and over represented 14.6 percent of the population 16 and over. The proportion rises slowly to 16 percent in 2000 and then rapidly to 22 percent in 2025. These percentages change very little after 2030; the percent based on the total population is 18 and the percent based on the population 16 and over is 23 in 2075.

I understand that the reason the Social Security System is now in financial difficulties is that its welfare features have become dominant over its insurance features and expensive programs other than those directly benefiting the elderly are making heavy inroads into the Social Security fund. If we rule out any new programs or expansions of old programs, the increase in Social Security taxes now going into effect on a staggered basis should take care of the demands on the fund until about 2025. The rapid rise in the ratio of the elderly population to the population in the main age groups that contribute to Social Security (16–64) in the second decade of the next century is bound to cause great financial strain on the system. A new cost structure will be needed at that time, but the new taxing program should serve for an indefinite period thereafter.

Question 5. Could you elaborate on the reasons for the low sex differentials in mortality in Scandinavia?

Answer 5. First, I should like to comment on the question. The sex differential in mortality in Sweden and other Scandinavian countries is well below that in the United States but it is by no means low. The male-female difference in life expectancy at birth in 1974 was 5.8 years in Sweden and 7.8 years in the United States.

I won't speculate about the reasons for the difference, and I am not familiar with any special literature on the question. The combination of the races introduces a degree of racial heterogenity in the United States which does not exist in Sweden; hence, it is preferable to compare the male-female differences in mortality or longevity for Whites in the United States and the total population of Sweden. The male-female difference in life expectancy at birth is somewhat larger for Blacks (8.7 years, 1975) than Whites (7.8 years, 1975) in the United States.

It would appear useful to examine the male-female difference in life expectancy at birth for Whites in the leading State in the United States. The difference in 1969–71 is 7.7 years as compared with 7.6 years for the United States as a whole. Since the differences are about the same, no basis of explanation appears here. If we confines ourselves to the figures for Whites, there is no close relation between the level of life expectancy at birth in the States and the difference between male and female life expectancy.

Comparison of recent age-specific death rates for the United States and Sweden reveals that the difference between the death rates of the sexes is greater in Sweden at infancy but smaller at all other ages where death rates are substantial, that is, over age 45. In all age groups 45–54 to 85 and over, the percent difference between male and female death rates in the United States exceeds the percent difference for Sweden by more than 10 points; in most cases the excess is more than 15 points. On the other hand, while a considerable part of the sex difference in life expectancy in both countries is accounted for by the difference in life expectancy between the sexes over age 65, the proportion of the total difference over age 65 is greater for Sweden (see table 10 of my prepared testimony).

The excess differences in the death rates in the United States in the older age groups are associated with large differences between the sexes in the United States than in Sweden for several leading causes of death, including diseases of the heart, malignant neoplasms, and influenza and pneumonia. Further understanding of the

sex difference in longevity between the Scandinavian countries and the United States would involve a study of differences in the availability of, access to, and delivery of health services, and differences among the countries in smoking habits of the two sexes, participation of the sexes in the labor force, life styles and occupational patterns, morbidity rates by cause, dietary habits, and similar factors. We can ask whether the provision of a wide range of government-sponsored social services and health services, which appears to contribute to a reduction in overall mortality in the Scandinavian countries, aids in reducing the male-female difference in mortality.

Question 6. With reference to your oral testimony, could you tell us what plans the Census Bureau has to produce alternative mortality assumptions for population projections.

Answer 6. The next set of national population projections will not be produced for at least another year, that is, at least two years after completion of the previous set of projections (Summer 1977). In the past the Census Bureau has employed only a single series of mortality projections in its population projections. This approach was valid and remains essentially valid for measuring population changes for the ages under 55, the age range covering the bulk of the population, because of the low death rates at these ages. Up to ages 55 to 59 the proportion of persons failing to survive over 5 years is now less than 5 percent.

While alternative mortality assumptions will not make much difference in the projections of total population or total population change, alternative assumptions could substantially modify the projection of the older population by the end of the century. Alternative mortality assumptions are needed, therefore, for projecting the older population to fairly distant dates (25 years or more). This need arises from the higher death rates at these ages and the recent record of pronounced fluctuations in the rate of decline of these death rates. The near-stability in the death rates at the older ages between 1954 and 1968 was followed by pronounced declines since 1968. It appears that death rates have continued to decline rapidly between 1976 and 1977, more rapidly than anticipated when the last set of projections was prepared.

A secondary reason for the simplistic treatment of mortality in the past is that the marked fluctuations in fertility rates have demanded considerable attention of the Bureau staff who were engaged in preparing population projections. With the relative stability of fertility rates in recent years, it should be possible to pay more attention to the effects of alternative mortality assumptions on population projections.

Accordingly, current plans of the Census Bureau include employing several alternative series of mortality assumptions in its population projections, at least for the ages above 55. One of these series might continue to assume modest-to-moderate declines in death rates like the present single series, in recognition of the possibility that some or all rates may fall slowly or even increase. Another might allow for fairly substantial declines, possibly at much faster rates than assumed in the present set of projections. Alternative assumptions may also be incorporated with respect to the male-female differences and Black-White differences in death rates. In selecting these alternative assumptions, the Bureau plans not only to take into account the Social Security Administration's studies of the prospects for changes in death rates but plans also to utilize recent epidemiological and biomedial studies of mortality such as those currently being implemented at the National Institute on Aging.

Question 7. In your oral testimony, you mention a Georgetown University study of Medicare cost projections. Do you have any further information about this study?

Answer 7. No. I suggest that you contact Professor Selma Mushkin, Director, Public Services Laboratory, Georgetown University, Washington, D.C. 20057, for further information regarding this subject.

Question 8. In your prepared testimony you discuss the Census Bureau assumption that the sex differential in mortality will widen in the future. Yet also you, say "A major change in the relative mortality levels of the sexes is not expected . . . unitl a whole generation of women is reared in the work ethic of males," which seems to imply a future narrowing of the differential. And in your prepared testimony you say that "the possibilities for improvement for males in the United States are greater than for females and that some convergence of the values for males and females may be realized." Do you agree with the Census Bureau projections? If not, could you state why briefly.

Answer 8. The Census Bureau projections of mortality imply small increases in the differences between the death rates of the sexes. The Census Bureau did not make an explicit decision to have the differences widen. The widening of the differences was a result of the decision essentially to accept the projections of

mortality developed by the Actuary's Offices of the Social Security Administration; these projections were derived by extrapolating historical trends in death rates for age, sex, and cause categories that were available through 1974. My prepared testimony suggests that a major factor in bringing about a narrowing of the mortality gap between the sexes could be a revolution in the work ethic of the sexes, particularly of women. In the Western countries of lowest mortality, the male-female gap in life expectancy is substantially smaller than in the United States; and we are farther behind for males than we are for females. On this basis the possibility for early progress seems to be greater for males than females. These facts suggest to me that it is unlikely that there will be an early rapid narrowing of the difference between the death rates of the sexes, but that some small approximation of the rates for males and females may occur in the next several decades.

The Census Bureau projections of mortality present one reasonable combination of assumptions of a conservative type. The slight divergence in the death rates of the sexes assumed in the Census Bureau projections hardly differs in its practical effect from maintaining the present differences. I would not now personally choose a single assumption on mortality that allows the sex differences in death rates to continue to widen. It would seem to be desirable for the Census Bureau to present alternative projections of population based on alternative levels of mortality and alternative assumptions regarding the male-female mortality gap; one of the latter assumptions could involve a moderate narrowing of the differences between male-female death rates.

Question 9. How could the health and survival of the elderly be affected by better nutrition? How does nutrition relate to family status and living arrangement?

Answer 9. (I have no particular expertise in the area of the relation of nutrition to the health and family status of the elederly and will abstain from replying to this question.)

Question 10. In your oral testimony you discuss differential declines in death rates by age group. Do you wish to make any additional comments?

Answer 10. Age-specific death rates for most age groups showed rapid declines between 1968 and 1976, the average percent decline being 15 percent (age-adjusted). The decline in the death rate for the age group 15–24 was relatively small, 8 percent, mainly due to higher mortality from accidents among males. By contrast, children under 1 year experienced a pronounced decrease in death rates between 1968 and 1976, 30 percent. Since all age groups showed declines and these declines did not vary over an extreme range, the pattern of the age specific death rates for 1976 was very similar to that of 1968. This can be made evident by an explicit comparison of the patterns at the two dates. If the age schedule of death rates at the two dates are reduced to percent distributions, they show a considerable similarity:

Age (years)	Percent change, 1968–76	Age pattern of death rates	
		1968	1976
All ages	−[1]8	100.0	100.0
Under 1	−30	6.1	5.3
1 to 4	−22	.2	.2
5 to 14	−19	.1	.1
15 to 24	−8	.3	.4
25 to 34	−13	.4	.5
35 to 44	−21	.9	.8
45 to 54	−16	2.0	2.1
55 to 64	−13	4.6	4.9
65 to 74	−16	10.0	10.3
75 to 84	−12	22.4	24.2
85 and over	−21	52.9	51.2

[1] Age—adjusted value is −15 percent.

Question 11. Are illegal aliens taken into account when "official" population statistics are computed? Do you see this "unofficial" immigration changing the scene significantly for the elderly population?

Answer 11. It is a mixed situation. Many illegal aliens are believed to be included in the census population used as the base of the current population estimates of the Census Bureau and, hence, as the base of the population projections. Illegal migration is not taken into account in the current postcensal estimates and the projections because there are no reliable data on the volume of annual net illegal immigration to the United States for postcensal years and no sound basis for making

assumptions about the future volume of such net immigration. Although there may be a tendency for illegal aliens to return home in anticipation of childbirth or death, the births to and deaths of the illegal aliens are included in the official vital statistics, however, and the projections of vital rates are based on figures which, for the most part, include the vital events affecting illegal aliens.

Undoubtedly the net flow of illegal aliens to or from the U.S. does have some effect on the size of the elderly population, although there is no way at present to measure this effect satisfactorily, either on the current numbers or the projected numbers. However, there is little reason to believe that the migration of illegal aliens has markedly affected the total number and proportion of elderly persons at current dates, particularly if the illegal migrants are mainly young, like most migrants. In later years some will move up into the older ages and will contribute to a slight "fattening" of the group.

Question 12. How will future population growth affect future personal health care expenditures?

Answer 12. Some preliminary figures are available on the per capita expenditures for health care in 1976 (i.e. July 1, 1975–June 30, 1976) for each of three broad age groups, under 19 years, 19–64 years, and 65 years and over, from the Health Care Financing Administration, DHEW. Figures on the per capita costs of health care for more detailed age groups are not available, but there figures are according to type of expenditure and source of funds. Corresponding figures for 1977 are not available but there are similar figures for several prior years.

If we assume, first, that the age-specific per capita expenditures for 1976 will continue without change in future years (that is, without allowance for inflation or the additional costs due to technological improvements) and apply them to the Census Bureau's Series II projections of population published in 1977, we can derive one set of projections of health care costs. Unfortunately, the figures do not allow for age changes within the three broad age groups; the lack of detail for ages 65 and over is of particular concern since the expected aging within this group in the next few decades should in itself add to the total health bill.

Per capita health care costs have gone up at about 13 percent to 15 percent per year in the last few years. The inflation rate based on general consumer prices was 9.2 percent between 1974 and 1975, 5.8 percent between 1975 and 1976, and 6.5 percent between 1976 and 1977. The difference between the general inflation rate and the change in per capita expenditures for health care can be accounted for by the cost of technological improvements and excessive "inflation" in the health care industry. If we allow for inflation and the increase in costs from improved technology, the total future health bill will be much greater than if we allow for population changes alone. Let us make an arbitrary assumption that the future annual increase in per capita health expenditures for each of the three age groups will be 6 percent, a conservative choice by comparison with recent experience. The results are hypothetical, of course, but they illustrate the possible increases in the national health care bill implicit in recent trends in population and prices.

The following table shows the results of these various calculations (billions of dollars):

Year ending June 30	Allowing only for population changes (series II)		Allowing also for inflation and technological improvement [1]	
	Total expenditures	Per capita expenditures	Total expenditures	Per capita expenditures
1970 (actual)	$60,113	$289.4	$60,113	$289.4
1976 (actual)	120,431	551.5	120,431	551.5
1980	126,132	567.8	164,016	738.3
1990	141,990	583.1	330,657	1,357.9
2000	151,770	582.9	632,938	2,430.8
2010	163,239	592.9	1,219,155	4,427.9
2020	180,278	621.4	2,411,238	8,311.3
2030	195,107	649.6	4,673,330	15,559.6

[1] Assumes a 6 percent annual total inflation rate in per capita expenditures.

Note.—Based on U.S. population including Armed Forces overseas only, except 1970 and 1976, which are based on the U.S. population including Armed Forces overseas, Federal civilian employees abroad, and the civilian population of outlying areas. In 1970, the additional civilian overseas population accounted for about $1.3 billion of total expenditures.

Question 13. Would you elaborate on the basis of your statement that the kinship network for the elderly, particularly the number of living children, is expected to decline in future decades.

Answer 13. The basic demographic issue is whether past and expected improvements is survival rates of the children are expected to offset past and prospective reductions in fertility and improvements in survial rates of the parents.

There are several different approaches to the question. One approach is to examine the recent and prospective trends in the ratio of the number of children (aged 45 to 49 years) to the number of their elderly parents (aged 65 to 79 years). This is a sort of "superannuated" fertility rate. This series was presented in reciprocal form to the year 2020 in table 13 of my prepared testimony. It is repeated and extended here:

Year	Ratio of children to parents (per 100)	
1950	85.9	
1960	77.2	
1970	74.3	
1976	63.9	
1980	55.7	
1990	59.6	
2000	79.7	
2010	78.5	
2015	58.3	
2020	46.3	
2025	Series II 41.4	Series III 38.0
2030	Series II 45.6	Series III 39.8
2040	Series II 50.4	Series III 41.6

It may be noted that the ration shows fewer children from 1950 to 1980 and more children from 1980 to 2000–2010, but after 2010 there is a strong shift toward fewer children, which will remain the pattern if the population becomes stationary. It should be noted that this procedure does not allow for the correlation between survival of parents and children and the relation between size of family and survival.

A second approach is to take the total fertility rate in each year or quinquennium, representing the births in the period per 100 women, "surviving" the rate (the births) to ages 45 to 49 (characteristic ages of children of parents who are elderly), and adjusting for the survival of the women (parents) from ages 20–34 to 65–79. This procedure does not take into account the correlation between the survival of children and mothers, any distinctive trend in the number of surviving fathers, and the relation between size of family and survival. The "survived" fertility rates from 1925–30 on are as follows:

Year of birth	Year children are 45–49, parents 65–79	Rates per 100 surviving women	
1925–30	1975	345	
1930–35	1980	295	
1935–40	1985	272	
1940–45	1990	287	
1945–50	1995	337	
1950–55	2999	403	
1955–60	2005	438	
1960–65	2010	399	
1965–70	2015	326	
1970–75	2020	258	
1975–80	2025	Series II 223	Series III 207
1980–85	2030	Series II 236	Series III 202
1985–90	2035	Series II 247	Series III 207
1990–95	2040	Series II 252	Series III 206

This series will fluctuate greatly in the next several decades. It is expected to decline in the next decade or so; then a steep rise is expected as the larger birth cohorts of the war and postwar years reach ages 45 to 49. The ratio of children to parents will reach a peak about the year 2005 when the birth cohorts of 1955–60

reach ages 45–49. Then the decline in the birth rates which has occurred in the last few decades will produce a sharp decline in the ratio, a low ratio will tend to persist if Series II or Series III fertility levels continue to prevail.

Changing mortality of children has become of minor importance in determining the trend of the ratio of children to elderly parents. In the years before World War II mortality had a much larger role in determining the number of surviving children. Fertility changes now dominate in determining the trend of (living) children to the (living) elderly. The recent sharp declines in the mortality of the elderly will intensify the role of falling and low fertility in reducing the ratio of children to their elderly parents. Over the period covered by the table given above, the mortality of parents and the mortality of children have or will largely offset one another in their effect on the trend of the relative number of surviving children and surviving elderly parents.

Question 14. Are projections of the total dependency ratio or the economic dependency ratio available? How does the prospective trend in the total dependency ratio differ from the trend of the aged dependency ratio?

Answer 14. Projections of the labor force to 1990, from which economic dependency ratios (that is, nonworkers per 100 workers) can be readily computed, are available from the U.S. Bureau of Labor Statistics. Projections of the total dependency ratio (that is, population under 18 plus population 65 and over per 100 persons 18–64) and the aged dependency ratio (that is, population 65 and over per 100 persons 18–64) can be calculated to the year 2050 on the basis of the latest Census Bureau projections of population (Series P–25, No. 704). Figures for 1950 to 2040 are as follows:

Year	Total dependency ratio			Aged dependency ratio		
	Series I	Series II	Series III	Series I	Series II	Series III
1950		64			13	
1960		83			17	
1970		78			17	
1976		69			18	
1980	66	64	63		18	
1990	71	64	59		20	
2000	74	63	56	20	20	20
2005	70	60	53	19	19	20
2010	69	59	53	19	20	21
2015	74	62	56	20	23	24
2020	79	67	61	23	26	29
2025	82	72	66	25	30	34
2030	81	74	70	25	32	38
2035	79	73	71	24	32	39
2040	77	72	72	22	31	39

It is evident that the prospective trends of the two series are somewhat different. The aged dependency ratio rises more rapidly than the total dependency ratio (Series II population projections) over the period 1976 to 2030. The net percentage rise between 1976 and 2030 is 7 percent for the total dependency ratio and 78 percent for the aged dependency ratio. The aged dependency ratio moves up almost steadily, but its rise is especially steep between 2010 and 2030. The total dependency ratio tends to fall between 1976 and 2010, then is expected to rise sharply between 2010 and 2030 when the large cohorts born after World War II enter the elderly population. The total dependency ratio increases even under the low fertility series (Series III) for the same reason. When the large postwar birth cohorts come along, the falling child and youth population can no longer offset the rising elderly population in determining the course of the total dependency ratio.

Additional Questions Asked of Ms. Mary Grace Kovar by the Chairman of the Select Committee on Population

Question 1. What is the nutritional status of the elderly population? How could the health and survival of the elderly be affected by better nutrition? How does nutrition relate to family status and living arrangements?

Answer 1. The data on nutrition from the Health and Nutrition Examination Survey are now being analyzed. The first report with data by age is expected to be final draft to go to publication in July. I have talked to Connie Dressler who is working with those data. She will send you a copy of the first report at the same time it goes for publication if you would like her to.

This first report will not answer the second and third parts of the question but should contribute greatly to answering the first part.

Question 2. In your testimony you referred to possible differential rates of decline in mortality across age groups. Do you wish to make any additional comments?

Answer 2. The differential among age groups in the rate of decline in mortality depends very much on the time period under consideration. During this century there has been an enormous improvement in mortality at all ages with the great decline among infants and children. During the past few (say, 10) years the greatest decline has been among people in the middle and older ages and among infants. The following three tables from the "Monthly Vital Statistics Report" of April 18, 1978 illustrate what has happened. The paper by Mary Grace Kovar and Lois A. Fingerhut, "Recent Trends in U.S. Mortality Among the Aged" (Presented to the Gerontological Society, San Francisco, November 21, 1977) discusses these trends for the aged. ["Recent Trends in U.S. Mortality Among the Aged" in Appendix with prepared statement]

Table 5. DEATHS IN THE SAMPLE AND ESTIMATED DEATH RATES, BY AGE, COLOR, AND SEX: UNITED STATES, DECEMBER 1976 AND 1977, AND CUMULATIVE FIGURES, 1976-77

[Rates on an annual basis per 1,000 estimated population residing in area for specific group]

Age, color, and sex	December				January-December			
	1977		1976		1977		1976	
	Number[1]	Rate	Number[2]	Rate	Number[1]	Rate	Number[2]	Rate
Total	16,875	9.1	16,640	9.1	188,851	8.8	190,398	8.9
Male	9,313	10.4	9,205	10.4	104,098	9.9	105,141	10.1
Female	7,562	8.0	7,435	7.9	84,753	7.7	85,257	7.8
White	14,806	9.3	14,584	9.2	166,014	8.9	167,286	9.0
Male	8,079	10.4	8,002	10.4	91,097	10.0	91,882	10.1
Female	6,727	8.2	6,582	8.1	74,917	7.8	75,404	7.9
All other	2,069	8.4	2,056	8.5	22,837	7.9	23,112	8.1
Male	1,234	10.5	1,203	10.4	13,001	9.5	13,259	9.8
Female	835	6.5	853	6.7	9,836	6.5	9,853	6.6
Under 1 year	418	15.2	428	16.4	4,634	14.7	4,689	15.3
1-14 years	157	0.4	168	0.4	2,158	0.4	2,129	0.4
15-24 years	340	1.0	393	1.1	4,752	1.2	4,558	1.1
25-34 years	387	1.4	387	1.4	4,501	1.4	4,220	1.3
35-44 years	511	2.5	527	2.7	5,745	2.5	5,813	2.5
45-54 years	1,261	6.4	1,275	6.4	14,312	6.1	14,981	6.3
55-64 years	2,584	14.9	2,571	15.1	29,115	14.3	29,566	14.8
65-74 years	3,929	31.5	3,892	32.1	44,418	30.6	44,412	31.4
75-84 years	4,411	75.8	4,309	74.9	48,833	71.8	49,334	73.1
85 years and over	2,869	159.0	2,688	158.4	30,328	146.8	30,656	156.0
Not stated	8	...	2	...	55	...	40	...

[1] Figures for the District of Columbia are not included in the December sample for 1977.
[2] Figures for the District of Columbia are not included in the December sample for 1976.

Table 6. DEATHS UNDER 1 YEAR IN THE SAMPLE AND ESTIMATED INFANT MORTALITY RATES, BY AGE AND CAUSE: UNITED STATES, DECEMBER 1976 AND 1977, AND CUMULATIVE FIGURES, 1976-77

[Rates on an annual basis per 1,000 live births adjusted for changing numbers of births]

Age and cause of death *(Eighth Revision International Classification of Diseases, Adapted, 1965)*	December				January-December			
	1977		1976		1977		1976	
	Number[1]	Rate	Number[2]	Rate	Number[1]	Rate	Number[2]	Rate
Total, under 1 year	418	14.3	428	15.6	4,634	14.0	4,689	15.1
Under 28 days	267	10.2	294	10.7	3,239	9.8	3,317	10.7
28 days to 11 months	151	4.1	134	5.0	1,395	4.3	1,372	4.4
Certain gastrointestinal diseases 004,006-009,535,561,563	3	0.2	6	0.2	53	0.2	71	0.2
Influenza and pneumonia 470-474,480-486	17	0.3	14	0.5	159	0.5	178	0.6
Congenital anomalies 740-759	69	2.3	75	2.7	845	2.6	839	2.7
Birth injuries 764-768(.0-.3),772	12	0.6	14	0.5	151	0.4	174	0.6
Asphyxia of newborn, unspecified 776.9	35	1.1	26	0.9	315	0.9	359	1.2
Immaturity, unqualified 777	32	1.0	33	1.2	363	1.1	403	1.3
Other diseases of early infancy... Remainder of 760-778	113	4.8	138	5.0	1,471	4.5	1,450	4.7
All other causes Residual	137	4.1	122	4.5	1,277	3.9	1,215	3.9

[1] Figures for the District of Columbia are not included in the December sample for 1977.
[2] Figures for the District of Columbia are not included in the December sample for 1976.

Table 7. DEATHS IN THE SAMPLE AND ESTIMATED DEATH RATES BY CAUSE: UNITED STATES, DECEMBER 1976 AND 1977, AND CUMULATIVE FIGURES, 1976-77

[Rates on an annual basis per 100,000 estimated population residing in area]

Cause of death *(Eighth Revision International Classification of Diseases, Adapted, 1965)*	December				January-December			
	1977		1976		1977		1976	
	Number[1]	Rate	Number[2]	Rate	Number[1]	Rate	Number[2]	Rate
All causes	16,875	909.9	16,640	909.5	188,851	877.5	190,398	890.8
Enteritis and other diarrheal diseases 008,009	16	0.9	18	1.0	151	0.7	200	0.9
Tuberculosis, all forms 010-019	21	1.1	25	1.4	296	1.4	328	1.5
Syphillis and its sequelae 090-097	2	0.1	8	0.4	13	0.1	24	0.1
Other infective and parastic diseases Remainder of 000-136	89	4.8	102	5.6	1,206	5.6	1,111	5.2
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues 140-209	3,243	174.9	3,269	178.7	38,400	178.4	37,380	174.9
Diabetes mellitus 250	291	15.7	290	15.9	3,334	15.5	3,497	16.4
Meningitis 320	13	0.7	10	0.5	162	0.8	162	0.8
Major cardiovascular diseases 390-448	8,751	471.9	8,548	467.2	95,474	443.6	97,329	455.4
Diseases of heart 390-398,402,404,410-429	6,583	355.0	6,317	345.3	71,364	331.6	72,341	338.5
Active rheumatic fever and chronic rheumatic heart disease 390-398	114	6.1	98	5.4	1,247	5.8	1,321	6.2
Hypertensive heart disease with or without renal diseases 402,404	100	5.4	69	3.8	1,030	4.8	1,065	5.0
Ischemic heart disease 410-413	5,850	315.4	5,688	310.9	63,558	295.3	64,718	302.8
Chronic disease of endocardium and other myocardial insufficiency 424,428	32	1.7	30	1.6	391	1.8	433	2.0
All other forms of heart disease 420-423,425-427,429	487	26.3	432	23.6	5,138	23.9	4,804	22.5
Hypertension 400,401,403	44	2.4	55	3.0	528	2.5	606	2.8
Cerebrovascular diseases 430-438	1,628	87.8	1,694	92.6	18,158	84.4	18,853	88.2
Arteriosclerosis 440	278	15.0	233	12.7	2,884	13.4	2,862	13.4
Other diseases of arteries, arterioles, and capillaries 441-448	218	11.8	249	13.6	2,540	11.8	2,667	12.5
Acute bronchitis and bronchiolitis 466	8	0.4	4	0.2	68	0.3	77	0.4
Influenza and pneumonia 470-474,480-486	494	26.6	446	24.4	4,963	23.1	6,154	28.6
Influenza 470-474	19	1.0	8	0.4	106	0.5	779	3.6
Pneumonia 480-486	475	25.6	438	23.9	4,857	22.6	5,375	25.1
Bronchitis, emphysema, and asthma 490-493	183	9.9	195	10.7	2,209	10.3	2,379	11.1
Chronic and unqualified bronchitis 490,491	33	1.8	31	1.7	429	2.0	448	2.1
Emphysema 492	143	7.7	154	8.4	1,621	7.5	1,751	8.2
Asthma 493	7	0.4	10	0.5	159	0.7	180	0.8
Peptic ulcer 531-533	53	2.9	55	3.0	628	2.9	626	2.9
Hernia and intestinal obstruction 550-553,560	58	3.1	53	2.9	563	2.6	593	2.8
Cirrhosis of liver 571	278	15.0	286	15.6	3,105	14.4	3,089	14.5
Cholelithiasis, cholecystitis and cholangitis 574,575	21	1.1	30	1.6	276	1.3	269	1.3
Nephritis and nephrosis 580-584	70	3.8	80	4.4	809	3.8	843	3.9
Infections of kidney 590	36	1.9	29	1.6	362	1.7	374	1.7
Hyperplasia of prostate 600	4	0.2	12	0.7	91	0.4	116	0.5
Congenital anomalies 740-759	107	5.8	120	6.6	1,293	6.0	1,353	6.3
Certain causes of mortality in early infancy 760-769.2,769.4-772,774-778	192	10.4	211	11.5	2,301	10.7	2,392	11.2
Symptoms and ill-defined conditions 780-796	362	19.5	364	19.9	4,027	18.7	4,003	18.7
All other diseases Residual	1,315	70.9	1,259	68.8	13,985	65.0	13,704	64.1
Accidents E800-E949	844	45.5	848	46.4	10,070	46.8	9,724	45.5
Motor vehicle accidents E810-E823	398	21.5	391	21.4	4,800	22.3	4,452	20.8
All other accidents E800-E807,E825-E949	446	24.0	457	25.0	5,270	24.5	5,272	24.7
Suicide E950-E959	206	11.1	184	10.1	2,697	12.5	2,451	11.5
Homicide E960-E978	178	9.6	161	8.8	1,947	9.0	1,779	8.3
All other external causes E980-E999	40	2.2	33	1.8	421	2.0	441	2.1

[1] Figures for the District of Columbia are not included in the December sample for 1977.
[2] Figures for the District of Columbia are not included in the December sample for 1976.

Question 3. In your testimony you stated that women use nursing homes more than men. What explains this fact?

Answer 3. Older women, that is, those 75 and older and even more than those 85 and older, do use nursing homes more than men the same age. While I cannot give definitive reasons for this differential utilization, I can speculate on the basis of other demographic information.

A much higher proportion of elderly women than men live alone. Thus, there is less likelihood of another person being present in the household to provide care and support of a woman than for a man. When the elderly woman living alone reaches a point where continuing care is needed, some means of providing that care must be found. If 24-hour-a-day care is needed, someone is going to have to move in with her or she is going to have to move. One solution is a move to a nursing home.

It would be useful to know whether there are cultural differences in attitudes toward caring for men and women. Is it more acceptable to take an elderly father into the household than an elderly mother or, conversely, less acceptable to let him go into an institution? Do elderly men expect more of their children than elderly women?

Question 4. Mr. Stockman asked if hospital days could be translated into expenditures for the 10-year age groups.

On the assumption that all elderly people have the same average cost per hospital day, could you tell us what average expenditure per year is for each 10-year age group within the elderly.

Could you project total hospital expenditures for the elderly through the year 2000, based on the following projection of the size of the elderly population:

	Population in millions		
	1980	1990	2000
Age 65 to 74	15.4	17.5	17.1
Age 75 to 84	7.0	8.9	10.3
Age 85 and over	2.1	2.5	3.2

Could you discuss factors which might result in different average cost per hospital day for different age-sex groups within the elderly population (briefly).

Answer 4. If the size and the age distribution of the elderly population change according to the projections provided by the staff of the Select Committee but there is no change in price, the projected expenditures are shown in column 3. If the population changes and expenditures per day increase 10 percent per year, the projected expenditures are shown in column 4. For comparison, if the elderly population did not change from 1975 but the expenditures per day increased at 10 percent per year, the expenditures for hospital care of the elderly would be $19.9 billion in 1980, $51.5 billion in 1990, and $133.7 billion in 2000.

ASSUMPTIONS FOR QUESTION 4

a. All elderly people have the same average cost per hospital day

This assumption is important for the present purpose only if the charges (or cost) are different from age group to age group. They will not be if, for example, more expensive procedures such as surgery, many of the cancer therapies, and diagnostic testing are utilized more for one age group than another. I think it likely that more effort is made for a 70-year-old than a 90-year-old which would make average daily costs higher for the youngest group of the elderly than for the oldest.

Data on the number of procedures and the charges should be available through the Medicare program.

b. Average daily expenditure for inpatient hospital care of elderly in 1975 was about $140

	Billion
Part A medicare for hospitals was	$9.5
Adjustment for growth of	−.5
Adjustment for nursing homes, et cetera	−.3
Total	8.7

However, only about 72 percent of the hospital expenditures for the elderly were covered by Medicare because of deductibles, etc., and it is estimated that 2 percent

of the utilization was covered by other means. Thus, 8.7 ($\times$0.72) ($\times$0.98)=$12.33 billion for hospital care of the elderly in 1975.

The Bureau of the Census estimates that there were 22.4 million people age 65 and older in the United States in 1975 (P–25, No. 721) which yields an estimate of $138.92 spent per hospital day.

c. Number of days of hospitalization per person will not increase

The assumption is made that the number of hospital days per person in the specified age group will remain unchanged between 1975 and 2000. The assumption is made on the basis that utilization increased immediately after Medicare was implemented but has remained relatively stable since then. The increase in the number of hospitalizations has been balanced by a decrease in the average length of stay.

d. Expenditures per day will increase at 10 percent per year

This has been the rate of increase over the past 25 years. Current cost containment programs set 9 percent as a goal. Thus, 10 percent seems reasonable.

It is important to note that the 10 percent is not strictly inflation. It reflects changes in the services offered by hospitals, the equipment available, staffing ratios, etc. The assumption is that such changes will continue.

PROJECTED EXPENDITURES FOR HOSPITAL CARE OF THE ELDERLY, ASSUMING NO CHANGE IN EXPENDITURE PER DAY AND ASSUMING AN INCREASE OF 10 PERCENT PER YEAR: UNITED STATES, 1975, 1980, 1990, 2000

Year and age	Population (in millions)	Hospital days (in millions)	Expenditure for hospital inpatient care [1]	
			No inflation (in billions)	10 percent per year (in billions)
1975:				
All 65+	22.4	88.8	12.3	12.3
65–74	13.9	45.0	6.3	6.3
75–84	6.7	32.9	4.6	4.6
85+	1.9	10.9	1.5	1.5
1980:				
All 65+	24.5	96.6	13.4	21.6
65–74	15.4	49.9	6.9	11.2
75–84	7.0	34.6	4.8	7.7
85+	2.1	12.2	1.7	2.7
1990:				
All 65+	28.9	115.1	16.0	66.8
65–74	17.5	56.7	7.9	32.9
75–84	8.9	44.0	6.1	25.5
85+	2.5	14.5	2.0	8.4
2000:				
All 65+	30.6	124.8	17.3	187.8
65–74	17.1	55.4	7.7	83.4
75–84	10.3	50:9	8.5	76.6
85+	3.2	18.5	2.8	27.8

[1] Cost per day (10 percent per year): 1975, $138.92; 1980, $223.73; 1990, $580.30; 2000, $1,505.16.

Question 5. In your oral testimony you discussed untreated but easily correctable health problems of the elderly. Could you supply us with data on the magnitude of the problem with hypertension. Could you list other conditions where similar calculations could be made with available data. Could you list conditions for which similar data might be obtained by extending the data collection at relatively low cost.

Answer 5. Approximately 41 percent of the noninstitutionalized population ages 65–74 have definite hypertension. The percentage ranges from 35 percent of the white men to 59 percent of the black women. (Definite hypertension is defined as either systolic pressure of 160 mm Hg or more or diastolic pressure of 95 mm Hg or more.)

Almost half (48.5 percent) had never been told by a doctor that they had hypertension ranging from 62 percent of the white men to 39 percent of the black women ages 65–74 (Source: National Center for Health Statistics, Series 11, No. 203).

One can assume then that at least 20 percent of the people ages 65–74 have hypertension that is not being treated as they had never been told. Other people may have been told but are not currently under treatment.

As Dr. Levy has testified, hypertension among the elderly is not an easily correctable condition but it can be treated.

Other data from the Health and Nutrition Examination Survey of the National Center for Health Statistics reveal that 9.5 percent of the noninstitutionalized people ages 65–74 have significant eye abnormalities for which treatment is needed but who are not under care.

About 61 percent of these people need dental care. Twenty-five percent need full dentures, 18 percent have decayed teeth, and 15 percent need peridontal treatment, Some, of course, have multiple needs.

Question 6. It seems that future elderly people will be healthier and thus more likely to migrate. Do you feel that Federal resources should be shifted from hospitals and nursing homes, which once built are fixed in place, to more development of home and day care (possibly more flexible)?

Answer 6. This is a policy rather than a demographic question and should be answered by someone in health policy. I can only say that decisions as to the means of providing needed care should consider migration as one of the factors, but there are other considerations as well. Among these are the need and benefit of the individual and the cost to society.

Question 7. Are there any other demographic factors which should be taken into account when considering institutionalization and the alternatives?

Answer 7. There is one more demographic factor that should be taken into account when considering institutionalization and the alternatives.

Among all women born before about 1910, women who are 70 or older now, about 20 percent were childless. (We do not have data for men.) These women, and those whose children have died, do not have an adult child to care for them or provide social or economic support.

The proportion of women remaining childless dropped rapidly to about 15 percent of those born in 1916–1920 and 10 percent of those born in 1926–1930. Mortality rates also dropped sharply so the women who are now 60 and those who are 50 will be much more likely to have one or more living children when they reach an age when institutionalization or an alternative must be considered.

This projected increase in the proportion of elderly women with one or more living children should be considered when projecting future levels of institutionalization for the elderly.

Question 8. In your testimony you referred to studies on health care costs by Georgetown University and by Dorothy Rice. Could you please document those references.

Answer 8. Some recent papers are:

Dorothy P. Rice, "Estimating the Cost of Illness," U.S. Public Health Service Publication No. 947–6, Health Economics Series, May 1966, U.S. Government Printing Office, Washington, D.C.

Barbara S. Cooper and Dorothy P. Rice, "The Economic Cost of Illness Revisited," Social Security Bulletin, February 1976.

Dorothy P. Rice, Jacob J. Feldman, and Kerr L. White, "The Current Burden of Illness in the United States," Occasional Paper of the Institute of Medicine, National Academy of Sciences, 1976.

Dorothy P. Rice and Thomas A. Hodgson, "Social and Economic Implications of Cancer in the United States," for presentation to the Expert Committee on Cancer Statistics of the World Health Organization and International Agency for Research on Cancer at Madrid, Spain, June 20 to 26, 1978.

Additional Questions Asked of Dr. Tamara Hareven by the Chairman of the Select Committee on Population

Question 1. You refer in your testimony to the importance of the specific experience of a cohort. How will the recent change in the mandatory retirement age affect the various future cohorts as they reach retirement age?

Answer 1. I suspect that the change in the mandatory retirement age will affect future cohorts in the following ways: People now in their 40's and 50's will have a greater number of options available to them when they reach retirement age. They will be able to decide how soon they could retire. Knowing now, in advance, that this is the case, they would be able to plan in advance according to these available options. On the other hand, the extension of retirement age is likely to diminish employment or promotion opportunities for people earlier in their careers.

Question 2. In your testimony you stress the ambiguity that has arisen since the public sector has taken over some of the functions of the family. Since we know that those public programs are not meeting the needs of the elderly, and there is no

indication they will in the near future, can you suggest any means of at least correcting the misconception.

Answer 2. A number of systematic studies are needed to investigate specifically what needs of the aged are being met, or are not being met by the public sector, and what needs are being met by kin. Such studies would have to investigate not merely what services are being offered, but rather investigate from the perspective of the elderly whether their needs are being met. Most of the current studies investigating the interaction of the elderly with their kin have not investigated the persistence or effectiveness of kin assistance. Longitudinal followup is also important.

Question 3. Many studies undertaken to evaluate the strength of the extended family utilized quantitative measures, such as, how many times one sees or talks to one's children, siblings, etc. Could you comment on the need for some qualitative measures of the nature of the interactions?

Answer 3. Current studies of extended family contacts rely too heavily on communication rather than on services. How often one visits or talks on the telephone, or gives assistance in a crisis situation, are not the same as sustained continuing support. In American society extended kin relations are voluntary. There are no laws requiring that children support aging parents, such as the laws requiring that parents should support young children. More systematic studies of what help actually transpires will probably find that the patterns of assistance are sporadic and spotty, by necessity so. In planning public support for the elderly, it would be, therefore, a mistake to assume from these existing studies that the elderly are receiving the necessary assistance from their kin.

Question 4. In your prepared testimony you suggest that the need for the development of family-oriented programs that strengthen the family. Can you give us some specific examples of such programs?

Answer 4. Examples of family-oriented programs that strengthen the family would be as follows: Tax allowances for families assisting the elderly not only in their own households, but also for families who are assisting their elderly relatives who are not living in the same household. Recognition of fees paid by people to their relatives for different services, such as child care, would also enable families to employ their older kin for services such as babysitting. Housing subsidies for families who include an older person, relative or not, would be another possible form of assistance. In addition to such measures pertaining directly to family assistance to the elderly, it is also important to support the entire family unit, not just in old age, or when it cares for the elderly. This could be done through family allowances, rather than restricting assistance to mothers when fathers are absent.

ADDITIONAL QUESTIONS ASKED OF DR. DONALD COWGILL BY THE CHAIRMAN OF THE SELECT COMMITTEE ON POPULATION

Question 1. Could you explain in layman's terms how you measure residential segregation?

Answer 1. The measure of residential segregation which I have used is most simply explained as the proportion of the older population (65 and over) who would have to be moved from their present neighborhood (census tract) to another in order to achieve the same proportionate distribution as the rest of the population. If this were to happen, there would be exactly the same percent of older people in the population of each census tract in a given metropolitan area.

Question 2. What is the current difference in age segregation between the white and black population?

Answer 2. The segregation scores by age for 1970 were higher for non-whites than for whites in about two-thirds of the metropolitan areas. But this is mostly a regional difference. Segregation scores for non-whites in general were higher in metropolitan areas in the north and the west and on the contrary they were higher for whites in the south. However, I have not done a careful analysis of these differences because I suspect that some of the high scores for non-whites are due to small numbers, particularly to small numbers of aged non-whites. I discovered that whenever zeros appeared in any of my cells the segregation scores tended to be exaggerated. This happened much more for non-whites than for whites in northern and western metropolitan areas. Therefore, I do not attach much significance to these differences for non-whites.

Question 3. Have other developed countries followed the same patterns of age segregation as the United States? What have their governments done to provide more desirable residential situations for the elderly?

Answer 3. We do not have comparable research on age segregation in any other country outside of the United States. We have only anecdotal material coming out of research on interaction patterns of older people with children such as Rosen-

mayr's reports on Vienna in which he found the strongly expressed wish on the part of both generations for "Intimacy at a Distance." He did not give empirical data on the extent to which this wish was achieved. Some of Townsend's research on east side London would imply less segregation by age than is the usual case in the United States, since he discovered a very strong pattern of daughters living within a very short distance of their mothers.

I am not aware that governments anywhere have taken much account of this desire for "Intimacy at a Distance" and where specific housing developments have taken place for older people, it has usually been on an age segregated basis, without any attention so far as I know to the location of or proximity to other members of the family.

Question 4. In your prepared testimony you note that high segregation scores occurred in the areas of greatest growth. Were these areas in central cities or the greater metropolitan regions?

Answer 4. When I referred to growth in relation to high segregation scores I was referring to growth of the total metropolitan areas not the central cities. I am sure that in most of these areas the major portion of the growth whatever it was, was in the suburban portions of the metropolitan areas.

Question 5. In your prepared testimony you mention that, of the elderly in central cities, a proportion of them are trapped in areas which are threatening to them. Could you give us a better idea of just how large this proportion is?

Answer 5. Certainly, I cannot contend that all of the elderly living in central cities are trapped there and feel threatened by the area. However, there are about seven million persons 65 and over living in the central cities of metropolitan areas and these make up about one-third of the total elderly people. A sizable proportion of these are in a sense trapped because of financial investment from which they cannot escape. We also know that "fear of crime" is cited as the most serious problem for people 65 and over as shown in such studies as the Harris study for the National Council On Aging, in which 23 percent of all older people cited this as a very serious problem for them and in that sample it was those with the lowest incomes who expressed the most fear of crime. for example, among those with incomes under three thousand dollars per year 31 percent cited fear of crime as a very serious problem for them. We cannot know precisely how many of these were urban poor but we do know that fear of crime for all age groups is much greater in urban areas and in the central cities. Hence, these figures would seem to typify the aged of whom I was speaking—those who are trapped in undesirable areas of the city.

Question 6. Mr. Brotman argued that people who now live in suburbs will remain there after retirement; thus a substantial suburban elderly population will develop. What would the implications be for such services as health and transportation?

Answer 6. I agree with the general proposition that Mr. Brotman was developing. Just as most of the pockets of segregation of older people at the present time have occurred not because of older people moving in but of people staying and aging in place while younger people move out, some of our suburbs are likely to show this pattern of development in the future. The implications are obvious. These communities, to the extent that the population merely ages in place, will increasingly have greater need for health services and transportation services. I think I can illustrate what I'm talking about from a study in a different context. This study, being done by some of my colleagues at the University of Missouri, is of older retired migrants to the Ozark area. When these people move in, they are usually in very good health; they are well above average income; they are usually quite well educated; and they are retiring out of the metropolitan areas in the hope of living in healthful pleasant esthetic surroundings for the rest of their lives. Typically they do not take account of the fact that inevitably they are going to continue aging. This movement has been going on for several decades now and some of the communities are beginning to feel the problems which are emerging. They have to do with lack of health facilities and with transportation. This is somewhat different from the suburbs Brotman was talking about because these communities were established through retirement migration, whereas in general our suburbs have been settled by people in their prime of life, their working years, but if they will continue to reside there as they retire and as they age—I agree with him that most of them will and that therefore, some of the suburbs are going to age in place—they will begin to feel the same pressures that our Ozark communities are now beginning to feel, the lack of accessible health facilities and the lack of usable transportation.

Question 7. In your prepared statement you state that "zoning laws frequently prohibit the achievement of (desirable housing arrangements)". Could you elaborate? What zoning laws could be passed to enhance family relationships?

Answer 7. The statement should read "Zoning laws frequently inhibit the achievement of such arrangement." I certainly did not mean that zoning laws explicitly zoned for age, although something approaching that seems to be developing in Arizona with the intent of excluding young children from such places as Sun City. My statement was made in the broader context of zoning laws which have the general intent of preventing "incompatible" uses of land. What that translates into is the restriction of rather large land areas to the same kind of building—single family, commercial, etc. We are now coming to the realization that people at different stages in their lives need different kinds and amounts of housing. But if we restrict large areas of land to the same kind of housing, this inevitability fosters segregation of generations, because the types of housing desired by members of the extended family who are at different stages in their life cycle are not all available in the same vicinity. I certainly would not favor any positive attempt to use zoning laws to enhance family relationships, instead we may need to relax some of the zoning laws we have in order to effect this result. Many zoning laws would not permit the construction of two decisively different kinds of residential structures within the same area as I suggested later in my testimony.

Question 8. You suggest that an innovative developer should be encouraged to experiment with adjacent communities designed for the two older generations. Please expand on your concept for adjacent communities.

Answer 8. I am sure an "innovative developer" assisted by an innovative architect could do more with this idea than I can. The idea is merely to begin to plan for "Intimacy at a Distance" and to assist families in planning in this direction by providing in proximity, suitable types of housing for different generations. One version of the idea could be that when planning a high rise for the elderly, consideration might also be given to a nearby area of small single family dwellings or duplexes suitable for middle-aged couples who have just entered their "the empty nest stage" and, having divested themselves of major responsibility for their children, will now be turning attention to monitoring the late years of their parents' lives. This I submit is a very frequent sequence of events in family life in America today. Not all people change residence when these things happen, but some of them might wish to, if suitable facilities and family arrangements were available to them without serious financial penalty.

Question 9. You suggest giving financial assistance to older persons to assist them in their selection of housing situations. In a hearing held recently by the Select Committee on Aging, experts testified that moving the elderly from their communities can sometimes be more devastating than improving their housing situation. Could you comment?

Answer 9. I was not for a moment suggesting that any one should be coerced into moving and I am sure there is no evidence that moving which is freely chosen has any "devastating" effects on people.

Question 10. There has been recent growth in retirement communities which provide life time care for the elderly. Some of the most respected of these institutions have gone bankrupt in the last couple of years. Do you feel that such communities will continue to grow? Are they meeting the desires of the elderly for independent living with family ties? What role should the Federal Government play in protecting the elderly who sometimes commit their entire assests to these institutions for their future care?

Anwer 10. I think it is almost a certainty that retirement communities which provide life time care, or promise to provide life time care, will continue to grow. However, such institutions have certain risk factors which have not yet been put on a sound actuarial basis. When such communities open, the population is usually in pretty good health and the institution financially sound. However, as time passes the population ages, health tends to decline, and incomes are diminished or are eroded by inflation. I think all of these risks indicate that planning in such places must be very careful and because there is risk not only of miscalculation but of intentional fraud, they must be regulated not only to guarantee quality of service but also sound financial management. Furthermore, it seems to me that the risk factors here are comparable to pension funds, and there is a need for governmental guarantees of the same kind that were instituted about a year ago for pension funds.

Question 11. In your oral testimony you refer to data on social expenditures on young versus elderly people. Could you send us the source of these data?

Answer 11. The data on public expenditures on young versus elderly population were quoted from memory from an article by Robert Clark and Joseph Spengler, "Population Aging In The Twenty-First Century". This is in *Aging* magazine (January-February 1978). The specific calculation which I was citing appears on page 8.

The sentence reads "We estimate that the total expense of public expenditures per aged person is approximately three times greater than the per youth expenditures". However, I would like to emphasize again that these figures refer to "public expenditures;" they do not compare the total cost of economic support. The total cost of economic support of that portion of the population which is dependent (not in the labor force) has been declining while the population has been aging. The fact that our society has chosen to support a large proportion of its dependent elderly through transfer payments managed by the government should not blind us to the fact that the total economic burden to the society (disregarding whether the support is through government budget or family budgets) has been declining. Conversely, the labor force of our population has been increasing as a percentage of the total. When we add to this increase in the proportion in the labor force the increase in labor productivity we have to conclude that our society which is after all an "affluent society" can, if it so choses, afford to support its dependent members at a decent level of living.

ADDITIONAL QUESTIONS ASKED OF DR. BETH SOLDO BY THE CHAIRMAN OF THE SELECT COMMITTEE ON POPULATION

Question 1. Mr. Brotman argued that the people who now live in the suburbs will remain there after retirement. Thus, a substantial suburban elderly population will develop. What would be the implications for services such as health and transportation?

Answer 1. A report issued last year by the Comptroller General's Office demonstrates that today's suburban elderly are substantially underserviced when compared with their counterparts in the central city. As Dr. Cowgill has pointed out in his testimony, the center of older metropolitan areas have become "gray ghettos" and service facilities tend to be located in areas with a high density of older persons. Although the proportion of older persons in suburban areas is presently not great, their needs have been sadly neglected in the placement of service centers and programs.

The most obvious consequence of a change in the metropolitan distribution of older persons will be the necessary relocation of service sites. The type of services offered and the delivery models themselves will have to be adapted to a suburban setting. Shopping areas, medical facilities, and social centers tend to be widely dispersed in suburban areas, and reliance on a private automobile is an integral part of the suburban life style. For older suburban persons, particularly those with ambulatory problems, the provision of transportation for shopping, physician visits, etc., is likely to be of considerable importance. Transportation-related services will be, by necessity, the foundation of service packages in the suburbs. The task of suburban service centers in the future will be all the more difficult if the cost of private transportation becomes prohibitive as a result of a sustained energy crisis.

The "aging in place" of today's middle-aged suburban residents also raises the question of housing suitability. Homes built originally to house families with children are likely to exceed the space needs of older persons. Upkeep and heating costs also may be in excess of feasible expenditures.

In light of the trend towards "aging suburbs", the following are reasonable policy recommendations:

1. Initiative should be undertaken now to provide funding for comprehensive metropolitan planning in mass transit systems.

2. New service delivery sites in suburban areas should be located in areas easily accessible by both public transportation and private cars.

3. Because a large proportion of tomorrow's suburban elderly will be homeowners, many of whom will have completed their mortgages, efforts by HUD and FHA to implement a "reverse annuity" plan should be supported by Congress.

4. The scope of services underwritten by Medicare, Medicaid, and other federally funded programs, should be expanded to include the cost of installing support bars, "panic buttons" and other protective devices in private homes. As the Comptroller General's Report to Congress points out, it is usually much less expensive to maintain an older individual in the community than in an institution. The ability of suburbanites to stay in the community through old age will demand a rethinking of the types of services provided through one or another Federal mechanisms.

Question 2. Tables 3 and 4 in your prepared testimony show that a substantial majority of our elderly population lives either with a spouse or alone. Both of these living arrangments also appear to be increasing in frequency in the elderly population. Do you interpret this to mean that the elderly face an increasingly narrow

range of options in living arrangements or that they have more frequently selected these two because of a greater ability to choose?

Answer 2. As I indicate in my prepared statement, changes in patterns of living arrangements for older persons are consistent with the housing preferences expressed by the vast majority of older persons. In our research, we attempted to account for changes in living arrangements in terms of the decreasing size of the average dwelling unit and changes in the housing stock. Neither of these factors have had any appreciable effect on the tendency of older persons to reside independently of their adult children. Our research clearly indicates that older persons are increasingly able to exercise their housing preference because of increases in income.

Survey results consistently indicate that older people value financial and household independence. Even for older persons in poor health, living with an adult child and his or her family is not an option widely preferred. In one study of Social Security beneficiaries, 23 percent of the older persons surveyed though that the best arrangement for older impaired persons was living with relatives. Approximately 40 percent of the respondents preferred maintaining their own home and paying for nursing care, while 38 percent favored institutionalization. Interestingly, in one study, the proportions of adult children reporting a willingness to share their household with their older parent was greater than the proportion of older persons who would be willing to accept this type of invitation from an adult child.

Perhaps the focus of policy inquiries should be on those older persons who, because of financial need, must compromise their wishes and move in with an adult child rather than on those older persons who are living alone by choice.

ADDITIONAL QUESTIONS ASKED OF THE PANEL BY THE CHAIRMAN OF THE SELECT COMMITTEE ON POPULATION

Question 1. The panel all agreed on the need for public policy to help elderly people maintain independent living arrangements, as well as ties to their relatives. Could you comment briefly on what priorities should be set among the following types of policies, or what other ones might be suggested to achieve this object.

Higher income support (e.g. through Social Security).

Subsides to home ownship by the elderly.

Subsides for expenditures on home health care, chore, and personal care.

Subsides for upgrading housing to contine independent living (such as moving to flat apartment, or remodeling).

Subsides to children for support of parents.

Provision of services (health, chore, and care) at home.

Provision of care and services outside the home (e.g., day care).

Foster care of the elderly; or measures to have strangers live with them in their own homes.

Relocation of the elderly to be near younger people.

Answer of Mr. Jacob S. Siegel

I concur in the general policy position expressed here, but will abstain from assigning priorities to the specific types of policies listed.

Answer of Dr. Beth Soldo

That is indeed a difficult question. From a legislative standpoint, the assigning of priorities to the policies you mentioned involves consideration of one, how likely is it that a specific program will have the desired effect and two, which program(s) will do so in the most equitable and cost-effective fashion? In some instances we have data available on which to formulate an answer to these questions; in other areas my answers are, in fact, reasoned guesses.

Let us consider first those program initiatives where we have some information about the likely cost and effect. With respect to the upkeep of housing, slightly under 50 percent of all elderly homeowners and renters have maintenance problems which ultimately may threaten their ability to remain in the community. The Ford Foundation is currently funding a demonstration project in Baltimore that provides services in-kind for home maintenance. HUD is supporting an evaluation of this project. An obvious advantage to this approach, as opposed to the case subsidy one, is that unemployed persons may be effectively recruited to perform necessary chores such as painting, repairing broken windows, or fixing faulty stairs.

Preliminary evidence suggests that providing the services directly for large home repair may be more target effective than simply incrementing income. In one well-done study it was found that little of the increases in income among elderly

homeowners was used to correct maintenance problems. It may be that, for many older persons, home maintenance has a low personal priority or that structural defects in the housing unit are not perceived as such by the older person. For large, infrequently needed repairs, such as repairing a furnace or fixing a leaky roof, it also appears that direct provisions of services is more cost effective than a direct cash subsidy for home maintenance. The administrative cost of a direct cash subsidy program is likely to exceed the cost of maintaining a pool of available workers in an area. The grindings of the Federal bureaucracy are such that it often easier to fund a million dollar project than to deliver a one time $300 check directly to an individual for a specific purpose.

In the area of housing and home maintenance, one of the most obvious needs is to include elderly homeowners under the unbrella of Federal housing subsdies now available to elderly renters. HUD's section 202 and section 8 programs provide new rental structures for the elderly primarily in urban areas. These programs are not responsive to the needs of a large segment of older persons who do not wish to move, and thereby give up their owned homes or who do not live in urban areas. Although Federal housing policies are restricted to renters, three in four elderly households are owner occupied. In order to meet the needs of this group of elderly in a way that is compatible with their stated preferences, HUD is reviewing programs which would expand section 8 of the National Housing Act to include subsidies for homeownership operating expenses, provide Federal grantees for reverse annuity mortgages and provide maintenance assistance. These initiatives should be supported. Although elderly homeowners are frequently viewed as a less-needy segment of the older population, the majority of elderly owners live in housing 25 or more years old. Because many homes occupied by the elderly are owned mortgage-free, older homeowners have a strong asset position but a low cash income profile. Hence, there is a strong need for HUD to provide viable supports for this group in a creative fashion.

In considering the other service programs mentioned, we must be realistic about service utilitzation patterns of older persons. In a New York City survey, older respondents were asked to whom they would turn for a wide variety of personal care and maintenance services. In order of preference, the responses were children and other relatives, friends/neighbors, and finally service agencies. This in and of itself is not surprising. What is noteworthy, however, is that many older persons preferred doing without a needed service if the only available provider was a service agency. I think these and other surveys clearly indicate the need to mobilize and support family members (or pseudo-family members) in their efforts to assist older relatives.

In your list, you enumerated many service programs that would encourage independent living among older persons through the family assistance network. Reimbursements to younger relatives for the cost involved in providing services to an older person should not be confined to those services rendered only when the two generations share the same household. This obviously defeats the stated objective of maximizing independent living. Rather costs should be reimbursed on a sliding scale (contingent on the younger relative's household income and number of older persons being supported) for services rendered to older persons in separate households.

Some of the other programs mentioned are innovative in that their focus is on assisting young and middle-aged adults to assist their elderly parents, grandparents, or other relatives. Family members need to have available easily accessible and dependable backup services (such as periodic help in grocery shopping or house cleaning chores). The availability of day care center for older persons is likely to enhance the ability of younger working daughters or daughter-in-laws to assist elderly relatives.

There are a number of options available for implementing these proposals. At the request of Chairman Claude Pepper, the Comptroller General's office costed-out the expected increase in Federal expenditures due to expanding chore and home-health services under Medicare-Medicaid programs. A similar request regarding the cost of adult day care centers and family subsidies would provide the Committees with an excellent basis on which to formulate specific legislative proposals.

Answer of Ms. Mary Grace Kovar

This question cuts across so many policy areas that it should be addressed to Secretary Califano's office. I can only comment that there is at least as much variation among elderly people as among younger ones. A subsidy to home ownership, for example, might benefit a physically healthy mentally competent older person but be detrimental to a frail forgetful one who could neither maintain the home nor resist the blandishments of people who offered to "help for a fee." No one policy will benefit all elderly people equally.

Answer of Dr. Tamara Hareven

Among the policies that would help the elderly maintain independent living arrangements, but in proximity to their relatives, I would give higher priority to the following measures: higher income support through social security, in order to cope with increasing costs of living, especially with high energy bills; subsidies for upgrading housing, provision of health and other care services at home; subsidies to children for support of parents, foster care for the elderly; measures to have strangers living in the household.

Answer of Dr. Donald Cowgill

Among the policies which you list, I would give income maintenance the highest priority. As I said in my formal testimony, the availability of adequate financial resources is fundamental to the security of older people and, given adequate financial resources, many of them—not all—will be able to secure the various services and conditions of life which they desire. In second priority, I would place the provision of home services (health, chore and care) whether this be by direct home provision of such services or the provision of subsidies which would permit people to buy them. I am inclined to think that the direct provision may be necessary in many areas, since such services simply are not available even if people wish to pay for them.

These are a part of a broader range of services which may be put under the general umbrella "continuum of care", including services in one's home of varying degrees of skill and intensity, dependent upon need, and services which people may obtain by going out of the home, such as foster care or day care. All of these types of care need further development in the United States. Unfortunately up to now we have placed too much emphasis upon institutional care and have not adequately developed alternatives to institutionalization. Subsidies to children for support of parents may be desirable in special circumstances but, on the whole, I am prone to take the direct route and, if the parents are mentally competent, I would say that any subsidy that is necessary should be given directly to them. If social security is adequate in coverage and amount, this type of subsidy should be minimal. The item "relocation of the elderly to be near the younger people" is of a different order. I am wary of the term relocation because it smacks of coercion and paternalism. As I stated earlier in my testimony, I would hope that the emphasis would be on providing maximum opportunity for choice and if older people want to be near younger people, and vice versa, I would hope the opportunity would be open to them. If, on the other hand, some older people want to go to retirement communities and not be bothered with younger people, then I think they should have that opportunity as well. And this brings me back to another major principle in my original testimony. That is, that older people actually constitute a great variety of people and they manifest a great variety of needs and interests. If we are to take account of these needs and interests in public policy, this points toward the need for a great variety and flexibility of programs.

Dr. Donald Cowgill: Extension of Testimony

(Before receiving this added question, I had just completed the following "Extension of Testimony" concerning policy priorities.)

Following the testimony on May 24, Congressman Scheuer challenged the witnesses to supplement their testimony with "a shoppong list" of programs which we should like to see enacted in response to the aging of our population. This challenge put the witnesses in a quite different role from that for which they had been invited to testify and called for a different focus and different emphasis. Naturally we were not prepared to make such a response at that time, but I am willing to extend my remarks to meet this challenge. We were initially invited as scientists and experts to testify as to the facts in limited areas of our expertise. We were not invited as advocates for particular policies. Furthermore we had been instructed to be brief (no more than 20 pages of written testimony and no more than 10 minutes of oral presentation). With these injunctions to brevity, it was necessary to devote most of our time and space to covering the essential materials in the area of our experitise; there was little room for a shopping list. The Congressman's challenge seems to imply that one can develop a simple list of programs to be undertaken in response to the very complex set of issues which were brought out in our testimony. On the contrary, the problems and issues are very complex and the responses in terms of public policy must also be very involved and complex. A simple shopping list will be inadequate and impossible.

In responding to the Congressman's challenge I am laying down the role of scientist and taking up the role of advocate. In my formal testimony I had stated that I would give first priority to measures to maintain adequate incomes among

our older people. In saying this I did not mean to imply that other public measures were not important; I merely asserted that given adequate incomes on the part of our elderly people, the need for other programs would be diminished. During the discussion which followed the testimony, it was implied by some that the provision of adequate income on the part of our increasing numbers and proportions of aged people would be a severe financial strain upon our society. I sought to debunk this point of view at the time, and I wish to further emphasize the fact of this matter here. Our society is the most productive and most affluent society the the world has ever known. Such a society is certainly capable of providing a comfortable standard of living for all of its members, including its aged members, many of whom have been forced to become non-producers by mandatory retirement rules. It is only this kind of a society which can be so wasteful as to force a large segment of the workforce to become non-producers. As John Kenneth Galbraith has said in his book "The Affluent Society" such a society can certainly afford to care for its elderly members at a comfortable standard of living. It is not that we are incapable of providing this standard of living, it is merely that we have been unwilling to do so.

In my testimony on May 24 I stated that at the same time that our population was aging, the proportion of the total population actively in the labor force had been increasing. Let me make those points explicit. In 1870 we had only 2.9% of our population 65 and over, but the proportion has increased steadily since then to about 10.5% today. In 1870 only 32.4% of our population was in the labor force and that percentage has increased until our census of 1970 indicated over 40% (40.8%) of the population in the labor force. This means that in 1870 we had 1 worker for every 3 consumers whereas today we have 2 workers for each 5 consumers. Another way of looking at this is that in 1870 there were 2 persons not in the labor force, i.e., dependents, to each worker whereas in 1970 this had decreased to 1.5 dependent persons to each producer. To permit the figures on increasing numbers and proportions of aged in our population to frighten us with the specter of crushing financial burdens, is to overlook the much greater decrease in the financial burden of children in our society. The trends which we are observing of course mean that a greater proportion of the production must be allocated to the older segment of the population, but it can do so because there has been a great reduction in the proportion of children in our society. The mere fact that we have elected to supply much of the financial maintenance of our older population through govenmentally operated transfer payments (social security) has made this portion of our national budget much more visible, but it should not blind us to the fact that the decreasing proportion of children in our society have relieved families of great burdens of financial support which are customarily absorbed in family budgets and therefore have never been totaled up.

Therefore, it seems patently obvious to me that our society is quite capable of providing an adequate income base for its older population. Of course, this will be easier if a greater proportion of these older people are themselves producers. With that in mind I strongly recommend the complete abolition of mandatory retirement based on age. This will permit a greater proportion of older people to continue to be producers and taxpayers for a greater proportion of their life rather than becoming merely consumers. Of course, the Congress took a great stride in that direction last December, but the job is not complete. For example, college professors were specifically exempted from the effect of that legislation.

A second point I would emphasize is the need for governmental assistance in the development in American society of facilities for a continuum of health care and housing for older people ranging all the way from independent private residence to hospitals and nursing homes. This should include at least the following separate kinds of facilities for housing or health care: (1) Independent living in private homes or apartments; (2) housekeeping service and home maintenance service to assist people who are not able to do the heavier tasks of maintaining their own residence; (3) Home health care which will provide occasional services for health maintenance on the part of people with some health limitations; (4) foster family care for those preferring to live in a family setting but have no families of their own; (5) day care for those who need attention during the day, but no one at home to provide it; (6) visiting nurses to provide skill nursing service as needed to people in their own homes; (7) visiting doctors! (It is symptomatic of American society that we have gotten so far away from health care in the home that the possibility of doctors visiting patients in their homes seems almost unmentionable. We need to move back in this direction; (8) boarding homes for those who either because of preference, health limitations, or social isolation are in need of congregate living quarters; (9) nursing homes providing skilled nursing service in congregate facilities for those

who cannot be cared for in their own homes. (These facilities are primarily for those with chronic health conditions and designed for providing long term care; (10) hospitals to provide curative care in cases needing service for acute disease; (11) hospices to provide understanding and positive care for people in the terminal phase of life.

The mere listing of these different kinds of facilities makes the point that up to now we have only a limited development of certain kinds of facilities and are generally lacking in most. In general, our society has over-stressed institutionalization, that is nursing homes and hospitals. And we are very underdeveloped on the intermediate kinds of care and service which would avoid early and unnecessary institutionalization. Furthermore, we have as yet had only a very limited development of the more humane institutions known as hospices.

In developing these services I would hope that attention could continually be paid to the oft repeated wish of older people and of their children to live near each other but not with each other. Housing and health care policies should be developed to help the family in its valiant efforts to care for its aged members. This would not only be a humane development; it would reinforce that institution of our society which still carries the heaviest burden of care for the aged, i.e., the family.

Answer of Mr. Herman Brotman

Let me start with a general comment.

There are few communities where most of the needs of the elderly are being met. Some communities are doing a more complete job than others but there is no community that I know of that is meeting all the needs of their older population which is not able to meet these needs on its own.

I suggest that in our traditional pluralistic American fashion, all of the programs, facilities, services, payment procedures, tax benefits, etc., grew up, in large part, as an accident or as a response to some disaster or overwhelming need or as a result of an intense special advocacy effort; all grew up piece meal, individually, and unrelated to each other. Some services have been neglected, some over-emphasized. Even where there are large numbers of programs, their creation individually and separately has brought multiple administrations, excessive administative costs, and contradictory or unrealistic eligibility requirements.

In addition, pressure from a "lady bountiful", a legislator, or an administrator with a "favorite" program may bring a complete distortion of priorities.

What I would like to promote first, rather than new programs or projects, is a movement toward coordination and integration of programs, removing obstacles, and making best use of resources. It might work like a generalized health insurance system (as in some Western European countries) where social and health services are not separated and are considered a matter of right.

I would like to start with an "intake" procedure where people who have needs or problems are examined by a technically competent group. The group would be composed of people with professional training in the variety of skills, services, and facilities. On the basis of their analysis of the needs of the individual, they would prescribe a program of services or assistance to take advantage of all the resources that exist within the community regardless of funding or sponsorship.

The service "prescription" examination of the individual's needs would also consider family, housing, transportation, availability of volunteers, professional staff, and the best point of delivery of the service. Thereafter, there should be a case manager or concerned person who keeps track of the individual and the services he is receiving to see if they are accomplishing the intended results and if the needs are changing. The intake process provides the prescription but it must be constantly updated.

One by-product of such a procedure is acute awareness of the needs that cannot be met because of costs, shortages of professional manpower, lack of facilities or transportation, etc. There is no better measure of unmet needs.

I have a basic trust in democracy and decentralization; basic decisions on services, priorities, meeting standards and guidelines, etc., should be made at the local community level closest to the individual. Where the process works poorly, we should provide accountability, technical assistance, and training, not direct or indirect centralized take-over.

Rather than plan new programs, I would first like to work towards integration, coordination, case management, professional review, and so on, so that we can integrate and coordinate these programs and services. Our pluralistic society will not do that automatically. The mechanisms I have mentioned could possibly do that especially if the Area Agency on Aging becomes part of this mechanism for advocacy, integration, and stimulation of program and resource development.

If this can be accomplished, we would then be in a position to measure the unmet needs, to plan, and to design solutions.

Question 2. Could you comment on projections of the elderly population. In particular, do you feel that errors made in past Census Bureau projections have hindered the development of public policy? If so, what could be done to improve the projections?

Answer of Mr. Jacob S. Siegel

Projecting the elderly population of the United States is essentially a problem of projecting mortality, and incorrect assumptions of mortality typically account for most of the errors in the projections of the elderly. For example, the lastest set of projections (published in 1977) had to allow for unanticipated declines in mortality (especially from major cardiovascular diseases) between 1974 and 1976, and, as a result of the new evaluation of mortality, some 1.2 million persons were added to the previous projections of the elderly population for the year 2000.

The most important type of projection needed for developing public policy is the aggregate population aged 65 and over for the United States as a whole. There is no evidence to suggest that errors in past Census Bureau projections of this type have hindered the development of public policy for the elderly. The projections for this group have not grossly misrepresented their size and rate of growth. Yet, in view of the consistent tendency to understate the population and, correspondingly, to overstate mortality, the principal component measured, there is a need to improve the quality of the mortality projections underlying the population projections of the Census Bureau. The Census Bureau has in the past relied upon projections prepared by the Actuary's Office of the Social Security Administration, but now plans to develop its own projections, in consultation with the Actuary's Office, the National Center of Health Statistics, the National Institute on Aging, and other appropriate public and private agencies. The Census Bureau is now formally monitoring its national projections, covering both total growth and the components of change for the various age groups; this should permit ongoing identification of the direction, magnitude, and basis of errors in the projections. As noted elswhere in my testimony, it is planned to employ alternative projections of mortality and, hence, to produce alternative projections of the elderly population. A more extensive and intensive exploration of available research studies bearing on the possibilities of extending human longevity, including comparative international studies and studies of the "biological limits" of human life, will be undertaken than had been previously done.

Answer of Dr. Beth Soldo

Programs and intervention strategies applicable only to present conditions tend, in the long run, to be insufficient and costly. Anticipating the direction of program activity in the future is essential to the successful formulation of policies which, because of their flexibility, will endure and be effective in the long run.

The capacity of local area, State and Federal policymakers to provide for the social and physical well-being of older persons is circumscribed, in part, by their access to comprehensive population information. Sociodemographic data provide policy makers with information on the initial size, location, and status of their target, or client, population. Nowhere is this information more necessary, yet more difficult to estimate, than in the area of long-range planning.

Demographers, like those in other disciplines whose interest bear on planning activities, have no "crystal ball" with which to predict accurately the future. Projections of the older population are viewed, however, as being a relatively simple exercise for demographers as mortality is the only factor operating to change the size and composition of a cohort as it ages. Mortality trends also are generally viewed as being considerably "less tricky" to predict than fertility. Given the ease with which demographers are expected to make projections of the older population, official projections for the United States should have accumulated an excellent track record.

The U.S. Bureau of the Census has prepared projections for the country as a whole since 1947. Comparing these projections with the size of the older population observed at the projected date offers striking evidence of the shortcomings of these past efforts to project the older population. As the Committees have heard from other witnesses, projections of the aggregate aged population have consistently underestimated the absolute number of persons 65 years of age and over. The accuracy of short-term projections (less than five years) has improved somewhat since the midpoint of the century although even the 1970 projection of the 1975 older population falls short by approximately one million older individuals. If one

takes into consideration the known underenumeration of the older population in censuses, the projected figures are even more deficient.

For applied planning purposes, it is insufficient to project the total size of the older population; a particular age structure implies a unique demand for services and health care resources. Official projections have failed to capture the growth of the "old old" segment of the aged population, i.e., those persons who generate the most extensive demand for services.

My purpose in reviewing the track record of the Census is not to castigate particular experts, but rather to point out certain deficiencies that arise from neglecting improvements in mortality in making projections. Between 1947 and 1977, only three major changes were made in the mortality assumptions for U.S. projections in contrast to the rather frequent modifications that were made in the fertility component. In only the 1947 projections were alternative mortality assumptions used indicating the unproblematic view of this component.

For the benefit of those concerned with planning and policy making the U.S. Bureau of the Census should be directed to prepare projections using alternative low, medium, and high mortality assumptions. Users of these projections would then have a range of estimates upon which to base their planning activities.

Answer of Ms. Mary Grace Kovar

As far as I know, errors made in past projections of the elderly population have not hindered the development of public policy.

Answer of Dr. Donald Cowgill

I think our projections of the elderly population have been quite good, and I am not aware that errors in these projections have caused any particular problems in the development of public policy. There is no doubt that such projections could be improved, but the major way in which they are to be improved is in improving the accuracy of age information at the time of the regular census. These are technical matters of which the Bureau of Census is aware, and I am sure they are doing their best to obtain the highest possible quality of data. Having had the experience of working with age data in a number of other countries, I am aware that our data are among the best in the world, and they are progressively improving.

Answer of Mr. Herman Brotman

Making projections is a very complicated business. Part of the complication results from the misunderstanding of the meaning of "projection". The Census Bureau projects future estimates on the basis of current levels, recent trends, and a stated, limited number of assumptions. This is quite different from "forecasting"—more like an informed flight of fancy—making assumptions of all kinds as to what the world will be like. The Census Bureau takes only a minimum number and range of factors.

For example, only the best concensus on life expectancy, fertility, and net migration levels are used in the Census population projections. They do make limited additional assumptions about whether subgroups within the population will show different trends from the major group; for instance in the current projections, the Bureau assumes that life expectancy for all blacks will approach that for whites, closing most of the present gap. This is a very conservative assumption since it reflects recent trends. Finally it is assumed that migration levels will remain constant but omit any adjustment for "illegal aliens" at all.

These are not forecasts; let me illustrate by talking about "life expectancy." Life expectancy is an artificial, computed figure. It applies the age-sex-color-specific death rates in the latest year for which the data are available to persons born in that year and keeps applying those death rates year by year until the computation shows no more people left. At any one age, if we divide the number of people still left into the total number of manyears they will still live, we have average life expectancy or average remaining years of life at that age for that population group. But this does not forecast actual survivorship.

According to the 1900 life tables, about 740,000 of the 2.5 million babies born in 1900 could be expected to reach age 70; the 1970 dicennial census counted about 980,000 native-born Americans aged exactly 70 in 1970. This one-third "surplus" is the result of post-1900 changes in death rates because of improved nutrition, sanitation, housing, health care, and medical discoveries. So the 1900 "life expectancy" figures were very poor forecasts of survivorship.

As death rates change, current life expectancies change. Current life expectancy at birth runs about 69 for men and 77 or eight years longer for women and are based on the specific death rates for last year but these are not necessarily forecasts. Any significant future changes in death rates will change survivorshp. In the

very recent past, death rates for older people have been dropping, primarily as a result of decreases in cardiovascular disease; so life expectancy for older people has been increasing. The Census Bureau, therefore, revised its latest projections to show even more older people because they are living longer after passing age 65.

Every projection is based on sets of assumptions which must be clearly stated so that planners may choose the assumptions they judge most probable.

I do not know how to improve projections until we are able to foresee the future. Meanwhile, improvement in projection and planning will come as we correct our assumptions with regard to current trends and revise our planning processes accordingly. The planning process has to be made circular so that it becomes a continuing process into which we feed both changes in the projections and the results of current measures already taken. Making projections more frequently is necessary if they are to reflect change.

Assumptions as to birth rates in the future (fertility) are especially important in making projections because the number of young people is much larger than the number of older people (current almost 3 to 1 comparing under 18 to 65+). The proportion of older persons in the total population (the burden) in the future depends much more on appropriate assumptions about fertility than any aspect of the situation of older people. This also affects the consideration of dependency ratio; the continuing drop in birth rates means that the family and the community have less youngsters to take care at the same time that there are more older people. Of course, the numbers and costs do not balance out but the trade-offs must be taken into account.

Question 3. How important is it to predict the future location of the elderly population for purposes of public policy in locating service facilities for the elderly? Does anyone make projections of the elderly population for States? For sub-State places? Would such projections be possible? Useful? Worthwhile?

Answer of Mr. Jacob S. Siegel

Projections of the distribution of the elderly population among States and even local areas are quite important for planning for health and other social services. There is not only the question of where to locate health and social service facilities, but also what scale of operation to establish. Thus, for example, a program to distribute hot meals to elderly persons requires information on the future location of the elderly population in the proposed service area, the proportion of the elderly population eligible for the program, and the extent to which non-ambulatory elderly persons may require specialized transportation. Projections of the geographic distribution of the elderly population are absolutely necessary for effective planning of services and facilities for the elderly population, and are particularly important in view of the opportunities and requirements of the Older Americans Act.

To my knowledge the Census Bureau is the only organization now engaged in the preparation of a comprehensive set of projections of the elderly population for States. The Bureau published a set of projections for States in October 1967 that included figures for the population aged 65 and over, but these are now long out of date, of course. A new report presenting projections of State population at possibly 5-year time intervals to the year 2000, with age detail, is scheduled for publication later this year. The report will include projections of the total population aged 65 and over for each State.

The Census Bureau does not now prepare population projections for areas below the State level, although some consideration has been given to producing projections for counties. State and local planning agencies are currently the best source of information on projections for sub-State areas. Most States prepare projections of county population, and many have initiated programs of population projection for minor civil divisions. It is difficult to know to what extent the elderly population is separately identified in locally-produced sub-State projections; the Census Bureau does not collect this information. The Bureau has published a comprehensive listing of State and local agencies preparing population projections, however (Current Population Reports, Series P–25, No. 723.). This publication should facilitate the location of data on projections for various applications in planning.

Answer of Dr. Beth Soldo

Well situated service facilities are particularly important for older persons. Trips outside the home are often limited to the immediate neighborhood because of declines in functional health and/or because of access to transportation systems. Thus, the location of service programs for older persons ultimately involves knowledge of the distribution of older persons, and their needs, across relatively small geographic areas.

Projections of the future location of older persons have obvious and significant implications for the placement of service facilities. As discussed previously, national projections of the older population have been inadequate. Local area projections tend to be even more difficult to prepare because of migration which must also be taken into consideration and because of regional, State, or local area variations in survivorship patterns.

Under the sponsorship of the Administration on Aging (AoA), our research team at Georgetown and Duke Universities are preparing projections of the older population for the 10 AoA Service areas, the basic unit of service delivery. In preparing these projections we are focusing not only on overall trends in mortality reductions and sex-race differentials in survivorship, but also on regional differences in mortality patterns. We are assuming that migration streams, by age, from 1975–1990 will approximate those observed for the periods 1965–1970 and 1970–1975. Preliminary analysis of 1975–77 data indicates that this is not an unreasonable assumption. Furthermore, we are disaggregating our projections by education, marital status, and living arrangements—factors that directly affect the need for and utilization of specific services by older persons.

Although these are hardly local area projections, they will provide sub-national estimates of the older population far more detailed than those prepared by the U.S. Bureau of the Census. We anticipate that our projections will serve as "guideposts" for planners who have a thorough working knowledge of a service region in establishing short-range local area forecasts and programs.

Answer of Ms. Mary Grace Kovar

It is important to project the location of the elderly population for locating services. How important depends on how the information will be used—whether services will actually be located where there is the largest number of people needing services.

Answer of Dr. Donald Cowgill

It is of course a matter of high importance in planning for any service to be able to predict the size of the population for which the service is being provided. Therefore, as we develop services for the elderly in various localities, it is vital that we have dependable information on the elderly population in the service areas. The Bureau of the Census does a good job of projecting the elderly population for the country as a whole and even for States. It has not yet developed adequate techniques or resources for projecting elderly population for smaller areas. Such projections would of course be useful, but they are difficult to make with acceptable accuracy. For the proximate future, I would say the most useful and at the same time feasible thing to do, would be to develop projections from the last census to the current year for AAA areas. I would not think it desirable to try to project into the future for small areas. The possibility for local variations due to migrations which nullify projections is too great to make projections very far into the future useful or reliable for local areas.

Answer of Mr. Herman Brotman

For certain purposes, it is important to project the future geographic distribution of older people. It is, however, one of the trend areas most difficult to pin down.

We know that the mobility of the American population is primarily job related and that older people are much less inclined to move. The seeming migration of retired older people is mostly an illusion—it represents a comparatively small number of people (only about one percent make an interstate move in a typical year) but all moving to Florida, Arizona, or Nevada.

More important is the inner city-suburban picture. The tremendous movement toward the suburbs after World War II was quite unexpected because the previous migration had been into the cities. Only a few older cities, like Philadelphia, Boston, and San Francisco, had suburban satellites.

The post-World War II development of housing in the suburbs still left employment, entertainment, etc., in the city so that the transportation system assumed a special pattern—it moved people from the suburbs into the cities and back again but began to neglect movement within the city or within the suburbs which creates special problems for the elderly. Further the people who moved from the city to the suburbs were the young who were establishing a family; the older remained behind in the inner city to stay in the old, familiar neighborhood that matched their economic resources. In the more recent past, the cities have attracted members of minority groups with higher birth rates and lower average incomes so that needs within the cities have risen much faster than resources.

So the surburbs started out with a young, family oriented, uniform middle-class population. These 30 and 40 year olds are now in their 60's or older. We are beginning to have concentrations of older persons in the suburbs and they are beginning to have difficulties with transportation and social, recreational, and medical facilities attuned to and accessible to them.

These kinds of geographic changes are hard to project, even in relation to the numbers of persons affected. They result from a combination of a great many economic, psychological, social, and cultural factors. Local planners will have to do their best with adaptation to particular local situations of overall national trends. They must assume that an aging suburban population will bring certain and perhaps different kinds of problems. They must assume that improved economic status of minority populations will increase life expectancy and increase the relative number of older persons, especially in the inner city (currently, most minority aged are in rural areas).

Question 4. Could you discuss our priorities for data on the elderly population. In particular could you discuss the importance of: data broken down by 5 year or 10 year age groups within the elderly population, in planning for health care expenditures. (In view of the problems of age reporting for the elderly, could such data for narrow age groups be useful and reliable)? Longitudinal surveys; health examination surveys directed explicitly at the elderly.

Answer of Mr. Jacob S. Siegel

In general, it would be useful to have data on the characteristics of the elderly tabulated in 5-year age groups to about age 85, with a terminal age group 85 and over, since the age span 65 and over is one wherein events and statuses change rapidly with increasing age, and it is important to identify and measure these changes and statuses as fully as possible. Yet, data in 5-year age groups, or even 10-year age groups, could be affected by serious net and gross errors of age reporting. Gross errors in particular may be quite large at the older ages and would affect crossclassifications with other characteristics even if the net errors in age reporting are small. Other characteristics may also be subject to errors of reporting. In spite of the possible errors in the data, however, it would be useful to secure data in 5-year age groups unless the sampling errors are so large as to make the data grossly misleading.

It would be useful to have data for 10-year age groups among the elderly to age 80 or 85 for measuring prospective health care expenditures. In view of the questionable quality of age reporting among the elderly and the difficulties of securing health expenditure data, more detailed data would not be worth using or securing. In any case, 10-year age detail would represent a considerable advance over the present situation. At the present time the Health Care Financing Administration (HCFA) has no information on health expenditures for even ten year age-groups. The most recent information on health care expenditures pertains to three broad age groups, under 19 years old, 19 to 64 years, and 65 years and over.[1] HCFA has informed me that the data on health expenditures for even these age groups are rather tenuous. Furthermore, there is little hope of obtaining adequate data on health care expenditures in the near future because of limited resources for doing this type of analysis.

I won't attempt to assign a priority to data on the elderly population from longitudinal surveys, as compared with data from censuses, general cross-sectional surveys, health interview surveys, health record studies, health examination surveys, and censuses with health inquiries. I should like to note only that longitudinal surveys can provide the basis for many important insights into the experiences and conditions of older age because of their focus on the life cycle and gross changes over time. Longitudinal surveys can answer many significant questions not answered or answerable by cross-sectional data.

Answer of Dr. Beth Soldo

There is an obvious and unfortunate lack of congruence between our conceptual understanding of aging and the data available to study it.

I believe most gerontologists would agree with the statement that human aging is an ongoing, multidimensional process. The emphasis on "process" implies that the proper focus for studies of human aging is the continuity of behavior across individual life cycles. Such a focus does not imply that older persons do not experience extreme discontinuities (for example, widowhood and retirement), but that responses to these changes build upon previous experiences and patterns of behavior. Recognition of the fact that aging is multidimensional, involving interactions be-

[1] Robert Gibson, "National Health Expenditures, Fiscal Year, 1976" Social Security Bulletin, Vol. 40, No. 4, 1977.

tween physical, intellectual, emotional, and social changes, also has very specific implications for our data requirements. It is meaningless to isolate one dimension of aging, for example the health of an older person, from the study of a person's status (past and present) along other dimensions.

Hence, the appropriate data bases for studies of older populations are those containing information on the timing, sequence, and direction of multiple age-related changes. Such data can be gathered only longitudinally or with a detailed retrospective instrument.

Data currently available fall far short of the ideal. Our knowledge of the aging process is incomplete primarily because of serious defects in our national data collection systems. While aging is recognized as being a multidimensional and ongoing process, data collection is still compartmentalized along administrative boundaries. The National Center for Health Statistics (NCHS), for example, collects and disseminates excellent detailed data on the functional and physiological health of the population. Both published and unpublished data from the Center, however, lack sufficient detail on the demographic, social, or economic characteristics of respondents and totally omits data on even objective indicators of housing adequacy. The U.S. Bureau of the Census, on the other hand, collects annual and decennial, sociodemographic, economic, and housing data without reference to information on either health or supportive arrangements. The Annual Housing Survey and the beginning-of-the-decade Census of Housing are both reliable sources of information about the physical characteristics of the housing stock, but neither detailed individual nor neighborhood data are collected in these surveys. The task of assembling data on attitudes, preferences, patterns of family and neighborhood integration and utilization of specific support systems is left to the small surveys.

Unlike many of the countries of Western Europe, the U.S. still lacks a comprehensive national survey of the elderly, much less an ongoing longitudinal one. The Retirement History Survey sponsored by the Social Security Administration is a national longitudinal survey of older persons but, even here, only select cohorts are being monitored. Our capacity to assess generational differences in styles of aging will be seriously impaired by the failure to document the experiences of younger cohorts.

Although the problem of data limitations may seem to some little more than academic nitpicking, it has very real consequences for policy making and planning. Without life history information, researches cannot determine how much of the difference between the health care costs of 80–84 and 60–64 year old persons is due to aging, per se, and how much is due to the fact that these two cohorts grew up during very different historical times. Results from local area longitudinal studies suggest that generational differences may be far greater than simple age differences.

Exclusive reliance on cross-sectional data have generated the myths that income and intelligence decline dramatically in old age. This is unfortunate because policy making and planning efforts should be based on our best possible understanding of aging and not on myths that surface because of faulty data.

In order to close the data gaps in gerontology, I recommend that:

1. The Committees request the National Institute on Aging to evaluate the cost and feasibility of a National Survey of the Elderly, such as the one conducted in Britain.

2. The Institute's current effort to inventory local area longitudinal surveys should be supported and given a high funding priority. Although longitudinal surveys are extremely expensive, the inventory now being compiled by NIA is a necessary first step.

3. Funding should be provided for the continued support of the "National Data Archives in Aging" and the "National Instrument Bank," supported by AoA. When completely operationalized, these resources will minimize the risk of redundant studies and provide easy access to the results of a number of small area studies, including longitudinal ones.

4. Data currently collected by Federal agencies and relevant to studies of aging should be made available to outside analysis in a usable format, expediously and inexpensively. The timely release of computerized files of a 1/100 Sample of Basic Records from the 1970 Census (identification information suppressed) has been significant to researchers. The track record of the Social Security Administration and the National Center for Health Statistics, however, in the release of important computerized files is extremely poor. The Health Interview Survey (HIS), from NCHS, is the only national and detailed survey of the functional health of the older population, yet the 1975 Survey tapes were only recently made available. Similarly, SSA has released only three out of five rounds of data collected in the Retirement

History Survey. Furthermore, the three rounds of released data are not linked (i.e., it is not possible to construct sequential measurements on the same individual) which totally defeats the purpose and cost of a longitudinal study. The need for distributing these valuable data sets is of particular importance since the analytic efforts of SSA and NCHS are insufficient.

5. There is an immediate need to establish a Federal policy on the collection of data relevant to the study of aging. Both the Parnes and Retirement History Surveys are longitudinal, federally-financed surveys, yet there is a considerable amount of overlap between them, both in terms of content and the cohorts being tracked. In the near future the funding for these surveys will expire. Since they constitute the only national longitudinal survey operations, at least one of them needs to be continued.

Answer of Ms. Mary Grace Kovar

First priority should probably go to tabulating smaller age groups within the elderly population. More specific tabulation will provide more information without the large cost of redesigning existing data collection or instituting new data collection. The problems of age misreporting for the elderly may be exaggerated. Most studies of age misreporting are based on Bureau of the Census data collection systems and espically the decennial census. I don't think it is wise to infer that, becasue age is misreported on a census with a single respondent for everyone in the household (and, according to anecdotes, other people as well), with a single question, and with no obvious reason for accurate reporting, it will also be misreported on other data collection systems where there is more likelihood of self reporting and possibly more reason for accuracy.

For 12 years now about 90 percent of the people 65 and older have been on Medicare. At the beginning, large numbers of people came in under grandfather clauses or without proof of age as they were obviously old enough even though their exact age was unknown. By now, all of those people should be 75 or older even though we don't know how much older. Since then, people have obtained their Medicare cards by proving eligibility. The accuracy of age reporting for Medicare populations should already be high for the "younger" old and the age limit will increase as these people age.

There are two implications. One is that age reporting on the medical care data systems should already be relatively good because payment for care so often depends on Medicare or Medicaid coverage. The second is that a large proportion of middle-aged people are finding out when they were born because they can see a future benefit in knowing. They won't have to guess "about 70" when the time comes because they will already know. As a result, age reporting should continue to improve.

It should be noted that we routinely use 5-year age intervals for death rates and that the hospital data in Table 4 of my testimony were by 5-year age intervals. The decennial life tables published by NCHS are based on death registration and census data for people under age 65 but Medicare data for people 65 and older.

Other data prioriites depend very much on the questions to be answered. The question needs to be formulated first; the method for obtaining the data should follow. Establishing priorities for methods of collecting data before establishing priorities on data needs is poor research techniques.

It is also limiting and can be wasteful. It is limiting because neither longitudinal surveys nor examination surveys may be the best way of obtaining the desired information. If they are not, it would be wasteful because both of these are expensive and there is no reason for using expensive methods when less costly ones would provide adequate information.

It might be useful for the committee staff to commission or prepare a paper on alternative ways of collecting the information needed to answer specified policy questions. Mary Grace Kovar and James A. Weed's paper, "Considerations in using Individual Socioeconomic Characteristics in the Analysis fo Mortality" (Proceedings of the American Statistical Association, Social Statistics Section, 1977), is an example of analyzing data needs for studying socioeconomic differentials in mortality.

Answer of Dr. Donald Cowgill

I think data by specific age groups are absolutely essential for good research work and for good planning. Longitudinal research is very expensive and time consuming, but again it is absolutely essential if we are ever to understand the effect of the aging process as distinct from the differences among age, cohorts arising from different historic experiences. I am not an expert on health services, therefore, I am not sure whether health examination surveys directed explicity at the elderly would be cost effective.

Answer of Dr. Tamara Hareven

I think data broken down by 5-year age groups would be extremely valuable for a better understanding of the status of the elderly and of their needs, as well as their residential arrangements. Such a breakdown would inable us better to distinguish between the "young old," the "older," and the "very old." Narrow age groups would also enable us to identify more specifically what the important points of transition are to dependency and to greater health care needs. For longitudinal research, clearly, a 5-year breakdown would be essential for followup.

Answer of Mr. Herman Brotman

The 65 plus population is not a monolithic group. There has always been a tremendous variation within the group in terms of experience, health, and economic status, etc. Considering the demographic changes that are taking place—more people reaching older ages, living longer once they reach old age, becoming a larger proportion of the total population, and women living longer than men—it is even more important that analysis of the group be made on the basis of as small age intervals as possible.

The minimum should be ten years, but preferably five years, at least in the ages closest to 65. However, it must be recognized that much of the data is gathered on a sample basis, and there may be limits to the adequacy of the sample to permit tabulation by 5-year intervals rather than 10, although there are ways of overcoming some of these problems. Even data broken down by 10-year intervals would be much better than grouping all people 65 and over into a single category.

Your question specifically asks about health care expenditures. Here, age distributions are particularly important because the cost of providing health care and the kinds of care needed vary considerably by age, with, obviously, large and longer health care requirements in the upper ages. In addition to age, sex differentials must be taken into account. Regardless of whether it is genetic or the result of previous life experience, both health care needs and institutionalization vary considerably by sex. Older women require more health care than do men in the same age group, and there are many more women than men in the upper ages.

We can anticipate that differences in life expectancy will continue to grow, though perhaps at a slower rate. We can foresee more older women than older men and an increasing discrepancy as you go up the age scale. Therefore, we can expect a larger proportion of widows as well, with less family support systems available and, at least for the immediate future, a larger proportion of women who do not have retirement income based on their own labor market activity and their own resources. Eventually the latter will change as more and more women enter and remain in the labor force and begin to draw retirement incomes based on their own work history. For now, we must take into account age as well as sex differentials, including life expectancy.

Minority groups also show differentials in life expectancy, but, when considering health care services and costs, analysis of these differentals is important for only those communities where the population mix of the older population is very different from the national average.

Longitudinal surveys provide different kinds of information than do cross-sectional studies end are always highly desirable and useful, but they are very complicated and expensive. The kinds of information to be secured and how it will be handled must be thought through since the study will cover a long period of time and content cannot be changed easily. Another problem common to all longitudinal studies is "attrition". In the course of time, numbers of subjects in the surveys will die, move, be unable to respond, or refuse to continue. It must be determined continuously whether the original and the subsequent samples in the survey are equivalent or comparable if the drop-outs significantly effect the validity of the survey.

Concerning the last part of the question on health examination surveys, I don't understand the necessity for restriction to older people. In order to understand the health status and problems of older people, a base must be established and that base is the rest of the population.

First, a good health examination survey should be a cross section of the population. Increasing the number of people in the survey or additional supplemenatation of older persons may help produce more detail or more cross tabulations, but a survey restricted to older people would leave many questions unanswered.

There would be no basis for comparison or norm setting.

Second, if there were diseases or disabilities that are present only in older persons, there might be a reason for a survey directed explicity toward older persons. But I know of no disease or condition solely related to the aged. There is consider-

able variation in prevalence in chronic conditions with older people more susceptible but the same disabilities, impairments, and diseases are also found in younger people.

Therefore, I think that health examination surveys should sample the total population and, if feasible, supplementation by additional older people in the sample so that more detailed and informative analyses are possible.

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APPENDIX

PREPARED STATEMENTS AND ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

PROSPECTIVE TRENDS IN THE SIZE AND STRUCTURE OF THE ELDERLY POPULATION, IMPACT OF MORTALITY TRENDS, AND SOME IMPLICATIONS

Statement of
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Before the
Select Committee on Aging
U.S. House of Representatives

and the

Select Committee on Population
U.S. House of Representatives

May 24, 1978

PROSPECTIVE TRENDS IN THE SIZE AND STRUCTURE OF THE ELDERLY POPULATION, IMPACT OF MORTALITY TRENDS, AND SOME IMPLICATIONS

Jacob S. Siegel*

For convenience and simplicity, in the present discussion the age range 65 and over as a whole is employed as the principal basis for identifying and describing the elderly population. Although as a group the elderly population is markedly different in its demographic and socioeconomic characteristics from the population at the younger ages, it is not a homogenous group, and various age segments within it should be considered separately in any detailed analysis of the characteristics of the group. If we compare the population 85 and over with the population 65 to 74, for example, we find many sharp differences with respect to such characteristics as living arrangements, marital status, work status, income, education, health, kinship support, and use of leisure time.[1/]

Size and Structure of the Elderly Population

Numbers and Proportions

Change in numbers. -- Between now and the end of the century the population 65 and over is expected to grow at only about half the rate of

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1/ For a more comprehensive treatment of this subject, see U.S. Bureau of the Census, "Demographic Aspects of Aging and the Older Population in the United States," by Jacob S. Siegel, Current Population Reports, Series P-23, No. 59 (rev.), May 1976.

*The views expressed in this paper do not necessarily reflect the position of the U.S. Bureau of the Census. The author wishes to acknowledge the professional assistance of Maria Davidson, Jerome Glynn, and J. Gregory Robinson in the preparation of the materials employed in this document.

the past quarter century, but this growth will still be considerable:

Period	Percent Increase			
	65 and over	65-74	75-84	85 and over
1950-1976	85	67	104	233
1976-2000	39	23	57	91
2000-2020	42	61	15	27

During this period this age group will increase by nearly 40 percent, from 23 million in 1976 to 32 million in 2000 (Table 1). The age group is expected approximately to double between 1976 and 2020, when we should have about 45 million elderly persons. In this period all age segments of the elderly population are expected to grow rapidly, particularly the extreme aged. In fact, changes show a regular progression with age for the 1976-2000 period. The population 65 to 74 should increase by about 23 percent, the population 75 to 84 by about 57 percent, and the population 85 and over by about 91 percent.

We can have a fair degree of confidence in the general level of the population and the growth rates shown, since the accuracy of projections of population numbers for the older age groups is dependent essentially on the accuracy of the projections of mortality, particularly for the older ages. Reasonable alternative projections of mortality would not seriously alter the population projections (see below).

The general rise in the numbers of births, particularly up to the early 1920's, is the principal factor that accounts for the large past and prospective increases in the number of elderly persons. Past and prospective declines in death rates, and immigration, particularly the heavy volume of

immigrants prior to World War I, serve also to augment the number but they play a distinctly secondary role. The sharp drop in the rate of increase in the 65-and-over population after about 1990, lasting about two decades, is a result of the rapid drop in the number of births during the 1920-30 and 1930-40 decades. The baby boom cohorts cause the leap forward in the elderly population after 2010.

Change in the proportion of elderly persons. -- The proportion of elderly persons in the total population is likely to continue to rise, but more slowly than in the past. The rise may not be a steady one because of the probable fluctuations in future fertility, but two of the three series of projections published by the Census Bureau (those having lower fertility) show a general rise in the proportion and all of the projected range for the proportion is about the level of 1976. Changes in the proportion of the elderly are directly affected by projections of the total population, and hence of fertility, as well as by projections of the elderly population. Hence, we can have much less confidence in these figures.

If fertility moves toward replacement level (fertility somewhat above the level of 1976) between 1976 and 1990, as in the Series II Census Bureau projections,[2/] we can expect about 12 percent of the population to be aged

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2/ The basic fertility assumptions employed in developing the three series of population projections relate to the average numbers of children born to a woman in her lifetime:

Series I	2.7 children per woman
Series II	2.1 children per woman
Series III	1.7 children per woman

Only one mortality assumption (moderate declines) and one immigration assumption (400,000 net immigration per year) are combined with these three fertility assumptions in the Census Bureau population projections.

65 and over in the year 2000 and about 15-1/2 percent in 2020, as compared with 10.7 percent in 1976 (Table 2 and Figure 1). The proportions 65 and over in 2020 corresponding to the population projections based on below-replacement fertility (Series III Census Bureau projections) and above-replacement fertility (Series I Census Bureau projections) are 18 and 13 percent, respectively. As fertility decreases, with a given level of mortality, the proportion of the older population tends to increase. The Bureau of the Census series of projected percents 65 and over at 10-year intervals to 2040, including the projected range, is as follows:

Year	Percent
1976	10.7
1980	11.2 (11.1 - 11.3)
1990	12.2 (11.7 - 12.6)
2000	12.2 (11.3 - 12.9)
2010	12.7 (11.1 - 13.9)
2020	15.5 (12.7 - 17.8)
2030	18.3 (14.0 - 22.1)
2040	17.8 (12.5 - 22.8)

If fertility continues at current levels and mortality declines moderately, as is assumed, the percentage of elderly persons can be expected to fall just below the highest percentage (18 percent) shown for the year 2020. A sharp rise will occur in the 2010--2025 period (unless fertility rises well above replacement level) because of the entry of the 1945-60 baby-boom cohorts into the 65-and-over population. There may be only a modest rise or a decline in the proportion after 2025, as a result mainly of the decline in the number of births after 1960.

Fertility has been and will continue to be a more important determinant of shifts in the proportion of the older population than mortality. Both recent changes in the birth rate and shifts in the numbers of births 65 years earlier jointly affect the proportion of elderly. Changes in death rates affect the proportion also but their influence is quite limited.[3/] Furthermore, as appears to have occurred in the earlier part of this century, declines in death rates may tend to retard or contribute only slightly to the rise in the proportion of elderly persons.[4/] When, as for the Census Bureau projections, the greater declines in death rates are assumed to occur at the older ages, the effect is to raise the proportion. At low levels of fertility, only extremely large future reductions in mortality occurring mainly at the older ages could contribute to substantial increases in the future percentage of the elderly. If fertility turns up and mortality declines only moderately, as is possible, the proportion of elderly persons in the population may stop rising and may even decline (e.g., Series I Census Bureau projections, 1990 to 2010).

Age pattern of the older population. -- The older population has been getting older and is expected to continue doing so for a few decades. For example, the proportion of persons in the age group 65 and over who are 75 and over is now rising and will generally continue to rise until at least the

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3/ Ansley J. Coale, "The Effects of Changes in Mortality and Fertility on Age Composition," Milbank Memorial Fund Quarterly, Vol. 34, No. 1, January 1956, pp. 79-114.

4/ 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. 44, No. 4, Part 1, October 1966 pp. 451-469.

year 2000. In 1976 the proportion in the older age group was 38 percent. In the year 2000 we can expect the proportion to be about 45 percent (Table 3). It is then likely to fall back to about 38 percent again in 2020 as the larger cohorts born in the high fertility period following World War II enter the younger segment of the group (65 to 74 years).

Sex Composition

Change in sex balance. Rates of increase are expected to be generally greater for elderly females than elderly males in the next few decades, but the tremendous differences in the growth rates of the sexes seen in the last few decades will not be repeated:

	Percent Increase			
Sex and period	65 and over	65-74	75-84	85 and over
Male				
1950-1976	60	51	69	159
1976-2000	36	24	55	69
2000-2020	45	63	17	25
Female				
1950-1976	108	82	135	286
1976-2000	41	22	58	101
2000-2020	39	60	14	28

For each sex for the 1976-2000 period growth rates progress upward with increasing age.

There were 69 males for every 100 females in the age group 65 and over in 1976 (Table 3). The deficit of males increases sharply with advancing age. At birth the sex ratio has consistently been about 105-106. By ages 70-74 the sex ratio has fallen below 75 and by ages 85 and over it has fallen below 50.

The sex ratio at ages 65 and over is expected to fall to 67 per 100 by the year 2000 and then to rise, reaching 69 again by the year 2020. The sex ratio at ages 75 and over and 85 and over will also tend to continue declining for the next few decades.

The large excess of females over males among the elderly is also reflected in differences in the age distribution of the sexes. In 1976 12.3 percent of the female population was over 65, as compared with 9.0 percent of the male population (Table 2). In the year 2000, the percent for females may be as high as 15, compared with 11 percent for males, under the low fertility series. For older segments of the elderly population, the difference in the percents for males and females is even more pronounced.

Role of fertility and mortality. -- The main reason for the drop in the sex ratio with increasing age for past and current years is that male mortality has been higher than female mortality at each age of life for many decades in the United States.[5/] This pattern is expected to continue. The main factor determining the declining trend in the sex ratios at each age over time is the relative level of male and female mortality, or more precisely, the relative levels of male and female survival rates. The death rates for the sexes at the various age groups have been steadily diverging, to the greater and greater disadvantage of males. The further decline or slight rise in the sex ratio of the population at the older ages projected for future years is a result of the assumption made in the Census Bureau projections that there will be a further slight divergence of male and female mortality rates.

5/ U.S. Bureau of the Census, Current Population Reports, Series P-23, No. 59 (rev.), op. cit., esp. p. 13-14.

MORTALITY AND SURVIVAL

Past General Trends

We can describe the period 1940-54 as one of generally rapid mortality declines in terms of age, sex, race, and cause-of-death categories. From 1954 until 1968, however, there was little progress in this regard. The expectation of life at birth and at age 65 remained nearly the same over the 14-year period from 1954 to 1968 (Table 5). Since about 1968 the mortality of the older population has begun to fall again and the average rate of decline in death rates has been greater than during the 1940-54 period. In the 9-year period from 1968 to 1977, there was an average annual decline of 1.7 percent in the death rate at ages 65 and over, as compared with a decline of 1.5 percent for this age group in the 1940-54 period (Table 6). The observed declines understate the real declines because of the aging of the elderly population itself.[6/] As a result of the declines in death rates, life expectancies at birth and at age 65 have been climbing steadily upward; life expectancy at birth is estimated at 73.5 years in 1977 as compared with 70.2 years in 1968.

Sex Differences

Past trends. -- As stated previously, the difference between the sexes in mortality levels is quite large and has been growing until recently. By 1976 the difference in the life expectancy at birth of males (69.0 years) and females (76.7 years) reached 7.7 years (Table 5). It was only 4.3 years in

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6/ Mary Grace Kovar and Lois Fingerhut, "Recent Trends in U.S. Mortality Among the Aged," unpublished paper presented at the annual meeting of the Gerontological Society, San Francisco, California, November 21, 1977.

1940. An increasing part of the difference is accounted for by the difference in life expectancy at age 65. According to the death rates of 1976, the male-female difference in the average number of years lived in the age interval 0-64 years was 2.3 years, as compared with 4.3 years for ages 65 and over.[7/] By 1976 the death rate of males 65 and over exceeded the corresponding rate for females by nearly 50 percent (Table 7).

Basis of the gap. -- Because of the magnitude, durability, and pervasive consequences for our society of the gap between male and female death rates, the basis for the gap is a matter of serious social concern. The gap is evidence of a considerable inequality between the sexes in the effects of environmental and/or genetic influences on mortality rates.

The evidence for the basis of the large and growing difference is conflicting, as suggested by a number of facts and studies. Social factors appear to exercise an important influence on the difference, but in combination with and in interaction with genetic and biological factors. Studies and analyses by Enterline,[8/] Godley and Kruegel,[9/] Retherford,[10/] and

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7/ The maximum number of years of life that may be lived in the interval under age 65 is, of course, 65 years. The "actual" figures for 1976 are 59.6 for males and 61.9 for females. The average number of years lived above age 65 is equal to life expectancy at age 65. Life expectancy at age 65 for 1976 is 13.7 years for males and 18.0 years for females.

8/ Philip E. Enterline, "Cause 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.

9/ Frank Godley and David Q. Kruegel, "Cigarette Smoking and Differential Mortality: New Estimates from Representative National Samples," unpublished paper presented at the annual meeting of the Population Association of America, Seattle, Washington, April 17-19, 1975.

10/ Robert D. Retherford, "Tobacco Smoking and the Sex Mortality Differential," Demography, Vol. 9, No. 2, 1972, pp. 203-216, and The Changing Sex Differential in Mortality, Greenwood Press, Westport, Conn. 1975.

Waldron[11/] favor explanations primarily in terms of "environmental" factors. Others, such as the Madigan study,[12/] favor explanations primarily in terms of hereditary (genetic and nongenetic) factors.

The study of Madigan, relating to mortality differences between brothers and nuns in Catholic teaching orders, concludes that the excess male mortality can be attributed to biological factors since the men and women can be assumed to have essentially the same life styles. Male fetal and infant mortality is markedly greater than female fetal and infant mortality. There is evidence that the female reproductive period is highly protective for women and, accordingly, the lengthening of the female reproductive period in the past century, presumably due to improved nutrition and hygiene, has apparently afforded an increasing biological advantage to women.

The changes in recent decades in the male-female mortality gap appear to be more associated with social and environmental factors. The Retherford study concluded that two-thirds of the divergence between the male and female death rates of adults in most of this century was due to smoking. Yet, females have taken up smoking in large and increasing numbers during this period, especially since World War II. Furthermore, during the same period larger and larger proportions of women have been joining the labor force. Presumably we

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11/ Ingrid Waldron, "Why Do Women Live Longer Than Men?", Journal of Human Stress, Vol. 2, March 1976, pp. 2-13, and Ingrid Waldron and Susan Johnston, "Why Do Women Live Longer Than Men?", Journal of Human Stress, Vol. 2, June 1976, pp. 19-29.

12/ Francis C. Madigan, "Are Sex Mortality Differentials Biologically Caused?", Milbank Memorial Fund Quarterly, Vol. 35, No. 2, 1957, pp. 203-223.

should have seen some convergence of the death rates of men and women. The divergence observed has been occurring, therefore, in spite of the fact that the differences in the life styles and roles of men and women have diminished. It is notable that we find the largest difference in life expectancy at birth, some 10 years, in the USSR, where men and women occupy much more equal occupational roles than in the United States.[13/] A major change in the relative mortality levels of the sexes is not expected to occur in the United States, if at all, until a whole generation of women is reared in the work ethic of males -- that is, socialized from childhood with a "work-or-perish" life design.

The increasing male-female mortality difference may also be interpreted as a result of a major shift of the cause-pattern of mortality in this century, involving a sharp reduction in the relative importance of the infectious and parasitic diseases and maternal mortality and a rise in the relative importance of the chronic "degenerative" diseases, e.g., diseases of the heart, malignant neoplasms, cerebrovascular diseases. For the second group of causes male rates tend to be much higher than female rates whereas, for many categories in the first group of causes, female rates tend to be more similar to those of male rates. Even for the second group, male-female differences have widened over the last several decades, however.

13/ Jacques Vallin and Jean-Claude Chesnais, "Évolution Récente de la Mortalité en Europe dans les Pays Anglo-Saxons et en Union Soviétique, 1960-1970," Population, Vol. 29 Nos. 4-5, July-Oct. 1974, pp. 862-898, esp. p. 863; Institut National d'Études Démographiques, "Sixième Rapport sur la Situation Démographique de la France," Population, Vol. 32, No. 2, March-April 1977, pp. 253-338, esp. 293-294.

Race Differences

There is still a difference of several years in life expectancy at birth between the races (White, Black-and-other-races). The difference has been reduced sharply over the last several decades, from about 11 years in 1940 to 5 years in 1976 (Table 5). The difference in life expectancy at age 65 is small, however, and has been small throughout this whole period. The magnitude of the male-female difference in life expectancy and the evolution of the difference are similar for Whites and Blacks.

Death rates for the Black-and-other-races population are higher than for Whites below age 65 and at ages 65-74. There is then a crossover of the rates at ages 75-79 in the U.S. death registration data. The crossover is not to be viewed merely as a statistical artifact since the crossover phenomenon appears in many other paired comparisons, often involving data of high quality.[14/] For example, it appears in death rates based on U.S. Social Security Administration ("Medicare") data, albeit at a higher age (ages 80-84). The Social Security data also reflect smaller differences between the races than the registration statistics.

Little attention has been given to the relative contribution of genetic and environmental influences to the White-Black mortality gap. The Kitagawa and Hauser study suggests that most of the difference may be accounted for by the difference in the socioeconomic status of the racial groups.[15/]

14/ Charles B. Nam and Kathleen A. Ockay, "Factors Contributing to the Mortality Crossover Pattern: Effects of Developmental Level, Overall Mortality Level, and Causes of Death," unpublished paper submitted to the XVIII General Conference of the International Union for the Scientific Study of Population, Mexico City, August 8-13, 1977.

15/ Evelyn M. Kitagawa and Philip M. Hauser, Differential Mortality in the United States: A Study in Socioeconomic Epidemology, Harvard University Press, Cambridge, Mass., 1973.

Causes of Death

The cause-pattern for deaths of the elderly has continued to shift toward the chronic "degenerative" causes and away from the infectious-parasitic causes. The major chronic causes are moving in opposite directions, however; death rates from cancer have been rising sharply and death rates from the cardiovascular diseases have been falling sharply in the last decade.

Only a few categories of causes account for most deaths over age 65. In 1976 diseases of the heart accounted for 44 percent of all deaths at these ages, and diseases of the heart, malignant neoplasms, and cerebrovascular diseases accounted for three-quarters of the deaths (Table 8). The rates for the remaining "leading" causes are so low that each cause, taken separately, accounts for less than five percent of the total number of deaths over age 65.

Additional insight into the current cause-pattern of mortality is secured by examining the possible gain in life expectancy from eliminating various causes of death and the chance of eventually dying from various causes. If all deaths from cardiovascular diseases were eliminated and if the chance of dying from the various causes is assumed to be independent, the gain in life expectancy at birth would be 12 years and the gain at ages 65 would be 11 years according to the death rates of 1969-71 (Table 9). Diseases of the heart account for about half of these additions to life expectancy. Roughly speaking a 65-year old has a two-thirds chance of eventually dying from a cardiovascular diseases -- a 50 percent chance of dying from a disease of the heart and a one-seventh chance of dying from a cerebrovascular disease.

If all deaths from cancer were eliminated, 2-1/2 years of life would be added at birth and 1-1/2 years of life would be added at age 65. The elimination of cancer would have a much smaller effect on life expectancy at age 65 than the elimination of cardiovascular diseases because the cancer rate is much lower generally and because cancer is less concentrated at the older ages. A 65-year old has a one-sixth chance of eventually dying from cancer.

If all cancer mortality were eliminated, the total number of deaths would not be greatly reduced after a while since the persons saved would be subject to the residual death rate for all other causes, albeit at older ages.[16/] Death rates at each age would fall but the chance of eventually dying from the other causes would rise. On the other hand, the saving of lives would be greater both initially and for a larger period if the cardiovascular diseases were eliminated, because the residual death rate would be reduced much more sharply.

It should be recognized that these figures have no direct implications for the future since complete elimination of the cardiovascular diseases or of cancer has not been projected or predicted. They mainly elucidate the current cause-pattern of mortality and hence may aid in planning current health programs and goals.

16/ Nathan Keyfitz, "What Difference Would it Make if Cancer Were Eradicated? An Examination of the Taeuber Paradox," Demography, Vol. 14, No. 4, Nov. 1977, pp. 411-418, esp. p. 417.

U.S. Bureau of the Census, "Demographic Aspects of Aging and the Older Population in the United States," op. cit., esp. p. 43.

Projections of Mortality and Population

Prospects for mortality reduction. -- A number of different approaches may be taken in projecting death rates for the United States. One is to extrapolate past trends in age-sex-race-cause specific death rates. Another is to consider the rates in more analytic terms, for example, in terms of the factors affecting specific causes of death (e.g., dietary habits, smoking practices). An even more analytical step is to take account of competing risks and joint causes of death. Guides for extrapolation may be derived from the experience of countries with the lowest death rates at each age and from available studies of the biological "limit" of mortality.

Historical and comparative international demographic analysis suggests only moderate reductions in death rates in the United States in the next several decades. There is little basis for anticipating major increases in life expectation in this period,[17/] and it is visionary to anticipate any extension of human life span.[18/] Life expectation at birth for Sweden ("best" single country) in 1974 and life expectation for a composite "country" derived from the lowest death rates at each age for various countries around 1974 are only three to five years greater than for the United States in 1974 (Table 10). At present mortality levels, even major (percentage) declines in

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17/ Jean Bourgeois-Pichat, "Future Outlook for Mortality Decline in the World," unpublished paper presented at the meeting of the United Nations, Ad Hoc Group of Experts on Demographic Projections, New York, November 1977.

Nathan Keyfitz, "Cause of Death in Future Mortality," Proceedings of the International Population Conference, Vol. 1, pp. 483-503, International Union for the Scientific Study of the Population, Mexico City, Aug. 8-13, 1977.

18/ For a summary comment, see Bernice L. Neugarten, "The Future and the Young-Old," in Lissy F. Jarvik (ed.), Aging into the 21st Century: Middle-Agers Today, Gardner Press, Inc., New York, 1978.

death rates would correspond to only moderate (percentage) increases in life expectancy.[19/] For example, if present death rates at each age were reduced by half, life expectation at birth would rise by only about 15 percent, that is, from 73 years to about 84 years. In the light of the present age structure of mortality, if large (absolute) reductions are to occur in mortality at all they would have to be concentrated at the older ages since death rates at the younger ages are already quite low.

Demographic analysis also suggests no great convergence of male and female mortality or life expectancy in the United States in the near future.[20/] When the U.S. values for 1974 are compared with the figures for Sweden in 1974 and the country composite for "1974", the U.S. figures are found to be much closer to the attained "best" levels for females than for males (Table 10). The comparison suggests that the possibilities for improvement for males in the United States are greater than for females and that some convergence of the values for males and females may be realized. This analysis also suggests that the male-female difference may have a substantial, irreducible minimum in post-industrial society.

19/ Nathan Keyfitz and Antonio Golini, "Mortality Comparisons: The Male-Female Ratio," Genus, Vol. 31, No. 1-4, 1975, pp. 1-34; Keyfitz, "What Difference Would it Make if Cancer were Eradicated? An Examination of the Taeuber Paradox," op. cit.; Jacob S. Siegel and Edwin Fonner, Jr., "Effect of Changes in Age-Specific Death Rates on Life Expectancy," unpublished paper presented at the annual meeting of the American Public Health Association, Miami Beach, Florida, Oct. 17-19, 1976.

20/ Bourgeois-Pichat, op. cit.; George C. Myers, "Changing Mortality Patterns and Sex Imbalances among the Aged," unpublished paper presented at the 10th International Congress of Gerontology, Jerusalem, Israel, June 1975.

As noted earlier, the present large difference presumably reflects both a biological advantage of women and the persistent, sizeable differentiation of the life styles, roles, and personal habits of the sexes. Even if men are afforded improved environmental "opportunities" or the environmental circumstances for females become more prejudicial to their health, a substantial difference in favor of women is expected to remain for several decades.

The projections of mortality incorporated in the Census Bureau's latest projections of population are adaptations of mortality projections prepared by the Social Security Administration that took explicit account of past trends in death rates for age, sex, and cause categories. They imply moderate reductions in death rates 21/ and a modest increase in expectation of life at birth and at age 65 between 1976 and 2020. For the year 2020, the projected figure for average life expectancy for both sexes is 75.0 years, as compared with the base estimate of 73.1 years in 1976 (Table 10). For males separately, the life expectancy value set for 2020 is 70.7 years, as compared with 69.1 years for 1976. The corresponding figures for females are 79.4 and 77.0. These figures imply a modest continuation of the divergence between male and female death rates and life expectancies that has been observed so far in this century.

21/ Death rates were assumed to decline at different rates at different ages between 1976 and 2050. It is estimated that the average percent decline in age-specific death rates for this period was 17 percent. This figure was obtained as the difference between the age-adjusted death rates calculated on the complements of 5-year survival rates in 1976 and 2050.

Evaluation of earlier official projections of mortality and the older population. -- In view of the widespread use of the Census Bureau's projections of the older population, it is useful to review the "accuracy" of past projections of the older population and the underlying projections of mortality. For this purpose the projections of the number of elderly persons for 1975 and 2000, included in the sets of projections published in the last 25 years or so by the Census Bureau, have been compared with the current estimate for 1975 and with the latest projections for the year 2000 (Table 11).

The projections of the population 65 years and over for 1975 published at various dates from August 1953 to December 1972 varied from 20.7 million (August 1953 and October 1955) to 22.2 million (December 1972). These figures differed from the current estimate for 1975 (22.4 million) by 7.9 percent and 1.1 percent, respectively. In all cases the projections fell below the curent estimate. One of the earliest projections in this series (November 1958) showed a relatively low deviation from the current estimate, 2.4 percent. Except for this figure, the percent deviation generally declined as the publication date approached 1975. The corresponding percent "errors" for the projections of the population 70 and over were generally similar or somewhat smaller. The differences between the past projections and the current estimate for 1975 represent a combination of the difference in the allowance for immigration and in the census counts for the adult population (the census counts being in error also) as well as in allowances for mortality.

There is presumably great interest now in the accuracy of the projections for the year 2000. We do not, of course, have current figures for evaluating the projections for this year, but we can examine the deviation of the projections

published in July 1964 to October 1975 from the latest projection for 2000, 31.8 million, published in July 1977. All projections fell below the latest figure and generally the projections had to be revised upward when a new set of projections was prepared. The differences between the various projections and the 31.8 million varied from 4 percent to 11 percent. The projections approximated 28-29 million until 1975 and 30-1/2 million in 1975, when the Census Bureau introduced a new set of mortality projections. The various projections for ages 70 and over in 2000 show a similar pattern of differences from the latest projection.

The latest projection of the population 65 and over for the year 2000 (31.8 million) is 4 percent greater than the last previous projection (30.6 million), and the latest projection of the population 65 and over for the year 2020 (45.1 million) is 5 percent greater (42.8 million). These differences reflect mainly the lower mortality of the 1972-76 period than anticipated and the use of more favorable mortality rates for future years.

Mortality trends are difficult to predict although they present a much smaller problem for projections of population than do projections of fertility trends. Employing a single assumption of regular small declines in mortality rates at the older ages is no longer a safe course to follow. Death rates may decline at different rates at successive periods or even rise, as they have in the last several decades and as fertility has done, although the reasonable bounds are much narrower for mortality than fertility in the short term. These new uncertainties suggest the desirability of making alternative assumptions regarding future mortality, as has been done for fertility.

Although it would be desirable to hit the future population on target, this is not to be expected. Happily, the kinds of errors in the projections

of mortality that the Census Bureau has made are far smaller in their impact on population size and structure, and hence less problematic, than the kind of errors normally associated with projections of fertility, the young population, and even the total population. In spite of the errors in the mortality projections, the Census Bureau projections of the elderly population have tended to reflect the future size of this group, its fluctuations, and its rate of increase reasonably well. Policy formulation and administrative action based on the population numbers as projected would not be seriously prejudiced by their "errors."

The percentage of the population 65 and over projected today for the year 2000 is substantially higher than was projected for this group in past years. The principal reason for the earlier understatement of the percentage has been the failure to project fertility satisfactorily for the intervening period. If the lower fertility assumptions employed now for the year 2000 were combined with the earlier projections of the number of elderly persons, the resulting percentages of elderly persons for the year 2000 would be much closer to the latest projections of the percentage.

Alternative analytical and theoretical models of mortality. -- It is of value in understanding the possible influence of future changes in mortality on population size and structure to posit various alternative mortality assumptions, including some which are relatively unrealistic or even highly theoretical. The purpose of such an exercise is not primarily to make alternative predictions; it is to aid in elucidating the role of mortality declines as a factor affecting population size and structure. Such mortality

series may also serve to measure the adequacy and "robustness" of the principal series of mortality projections. Four analytical or theoretical series of projections were developed for these purposes. They are:

(1) Death rates of 1976 remain unchanged.

(2) Death rates decline twice as rapidly between 1976 and 2050 as in Census Bureau projections.

(3) Death rates of 1976 are reduced by one-half in 2050.

(4) Death rates of 2050 are zero ("gradual immortality").

In all series, the death rates were derived for intermediate years by geometric interpolation. These death rates were combined with the three fertility assumptions and the single immigration assumption of the Census Bureau projections to derive new population projections. The effect of still different fertility, mortality, and net immigration assumptions (e.g., 300,000 net immigration per year) may be derived by interpolation of the appropriate population series or of the appropriate summary measures.

The first series provides an analytic "zero" base for measuring the number of lives saved by the improvement in death rates assumed in the various other series. Series (2) and (3), representing much more extreme assumptions than the Census Bureau series, are viewed as somewhat unrealistic. They are designed to evaluate the sensitivity of the population parameters to alternative mortality assumptions. The fourth series, "gradual immortality," aids in focusing on a possible trajectory of mortality and population change resulting from radical declines in mortality in the next several decades.

The effect of these alternative fertility and mortality assumptions on a range of measures bearing on the size and structure of the future elderly population in 2000 and 2020 has been examined. These measures are: the number of persons 65 and over and 75 and over and their percent increases, the proportion of persons 65 and over, the proportion of 75-year-olds among 65-year-olds, the numeral gap between the sexes, the relative number of elderly males and females, and so-called societal and familial aged dependency ratios. For several of these measures the choice of fertility assumption has no effect in the next half century, such as the number 65 and over, the number 75 and over, the male-female difference, the sex ratio of the population 65 and over, and the ratio of persons 65-79 to persons 45-49 (familial dependency ratio). For the proportion 65 and over and the ratio of persons 65 and over to persons 18-64 (societal dependency ratio), both the fertility assumption and the mortality assumption affect the measure. We focus particularly on the comparative variation resulting from the three different fertility series, on the one hand, and the Census Bureau series on mortality, the series doubling the Census Bureau rate of decline in death rates, and the series reducing the initial death rates by one-half in 2050, on the other.

The projected decline in death rates in the Census Bureau series added some 900,000 persons (3 percent) to the population 65 and over in the year 2000 and some 2.8 million (7 percent) in the year 2020 (Table 12). As a result of the net immigration assumed, some 370,000 persons (1.2 percent) were added to the number in 2000 and 1.7 million persons (4 percent) were added in 2020. If the assumed decline in death rates were twice as rapid, the elderly population would be substantially larger at both dates; the additions to the Census Bureau projections would be

1.5 million in 2000 and 4.4 million in 2020. Reducing the current rates by half would add even more elderly persons.

The percent 65 and over would also be raised under the alternative mortality series, but the increases tend to be small. If death rates were assumed to decline twice as rapidly as originally, the percent would be 12.6 instead of 12.2 in 2000, and 16.5 instead of 15.5 in 2020, under the middle fertility series. The fertility assumption has a much greater effect on the percent 65 and over than the mortality assumption; the original projections for 2000 vary from 11.3 to 12.9. In fact, the effect of the immigration assumption is as great as the effect of the mortality assumption, albeit in the opposite direction.

Note, however, that lower mortality per se does not account for the higher percent of elderly; rather it is the secondary assumption that larger mortality declines, and hence larger increases in survival rates, will occur at the older ages, than at the younger ages. This assumed pattern of declines in mortality would result in larger percent increases in the population at the older ages than at the younger ages and, hence, a rise in the proportion of the population at the older ages.

Uniform <u>percentage</u> reductions in death rates, such as are implied in set (3) and (4), consistently result in higher proportions of the elderly. They necessarily produce larger <u>absolute</u> decreases in death rates, and larger <u>percentage</u> increases in survival rates, at the older ages than at the younger ages. The rise in the proportion of the elderly would be reinforced by declining fertility. Under the assumption that death rates are cut in half by 2050, the percent over 65 would rise to 12 to 13-1/2 (depending on

the fertility assumption) in 2000 (as compared with the Census Bureau projection of 11-1/2 to 13), and to 14 to 19-1/2 in 2020 (as compared with the Census Bureau projection of 12-1/2 to 18). Under an assumption of "gradual immortality" some 20 to 23 percent of the population would be over 65 in the year 2000; for 2020 the percents are higher and the range is wider, 28 to 37. It seems clear that the proportion of elderly persons in future years will not be greatly affected by the choice of mortality assumption, unless that assumption is a radical one, but that the choice of fertility assumption can have a significant effect.

The alternative assumptions on mortality have little effect on the proportion of 75-year-olds of all 65-year-olds in 2000, and only an extreme reduction in death rates (e.g., 50-percent reduction) would substantially change the proportion in 2020. The immigration assumption has practically no effect on this ratio.

The ratio of elderly persons to "working-age" persons would tend to be slightly higher with lower mortality rates. Mortality would share with fertility much of the influence in affecting the ratio in 2000, but would have relatively little effect in 2020. This shifting role of mortality is a result of the fact that the numerator of the ratio at both these dates is influenced only by the mortality level while the denominator is influenced by fertility in an increasing degree as time passes.

The excess of elderly females over elderly males is not seriously affected by the mortality assumption to 2000, but in the long run the pattern of declines in mortality by age and sex and the extent of the decline have a

large effect on the size of the difference. Similarly the sex ratio of the elderly may fall or rise in the long run, depending on the age-sex pattern of the declines in death rates and the rate of decline.

In sum, reasonable alternative possibilities for declines in death rates (i.e., barring the most extreme assumptions), with allowance for alternative levels of fertility, do not substantially change the picture with regard to the parameters of the elderly population for the next 25 years. but may do so over a longer period, such as 40 to 50 years.[22/]

SOME SOCIOECONOMIC IMPLICATIONS

The demographic changes mentioned have many important social and economic implications. I focus here on some of these, particularly those relating to the current and future requirements for health services.

Societal and Familial Aged Dependency Ratios

Societal dependency. -- The relative number of elderly persons (65 and over) and persons of the usual working ages (18 to 64), which roughly

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22/ Preston has also examined the possible changes in the U.S. population parameters with some extreme assumptions of declines in mortality. (Samuel H. Preston, Mortality Patterns in National Populations, New York, Academic Press, 1976, esp. Chapter 7). He shows that if deaths due to cardiovascular diseases were immediately eliminated, the size of the total population and the number of elderly people would increase tremendously. The proportion of elderly persons would increase sharply in the first few decades, and then would continue to increase more slowly for the next several decades. The increase in the proportion of the elderly resulting from the elimination of cancer would be far less than the corresponding increase from the elimination of cardiovascular diseases. Elimination of any important cause would also tend to raise the sex ratio of the elderly. For example, the present sex ratio of 69 males to 100 females would rise by several points in a single decade if cardiovascular diseases were immediately eliminated.

reflects the balance of elderly "dependents" to "producers", more than doubled between 1920 and 1960. The figure has been barely rising since then and is expected to continue increasing slowly in the next several decades (Table 13). The ratio was 18 per 100 persons 18 to 64 in 1976; it may rise only slightly to 20 by 1990, where it may remain for a few decades, and then it should rise sharply (26 in 2020, Series II) as the postwar birth cohorts reach 65 years of age. This is the period when support of the elderly by public funds, whether secured as Social Security taxes or general revenue (both being dispersed as intergenerational transfers), may become a serious problem of public finance.

Familial dependency. -- The trend in the relative numbers of persons 65 to 79 and persons 45 to 49 can be used to illustrate roughly the prospective shifts in the ratio of elderly parents to the children who would "support" them. This measure increased sharply and steadily between 1920 and 1976, when there were 156 persons 65 to 79 per 100 persons 45 to 49. A peak will be reached in 1980 at 180, and again in the year 2020 with a still higher figure of 216. Thus, the ratio of the number of elderly persons to the number of younger persons of the next generation will become more favorable at times and less favorable at others, with the most rapid shift to an unfavorable balance occurring in the second decade of the next century.

The fluctuations in these familial dependency ratios reflect mainly past trends in the number of births, which have tended to move in a wavelike fashion in the last several decades. For example, the very high

ratio in the year 2020 results from the combination of the relatively large (average annual) number of births in the postwar decade (population 65-74 years) and the small (average annual) number of births in the early seventies (population 45-49 years).

With declining or low fertility, elderly persons will have fewer brothers and sisters and fewer children than in the past to provide needed or desirable economic and psychological support. This will occur in spite of increasing survivorship of children and siblings. Past and prospective shifts in fertility, mortality, and age structure are obviously not the only factors affecting the problem of the support of the elderly, but the shifts in societal and familial dependency ratios suggest that the extent of the problem of familial and societal support of the aged will become greater at times than at present, and possibly serious after 2010.

There is the definite possibility of a condition of population stationarity in the United States in the next 75 years resulting from recent and prospective low fertility. Such a stationary population will be characterized by a smaller proportion of elderly persons who have living relatives of the same or next generation, a higher proportion of elderly persons in the population, and a higher ratio of aged persons to persons of the usual working ages. This situation suggests that Government may be expected to play a bigger part in the support of the elderly, particularly in providing health and other services.[23/]

23/ Ethel Shanas and Philip M. Hauser, "Zero Population Growth and the Family Life of Old People," Journal of Social Issues, Vol. 30, Number 4, 1974, pp. 79-91.

Provision of Health Care

The demographic changes identified will mean that the needs of the elderly will account for a larger and larger share of the health effort, resources, and budget. The aged are the largest users of health resources. They make more visits to physicians (per person) and use hospital facilities more frequently than any younger age group.[24/] Given the great increase in the number of elderly persons expected in the next half century and assuming even the same per capita demand for health care for each age-sex group in the future as at present, the total demand for health care will tend to increase greatly. The expected rise in the proportion of elderly persons, reflecting the relatively more rapid increase in the number of elderly persons than of younger-age persons, will augment greatly the relative demand for health care on the part of the elderly population in future years. The upward shift in the average age of the elderly, combined with the sharply increased demand for health care within the older age span, will add further to the increase in overall demand and to the elderly population's share.

We can, in fact, anticipate increasing utilization of health care resources per capita among the elderly in part because of the expected increase in the educational and income level of the elderly and their increased participation in broad health insurance plans. A more educated and affluent population of prospective older patients will tend to seek more comprehensive health care services and advanced methods of treatment, resorting more often to specialists and use of specialized equipment.

Given the relation of social isolation to emotional disorders and the prominence of emotional disorders among elderly persons, it may be

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24/ U.S. Public Health Service, Health, United States, 1976-77, 1978, esp. chapt. 1.

possible to trace a logical nexus between the small family system (low fertility, "nucleation" of families, and "individuation" of households), a large male-female mortality gap, and high internal migration rates of younger relatives, on the one hand, and the prevalance of emotional disorders among the elderly, on the other. Of course, any such relation is reinforced by low income, loss of the work role, poor physical health, and limited ambulatoriness on the part of many elderly persons.

Issues Relating to Sex Differences in Mortality

The large sex difference in mortality has a considerable impact on many aspects of our social life. In addition to the fact that it results in a large excess of women at the older ages, it tends to produce a high rate of widowhood and paternal orphanhood, major economic losses to families and society, and loss of familial psychological and social support for the surviving women. Its ultimate price in life dissatisfactions are immense and incalculable.

In view of the considerable differences between the mortality levels of males and females and the tremendous demographic, social, and economic consequences that flow from these differences, it is essential that we try to understand better the relative etiological roles of genetic and environmental factors in producing the differences. More needs to be learned about those aspects of the behavior and genetic makeup of males that make them more vulnerable than females to serious illness. Are there, for example, male-female differences in recognizing the need for, seeking, and accepting medical care? The conduct of KAP (knowledge-attitude-practice) studies for mortality, as has been done for fertility, may help

to provide an answer to this question. Can the physiological bases for the female advantage be more clearly identified?

Whether or not we can fully understand the underlying bases of the difference in the mortality of the sexes, its great magnitude, its persistence, and its many and profound consequences justify a major assault on the problem. Imaginative and wide-ranging programs should be launched with the prevention of premature death of males as a specific goal. The goal of greater sex equality in length of life may be viewed as sufficiently important to call for a course of preferential treatment for men.

Other Issues Relating to Mortality

The same issues as just presented for male-female mortality differences may be considered in relation to Black-White differences mutatis mutandis, although here the differences are not as marked and have been declining over time, the disadvantage is not consistently in one direction over the age span, and the social consequences are not as profound. The issues here relate primarily to the substantial excess of the mortality of Blacks over Whites at the ages below about age 75.

Various bioethical and other nonmedical considerations are involved in decisions regarding the allocation of funds for health research and provision of health care to elderly people. In particular, there is a problem of making decisions about the allocation of limited resources where different applications will have different payoffs in lives ultimately saved. Available funds are always assigned on a discretionary basis to different

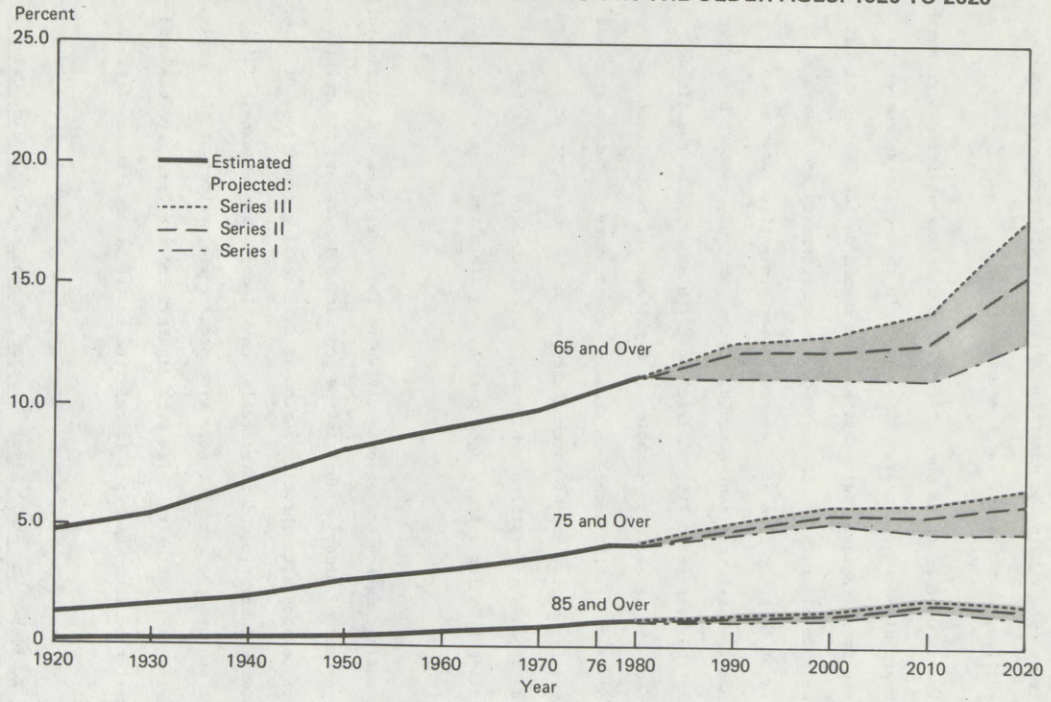
public programs and, within the domain of health, to different programs for health prevention, maintenance, and treatment.25/

One issue is whether it is more effective to allocate additional research funds for heart disease or cancer. One can begin to develop an answer to this question from available information. One should decide whether it is more desirable to maintain the life of very sick, extremely aged persons at all costs or to apply some of these funds for preventive purposes to younger adults. The latter course could, in the long run, be more effective in improving the average quality of life among the elderly and equalizing death rates of the sexes. For example, it might be more cost-effective (in terms of years of life added) to spend a larger share of community funds on mobile cardiac units, use of which might prevent the death of many middle-aged husbands and fathers, and less on drastic mechanical methods of life prolongation for extreme aged persons who are already very seriously ill.

As increasing numbers of persons survive to the older ages and particularly as the proportion of older persons in the population increases, the relative frequency of persons with chronic, seriously debilitating conditions of later life, including incurable and intractable conditions, will increase. This development suggest the need for more widespread confrontation of the complex bioethical issues relating to "life with dignity" and the "right to die" and for exploration of these concepts in relation to the general issue of basic human rights.

25/ Victor R. Fuchs, Who Shall Live? Health, Economics, and Social Change, Basic Books, New York, 1974.

Figure 1. PERCENT OF THE TOTAL POPULATION IN THE OLDER AGES: 1920 TO 2020



Note: Points are plotted for years ending in zero except for 1976.
Source: Table 2 and **Current Population Reports,** Series P-25, No. 311, 519, 614, 643, and 704.

Table 1. Total Population in the Older Ages and Decennial Increases: 1950 to 2040

(Numbers in thousands. Estimates and projections as of July 1. Figures refer to the total population of the 50 States and District of Columbia. A minus sign (-) denotes a decrease. See text for explanation of Series I, II, and III)

	60 years and over			65 years and over			70 years and over			75 years and over			85 years and over		
		Increase in preceding decade			Increase in preceding decade			Increase in preceding decade			Increase in preceding decade			Increase in preceding decade	
	Number	Amount	Percent	Number	Amount	Percent	Number	Amount	Percent	Number	Amount	Percent	Number	Amount	Percent
ESTIMATES															
1950	18,500	(X)	(X)	12,397	(X)	(X)	7,348	(X)	(X)	3,904	(X)	(X)	590	(X)	(X)
1960	23,828	5,328	28.8	16,675	4,278	34.5	10,394	3,046	41.5	5,621	1,717	44.0	940	350	59.3
1970	28,753	4,925	20.7	20,087	3,412	20.5	13,065	2,671	25.7	7,600	1,979	35.2	1,432	492	52.3
1976	32,244	(X)	(X)	22,934	(X)	(X)	14,654	(X)	(X)	8,741	(X)	(X)	1,966	(X)	(X)
PROJECTIONS 1/															
1980	34,724	5,971	20.8	24,927	4,840	24.1	16,227	3,162	24.2	9,434	1,834	24.1	2,294	862	60.2
1990	40,184	5,460	15.7	29,824	4,897	19.6	19,803	3,576	22.0	12,021	2,587	27.4	2,881	587	25.6
2000	41,973	1,789	4.5	31,822	1,998	6.7	22,630	2,827	14.3	14,386	2,365	19.7	3,756	875	30.4
2010	49,850	7,877	18.8	34,837	3,015	9.5	23,211	581	2.6	15,060	674	4.7	4,575	819	21.8
2020	63,265	13,415	26.9	45,102	10,265	29.5	29,126	5,915	25.5	16,975	1,915	12.7	4,776	201	4.4
2030	70,737	7,472	11.8	55,024	9,922	22.0	37,936	8,810	30.2	23,170	6,195	36.5	5,681	905	18.9
2040 (II)	69,806	-931	-1.3												
Range (III)	68,566	-2,171	-3.1	54,925	-99	-0.2	40,774	2,838	7.5	27,907	4,737	20.4	7,980	2,299	40.5
Range (I)	71,445	708	1.0												

(X) Not applicable.

1/ Base date of projections is July 1, 1976.

Source: U.S. Bureau of the Census, Current Population Reports, Series P-25, Nos. 311, 519, 614, 643, and 704.

Table 2.—Percent of the Total Population at the Older Ages, by Sex: 1950 to 2020

(Estimates and projections as of July 1. Based on totals including Armed Forces overseas. See text for explanation of Series I, II, and III)

Age and sex	1950	1960	1970	1976	Projections 1/ 1980 II	1980 Range I-III	2000 II	2000 Range I-III	2020 II	2020 Range I-III
ALL RACES										
Both sexes										
60 years and over	12.1	13.2	14.1	15.0	15.6	15.5-15.7	16.1	14.8-17.1	21.8	17.9-25.0
65 years and over	8.1	9.3	9.9	10.7	11.2	11.1-11.3	12.2	11.3-12.9	15.5	12.7-17.8
70 years and over	4.8	5.8	6.4	6.8	7.3	7.2-7.4	8.7	8.0-9.2	10.0	8.2-10.2
75 years and over	2.6	3.1	3.7	4.1	4.2	4.2-4.3	5.5	5.1-5.9	5.9	4.8-6.7
85 years and over	0.4	0.5	0.7	0.9	1.0	1.0-1.0	1.4	1.3-1.5	1.6	1.3-1.7
Male										
60 years and over	11.8	12.4	12.6	13.1	13.6	13.5-13.7	13.8	12.7-14.7	19.3	15.7-22.3
65 years and over	7.7	8.5	8.5	9.0	9.3	9.3-9.4	10.0	9.2-10.7	13.2	10.7-15.2
70 years and over	4.5	5.2	5.3	5.5	5.8	5.7-5.8	6.8	6.2-7.2	8.0	6.5-9.2
75 years and over	2.3	2.7	3.0	3.1	3.1	3.1-3.2	4.0	3.7-4.2	4.3	3.4-4.9
85 years and over	0.3	0.4	0.5	0.6	0.7	0.6-0.7	0.8	0.8-0.9	0.9	0.8-1.1
Female										
60 years and over	12.5	14.1	15.6	16.8	17.6	17.4-17.7	18.3	16.9-19.3	24.1	20.0-27.5
65 years and over	8.6	10.0	11.2	12.3	13.0	12.9-13.1	14.3	13.2-15.1	17.8	14.7-20.3
70 years and over	5.[illegible]	6.3	7.5	8.1	8.8	8.7-8.8	10.5	9.7-11.1	12.0	9.9-13.6
75 years and over	[illegible].8	3.5	4.4	5.0	5.3	5.3-5.3	7.0	6.5-7.4	7.4	6.1-8.4
85 years and over	0.5	0.6	0.9	1.2	1.4	1.4-1.4	2.0	1.9-2.1	2.3	1.9-2.6

1/ Base date of projections is July 1, 1976.

Source: U.S. Bureau of the Census, Current Population Reports, Series P-25, Nos. 311, 519, 614, 643, and 704.

Table 3. Percent Distribution of the Population 65 Years Old and Over by Age: 1950 to 2020

Age	1950	1960	1970	1976	Projections				
					1980	1990	2000	2010	2020
65 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
65 to 69 years	40.7	37.7	35.0	36.1	34.9	33.6	28.9	33.4	35.4
70 to 74 years	27.8	28.6	27.2	25.8	27.3	26.1	25.9	23.4	26.9
75 to 79 years	17.4	18.5	19.2	17.7	17.3	18.4	20.1	17.0	16.8
80 to 84 years	9.3	9.6	11.5	11.9	11.3	12.2	13.3	13.1	10.2
85 years and over	4.8	5.6	7.1	8.6	9.2	9.7	11.8	13.1	10.6

Source: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 311, 519, 614, 643, and 704.

Table 4. Sex Ratios of the Population, by Broad Age Groups: 1950 to 2020

(Males per 100 females, Estimates and projections as of July 1. Figures include Armed Forces overseas)

Age and projection series	1950	1960	1970	1976	Projections 1980	1990	2000	2010	2020
All ages.....II	99.3	97.0	94.8	94.8	95.0	94.8	94.6	94.4	93.8
Range.....I					95.1	95.2	95.4	95.7	95.7
III					94.9	94.5	94.0	93.5	92.4
Under 15 years	103.8	103.4	103.9	104.2	104.5	105.1	105.2	105.1	105.1
15 to 29 years	98.7	97.7	97.8	100.3	101.3	101.3	102.1	102.1	102.1
30 to 44 years	97.4	95.5	95.2	95.8	96.6	97.2	96.7	96.8	97.3
45 to 59 years	99.8	96.9	93.4	94.8	95.3	95.1	95.9	95.4	95.3
60 to 64 years	100.4	91.2	87.7	87.9	87.9	98.8	89.9	91.1	90.9
65 to 69 years	94.0	87.8	80.7	79.3	79.7	80.5	82.4	82.4	83.2
70 to 74 years	91.3	85.3	73.9	73.5	72.4	72.9	74.6	74.8	75.9
75 to 84 years	85.0	77.4	65.9	61.0	60.3	59.6	59.9	60.7	61.4
85 years and over	70.0	63.8	53.2	47.0	44.7	40.9	39.4	38.8	38.5
65 years and over	89.5	82.6	72.0	69.0	68.2	67.3	66.6	67.0	69.3
75 years and over	82.6	75.0	63.3	57.7	56.2	54.7	54.0	53.4	54.2

Source: U.S. Bureau of the Census, Current Population Reports, Series P-25, Nos. 311, 519, 614, 643, and 704.

Table 5. Life Expectancy at Birth and at Age 65, by Race and Sex: 1900 to 1976

Race and year	At birth				At age 65			
	Both Sexes	Male	Female	Difference	Both Sexes	Male	Female	Difference
All Races								
1900-02	49.2	47.9	50.7	2.8	11.9	11.5	12.2	0.7
1939-41	63.6	61.6	65.9	4.3	12.8	12.1	13.6	1.5
1954	69.6	66.7	72.7	5.0	14.4	13.1	15.7	2.2
1968	70.2	66.6	74.0	7.4	14.6	12.8	16.3	3.5
1976	72.8	69.0	76.7	7.7	16.0	13.7	18.0	4.3
White								
1900-02	49.7	48.2	51.1	2.9	11.9	11.5	12.2	0.7
1939-41	64.9	62.8	67.3	4.5	12.8	12.1	13.6	1.5
1954	70.5	67.4	73.6	6.2	14.4	13.1	15.7	2.6
1968	71.1	67.5	74.9	7.4	14.7	12.8	16.4	3.6
1976	73.5	69.7	77.3	7.6	16.1	13.7	18.1	4.4
Black and other races								
1900-02	33.8	32.5	35.0	2.5	10.9	10.4	11.4	1.0
1939-41	53.9	52.3	55.6	3.3	13.0	12.2	13.9	1.7
1954	63.4	61.0	65.8	4.8	14.6	13.5	15.7	2.2
1968	63.7	60.1	67.5	7.4	13.7	12.1	15.1	3.0
1976	68.3	64.1	72.6	8.5	15.8	13.8	17.6	3.8
White-Black difference								
1900-02	15.9	15.7	16.1	X	1.0	1.1	0.8	X
1939-41	11.0	10.5	11.7	X	-0.2	-0.1	-0.3	X
1954	7.1	6.4	7.8	X	-0.2	-0.4	-	X
1968	7.4	7.4	7.4	X	1.0	0.7	1.3	X
1976	5.2	5.6	4.7	X	0.3	-0.1	0.5	X

(X) Not applicable.

Source: National Center for Health Statistics (U.S. Public Service) and the U.S. Bureau of the Census. For 1976, "Advance Report- Final Mortality Statistics, 1976," Monthly Vital Statistics Report, Vol. 26, No. 12, Supplement (2), March 1978.

Table 6. Death Rates for the Population 55 Years Old and Over, by Age: 1940 to 1977

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 1/	17.0	37.2	82.9	195.8	61.4
1976 (prov.)	14.8	31.4	73.2	156.1	54.2
1976	14.8	31.3	73.3	155.7	54.3
1977 (prov.)	14.3	30.5	71.5	145.9	52.6
PERCENT CHANGE					
1940-54	-21.6	-21.7	-23.	-23.0	-18.8
1954-68	-2.3	-1.8	-3.6	+7.8	+4.8
1968-77	-15.9	-18.0	-13.8	-25.5	-14.3

1/ Official estimates for 1968 have been revised by the Census Bureau on the basis of revised population estimates.

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

Table 7. Ratios of Male to Female Death Rates for the Population 55 Years Old and Over, by Age: 1900 to 1976

Year	55 to 64 years	65 to 74 years	75 to 84 years	85 years and over	65 years and over
1900.....	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.....	2.07	1.88	1.46	1.18	1.44
1976.....	1.99	1.97	1.58	1.26	1.46

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, for 1940 and 1954, and "Advance Report - Final Mortality Statistics," Monthly Vital Statistics Report, Vol. 26, No. 12, Supplement (2), March 1978.

Table 8. Death Rates for the Ten Leading Causes of Death for Ages 65 and Over, by Age: 1976

(Deaths per 100,000 population)

Cause of death by rank	65 years and over	65 to 74 years	75 to 84 years	85 years and over
All causes	5,428.9	3,127.6	7,331.6	15,486.9
1. Diseases of the heart	2,393.5	1,286.9	3,263.7	7,384.3
2. Malignant neoplasms	979.0	786.3	1,248.6	1,441.5
3. Cerebrovascular diseases	694.6	280.1	1.014.0	2,586.8
4. Influenza and pneumonia	211.1	70.1	289.3	959.2
5. Arteriosclerosis	122.2	25.8	152.5	714.3
6. Diabetes mellitus	108.1	70.0	155.8	219.2
7. Accidents	104.5	62.2	134.5	306.7
Motor vehicle	25.2	21.7	32.3	26.0
All other	79.3	40.4	102.2	280.7
8. Bronchitis, emphysema and asthma	76.8	60.7	101.4	108.5
9. Cirrhosis of liver	36.5	42.6	29.3	18.0
10. Nephritis and nephrosis	25.0	15.2	34.1	64.6
All other causes	677.5	427.8	908.6	1,683.8

Source: National Center for Health Statistics (U.S. Public Health Service), "Advance Report--Final Mortality Statistics, 1976," Monthly Vital Statistics Report, Vol. 26., No. 12, Supplement (2), March 1978; and unpublished data provided by the National Center for Health Statistics.

Table 9. Gain in Life Expectancy from Eliminating Specified Causes of Death and Chance of Eventually Dying from These Causes: 1969-71

Cause of death	Gain in life expectancy (in years)		Chance of eventually dying	
	At birth	At age 65	At birth	At age 65
Major cardiovascular - renal diseases	11.8	11.4	.588	.672
Diseases of the heart	5.9	5.1	.412	.460
Cerebrovascular diseases	1.2	1.2	.122	.149
Malignant neoplasms[1/]	2.5	1.4	.163	.145
Motor vehicle accidents	0.7	0.1	.020	.006
All other accidents	0.6	0.1	.026	.018
Influenza and pneumonia	0.5	0.2	.034	.037
Diabetes mellitus	0.2	0.2	.020	.021
Infective and parasitic diseases	0.2	0.1	.007	.005

1/ Including neoplasms of lymphatic and hematopoietic tissues.

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

Table 10. Recent and Projected Values for Life Expectancy at Birth and at Age 65 for the United States and Comparative International Values

Year	At birth				At age 65			
	Both sexes	Male	Female	Difference 1/	Both sexes	Male	Female	Difference 1/
1973 a/	71.3	67.6	75.3	7.7	15.3	13.1	17.2	4.1
1974 b/	71.9	68.2	75.9	7.7	15.6	13.4	17.5	4.1
1975 c/	72.5	68.7	76.5	7.8	16.0	13.7	18.0	4.3
1976 d/	72.8	69.0	76.7	7.7	16.0	13.7	18.0	4.3
Projections e/								
1976 (Base)	73.1	69.1	77.0	7.9	16.0	13.8	18.4	4.6
2000	74.1	70.0	78.3	8.3	16.8	14.2	19.0	4.8
2020	75.0	70.7	79.4	8.7	17.2	14.5	19.8	5.3
2050	76.4	71.8	81.0	9.2	18.0	15.0	20.7	5.7
Best country composite, 1974	76.6	73.8	79.4	5.6	17.4	15.5	18.8	3.3
Sweden, 1974	75.1	72.2	78.0	5.8	16.0	14.1	17.5	3.4
Difference, United States and best country composite, 1974	-4.7	-5.6	-3.5	2.1	-1.8	-2.1	-1.3	0.8

1/ Excess of female over male value.

Sources:

a/ National Center for Health Statsitics, "Final Mortality Statistics, 1973," Monthly Vital Statistics Report, Vol. 23, No. 11, Supplement (2), February 1975.

b/ National Center for Health Statistics, "Final Mortality Statistics, 1974," Monthly Vital Statistics Report, Vol. 24, No. 11, Supplement, February 1976.

c/ National Center for Health Statistics, "Final Mortality Statistics, 1975," Monthly Vital Statistics Report, Vol. 25, No. 11, Supplement, February 11, 1977.

d/ National Center for Health Statistics, "Final Mortality Statistics, 1976," Monthly Vital Statistics Report, Vol. 26, No. 12, Supplement (2), March 30, 1978.

e/ U.S. Bureau of the Census, "Projections of the Population of the United States: 1977 to 2050," Current Population Reports, Series P-25, No. 704, July 1977, and unpublished data.

Table 11. Comparison of Estimates and Projections of Populations 65 Years and Over and 70 Years and Over: 1975 and 2000

(Numbers in thousands. Estimates and projections as of July 1)

Age group and projection	1975			2000		
	Population	Difference from current estimate		Population	Difference from latest projection 2/	
		Amount	Percent		Amount	Percent
65 years and over						
Current estimate 1/	22,420	(X)	(X)	(X)	(X)	(X)
Projections (P-25 report number and date of issue): 3/						
704 (July, 1977)	(X)	(X)	(X)	31,822	(X)	(X)
601 (Oct., 1975)	22,330	-90	-0.4	30,600	-1,222	-3.8
493 (Dec., 1972)	22,170	-250	-1.1	28,842	-2,980	-9.4
470 (Nov., 1971)	21,859	-561	-2.5	28,839	-2,983	-9.4
448 (Aug., 1970)	21,503	-917	-4.1	28,837	-2,985	-9.4
381 (Dec., 1967)	21,160	-1,260	-5.6	28,184	-3,638	-11.4
286 (July, 1964)	21,172	-1,248	-5.6	28,199	-3,623	-11.4
187 (Nov., 1958)	21,872	-548	-2.4	(NA)	(NA)	(NA)
123 (Oct., 1955)	20,655	-1,765	-7.9	(NA)	(NA)	(NA)
78 (Aug., 1953)	20,689	-1,731	-7.7	(NA)	(NA)	(NA)
70 and over						
Current estimate 1/	14,319	(X)	(X)	(X)	(X)	(X)
Projections (P-25 report number and date of issue): 3/						
704 (July, 1977)	(X)	(X)	(X)	22,630	(X)	(X)
601 (Oct., 1975)	14,233	-86	-0.6	21,577	-1,053	-4.7
493 (Dec., 1972)	14,484	+165	+1.2	20,310	-2,320	-10.3
470 (Nov., 1971)	14,169	-150	-1.0	20,226	-2,404	-10.6
448 (Aug., 1970)	13,983	-336	-2.3	20,306	-2,324	-10.3
381 (Dec., 1967)	13,690	-629	-4.4	19,859	-2,771	-12.2
286 (July, 1964)	13,688	-631	-4.4	19,866	-2,764	-12.2
187 (Nov., 1958)	14,089	-230	-1.6	(NA)	(NA)	(NA)
123 (Oct., 1955)	13,117	-1,202	-8.4	(NA)	(NA)	(NA)
78 (Aug., 1953)	13,131	-1,188	-8.3	(NA)	(NA)	(NA)

X Not applicable.

NA Not available.

1/ Current Population Reports, Series P-25, No. 721, April 1978.

2/ Latest projection is 31,822,000, published in Current Population Reports, Series P-25, No. 704, July 1977.

3/ Base date may be a few months to one and a half years prior to publication date and final death statistics used may relate to a calendar year two to three years before the publication date.

Table 12. Parameters for the Elderly Population under Alternative Fertility and Mortality Assumptions: 1976, 2000, and 2020

(Numbers in thousands)

Population parameter	1976	2000					2020				
		Census Bureau[1]	Mortality assumption				Census Bureau[1]	Mortality assumption			
			Set 1	Set 2	Set 3	Set 4		Set 1	Set 2	Set 3	Set 4
1) Population, 65 years and over	22,934	31,822	30,923	33,278	33,855	65,799	45,102	42,327	49,483	51,301	129,691
2) Percent increase over 1976	(X)	38.8	34.8	45.1	47.6	186.9	96.7	84.6	115.8	123.7	465.5
3) Population, 75 years and over	8,741	14,386	13,791	15,224	15,916	42,583	16,975	15,316	19,458	21,495	90,607
4) Percent increase over 1976	(X)	64.6	57.8	74.2	82.1	387.2	94.2	75.2	122.6	145.9	936.6
Percent 65 and over											
5) Series I (High)	10.7	11.3	11.0	11.6	11.9	20.1	12.7	12.1	13.6	14.1	28.3
6) Series II (Medium)		12.2	11.9	12.6	12.9	21.6	15.5	14.8	16.5	17.2	33.0
7) Series III (Low)		12.9	12.7	13.3	13.6	22.8	17.8	17.0	18.9	19.6	36.6
8) Percent, 75 years and over / 65 years and over	38.1	45.2	44.6	45.7	47.0	64.7	37.6	36.2	39.3	41.9	69.9
9) Excess of females over males, 65 years and over	4,207	6,388	6,151	6,915	6,181	5,221	8,166	7,544	9,217	7,462	3,865
10) Sex ratio, 65 years and over	69.0	66.6	66.8	65.6	69.1	85.3	69.3	69.7	68.6	74.6	94.2
11) Ratio (per 100) 65 to 79 years / 45 to 49 years	156.4	125.5	123.3	128.9	129.5	172.0	215.9	207.6	229.1	229.4	303.1
Ratio (per 100) 65 years and over / 18 to 64 years											
12) Series I (High)	18.1	19.5	19.0	20.3	20.7	38.7	22.7	21.5	24.5	25.6	60.8
13) Series II (Medium)		19.9	19.4	20.7	21.1	39.5	26.0	24.6	28.0	29.2	69.1
14) Series III (Low)		20.2	19.7	21.0	21.5	40.1	28.6	27.1	30.8	32.2	75.7

X Not applicable

1/ Current Population Reports, Series P-25, No. 704, July 1977.

2/ Set 1 Death rates of 1976 remain unchanged.
Set 2 Death rates decline twice as rapidly between 1976 and 2050 as in latest Census Bureau projections.
Set 3 Death rates of 1976 are reduced by one-half in 2050.
Set 4 Death rates of 2050 are zero.

Table 13. Familial Aged Dependency Ratios and Societal Aged Dependency Ratios: 1920 to 2020

(Figures are shown for July 1 of the year indicated. Ratios for 1940 and later years include Armed Forces overseas)

Year	Population 65 to 79 years / Population 45 to 49 years	Population 65 years and over / Population 18 to 64 years
Estimates		
1920	0.76	.08
1930	0.82	.09
1940	0.95	.11
1950	1.16	.13
1960	1.29	.17
1970	1.35	.17
1976	1.56	.18
Projections		
1980	1.80	.18
1990	1.68	.20
2000 II	1.25	.20
2000 Range I		.20
2000 III		.20
2010 II	1.27	.20
2010 Range I		.19
2010 III		.21
2020 II	2.16	.26
2020 Range I		.23
2020 III		.29

Source: U.S. Bureau of the Census, Census of Population, 1930, General Report, Vol. II, table 7, and Current Population Reports, Series P-25, Nos. 311, 519, 614, 643, and 704; unpublished data for age group 45-49 for years 2010 and 2020.

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

STATEMENT

by

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Before the

SELECT COMMITTEE ON AGING

and the

SELECT COMMITTEE ON POPULATION
UNITED STATES HOUSE OF REPRESENTATIVES

May 24, 1978

Thank you for inviting me to appear before you today. Much of the material I am going to talk about is from the special report on the elderly contained in Health, United States, 1976-1977. I am especially pleased to have the opportunity to present this material because it was designed especially to make data available to people who formulate policy.

You are fully aware of the decrease in mortality rates among older as well as younger people. (Tables 1 and 2) The result is that a higher proportion of the people in the United States are living to retirement age--and I'm afraid that for today I'll have to use the now out-moded definition of age 65--and an increasing proportion are living well beyond that age. Under the 1975 schedule of mortality, for example, 75 percent of all babies born in this country could be expected to reach their 65th birthday. Of the people reaching their 65th birthday, 88 percent can expect to survive to their 70th; 82 percent of those reaching 70 can expect to live to age 75 and 73 percent of those reaching age 75 can expect to live to age 80. At age 80, 63 percent can expect to have an 85th birthday. In other words, even if there is no change in mortality, rates, three-quarters of all babies born in the United States in 1975 could expect to live to age 65 and one-quarter to age 85.

Thus, not only is an increasing proportion of the United States population age 65 and over, but within that age group the proportion 65-74 is getting smaller while the proportion 75 and over (and 85 and older) is getting larger. This trend is expected to continue to the end of the century so that by the year 2000 it is projected that about 45 percent of the population 65 and older will be 75 and older in contrast with 38 percent in 1978.

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The decline in mortality rates and the resulting change in population composition raise two questions which I would like to address. The first is "Among elderly people, are there differences in health status and utilization of health services between the 'younger' (those 65-74) and 'older' (those 75 and over) people which may result in future increases in the use of medical services simply because of the projected change in age composition?" The second question is "Has providing more medical care and prolonging life already resulted in an increasingly dependent and sick elderly population?"

The answer to the first question is yes. The prevalence of chronic diseases and impairments and the utilization of medical services, both of which increase with age, do increase more rapidly beginning at about age 75. As a group, the people 75 and over need more medical care and other services if they are to continue to lead active lives than those ages 65-74, and they use more medical services.

Chronic conditions are, by definition, conditions that do not go away. Thus, their prevalence increases with age. Only 14 percent of the non-institutionalized people 65 and over report that they have no chronic conditions (and laboratory findings have indicated significant pathology for many elderly people who were not aware that they had diabetes, hypertensive heart disease, or coronary heart disease).

Almost half of the people 65 and over are limited in activity because of one or more chronic conditions. However, only 42 percent of the people ages 65-74 are limited in contrast with 56 percent of those 75 and over.

About 18 percent of all people 65 and over are unable to carry on their major activity because of a chronic condition but within the age group the proportion increases from 15 percent of the people 65-74 to 23 percent of those 75 and over (Table 3).

People 75 and over are more likely to have accidental injuries than those 65-74. This may be due partly to the loss of sensory ability which frequently accompanies aging. Defective visual acuity increases rapidly starting at age 40 and unfortunately the ability to correct for the defect decreases so that after age 75, even with correction, less than 20 percent of the people have "normal" vision. Ability to adapt to light changes also decreases leading to accidents when moving from light to dark rooms or from outside to inside.

Ability to hear, to taste, to smell decreases so that complaints about food tasting bitter or sour may be due, not to imagination, but to physical loss of ability to taste or smell food. As people age, they are less likely to have their own teeth. The loss of ability to eat and enjoy food can be a contributing cause to poor nutrition.

As a result of the increased prevalence of chronic conditions and impairments, and the greater impact of an illness of injury that might be relatively minor in a younger person, older people do use more medical services than younger ones. Most important from the standpoint of cost, older people use vastly more inpatient hospital care.

On the average, the older people are, the more likely they are to be hospitalized, and once in the hospital they stay longer.

We have often quoted the estimate of more than 4,000 days in the hospital for every 1,000 people 65 and over. The differences in hospital use within this age group are less well-known (Table 4).

People in their late 60's (ages 65-69) have just about 3,000 days per 1,000 persons, those in their late 70's (ages 75-79) have about 4,700 days per 1,000 people and people age 85 and over have, on the average, 8,300 days in the hospital for every 1,000 people that age.

The reasons elderly people are hospitalized vary widely. Some hospital episodes are for procedures which may enable elderly people to return to active lives--cataract surgery, repair of fractures, hernia repair, or insertion of an electronic heart device. And, it is essential to recognize that the frequency of these procedures has increased over the decade from the mid-1960's to the mid 1970's. (Table 5)

Some hospitalization is for illnesses which may strike at any age and from which people do recover. For example, ischemic (coronary) heart disease, fractures, and pneumonia are serious but not necessarily fatal among people 65 and over. In 1975-76, ischemic heart disease accounted for 13 percent of all the days elderly people spent in the hospital, fractures for 6 percent, and pneumonia for 3 percent.

Conditions which may eventually be fatal account for another part of the hospital care, but this care might give the person a longer life. Such care may be very expensive regardless of age. Malignant neoplasms (cancer,) for example, which accounted for 11 percent of the

days elderly people spend in the hospital, may be treated with surgery, radioactive or drug therapy, or by other methods which often require multiple hospitalizations.

Some of the hospital care is for terminal illness. The amount of hospital care is great in the last few months of life regardless of age. Since death rates increase with age and hospitalization so often precedes death, hospital utilization rates also increase with age.

The second mode of care which is relatively common for elderly people and where there is a large age differential is long-term institutional care.

At the beginning of 1974 about 961,000 people 65 years and over were in nursing homes or 44 residents for every 1,000 people age 65 and over. There were approximately 16,000 days of care per year for every 1,000 people 65 and over--four times the number of days in short-stay hospitals. (These are 1973-74 data but the preliminary data from 1976 indicate no major change.)

Use of nursing homes increases very rapidly with advancing age. There were only 12 residents of nursing homes for every 1,000 people ages 65-74. At ages 75-84, there were 59 residents for every 1,000 people. Among people who had had their 85th birthday, 237 per 1,000 (almost a quarter) were residents of nursing homes at the beginning of 1974. There were 86,400 days of care per year in nursing homes for every 1,000 people age 85 and over in 1973 in contrast to the 8,300 days in short-stay hospitals.

In general, the very old residents of nursing homes really cannot care for themselves and many would be difficult to care for at home. Hardening of the arteries was the most common primary diagnoses but they suffered from multiple chronic conditions and impairments.

About 70 percent of the nursing home residents who were 85 and over were senile, 43 percent had arthritis or rheumatism, and 40 percent had heart trouble. About 14 percent had glaucoma or cataracts, and 11 percent were mentally ill, had diabetes, and/or chronic back or spine trouble.

The heavy reliance on nursing homes by very old people is important to recognize because the charges in nursing care homes are rising even though it is still far less expensive than hospitalization. In 1964, the average monthly charge per resident was $212. The average monthly charge in 1973-74 was $495. Preliminary data for 1977 indicate that the average monthly charge was about $700 per resident. Many residents of nursing homes remain there for long periods. Unlike short-stay hospital care, long-term nursing home care is seldom paid for by Medicare and in 1973-74 only about half of the residents were financed by Medicaid. Therefore, the economic burden on the individual and her family can be very heavy.

Use of ambulatory medical care is higher among the elderly than among younger people. In 1975, about 79 percent of the people 65 and over had had a physician contact within the year and 69 percent within 6 months. Non-institutionalized elderly people had a physician contact (other than visits to hospital inpatients) on an average of 6.6 times a year.

But ambulatory medical care does not show the same rapid increase of use with advancing age that inpatient care does. Although people 75 and over were more likely to have had at least one medical contact during the year than people ages 65-74, the number of visits per person per year was about the same. Although we do not have data to demonstrate what happens, it is likely that the older the person is, the more likely he or she is to be moved to a hospital or nursing home when sick. If that happens, then the doctor visits would be to inpatients rather than ambulatory care.

When the physician in office-based practice report on visits made by elderly people, it is apparent that these office visits are for continuing on-going care and that chronic conditions are the reason for much of the ambulatory care just as they are for inpatient care. About 92 percent of the visits in 1975 were for patients who had been seen before; 46 percent were for routine care of a chronic condition and another 16 percent were for flareups of chronic conditons.

Ischemic heart disease and hypertension were each responsible for more visits of elderly people to office-based physicians than any other conditions, together accounting for 18 percent of all visits the elderly made to doctor's offices. Arthritis and rheumatism, eye diseases, and diabetes are other chronic conditions which acounted for many visits.

There are two more points which are important to mention before turning to the second question.

First, while the relationship between morbidity or level of health and utilization of medical services is a complex one, there is no question that elderly people with chronic conditions, who are limited in activity, or who perceive themselves as being in poor health are more likely to use medical services than others. In 1975, non-institutionalized elderly people in reported poor health were more than three times as likely to have been hospitalized in the preceding year as those in excellent health. They were five times as likely to have had ten or more physician visits during the year. At the other end of the scale, 28 percent of those reported to be in excellent health did not visit a physician at all during the year in contrast with 6 percent of those in poor health.

Less than half of the non-institutionalized elderly people in 1974 were reported to have any degree of activity limitation. Yet this 46 percent of the people accounted for 63 percent of all physician visits and 78 percent of all days elderly people spent in short-stay hospitals.

Similarly, Medicare enrollees who are limited utilize more services than those who are not. Only 7 percent of the enrollees in 1973 were confined to the house or to bed yet they utilized 14 percent of the physician services. Twelve percent of the Medicare enrollees had "health worse than others" yet they utilized 22 percent of the services.

With the rising costs of medical care and concerns about the possibility of over- utilization, it is important to recognize that medical services are being utilized to a greater extent by people

in relatively poor health than by those in relatively good health and that even people in good health require preventive care and care for acute illnesses.

Second, if the gap in the expectation of life continues to widen, the proportion of women in the elderly population will increase.

Changes in the composition of the elderly population could increase the overall levels of utilization of the specified medical services then in two ways if there is no change in the age-sex specific rates of utilization--(one) the larger proportion of the elderly population which is over age 75 or 85, where utilization rates for inpatient services are very high, could increase the levels of both hospital and nursing home use among the elderly and, (two) the larger proportion of women in those age groups, where the rates of utilization of nursing homes by women is very high, could increase the overall levels of nursing home use. (At age 85 and over, 270 out of every 1,000 women in contrast with 170 out of every 1,000 men were in nursing homes in 1973-74.)

The second question is: "Has providing more medical care and prolonging life already resulted in an increasingly dependent and sick elderly population?". The question needs to be addressed because, in part, reduced mortality may reflect the postponement of the deaths of individuals with severe chronic conditions. For instance, death rates from strokes have been declining markedly. To the extent that this decline is due to improved survival among individuals who have suffered a stroke, one might expect to find an increasing proportion of elderly with residual impairments. Improved survival of individuals with any major affliction could result in an increased prevalence of infirmity. On the basis of the examination of trends in a number of different indicators of the health of the elderly, we find little evidence of the deterioration of the overall health status of that population.

Certainly rates for the utilization of short-stay hospitals increased from 1965 to 1975. In 1965, there were 264 discharges and 3,400 days of care in short-stay hospitals for each 1,000 people 65 and over. In 1975, there were 359 discharges and 4,200 days of care. But the great increase in hospital utilization was during the year that Medicare

was implemented. It has been estimated that between the year before Medicare and the first year of Medicare the number of days of care per 1,000 elderly people increased by 9-16 percent. Since then, the increase in the discharge rate and the decrease in the length of stay have tended to cancel each other out so that the number of hospital days has not increased substantially.

Hospital surgical rates increased. In 1965, there were 76 operations for every 1,000 people 65 and over; in 1975, there were 155 operations per 1,000 elderly people. The rate was more than double. But cataract surgery rates more than doubled and arthoplasty (hip surgery) rates tripled. The rates of fracture and hernia repairs increased and insertion of electronic heart devices came into being. There are procedures which help people be less dependent.

The average number of ambulatory physician contacts by elderly people living in the community remained remarkably constant over the 10 years at about 6.6 physician contacts per year per person.

There were increases in utilization of both hospital and ambulatory by poor people. The number of physician contacts remained constant because the increased use by the elderly poor was accompanied by some decrease by the nonpoor. The proportion who had seen a physician within 2 years increased for both groups. The increase in hospital utilization was greater among the elderly poor than among the non-poor. From 1964 to 1975 discharge rates increased by 47 percent for the poor and 18 percent for the non-poor elderly. Financial barriers appear to have been lifted for poor people who were unable to pay for hospital and physician care before Medicare.

The elderly people who were not in institutions, especially poor people, have received more medical care during the decade from 1965 to 1975 than they had been receiving before 1965. It is likely that those in institutions were also receiving more medical and nursing care as staffing ratios increased and nursing homes were upgraded to meet Medicare and Medicaid requirements.

However, on the basis of the health status measures available to us, levels of disability have not increased among elderly people.

There has been no increase in short-term disability among non-institutionalized elderly people as measured by the number of days during the year that people modify their usual behavior because of illness. In 1965, the average number of days of restricted activity per year per elderly person was 39; in 1975, it was 38. The average number of days in bed was 14 in 1965 and 13 in 1975. The average number of days lost from work by employed elderly people actually decreased from 8 days in 1965 to 4 days in 1975--probably reflecting the ability of people in relatively poor health to retire earlier as benefits improve while those in relatively good health may continue working.

There was no change in the proportion of the elderly limited in mobility due to chronic conditions between the 2 years for which data are available. In both 1966 and 1972, limitation of mobility was reported for about 20 percent of the elderly.

The proportion of people 65 and over with any degree of limitation of activity appears to have increased from 1965 to 1975. All of the increase is due to the aging of that population.

The proportion unable to carry on their major activity appears to have increased somewhat. This is a measure highly associated with attitudes about work and what people consider their major activity to be. It is possible that a change in attitudes and an increasing proportion of people retiring because of disability is influencing this measure. The increase is restricted to men; there has not been an increase in the proportion of elderly women unable to carry on their major activity.

Finally, less than 10 percent of the people themselves report that they are in poor health. In response to the question "Compared to others your own age would you rate your health as excellent, good, fair, or poor?", two-thirds of the elderly people living in the community were reported to be in good or excellent health regardless of age. And the individual's self-assessment of health may be as important as his actual medical status in predicting general emotional state and behavior.

Thus for those elderly people living in the community and receiving their medical care in hospitals or physicians' offices, there does not appear to have been any decline in health status during the decade when death rates declined rapidly. Moreover, it does not appear that increasing proportions of the elderly population are being moved into long-term institutions owing to very severe illness.

What does seem to have occurred is that there was some increase in the proportion of the elderly in institutions between 1960 and 1970 (from 4 to 5 percent according to the two censuses). A great shift in the type of institution probably occurred in the late 1960's, and little change since then.

Unfortunately, the shift in the type of institution is not well documented but there is some evidence of what occurred. In 1960, 29 percent of the elderly residents of institutions were in mental hospitals and 63 percent were in homes for the aged and dependent. In 1970, the comparable figures were 12 percent and 83 percent respectively. In 1969, the only year for which data are available, 38 percent of the 37,000 elderly patients released from State and county mental hospitals were released to nursing homes or homes for the aged. At the beginning of 1974, 5 years later, 6 percent of the elderly people then residents of nursing homes had been in a mental or other specialty hospital immediately before entering their current nursing home.

Finally, neither the 1976 Survey of Institutionalized Persons nor the 1976 Nursing Home Survey show any increase in the proportion of elderly people in long-term care facilities in the 1970's. It appears likely that the use of nursing homes increased with the implementation of Medicaid, that changes in the way long-term care was paid for resulted in changes in the kinds of institutions people used, and that there has been no increase in institutionalization of elderly people since at least 1970.

In summary, there appears to be no evidence that the decline in death rates has resulted in a sick, dependent elderly population. The decline in mortality has resulted in a higher proportion of very old people among the elderly and very old people, as a group, do have more illness and functional disability and use more inpatient medical care than younger ones. However, when you compare each age group in 1975 with people that age in 1965, there has been remarkably little change.

It is safe to say that very old people will continue to have higher rates of illness and disability than younger ones and that as the proportion of the elderly population which is very old increases, there will be an increase in the demand for some form of long-term continuing care for these people.

From this, one cannot definitely project increased demand for nursing home or hospital in the future. There is a great deal of research right now and there are demonstration projects on alternative means of providing needed care, especially long-term care, to elderly people. If appropriate ways of providing the services outside nursing homes can be implemented, we might see a decline in the proportion of people in nursing homes.

If I can answer any questions, I will be glad to do so. Thank you for the opportunity to appear before you today.

Table 1. Death rates per 100,000 resident population age 65 and over for total population and age adjusted: United States, 1960, 1965, 1970, 1975

(Data are based on national vital registration system)

	1960	1965	1970	1975	1960	1965	1970	1975
	Death rates per 100,000 population age 65 and over							
	Unadjusted				Age adjusted			
BOTH SEXES								
All races	6,057.6	6,020.3	5,885.5	5,432.4	6,470.9	6,282.0	5,885.5	5,323.1
White	6,065.5	6,041.5	5,891.5	5,442.7	6,475.5	6,286.3	5,864.8	5,310.3
All other	5,961.8	5,786.0	5,821.5	5,348.4	6,330.5	6,134.0	6,015.2	5,493.8
Black	6,009.2	5,905.3	6,028.9	5,584.4	6,361.1	6,263.8	6,248.4	5,809.7
Other	5,257.5	4,290.2	3,779.7	3,146.8	5,940.0	4,534.5	3,780.0	2,985.0
MALES								
All races	7,083.7	7,240.3	7,203.5	6,702.7	7,712.1	7,751.6	7,490.2	6,953.6
White	7,103.4	7,279.2	7,233.8	6,735.3	7,744.7	7,794.9	7,515.5	6,988.6
All other	6,867.2	6,826.0	6,888.0	6,399.4	7,309.5	7,260.1	7,187.1	6,662.2
Black	6,928.4	6,984.0	7,179.0	6,767.6	7,375.1	7,450.3	7,534.2	7,137.0
Other	6,162.5	5,230.6	4,583.5	3,878.4	6,491.0	5,403.5	4,615.8	3,753.4
FEMALES								
All races	5,209.1	5,083.8	4,937.3	4,550.9	5,461.1	5,177.9	4,756.9	4,227.6
White	5,215.0	5,097.8	4,935.1	4,554.6	5,454.7	5,163.5	4,718.3	4,196.5
All other	5,149.8	4,921.9	4,965.6	4,511.3	5,461.6	5,207.9	5,074.7	4,569.7
Black	5,204.4	5,037.4	5,158.0	4,722.2	5,507.8	5,321.7	5,287.8	4,854.9
Other	4,025.8	3,124.0	2,731.6	2,396.2	4,629.8	3,458.4	2,685.7	2,199.6

NOTE: Rates were calculated for this paper and are not official rates.

SOURCES: Kovar, M.G., and Fingerhut, L.A.: Recent Trends in U.S. Mortality Among the Aged. Paper presented to the meeting of the Gerontological Society, San Francisco, Calif., Nov. 1977. Based on data from the National Center for Health Statistics; Vital Statistics of the United States, Vol. II Mortality 1960, 1965, and 1970; 1975 data to be published; U.S. Bureau of the Census: Current Population Reports Series P-25, Nos. 519, 614, and 643.

Table 2. Death rates per 100,000 resident population age 65 and over adjusted by population enumeration factors and age and enumberation adjusted: United States, 1960, 1970

(Data are based on national vital registration system)

	1960	1970	1960	1970	1960	1970	1960	1970
	Deaths rates per 100,000 population age 65 and over							
	Unadjusted		Age adjusted		Enumeration adjusted		Enumeration and age adjusted	
BOTH SEXES								
All races	6,057.6	5,885.5	6,470.9	5,885.5	5,982.3	5,815.2	6,412.3	5,741.2
White	6,065.5	5,891.5	6,475.5	5,864.8	5,973.6	5,816.8	6,390.2	5,725.8
All other	5,961.8	5,821.5	6,330.5	6,015.2	6,091.4	5,797.9	6,606.6	5,836.6
Black	6,009.2	6,028.9	6,361.1	6,248.4	6,143.5	5,998.0	6,636.7	6,000.8
Other	5,257.5	3,779.7	5,940.0	3,780.0	5,324.1	3,803.8	6,090.2	4,680.6
MALES								
All races	7,083.7	7,203.5	7,712.1	7,490.2	7,121.4	7,173.7	7,814.3	7,407.8
White	7,103.4	7,233.8	7,744.7	7,515.5	7,103.4	7,177.5	7,790.5	7,400.2
All other	6,867.2	6,888.0	7,309.5	7,187.1	7,331.5	7,132.7	8,011.1	7,414.5
Black	6,928.4	7,179.0	7,375.1	7,534.2	7,397.5	7,433.1	8,076.4	7,635.4
Other	6,162.5	4,583.5	6,491.0	4,615.8	6,573.3	4,751.2	7,315.2	6,697.4
FEMALES								
All races	5,209.1	4,937.3	5,461.1	4,756.9	5,071.4	4,850.8	5,322.6	4,591.8
White	5,215.0	4,935.1	5,454.7	4,718.3	5,072.3	4,854.5	5,303.5	4,572.5
All other	5,149.8	4,965.6	5,461.6	5,074.7	5,059.0	4,809.9	5,440.0	4,739.6
Black	5,204.4	5,158.0	5,507.8	5,287.8	5,132.0	4,977.5	5,510.8	4,889.2
Other	4,025.8	2,731.6	4,629.8	2,685.7	3,670.6	2,768.0	4,088.0	3,159.5

NOTE: Rates were calculated for the purpose of this paper and are not official rates.

SOURCES: Kovar, M.G., and Fingerhut, L.A.: Recent Trends in U.S. Mortality Among the Aged. Paper presented to the meeting of the Gerontological Society, San Francisco, Calif., Nov. 1977. Based on data from the National Center for Health Statistics; Vital Statistics of the United States, Vol. II Mortality 1960 and 1970; U.S. Bureau of the Census: Current Population Reports Series P-25, Nos. 519, 614, and 704.

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Table 3. Selected health status characteristics of noninstitutionalized persons 65 years of age and over, according to sex and age: United States, 1968-69 and 1976

(Data are based on household interviews of a sample of the civilian noninstitutionalized population and on the national vital registration system)

Age	1968-69			1976		
	Both sexes	Male	Female	Both sexes	Male	Female
	Percent unable to carry on major activity					
All ages 65 and over---	15.9	25.2	8.9	17.6	29.9	9.0
65-74 years----------	12.4	22.0	4.8	14.7	26.6	5.5
75 years and over----------	21.8	30.9	15.4	22.7	36.4	14.5
	Percent reporting poor health					
All ages 65 and over---	---	---	---	9.0	9.3	8.8
65-74 years----------	---	---	---	8.5	9.2	8.1
75 years and over----------	---	---	---	9.9	9.7	10.0
	Deaths per 1,000 resident population					
All ages 65 and over---	60.8	73.9	51.2	54.3	66.7	45.7
65-74 years----------	36.8	49.9	26.5	31.3	43.4	22.0
75 years and over----------	101.2	118.8	89.7	91.7	111.8	80.1

SOURCES: National Center for Health Statistics: Age patterns in medical care, illness, and disability, United States, 1968-1969, by C. Namey and R. Wilson. Vital and Health Statistics. Series 10, No. 70. DHEW Pub. No. (HSM) 72-1026. Health Services and Mental Health Administration. Washington. U.S. Government Printing Office, April, 1972; Division of Health Interview Statistics, data from the Health Interview Survey, 1976; Vital Statistics of the United States, 1968 and 1969, Vol. II, Part A. DHEW Pub. Nos. (HSM) 72-1101 and (HRA) 74-1101. Health Services and Mental Health Administration and Health Resources Administration. Washington. U.S. Government Printing Office, 1972 and 1974; U.S. Bureau of Census: Population estimates and projections. Current Population Reports, Series P-25, Nos. 519 and 643. Washington. U.S. Government Printing Office, April 74 and Jan. 77.

Table 4. Discharges and days of care in non-Federal short-stay hospitals per 1,000 population, according to sex and age: United States, average annual 1975-76

(Data are based on a sample of hospital records)

Age	Discharges			Days of care		
	Both sexes	Male	Female	Both sexes	Male	Female
	Discharges per 1,000 population			Days per 1,000 population		
All ages	163	135	189	1,245	1,099	1,382
45-64 years	195	189	200	1,733	1,690	1,773
45-49 years	171	148	193	1,356	1,187	1,514
50-54 years	184	172	194	1,550	1,489	1,606
55-59 years	202	199	204	1,850	1,790	1,906
60-64 years	232	254	213	2,311	2,507	2,144
65 years and over	361	388	343	4,167	4,392	4,010
65-69 years	280	312	256	2,982	3,314	2,714
70-74 years	324	358	299	3,708	4,012	3,489
75-79 years	396	430	375	4,735	5,060	4,527
80-84 years	480	516	460	5,794	6,096	5,619
85 years and over	665	732	632	8,288	8,959	7,954

NOTE: Rates are based on the average annual civilian noninstitutionalized population.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the Hospital Discharge Survey.

Table 5. Discharges, days of care, and average length of stay in non-Federal short-stay hospitals, according to sex and age: United States, 1965 and 1975

(Data are based on a sample of hospital records)

Sex and age	Discharges		Days of care		Average length of stay in days	
	1965	1975	1965	1975	1965	1975
	Number per 1,000 population					
Both sexes, all ages[1, 2]	151.7	162.8	1,185.6	1,254.9	7.8	7.7
45-64 years	174.3	194.7	1,713.5	1,748.9	9.8	9.0
65 years and over	263.9	359.3	3,446.7	4,165.9	13.1	11.6
Male, all ages[2]	121.3	134.0	1,017.9	1,104.4	8.4	8.2
45-64 years	169.2	188.3	1,688.0	1,699.9	10.0	9.0
65 years and over	276.3	386.9	3,411.2	4,379.0	12.3	11.3
Female, all ages[2]	179.8	189.7	1,338.6	1,395.2	7.4	7.4
45-64 years	178.4	200.5	1,822.8	1,793.6	9.7	8.9
65 years and over	252.8	339.9	3,452.4	4,016.4	13.7	11.8

[1] 1965 figures include data for which sex was not stated.

[2] 1965 figures include data for which age was not stated.

NOTE: Rates are based on the civilian noninstitutionalized population.

SOURCE: National Center for Health Statistics: Utilization of short-stay hospitals, annual summary for the United States, 1975, by Abraham Ranofsky. Vital and Health Statistics. Series 13-No. 31, DHEW Pub. No. (HRA)77-1782. Health Resources Administration. Washington. U.S. Government Printing Office. April 1977.

Table 6. Operations per 1,000 population for inpatients 45 years of age and over discharged from non-Federal short-stay hospitals, according to sex, age, leading surgical category, and ICDA Seventh and Eighth Revision Codes: United States, average annual 1965-66 and 1975-76

(Data are based on a sample of hospital records)

Age and surgical category[1]	ICDA codes[2]		Both sexes		Male		Female	
	Seventh Revision	Eighth Revision	1965-66[3] average	1975-76 average	1965-66 average	1975-76 average	1965-66 average	1975-76 average
			Operations per 1,000 population					
45-64 years								
All operations[4]			97.9	122.9	82.4	100.8	112.0	143.1
Biopsy		A1-A2	---	9.4	---	6.5	---	12.1
Repair of inguinal hernia	40.0-40.1	38.2-38.3	4.4	4.1	8.5	8.0	0.6	0.6
Cholecystectomy	53.5	43.5	4.0	4.0	2.2	2.4	5.6	5.4
Excision of lesion of skin and subcutaneous tissue	89.1	92.1-92.2	3.8	3.4	3.7	3.2	3.9	3.6
Cardiac catherization	30.4-30.5[5]	30.2[5]	0.3	2.8	*	4.0	*	1.6
Extraction of lens	17.3-17.5[5]	14.4-14.6[5]	1.2	1.9	1.3	2.0	1.2	1.9
Hemorrhoidectomy	49.3	51.3	3.0	1.9	3.4	2.1	2.6	1.7
Partial mastectomy	38.1	65.2	1.6	1.7	*	*	3.0	3.1
Exploratory laparotomy	41.1	39.1	1.5	1.6	1.4	1.3	1.6	1.9
Excision of intervertebral cartilage	83.4	86.4	0.8	1.6	1.0	1.8	0.7	1.3
Dilation of urethra	64.5	57.5	0.7	1.4	0.8	1.2	0.6	1.6
65 years and over								
All operations[4]			107.5	154.9	119.6	178.9	97.7	138.2
Biopsy		A1-A2[5]	---	13.9	---	16.0	---	12.4
Extraction of lens	17.3-17.5[5]	14.4-14.6[5]	5.8	10.9	5.0	9.3	6.4	11.9
Reduction of fracture with fixation	82.2[5]	82.2[5]	5.4	6.8	2.9	3.6	7.4	9.0
Repair of inguinal hernia	40.0-40.1	38.2-38.3	4.7	5.2	9.3	11.2	1.1	1.0
Cholecystectomy	53.5	43.5	4.3	4.7	3.1	4.0	5.3	5.2
Excision of lesion of skin and subcutaneous tissue	89.1	92.1-92.2	3.5	4.0	3.8	4.5	3.2	3.7
Insertion or replacement of electronic heart device		30.4-30.5	---	3.7	---	4.6	---	3.0
Resection of small intestine or colon	46.2-46.5	47.4-47.6	2.3	3.4	1.8	3.5	2.6	3.3
Dilation of urethra	64.5	57.5	1.2	3.2	1.9	4.8	*	2.0
Local excision and destruction of lesion of bladder	63.1	56.1-56.2	2.1	3.1	3.4	5.6	*	1.4
Exploratory laparotomy	41.1[5]	39.1[5]	2.2	2.7	1.9	2.6	2.4	2.8
Closed reduction of fracture without fixation	82.0[5]	82.0[5]	2.9	2.5	1.7	1.2	3.9	3.4

[1] Operations applicable to one sex are not listed in this table. Surgical categories are ranked separately for each age group.

[2] Surgical groupings and code number inclusions are based on the Seventh and Eighth Revision International Classification of Diseases, Adapted for Use in the United States.

[3] Includes data for which sex was not stated.

[4] Includes operations not listed in table, including operations applicable to one sex.

[5] These codes are modifications of ICDA Codes for use in the Hospital Discharge Survey.

NOTE: Rates are based on the average annual civilian noninstitutionalized population.

SOURCE: National Center for Health Statistics, Division of Health Resources Utilization Statistics: Data from the Hospital Discharge Survey.

Table 7. Discharges from non-Federal short-stay hospitals and days of care per 1,000 population age 65 and over and average length of stay, according to leading diagnostic category, and ICDA code: United States, average annual 1975-76

(Data are based on a sample of hospital records)

First-listed diagnosis and ICDA code[1]	Discharge	Days of care	Length of stay
Both sexes			
			Days
All diagnoses	361.3	4,167.2	11.5
Diseases of the heart---390-398, 402,404, 410-414, 420-429	66.0	755.3	11.4
Ischemic heart disease---410-414	46.3	538.5	11.6
Malignant neoplasms---140-209	34.2	477.0	14.0
Fracture---800-829	16.2	270.5	16.7
Delivery---650-662	-	-	...
Neuroses and nonpsychotic disorders---300-309	6.1	72.6	11.9
Cerebrovascular disease---430-438	20.5	279.7	13.7
Pneumonia---480-486	11.5	141.8	12.4
Psychoses---290-299	2.7	51.2	19.0
Diabetes mellitus---250	9.3	114.2	12.2
Arthritis and rheumatism---710-718	8.7	116.5	13.4
Cholelithiasis (gallstones)---574	5.4	71.5	13.2
Diseases of arteries, arterioles, capillaries---440-448	8.6	135.0	15.7
Displacement of intervertebral disc---725	1.3	18.7	14.2
Benign neoplasms---210-228	3.4	26.1	7.8
Bronchitis, emphysema, asthma---490-493	6.6	68.1	10.2
Diseases of central nervous system---320-349	3.2	49.2	15.4
Ulcer---531-534	5.1	60.8	11.9
Sprains and strains---840-848	1.9	17.8	9.3
Eye diseases and conditions---360-379	13.6	72.1	5.3
Inguinal hernia---550,552	4.9	39.4	8.1
Hyperplasia of prostate---600	7.4	84.0	11.3
Congenital anomalies---740-759	0.9	9.3	10.6
Disorders of menstruation---626	0.8	3.1*	3.9
Intercranial injury---850-854	1.3	12.5	9.7
Appendicitis---540-543	0.4*	4.8*	11.2
Lacerations---870-907	1.3	10.5	7.8
Gastritis and duodenitis---535	2.4	19.6	8.0
Hypertension---400, 401, 403	2.6	19.9	7.7
Acute bronchitis and bronchiolitis---466	2.7	24.2	9.1

[1]Diagnostic groupings and code number inclusions are based on the Eighth Revision International Classification of Diseases, Adapted for Use in the United States. Codes 760-771, 773, and 779 are not used in the Hospital Discharge Survey.

NOTE: Rankings are based on number of days of care.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the Hospital Discharge Survey.

Table 8. Residents of nursing homes age 65 and over, number of residents and days of care in nursing homes per 1,000 population, according to sex and age: United States, 1973-74

Age	Both sexes	Men	Women
	Number of nursing home residents		
All ages 65 and over	961,500	265,800	695,800
65-74	163,100	65,200	98,000
75-84	384,800	102,300	282,500
85 and over	413,600	98,300	315,300
	Nursing home residents per 1,000 population		
All ages 65 and over	44.1	29.6	54.1
65-74	12.0	11.1	12.8
75-84	58.9	40.8	70.0
85 and over	236.6	169.8	269.7
	Nursing home days per 1,000 population		
All ages 65 and over	16,080.8	10,820.5	19,751.7
65-74	4,397.0	4,045.9	4,671.5
75-84	21,485.7	14,906.0	25,567.2
85 and over	86,363.8	61,968.0	98,447.0

SOURCE: National Center for Health Statistics: Characteristics, social contacts, and activities of nursing home residents, United States, 1973-74, National Nursing Home Survey. *Vital and Health Statistics*. Series 13-No. 27. DHEW Pub. No. (HRA) 77-1778. Health Resources Administration. Washington. U.S. Government Printing Office, May 1977.

Table 9. Rates per 1,000 of reported chronic conditions and impairments and of primary diagnosis, for nursing home residents 65 years and over, by age group

Reported chronic conditions and impairments and primary diagnosis at last examination[1]	Age 65-74 years	75-84 years	85 years and over
Condition or impairment	**Rate per 1,000 residents**		
Senility	482.2	623.2	694.3
Mental illness	293.0	171.9	112.8
Mental retardation	94.5	27.6	17.5
Arthritis or rheumatism	232.4	363.2	431.1
Paralysis or palsy due to stroke	166.1	129.1	80.1
Paralysis or palsy not related to stroke arthritis or rheumatism	75.5	52.5	36.8
Glaucoma or cataracts	62.8	95.6	143.9
Diabetes	168.1	148.8	109.4
Any chronic trouble with back or spine	86.6	100.8	107.9
Amputation of extremities or limbs, or permanent stiffness or any deformity of foot, leg, fingers, arm or back	160.8	133.0	123.2
Heart trouble	271.9	354.7	403.9
None of the above	62.2	53.8	47.0
Primary diagnosis and ICDA category			
Senility, old age, other symptoms and ill-defined conditions	85.2	140.9	198.4
Heart attack	41.1	55.3	68.9
Stroke	138.0	120.6	87.5
Hardening of the arteries	151.7	237.2	315.8
Diseases of the circulatory system other than hardening of the arteries, stroke and heart attack	31.4	39.9	43.4
Accidents, poisonings and violence	35.8	45.8	55.3
Mental disorders	185.1	72.0	32.7
Diseases of the musculoskeletal system and connective tissue	58.5	70.7	80.0
Endocrine, nutritional and metabolic diseases	59.5	46.9	39.8
Diseases of the respiratory system	33.2	22.9	14.7
Neoplasms	29.4	23.6	22.3
Diseases of the nervous system and sense organs	78.4	49.3	38.0
Diseases of the digestive system	18.6	17.9	21.6
Infective and parasitic diseases	(2)	(2)	(2)
Diseases of the genitourinary system	(2)	16.7	16.2
Diseases of the skin and subcutaneous tissue	(2)	6.1	(2)
Diseases of the blood and blood-forming organs	(2)	7.6	9.5
Other diagnoses	15.9	15.0	13.5
Unknown diagnoses	(2)	9.3	10.5

1/More than 1 condition or impairment may have been reported for a resident (average number was 2.2), but only 1 primary diagnosis was reported for each.

2/Figure does not meet standards of reliability or precision.

SOURCE: National Center for Health Statistics: Profile of chronic illness in nursing homes, United States: 1973-74 National Nursing Home Survey. *Vital and Health Statistics*. Series 13-No. 29. DHEW Pub. No. (HRA) 78-1790. Health Resources Administration. Washington. U.S. Government Printing Office, Dec. 1977.

Table 10. Physician visits, according to place of care and age: United States, fiscal years 1964 and 1967 and selected calendar years 1970-76

(Data are based on household interviews of samples of the civilian noninstitutionalized population)

Age and year	Visits per 1,000 population	Place of care					
		All places of care[1]	Doctor's office (group practice or doctor's clinic)	Hospital outpatient clinic or emergency room	Telephone	Company or industry clinic	Home
Total[2]		Percent distribution					
FY 1964	4,544.5	100.0	69.8	11.9	10.6	0.6	5.4
FY 1967	4,320.4	100.0	71.8	9.3	11.3	0.8	3.3
1970	4,638.3	100.0	69.4	10.6	12.2	1.0	2.0
1973	5,009.8	100.0	69.1	10.7	12.7	0.8	1.4
1974	4,945.1	100.0	68.8	11.9	12.3	0.8	1.1
1975	5,051.5	100.0	68.0	12.9	12.5	0.9	0.8
1976	4,944.0	100.0	67.9	13.1	12.0	0.9	1.4
45-64 years							
FY 1964	5,038.2	100.0	76.8	10.0	6.1	0.6	4.5
FY 1967	4,659.3	100.0	77.1	8.4	7.2	0.7	3.4
1970	5,206.0	100.0	72.7	10.7	9.3	1.4	2.0
1973	5,454.5	100.0	73.7	10.1	9.9	0.9	0.8
1974	5,517.6	100.0	74.1	10.7	9.2	1.0	0.9
1975	5,629.9	100.0	72.6	12.1	9.7	0.9	0.7
1976	5,729.9	100.0	68.5	15.0	9.9	1.4	1.5
65 years and over							
FY 1964	6,657.3	100.0	64.2	8.5	8.2	*	17.3
FY 1967	6,002.6	100.0	73.8	6.0	7.8	*	10.5
1970	6,269.0	100.0	72.7	7.8	9.6	*	7.9
1973	6,542.4	100.0	75.1	8.4	9.4	*	4.4
1974	6,730.8	100.0	75.6	8.7	9.2	*	4.2
1975	6,607.7	100.0	76.2	9.0	8.5	*	2.9
1976	6,853.8	100.0	72.9	9.5	9.9	*	4.8

[1] Includes other and unknown places of care.

[2] Includes all ages.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics: Data from the Health Interview Survey.

Table 11. Office visits to physicians, according to color, sex, and age of patient: United States, average annual 1975-76

(Data are based on reporting by a sample of office-based physicians)

Age of patient	Color								
	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	Office visits per 1,000 population								
All ages	2,771	2,276	3,231	2,865	2,353	3,345	2,148	1,750	2,499
45-64 years	3,377	2,824	3,881	3,415	2,841	3,942	3,051	2,669	3,376
45-49 years	3,080	2,466	3,656	3,116	2,467	3,733	2,803	2,457	3,097
50-54 years	3,217	2,521	3,859	3,244	2,540	3,898	2,988	2,344	3,541
55-59 years	3,506	3,038	3,939	3,543	3,057	3,995	3,164	2,862	3,440
60-64 years	3,810	3,450	4,117	3,853	3,468	4,184	3,390	3,260	3,492
65 years and over	4,357	4,022	4,591	4,488	4,180	4,701	3,068	2,542	3,465
65-69 years	4,275	3,877	4,595	4,410	3,998	4,742	3,007	2,740	3,222
70-74 years	4,586	4,160	4,893	4,697	4,331	4,958	3,509	2,591	4,232
75 years and over	4,260	4,072	4,372	4,403	4,262	4,485	2,770	2,267	3,116

NOTE: Rates are based on the average annual civilian noninstitutionalized population, excluding Alaska and Hawaii.

SOURCE: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Data from the National Ambulatory Medical Care Survey.

Recent Trends in U.S. Mortality Among the Aged

Mary Grace Kovar and Lois A. Fingerhut

Presented at:

Gerontological Society
San Francisco, California
21 November 1977

RECENT TRENDS IN U.S. MORTALITY AMONG THE AGED

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Mortality rates are the oldest and most widely available measure of health. The objection that they do not measure the health status of the living population, especially in a modern industrialized country where conditions accumulate over a lifetime and become chronic instead of killing the individual in a brief period, is a valid one. However, measuring the health of a living population is a difficult task and the measures used are seldom comparable over time or space. In contrast, death is a discrete measurable event. The rates themselves, variations over time and among populations, and the conditions causing death are useful indicators of health provided one exercises reasonable caution in interpretation.

The caution is necessary because the data are not perfect. A rate depends upon a numerator, the number of deaths, and a denominator, the population at risk of dying. In the United States we obtain the official count of deaths from the death registration system and the population at risk from an independent source--the decennial census of population and the intercensal population estimates. The fact that the two sources are independent may introduce additional problems. There is a third source for the elderly population, the Social Security Administration, which provides both numerator and

and denominator data. However, the Social Security system as presently designed does not furnish as much information (cause of death and race are omitted) and it is not the source for the official death rates for the United States. It is used in calculating the decennial life tables.

Registering a death is legally required in all States. The body cannot be buried unless the death is registered and we have reason to believe that registration for adults is virtually complete. Age may be incorrectly reported, however, especially for extremely old people, as may be the cause of death. The introduction of Medicare and increased utilization of medical facilities by people 65 years and over may improve cause-of-death and age reporting but improvements in reporting will affect the time trends by cause. In the meantime, we have very little information on the accuracy of age reporting except that it is not always consistent with the census (NCHS, 1968). There have been studies on the quality of cause-of-death data which tend to support the adequacy for the major categories (Moriyama, 1958 and 1963) although there is reason to believe that the validity decreases with extreme age. If the diagnoses recorded on charts in nursing homes are any indication of the quality of diagnostic information to certify the cause-of-death when nursing home residents die, we cannot expect any great improvement in the immediate future (Kovar, 1977a).

Responding to the decennial census is also legally required but studies by the Bureau of the Census have shown that underenumeration does occur; in 1970 the undercount was estimated to be about 2.5 percent for all ages and 1.8 percent for people 65 years and over. The undercount was much higher for the black than for the white population. In addition, there are errors in age reporting. The combined effect is that the age groups 55-64 is estimated to have a small net undercount, 65-69 a net overcount which is quite large (10-15 percent) for the black population, 70-74 a very small undercount, and age 75 and over a net undercount which is very large (19 percent) for black females (Siegel et al, 1976). The result is that the official death rates are probably too high for adults under age 65, too low for ages 65-74, and too high again for ages 75 and over--especially for the black population.

The under (or over) reporting will have no effect on the time trends in death rates if the errors are consistent from one census to the next. Unfortunately, they are not entirely--again, especially for the black population--and the effect on the death rates will be discussed later.

Finally, the rates for people age 85 and over may be very unreliable both because of the unreliability of age and cause-of-death reporting and because of the random variation due to small numbers. I have included the data for people 85 years and over for completeness but extreme caution should be used in drawing inferences about changes in the rates.

Beginning with caveats about data reliability makes it sound as if we can say nothing about changes in mortality among the aged. That's not true; we actually know a great deal. But awareness of the limitations in the source data does decrease the risk of jumping to unwarranted conclusions.

There is no question that we are in a period of very rapid decline in death rates among the elderly. From 1965 to 1975 the death rate for people age 65 and over decreased by 11 percent. In 1965 there were 6,118 deaths per 100,000 people age 65 and over; in 1975 there were 5,432 (Table 1).

The decrease in rates occurred despite the aging of the elderly population and reflects even greater decreases for most of the component age groups.

From 1925 through 1975 mortality rates among elderly people declined at an average annual rate of almost one percent for each of the three age groups 65-74, 75-84, and age 85 and over. The average annual rate from 1965-1975 has been about 1.7 percent for people 65-74, 1.1 percent for those 75-84, and 2.8 percent for those age 85 and over in contrast with the previous 10 years when there was relatively little change.

This is, however, the second period of rapid decline during the 50 years. From 1940 to 1945 mortality rates for the elderly declined by about 12 percent; the average annual rate of decline was higher then than during the 5 years 1970-1975. The rate of change then slowed although the rates

continued to decline until the mid-50's. From 1955 to 1960 there was very little decline. The rate of decline then began to increase again to the present rapid rate. Whether mortality rates will continue to go down at the current rate, whether they will drop more slowly, or stabilize at the current level is unknowable at present.

The reasons for, or more specifically the cause of death which accounted for, the declines were entirely different for the two periods of rapid decline. The earlier decline was largely due to the decrease in deaths from influenza and pneumonia. In 1935, there were 326 deaths from influenza and pneumonia per 100,000 people ages 65-74. by 1940 there were 228, by 1945 there were 136, and in 1950 there were 97. For people ages 75-84 the comparable rates were 854, 688, 418, and 293. The rates have fluctuated since then reflecting the influenza epidemics but no recent epidemic has caused anywhere near the number of deaths from influenza and penumonia that was considered "normal" 30 or 40 years ago (Tables 2, 3 and 4).

In contrast, the recent decline is due almost entirely to decreases in the rates for cardiovascular conditions. Rates for diseases of the heart, cerebrovascular diseases, arteriosclerosis, and hypertension are all decreasing.

By far the most dramatic decline is the decrease in death rates for diseases of the heart which is the leading cause of death from age 45 on and in 1975 accounted for 44 percent of all deaths of people age 65 and over. Heart

disease had been epidemic in the United States with death rates increasing from year to year but once the turnabout occurred, the decrease has been just as steady. The decrease started first for women (who have never had death rates for heart disease as high as men) but since the middle 60's the rates have been declining for men as well.

Because diseases of the heart account for such a large proportion of the total deaths, any change in the death rate from this cause is important. For example if there were no deaths from diseases of the heart, 5.1 years would be added to life expectancy at age 65 (NCHS, 1975). According to the 1969-71 life tables, people could expect to live for 20.1 years instead of 15.0 years after their 65th birthday if diseases of the heart were eliminated as a cause of death. (And by 1975, with death rates from diseases of the heart declining steadily, life expectancy at age 65 had increased to 16.0 years (NCHS, 1976)). Elimination of malignant neoplasms as a cause of death would add only 1.4 years to life expectancy at age 65 and no other disease would add as much as half a year. (These estimates are based on the assumption that the causes act independently.)

Figures 1 and 2 illustrate the changes that have occurred in mortality rates in the United States over the 50 years from 1925-1975. They have been graphed on semi-logrithmic paper as the intent is to illustrate change--not relative magnitude. From figure 1 you can see the rapid decline beginning at about

1940, the period of stability at a lower rate beginning in 1955, and the current period of decline beginning in the middle or late 60's. Rates for younger people have followed the same pattern.

Figure 2 shows only the rates for people 65-74 years by cause of death for the leading causes. As you can see, mortality rates are declining for all of the cardiovascular diseases.

Figure 2 also illustrates why changes in death rates by cause of death must be interpreted with caution. Death rates from bronchitis, emphysema, and asthma appear to have decreased from 1965 to 1975. But that is a category which did not even appear as a cause of death until 1950 and increased rapidly during the following 15 years before decreasing. There are fashions in diseases as in everything else and this particular decline is artifactual. Medical certifiers are, with increasing frequency, entering the generalized term "Chronic obstructive lung disease" on death certificates instead of the specific diagnoses. Consequently, data for "Bronchitis, emphysema, and asthma" need to combined with "Chronic obstructive lung disease" (ICDA 519.3) to obtain a measure of mortality from this complex of diseases. And the mortality rate for the combined groups has been increasing not decreasing.

In contrast, rates for <u>all</u> of the cardiovascular diseases are declining. The decrease appears to be real and not caused by shifting diagnoses from one category to another.

Further evidence of the reality of the decline is given in figures 3, 4, and 5. Mortality rates for cerebrovascular diseases among people ages 65-74 are used as illustration. The mortality rates are going down among men and women, black and white, in the United States. They are also going down for both men and women in other countries for which we have reliable data. And in every country, the rates are higher among men than among women.

Before turning to changes in the rates by sex and race, I'd like to point out that both the early and the recent decline also occurred among younger people, that mortality rates for the circulatory disorders are also declining at younger ages, and that the slow steady increase in death rates from malignant neoplasms is also occurring among younger people.

The decline in the death rates among younger people means that a higher proportion of the population will live to become elderly.

In the United States as in other countries, women live longer than men. Under the 1975 schedule of mortality 68 percent of the men and 82 percent of the women would reach a 65th birthday. Of those who reached age 65, the women could expect to live 4 years longer than the men.

At the turn of the century the death rate for men age 65 and over was 6 percent higher than that for women (Linder and Grove, 1943). By 1950 the death rate for elderly men was 27 percent higher than that for women. It was 41 percent higher by 1965 and 47 percent higher by 1975.

Two-thirds (68 percent) of the difference in the mortality rates between elderly men and elderly women is attributable to the deaths from two clusters of diseases--diseases of the heart and malignant neoplasms. If recent trends in the death rates for those causes continue, the difference in mortality rates between the sexes will not be eliminated.

Mortality rates for the elderly population are given in Tables 5, 6 and 7 for 1950 through 1975. Table 8 shows the data for 4 time periods 1960, 65, 70, and 75 for each sex and for 3 racial groups with "black" and "other" summarized to the "all other" category for comparability with the usual vital statistics data. The left-hand panel gives the unadjusted rate. The right-hand panel gives the rates after the age-sex-race specific mortality rates have been age-adjusted to the 1970 U.S. population age 65 and over. (Rates were calculated for 5 year age intervals and adjusted by the direct method.)

The age adjustment is necessary for comparisons of the total elderly population over time, between sexes, and among racial groups because among people age 65 and over, the 1975 population was older than the 1965 one, women are older than men, and whites are older than blacks.

It is immediately apparent that the unadjusted rates understate the magnitude of the decline in mortality among the elderly between 1965 and 1975. If the age distribution had remained constant over the 10-year period, death rates would have declined by 15 percent instead of 10 percent for both sexes, by 10 instead of 7 percent for men, and by 18

instead of 11 percent for women. The rate of decline for each of the racial groups was also greater than would appear from the unadjusted data.

The differences among the population subgroups are also greater when the effects of differing age distributions is removed. The difference in the rates between men and women and between blacks and white is larger than would appear. The extremely low rates for the "other" group may be partly an artifact and partly real. It has been noted before for younger adults (Kitagawa and Hauser, 1973) and also in infant mortality.

It is possible, at least for years in which there was a decennial census, to adjust the population for enumeration errors as well. The combined enumeration-age adjustment is shown in the right hand panel of Table 9 for 1960 and 1970. Again, the effect is to increase the magnitude of the decline--the change over time was actually greater than it appeared to be. The difference in rates between men and women is also increased by the combined adjustment as is the difference between blacks and whites for both sexes and for females.

However, while elderly white men appeared to have higher death rates than elderly black men in both 1960 and 1970 from the unadjusted rates and higher rates in 1960 even when the rates were age adjusted, the effect of adjustment for enumeration is to reverse the differential. I might add that the famous "cross-over" still occurs; white death rates are still higher than black ones in extreme old age even after adjustment for enumeration.

And, finally, even after adjustment for enumeration, the rates for the "other" group are still lower than for whites and blacks but the differential is reduced.

I would like to close by commenting on the possible effects of Federal health programs--especially Medicare. It has been well documented that Federal spending on medical care of the elderly has increased enormously over the decade under consideration. Two questions arise: Is Medicare responsible for the declining death rates? and Does providing medical care and keeping people alive result in an increasingly dependent sick older population?

The answer to the first question seems clear. Death rates are declining at all ages and in many countries. Medicare alone could not account for such a universal phenomenon which is largely the result of declines in the major killer in modern industrialized countries--heart disease.

The answer to the second question is less clear. Careful analyses of data from a number of sources reveal no increase in disability, either short- or long-term, among elderly people who are not in institutions (Kovar, 1977b, Shanas, 1977). However, it is possible that with the advent of Federally funded programs increasing proportions of the dependent elderly are being institutionalized thus reducing the prevalence of disability in the noninstitutional population. Recently available data indicate that this is not happening. The proportion of elderly people who are in institutions may even have declined between

1970 and 1976 (Census, personal communication from unpublished data); it certainly has not increased. The proportion in nursing homes also appears to have either stabilized or decreased slightly. We have as yet no information about the health status of the institutionalized people and the final answer will have to wait for that information, but at the moment we have no reason to believe that with declining mortality rates the health status of the living elderly is worsening.

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Illustrative Material

for

Recent Trends in U.S. Mortality Among the Aged

Mary Grace Kovar and Lois A. Fingerhut

Presented at:

Gerontological Society
San Francisco, California
21 November 1977

Death rates for the 10 leading causes of death among persons 65 years and over, by 1975 rank order for both sexes, and by sex for 1975: United States, 1950, 1965, and 1975

(Data are based on the National Vital Registration System)

Cause of death and ICDA code	1950	1965	1975		
			Both sexes	Male	Female
	Deaths per 100,000 resident population 65 years and over				
All causes	6,270.3	6,118.3	5,432.4	6,702.7	4,550.9
Diseases of heart----------390-398, 402, 404, 410-429	2,860.9	2,823.9	2,403.9	2,933.0	2,036.7
Malignant neoplasms----------140-209	856.5	901.4	961.1	1,301.1	725.2
Cerebrovascular diseases----------430-438	923.8	901.0	729.7	740.5	722.1
Influenza and pneumonia----------470-474, 480-486	191.3	213.7	187.1	239.2	150.9
Arteriosclerosis----------440	---	---	123.0	119.8	125.2
Diabetes mellitus----------250	121.1	122.9	112.9	102.8	119.9
Accidents----------E800-E949	210.8	155.0	109.6	140.6	88.1
Motor vehicle accidents----------E810-E823	43.1	38.9	25.3	38.7	16.0
All other accidents----------E800-E807, E825-E949	167.7	116.1	84.3	101.9	72.1
Bronchitis, emphysema, and asthma----------490-493	---	---	80.5	152.5	30.5
Cirrhosis of liver----------571	34.9	34.5	36.6	58.1	21.6
Nephritis and nephrosis----------580-584	---	---	23.2	...	...
Suicide----------E950-E959	30.0	22.8	...	36.8	...
Hernia and intestinal obstruction----------550-553, 560	37.6	35.6	...	...	20.5
All other causes----------	---	---	664.9	878.4	510.1

NOTE: Cause-of-death titles and numbers are based on the Eighth Revision International Classification of Diseases, Adapted for Use in the United States, 1965. Because of decennial revisions in the classification and changes in rules of cause-of-death coding, there is lack of comparability for some causes from one revision to the next. In some instances data are omitted for earlier years because the appropriate subcategories are not available. Data for influenza and pneumonia should not be interpreted for trends since they are influenced by epidemics which cause large fluctuations in data for a single year.

SOURCES: National Center for Health Statistics: Vital Statistics of the United States, Vol. II, for data years 1950 and 1965, Washington, U.S. Government Printing Office; and for 1975, Health Resources Administration, DHEW, Hyattsville, Md., to be published.

Table 2. Death rates for all causes and for the 10 leading causes of death among persons 65-74 years, based on the 1975 ranking of causes for all ages: United States, 1925-75

Cause of death and ICDA code[1]	1925	1930	1935	1940	1945	1950	1955	1960	1965
	(Rates per 100,000 estimated population ages 65-74 years)								
All causes	5,173.5	5,137.3	4,872.4	4,838.3	4,258.8	4,104.3	3,811.1	3,822.1	3,790.3
Diseases of heart----------390-398, 402, 404, 410-429	1,326.4	1,499.6	1,573.1	1,738.8	1,641.8	1,857.2	1,807.6	1,740.5	1,697.8
Malignant neoplasms----------140-209	665.2	677.1	689.7	700.8	670.3	698.8	711.5	713.9	752.2
Cerebrovascular diseases----------430-438	736.3[3]	687.4	587.8	573.8	532.8	554.7	506.0	469.2	430.0
Accidents----------E800-E949									
Motor vehicle accidents[2]----------E810-E823	42.3	66.3	62.3	56.9	39.9	39.1	35.3	31.4	35.5
All other accidents[2]----------E800-E807, E825-E949	136.8	131.8	130.2	122.9	112.2	77.8	66.1	56.7	55.3
Influenza and pneumonia----------470-474, 480-486	404.9	337.0	325.9	228.2	136.4	97.1	76.4	112.1	94.6
Diabetes mellitus----------250	130.6	151.3	173.6	190.8	163.7	101.2	91.7	93.4	92.6
Cirrhosis of liver----------571	46.1	43.0	41.5	39.2	35.7	33.8	36.1	37.4	38.0
Arteriosclerosis----------440		126.6	97.1	82.8	81.7	70.0	58.7	56.9	52.1
Bronchitis, emphysema, and asthma----------490-493						3,4/17.8	36.6	55.2	86.0

	1968	1969	1970	1971	1972	1973	1974	1975
All causes	3,848.5	3,738.2	3,582.7	3,486.2	3,526.9	3,440.0	3,327.6	3,189.2
Diseases of heart----------390-398, 402, 404, 410-429	1,687.4	1,634.5	1,558.2	1,510.8	1,512.3	1,461.6	1,400.5	1,323.7
Malignant neoplasms----------140-209	774.2	769.4	754.2	758.5	774.1	768.1	774.5	775.5
Cerebrovascular diseases----------430-438	423.2	406.5	384.1	368.3	367.5	355.1	334.4	303.1
Accidents----------E800-E949								
Motor vehicle accidents[2]----------E810-E823	36.2	35.2	32.8	32.4	32.1	29.4	22.7	22.0
All other accidents[2]----------E800-E807, E825-E949	56.9	53.8	52.8	50.4	48.9	48.1	46.2	44.5
Influenza and pneumonia----------470-474, 480-486	109.5	101.9	90.2	74.8	86.7	82.1	68.7	70.2
Diabetes mellitus----------250	99.5	96.7	92.1	89.5	89.7	85.4	81.6	75.2
Cirrhosis of liver----------571	41.6	40.9	42.2	42.2	43.1	44.6	45.9	42.8
Arteriosclerosis----------440	42.1	40.1	37.3	34.5	34.9	32.4	31.6	26.6
Bronchitis, emphysema, and asthma----------490-493	97.6	90.3	86.6	83.2	84.3	79.4	71.0	65.3

[1] Because of decennial revisions of the International Classification of Diseases and changes in rules for selecting the cause of death, there is lack of comparability to a varying degree for some causes from one revision to the next. The beginning dates of the revision are 1921, 1930, 1939, 1949, 1958, and 1968. In some instances data are omitted for earlier years because appropriate subcategories are not available by age of the decedent. Except for diseases which are epidemic in nature abrupt changes at the beginning of the revision period are indicative of breaks in comparability. The cause-of-death titles are based on the Eighth Revision, International Classification of Diseases, Adapted for Use in the United States and in some instances have been considerably shortened.

[2] The "motor vehicle accident" rate should be added to the "other accident" rate to provide the single category "all accidents."

[3] Excludes data for emphysema without mention of bronchitis (ICD No. 527.1) because data were not available for these years.

[4] Population adjusted for age bias in races other than white.

NOTE: The Ninth leading cause of death is certain causes of mortality in early infancy. Data for these age groups are not applicable.

SOURCE: National Center for Health Statistics: Vital Statistics of the United States, Vol. II., Mortality, selected years.

Table 3. Death rates for all causes and for the 10 leading causes of death among persons ages 75-84 years, based on the 1975 ranking of causes: United States, 1925-75

Cause of death and ICDA code[1]	1925	1930	1935	1940	1945	1950	1955	1960	1965
	(Rates per 100,000 estimated population ages 75-84 years)								
All causes	11,929.0	11,269.2	11,312.6	11,203.9	9,835.2	9,331.1	8,794.6	8,745.2	8,192.7
Diseases of heart----------390-398, 402, 404, 410-429	3,224.6	3,486.4	3,888.2	4,216.6	3,916.3	4,311.0	4,211.5	4,089.4	3,833.9
Malignant neoplasms----------140-209	1,027.1	1,019.7	1,133.9	1,155.5	1,144.4	1,153.3	1,146.4	1,127.4	1,093.9
Cerebrovascular diseases----------430-438	1,866.8	1,651.0	1,487.6	1,444.8	1,342.6	1,499.6	1,497.6	1,491.3	1,322.2
Accidents----------E800-E949									
Motor vehicle accidents[2]----------E810-E823	56.0	85.0	83.4	76.1	54.8	52.7	47.1	41.8	45.5
All other accidents[2]----------E800-E807, E825-E949	387.2	392.8	417.9	414.6	388.0	263.0	215.0	172.7	154.5
Influenza and pneumonia----------470-474, 480-486	1,071.6	834.1	853.5	687.9	417.9	292.5	249.8	340.6	295.1
Diabetes mellitus----------250	161.6	181.1	229.1	273.3	252.9	166.7	150.6	163.7	166.4
Cirrhosis of liver----------571	71.7	57.5	60.2	51.8	44.9	36.9	35.9	32.1	29.9
Arteriosclerosis----------440		511.0	453.5	415.5	398.0	392.0	340.2	307.4	270.5
Bronchitis, emphysema, and asthma----------490-493	---	---	---	---	---	3,4/30.3	51.1	71.0	114.1

Cause of death and ICDA code[1]	1968	1969	1970	1971	1972	1973	1974	1975
All causes	8,078.8	7,896.0	8,004.4	7,866.6	7,965.4	7,932.1	7,654.8	7,359.2
Diseases of heart----------390-398, 402, 404, 410-429	3,726.4	3,644.9	3,683.8	3,630.5	3,647.7	3,609.2	3,440.8	3,280.8
Malignant neoplasms----------140-209	1,104.4	1,112.0	1,169.2	1,167.7	1,179.9	1,187.9	1,213.7	1,221.9
Cerebrovascular diseases----------430-438	1,283.5	1,232.3	1,254.2	1,233.1	1,237.9	1,233.5	1,176.6	1,076.3
Accidents----------E800-E949								
Motor vehicle accidents[2]----------E810-E823	46.1	42.9	43.5	42.4	44.8	40.7	31.6	32.5
All other accidents[2]----------E800-E807, E825-E949	137.8	132.5	131.2	123.9	124.1	119.8	113.5	108.6
Influenza and pneumonia----------470-474, 480-486	322.1	295.4	272.8	257.7	289.2	295.6	259.3	264.4
Diabetes mellitus----------250	183.3	185.9	186.8	182.4	181.5	179.7	172.0	160.1
Cirrhosis of liver----------571	28.8	28.8	30.9	30.1	29.5	28.8	29.5	29.0
Arteriosclerosis----------440	215.0	206.8	197.8	190.3	194.0	190.6	178.5	159.4
Bronchitis, emphysema, and asthma----------490-493	135.5	126.8	129.1	127.2	128.2	126.2	114.9	106.2

[1] Because of decennial revisions of the International Classification of Diseases and changes in rules for selecting the cause of death, there is lack of comparability to a varying degree for some causes from one revision to the next. The beginning dates of the revision are 1921, 1930, 1939, 1949, 1958, and 1968. In some instances data are omitted for earlier years because appropriate subcategories are not available by the decedent. Except for diseases which are epidemic in nature abrupt changes at the beginning of the revision period are indicative of breaks in comparability. The cause-of-death titles are based on the Eighth Revision, International Classification of Diseases, Adapted for Use in the United States and in some instances have been considerably shortened.

[2] The "motor vehicle accident" rate should be added to the "other accident" rate to provide the single category "all accidents."

[3] Excludes data for emphysema without mention of bronchitis (ICD No. 527.1) because data were not available for these years.

[4] Population adjusted for age bias in races other than white.

NOTE: The Ninth leading cause of death is certain causes of mortality in early infancy. Data for these age groups are not applicable.

SOURCE: National Center for Health Statistics: Vital Statistics of the United States, Vol. II., Mortality, selected years.

Table 4. Death rates for all causes and for the 10 leading causes of death among persons ages 85 and over, based on the 1975 ranking of causes: United States, 1925-75

Cause of death and ICDA code[1]	1925	1930	1935	1940	1945	1950	1955	1960	1965
	(Rates per 100,000 estimated population ages 85 and over)								
All causes	27,266.8	22,795.6	22,457.9	23,565.1	20,958.2	20,196.9	18,983.3	19,857.5	20,199.7
Diseases of heart----------390-398, 402, 404, 410-429	6,769.3	6,699.1	7,412.7	8,563.9	8,132.3	9,152.5	8,745.0	9,337.8	9,600.5
Malignant neoplasms----------140-209	1,250.8	1,196.3	1,297.5	1,357.9	1,389.8	1,451.0	1,465.3	1,450.0	1,493.3
Cerebrovascular diseases----------430-438	3,594.6	2,837.8	2,533.8	2,615.7	2,510.2	2,990.1	3,290.6	3,680.5	3,741.8
Accidents----------E800-E949									
Motor vehicle accidents[2]----------E810-E823	58.1	83.4	87.3	69.1	46.9	45.1	41.1	37.9	40.3
All other accidents[2]----------E800-E807, E825-E949	1,291.4	1,218.6	1,286.5	1,283.9	1,265.9	927.5	741.9	586.8	565.9
Influenza and pneumonia----------470-474, 480-486	2,758.5	1,884.4	2,071.8	1,986.8	1,257.5	954.4	791.1	1,126.6	1,062.6
Diabetes mellitus----------250	124.4	133.8	182.5	220.7	209.7	150.3	163.1	181.7	220.0
Cirrhosis of liver----------571	83.8	64.4	60.3	60.0	54.6	39.0	37.0	28.8	21.7
Arteriosclerosis----------440		1,692.3	1,510.8	1,554.8	1,497.3	1,727.7	1,491.4	1,423.3	1,396.3
Bronchitis, emphysema, and asthma----------490-493						[3,4] 65.0	72.5	82.0	130.9

Cause of death and ICDA code[1]	1968	1969	1970	1971	1972	1973	1974	1975
All causes	19,614.3	19,084.6	16,344.9	17,426.4	17,351.8	17,429.4	16,532.8	15,187.9
Diseases of heart----------390-398, 402, 404, 410-429	9,293.3	9,162.0	7,891.3	8,468.9	8,386.9	8,382.1	7,983.1	7,282.0
Malignant neoplasms----------140-209	1,477.6	1,486.5	1,320.7	1,440.7	1,425.8	1,435.3	1,414.7	1,408.6
Cerebrovascular diseases----------430-438	3,611.7	3,479.0	3,014.3	3,191.5	3,204.4	3,197.9	2,996.8	2,654.8
Accidents----------E800-E949								
Motor vehicle accidents[2]----------E810-E823	39.8	34.5	34.2	36.3	35.3	34.7	26.8	24.2
All other accidents[2]----------E800-E807, E825-E949	474.7	454.5	358.5	376.9	376.1	369.5	333.5	292.7
Influenza and pneumonia----------470-474, 480-486	1,169.7	1,040.6	814.5	840.0	860.9	910.4	806.9	777.1
Diabetes mellitus----------250	258.3	262.0	230.2	248.0	255.3	245.9	248.4	224.6
Cirrhosis of liver----------571	22.8	21.8	20.3	21.6	20.3	19.9	18.5	16.9
Arteriosclerosis----------440	1,123.5	1,075.6	880.2	904.6	890.8	890.2	850.6	706.8
Bronchitis, emphysema, and asthma----------490-493	154.7	146.5	121.2	130.4	129.1	133.2	108.4	101.3

[1] Because of decennial revisions of the International Classification of Diseases and changes in rules for selecting the cause of death, there is lack of comparability to a varying degree for some causes from one revision to the next. The beginning dates of the revision are 1921, 1930, 1939, 1949, 1958, and 1968. In some instances data are omitted for earlier years because appropriate subcategories are not available by the decedent. Except for diseases which are epidemic in nature abrupt changes at the beginning of the revision period are indicative of breaks in comparability. The cause-of-death titles are based on the Eighth Revision, International Classification of Diseases, Adapted for Use in the United States and in some instances have been considerably shortened.

[2] The "motor vehicle accident" rate should be added to the "other accident" rate to provide the single category "all accidents."

[3] Excludes data for emphysema without mention of bronchitis (ICD No. 527.1) because data were not available for these years.

[4] Population adjusted for age bias in races other than white.

NOTE: The Ninth leading cause of death is certain causes of mortality in early infancy. Data for these age groups are not applicable.

SOURCE: National Center for Health Statistics: Vital Statistics of the United States, Vol. II., Mortality, selected years.

Figure 1

DEATH RATES FOR ALL CAUSES AT SELECTED AGES: UNITED STATES, 1925-75

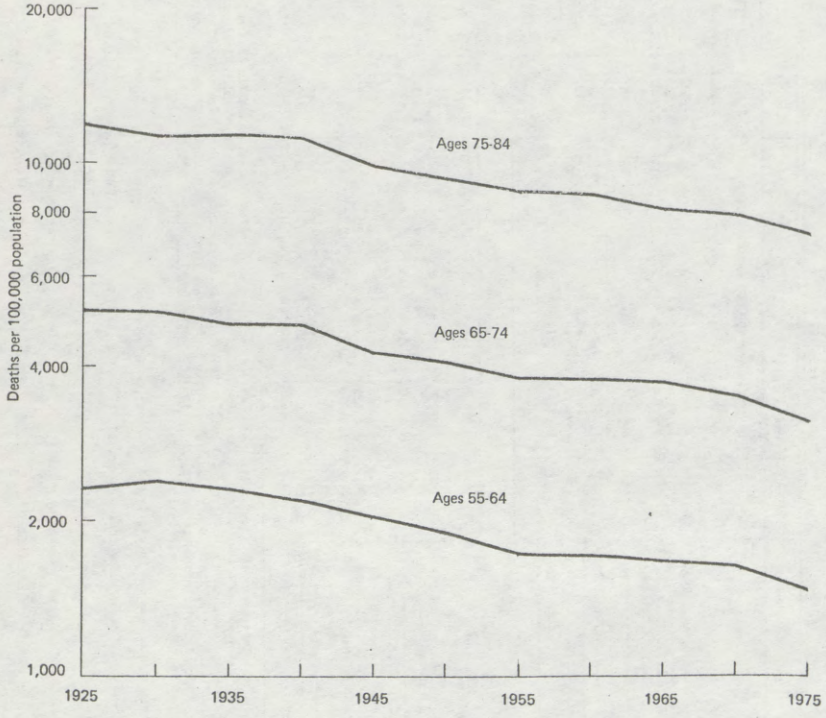

Figure 2

DEATH RATES FOR LEADING CAUSES AT AGE 65-74 YEARS: UNITED STATES, 1925-75

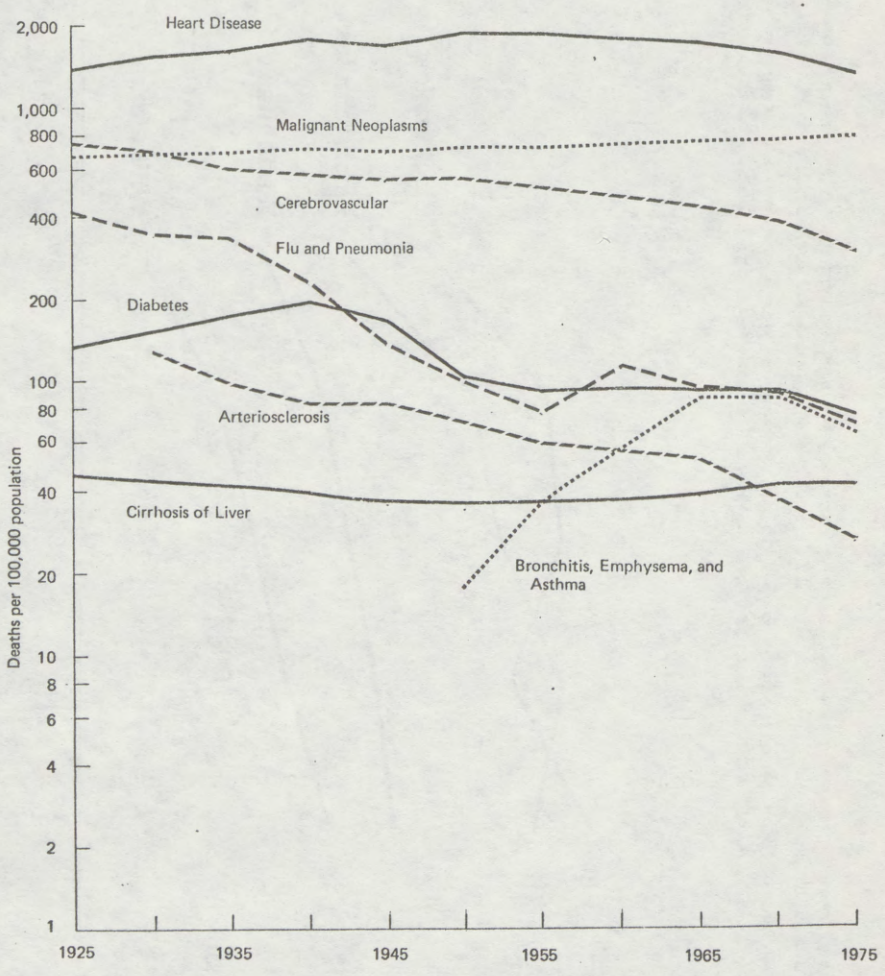

Figure 3

DEATH RATES FOR CEREBROVASCULAR DISEASES AT AGE 65-74 YEARS: UNITED STATES, 1955-75

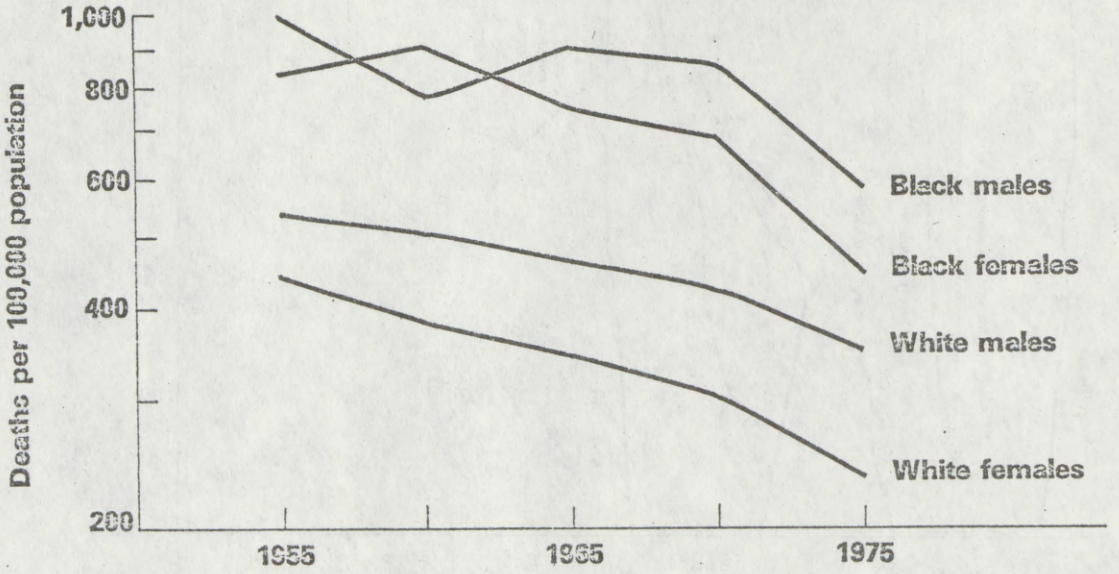

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Figure 4

DEATH RATES FOR CEREBROVASCULAR DISEASES FOR MEN AT AGES 65-74: UNITED STATES AND SELECTED COUNTRIES

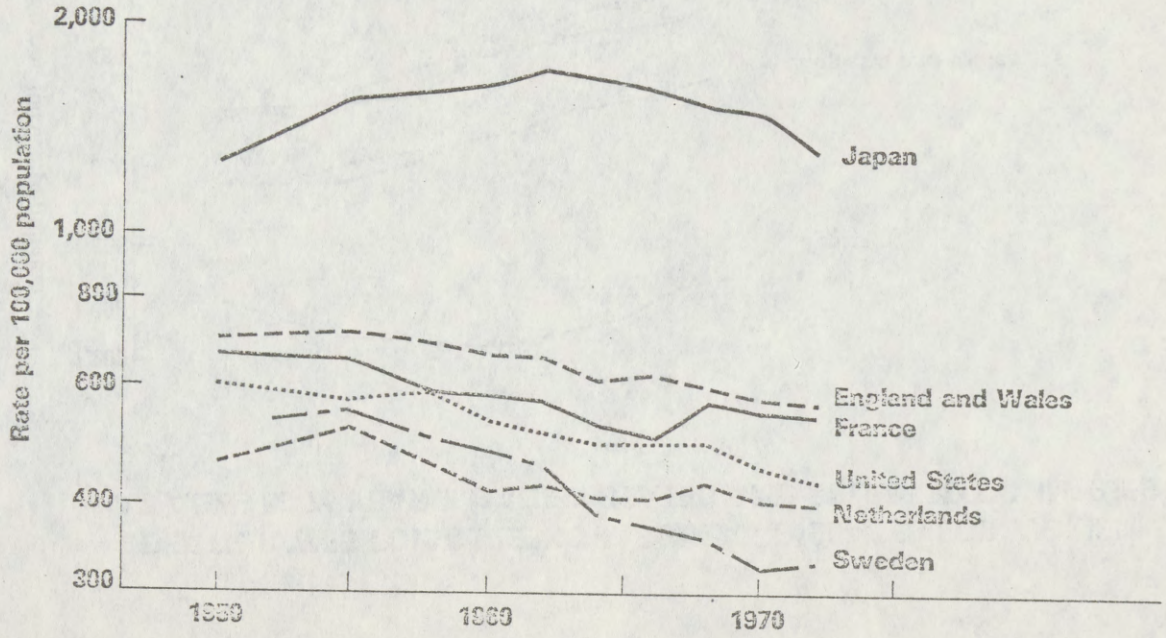

Figure 5

DEATH RATES FOR CEREBROVASCULAR DISEASES FOR WOMEN AT AGES 65-74 YEARS: UNITED STATES AND SELECTED COUNTRIES

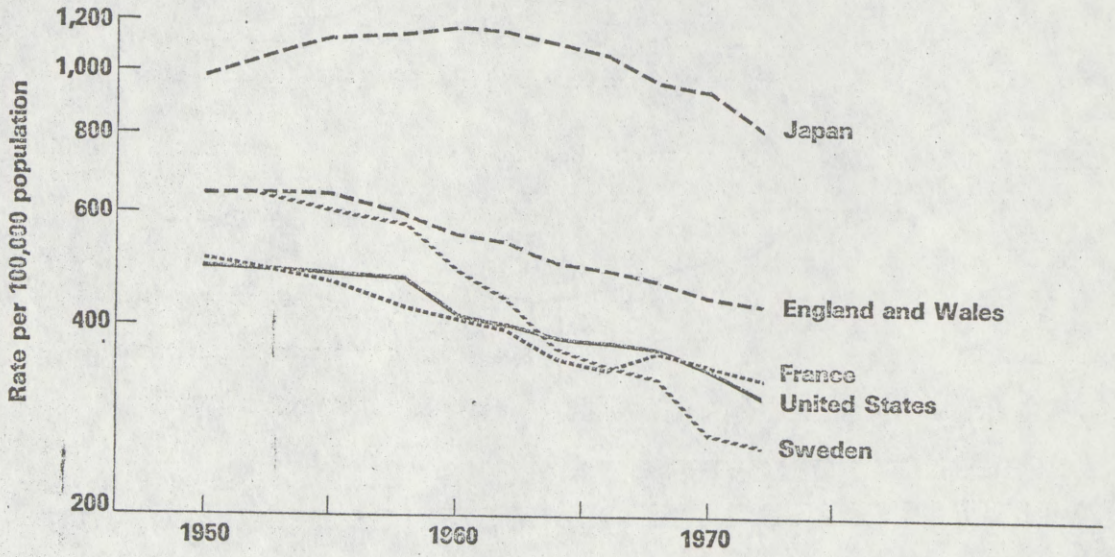

Table 5. Age specific death rates for both sexes, ages 55 and over by 5-year age groups and by race, United States, 1950-1975

	1950	1955	1960	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Total Both sexes														
55 and over-----	3,959.0	3,838.8	3,963.8	3,935.8	3,964.4	3,882.8	3,999.6	3,914.1	3,846.7	3,824.9	3,872.5	3,850.2	3,728.9	3,586.7
55-59----------	1,548.0	1,383.7	1,378.4	1,334.4	1,353.9	1,341.0	1,381.3	1,361.5	1,357.6	1,326.1	1,328.0	1,314.7	1,248.8	1,199.8
60-64----------	2,305.0	2,150.1	2,144.9	2,120.9	2,097.8	2,043.6	2,090.8	2,013.0	1,992.1	1,960.8	1,972.2	1,944.3	1,886.7	1,832.7
65-69----------	3,355.0	3,224.0	3,130.7	3,045.3	3,062.6	2,986.9	3,079.9	3,016.6	2,955.9	2,862.4	2,875.8	2,803.2	2,696.1	2,574.7
70-74----------	5,089.3	4,521.8	4,686.9	4,420.6	4,488.0	4,413.9	4,529.9	4,414.7	4,353.8	4,296.5	4,397.2	4,302.7	4,193.9	4,050.5
75-79----------	7,916.1	7,367.2	7,142.1	6,980.3	6,982.4	6,777.2	6,947.0	6,727.8	6,679.7	6,627.3	6,747.8	6,720.7	6,445.2	6,205.1
80-84----------	11,748.8	11,865.4	11,569.7	10,814.6	10,778.0	10,404.4	10,643.2	10,460.6	10,049.2	9,890.9	9,891.7	9,762.2	9,461.3	9,102.6
85 and over-----	19,748.5	17,931.3	19,630.4	20,069.0	19,981.2	19,223.2	19,582.7	18,821.8	17,245.9	17,449.7	17,318.4	17,354.9	16,476.1	15,187.9
Age adjusted 65 and over---			6,470.9	6,282.0					5,885.5					5,323.1
White														
55 and over-----	3,913.4	3,815.6	3,935.2	3,912.5	3,936.7	3,864.2	3,965.2	3,887.1	3,820.8	3,803.4	3,848.8	3,821.0	3,705.5	3,565.2
55-59----------	1,444.3	1,292.5	1,290.2	1,258.4	1,275.1	1,262.5	1,293.9	1,276.0	1,277.1	1,253.1	1,251.8	1,237.8	1,177.3	1,131.3
60-64----------	2,205.4	2,056.4	2,022.0	1,999.7	1,988.9	1,950.0	1,982.9	1,919.1	1,905.5	1,875.9	1,887.5	1,858.2	1,804.1	1,755.4
65-69----------	3,248.4	3,132.5	3,032.7	2,948.9	2,951.8	2,885.5	2,953.6	2,897.4	2,852.7	2,775.2	2,788.6	2,722.0	2,626.5	2,516.5
70-74----------	5,048.3	4,481.4	4,620.8	4,349.6	4,407.1	4,340.6	4,441.0	4,332.1	4,257.5	4,184.2	4,272.0	4,149.9	4,043.2	3,917.9
75-79----------	7,925.5	7,483.4	7,179.2	6,991.5	6,975.1	6,776.7	6,924.1	6,708.2	6,658.9	6,613.4	6,729.0	6,686.9	6,411.5	6,146.7
80-84----------	12,000.5	11,951.3	11,718.2	10,975.9	10,926.8	10,573.1	10,784.2	10,597.6	10,173.6	10,041.5	10,055.7	9,929.6	9,637.1	9,257.7
85 and over-----	20,226.8	18,440.1	20,087.8	20,583.1	20,468.3	19,743.6	20,083.3	19,345.5	17,683.7	17,938.3	17,814.5	17,842.8	16,991.5	15,707.5
Age adjusted 65 and over---			6,475.5	6,286.3					5,864.8					5,310.3
All other														
55 and over-----	4,551.8	4,119.7	4,280.4	4,182.8	4,251.4	4,073.0	4,352.9	4,189.1	4,108.6	4,044.8	4,111.7	4,141.9	3,958.9	3,807.2
55-59----------	2,754.9	2,349.8	2,214.7	2,071.1	2,108.1	2,086.8	2,206.9	2,168.0	2,122.4	2,038.5	2,074.8	2,073.5	1,944.4	1,843.7
60-64----------	3,566.3	3,293.1	3,497.3	3,373.8	3,210.6	2,990.3	3,172.4	2,937.7	2,827.3	2,758.5	2,761.5	2,740.5	2,645.9	2,553.7
65-69----------	4,778.0	4,343.0	4,207.1	3,962.3	4,095.0	3,928.0	4,249.7	4,117.6	3,911.4	3,682.6	3,684.6	3,544.8	3,321.0	3,082.0
70-74----------	5,651.9	5,053.3	5,517.0	5,249.9	5,409.1	5,233.8	5,521.6	5,325.5	5,391.6	5,473.3	5,744.1	5,955.5	5,837.8	5,505.6
75-79----------	7,829.7	5,912.4	6,660.0	6,833.3	7,105.1	6,783.4	7,242.3	6,962.7	6,941.3	6,797.3	6,975.5	7,148.8	6,846.7	7,036.7
80-84----------	8,323.7	10,252.7	9,387.3	8,704.3	8,760.0	8,204.7	8,801.3	8,732.9	8,431.5	8,065.0	7,915.8	7,819.1	7,418.0	7,364.5
85 and over-----	14,091.3	11,667.2	14,032.4	14,130.1	14,294.4	13,246.3	13,990.2	12,889.0	12,320.5	12,183.9	12,035.1	12,137.9	11,172.9	10,102.9
Age adjusted 65 and over---			6,330.5	6,134.0					6,015.2					5,493.8
Black														
55 and over-----	...	...	4,386.2	4,320.6	4,396.7	4,210.7	4,511.0	4,351.5	4,264.0	4,196.6	4,278.4	2,050.5	4,141.4	3,979.6
55-59----------			2,339.4	2,162.2	2,207.0	2,189.2	2,308.1	2,273.4	2,226.9	2,139.8	2,182.5	2,186.5	2,052.9	1,959.3
60-64----------			3,612.0	3,570.7	3,384.8	3,144.3	3,324.5	3,077.8	2,952.3	2,875.8	2,877.7	2,859.8	2,764.7	2,675.2
65-69----------			4,297.2	4,100.3	4,244.0	4,075.5	4,432.6	4,299.2	4,071.9	3,820.8	3,824.3	3,661.6	3,419.9	3,167.7
70-74----------			5,622.6	5,349.0	5,524.2	5,356.8	5,706.1	5,517.9	5,622.0	5,746.7	6,079.2	6,368.7	6,263.6	5,924.8
75-79----------			6,700.5	7,017.5	7,282.1	6,927.6	7,445.8	7,227.8	7,184.8	7,096.3	7,329.6	7,559.8	7,387.1	7,533.3
80-84----------			9,188.5	8,791.5	8,965.9	8,432.6	9,103.6	9,080.9	8,751.0	8,344.3	8,216.5	8,164.8	7,816.0	7,742.0
85 and over-----			13,828.4	14,257.9	14,540.7	13,509.3	14,289.1	13,336.1	12,754.8	12,433.3	12,367.5	12,476.8	11,630.7	10,567.1
Age adjusted 65 and over---			6,361.1	6,263.8					6,248.4					5,809.7
Other														
55 and over-----	...	...	2,951.3	2,623.6	2,649.8	2,585.8	2,674.5	2,518.8	2,530.4	2,533.3	2,494.1	2,479.5	2,289.8	2,180.4
55-59----------			961.6	1,059.5	1,018.4	969.2	1,116.3	1,037.0	1,040.5	1,023.5	1,036.4	1,011.1	966.7	853.8
60-64----------			2,059.1	1,515.6	1,560.6	1,494.0	1,623.9	1,470.6	1,498.6	1,493.1	1,308.1	1,464.5	1,410.1	1,350.0
65-69----------			2,774.2	2,230.4	2,342.0	2,266.0	2,276.8	2,194.8	2,208.5	2,208.5	2,150.0	2,198.3	2,145.9	2,057.8
70-74----------			4,075.0	3,803.7	3,817.2	3,619.4	3,291.2	3,234.2	3,076.2	2,955.3	2,936.0	2,757.4	2,644.6	2,571.7
75-79----------			6,106.7	4,833.3	5,123.8	5,190.9	5,039.1	4,404.2	4,534.6	4,044.8	3,987.5	4,025.7	3,280.0	3,002.2
80-84----------			12,566.7	7,681.8	6,669.2	6,153.3	6,193.8	5,847.1	5,822.2	5,742.1	5,360.0	4,959.1	4,316.7	4,329.2
85 and over-----			17,450.0	12,742.9	11,800.0	10,733.3	11,240.0	9,275.0	8,846.2	10,053.8	9,257.1	9,313.3	7,688.9	6,895.5
Age adjusted 65 and over---			5,940.0	4,334.5					3,780.0					2,985.0

SOURCES: Deaths: National Center for Health Statistics, Vital Statistics of the United States Mortality Volume II. Selected years, 1950-72. 1973, 1974 and 1975 data are available but not yet published.

Population: U.S. Bureau of Census, Current Population Reports Series P-25 No. 265 for 1950 and 1955, No. 519 for 1960, 1965-1969, No. 614 for 1970-1973 and No. 643 for 1974-1975.

... Not available.

Table 6. Age specific death rates for males, ages 55 and over by 5-year age groups and by race, United States 1950-1975

	1950	1955	1960	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Total males														
55 and over----	4,524.4	4,462.3	4,691.1	4,745.1	4,784.9	4,703.0	4,846.5	4,747.4	4,678.7	4,640.5	4,698.6	4,658.2	4,501.5	4,347.7
55-59----------	1,975.3	1,814.2	1,846.2	1,821.0	1,859.3	1,834.3	1,887.3	1,862.3	1,852.4	1,806.9	1,809.2	1,778.6	1,691.6	1,615.1
60-64----------	2,879.7	2,803.0	2,858.2	2,903.3	2,899.0	2,833.7	2,902.2	2,804.5	2,771.8	2,714.8	2,748.3	2,695.5	2,593.3	2,522.8
65-69----------	4,135.8	4,051.2	4,132.5	4,138.0	4,172.5	4,070.1	4,224.8	4,161.9	4,098.3	3,987.2	3,995.7	3,932.4	3,795.1	3,636.3
70-74----------	5,993.6	5,559.6	5,921.9	5,834.8	5,940.2	5,913.2	6,128.2	5,962.8	5,875.6	5,821.2	5,979.6	5,871.4	5,720.4	5,555.5
75-79----------	8,975.0	8,508.6	8,550.1	8,699.8	8,744.2	8,575.2	8,836.2	8,638.1	8,636.2	8,621.9	8,836.7	8,813.5	8,498.2	8,253.7
80-84----------	13,001.0	13,146.9	13,213.4	12,808.2	12,804.0	12,460.3	12,755.8	12,677.1	12,296.7	12,206.4	12,322.2	12,226.6	11,876.7	11,393.3
85 and over----	21,173.6	19,166.5	20,970.8	22,080.9	22,008.6	21,339.4	21,732.0	20,875.6	19,448.7	19,785.0	19,595.8	19,700.9	18,778.1	17,572.6
Age adjusted 65 and over--			7,712.1	7,751.6					7,490.2					6,955.6
White males														
55 and over----	4,484.5	4,450.5	4,674.3	4,731.8	4,764.3	4,693.2	4,816.2	4,723.4	4,656.2	4,621.8	4,674.5	4,628.8	4,474.4	4,322.7
55-59----------	1,875.8	1,735.5	1,777.2	1,751.5	1,781.5	1,758.0	1,795.7	1,772.2	1,766.8	1,727.4	1,722.2	1,692.4	1,605.6	1,534.6
60-64----------	2,796.8	2,719.7	2,749.4	2,801.2	2,807.5	2,759.1	2,801.9	2,721.6	2,692.3	2,634.8	2,670.0	2,610.1	2,511.5	2,443.7
65-69----------	4,039.8	3,979.2	4,046.4	4,061.8	4,088.0	3,996.1	4,128.0	4,070.0	4,017.3	3,926.9	3,927.4	3,870.5	3,740.2	3,590.9
70-74----------	5,975.1	5,540.9	5,881.1	5,778.8	5,871.6	5,858.7	6,058.5	5,901.4	5,810.3	5,744.5	5,893.8	5,761.1	5,605.9	5,462.2
75-79----------	8,992.2	8,673.7	8,631.9	8,741.9	8,768.8	8,608.7	8,843.5	8,644.3	8,649.1	8,654.2	8,857.7	8,823.5	8,499.3	8,253.6
80-84----------	13,286.3	13,267.9	13,400.2	13,073.5	13,043.8	12,703.5	12,992.6	12,896.1	12,506.9	12,435.6	12,592.9	12,514.5	12,181.7	11,832.0
85 and over----	21,636.3	19,728.1	21,484.8	22,733.6	22,566.0	22,013.2	22,371.2	21,593.7	20,075.3	20,420.4	20,223.8	20,312.5	19,431.5	18,257.9
Age adjusted 65 and over--			7,744.7	7,794.9					7,515.5					6,988.6
All other males														
55 and over----	5,010.0	4,608.5	4,870.7	4,884.2	4,993.8	4,805.1	5,149.7	4,983.4	4,901.5	4,824.0	4,937.9	4,952.3	4,764.1	4,591.7
55-59----------	3,120.9	2,630.7	2,692.0	2,492.6	2,604.1	2,570.2	2,763.1	2,726.8	2,686.1	2,599.3	2,685.3	2,656.9	2,550.1	2,392.9
60-64----------	3,899.1	3,812.1	4,021.0	3,940.8	3,822.7	3,589.4	3,900.6	3,622.2	3,541.2	3,473.1	3,484.2	3,492.2	3,356.5	3,280.8
65-69----------	5,346.6	4,934.3	5,061.8	4,853.1	4,966.4	4,746.8	5,106.0	5,001.3	4,822.3	4,547.6	4,624.8	4,495.5	4,300.3	4,038.7
70-74----------	6,216.1	5,796.6	6,449.4	6,433.9	6,701.0	6,505.8	6,868.5	6,573.4	6,539.9	6,603.3	6,840.8	6,986.9	6,883.9	6,534.9
75-79----------	8,727.7	6,612.2	7,565.7	8,180.5	8,367.0	8,169.5	8,747.9	8,562.5	8,683.4	8,256.6	8,671.8	8,703.1	8,421.4	8,254.3
80-84----------	9,291.9	11,311.1	10,725.5	9,725.4	9,990.6	9,437.9	9,988.1	10,113.2	9,858.6	9,401.1	9,389.7	9,377.1	8,762.4	9,167.4
85 and over----	15,742.1	12,707.7	15,416.1	15,761.8	16,233.3	14,653.8	15,512.2	14,102.3	13,448.9	13,629.2	13,592.0	13,867.3	12,782.5	11,693.8
Age adjusted 65 and over--			7,309.5	7,260.1					7,187.1					6,662.2
Black males														
55 and over----	...	...	5,013.4	5,081.0	5,194.1	4,993.8	5,373.3	5,206.7	5,119.4	5,041.6	5,175.2	5,197.8	5,017.3	4,839.4
55-59----------			2,657.0	2,633.8	2,764.5	2,719.0	2,918.4	2,884.4	2,844.8	2,748.6	2,846.0	2,828.7	2,712.3	2,548.0
60-64----------			4,183.7	4,226.9	4,070.9	3,811.9	4,131.2	3,847.1	3,727.7	3,661.8	3,681.2	3,688.3	3,537.9	3,466.3
65-69----------			5,181.5	5,039.8	5,176.2	4,939.9	5,364.8	5,247.8	5,053.4	4,766.9	4,858.8	4,687.4	4,489.7	4,201.5
70-74----------			6,577.9	6,559.0	6,825.0	6,680.1	7,095.1	6,841.0	6,855.4	6,936.1	7,262.7	7,487.1	7,435.3	7,045.5
75-79----------			7,653.7	8,461.4	8,635.0	8,365.1	8,951.9	8,801.8	8,745.0	8,641.7	9,108.6	9,246.9	9,130.4	9,080.2
80-84----------			10,507.0	9,919.6	10,178.9	9,826.3	10,598.2	10,674.1	10,395.0	10,092.1	9,928.4	10,021.1	9,421.9	9,738.7
85 and over----			15,375.0	15,966.7	16,378.1	15,023.5	16,225.7	14,959.5	14,415.4	14,080.5	14,060.5	14,248.9	13,214.3	12,450.9
Age adjusted 65 and over--			7,375.1	7,450.3					7,534.2					7,137.0
Other males														
55 and over----	...	...	3,466.4	3,111.1	3,191.2	3,153.9	3,224.5	3,093.3	3,088.8	3,040.6	3,022.2	3,016.6	2,810.3	2,731.6
55-59----------			1,156.8	1,247.7	1,200.0	1,220.5	1,375.6	1,279.5	1,268.9	1,295.6	1,288.9	1,200.0	1,204.2	1,142.3
60-64----------			2,437.0	1,810.5	1,915.8	1,866.7	2,043.6	1,795.0	1,960.0	1,848.8	1,785.7	1,814.0	1,783.7	1,693.0
65-69----------			3,429.4	2,904.0	2,907.4	2,962.1	2,851.6	2,906.3	2,881.8	2,700.0	2,635.3	2,797.1	2,611.4	2,530.6
70-74----------			5,035.7	4,842.9	5,107.1	4,531.3	4,429.4	4,125.0	3,872.7	3,954.2	3,838.5	3,664.3	3,446.7	3,454.8
75-79----------			6,730.0	5,816.7	6,066.7	6,461.7	6,745.5	6,190.9	6,083.3	5,092.9	5,293.3	5,088.2	4,242.1	3,900.0
80-84----------			13,075.0	8,171.4	8,457.1	6,977.8	6,510.0	6,860.0	6,640.0	5,981.8	6,109.1	5,366.7	4,750.0	5,272.7
85 and over----			15,800.0	14,225.0	15,750.0	12,140.0	11,350.0	9,571.4	8,737.5	10,985.7	10,714.3	11,414.3	10,137.5	8,045.5
Age adjusted 65 and over--			6,491.0	5,403.5					4,615.8					3,753.4

SOURCES: Deaths: National Center for Health Statistics, Vital Statistics of the United States Mortality Volume II. Selected years, 1950-72. 1973, 1974 and 1975 data are available but not yet published.

Population: U.S. Bureau of Census, Current Population Reports Series P-25 No. 265 for 1950 and 1955, No. 519 for 1960, 1965-1969, No. 614 for 1970-1973 and No. 643 for 1974-1975.

... Not available.

Table 7. Age specific death rates for females, ages 55 and over by 5-year age groups and by race, United States, 1950-1975

	1950	1955	1960	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Total females														
55 and over	3,421.9	3,269.0	3,325.0	3,254.1	3,284.9	3,208.9	3,310.4	3,241.4	3,180.3	3,175.3	3,218.2	3,212.8	3,122.4	2,990.9
55-59	1,120.2	966.4	930.3	882.4	885.5	885.2	915.4	901.5	904.8	886.4	887.9	890.0	845.1	821.3
60-64	1,728.9	1,529.6	1,494.1	1,418.1	1,381.6	1,341.5	1,373.4	1,316.5	1,308.7	1,301.3	1,294.2	1,287.8	1,267.5	1,226.8
65-69	2,617.4	2,450.2	2,251.0	2,137.7	2,146.1	2,097.6	2,145.5	2,088.3	2,034.3	1,953.0	1,975.3	1,900.4	1,821.7	1,731.4
70-74	4,265.1	3,616.8	3,632.2	3,309.9	3,364.5	3,267.6	3,327.3	3,260.0	3,229.6	3,176.7	3,241.1	3,155.6	3,073.7	2,945.1
75-79	6,991.3	6,400.8	6,010.6	5,698.5	5,694.8	5,482.0	5,610.8	5,400.4	5,342.9	5,275.7	5,348.1	5,339.4	5,107.7	4,878.6
80-84	10,735.3	10,860.2	10,377.7	9,466.8	9,427.8	9,056.4	9,278.7	9,063.3	8,660.0	8,492.3	8,450.0	8,322.7	8,070.4	7,686.9
85 and over	18,757.5	17,107.0	18,775.8	18,898.4	18,854.2	18,037.0	18,425.0	17,710.1	16,065.8	16,232.2	16,155.5	16,174.4	15,335.0	14,031.4
Age adjusted 65 and over			5,461.1	5,177.9					4,756.9					4,227.6
White females														
55 and over	3,372.3	3,238.2	3,290.3	3,230.9	3,254.3	3,186.9	3,275.4	3,214.4	3,155.2	3,081.9	3,197.5	3,186.4	3,103.7	2,974.3
55-59	1,012.5	864.8	825.2	799.8	805.7	804.7	830.9	819.0	827.5	817.1	819.4	820.0	784.8	761.6
60-64	1,613.7	1,426.6	1,360.2	1,281.8	1,258.5	1,232.7	1,258.9	1,213.1	1,215.4	1,211.7	1,203.0	1,199.5	1,182.8	1,149.5
65-69	2,503.9	2,344.1	2,145.1	2,025.9	2,018.0	1,976.2	1,997.8	1,949.0	1,914.2	1,846.1	1,874.5	1,804.1	1,740.1	1,662.7
70-74	4,209.7	3,562.7	3,552.8	3,231.3	3,281.5	3,188.4	3,232.6	3,169.4	3,119.5	3,050.2	3,099.5	2,986.2	2,912.4	2,798.8
75-79	6,996.4	6,485.2	6,027.1	5,697.3	5,667.0	5,470.9	5,576.6	5,373.4	5,312.0	5,245.4	5,323.6	5,290.3	5,064.8	4,801.8
80-84	10,969.7	10,931.6	10,512.1	9,587.5	9,535.8	9,185.2	9,377.2	9,160.4	8,757.9	8,605.8	8,571.1	8,449.3	8,198.9	7,813.5
85 and over	19,187.9	17,588.1	19,247.5	19,353.7	19,293.5	18,496.0	18,875.5	18,178.5	16,458.4	11,017.4	16,604.8	16,619.1	15,786.3	14,494.1
Age adjusted 65 and over			5,454.7	5,163.1					4,718.3					4,196.5
All other females														
55 and over	4,074.2	3,648.1	3,726.7	3,565.8	3,612.8	3,445.4	3,677.1	3,521.6	3,443.0	3,401.0	3,432.4	3,479.7	3,306.8	3,154.5
55-59	2,381.6	2,066.4	1,942.3	1,677.8	1,648.7	1,649.5	1,704.6	1,669.3	1,624.3	1,546.3	1,542.4	1,564.8	1,417.5	1,367.4
60-64	3,221.4	2,794.2	2,991.2	2,849.3	2,658.3	2,450.3	2,523.2	2,335.3	2,205.3	2,144.5	2,142.2	2,094.1	2,040.7	1,939.0
65-69	4,178.8	3,771.6	3,433.1	3,206.2	3,359.5	3,239.1	3,531.8	3,387.5	3,158.4	2,969.0	2,917.7	2,781.1	2,546.9	2,331.0
70-74	5,022.9	4,357.7	4,665.8	4,257.2	4,365.5	4,211.7	4,422.0	4,304.0	4,458.6	4,573.9	4,847.3	5,100.0	4,961.4	4,667.0
75-79	6,903.2	5,249.5	5,833.0	5,714.0	6,075.9	5,670.7	6,111.2	5,766.7	5,754.4	3,670.1	5,676.0	5,967.1	5,654.3	5,832.0
80-84	7,220.0	9,250.0	8,243.6	7,868.8	7,885.0	7,235.7	7,887.4	7,605.5	7,303.1	6,979.8	6,889.3	6,750.4	6,511.1	6,180.9
85 and over	12,929.6	10,894.3	12,960.0	12,998.0	12,977.4	12,050.9	12,967.2	12,067.7	11,400.0	11,271.1	10,939.0	11,115.9	10,236.7	9,177.3
Age adjusted 65 and over			5,461.6	5,207.9					5,074.7					4,569.7
Black females														
55 and over	...	...	3,820.0	3,676.8	3,725.0	3,561.1	3,803.6	3,657.4	3,578.9	3,524.7	3,563.6	3,625.7	3,455.0	3,306.4
55-59			2,040.2	1,739.7	1,711.3	1,721.5	1,774.8	1,742.6	1,698.7	1,622.1	1,611.4	1,640.5	1,488.4	1,454.8
60-64			3,091.7	2,992.2	2,783.2	2,568.3	2,636.1	2,438.1	2,303.2	2,221.5	2,210.6	2,179.5	2,122.5	2,019.6
65-69			3,497.7	3,324.4	3,479.3	3,371.4	3,668.1	3,544.7	3,292.8	3,071.5	3,016.2	2,871.9	2,618.0	2,387.6
70-74			4,749.7	4,351.9	4,444.6	4,316.0	4,591.2	4,465.2	4,669.8	4,807.9	5,143.0	5,472.0	5,346.1	5,025.3
75-79			5,877.3	5,869.3	6,226.5	5,815.3	6,292.2	5,986.1	5,998.6	5,927.0	5,889.6	6,313.7	6,102.6	6,390.4
80-84			8,118.9	7,926.0	8,044.0	7,414.1	8,051.9	7,967.3	7,617.3	7,185.3	7,102.9	6,977.5	6,728.7	6,472.9
85 and over			13,052.6	13,143.5	13,340.8	12,283.0	13,333.9	12,335.0	11,758.5	11,634.8	11,383.8	11,480.0	10,748.9	9,558.6
Age adjusted 65 and over			5,507.8	5,321.7					5,287.8					4,854.9
Other females														
55 and over	...	...	2,165.4	1,961.3	2,033.9	1,878.3	2,001.6	1,802.2	1,811.0	1,924.7	1,904.5	1,848.5	1,722.9	1,623.5
55-59			665.5	783.3	754.8	663.6	782.9	748.6	757.5	700.0	790.5	795.0	729.2	575.9
60-64			1,377.8	1,084.6	1,181.5	975.0	1,039.3	972.4	883.3	1,056.7	1,180.6	979.4	991.4	997.4
65-69			2,130.8	1,428.6	1,678.3	1,423.0	1,629.2	1,319.2	1,353.8	1,584.6	1,515.4	1,415.4	1,463.0	1,450.0
70-74			3,033.3	2,684.6	3,015.4	2,646.7	2,152.9	2,264.4	2,095.2	2,000.0	1,958.3	1,780.4	1,655.6	1,645.7
75-79			4,860.0	3,522.2	3,866.7	3,690.0	3,790.9	3,133.3	3,207.1	3,066.7	2,835.3	3,022.2	2,409.5	2,179.2
80-84			11,550.0	6,825.0	5,500.0	4,916.7	5,666.7	3,850.0	4,266.7	4,811.1	4,444.4	4,230.0	4,236.4	3,530.8
85 and over			11,200.0	10,766.7	8,525.0	8,975.0	8,860.0	8,860.0	7,516.7	7,685.7	6,825.0	7,475.0	5,730.0	5,745.5
Age adjusted 65 and over			4,629.8	3,458.4					2,685.7					2,199.6

Deaths: National Center for Health Statistics, Vital Statistics of the United States Mortality Volume II. Selected years, 1950-72. 1973, 1974, and 1975 data are available but not yet published.

Population: U.S. Bureau of Census, Current Population Reports Series P-25 No. 265 for 1950 and 1955, No. 519 for 1960, 1965-1969, No. 614 for 1970-1973 and No. 643 for 1974-1975.

... Not available.

Table 8. Death rates per 100,000 resident population age 65 and over for total population and age adjusted: United States, 1960, 1965, 1970, 1975

	1960	1965	1970	1975	1960	1965	1970	1975
	Death rates per 100,000 population age 65 and over							
	Unadjusted				Age adjusted			
BOTH SEXES								
All races	6,057.6	6,020.3	5,885.5	5,432.4	6,470.9	6,282.0	5,885.5	5,323.1
White	6,065.5	6,041.5	5,891.5	5,442.7	6,475.5	6,286.3	5,864.8	5,310.3
All other	5,961.8	5,786.0	5,821.5	5,348.4	6,330.5	6,134.0	6,015.2	5,493.8
Black	6,009.2	5,905.3	6,028.9	5,584.4	6,361.1	6,263.8	6,248.4	5,809.7
Other	5,257.5	4,290.2	3,779.7	3,146.8	5,940.0	4,534.5	3,780.0	2,985.0
MALES								
All races	7,083.7	7,240.3	7,203.5	6,702.7	7,712.1	7,751.6	7,490.2	6,953.6
White	7,103.4	7,279.2	7,233.8	6,735.3	7,744.7	7,794.9	7,515.5	6,988.6
All other	6,867.2	6,826.0	6,888.0	6,399.4	7,309.5	7,260.1	7,187.1	6,662.2
Black	6,928.4	6,984.0	7,179.0	6,767.6	7,375.1	7,450.3	7,534.2	7,137.0
Other	6,162.5	5,230.6	4,583.5	3,878.4	6,491.0	5,403.5	4,615.8	3,753.4
FEMALES								
All races	5,209.1	5,083.8	4,937.3	4,550.9	5,461.1	5,177.9	4,756.9	4,227.6
White	5,215.0	5,097.8	4,935.1	4,554.6	5,454.7	5,163.5	4,718.3	4,196.5
All other	5,149.8	4,921.9	4,965.6	4,511.3	5,461.6	5,207.9	5,074.7	4,569.7
Black	5,204.4	5,037.4	5,158.0	4,722.2	5,507.8	5,321.7	5,287.8	4,854.9
Other	4,025.8	3,124.0	2,731.6	2,396.2	4,629.8	3,458.4	2,685.7	2,199.6

NOTE: Rates were calculated for this paper and are not official rates.

SOURCES: Deaths: National Center for Health Statistics, Vital Statistics of the United States, Vol. II Mortality 1960, 1965, and 1970. 1975 (to be published).

Population: U.S. Bureau of the Census, Current Population Reports, Series P-25, Nos. 519(for 1960 and 1965), 614(for 1970) and 643(for 1975), Table 2.

Table 9. Death rates per 100,000 resident population age 65 and over adjusted by population enumeration factors and age and enumeration adjusted: United States, 1960, 1970

	1960	1970	1960	1970	1960	1970	1960	1970
	Deaths rates per 100,000 population age 65 and over							
	Unadjusted		Age adjusted		Enumeration adjusted		Enumeration and age adjusted	
BOTH SEXES								
All races	6,057.6	5,885.5	6,470.9	5,885.5	5,982.3	5,815.2	6,412.3	5,741.2
White	6,065.5	5,891.5	6,475.5	5,864.8	5,973.6	5,816.8	6,390.2	5,725.8
All other	5,961.8	5,821.5	6,330.5	6,015.2	6,091.4	5,797.9	6,606.6	5,836.6
Black	6,009.2	6,028.9	6,361.1	6,248.4	6,143.5	5,998.0	6,636.7	6,000.8
Other	5,257.5	3,779.7	5,940.0	3,780.0	5,324.1	3,803.8	6,090.2	4,680.6
MALES								
All races	7,083.7	7,203.5	7,712.1	7,490.2	7,121.4	7,173.7	7,814.3	7,407.8
White	7,103.4	7,233.8	7,744.7	7,515.5	7,103.4	7,177.5	7,790.5	7,400.2
All other	6,867.2	6,888.0	7,309.5	7,187.1	7,331.5	7,132.7	8,011.1	7,414.5
Black	6,928.4	7,179.0	7,375.1	7,534.2	7,397.5	7,433.1	8,076.4	7,635.4
Other	6,162.5	4,583.5	6,491.0	4,615.8	6,573.3	4,751.2	7,315.2	6,697.4
FEMALES								
All races	5,209.1	4,937.3	5,461.1	4,756.9	5,071.4	4,850.8	5,322.6	4,591.8
White	5,215.0	4,935.1	5,454.7	4,718.3	5,072.3	4,854.5	5,303.5	4,572.5
All other	5,149.8	4,965.6	5,461.6	5,074.7	5,059.0	4,809.9	5,440.0	4,739.6
Black	5,204.4	5,158.0	5,507.8	5,287.8	5,132.0	4,977.5	5,510.8	4,889.2
Other	4,025.8	2,731.6	4,629.8	2,685.7	3,670.6	2,768.0	4,088.0	3,159.5

NOTE: Rates were calculated for the purpose of this paper and are not official rates.

SOURCES: Deaths: National Center for Health Statistics, Vital Statistics of the United States, Vol. II Mortality 1960 and 1970.

Population: U.S. Bureau of Census, Current Population Reports, Series P-25, No. 519 Tables 2 and 6 (for 1960) and No. 614 Tables 2 and 4 (for 1970).

Enumeration Adjustment: U.S. Bureau of Census, Current Population Reports, Series P-25, No. 704 Tables E-1 (for 1970) and No. 519, Table A-2 (for 1960).

HISTORICAL CHANGES IN THE LIFE COURSE AND THE FAMILY: POLICY IMPLICATIONS FOR THE AGED

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May 24, 1978

The recognition of old age as a major social, economic, and psychological problem of our times is part of a larger historical process over the past two centuries, involving the emergence of new stages of life and their societal recognition. One of the most important contributions of historical knowledge is its capacity to broaden our understanding of the relationship between individual development, changes in family behavior, and other institutional changes in the larger society. An understanding of the past not only helps explain how we got to where we are; beyond that, the historical experience provides valuable comparisons between past and present, helping us assess the magnitude of contemporary problems and judge their uniqueness. From a policy perspective historical precedents can provide important models for future planning (as will be discussed later).

History is particularly valuable for our understanding of the problems of the elderly because each group as it reaches old age brings with it historical experiences of its earlier life. The historical background of different cohorts affects their respective adaptation to old age. This discussion will focus, first, on some of the historical changes in the life course over the past century; second, on their relationship to historical changes in the family; and, third, on the policy implications of such developments.

The timing of life-course transitions has changed significantly in American society over the past two centuries, as have the age configurations within the family unit as it moves from marriage to dissolution in old age (Hareven, 1977; Uhlenberg, 1978). Important changes have also occurred in the synchronization of individual time scheules with the collective time tables of the family unit. Demographic, economic, and cultural factors have combined to account for the differences in the timing of such life-course transitions as leaving home, entry into and exit from the labor force, marriage, parenthood, the "empty nest," and widowhood. These changes are particularly significant in their impact on the role and position of the elderly within the family unit.

As Uhlenberg (1974, 1978) suggests, over the past century several important demographic developments have tended to effect greater uniformity in the life course of American families, and have considerably increased the chances for intact survival of the family unit over the lifetime of its members. As a result of the decline of mortality since the late nineteenth century, there has been a greater chance for children to survive into adulthood, and to grow up with their siblings and with both parents alive. Similarly, women have had a greater chance to survive through adulthood and to fulfill the normally prescribed family roles, namely, marriage, raising children jointly with a husband, and survival with

husband through the launching stage (Uhlenberg, 1974). Historical investigation of birth cohorts from 1870 to 1930 has thus shown that an increasing proportion of the population has entered prescribed family roles and, except for divorce, has lived out its life in family units (Uhlenberg, 1974). Contrary to conventional assumptions, there has thus been a growing uniformity in life-course transitions into family roles and survival through the entire family cycle except for disruption through divorce. (The trend in solitary residence since the 1950s suggests a change in this pattern (Kobrin, 1976).)

Given these continuities, why have the middle and later periods of life emerged as problematic? Interestingly, the same demographic factors that are responsible for continuities in family roles have also generated important discontinuities, which have tended to enforce segregation among different age groups in the family and in the larger society. These discontinuities in the life course over the past century were expressed in changes in the timing of transitions into and out of family roles, namely, transitions to adulthood, in family formation and parenthood, entry into the postparental or "empty nest" period, and into old age. They are also closely related to the gradual segmentation of the life course into societally acknowledged stages (childhood, youth, adolescence, adulthood, middle age, and old age), each with its recognized problems, functions, and needs (Kett, 1977; Hareven, 1976;

Fischer, 1977; Neugartent, 1968). In the nineteenth century, these transitions occurred more gradually and were timed less rigidly than in contemporary society. Over the past century, transitions to adulthood have become more uniform for the entire population, more rapidly timed, more orderly in sequence, and more definite (Modell, Furstenberg, and Hershberg, 1976).

The age configurations within the family have changed too. The combination of fewer children overall with segregation of childbearing to the early stages of the family cycle and children's leaving home more uniformly earlier in their parents' lives has resulted in a widespread emergence of the empty nest as a characteristic of middle and old age (Glick, 1977).

In the nineteenth century, later age at marriage, higher fertility, and shorter life expectancy rendered different age configurations within the family from those characterizing contemporary society. These differences were reflected in the following areas: In families with typically larger numbers of children and with children remaining in the household longer, parenthood extended over a longer period of time, sometimes over the parent's entire life. Since children were spread in families along a broad age range, children were exposed to a greater variety of ages within their own families. Older siblings in turn frequently "trained" for adult roles by acting as surrogate parents for younger

siblings. Proportionally fewer adults lived alone, in contrast to the current emergence of an increasing tendency toward solitary living, especially for women in later years of life (Kobrin, 1976).

In modern society, by contrast, the postparental period comprises one-third or more of the married adult life span. Glick (1977) concludes that the period of the empty nest has increased over the past eighty years by eleven years (from 1.6 to 12.3 years): "The couple now entering marriage has the prospect of living together 13 years after launching their children, more than one-third of the 44 years of married life that lay ahead of them at the time of marriage" (Glick, 1977:9). Growing sex differentials in mortality above age fifty have made age-structure imbalance and widowhood more important features in women's lives. In this respect, Uhlenberg (1978) has noted that the major change since the late nineteenth century has not been in the emergence of an empty nest as such, but rather in the proportion of a woman's lifetime that this period encompasses. Earlier marriage and earlier completion of childbearing and childrearing on the one hand, and greater survival into older age on the other, have resulted in a higher proportion of a woman's life spent, first, with a husband but without children, and then alone, without either husband or children.

The full implication of these changes in the timing of life-course transitions into family roles is realized in

connection with changes in labor force participation. In the nineteenth century entry into and exit from the labor force were only mildly age related. Children started to work as early as they could, and old men stopped working only when they were too old or too feeble to continue. The imposition of compulsory schooling and child labor laws on the one hand, and the introduction of institutionalized retirement on the other, have set clear age boundaries to the work life. These changes not only pushed older people out of the labor force at a specific age, but did so precisely after their children had already left home, thus losing a source of familial support as well.

The implication of these changes for the middle-aged and the aged are significant: The nineteenth-century patterns allowed for a wider age spread within the family, and for greater opportunity for interaction among parents and adult children, as well as among other kin. The tendency of children to postpone setting up independent households, or to return to the parental household after marriage, was part of a flexible pattern of family adaptability to economic insecurity. Family needs and the imperative for exchanges along the life course served as important mechanisms for mutual assistance and for support in old age (Anderson, 1971). The demographic changes discussed above, combined with the increasing rapidity in the timing of life-course transition, have converged to isolate and segregate age groups within the family as well as in the larger society.

Historical Changes in the Family

One of the pervasive myths about the family in the past has been the assumption that families were great extended units with three generations coresiding in the same household. Recent historical literature has already effectively demolished one of the prevailing explanations for the isolation of the aged in American society, namely, the decline and breakup of traditional extended (especially three-generational) families under the impact of industrialization and urbanization (Laslett and Wall, 1972; Hareven, 1974). The reason for the segretation of old people in modern society does not lie, as has been argued, in the breakdown of the "traditional" family. Rather it results from changes in family membership, roles, and values, and from changes in the family's interaction with other institutions in the larger society.

The majority of households in the past were nuclear. Aging parents or other relatives rarely coresided in their children's household. Most of the elderly in the past, as in the present, continued to live in nuclear households and tried to maintain the headship of their households, and thus, their independence, as long as they could. If people were too old and too poor to continue heading their own households, they occasionally moved in with their children. This holds especially true for widows. Only about one percent of the aged lived in institutions. The majority continued to live in a family setting and to head their own households. Older people were able to do this, by taking strangers into their

households--as boarders and lodgers in exchange for pay or services.

One of the family's most important sources of flexibility and adaptability in the past was the presence of surrogate kin in the household. Boarders and lodgers who were themselves in a state of transition between leaving their parent's homes and setting up their own households, entered exchange relationships with older heads of households, whose own children had left home. The fact that approximately one-fourth to one-third of urban populations in the nineteenth century either boarded with families or took in boarders testifies to the pervasiveness of this practice of economic exchange as a life-course and migration phenomenon.

Boarding and lodging thus fulfilled the important role of the "social equalization of the family" (Modell and Hareven, 1973). The taking of strangers into the household met important needs at both stages of the life course: It facilitated transition to independent adulthood (especially when it involved migration) and it provided sources of support and sociability for older heads of households. The withdrawal of strangers from the family and the virtual disappearance of the practice of boarding and lodging since the 1930s has robbed the family of one of its important sources of fluidity and adaptability to changing economic circumstances.

Another major change has been in the interaction of the aged with other kin. To what extent can the elderly today

depend on support from kin, and how is this pattern different from that of the past?

Over the past two centuries there have been no drastic changes in the organization and structure of kin. Historical research has shown that rather than a breaking up of traditional kinship ties, there has actually been a continuity in the functions of kin and in the reliance of the elderly on support from their kin. Today, as in the past, a major proportion of the aged prefer to live in proximity to their kin. However, despite this apparent continuity, there have been major changes in the role of kin, which have serious implications for the status of the elderly today. First, geographic mobility has greatly contributed to a greater separation of people from their kin. Second, and more significant, the nature and quality of kin relations have changed as well. In earlier periods, kin served as the most essential resource for economic assistance and security and carried the major burden of welfare functions, many of which now fall within the purview of the government. Exchange relations among kin and mutual assistance were the very basis of assistance in old age. One's kin were one's almost exclusive source of social security.

The gradual replacement of functions of kin by the public sector and the growing emphasis on sentimentality and privacy in family relations have tended to diminish the central role which kin had in the support of the elderly in the past. Thus, current studies documenting continuing interaction of the aged

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with their own kin must be understood in their proper perspective: While there is evidence of frequency of communication between the aged and their kin, there is little systematic evidence of continuing and consistent support. The quality and persistence of that interaction is not clear either. The current involvement of the elderly with kin, as Shanas (1968) and others have been finding, represents an important historical transition: These elderly have carried over into old age the historical attitudes and traditions which were prevalent when they were growing up earlier in this century, for instance, a strong reliance on relatives. They also have kin available, because of the larger family size of earlier cohorts. Future cohorts, as they reach old age, might not have the same strong sense of integration with kin, nor might there be sufficient numbers of kin available for them to rely on. It would be a mistake, therefore, to leave kin to take care of their own at a time when the chances for people to do so are considerably diminishing.

A related development has been the gradual transfer of functions of family welfare, including care for the elderly, from the family to the public sector, a process that culminated in the passage of social security legislation and in subsequent government welfare programs. The experience of public welfare policies for different age groups has drawn firmer boundaries between the family and the community (Bremner, 1956). In American society this shift has generated considerable

ambiguity in the expectations for support and assistance for the elderly from their own kin. On the other hand, it is assumed that the welfare state has relieved children from the responsibility of supporting their parents in old age; But these public measure are not sufficient in the economic area, nor do they provide the kind of support and sociability in areas traditionally provided by the family. It is precisely this ambiguity, and the failure of American society to consummate the historical process of transfer of functions from the family to public agencies, and the failure to draw specific boundaries between the responsibility of the family and those of the government, that have rendered the elderly vulnerable. This is not to argue that all functions of care of the elderly should be transferred from the family to public agencies, but rather that the respective functions of each be more clearly defined and that the family receive the necessary supports in order to be able to carry out its part of the responsibility.

So far this discussion of changes in the timing of life-course transitions and the family has generalized on the entire population. In reality, these historic trends were not experienced uniformly. Different cohorts were affected differently by the changes discussed above (Riley, Johnson, and Foner, 1972). The historical experience of a cohort, particularly its earlier life events, would seriously affect its adaptability to the conditions it encounters in old age.

In addition to variation in social and economic backgrounds, there have also been variations in factors affecting earlier life-course transitions of different cohorts. The following factors affecting the location of cohorts in historical time are of special significance: definitions of age and aging in specific time periods; the availability of public welfare assistance outside the family directed toward specific age groups; the nature and pace of each group in its transitions into different adult roles; and the emergence of societal regulation governing such transitions (schooling, child-labor and retirement laws, for example).

People who experience erratic and less rigidly age-related or institutionalized transitions earlier in life would respond differently to rigid transitions in old age. Another example is the first group to experience mandatory retirement in the twentieth century; the members of this group would have been affected more strongly by this discontinuity since they had not experienced sharp age-related discontinuities earlier in life. Similarly, cohorts who had had no experience with public welfare agencies in early life-course stages would be less adept at interacting with bureaucratic institutions than would cohorts who had come of age in the welfare-state regime (Hareven, 1976).

Policy Implications

One of the most important lessons from history is an understanding of the location of different cohorts in historical time. From a historical perspective one views the elderly not merely as an aggregate of individuals but also as an age group moving through history. An understanding of the historical experience of different cohorts could thus help explain their current condition and predict their future needs.

The ways in which different groups experienced life-course transitions earlier in life is relevant to their transition into "old" age. Rather than formulating overall programs for the "aged" and for the "elderly," it is important to plan policies which differentiate among the needs of different cohorts as they are affected by their cumulative life experiences, the pace of their past transitions, and their cultural values, also taking into account the variations in the experience of different ethnic groups.

Future cohorts entering old age will vary considerably in number. For example, cohorts who reach old age between the years 2010 and 2020 will be considerably greater in number than earlier cohorts because of the baby boom. Except for the parents of the baby boom, future cohorts reaching old age will have fewer children, and will have fewer siblings to rely on for assistance. Thus, they will have much smaller kinship networks to draw upon for support. Future cohorts

entering old age will also be more predominantly native American. Because of the decline in immigration since the 1920s, 90 percent of the members of these cohorts will have been born and reared in the United States and will therefore have a lesser tradition of reliance on kin support than did earlier cohorts. The aged in the future will also adopt more easily to bureaucratic institutions, because they will have had experience dealing with bureaucracies from earlier ages. Policy measures directed toward these different cohorts will therefore have to take into account their unique experiences in order to meet their needs more effectively.

Policy planners must consider such variations in the backgrounds and needs of different cohorts as they reach old age. The decline in available kinship networks for the aged in the future would particularly require government programs that would provide the necessary assistance--especially social supports--to enable the elderly to continue living in the community, rather than in institutions.

Historical precedent also provides an important model that could be adapted to the care of the elderly who have no families. The historical practice of surrogate families--that is, having people board in other people's households--could be incorporated effectively into policy for the aged. Thus, older people without kin could be placed as "foster elderly" in nonkin households in exchange for supports to those households. Provided there is proper followup and

supervision, such arrangements would integrate older people into surrogate family settings.

Historical changes in the role of kin also have significant policy implications. Public welfare agencies and institutions have replaced many of the functions traditionally held by kin, but kin have persisted in fulfilling important functions of care during crisis situations, especially when the elderly are involved. To assume that kin can take care of their own is to romanticize the continuity in viable kin roles. Historical evidence suggests that people paid a high price in terms of personal sacrifices when they carried the bulk of the responsibility in assisting their kin. The expectation that the elderly should rely on their own kin for major services is even less realistic today, given the high population turnover and changes in familial values.

A policy oriented toward the strengthening of families in order to enable them to provide better supports for the elderly would make it possible for the aged to function more effectively within the community, and to maintain their independence, without isolation. Existing public programs directed at specific age groups (children, youth, the aged) have tended to reinforce the historic trend toward age segregation. In order to avoid its continuation, future programs, continuing the necessary supports to meet the needs specific to the elderly, will also have to assist the entire family as a unit. While each age group or each stage of the life course requires programs

specially oriented toward its characteristic needs, it is also necessary to develop family-oriented programs that strengthen the family as the arena of interaction and socialization of different age groups.

The historical experience establishes beyond doubt that, despite the diversity in family behavior among various ethnic and cultural groups, there has been a continuity in the preference of adults from all age groups to live in independent households and for couples or individuals to head their own households. The elderly have shared this preference. The form of residence most accepted by the elderly is that of separate residence in close proximity to children or other kin. If this cultural preference is taken into account, future public policy measures will have to address two levels: First, greater supports to the elderly will be necessary, so that they can continue to maintain independent living arrangements. Such supports would include higher income through social security, subsidies for home ownership or for decent apartment rentals, subsidies for home health-care expenditures, and public-sponsored transportation to shopping areas and social activities. Second, if children or relatives are to assist their aging relatives, subsidies will have to be provided to families caring for elderly relatives, even if those relatives are not living in the same household; such subsidies might be in the form of tax incentives, or services performed by relatives might be recognized as <u>paid</u> services.

For those elderly who are unable to maintain independent residences and who have no kin, foster care could be provided, or conversely, younger people could live as lodgers or boarders in the households of the elderly, thus providing more humane, and perhaps less costly, alternatives to institutionalization.

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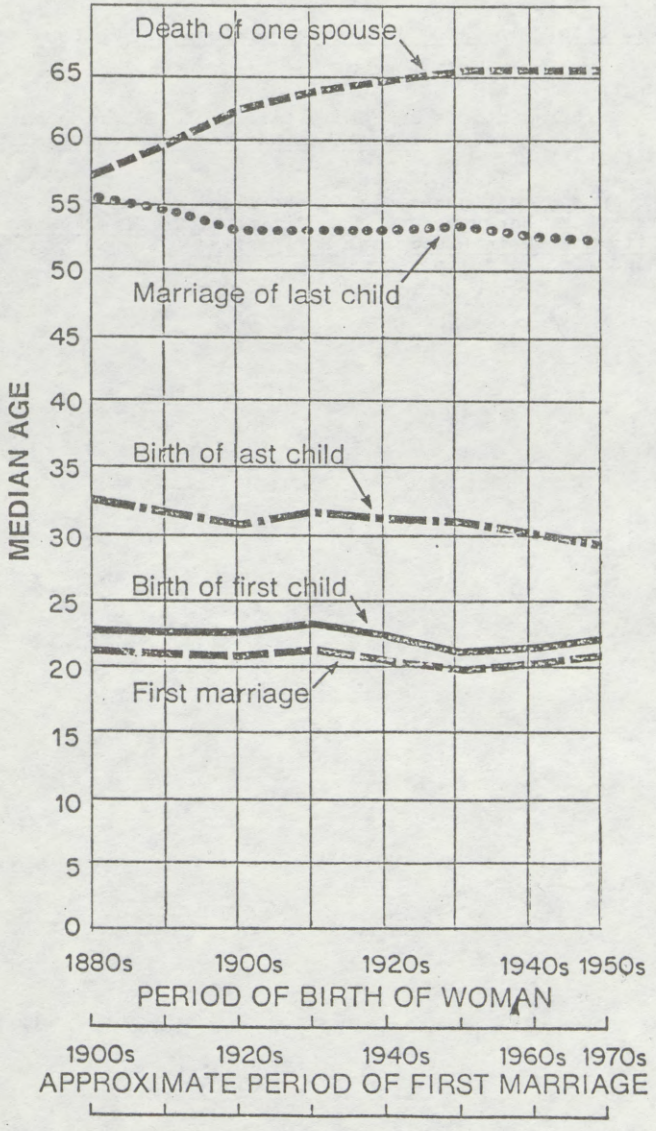
Source: Paul C. Glick and Arthur J. Norton, "Marrying, Divorcing and Living Together in the U.S. Today," Population Bulletin, Vol. 32, No. 5 (Population Reference Bureau Inc., Washington, D.C., 1977).

Figure 5. Median Age of Typical Mothers at Selected Points in the Life Cycle



The Future Location of the Elderly Population Within Metropolitan Areas

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Before the
Select Committee on Aging

and the
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U.S. House of Representatives

May 24, 1978

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The Future Location of the Elderly Population Within Metropolitan Areas

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I have been asked to testify on the future location of the elderly population within metropolitan areas. For the most part I shall proceed on the assumption that the best guide to the future is to be found in trends during the recent past. This assumption has been challenged and I will take note of some alternative possibilities later in this document.

Twenty years ago I called attention to the development of some "grey ghettos" near the center of many American cities (Cowgill, 1958). This assertion was based upon the study of 57 of the largest American cities as of the time of the 1950 census. While the phenomenon of significant concentration of residences of older people in certain areas of these cities was observable and unmistakable, I could not be sure at that time whether it was increasing (Cowgill, 1957). However, further research just completed (Cowgill, 1978) indicates that there has been a marked trend toward greater separation of residences of different age groups since 1940. Using a more precise instrument for measurement of segregation than had been available in my earlier study I determined that there was some increase in segregation during the 1940's, a sharp increase during the 1950's, and a continuing slow rate of increase during the 1960's. The change over the 30-year period was marked and unmistakable.

What this means is that over these three decades there was an increasing tendency for older people (65 and over) to live in different residential sections of our metropolitan areas apart from younger populations. In other words there

appears to have been a heightening and sharpening of the tendency which I detected 20 years ago for older people to concentrate in certain sections of our metropolitan areas, some of these areas justifying the term "grey ghettos".

However, this is not the result of any age stereotyping or intentional discrimination; for the most part it is the result of growth and the changing patterns of residence related to growth and prosperity. To be sure Federal housing and highway programs and policies during this period undoubtedly contributed to urban sprawl and one unplanned consequence of urban sprawl has been the increased separation of residences of the different generations. A phenomenon well known to demographers is that older people tend to stay put while younger adults are much more mobile. Within the context of my study this meant that older people tended to stay in their original residences in the older parts of metropolitan areas while their children married and moved to the suburbs. For the most part the movement to the suburbs by the younger population appears to have been voluntary, another aspect of the pursuit of the American dream. But there is considerable evidence to indicate that in the case of the white population during the period under consideration, it was hastened by the increasing presence of black populations in the core areas. The question as to whether the older white people who stayed behind in the central areas of these cities wanted to do so is moot. Many of them did and do want to continue to live in the old residence to which they have been accustomed and in association with neighbors who have been life-long friends. But some undoubtedly are trapped in an area that they perceive to be increasingly threatening, but are unable to move because of financial limitations.

In some communities the establishment of institutions or facilities specifically designed to serve and house older people may have contributed to the trend. This would include such things as building of high-rise apartments

for older people in a central city area, the building of nursing homes in this area adjacent to central city hospitals, and the conversion of some former downtown transit hotels to residential quarters for older people. However, institutionalization per se does not explain either the variations among different metropolitan areas in the extent of age segregation nor does it explain the trend. High segregation scores occurred in areas of greatest growth, not in communities with highest institutionalization. Furthermore, while the numbers and proportions of older people in our population have obviously been increasing, the proportion of older people in institutions has not increased.

On the other hand the proportions of older couples living alone in their own two-person households and the proportion of widows living in separate quarters in one-person households have been increasing dramatically. This appears to express their desire for independence and as they are financially able to maintain independent residences they appear to do so in increasing numbers. To the extent that this means remaining in the old family domicile or moving into a high-rise, both of which are independent and separate from their children or other relatives, this independent residence may have contributed to the trend which I observed. However it should be remarked that in the latter case I am talking about a degree of segregation which is desired by the old people themselves.

This raises the issue as to whether segregation of older people by residence is desirable. And again there is no clear-cut answer. We know that in general when older people live in communities or settings in which a high proportion of the residents are their equals in age, they maintain a higher level of activity and sociability (Rosow, 1967) and we know that a high proportion of older people want to live in and maintain their own domicile separate from children and other relatives (Beyer and Woods, 1963; Shanas, 1962).

We also know that considerable numbers of older people who can afford it are moving to segregated retirement communities in the Sunbelt of the United States and that their desire to avoid the annoyance and expense of having children in the communities is so strong as to have led to an attempt to zone those communities to exclude families with children. To be sure many older people will give stereotyped and culturally acceptable answers when asked in an interview whether they want to associate mostly with people their own ages or with people of all ages and will tell you that they want to be in contact with people of all ages, but their friendship patterns belie this statement. Most of their friends are their own age, and the type of relationships they seem to want to have with their children and grandchildren is best described in the words of an Austrian sociologist as "intimacy at a distance" (Rosenmayr, 1963). This means that while they want their own independent domicile they want to be close enough to relatives to continue intimate affectional relationships. They want the emotional support and security afforded by living reasonably close but they do not want the irritations and mutual interference that accompany joint residence. Furthermore, there is abundant evidence both here and in Europe (Shanas, et. al., 1968) that thousands of older people do achieve this kind of "intimacy at a distance." However, it is probable that in many cases the distance is greater than desired and the obstacles to continued intimacy are heightened by the residential segregation patterns which I have detailed above.

If we assume that the trends of the past are to be continued in the proximate future, then we should project a continued increase in the separation of residences of the older population from the younger generation and one aspect of this separation will undoubtedly continue to be a greater concentration of older people in central city neighborhoods, and near downtown high-rises and condominiums (Golant, 1975). However, this broad prediction must be qualified

by the further prediction that since growth has been the prime factor in producing such segregation in the past, declining growth of our metropolitian areas, occasioned both by declining rates of population growth and declining migration to metropolitian centers, should presage a slower rate of increase of segregation in the future. Furthermore, the pattern of age segregation must change. The continued aging of populations in their present locations, combined with the demise of the older groups, will change the pattern. Some of the suburbs spawned by the recent urban sprawl will in time age themselves, and unless there is replacement by younger populations this would tend to diminish the contrast between them and the central city. However it seems probable that just as the segregating process slows for the white population, it may accelerate for the black population as the latter find increasing opportunity to move to the suburbs.

While most predictions are essentially straight-line projections of trends in recent past, there are of course alternative interpretations of history, such as a cyclical or reactive view (Peterson, Powell, Robertson, 1975). According to this view much of history needs to be interpreted as reaction to major new inventions or conditions, such as the automobile and atomic energy. One possible alternative projection of the future distribution of the aged population in our metropolitian areas might be to take account of the growing energy crisis which could well reverse the pattern of residential priority and make it most prestigious (as well as economical) to live close to the center. If this were to happen then we might have a somewhat enforced development of age integration on the neighborhood level. I mention this as a possibility; I do not have the prescience to know whether it is likely to happen.

In making any recommendations for future policy, one has to sort out his values and try to be clear on what values are to be served. I personally do not favor either age segregation or age integration on a residential basis or any other basis. In my studies of aging and older people the one conclusion that stands out above all others is that older people are an exceedingly heterogeneous category; the only thing they have in common is longevity. There is reason to believe that the older generation contains a greater variety of interests, talents, capabilities, attitudes, and points of view than any other generation in our population. I think this is an important generalization because it means that if our older generation is to be well served in the things that they want and desire, we cannot have one set of solutions or one program. Our policies and programs must acknowledge this heterogeneity of the people to be served. This generalization applies to residence and housing as well as all other aspects of life. There are those who would like to live a hermit's existence; there are those who like continued and intensive sociability; there are those who like to live in small towns; there are those who prefer the heart of Manhattan; there are those who favor an age integrated suburb; there are those who prefer the age segregated retirement community. Policies and programs should take account of these varied preferences if public policy is to serve democratic interests.

As far as the issue of residential location within metropolitian areas is concerned, this leads me to two general conclusions relative to policy: (1) since one of the major reasons that some older people are unable to achieve the type of housing and the location of residence that they would prefer is lack of income, the obvious way in which public policy might further assist in solving this problem is to devote greater emphasis to the issue of income maintance of older people. Given adequate income older people are usually able to secure the

type of housing they want in the place they want it. Given an ample supply of adequate housing in a community, my preference as to the method to be used in subsidizing the income of older people in order to obtain access to such housing is the most direct one, i.e., a direct supplement to the income. This permits the older person him/herself to make the selection in terms of his/her own values. Of course if there is an inadequate supply of housing in the community in the first place then perhaps one would need to resort to a way of increasing that supply and at the same time making sure that the people for whom it is designed have access to it, including the ability to pay for it. (2) The second point I would make in regard to policy and program is that we need to find ways of accommodating the frequently expressed wish of older people for "intimacy at a distance" with members of their extended families. Families and older people themselves arrive at various arrangements and compromises in the effort to be close but not live with each other. Public policy has rarely if ever taken account of this preference. High-rises and condominiums are built with no regard to such a desire on the part of their intended residents. Zoning laws frequently prohibit the achievement of such arrangements. And to the extent that public policy fostured the massive urban sprawl of the last generation, it may have contributed to the gap between the oldest generation and their children in that it fostered an increasing distance between the suburb and the central city. Perhaps some innovative developer should be encouraged to experiment with adjacent communities designed for the two older generations, i.e., the young-old retirees and their middle-aged children. But again this is only one type of solution which no doubt would not fit the needs and desires of many people. And again perhaps the most general assistance in this direction is to be sure that the older generation has adequate income to secure the type of housing and the type of location they desire.

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Living Arrangements of the Elderly: Future Trends and Implications

by

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Statement prepared for Joint Hearings of the House Select Committees on Population and Aging, May 24, 1978.

Introduction

Changes in the size and age structure of the population would hardly warrant Congressional attention if the production and consumption of social and economic resources did not vary significantly with age. Because patterns of work, health, asset formation, geographic mobility and family structure are highly age-related, the continued "aging" of the American population will have profound and multiple consequences for the social structure. If only in terms of their numbers, members of the "baby boom" cohorts will, as they age, challenge and tax every existing program concerned with the welfare of older persons. As in the recent past, individual aging both will affect and, be affected by, the organization of vital goods and services. In holding these hearings, the Members of the Select Committees on Aging and Population, demonstrate their sensitivity to the reciprocal nature of the relationship between individual aging and population aging and the importance of this ongoing process for the American future. The members and staffs of the Committees are to be commended for their social insights.

I have been asked to focus my testimony on the implications of aging populations for one of the numerous areas of human behavior that manifests age differences--patterns of living arrangements.

Until the onset of old age, living arrangements trace a fairly predictable path over the course of the life cycle. For the most part, children are born into a family setting and remain there throughout their adolesence. During early adulthood, individuals leave their parent's house-

hold to establish their own, either by themselves or with a spouse. Throughout middle age, the husband-wife household predominates, with children entering and then leaving the family home. Marital terminations either by divorce or death, may sometimes disrupt the pattern, but remarriages frequently compensate for midlife dissolutions of husband-wife households.

It is not until the latter part of the life cycle that large proportions of each cohort confront yet another major adjustment in living arrangements. Unlike the changes of early adulthood, however, changes in living arrangements at the older ages are frequently involuntary and unwelcome occurrences, brought about by widowhood, impairments in functional ability or retirement. This adjustment frequently takes the form of a transition from being a member of an intact nuclear family (albeit often one in the "empty nest" state) to living in some type of alternative living arrangement. At the death of her spouse, an older woman, for example, is confronted with the choice of maintaining her own household or sharing one, perhaps with an adult child. The choice she makes will have a direct impact on the remainder of her life course.

In households shared with other family members, primary roles and social supports are immediately available to the older person. Even in households occupied by an older husband-wife or sibling pair, a delicate balance of care and compensation is struck that minimizes the need for outside services or, in extreme cases, precludes institutionalized placement. In the absence of kin within the houshold, the type of living arrangement limits the number and kinds of supports available. Particularly for older persons living alone, repeated acute or chronic illness episodes

or housing maintenance problems are serious challenges to the continuation of independent living. Research has monitored the importance of living arrangements not only for potential support networks available to older persons but also for the life satisfaction of the elderly, their patterns of activity, geographic mobility and morbidity and even their attitudes towards death.

Because of differences in personal preferences and in the kinds of options available to older persons, living arrangements of the elderly show considerable variation. While the majority of the elderly population (defined here as the population 60 years of age and over) are members of family households, 88 percent of older males and 64 percent of older females living in family households are spouses in an intact husband-wife family.[1] Once an elderly marriage is disrupted by the death of one partner, the survivor is likely to live in a non-family setting. Because of sex differentials in mortality more women than males reside in some type of alternative living arrangement at the older ages. Only 34 percent of widowers and 38 percent of widows live with family members. Approximately one out of every two older divorced, separated or widowed persons lives alone. The vast majority of older one-person households are female occupied. It is important to note at the onset of this discussion that relatively few older persons are institutionalized despite the dramatic increases in the rates of institutionalized placements by age.

Speculation on future trends in living arrangements presupposes

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[1]Data are from special tabulations of the Public Use Sample (P.U.S.) of Individual Records, the 1970 Census Enumeration. Data were released by the United States Bureau of the Census in computerized tape format to allow for micro analysis.

some understanding of the determinants of current patterns and the factors responsible for aggregate changes in the recent past. Results from two research projects, supported by the Administration on Aging, shed some light on these questions and provide an appropriate framework for discussing possible changes in patterns of living arrangements among the elderly over the next 20-30 years.

Determinants of Living Arrangements

Foremost among our conclusions are the simple observations that (1) living arrangements of older persons are not randomly distributed and (2) that housing behavior of the elderly reflects not only their current status and characteristics but also their previous life history. The last is a particularly salient point for the projection of future trends since the "baby boom" cohorts will enter old age with an accumulated life history quite distinct from those cohorts currently filling the age slots of the older population.

In part, the options available to the elderly depend on the number, sex, marital status and propinquity of relatives in successive generations of the family. The extended family structure that exists at one point in time, and within which the living arrangements of older members is embedded, is determined by rates of mortality, fertility, marriage and migration as they operated selectively on family members in the past. An elderly woman who has remained childless, for example, does not have available the option of either living with adult children or relying on them for other kinds of assistance in her old age. Thus living arrangements at the older ages are the outcome of a lifelong series of interactions between opportunities,

decisions, experiences and preferences.

In our work we have conceptualized living arrangements at the older ages as the outcome of a complex process involving sociodemographic, psychological, economic and health-related factors. We have found that these factors do not operate independently but interact with one another. We also have found that the process determining living arrangements at the older ages is not constant. The importance of functional health as a determinant of living arrangements increases with age and the effects of background variables, such as education, declines.

From our data we note the following general patterns:

1. Age, because of its association with declines in health and the probability of widowhood, is a strong predictor of living arrangements at the older ages. For unmarried older persons, between the ages of 60 and 74, the most common type of alternative arrangement is independently heading a non-family household as a primary individual. In 1970, 96 percent of all older primary individuals lived alone. At the older ages, 75 and above, the probability of living with relatives or being institutionalized increases. Living with non-relatives as a friend, partner or resident employee is rare among the elderly. The association between age and living arrangements is shown graphically in Figure 1 for older males and in Figure 2 for older females.[2]

2. Males and females at the older ages have dissimilar patterns of living arrangements. Most older men, even at the extremes of old age, are married and live with their spouses. If unmarried, older men are less likely to head their own households (either alone or with others) than women of the same age and marital status. Proportionately more unmarried men are institutionalized than are women. Older women, however, if unmarried and especially

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[2]In Figures 1 and 2 the curves falling below the line of unity represent instances where the odds for alternate living arrangements are less than those of a head or spouse; those curves above the line represent odds of alternative living arrangements which exceed the probability of living in an intact husband-wife household. The data in these charts are based on a log-linear analysis of unpublished 1960 and 1970 data from the U.S. Bureau of the Census. For a complete discussion of methodology and characteristics of the data bases consult Myers and Soldo (1976) and Soldo (1977a and b). Funding for this study was provided by the Administration on Aging, Grant Number 90-A-313.

Figure 1 Odds of Alternative Living Arrangements Relative to Head for Elderly Males

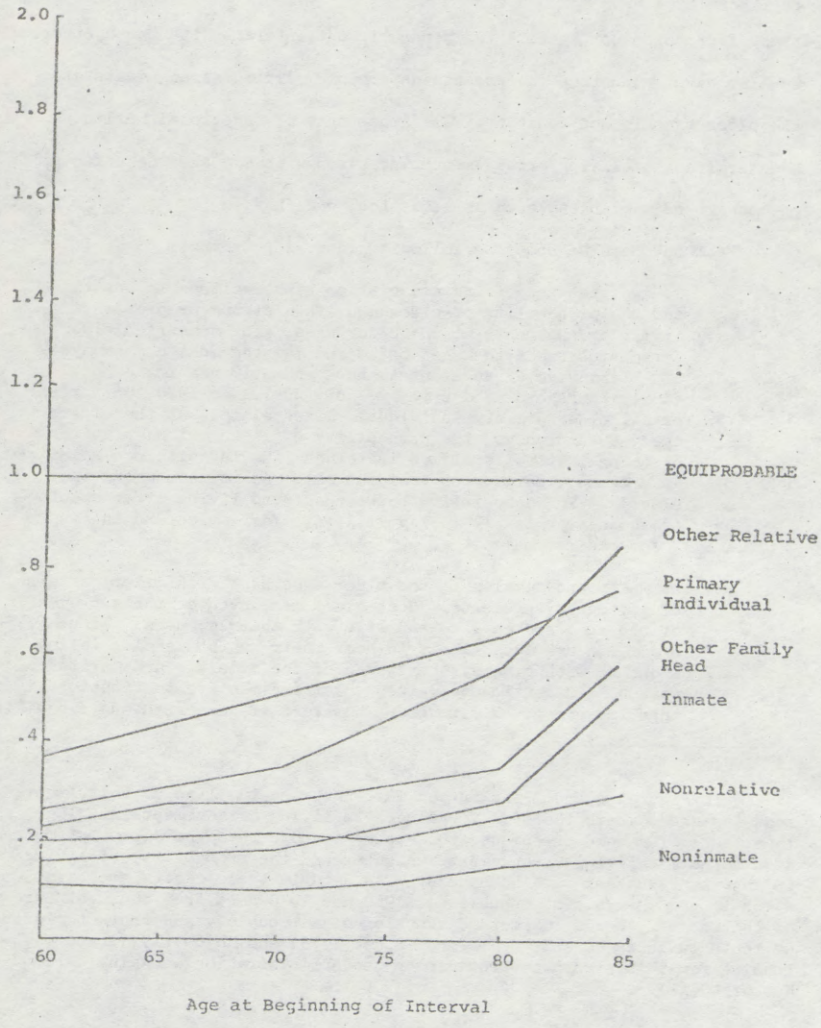
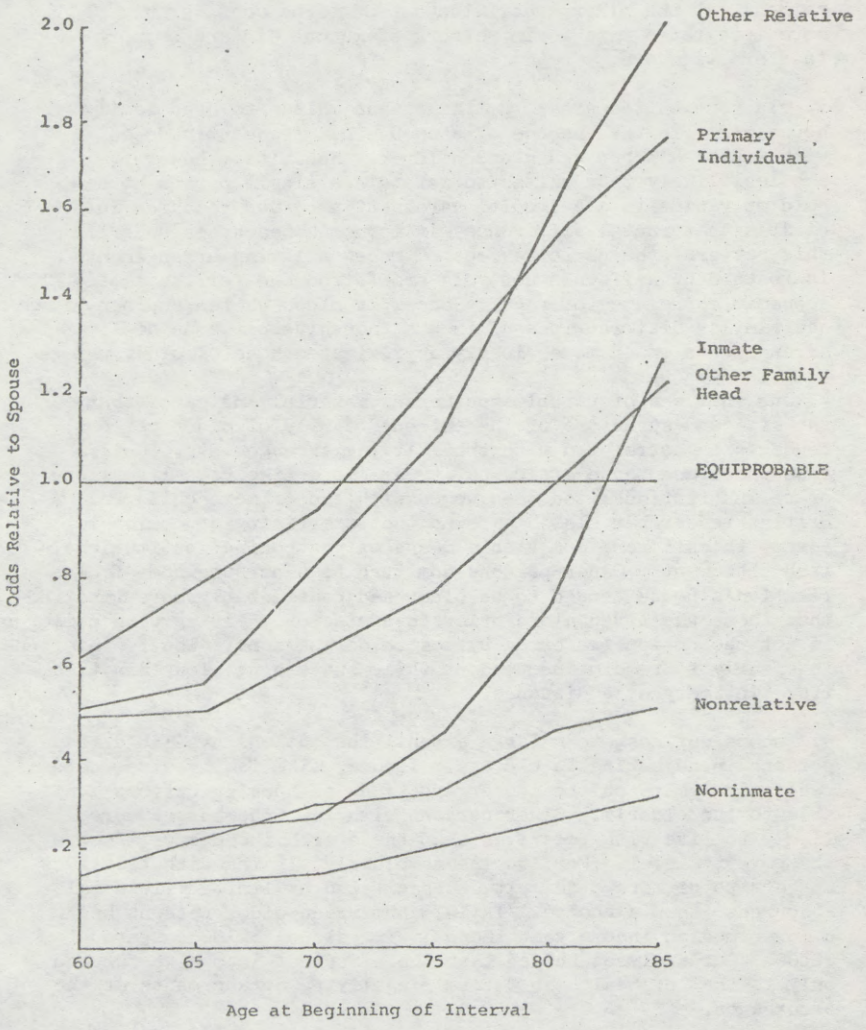


Figure 2 Odds of Alternative Living Arrangements Relative to Spouse for Elderly Females



at the older ages are more likely to live with relatives than males of the same age. These observed tendencies reflect lifelong differences between males and females in family relationships and intergenerational roles. Across the life cycle, kinship ties are more salient to women than to men. At the older ages, widows tend to be considerably more integrated into a kin network of mutual aid and support than are widowers.

3. Older nonwhites are more likely than whites to head family households, in the absence of a spouse but frequently do so with adult children and grandchildren. Nonwhites, however, are less likely than whites to maintain a single person household or reside in a custodial care setting. Our research indicates that racial differences in economic resources underlie this pattern--the direct effect of race on living arrangements is reduced by half when controls are introduced for the socioeconomic correlates of race. Hence, if older whites and nonwhites had similar distributions of income, nonwhite patterns of living arrangements would more closely approximate those of older whites.

4. Our analyses of unpublished Census material indicates that the size and structure of the extended family of older persons tends to be correlated with their living arrangements. Childless women and those of low parity are more likely to live alone or be institutionalized than women with two or more children. A British researcher also has found that exercising an option to live with children is a viable means of postponing institutionalized placement. Older persons admitted to a nursing home from a relative's house tended to be older and considerably more impaired than those who lived alone prior to admission. Living with children is not the option preferred by most older persons. Their preference is clearly to remain independent while sustaining close kin ties, i.e. "intimacy at a distance."

5. Income defines, to a large extent, the options available to persons in adjusting to old age. Income, like family size, sets realistic limits on the number and kinds of housing options available to the elderly. Older persons with low incomes are more likely to live with relatives than those with incomes well above the poverty level. For low income elderly, living with relatives appears to be more a default, necessitated by limited financial resources, than a choice. In 1973 unmarried older persons had a lower median income than those living alone, $2100 compared to $2800. Our analyses showed that the effect of income was second only to that of health in determining living arrangements at the older ages.

6. The greater the extent of functional disability, the higher is the probability that an older person will be institutionalized or live in a relative's home. If an older man is severely limited

> in normal activities, he is most likely to be living with his spouse. Because older women are disproportionately widows, the majority of impaired older women living with a relative share the household of an adult child or sibling. Despite excessive utilization of a relative's household as a care-rendering environment by the impaired elderly, approximately one out of every seven disabled older persons lived alone in 1974. These impaired persons sustained independent living only through the intervention either of family or friends outside the household or of community service programs. A recent report released by GAO suggests strongly that it is the family support network that primarily services the frail elderly.

Because the elderly, even at the same age, are not a homogeneous statistical group, there are exceptions to each of the statements listed above. We do find instances, for example, where older persons in good health and with extensive financial resources live with the family of an adult child. Inferences made from group data, however, are useful indicators of population trends--past and future.

Recent Trends

Over the last twenty years, there has been considerable change in patterns of living arrangements among the elderly. For the most part, the proportion of those living in a relative's household has steadily declined, while the proportion of those independently heading their own household, either alone or with others, has increased. The decline in extended family living also has been offset by slight increases in the proportion institutionalized. These trends are evident from the data presented in Table 3 for older males and in Table 4 for older females. Because of the sex differential in mortality, these trends are much more pronounced for females than for males.[3]

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[3]Because of comparability constraints, it is possible to assemble data for a twenty year time series only for the population 55 years of age and older. Data cited elsewhere in this presentation, however, pertain to the population 60 years of age and older.

Table 3

Percent Distribution of Living Arrangements Among Elderly Males, 55 Years and Over: 1955-1970*
(Numbers in Thousands)

Living Arrangements	1955	1960	1965	1970	1975
In Households	96.2%	97.4%	96.8%	96.6%	96.9%
In Families	84.4	84.9	84.1	84.3	84.1
Head, Spouse Present	70.6	73.3	73.3	75.8	77.4
Other Male Head	4.7	4.2	3.6	3.1	3.0
Other Male Relative	9.1	7.4	7.1	5.3	3.7
Primary Individual	8.4	9.6	10.3	10.9	11.5
Secondary Invidual	3.4	3.2	2.0	1.4	1.3
In Group Quarters[a]	3.8	2.6	3.2	3.4	3.1
Inmates[b]	2.3	2.1	2.6	2.6	2.7
Noninmates	1.5	.5	.6	.8	.4
Total	100.0% (13,602)	100.0% (14,539)	100.0% (16,013)	100.0% (17,073)	100.0% (18,409)

*Civilian population only.

[a]Note those institutionalized are not sampled in the Current Population Survey. Rather, estimates of the institutionalized population are prepared by forward surviving the most recent census count of those in group quarters.

[b]Estimates of the number of institutionalized persons in 1975 are based on data shown in Table 6-2 of a Current Population Report "Demographic Aspects of Aging and the Older Population in the United States," Series P-23, No. 59 (May 1976).

Sources: United States Bureau of the Census, Current Population Reports, "Marital Status and Family Status," Series P-20, No. 62 (March 1955), No. 105 (March 1960), No. 144 (March 1965), No. 212 (March 1970), No. 287 (March 1975).

Table 4

Percent Distribution of Living Arrangements Among Elderly Females, 55 Years and Over: 1955-1970*
(Numbers in Thousands)

Living Arrangements	1955	1960	1965	1970	1975
In Households	96.9%	97.7%	96.8%	96.6%	96.4%
In Families	75.8	74.1	70.1	68.0	66.7
Spouse of Head	46.6	48.0	47.2	47.5	49.1
Female Head	11.2	10.6	10.1	9.7	8.7
Other Female Relative	18.1	15.9	13.6	10.8	8.9
Primary Individual	18.2	21.3	24.1	27.3	28.8
Secondary Individual	2.8	2.1	1.7	1.2	1.0
In Group Quarters[a]	3.1	2.3	3.2	3.4	3.6
Inmates[b]	2.0	1.7	2.8	2.9	3.3
Noninmates	1.1	.6	.4	.5	.3
Total	100.0% (14,901)	100.0% (16,656)	100.0% (18,953)	100.0% (21,053)	100.0% (23,496)

*Civilian population only.

[a]Note those institutionalized are not sampled in the Current Population Survey. Rather, estimates of the institutionalized population are prepared by forward surviving the most recent census count of those in group quarters.

[b]Estimates of the number of institutionalized persons in 1975 are based on data shown in Table 6-2 of a Current Population Report, "Demographic Aspects of Aging and the Older Population in the United States," Series P-23, No. 59 (May 1976).

Sources: United States Bureau of the Census, Current Population Reports, "Marital Status and Family Status," Series P-20, No. 62 (March 1955), No. 105 (March 1960), No. 144 (March 1965), No. 212 (March 1970), No. 287 (March 1975).

Between 1955 and 1975 the older population increased in size. Between 1960 and 1970, for example, the population 60 years of age and older increased by nearly 25 percent, compared to a total population increase of 13 percent. The proportionate distributions shown in Tables 3 and 4, while capturing the direction of trends in living arrangements among the elderly, mask the very real increase in the number of older persons, as a whole, and in the number of older persons maintaining their own households. In 1960, the U.S. Bureau of the Census enumerated roughly 3 million older primary individuals; by 1970, this number had doubled.

This increase is particularly noteworthy since between 1960 and 1970 the older population "aged" as well as increased in size. The aging of the older population might have led a forecaster in the mid-1960's to project a decline in the proportion of elderly living independently since such arrangements tend to be associated with the younger age groups. Rather, the relative and absolute numbers of primary individuals has continued to increase, but the age structure of independent-types of alternative arrangements also has shifted upward. In 1960, approximately one out of every four persons living alone was 75 years of age or older; by 1970 one in three primary individuals was in the older age groups. The data suggest that substantially more older persons are overcoming (or at least confronting) the health and financial problems associated with being very old in order to sustain their preference for independent living.

Accounting for Changes

The dramatic changes in patterns of living arrangements prompted our research team to investigate the factors responsible for these changes

for the period 1960-1970 and again for 1970-1975. Our findings have direct bearing on future trends in living arrangements among the elderly.

In accounting for differences observed from comparing two or more cross-sectional distributions, a researcher can entertain two distinct hypotheses:

> 1. The distribution of living arrangements changes because the association between the determinants of living arrangements (the independent variables) and the outcome variable changed during the time of observation. Changes in the determining process itself could occur if, for example, access to Meals-on-Wheels or Home-Health Aids reduced the importance of health in determining living arrangements at the older ages.
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> 2. Temporal variations in patterns of living arrangements reflect changes in the distribution of the independent variables among the population groups under study, i.e. changes in the composition of the older population from one time point to another.

Our research findings with respect to the determinants of aggregate changes in living arrangements are relatively easy to summarize. No matter what variables we examined or in what combination, we found that the factors influencing individual decisions have temporally constant effects. Changes in population composition (i.e., changes in the distribution of these factors among successive cohorts) were identified as the major factor responsible for generating changes in observed patterns of living arrangements.

Changes in the sex-ratio, racial composition and marital status composition of the older population proved to be relatively minor, and had comparatively inconsequential effects on aggregate changes. When only demographic variables were considered, almost all of the observed changes in living arrangements were attributable jointly to changes in the size and age structure of the older population. This conclusion was

modified when other factors were considered simultaneously. When attention was restricted to the older ever-married female population and family size was included in the list of explanatory variables, changes in the family size of successive cohorts played the dominant role in accounting for changes in patterns of living arrangements. If living arrangements at the older ages are seen as an outcome of the status achievement process, socioeconomic changes in population composition assume the greatest importance. Increases in the incomes of older women (due to increases in Social Security benefits and increases in the proportion of older women eligible for their own benefits) accounted for a substantial part of the increase in primary individuals between 1960 and 1975. Our data also suggest that patterns of living arrangements at the older ages are much more sensitive to socioeconomic shifts in population composition than they are to demographic changes, per se.

Future Trends

Since our research indicates that changes in population composition, initiated by cohort succession and differentiation, are primarily responsible for changes in living arrangements, projecting the distribution of living arrangements into the near future (15-20 years) is largely a matter of projecting the composition of the older population.

The older population of the next ten or twenty years is currently identifiable in terms of birth cohorts. The cohorts of 1921-25 and 1926-30 will be new recruits into the older population by the year 1990; and by the year 2000 the birth cohorts of 1931-35 and 1936-40 will also have joined

the ranks of the elderly. With fertility, education and occupational attainment largely completed, birth cohorts that will fill the ranks of the elderly by 1990 or 2000 possess a variety of relatively fixed characteristics. For purposes of projecting living arrangements based on a compositional change model, it is necessary to anticipate the future course of mortality as it will operate selectively on these cohorts.

How likely is it that we will be reasonably able to anticipate cohort-specific mortality patterns in the future? Previous projections of the older population prepared by the U.S. Bureau of the Census have been consistently too low, because these projections have overestimated the force of mortality at the older ages. Nor have previous projections anticipated the "aging" that is occurring within the older population.

For planning and policy-making purposes, it is insufficient to know only the size and sex-age structure of the older population in the future; knowledge of the composition of the older population (with respect to family size, education, assets and location) also is necessary to anticipate the future demand for services related to types of living arrangements.

The composition of the older population in the near future depends not only on the composition of the cohorts now in mid-life, but also on the extent to which the cohort's members are depleted at different rates. The members of the House Select Committees on Aging and Population, by now, are well acquainted with sex and race differentials in mortality. Mortality also is selective by socioeconomic status, education, marital status and family size. Most projections of the older population do not

acknowledge changes in the composition of cohorts due to the effects of differential mortality (other than changes due to sex-race differences).

Our research staff at Georgetown, in colloboration with colleagues at Duke University, is currently involved in preparing projections of the older population that take into consideration not only improvements in overall mortality but also the effects of differential mortality. When completed, these projections will provide the data necessary to forecast patterns of living arrangements under the compositional change model described above.

As these projections are not yet finished, let us assume the conventional wisdom regarding changes in the composition of the older population in the near future. Both Committees, I believe, have previously heard testimony on this issue and I will simply list the kinds of compositional changes that the current structure of mid-life cohorts imply for the older population of 2000 or 2020. By the turn of the century the older population is likely to have:

1. Increased in size by about one-third.

2. "Aged" with the number of persons 75-84 years of age increasing by 50 percent between 1978 and 2000, and the number of persons 85 years of age and older nearly doubling.

3. An even greater excess of females than currently observed, particularly among the very old.

In addition it is important to note expected differences in marital status, family size and socioeconomic status. Because improvements in chronic disease mortality are expected to continue, the duration of married life (for those married at the threshold of old age) is likely to increase as well. Current increases in divorce/separation rates also suggest that by

the year 2000 proportionately more older persons will have experienced at least one divorce. Glick estimates that the number of older divorced persons will be almost double during the last quarter of the century, increasing from 12 percent in 1975 to 22 percent in the year 2000. As a result, family ties may become more segmented. Even for older persons who will have remarried subsequent to a divorce, a disrupted marital history is likely to have had an adverse impact on their asset formation and, consequently, on their economic reserves in old age.

Women who will be 60-74 in 2000 are the mothers of the "baby boom" and are likely to have a large family support network available to them in their old age. The next generation of elderly will be the "baby boom" cohorts who, if recent fertility trends continue, will have relatively small family support networks.

Older women in the near future also are likely to have very different work histories than those currently in the older population. Higher rates of female labor force participation among young adult and middle-age cohorts are likely to result in higher proportions of women eligible for their own Social Security benefits and their own secondary pension benefits.

Assuming that changes in sociodemographic and economic composition of successive cohorts persist as the driving force behind changes in patterns of living arrangements, what do these trends imply for future patterns of living arrangements?

For several reasons, it is unlikely that the trend towards independent living -- separate residences for older married couples and single person households for older persons -- will reverse itself in the near future. Our previous research indicates that the implications of "aging" within the

older population are likely to be offset by improvements in the financial status of the elderly as generational differences in educational attainment are reduced and more women accumulate work histories. A lifetime of interaction with various bureaucratic structures is also likely to give tomorrow's elderly a decided edge over today's in identifying and using different federal, state, and local assistance programs. In addition, there is no reason to suggest that the housing attitudes of older persons in the future will contradict what we observe today, i.e., a decided preference for living independent of one's own family.

While, I believe, the direction of the overall trend is fairly certain, age-specific patterns are considerably less so. If advancing age continues to be associated with declines in functional health and reductions in physical mobility, the very old will continue to need assistance from outside the household. Even when homes are not shared with family members, younger relatives in the vicinity frequently provide assistance with daily tasks, such as grocery shopping, cleaning, and transportation. How available will family members be to the elderly of the twenty-first century?

The answer to that depends on both the absolute number of relatives in descendant generations and their location vis-à-vis the older parent(s). Among the implications of a declining birth rate, we are often told, is a reduction in size of the family support network potentially available to assist older persons in the future. But completed fertility rates are only half the picture in determining the future size of family support systems. Equally important is the extent to which children survive until their parents' old age. A study recently completed by Gray at U.S.C. compared the survivorship of female children born under the 1920, 1930, and 1970's fertility

regimes and exposed to the mortality schedule of the same years. Not surprisingly, she found that the mothers of the 1920's had more daughters born than the mothers of the 1970's. Because of improvements in mortality, however, the hypothetical 1970 mothers would actually have more surviving daughters at the age of 70 than the 1920 mothers. For example, a 1920's mother had, on the average, 1.4 female children compared to 1.2 for the 1970's mother. At age 70, 73.5 percent of the daughters born to a 1920's mother would still be alive (or an average of .99 surviving daughters). Ninety percent of the female children born to a 1970's mother would be alive by her seventieth birthday or approximately 1.1 daughter per older mother. This research strongly suggests that congruency of intergenerational mobility paths will be a much better predictor of kin availability than fluctuations in the birth rate, per se. Unfortunately, this is an area that we, as demographers and gerontologists, know very little about.

Rates of institutionalization at the older ages also are likely to increase if the options currently available define the alternatives in 2000-2020. Childless women tend to be particularly vulnerable to institutionalized placements and the proportions of childless women continue to increase. The effect of increased financial resources for these women is likely to take the form of postponing rather than precluding an institutionalized episode. Unless training efforts in home health and general maintenance programs are increased, higher incomes will not be able to purchase the services needed for a seriously impaired older person to remain in the community indefinitely. The demand for qualified home-health and personal care assistants goes unmet today; the demand is likely to exceed supply by an even greater amount after the turn of the century.

Recommendations

We must realize that there are very realistic limits on the growth of independent living among the elderly. Increases in the absolute and relative number of older persons living either alone or with their spouses cannot continue indefinitely. In 1975 approximately 3 out of every 4 older females and nine out of every 10 older men lived in their own households, either alone or with a spouse. Additional increases in independent living will be offset primarily by reductions in the proportions of older persons sharing a relative's household. Additional constraints on the growth of independent living will be imposed by the extent to which improvements in the quality of life fail to keep pace with extensions in the quantity of life.

The magnitude of future increases in independent living among the elderly also will be circumscribed by the availability of appropriate housing units. Today, the housing market is being called on to meet the extensive demand for single family homes initiated by the "baby boom" entering its young family stage. The challenge is not simply to meet the demand but to do so in such a way that these new units can be recycled or adapted for housing small elderly households 20-30 years hence.

Housing for older persons, however, is not simply physical structures. At the older ages, housing adequacy is defined by a series of interactions between an individual's characteristics (including the important factor of health status) and both the physical and social aspects of the residential environment. Planning for independent living must focus on the physical characteristics of small housing units, their location with regard to services, commercial and recreational activities, and accessibility and usability of transportation.

There is no single residential environment that is "good" for all older persons or for the same person at different ages. Efforts must be made to define the types of living arrangements and housing most appropriate for specific levels of functional ability. Are there "limits" to the feasability, appropriateness or costs of programs oriented to maintaining an independent lifestyle for older persons? At what level of functional disability is an older person better served by transfer to some type of congregate living environment? Is health the only factor that needs to be considered in establishing a threshhold for support of independent living?

A wider range of alternatives should be made available to older persons desirous of sustaining independent living as long as possible. With few exceptions, the current choices for those needing assistance are limited to living alone and relying on family or program service delivery; living with a relative; or being institutionalized. Transitional options are seldom available.

The orientation of current service programs targeted at older persons also must be seriously evaluated. Today subsidized support programs revolve around a medical model. It is somewhat absurd that costs are absorbed for medical expenses, such as hip replacement operations, but not moving expenses for an arthritic woman who could live independently if a unit without stairs could be found and afforded. Service delivery for older persons living alone must emphasize prevention as well as care. Regular monitoring and evaluation of older persons, in the home, is a well established part of the geriatric services in Great Britain and one that the United States should investigate.

I would like to close with a final word about the role of the family and the care of older person. As noted above, the family is the primary

support system utilized by older persons in need of personal care or assistance. I think this implies two significant things for subsidized intervention programs. One, efforts should be made to shore up the family's ability to be involved in the care of its older members -- both now and in the future. Tax incentives have been mentioned as one way of accomplishing this objective. Others might include relaxing restrictions for home-health aids under Medicare-Medicaid and increasing the availability of day-care, vacation-care centers for older persons. Cost-sharing moving expenses for older persons wanting to be near but not live with relatives may be another. Two, family assistance is the first defense against institutionalization because of a family's commitment and flexibility. A very real challenge for those concerned with program development in the next century will be to orchestrate service delivery to mimic the family's adaptability.

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