S. HRG. 108–690

GETTING OLDER, STAYING HEALTHIER: THE DEMOGRAPHICS OF HEALTH CARE

HEARING

BEFORE THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

ONE HUNDRED EIGHTH CONGRESS

SECOND SESSION

JULY 22, 2004

Printed for the use of the Joint Economic Committee

U.S. GOVERNMENT PRINTING OFFICE

96–735 PDF WASHINGTON : 2004

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2250 Mail: Stop SSOP, Washington, DC 20402–0001

JOINT ECONOMIC COMMITTEE

[Created pursuant to Sec. 5(a) of Public Law 304, 79th Congress]

SENATE
ROBERT F. BENNETT, Utah, *Chairman*
SAM BROWNBACK, Kansas
JEFF SESSIONS, Alabama
JOHN SUNUNU, New Hampshire
LAMAR ALEXANDER, Tennessee
SUSAN COLLINS, Maine
JACK REED, Rhode Island
EDWARD M. KENNEDY, Massachusetts
PAUL S. SARBANES, Maryland
JEFF BINGAMAN, New Mexico

HOUSE OF REPRESENTATIVES
JIM SAXTON, New Jersey, *Vice Chairman*
PAUL RYAN, Wisconsin
JENNIFER DUNN, Washington
PHIL ENGLISH, Pennsylvania
ADAM H. PUTNAM, Florida
RON PAUL, Texas
PETE STARK, California
CAROLYN B. MALONEY, New York
MELVIN L. WATT, North Carolina
BARON P. HILL, Indiana

PAUL A. YOST, *Executive Director*
WENDELL PRIMUS, *Minority Staff Director*

CONTENTS

Opening Statement of Members

Senator Robert F. Bennett, Chairman 1
Representative Pete Stark, Ranking Minority Member 2

Witnesses

Kenneth G. Manton, Ph.D., Research Director, Center for Demographic Studies, Duke University, Durham, North Carolina 4
James Lubitz, M.P.H., Acting Chief, Aging and Chronic Diseases, Statistics Branch, Centers for Disease Control and Prevention, Hyattsville, Maryland 7
James F. Fries, M.D., Professor of Medicine, Stanford University School of Medicine, Stanford, California 9
Judith Feder, Ph.D., Professor and Dean of Public Policy Institute, Georgetown University, Washington, DC 12

Submissions for the Record

Prepared statement of Senator Robert F. Bennett 27
Prepared statement of Representative Pete Stark, Ranking Minority Member 28
Prepared statement of Kenneth G. Manton, Ph.D., Duke University, Center for Demographic Studies 29
Prepared statement of James Lubitz, Acting Chief, Aging and Chronic Diseases, Statistics Branch, National Center for Health Statistics Centers for Disease Control and Prevention, U.S. Department of Health and Human Services 53
Prepared statement of James F. Fries, MD, Professor of Medicine, Stanford University School of Medicine 58
Prepared statement of Judith Feder, Ph.D., Professor and Dean, Georgetown Public Policy Institute, Georgetown University 79

GETTING OLDER, STAYING HEALTHIER: THE DEMOGRAPHICS OF HEALTH CARE

THURSDAY, JULY 22, 2004

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, DC

The Committee met at 10 a.m., in room SD–628 of the Dirksen Senate Office Building, the Honorable Robert F. Bennett, Chairman of the Committee, presiding.

SENATORS PRESENT: Senator Bennett (Chairman of the Committee).

Representatives present: Representative Stark.

Staff present: Tom Miller, Leah Uhlman, Nancy Marano, Brian Higginbotham, Zach Jones, Colleen Healy, Wendell Primus, John McInerney, Debra Veres, and Nan Gibson.

OPENING STATEMENT OF SENATOR ROBERT F. BENNETT, CHAIRMAN

Chairman Bennett. The Committee will come to order.

Good morning and welcome to the hearing on The Changing Demographics of Health Care.

Today, we will examine long-term trends in the health status and health spending levels of elderly Americans.

We are meeting at a time of various pressures and competition for our attention. The 9/11 Commission report is coming out this morning. And the Senate has scheduled a series of votes starting at 11 o'clock.

So I've decided to start right on time and see if we can get it all done before these other pressures close in on us.

But I'm grateful to our witnesses for their willingness to be here today and share with us their expertise.

The two most obvious trends are that we are living longer and spending more on health care costs. The connection between these two trends is complex. It is not a direct cause-and-effect situation.

We need to understand it better.

Some might worry that we're caught on a fiscal treadmill in which long life spans beyond the age of 65 will simply add to the mounting financial burden of our commitments to fund public entitlement programs like Medicare and Medicaid and Social Security.

But that view, in my view, focuses too narrowly on the sheer duration of life and the potential costs connected with it, without examining the quality and value of extra years of life.

Even though we hear complaints about our health care system and are concerned about various indications of unhealthy habits

and practices, there's a growing body of evidence that suggests that Americans are not just living longer—they're also living in better health overall.

We need to understand the implications of that.

Today's hearing will first take a look at what we know about a possible decline in chronic disability rates among the elderly and what this trend implies for the future. Then we will explore whether it is possible to delay the onset of serious illnesses while extending life spans, particularly through effective health promotion and disease prevention strategies.

We'll examine how by changing the underlying demand for health care services, instead of just trying to control the supply of health care, we could affect the future structure and financing of our public health programs.

Finally, we will discuss whether a longer life span, combined with better health, can maintain and enhance the vital treasure of human capital that we need to maintain a vigorous labor force and strong economic growth in an aging society.

As a personal note, I'm planning to do my part by extending my working life at least another 6 years——

[Laughter.]

Chairman Bennett [continuing]. If the voters of Utah will agree. And that will take me a full 10 years beyond the normal retirement age.

I hope to set a vigorous example.

Of course, before we paint too rosy a picture of the future, we should carefully assess where we've been and where we are now.

So today, we have a panel filled with some of the nation's leading experts in the field of health care demographics. We hope that they will not only highlight and interpret the data for us, but that they will also offer some suggestions as to how we can harness the full potential of our current investments in health care and health promotion.

Mr. Stark.

[The prepared statement of Chairman Bennett appears in the Submissions for the Record on page 27.]

OPENING STATEMENT OF REPRESENTATIVE PETE STARK, RANKING MINORTITY MEMBER

Representative Stark. Boy, Mr. Chairman, you had me there for a moment. I thought what you said before we paint too rosy a picture of the future, you were going to then recognize me.

I didn't think that was the best way to introduce me.

[Laughter.]

Chairman Bennett. Well, I think you too are setting an example.

Representative Stark. Rarely, can I claim to outdistance the Chair. But in this particular topic, I must claim seniority, experience, if that counts for anything in this game.

When it comes to unhealthy habits and practices, I have a suspicion that I know more about that than the Chairman.

[Laughter.]

But having said that, I have extended my tenure far beyond any normal retirement age. But I have to do it 2 years at a time, and I am also going ahead.

I want to thank you for holding this hearing. I look forward to what the witnesses say on a public policy issue.

I know that Dr. Feder will talk about a need for a federally funded program. I have reviewed the marvelous opening statement that the staff suggested for me. I'd ask that it appear in the record.

Chairman Bennett. Without objection.

Representative Stark. But I'd like to take one moment—this is something that I did with your colleague, Mr. Kennedy.

We had a commission a thousand years ago on long-term care. One of the concerns, whether it be institutional care or supporting care in the home, I can assure the Chair that things don't fall off, but they get a little rusty as one gets older.

Your shoes get further away and steps get higher.

But it does seem to me, and we'll get into a little liberal/conservative conundrum here, that long-term care is the poster child of an opportunity for social insurance.

I want to make a couple of points. Perhaps the witnesses will debate this.

There is no actuarial determination of who may or may not need long-term care in any age segment. It's completely random. And that pretty much takes the idea of insurance, if you will, and particular commercial insurance, off the table.

Almost all the long-term policies now are nothing but kinds of savings, cash-value insurance. Sometimes you get it back, sometimes you don't.

So if it's random, it is beyond the ability of most average Americans to pay for it reasonably.

It doesn't necessarily just hit folks our age. There are a lot of 16-year-olds who are dumb enough to ride their bicycles or motorcycles without helmets and end up needing care—again, a random question.

Therefore, if we, as we do in other things, have a small payment, as small as we can make it, and have a benefit.

It seems to me that the charges are relatively uniform across the country. I don't know as there are huge variations in the Medicaid charges now.

We have an opportunity in this country in one format or another to have a social insurance program—you might want to income-relate it. There's a lot of ways that we can look at it.

But it just seems to me it is a need which nobody disagrees exists. And because it comes randomly and because it does these things, might very well be a target for some kind of social insurance—hopefully, that would be funded by those who would use it and not be a burden on the government.

I'd hope maybe the Chair would at some point in the future like to discuss that as possible legislation, assuming we both get reelected, we'll have time to do these sorts of things.

[Laughter.]

So I thank you for this hearing. I apologize that I won't be able to stay for the full hearing, but I want to commend you for getting us going on this topic.

Thank you very much.

[The prepared statement of Representative Stark appears in the Submissions for the Record on page 28.]

Chairman Bennett. Thank you, sir.

You will find in the liberal/conservative clashes around here, that's a very mild difference compared to some of the others that we've had.

So we've come a ways.

Let me introduce the members of the panel and we'll hear from you in this order.

Dr. Kenneth Manton of the Center for Demographic Studies at Duke University.

Dr. Manton is noted for his work on the National Long-Term Care Survey, which is a study that emphasizes remarkable declines in the prevalence of chronic disability among the elderly in recent decades.

Then we'll hear from James Lubitz of the National Center for Health Statistics. Mr. Lubitz has examined the connection between increased longevity and health care spending among the elderly in a number of articles.

He suggests that the effects of longevity on Medicare acute care services and Medicaid long-term care benefits may in fact run in different directions.

Dr. James Fries of Stanford University. He first coined the theory of morbidity compression several decades ago to explain how the onset of serious disease and chronic disability may be delayed until later in life so that a larger portion of our life spans are spent in good health.

Then Dr. Judy Feder, who is a professor and dean of Policy Studies at Georgetown University. She's also a senior scholar at Georgetown's Institute of Health Care Research and Policy.

Dr. Feder previously served 3 years as principal deputy assistant secretary at the Department of Health and Human Services and has written extensively about the financing of Medicare, Medicaid, and long-term care in particular.

We're honored to have this group of experts with us.

Dr. Manton, we'll hear from you first.

OPENING STATEMENT OF KENNETH G. MANTON, PH.D., RESEARCH DIRECTOR, CENTER FOR DEMOGRAPHIC STUDIES, DUKE UNIVERSITY, DURHAM, NORTH CAROLINA

Dr. Manton. Thank you, Mr. Chairman. I'll just highlight my statement and be available for questions after the presentations.

My primary areas of research are in mathematical and medical demography. My comments are primarily data-driven. I won't interpret them very much, but I'll lay out the facts as I see them and can answer questions on any aspects or facets of that data.

As you mentioned, my recent research is heavily focused on the application of the 1982, 1984, 1989, 1994, 1999 and now, the 2004, National Long-Term Care Survey, to health problems of the elderly and the Medicare and Social Security systems.

The Long-Term Care Survey is perhaps unique in the sense that it's drawn from a Medicare list sample and covers people in all

types of residences, including assisted living, as well as nursing home.

We can directly focus on the question of long-term care and long-term care insurance. We actually have an actuarial center that specializes in that and in setting up criteria for qualification for long-term care insurance.

By way of reference and a bit of context, I participated in the Senate Finance Committee hearings in 1982, when the decision was originally made to increase the retirement age for Social Security at age 67 staring in the year 2000.

The position that I thought then and continue to think is conservative.

The problem then, and what was very important in those hearings is that we lacked data on how health had changed as life expectancy increased.

I think we now have a significant amount of data to reflect on those issues again, both in changing the retirement age and in looking at the health needs of the underlying population.

In 1999, I participated in closed-door hearings with Nick Smith of Michigan on the potential for increasing life expectancy and active life expectancy.

At that hearing was Dr. Haseltine, who now runs something like human genome sciences and the Social Security actuaries.

Again, we were sort of blue-skying issues of how much life expectancy might increase and what would be the trailer effect on active life expectancy.

The 1982 to 1999 Long-Term Care Survey provides me with the basis to demonstrate the soundness of the position I was promulgating in terms of looking at life expectancy, active life expectancy, and the proposition that the health care system in the United States may be the world's best, with the primary problem being the equity of distribution of health services across the population.

If you look at that population or recognize its size (290 million people) and the fact that there are some very disadvantaged groups, for 280 million of those people, their life expectancy might be greater than in Japan.

To that point, I tried to provide some simulation analyses in the written testimony.

Some of the recent important observations from the Long-Term Care Survey are:

There are large declines in chronic disability, 1.7 percent per annum, from 1982 to 1999, with declines accelerating, being fastest from 1994 to 1999, conservatively being 2.6 percent.

Other people at our center, including our actuary, come up with a higher number like 3½ percent on a different basis.

But the finding is robust—a decline and an acceleration of decline in the prevalence of chronic disability.

More recently, because the Long-Term Care Survey is linked to Medicare expenditure data, we're able to look within disability categories and health categories, if you will, as to what's been happening to the inflation-adjusted per capital Medicare expenditures.

This finding was interesting.

In the growing non-disabled elderly population, per capital inflation-adjusted costs had declined from 1982 to 1999.

In the most severely disabled category, from 1982 to 1999, calculated on the same basis, costs were increasing.

So there's interaction between Medicare cost expenditures on a personal basis and the decline of disability.

Larger numbers of non-disabled with lower costs than declining costs inflation-adjusted, higher costs for the smaller, severely disabled population.

So, again, it's a question of targeting services to this very severely disabled group and providing preventative services—and by preventative, not just chronic diseases, but the promotion of functional capacity.

We use the ADLs and IDLs, active daily living capacities and instrumental daily living capacities, because they involve not just physical activity, but a morale component or a psychological component.

You can climb a stair with a little bit of pain. You can take Ibuprofen if you want to.

So we use that as an indicator both of a combined physical and psychological profile of the health of the population.

So in addition, probably one of the more controversial findings, but I think it's been pretty well established and I've talked with my colleagues about this basis, is that we found declines in the elderly institutional population in both relative and absolute terms.

So, as a consequence, there have been examinations of the effects of trends of Medicare expenditures, and you see the declines with later ages. But reinforcing that may be the fact that institutional population size is going down. People are transferring from nursing homes to assisted living. Even the total size of the nursing home bed populations and assisted living and nursing home is declining.

I can expand on those comments.

Just to sort of conclude on three propositions to consider.

The first proposition is Social Security and Medicare projections are based on overly pessimistic assumptions about the health and life expectancy of the U.S. population.

We may have the highest life expectancy, at least for 95 to 98 percent of the U.S. population.

Number 2, the health of the U.S. elderly population is better than our national vital statistics system indicates.

Active life expectancy estimates based on the 1982 to 1999 National Long-Term Care Survey suggests that the United States may have the world's best health care system.

The problem is equitable distribution of care.

From 1982 to 1999, life expectancy increased for both males and females, 4.5 years. Active life expectancy increased about 80 to 90 percent of that, about 3.8 to 3.9 years.

So it's not just an expansion of life expectancy. There's a considerable increase in active life expectancy underpinning that.

Then the final proposition—significant improvements in both the Social Security administration and Medicare trust funds could be realized if the healthy U.S. elderly population could be measured and projected correctly, and that the health care system is appropriately directed toward increasing human capital.

That we take NIH research and we take Medicare and we focus it toward improving the functional capacity of the elderly population in the United States

I think that concludes my comments.

Chairman Bennett. Thank you very much.

Mr. Lubitz.

[The prepared statement of Dr. Manton appears in the Submissions for the Record on page 29.]

OPENING STATEMENT OF JAMES LUBITZ, M.P.H., ACTING CHIEF, AGING AND CHRONIC DISEASES, STATISTICS BRANCH, CENTERS FOR DISEASE CONTROL AND PREVENTION, HYATTSVILLE, MARYLAND

Mr. Lubitz. Thank you, Mr. Chairman, and Mr. Stark. I'm pleased to be here.

I'm going to discuss research on medical expenditure patterns from age 65 until death and some possible implications for the future.

As background, our health care system has changed dramatically since Medicare's beginning. Health care spending has grown considerably, particularly for the elderly.

Expectations for medical care have changed. In the 1970's, there was serious discussion of the idea that medical spending in the aggregate did little good and that we were wasting medical care on aggressive interventions for old sick people.

Today, with numerous treatments to improve health, we have high expectations for medical care.

There is new evidence that medical care is cost-effective in the aggregate and that the health of the elderly may be improving.

The effect of improved health on health spending is a complex subject, but some believe that it will lower costs.

Now I'm going to highlight some findings on the relationship of demographic factors to health care spending.

First, I'd like to mention findings on cost of final years of life.

Costs for persons in their last year of life are about 28 percent of annual Medicare costs. This percentage has held steady despite all the changes in our health care delivery system.

Another finding is that we find lower Medicare costs in the last year for older decedents as compared to younger ones.

Now we also looked at Medicare costs from age 65 until death. We looked at the question of how much long-lived persons cost Medicare as compared to others.

We find, and you can see on the chart in the Medicare line, that past age 70 or 75, each additional year adds little to Medicare costs from 65 to death. Whether an enrollee dies at age 80 or at age 90, Medicare will always pay the high final year costs and the added years covered are the healthy low-cost years far from the end of life.

Now let's look at non-Medicare services.

Although Medicare costs in the final years are lower for older decedents, this is not the case for non-covered services. Nursing home expenses in the last 2 years of life are much higher for older decedents and, in fact, exceed Medicare payments for decedents aged 90 and over.

Concern about costs in the final year of life has often focused on expensive, high-tech care. But long-term care costs are more important for the oldest.

The effect of longevity on total health care spending is different from the effect on just Medicare.

That's the top line on the chart, which is at a 45-degree angle.

Because long-term care costs accelerate with age, they offset the considerably lower Medicare costs in the final years for older decedents. Each added year lived adds the same amount to cumulative health care costs from age 65 to death.

Again, that's the 45-degree line.

Our Nation will experience a large growth in the number of the elderly and an increase in life expectancy. Our simulations show that the increase in the numbers of the elderly will have by far the largest effect on future spending, both Medicare and non-Medicare.

Increased life expectancy beyond age 65 will have a small effect on Medicare and a modest effect on long-term care spending.

Next, we simulated spending for persons reporting good health at age 70 versus those in poor health, and we found that healthy persons live longer, but had similar cumulative health care spending from age 70.

That's total spending—Medicare and non-Medicare.

Their lower yearly costs offset the effect of more years to accumulate costs.

I'll finish with some implications.

Life expectancy increases may result from healthier lifestyles, preventive services, or costly new medical advances. The future role of each is unclear.

There is new evidence that our favorable health risk profile in middle age may result in both longer life and lower-than-average Medicare costs.

The costs of health promotion, of course, in the pre-Medicare years are not borne by Medicare.

Assuming that today's age-related patterns of frailty and cognitive loss persistent to the future, greater longevity will increase the need for long-term care, which is paid mostly by Medicaid and by patients and families.

However, the compression of morbidity hypothesis posits that the amount of time spent in poor health will be less among tomorrow's elderly.

In summary, it is difficult to predict the future health of the elderly and its relation to spending. We can simulate the effects of future scenarios, but cannot predict the future, except for the certainty of a large increase on the number of elderly.

I'd be glad to answer any questions.

Thank you.

Chairman Bennett. Thank you, sir.

Dr. Fries.

[The prepared statement of Mr. Lubitz appears in the Submissions for the Record on page 53.]

OPENING STATEMENT OF JAMES F. FRIES, M.D., PROFESSOR OF MEDICINE, STANFORD UNIVERSITY SCHOOL OF MEDICINE, STANFORD, CALIFORNIA

Dr. Fries. Senator Bennett, Representative Stark, ladies and gentlemen, it's a pleasure to be here.

I'll give you some headlines in this brief presentation. The written testimony has more discussion of those points, and I'll be happy to respond and elaborate with them as we go.

Health care costs have resumed double-digit annual increases and are in crisis.

Existing control mechanisms, now and in the past, principally based upon rationing of supply, have failed to be effective.

The illness burden of the nation, driven by the health problems of increasing numbers of seniors, is of mammoth amount.

The ironic reality is that we already know how to improve health and at the same time, reduce medical care costs.

Healthier people need less medical care. They place less burden on the demand side of the equation.

We know how to postpone illness. It is done by prevention.

Three false beliefs underlie our failure to systematically approach postponement of illness.

First, "the data are soft." False. There's far more evidence for the effectiveness of well-designed preventive approaches than for most of what we now call evidence-based medicine.

Second, "there is a long lag of 20 years or more before a change in the health risk behavior is likely to prevent a disease event such as a heart attack, and we have a crisis now."

The worksite version of this fallacy is "I will just be making my employees healthier for their next employer."

False. Measurable reductions in costs and improvement in health and productivity, on the order of 10 to 20 percent, are achievable in the first 12 months of sound programs and continue to build thereafter.

Third, "people with good health habits live longer and will have greater medical care costs." Also false, as Dr. Lubitz has just told us.

Longer-lived persons do not have increased cumulative lifetime or Medicare costs.

I will make three major points and explore their policy implications briefly.

First, the underlying theory behind health enhancement initiatives is the "compression of morbidity." We have a chart showing the compression of morbidity in which three potential lives are diagrammed, from birth on the left to death on the right.

The current morbidity and medical care costs in life are concentrated between the ages of, say, 56 and 76.

The unhappy scenario would be the middle scenario in which there is an extension of longevity and an increase in the area represented by the shaded area, so that we have prolonged the period of dying.

The third scenario is a world in which we emphasize the quality of life and the postponement of the onset of illness; morbidity is compressed, squeezed in-between a later point of onset and the age

of death, which, while moving upwards, may be moving upwards more slowly than the amount of postponement which we achieve.

Kenneth Manton has estimated that if mortality rates decline at 1 percent a year, which is their historic value, and disability rates decline at 2 percent a year, which is true of the Long-Term Health Care Survey, then morbidity is currently being compressed on a population basis in the United States.

So, what was a controversial hypothesis of the compression of morbidity years ago is actually coming true, even though we have not systematically begun to approach and target the postponement of the onset of illness. This is a very different health improvement strategy than that which we have used.

Second, the onset age of chronic infirmity potentially may be postponed by up to 12 years, certainly by 7 to 12 years, so that the amount of postponement by lifestyle change of the onset of infirmity is very substantial.

Third, multiple large, randomized, controlled scientific trials have proved the effectiveness and cost effectiveness of sound preventive approaches to the postponement of illness.

We have good science.

The overarching objectives are to improve the national health and to decrease medical care expenditures.

The facts, just briefly:

We already know how to improve health and save money. It requires postponement of the onset of illness in the individual. And there are policy ways of targeting that.

The compression of morbidity paradigm provides an underlying structure, and I covered those points.

Also covered, the point that morbidity compression is currently occurring, that epidemiologic studies show potential disability, the postponement of 7 to 12 years, and that there are a lot of randomized and observational trials which support this data.

Of interest, and neglected, in fact, is that there are effective health enhancement and cost-savings programs; there are a number that have now received the C. Edward Koop National Health Award, some 70 programs.

Successful programs go beyond health promotion considered as simply risk reduction. They contain specific additional elements:

(1) Improvements in personal self-efficacy and health confidence.

(2) Improvement in self-management skills whereby patients take a greater role in determining the decision structure of what happens to them in the medical care system.

(3) Programs directed at high-risk individuals.

(4) Programs which are involved at persons who have chronic illnesses already, where the costs are present.

(5) And finally, last year of life programs, where there are untapped approaches to improve the quality of life. And that area is suggested by Dr. Lubitz again.

So there are a number of available approaches that are in the area of increasing autonomy of the individual, which include personal health decisionmaking and attitudes toward health and pursuing lifestyles, which are at least as important as and more immediate than are the effects that come from the stopping-smoking pro-

grams or the weight-reduction programs, more strictly risk reduction models.

So it's more complicated than we have thought, and there are new opportunities, and that's actually good news.

The policy initiatives need to focus on the big targets. With the WHO, we're now saying 3; 4; 50.

Three risk factors—smoking, diet, obesity, lack of exercise.

Four diseases—heart disease, cancer, diabetes, chronic lung disease.

Cause fifty percent of illness.

To effect changes, you need to hit the big targets.

Craft careful, prudent, yet urgent approaches. This is a crisis. We need to do things now. Yet, we don't want to provide funding mechanisms for programs which are ineffective.

We have to balance the need for proof with the need for progress.

Multiple approaches—legislative, community work side, public education incentives, and others are needed.

Tailored personalized population-based computer-assisted programs appear to be the best of presently available interventions.

Keep these approaches strictly bipartisan. They are. Everyone is served, regardless of what one's opinions are about what changes need to be made in the health care system. If there's less disease, and a lesser need for services—everyone wins regardless of the side of the aisle on which they sit.

Use this Committee in a major role to reconcile health and economic goals.

We need a blessing on the economic argument side because if we can come with proposals which are strong and sound and which will improve health and save money, there is no reason not to widely implement such proposals.

The problem is overcoming the skepticism. We're fortunately hearing here from people with a lot of stature in the area that the economic argument is a strong one.

Granting that, then this Committee, sitting where it does, has the ability to influence a lot of things.

Finally, some specific actions that are needed.

(1) Support the Senior Risk Reduction Project, the SRRP demonstration, which will be a random sample of Medicare people. It just needs to get started. It's planned. It's ready to go.

Hopefully, it will get going this year.

(2) The HeLP bill, recently introduced as S. 2558, by Senator Harkin—it's an omnibus bill with a lot of very good features in it, as I know Senator Bennett is aware.

(3) The Health Promotion FIRST Act is going to be introduced by Senator Lugar in the next week or so. It provides an improved health promotion scientific infrastructure.

It will train better, more rigorous people and enlarge the field of developing and improving programs.

(4) We need reimbursement initiatives for qualified prevention coverage. We need incentives of some kind for work site health promotion programs.

The Harkin bill actually talks about some tax credits.

(5) And we need, finally, rigorous external evaluation of these efforts. They have to proceed under a bright light. And they have to be observed by skeptics.

We can improve health and reduce medical care costs substantially with currently proven approaches to postponement of morbidity.

These approaches in turn can be refined and improved.

Demand-side health improvement initiatives benefit the individual, the payer and the society. They do not encourage or require rationing. They are entirely bipartisan. They are not inconsistent with other cost containment initiatives.

They have not been tried. They can work.

Thank you.

Chairman Bennett. Thank you very much.

Dr. Feder.

[The prepared statement of Dr. Fries appears in the Submissions for the Record on page 58.]

OPENING STATEMENT OF STATEMENT OF JUDITH FEDER, PH.D., PROFESSOR AND DEAN OF PUBLIC POLICY INSTITUTE, GEORGETOWN UNIVERSITY, WASHINGTON, DC

Dr. Feder. Thank you, Mr. Chairman. It's a pleasure to be here with you today.

Mr. Stark, I appreciate the opportunity to participate with such esteemed experts on this topic.

I'm going to shift our focus a little bit to the financing of care, particularly long-term care, and the implications of aging for that financing.

We've heard from Dr. Manton about declines in the rates of disabilities. We've heard from Dr. Fries about the importance of improving health and prevention and making those declines come about. And we've heard from Mr. Lubitz about the impact of longevity, especially for very old people, on long-term care costs, creating higher long-term care costs, and of the overwhelming effect of growing numbers of elderly people on total costs and on long-term care costs.

As I turn to financing and the implications of these factors for financing, my basic premise will be that even if the rate of disability declines—and we certainly hope that it does and I would support efforts to making that happen—future increases in the number of older people, especially very old people, will mean a greater need for long-term care.

The population over age 85 is expected to double by the year 2030, and to quadruple by 2050.

That means that the rate of disability would have to be half or a quarter of current rates to keep the number of people likely to need long-term care from growing.

While such declines are by no means impossible and we should certainly seek to achieve them, our best bet is that we will need more resources to meet care needs in the future than we are investing today. Especially since we're really not meeting those needs very well right now.

Let me elaborate on the inadequacies of current financing policy and the implications for the future.

As Mr. Stark indicated, the need for long-term care is an unpredictable and potentially financially catastrophic event, best dealt with through insurance.

For the almost 40 percent of the long-term care population who are under the age of 65, the need for long-term care is clearly unpredictable.

Though the probability of needing long-term care increases with age, even among the elderly the need and the extent of need varies considerably.

Thirty percent of people retiring today are estimated as likely to need no long-term care before they die, while at the other extreme, 20 percent are estimated to need care for 5 years or more.

For those who need extensive care, costs exceed most families' ability to pay—today, more than $50,000 a year for nursing home care and about $26,000 a year for regular home care.

But we lack private or public insurance to protect against the unpredictable financial catastrophe that long-term care represents.

Though sales of private long-term care insurance are growing, its inadequacies as a solution to our broad needs should be obvious from our experience with the exclusions, benefit limitations, and marketing costs of health insurance marketed to individuals. What doesn't work for health care will work even worse for long-term care.

Public insurance is also lacking. Medicare covers very little long-term care, and Medicaid, which provides invaluable resources and services for long-term care and is the nation's long-term care safety net, does not protect people against financial catastrophe. It finances services only with impoverishment—that is, after catastrophe strikes.

Medicaid's adequacy is further weakened by its emphasis on nursing home care rather than care at home, the considerable variation in the benefits and eligibility across states, and the vulnerability of its benefits to limited state revenue capacity and other pressing state needs—education high among them.

Overall, despite substantial Medicaid and out-of-pocket spending on long-term care, and extraordinary efforts by families who provide most of the long-term care people receive at home, one in five elderly people outside nursing homes report unmet need, frequently resulting in serious consequences like falling, soiling themselves, or inability to bathe or to eat.

Without a change in policy, unmet need will likely increase. An aging population will put growing pressure on all state Medicaid programs. But states with the greatest increase in their older, relative to their younger, working age citizens, like Colorado, Utah, and Oregon, will face the greatest pressure.

Since many of the states with the greatest change are today's lowest spenders per worker on Medicaid term care, long-term care financing will likely be even less equitable and adequate in the future than it is today.

What should we do about it?

We really have a choice—whether we want to live in a society in which we assure access to affordable quality care for people who need it, or in a society in which we leave people in need to manage as best they can on their own.

I hope that we opt for the first.

To address both current and future care needs requires a commitment of public resources. And to be adequate and effective in all states, it is Federal resources, consistent with the Governors' frequent request that the Federal Government assume fuller financial responsibility for those people who are eligible for both Medicare and for Medicaid.

Expansion of public financing for long-term care could take a variety of forms. And if public benefits are limited or targeted, we can protect people against impoverishment and still leave plenty of room for cost sharing or private insurance supplementation by the better off.

Indeed, the OECD reports an increase in the number of nations around the world adopting universal public protection with what they call a fairer balance between public and private financing, one that relates personal contributions to ability to pay and one that targets the greatest benefits to the population in greatest need. Many of these nations have substantially larger proportions of elderly today than does the United States, and therefore, can be instructive to us as we adjust to an aging society.

Clearly, we will face choices in that adjustment. If we are to be the caring society, I believe we wish ourselves to be, we too will move in the direction of greater risk-sharing and equity by adopting a national policy and committing the Federal fiscal resources which will be necessary to achieve that end.

Thank you.

[The prepared statement of Dr. Feder appears in the Submissions for the Record on page 79.]

Chairman Bennett. Thank you very much, all of you. You've demonstrated how complex and yeasty this particular issue is. There are a number of subtexts now running around here that I hope we can get into.

As Mr. Stark knows, my style is to try to generate more of a roundtable sort of conversation than the traditional questioning/answering from the dais to the witness.

That having been said, I am going to ask some questions and I'm sure that Mr. Stark is too, before we get into that.

But I would hope later on, we can be at a point where people feel free to speak up and interact back and forth.

Let me see if I understand some of the points that have been made.

Dr. Manton, I'm interested. We always talk about life expectancy in a total population. And we always use a single term. I know the life expectancy in Japan. I know the life expectancy in Russia and so on.

I should have been smart enough to realize that life expectancy varies from group to group. I'm interested in your concept that if you take out a certain portion, which you describe as the disabled, among the non-disabled, our life expectancy goes up——

Dr. Manton. May be the world's best.

Chairman Bennett. May be the world's best.

Dr. Manton. For 95 percent of the U.S. population.

Chairman Bennett. Ninety-five percent.

Dr. Manton. More than any other country. Japan has 127 million. Their male-female combined life expectancy is 81 years.

I did some simple simulation studies, back-of-the-envelope type of things, and if you simply take Hispanic workers, migrant workers, undocumented aliens, and you take the estimate that the census missed 7 to 14 million of them, if you take the upper bound of 14 million and you take what's in the literature, a life expectancy of 49 years, which is less than many developing countries, that can change life expectancy in the United States because it's a younger population, highly focused, with very low life expectancy.

It can change life expectancy at birth in the United States by 1.1 year.

Chairman Bennett. That raises a whole series of analytical questions that I think have to be factored into the overall equation.

Dr. Manton. Well, one of the interesting things is that if you even compare NCH's life tables to the Social Security actuaries' life tables, they're off by half a year. They differ.

Same vital statistics data, two different agencies.

NCH's is a little higher and it's probably a better estimate. The Social Security actuaries—it must be some actuarial assumption, some sort of smoothing assumption or some ultimate change assumption.

But it's like 0.5 to 0.6 years and guess what? It's the same at age 90 as it is at birth.

Artificial.

Chairman Bennett. Mr. Lubitz, let me see if I understand exactly what you're saying.

If you have a healthy lifestyle and you live longer, the cost in total life terms remains the same, but the cost per year will go down because you have more years.

Mr. Lubitz. That's it exactly. Our findings concern cost from age 70 until death. That was our finding exactly.

Chairman Bennett. That's a standard mathematical model that fits. But it has implications because if we're in the territory that Dr. Feder is talking about and we're looking at Medicare costs per year, if the cost per individual for his lifetime remains the same but it's spread over, let us say, 10 years instead of 5, the cost per individual in the Medicare program is going to go down, in the overall.

Dr. Manton is with me mathematically on this.

Dr. Manton. Right. The per-capita, per-year cost is going down.

So each year under the Medicare experience, per individual is declining.

Chairman Bennett. Per capita per year. Now, the capita is going up.

Dr. Feder. Exactly.

Chairman Bennett. The capita is going up. So let's not be overly excited about this.

But it's nonetheless a good thing.

Dr. Manton. Right.

Mr. Lubitz. If what you're saying, Mr. Chairman, is that if we increase the proportion of the elderly and middle-aged who are in good health, it looks like your conclusion is correct, yes.

Chairman Bennett. There's a pay-off. There's a pay-off at the other end.

Dr. Fries, you seem to reinforce both of these conclusions that say, therefore, there's an area of examination that we need to do in terms of making our long-term forecast of what our costs are going to be, and that there's a strong potential that the costs will not be as high as the straight-line extrapolation might indicate today.

Dr. Fries. That's right. But there's a harmonic all the way across this panel because it is driven not by increases in senior life expectancy, which will be modest, from age 65 or from age 85.

From age 85, the change in the United States has been only fractions of a year over the last 20 years.

What drives the equation is what Dr. Feder was saying, the number of people in the cohorts that are rolling toward us at this period of time.

We can't change that number.

Dr. Feder. Hopefully.

Dr. Fries. It's driven by the number of people born 85 years ago, and there are more of them every year. And they're coming along.

So that number we're stuck with and we can predict it pretty accurately.

Chairman Bennett. Yes.

Dr. Fries. There is another pusher, which is that more of them get to 65, a larger percentage of each birth cohort actually makes it to 65 or makes it to 85.

So that also is a pusher. We can estimate that pretty cleanly.

So there are more people coming. It is probable that we'd have to be really good at postponing illness to make up as much on the individual basis, which is the only place that we can make it up.

Dr. Manton. Better educated.

Dr. Fries. These other numbers are set.

Dr. Manton. They're better educated. That's another dynamic.

Dr. Fries. Yes.

Dr. Manton. Access to health care and the ability to follow physicians' orders.

Dr. Fries. We've been looking—and I've written on the Long-Term Care Survey Data and what the implications are and why are we compressing morbidity because it's clear that we haven't gotten into the postponement of illness scenario yet.

Chairman Bennett. Yes.

Dr. Manton. Medical care has played a lot of roles. Some of the better treatment of hypertension, for example, better treatment of cholesterol levels and things that have happened over this last period of time. More total joint replacements.

Some of these advances that have compressed morbidity are on the medical side.

The future, if we do it right, and if you had the chart that I had, you kind of contrasted the scenarios.

If you want to extend the longevity line, then you can think about heart transplants and extreme technology employed at the late portion of life, and it drives that whole shaded area out. It costs a lot of money.

If you want to drive the first one by prevention, you clearly have to get in there before it happens.

Chairman Bennett. This is the point I want to make, and then I'll turn it over to Mr. Stark.

Dr. Feder makes the clear point that these people are coming.

Dr. Feder. I'm a baby boomer myself. And we think it's a good thing that we're coming.

Chairman Bennett. Yes. Mr. Stark and I both think it's a good thing that longevity goes up.

[Laughter.]

But there's an implication in all of this which I'm not sure we can quantify, although Dr. Manton has tried to.

That various strata in our society have very different tracks ahead of them. I can't put my finger on it, but it just stuck out of my memory.

If you're African-American and you have not graduated from high school, and you do not have a stable family situation from which you have come, this is a health disaster statistically.

You're much more likely to die younger. You're much more likely to be a smoker.

We talk about increasing the price of cigarettes in order to discourage people from smoking. We've had some push back—yes, but this is a very regressive tax.

If the tax on cigarettes goes up, it's the people at the lower economic level who are paying the tax because they're the ones who tend to smoke because the education, the family tradition, the peer pressure, whatever, is not there for them to stop smoking.

So an increase in tobacco prices, increase in cigarettes, is a regressive tax on the poor.

I'm sure you've heard that on the House side, too, that we've heard on the Senate.

It doesn't convince me not to raise the price of cigarettes, but it's an interesting analysis tool. Dr. Feder, maybe you and Dr. Manton can get together and look at which portions, which sectors of the economy are most likely to be the most expensive.

It may not be completely random in terms of health care. You say for the 16-year-old who is driving his motorcycle without a helmet, that's random. But the older you get, it becomes more predictable in terms of the socio-economic pattern that people are following coming into those later cohorts, as well as lifestyles.

Because I think we ought to be looking in terms of where the pressures are building and whether or not interventions that we don't normally think of as health interventions, educational interventions and others, can change lifestyle.

Isn't it true that if you are at the higher economic scale, you are far more likely to be physically fit?

Dr. Feder. If people have better incomes, they are more likely to be in better health. You're absolutely right—those strategies are important, along with education and improving health and people's quality of life.

But I wouldn't want you to think that you then can eliminate this variable risk of care needs.

We're all going to get something.

Chairman Bennett. No, I don't think anybody would suggest that it can be eliminated.

But it can be ameliorated.

Dr. Feder. We can reduce the risk. But then there still is an unpredictable factor.

I know that you did not mean to characterize all the younger people with disabilities as motorcycle accidents.

Chairman Bennett. No, no, no.

Dr. Feder. It's just important that we recognize that there are birth defects.

Chairman Bennett. Yes.

Dr. Feder. There are health conditions, many things. The fact that 40 percent of the people who need long-term care are under the age of 65 is something people sometimes forget when we focus so heavily on the growing elderly population.

Chairman Bennett. I'll turn it over to Mr. Stark now. I've gone too long and have intruded on his time.

Representative Stark. Thank you, Mr. Chairman.

Is there agreement among the witnesses and generally among people who do research in this area as to the accuracy and transparency of the data base?

Do you have all the basic data that you need so that it's just a question of how you interpret it? Or are there differences in the basic data that cause some differences in prediction?

Dr. Fries. I'll try. Probably everybody would like to comment a little bit on this.

In 1980, that period of time we had almost no data on quality of life, on morbidity, on disability, on a national sample basis.

So we have improved that data a great deal.

We still don't measure it very well.

Dr. Manton. On expenditures.

Dr. Fries. We'd find even better results I think if we had better measures of disability, if we used more quantitative measures as opposed to on/off measure—you are disabled, you aren't disabled.

We have ways of doing that. They haven't really crept into the surveys yet.

So there is a need for more and more data. The need for the data is particularly on the morbidity side, not the mortality side, which we count a lot better.

Dr. Manton. I've had a lot of experience in terms of dealing with the data sets. When we did the 1982 to 1989—1982, 1984, 1989, there's a National Academy of Science panel that looked at it and said, "Well, it's potentially credible." The data is OK. But let's have one more round of data to make sure that there's a trend.

So we did 1994. And the rates went up a little higher. The rate of improvement went up a little higher.

So at that point, there was a dilemma—hmmm, maybe we'll have to accept this.

In 1999, they accelerated again. In 1999, the institutional population experienced an absolute drop.

Now what I'm trying to say there is you need targeted services to the people that need it, better services for a smaller portion of the population with the highest needs.

But a simple analysis of the institutional population, the Census Bureau estimated in 1999 that there's going to be 1.74 million people in nursing home beds. We counted 1.46 million.

That was controversial until the 2000 census came out, which came out at 1.52 million, and other data sets like the National Nursing Home Survey——

Representative Stark. Well, when you counted 1.52 or 1.46 million, did anybody dispute your count? There may be disputes about how you interpret what that is, but what I'm trying to get at is, when you all are counting people with heart attacks in a certain age group, do you all pretty much come up with the same numbers?

Are we working exactly——

Dr. Manton. So far, talking to the individuals and other researchers involved like Brenda Stillman, if we talk and get our definitions straight, the numbers are pretty robust.

Representative Stark. OK.

Dr. Fries. There were 16 different trials that were used in a meta-analysis by Freedman and Martin and every single one of them showed—not as well documented as Ken's data, but showed the same thing.

Dr. Feder. Mr. Stark.

Representative Stark. Yes.

Dr. Feder. My colleagues may know better than I, but I think there are some issues in counting people with functional impairments. They are partly definitional issues. They are partly finding the people.

So I think that that's an area where I believe we would all agree more work is needed.

Representative Stark. OK.

Mr. Lubitz.

Mr. Lubitz. I wanted to mention, if I may.

Representative Stark. Please.

Mr. Lubitz. Three areas where I think that we need to improve our data on the elderly especially.

One is in getting good national regular estimates of cognitive status—Alzheimer's. I'm not aware that we have consistent yearly, good reported data.

We need to get a better handle on our population in assisted living facilities and facilities that can be alternatives to either home care or nursing home care.

Dr. Feder. Exactly.

Mr. Lubitz. And that really bears on how we evaluate the health of the elderly.

The other area is I don't think we have good national regular data on the mental health or mental illness in our population, including the elderly population.

Representative Stark. Good point.

Mr. Lubitz. And a methodological issue.

Representative Stark. And that would impact mightily, it seems to me, both the dementia and the mental health issues.

Mr. Lubitz. Well, especially Alzheimer's.

Dr. Manton. Alzheimer's is a major problem. It gets overcounted.

There was a GAO study in 1998 that came up with an estimate, one quarter the size of the estimate from NIA, and our numbers were consistent with GAO, not with the NIA estimates, which was based on one study, in 1980, and extrapolated forward, multiplied times census numbers.

We have a time series over 20 years. Our numbers are consistent with the European experience and are consistent with the GAO method analyses.

1.1 million severely cognitively impaired.

Representative Stark. Well, it just occurs to me, Mr. Chairman, that whatever we could do to see that we get a group of witnesses like this so that we're all using the same data, that's something that I'm sure we could begin to have some impact on now, both its availability and to the extent that we can standardize it.

So that argument gets off the table and we can get down to suggesting now, how do you want to take that data?

Mr. Lubitz, I was surprised by the flat curve that you have for Medicare after about age 73, which I am surprised.

I'm also surprised that there hasn't been—and I don't know from whence, what period this data comes, that the pharmaceutical benefit—if you matched it logarithmically with Medicare, does it follow the same pattern as Medicare, the pharmaceutical part?

Mr. Lubitz. I really can't answer that.

Representative Stark. OK. Are the veterans programs in your data?

Mr. Lubitz. That's a very good question. My answer, I believe, no.

No, they are not.

Representative Stark. I don't know how they might impact.

Dr. Manton. We in the Long-Term Care Survey, Eric Stallard have been linking in veterans programs, benefits, and long-term care.

For the 2004 round, we have proposed, but not funded, the study of the Medicare drug benefit with a follow-on component of the core survey.

Then also one thing with the survey—it's actually not my fault or responsibility, but when it was designed in 1980, it was meant to match up any definition of disability and functioning that was in demonstration studies being done by the government.

So you can look at unmet needs. You can look at different definitions of disability.

You can change the definitions, but the data is there in order to get a temporal measure and consistently done over the 20-year period.

Then costs we linked to the Medicare files.

Dr. Fries. From the clinical side, a lot of the data that you've had presented here are consistent with gerontologic teaching right now which is as you have older patients, you have fewer moveable, modifiable results and illnesses, and that at the same time, medications taken are less effective because there is less organ reserve.

So the counseling is lower, slower, and more conservative. Perhaps defer the total joint replacement or other procedures.

So you have a well thought-through and well taught approach toward just a general decrease in the aggression of medical care for the individual very elderly patient.

Representative Stark. Let me end my part here and toss out a factoid whose accuracy I won't argue about. But I think in terms of its approximation, it's not very far off.

That is—and you can do this with several countries. But the one that hit me, only because I spent a pleasant week in Costa Rica. But that the average cost per capital for medical care in Costa Rica is—I'm going to say $500.

The average cost in the United States I'm going to say is, let's say around $4000.

Whomever I heard this from, I'm pretty sure that those numbers are in proportion. It says that a child born in Costa Rica today has the same life expectancy as a child born in the United States today.

Explain that to me.

Mr. Lubitz. Maybe I can start.

Representative Stark. OK.

Mr. Lubitz. I have a little bit of a family insight because my wife is Costa Rican.

[Laughter.]

I've thought about your question. And my answer, which is not based on science but just on many, many trips there, is two things.

One, they have a good, lean diet.

Two is they don't have as many automobiles per capita. It's growing now, but they do a lot of walking every day.

Representative Stark. I can understand why. They don't have any roads.

Mr. Lubitz. Right.

[Laughter.]

They take public transportation. They do a lot of walking.

Third is their medical care system, while certainly not as technically advanced as ours, is pretty decent and their national medical school is based on the American model.

Representative Stark. Is it universal?

Mr. Lubitz. It's very good. They do have universal coverage, although the people complain about long waits, et cetera.

Dr. Fries. I think the strongest point, just to build on that, the strongest point of these international comparisons are that we are clearly not getting very good value at the margin for the way in which we're currently spending money on health care.

If it was, and you're correct that we spend 10 times as much as really impoverished——

Dr. Manton. Relative to the average income, though, is the question.

Dr. Fries. Well——

Dr. Manton. Adjust out for the base income levels.

Dr. Fries. There's so much that's fixed costs because machines cost the same even in developing countries as in developed ones.

So, the fact that we don't see that we in the United States live 10 years longer or have 10 years' greater health than other developed nations is a cogent one.

But when you make the international comparisons, you see that wise resource use and encouragement of that, emulating some of

those low-tech measures, can help us get some health production that we presently neglect until it gets to be very expensive.

Representative Stark. Dr. Manton's comment I did hear, is that there's a difference in income. So I'll ask the staff—they're going to be mad at you. But I'm going to ask them to adjust that factoid for me.

Dr. Manton. Because United States is about $35,000. What's it in Costa Rica?

Mr. Lubitz. I don't know.

Dr. Manton. A tenth, and then we're at $5,000. The relative expenditure is greater proportion.

Representative Stark. OK. I'll look at that.

Judy.

Dr. Feder. Mr. Stark, just to make a slightly different point. I think that Jim mentioned it at the beginning of his remarks.

There is analysis that says that we are getting more value from the dollar in our health spending than we have typically thought we are that the investment is producing benefits in terms of quality-adjusted life-years.

So, one wants to look at that carefully.

That is not to say that we couldn't get that value by spending less, that we could use our dollars more wisely.

So I don't think we have to believe that we are wasting money in terms of our investment in improved medical care.

As a user of many new medications, I think we ought to recognize that value.

But we don't want to spend more than we have to, and I think that there is widespread agreement that we may be doing that.

Representative Stark. Thank you.

Dr. Manton. One comment just on the expenditures. Again, you have to be careful about the base.

But there's a small table in my written testimony where you compare personal expenditures like 13.9 percent or 14 percent you figure in the United States of the economy is devoted to health care.

But when you look at a proportion of government expenditures, the Japanese and the Swedish are very close to the United States, within 1 percent, 16½ versus 17½ percent.

The point being what's happening in the United States is more private investment and maybe the U.S. citizen is thinking more about his health and investing more out of his pocket into the system and into their health care.

Chairman Bennett. Do expenses for private trainers for Hollywood stars count as health care expenditures?

[Laughter.]

Dr. Manton. Probably not yet, but they probably should.

Chairman Bennett. Yes.

Dr. Manton. They can help a lot. Especially if you've got flexibility problems.

[Laughter.]

Chairman Bennett. I won't go any farther than that. But you're right, that people at the upper end of the economic scale do spend a lot of money in ways that may or may not be really productive in terms of better health.

Dr. Manton, Mr. Lubitz has projected that the expenses of long-term care will essentially wipe out the savings in Medicare spending as people live longer.

Now, he seems to assume that the current projections of the need for long-term care and its costs will remain the same.

Is that a reasonable assumption from your point of view?

Dr. Manton. I don't think so. When we did calculations, taking the 1982 risks of institutionalization or disability and go forward, if we hadn't had the improvements, we estimated about $26 billion per year more expenditures in Medicare and of about $5 billion a year more expenditures in Medicaid. And we can break that down in a lot of different ways.

The rate of institutionalization and even the absolute count of the institutional population has declined, and it could go down a lot further, from 1.74 in 1994 to 1.46 million, which is an absolute decline.

But, really, that's 1.2 million nursing home beds in nursing homes. About a quarter-million are in assisted living.

If you look at assisted living, 800,000 or 900,000 people, only about a quarter of those people need nursing home beds.

I've talked to geriatrician and gerontologists who say that the same thing could be done to nursing homes, that you could reduce the population by 60 to 70 percent from the 1.2 million.

So there are a lot of improvements still to squeeze out.

Chairman Bennett. How do you reduce the population in nursing homes again by 60 percent?

That gets our attention all the way across.

Dr. Manton. OK. Look at the assisted living population. That's where you have graded care. That's where you can move back and forth with rehabilitation, into a nursing home bed and out of a nursing home bed.

So that's the very elderly population who's moved out of their home or an apartment into a place where there are nursing home beds available. And you have spousal care usually available.

What is the rate of utilization in nursing home beds in an assisted-living facility? It's about 25 percent.

So I've asked people. I said, in the average nursing home population, true nursing home, classical nursing home, especially with giving the pressure toward rehabilitation post-acute care since the 1988 MCCA—Medicare Catastrophic Care Act—that you could probably do the same with classical nursing home beds.

Dr. Feder. Mr. Chairman.

Chairman Bennett. Yes.

Dr. Feder. I didn't mean to interrupt you, Ken.

Dr. Manton. Yes.

Dr. Feder. This is an area where I think there is some dispute in the analysis.

Going back to the decline in the nursing home population, I think that researchers have raised questions about whether we really know what's happened to those people—the ones that aren't in nursing homes. Are they in assisted living facilities? Are they getting adequate home care?

It's not at all clear.

My understanding of the data on who is in assisted living is that that population tends to look quite different from the nursing home population. Although there are individuals who could move from one to the other, to think of a wholesale movement to a less costly level of care is probably unlikely; particularly since the kinds of people using nursing homes are increasingly disabled, so that they really need the kind of intensive care that they're getting in nursing homes.

So finally, I guess the other piece is, and that was meant to be the thrust certainly of my oral presentation, we have to look at all of this against, to put it simply, what a lousy job we're doing in taking care of people today.

Home care is barely available for people who need long-term care. They may not be in nursing homes, but they may be at home putting enormous burdens on family care-givers, or going with unmet need, as I indicated earlier.

As your question indicated, to think that we could make enormous differences or make enormous cuts in what we're currently spending, which I don't think we've meant to imply, would be unlikely, would be wrong.

Chairman Bennett. Yes.

Dr. Fries. There are a lot of nuances here and we need to move toward dynamic models and away from static models because that's where you add and subtract here.

If you just imagine a situation in which two spouses are both vigorous in their middle 80's and living together, their opportunity to live independently is greatly enhanced compared with the traditional widow living alone without a family support system.

So there are some things which I would argue can be encouraged that are good for the pocketbook and they're also very good for the people who are living and growing older at the same time.

So I think we need to look for sort of natural trends which may in a nuanced way come in.

The other thing that I keep talking about in dynamic modeling, and Ken and I have talked over the years about dynamic modeling of compression of morbidity, it doesn't have to happen.

You can do a "Russian approach" on health and have everything get worse over time.

We've had pretty steady progress. But that doesn't have to happen. If we don't work to postpone illness through good health policy across the society, then we'll have more illness than if we do work to postpone illness.

So we haven't done that yet. A lot of what we're going to see in the results when we look back 10 and 15 years from now is how we executed with response to now understanding the problem and some of the solutions to the problem better.

We need to work on that now.

Chairman Bennett. Yes, Mr. Lubitz?

Mr. Lubitz. Yes. I wanted to mention some points for caution about projecting to the future and these optimistic things that we hope for.

One is that there is some scientific debate about the extent to which the disability drops among the elderly are due to fundamentally better health, or to use of equipment.

One of our colleagues, Brenda Stillman, has a recent paper raising this question.

Dr. Manton. I've talked to her recently about that paper.

I have a comment.

[Laughter.]

Mr. Lubitz. The other thing is that I wanted to just mention two things, one that is happening today and one that began to happen in the 1950's, which were big fundamental changes in the health of our population that nobody predicted, and it's a lesson to us that it is very hard to predict the future.

The first thing that began to happen in the 1950's was a dramatic drop in the death rate from cardio-vascular diseases.

I don't think people predicted it and people are still trying to understand the reasons behind it.

The other thing that nobody predicted that's happening today is the obesity epidemic. It's been going on for two decades, but in the 1970's, I never read anything that people said that such an epidemic was coming.

So we are going to have soon, the first—I mean, in a number of years, the first decade of people, the first large group of people who have been fat since age 35 entering on to Medicare.

I don't know what it will mean.

Dr. Manton. The biggest problem——

Chairman Bennett. It can't be good.

Dr. Manton. The biggest problem with obesity at later ages, or nutrition—now Jim can talk about this—if you go into a nursing home population, you don't see a lot of fat people.

They may have poor body composition and relative to the lean body mass, they may have a lot of fat. But the problem in a nursing home is not obesity and being over fat. It's cellular hydration, dehydration, and the nutrition is not terribly good.

There's a study by Fiatroni in 1994 in the New England Journal of Medicine where they looked at the effects of weight training on people to regenerate function. For a lot of studies it didn't work. But Fiatroni said, "Hey, maybe if they're working harder, maybe they need a little more food."

When you put nutrition together with exercise, they got up out of chairs, they started walking, and the population was mean age 87.

So one of the problems that we've had with our survey as we've gone on in time is the size of the disabled population is getting so small, to get accurate estimates, we're having to look at higher level functions over time and to look at greater psychological mental functioning as well as physical functioning.

One additional point that I would sort of say, and I can talk a lot about Brenda Stillman's stuff when we talked over the phone to get this issue resolved, and there was a problem using the Census Bureau independent population estimates and we can go into great detail in that.

But one point of many that I didn't put in my written testimony was simply one that was the rate of improvement for people at specific ages in terms of disability against age.

That's a straight 45-degree line up there. What that means is 95-year-olds are increasing relatively a lot faster in terms of functional improvement than 70-year-olds are.

Chairman Bennett. The Senate has called a vote and I think we've probably come to a logical stopping place. So I will adjourn the hearing.

But I cannot resist sharing an anecdote out of my own family that I think illustrates what we've been talking about here.

My Uncle Harold was a very active squash player all his life. Squashball, racquetball, and so on.

Wherever he went on business trips, he would always put a 3x5 card on the bulletin board to say, "I'm in the hotel. If somebody wants a squash game, I'm available."

On one occasion, he was in Las Vegas and staying at a private club rather than a casino-type hotel, put the 3x5 card up, and got a phone call.

Went down to the game with the fellow who answered his request. And when it was over, Uncle Harold had won the game.

The young man who was his opponent, as they were showering and dressing after the game, said, "Mr. Bennett, I just want to say something." He said, "When you walked in here, I was very disappointed at the idea that I was going to play a 65-year-old man, and that this wouldn't be much of a game for me."

He said, "Obviously, I misjudged and you are in wonderful shape and a wonderful squash player at your age."

Uncle Harold said, "Thank you very much. I appreciate that. By the way, I'm 75."

[Laughter.]

Uncle Harold died at 99, after a 48-hour illness. He was living alone in the house that he and his wife had raised eight children.

He said he was never going to move because he didn't want to clean out the attic.

[Laughter.]

He drove a Jaguar in the last week of his life. He refused to let us make a big deal out of his 99th birthday because he says, 99 is not that big a deal. Let's wait until I'm 100.

He didn't make it to 100. But in terms of the morbidity compression, in his case it was less than a week. I think the squash playing probably had a lot to do with it.

If we could get every Medicare recipient to be in that circumstance, although I must further say, I think genetics had something to do with it.

My Uncle Harold died at 99. My father didn't make it. He died at 95 and my mother at 96. I'm reminding the voters of those two ages when they think I may be too old for another term in the Senate.

[Laughter.]

With that, the Committee is adjourned.

[Whereupon, at 11:20 a.m., the hearing was adjourned.]

Submissions for the Record

PREPARED STATEMENT OF SENATOR ROBERT F. BENNETT, CHAIRMAN, JOINT ECONOMIC COMMITTEE

Good morning and welcome to our hearing on the changing demographics of health care. Today we will examine long-term trends in the health status and health spending levels of elderly Americans.

The two most obvious trends are that we are living longer and spending more on health care. But the connection between those two trends is complex, and we need to understand it better. Some might worry that we are caught on a fiscal treadmill, in which long life spans beyond age 65 will simply add to the mounting financial burden of our commitments to fund public entitlement programs like Medicare, Medicaid, and Social Security. But that view focuses too narrowly on the sheer duration of life and the potential costs associated with it, without examining the quality and value of extra years of life.

Even though we hear complaints about our health care system and are concerned about various indications of unhealthy habits and practices, there is a growing body of evidence that suggests Americans are not just living longer, they are also living in better health overall.

Today's hearing will first take a look at what we know about a possible decline in chronic disability rates among the elderly and what this trend implies for the future. Then we will explore whether it is possible to delay the onset of serious illnesses while extending active life spans, particularly through effective health promotion and disease prevention strategies. We will examine how by changing the underlying demand for health care services, instead of just trying to control the supply of health care, we could affect the future structure and financing of our public health programs. Finally, we will discuss whether a longer lifespan, combined with better health can maintain and enhance the vital treasure of human capital that we need to maintain a vigorous labor force and strong economic growth in an aging society.

Of course, before we paint too rosy a picture of the future, we should carefully assess where we have been and where we are now. Today, we have a panel filled with some of the nation's leading experts in the field of health care demographics. We hope that they will not only highlight and interpret the data for us, but that they will also offer some suggestions about how we could harness the full potential of our current investments in health care and health promotion.

Dr. Kenneth Manton of the Center for Demographic Studies at Duke University is noted for his work with the National Long-Term Care Survey, a study emphasizing remarkable declines in the prevalence of chronic disability among the elderly in recent decades.

James Lubitz of the National Center for Health Statistics has examined the connection between increased longevity and health care spending among the elderly in a number of articles. He suggests that the effects of longevity on Medicare acute care services and Medicaid long-term care benefits may run in different directions.

Dr. James Fries of Stanford University first coined the theory of morbidity compression several decades ago to explain how the onset of serious disease and chronic disability may be delayed until later in life so that a larger portion of our life spans are spent in good health.

Judy Feder is Professor and Dean of Policy Studies at Georgetown University, and also a senior scholar at Georgetown's Institute of Health Care Research and Policy. She previously served 3 years as Principal Deputy Assistant Secretary at the Department of Health and Human Services and has written extensively about the financing of Medicare, Medicaid, and long-term care in particular.

PREPARED STATEMENT OF REPRESENTATIVE PETE STARK,
RANKING MINORITY MEMBER

Thank you, Chairman Bennett. I would like to thank the Chairman for holding this hearing on the important issue of the growing elderly population, longevity, morbidity, and the implications for our health care system.

The witnesses joining us today are leading researchers in this field and I'm looking forward to their testimony. We appreciate being able to draw on their vast experience and expertise as we grapple with the myriad public policy issues surrounding our increased longevity.

That we are living longer is certainly good news, but the question that remains is what will our quality of life be as we age?

Medicare and Medicaid provide health security for the elderly, but there's no comprehensive national strategy for long-term care. You can't predictably know when you or a family member might need such care, and many families cannot shoulder the burden of a long convalescence or illness.

Most people can't buy cost-effective insurance for long-term care, and Medicare doesn't cover it. Medicaid does provide this type of support, but only for the very poor, and the scope and quality of services varies by state. We have seen cases of married couples divorcing just so that the very ill or dying person does not leave their spouse impoverished in order to obtain the care they need. This is hardly a family friendly policy.

There is a crying need for a sensible strategy that provides quality and affordable long-term care. Dr. Lubitz points out that as our longevity improves more financial pressure will be put on an already stressed Medicaid system, while Medicare will experience only a little extra pressure. We can't fix this coverage gap through Medicaid.

Dr. Feder points out the obvious need for a federally funded program, due to the fact that the demands for such care will vary by State and the ability of their working age population to support their elderly population. For example, she shows that in California we won't have nearly as large of a decline in the number of workers supporting our elderly over the next two decades as you will in Utah.

With the baby boom generation aging, the need for long-term care will reach a crisis point if we don't act soon. I look forward to hearing from our witnesses about how we might avoid such a disaster.

TESTIMONY OF

KENNETH G. MANTON, Ph.D.
DUKE UNIVERSITY
CENTER FOR DEMOGRAPHIC STUDIES

BEFORE THE

JOINT ECONOMIC COMMITTEE
OF THE
U.S. CONGRESS

THURSDAY, JULY 22, 2004

I. Context

The research outlined below stems from two sources. One is the Senate hearing on the fiscal stability of the Social Security Trust Fund relative to forecasts of mortality held in 1983 (Manton, 1983). This arose out of the fact that Social Security actuaries had not anticipated increases in male life expectancy after a period of stagnation 1954 to 1968. The anticipation of future increases in life expectancy might have been based simply on the observation of female life expectancy, which continued to improve unabated over the same period. Apparently, one reason for the failure to anticipate mortality changes was due to the SSA actuaries' reluctance to anticipate the growing role of women in the U.S. economy.

The connection here to Medicare is that the SSA life expectancy and population forecasts are directly used in Medicare cost projections. Thus, SSA forecasts are the demographic basis for Medicare projections. What would be strange to an economist is why the investment in health does not affect the SSA forecasts; i.e., why is population and health change exogenous to Medicare expenditures (and health forecasting).

We believe this is the fundamental error in the system. The rest of the discussion provides evidence of the problems this has engendered for a very long time, as well as our approach to fixing the problem; i.e., using biological and health data to construct the feedback between population and health – and a myriad of good and bad things that flow from this linkage.

Ultimately we believe that by constructing a realistic bridge between a population and health model much of the pessimism about Medicare expenditures can be dispelled and many new options identified that are not simply policy driven, i.e., tax increase/decrease or increases and decreases in Medicare benefits. We wish to project the true product of Medicare expenditure (and NIH investment) on the health and functioning of the U.S. elderly population into the future.

Moreover, it is not sufficient to predict mortality and life expectancy changes but, as recognized by WHO, quality of life – which is strongly associated with the available human capital in an aging population and economic growth and productivity (discussions with Greenspan, December 20, 2000, at Washington D.C. Federal Reserve Bank). It is in this context that the National Long Term Care Survey (NLTCS) was planned during the end years of the Carter administration (1980) and implemented during the Reagan administration (the NLTCS was made longitudinal in 1984 and conducted again in 1989). The NLTCS addresses the major reasons that more aggressive steps for altering the Social Security normal retirement age and for modifying the Medicare Program were not taken in 1982; i.e., lack of data in 1982 on how functionally capable and healthy were survivors to later ages (Feldman, 1983). Indeed, in 1982 it was unclear even how to conceptualize the linkage of survival and health (Fries, 1980; Manton, 1982).

Now that we have 18 years' worth of NLTCS data, 1982 to 1999 (and soon 23 years with the 2004 NLTCS) – linked to Medicare records, with clinical diagnoses and bills – we can begin to systematically address that question; i.e., how rapidly does life expectancy increase relative to the portion of life expectancy in a wholly functionally independent state without severe medical problems? Furthermore, we are making projections under our current NIA funded research that include that information and, in others of our projections, information from the most comprehensive and recent longitudinal epidemiological data sources; e.g., the 46 year follow-up from the Framingham Heart study and data on genetic and protein biomarkers to be drawn from biological specimens collected in 1999 and in an enhanced 2004 (and planned 2009) NLTCS.

The biomarker data could assess future treatments that could drive future Medicare reimbursement systems to improve human capital in the U.S. to stimulate future GDP expansion.

II. The 1982 to 2004 National Long Term Care Survey and Biomedically Motivated Forecasting Models – the Tools.

At the Center for Demographic Studies at Duke University I have been the P.I. on cooperative agreements with HCFA/CMS to study the 1982 and 1984 NLTCS and then P.I. on NIA grants to conduct the 1984, 1994 and 1999 NLTCS and to analyze changes in the human capital present at later ages in the U.S. population aged 65+. In the course of these projects we have developed both an evolving (but with a stable core) data collection strategy plus a number of analytic tools to model, and forecast, health changes and health costs of the elderly U.S. population.

The fundamental finding of the NLTCS is that chronic disability above age 65 has consistently declined in the U.S. population from 1982 to 1999. Indeed, the rate of change has accelerated. It was 1.7% from 1982 to 1999. But it was 2.6% from 1994 to 1999, i.e., the fastest decline is in the most recent survey cycle. Evidence of any decline was controversial in 1982-1984 because it was then assumed that, as life expectancy increased, so did the period of time the individual spent in decline and decay, i.e., "pandemics" of chronic disability and disease (e.g. Kramer, 1980) which were assumed to be associated with the social and ecological stress of modern industrial states (Omran, 1971). I did not believe in this (Manton, 1982, 1989).

This pessimism prevented the Greenspan commission from recommending significant action to deal with Medicare and Social Security issues with a two-year increase in retirement age delayed to 2000 and then only phased in over about a 22 year period. It was felt that there was insufficient national data to justify any more of an increase; i.e., it was not known how health and function had changed as a process as life expectancy increased (Feldman, 1983). Consequently, when we published about a decline in the 1982 to 1989 NLTCS a *National Academy of Science* panel was convened to study its validity. The report (Freedman and Soldo, 1994) suggested that the evidence was interesting but that one should wait until the 1994 NLTCS before concluding a positive trend existed.

When the trend towards a decline in disability was strengthened with the results of the 1994 NLTCS, it became difficult to ignore the evidence – and serious consideration of the fact of a disability decline started. Indeed, the decline was so rapid 1982 to 1989 that, in order to have sufficient respondents to our detailed community interview in 1994, we had to:

a) oversample 1200 elderly who were not disabled,

b) add in variables to assess higher degrees of physical and mental function.

We also included important measures such as nutrition, exercise, and risk factors to begin to determine how to intervene in the aging process and promote the decline in disability.

The value of the time series on disability greatly expanded in 1999 because we had two time points (1994 and 1999) with detailed clinical diagnoses (ICD-9) and because we added biomarkers (blood and buccal cell samples) for approximately 2700 persons. This means we could look at clinical and biomarker correlates of the trends in functional disability, and we had the necessary data to determine how medical management, and even molecular medicine, could influence future disability trends. With Medicare records, we had the tools to determine how to revamp the Medicare Reimbursement System to promote adoption of new effective therapies and treatments. Further, we now had evidence of a 1.7% decline in disability over 18 years in a

follow-up of 42,000 individuals – enough to begin to convince actuaries that there was something to pay attention to (Stallard, 2004).

Recognition of this success evidenced by long-term declines in disability was shown by the interest of OECD, the G-8 and U.S. policy makers in the declines in the Denver, Colorado meetings. A crucial observation in the 1999 NLTCS was to confirm:

a) declines in the use of institutional care in the U.S.;
b) declines in serious disability (ADL) in the elderly population;
c) identification of sources of large declines in severe cognitive impairment at late ages, and, most important;
d) that for the growing non-disabled elderly population there were declines, inflation adjusted, in per capita expenditures in Medicare 1982-1999 (especially for males 65 to 84).

Many of these results will be examined in the 2004 NLTCS that is now in process.

The following sections will cover these topics in greater detail starting with the provision of evidence of the undue pessimism of SSA and Medicare (because they are driven by SSA projections and don't reflect a feedback of health status) forecasts about the current and future health state of the U.S. population. In each argument we will bring in supporting data to examine why the basic demographic trends on mortality have been misinterpreted and not well anticipated.

III. SSA Modeling of U.S. Mortality Trends; an Evaluation of Underlying Health Dynamics

The initial failure to accurately project increases in U.S. life expectancy by SSA and Medicare actuaries was due to increases in male cardiovascular disease risks (increases paralleled in Britain with male life expectancy increases there occurring to about 1964 (Kaplan and Keil, 1993; Manton, 1999). This view was so extreme as to posit (Table 5: Bayo and McKay, 1974), in the 1974 SSA projections, an ultimate biological limit to human longevity of 69.0 years for males and 76.9 years for females, to be reached in the year 2000 (Myers, 1981).

The facts are quite different. SSA life tables indicate a life expectancy of 74.0 years for males and 79.4 years for females for 2001. The values for 2001 from NCHS were 74.4 years for males and 79.8 years for females. Life expectancy increased a further 0.2 years to 2002. Thus the 1974 SSA "ultimate" life expectancy values projected to occur in 2000 were 5.0 years too low for males and 2.9 years too low for females – over a period of 26 years. These are huge projection errors for the Social Security and Medicare programs for mid-range projections.

In Figure 1, adapted from NVS Reports, Vol. 52, No. 14 (p. 4), we see very rapid increases in life expectancy that show no signs of abating (especially for white males). If the mortality trends are so consistent, why did the 1974 SSA life expectancy projections differ so much from the facts in 2000? This is because the SSA actuarial procedures essentially ignore empirical data trends after 25 years, using instead "ultimate rates" based on "expert opinion". This is basically a philosophy of "good things eventually fail".

IV. Some Epidemiological Evidence about Cancer Mortality Trends and Forces Shaping Them

Of interest is the timing of the reversal of mortality increases (life expectancy declines) relative to the Framingham Heart Study (NHLBI) which was started in 1948, with several other

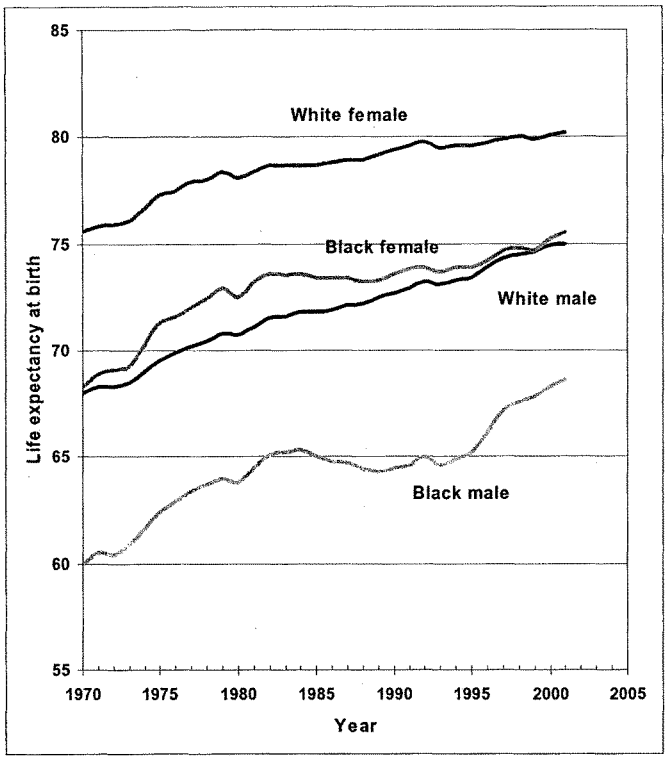


Fig 1. Life expectancy at birth by race and sex: 1970-2001

longitudinal cardiovascular disease risk factor studies starting later (e.g., Charleston Heart study about 1960; Kaplan and Keil, 1993). The first significant findings about circulatory disease risk factors were probably available in the Framingham 10-year follow up (i.e., 1960) which was followed by the above-noted reversals of male cardiovascular disease mortality increases about eight years later (1968-1969). This major mortality turning point was not only not anticipated by SSA actuaries, but they did not accept the evidence on the turning point until 1978-1979. This acknowledgement of the change is roughly concurrent with the convening of Senate Finance Committee hearings (see Manton, 1983) and the Greenspan Commission.

Twenty-two years after the Framingham Heart study was started, the NCI "war on cancer" was initiated by President Nixon (1972). The war on cancer was heavily criticized as not being effective in changing adult solid tumor mortality, both 14 years after the war started (Bailar and Smith, 1986), and even after major cancer mortality declines started in 1990 (Bailar and Gornik, 1997).

This could be partly attributed to a defect in the procedures by which cancer drug therapies were developed; i.e., candidate drugs were tested on one set of rapidly growing cell lines such as childhood leukemia. Thus, it was no surprise that the first therapies were most effective against childhood leukemia and adult lymphomas. In about 1978, the screening panel was modified to contain breast cancer and other solid tumor cell lines (Weisenthal, 2004). After this occurred, progress started to be made against rapidly growing hormonally dependent tumors (e.g., breast and testicular cancer), and even later, colorectal cancer.

One fundamental reason that some tumors remained resistant to chemotherapy was that the theory of pharmacogenesis (Gonzalez and Nebert, 1990) suggests there was co-evolution of plants and animals, i.e., plants developed toxins so as not to be eaten and animals developed physiological mechanisms so as not to be poisoned. The protective mechanism in animals involved a gene coding for a glycoprotein that pumped water-soluble toxins out of cells (Gottesman, 1989). Thus, digestive organs like the stomach, liver and kidneys were resistant to water soluble compounds. As a consequence, lipid soluble agents had to be developed (e.g., liposomal delivery of doxorubicin) and alternate cell structures attacked; i.e., taxol and taxotere attacking the proteins forming the cytoskeleton. This made therapy far more effective.

In 1983, an article in the *New England Journal of Medicine* questioned the use of cell sensitivity panels, so this type of test became unpopular. The most appropriate, and effective, use, however, seems to be testing of drugs against a patient's own tumor cells from biopsy, which may increase therapy efficacy by up to 20 fold (Weisenthal, 2004). By doing so, a postulated 20-fold increase in the therapeutic efficacy of current chemotherapy regimens could lead to further major breakthroughs in cancer patient survival.

The technology exists today to do this very cost effectively (e.g., use of micro array genetic screening procedures; automated testing of sets of tumor cells from a biopsy to multiple chemotherapy agents). What was needed was to pair the technology for the biopsy assessment with new candidate (for the person) drugs and basic biomedical research, and theory, on cell metabolism and proteomics and intracellular molecular dynamics (Manton et al., 2004; Hai and Manton, 2004; Hai et al., 2004). The issue is to merge this research and theory on the cellular (and intracellular stochastic molecular) micro level with epidemiological and demographic data on the meso (individual) and macro (population) level. This is the thrust of our current intra-disciplinary research program at my Center for Demographic Studies, e.g., Manton et al., 2004, which involves a mix of M.D./Ph.D.s, physicists, mathematicians, computer scientists, and economists totaling 35 to 40 persons. I believe this is a unique combination of talent and data resources directed to a well thought through research strategy.

V. Social Correlates of Trends

Associated with these "macro" mortality trends and biomedical innovations were social changes. Stomach cancer in the 1930's was the most prevalent tumor type of death, partly due to the presence of *H. pylori* in water in rural farm communities (e.g., Minnesota). As water quality improved, stomach cancer dropped from the number 1 cause of cancer death in 1930 to number 6 in the 1990's. Concomitant with this were rises in lung cancer mortality due, in part, to the provision of cigarettes to soldiers in W.W. II. The 1962 Surgeon General's report altered U.S. cigarette consumption, so that the peak lung cancer mortality for males occurred in 1995 – with attendant cost consequences for Medicare.

The point is that the use of biological, epidemiological and demographic data, in models that use those data in a biologically consistent fashion, can predict mortality turning points for the Social Security and Medicare trust funds. This is not now done, nor is it planned, though I recommended it in my testimony at another Congressional hearing (Manton, 1999).

In 1999, I was present at hearings held by Representative Nick Smith of Michigan in a closed door session with Dr. Haseltine (a biophysicist, formerly of Harvard University and now CEO of Human Genome Sciences) and the Social Security actuaries (Manton, 1999). The topic was the inability to predict major changes in mortality and how much life expectancy could increase and over what time. In that hearing I repeated much of what I said in 1983 – and now I am repeating much of what I said in 1999.

What I presented at that hearing was the use of Framingham data, and longitudinal data from the 1982 to 1989 NLTCS, to develop scenarios by which U.S. life expectancy could increase to 90 to 95 years (Manton et al., 1992, 1994) with a larger proportion of life span spent in active states. Our models have increased greatly in scientific sophistication and information content since then.

The 1982 to 2004 NLTCS survey records linked to Medicare records, and to biomarker data, may be more information rich than the simple time-to-death distributions exploited in actuarial forecasts (Manton et al., 1992, 1994). Since then we have made great strides in both the linkage of multi-faceted longitudinal data sets and in modeling (e.g., addition of biomarker data to the 1999 NLTCS).

VI. The Combined Effect of Biomedical and Social Forces on Recent Cancer Trends

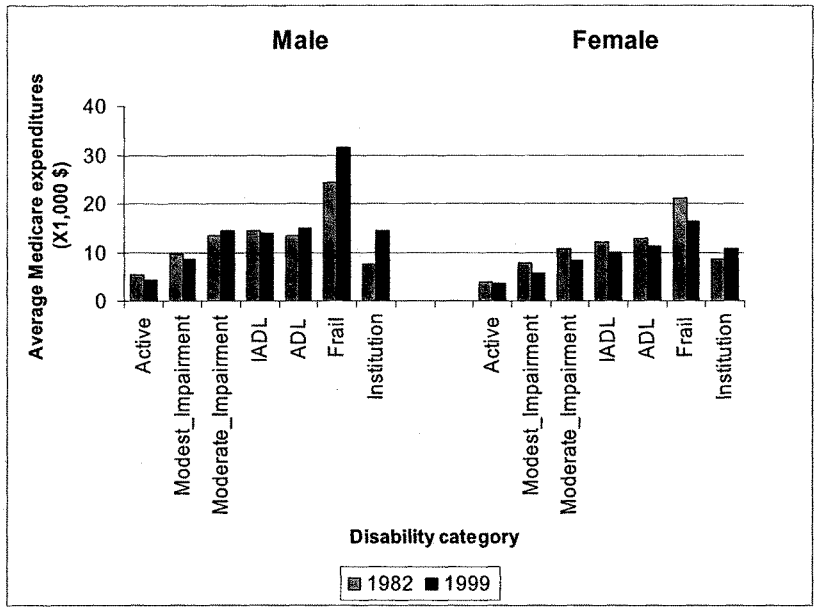
As a consequence of public health (stomach), social (lung, smoking trends) and medical (breast, age at first birth) factors, total cancer mortality started to decline in 1990 (even before the peak in lung cancer mortality and long before Bailar and Gornick, 1997). Certain types of cancer declined much earlier. The declines continued to at least 2002. CDC indicated that cancer incidence dropped 0.5% 1991-2001 – possibly an underestimate due to improved screening procedures. From 1993 to 2001, cancer mortality rates dropped 1.1% per year. Thus, about half of the decline appears due to public health measures and cancer prevention and half due to improvements in treatments – NCI funds both types of efforts. However, much more could be done in treatment if best available technologies were used in general practice (e.g., Weisenthal, 2004). Cancer is thus another example of a major mortality turning point that was missed by the SSA actuaries, but which was predictable from a multi-faceted biologically and medically informed analysis. Obviously, if one relies on mortality data alone, one can never anticipate such crucial turning points; i.e., they will only be recognized after 10 to 15 years because there is no information on health changes prior to death.

VII. Active Life Expectancy – A Crucial Innovation

Our research suggests vital statistics and Census data may have produced a serious underestimate of the benefits of investment in biomedical research at NIH, as well as in the health care delivery system of the U.S., including Medicare. As a further consequence, it misses identifying a very reasonable, positive way to significantly reduce Medicare and Social Security funding problems. Indeed, financial and demographic factors may demand it. For one, the decreasing age of retirement in the U.S. has reversed (Burkhauser and Quinn, 1997) and is

apparently continuing to increase. There may be significant underreporting of employment of low income elderly who work in service occupations to supplement Social Security payments. An economic incentive to the more affluent to continue work is that the debt burden of the U.S. elderly population has apparently started to increase – a powerful incentive to continue employment.

Actually, the global effect involves four factors: a) declining disability (e.g., Singer and Manton, 1998; Manton and Gu, 2001); b) decreasing inflation-adjusted Medicare costs for non-disabled persons and increased Medicare costs for severely-disabled persons (see adaptation in figure 2 of Figures from the Harvard University Conference, Boston, Massachusetts, April 28, 2004); c) increasing employment over age 65 (Burkhauser and others); and d) improving scientific productivity of NIH (e.g., Tolley et al., 2004 and other papers) in new econometric and demographic models using NLTCS and Medicare data.



1982 data was adjusted by Consumer Price Index (CPI) for medical care services for the U.S. city average; data from DOL (5.9% per year).

Fig 2. Average Medicare expenditures and the distribution of person by seven pure types (after mortality adjusted): Age 65-84.

In Figure 2, the bars to examine are the left-most pairs labeled "active" which, in the 1982 to 1999 NLTCS, are increasing at a high rate (1982 to 1999 by 1.7%; 1994 to 1999 by 2.6%); a

rate accelerating to at least 1994 to 1999. Medicare costs are declining within the growing non-disabled population, with the largest (inflation-adjusted) declines for males aged 65 to 84. Overall, we estimate this saved 26 billion dollars in Medicare expenditures in 1999 alone.

Medicaid is also strongly affected by declines in severe disability and nursing home use. This may have reduced LTC costs of the elderly by another 4 to 5 billion dollars in 1999. Thus, the combination could have reduced combined Medicare/Medicaid costs 30 or more billion dollars in 1999 – more than enough to pay for the entire NIH budget – without considering the $60 to $90 billion dollars' increase in federal tax revenue due to increased participation of persons over age 65 in the work force under the current projected changes of the normal retirement age to 67 (Tolley et al., 2004). Further increases in this age could have tremendous additional benefits.

Our econometric models show that at an interest rate of 7%, the "optimal" investment in NIH research is about $60 billion. Our results indicate that, at an interest rate of 4%, the "optimal" (to stimulate economic growth) investment is several hundred billion dollars. At 1% the optimal rate of investment is higher. This is simply common sense. Rather than let money stagnate at 1%, investment in any enterprise that reasonably advances economic productivity would be welcome (Tolley et al., 2004).

Our studies of the 1994 and 1999 NLTCS indicate that the institutional population is an area of remarkable improvement. Not only did the number of persons in nursing home beds decline from 1.74 million in 1994 to 1.42 to 1.46 million in 1999 but the number in traditional nursing homes declined to 1.2 million persons, with about 250,000 nursing home beds in graded care, assisted living facilities (not present in 1994 – a new residential option emerging because of the effects of the 1988 Catastrophic Care Act on Medicare Home Health Agency use and the re-focus of nursing home care on post-acute care – not residential). Geriatricians I have discussed this with (e.g., Dr. Bruce Kinosian of the University of Pennsylvania) suggest that, of the remaining 1.2 nursing home beds, good quality care could reduce long term care nursing home patients by 65 to 75%, paralleling the proportions found in the 800,000 assisted living residents in 1999. This is an interaction of economic growth, social change, and geriatric medicine (much of which was funded by NIA and the V.A.).

VIII. Some Possible Strategies to Innovate, and the Potential Leverage of NIH Research, on Economic Growth

a.) Research on Aging

Both basic science studies of aging and epidemiological studies of aging have yielded tremendous insights into how to modify and slow, or even reverse (Regenerative Medicine), the effects of time on human physiology.

Epidemiologically, it has been found that, at advanced ages, the incidence of cancers, osteoporosis, and Alzheimer's disease slows. This could be due to an advanced age "selection of the fittest" (e.g., centenarians are generally relatively healthy as a group relative to the population at age 80 – 89; see NIA centenarian studies). Or it could be due to the aging process in average persons changing at very advanced ages. For example, cancers are rapidly growing cells. They are most lethal in children, where the entire body is rapidly growing. In young adults, germ cells (e.g., testicular cancers) are selectively rapidly growing. At late ages, many types of cells are in "replicative senescence;" i.e. fully functional but only slowly dividing.

Thus, this phenomenon may not be due to selection, but rather to adaptational consequences of senescence for metabolism that is genetically programmed.

Research also tells to reject the classic genetic paradigm of disease. One of the biological scientists at our center (Professor M. Golubovsky) is an expert in stochastic epigenetic changes (Golubovsky and Manton, 2004a,b). An understanding of genetic transmission (DNA→RNA→protein) as modifiable is an area of specialization of the theoretical organic chemist on our staff (Dr. S. Volovyk) whose specialty is free radical theory. He has worked with me on how to modify damage associated with gamma radiation and incorporated radionucleides (Manton et al., 2004) in neurodegeneration. This is of interest in that, in Ukrainian studies of Chernobyl, cancer was not as important as accelerated aging of the circulatory system and the brain. I have postulated that modification of osteoporosis drugs could prevent uptake of the most damaging radionucleides (Sr^{90}). Research at the University of California at Berkely on the use of alpha lipoic acid (a special anti-oxidant) and N-acetyl carnitine could reduce the Chronic Radiation Syndrome effect of radionucleides' exposure and reverse decline of energy produced by age related decay of mitochondrial efficiency (Walter et al, 2001; Liu et al, 2001; Hagen et al, 2001). I have started to examine this at a fundamental level in a thyroid-based model of human senescence (Manton, 2004a). This leads to the next suggestion of how to better leverage NIH research dollars.

b.) Better Use of International Data on Human Population Exposures (e.g., in former Soviet States)

One approach to leveraging NIH research is the production of international collaboration studies. For example, one could use large international investments in major, but tragic, human population exposures to stressors such as the effects of low-dose ionizing radiation on neurodegeneration and circulatory disease in Chernobyl (followed 1986 to 2004 in the Ukraine, Russia, and Belarus). The Soviet/Russian investment in these longitudinal studies is irreplaceable and, if the same exposure conditions existed today (e.g., nuclear terrorism; radioecological pollution due to reactor dismantling or failure of radionucleide storage systems), would cost billions of dollars to replicate. These are large-scale, natural human laboratories to study specific diseases and fundamental biological processes related to aging (and most chronic disease) such as inflammation (e.g., IL-6 and the increase in inflammation with age, Cohen et al., 1997).

c.) Potential Effects

Such studies could lead not only to the preservation of human capital, but also to the regaining of function, as suggested by Dr. Haseltine in the 1999 hearings, by promulgating the notion of using human growth factors (proteins and enzymes) to control disease and regain function. For example:

a) Remicade, a TNF-α inhibitor may "cure" rheumatoid arthritis by "resetting" the immune system. It is of great benefit in ulcerative colitis – and possibly multiple sclerosis.

b) Evidence suggests that supplementation with Vitamins C and E and low dose aspirin may prevent most Alzheimer's disease (Zandi et al, 2004). In't Veld et al. (2001) found that ibuprofen (Advil) use may prevent 80% of Alzheimer's disease if started before disease onset (see Manton et al., 2004 for discussion of possible mechanisms).

c) Exercise and nutritional supplementation (e.g., calories and select amino acids – glutamine, arginine) may modify such factors as endogenous growth hormone release.

d) Even the health effects of chronic exposure to low dose, endogenous radionucleides (e.g., ingestion of ^{90}Sr and ^{137}Cs) can be prevented by a) preventing the operation of bone-building cells during exposure to the radio-nucleides (say by re-engineering osteoporosis drugs) or b) eliminating chronic radiation syndrome effects by ingesting alpha lipoic acid and N-acetyl-carnitine (an anti-oxidant and a fatty acid metabolizer) – effects that could even reverse the signs of aging (Liu et al., 2002; Walter et al., 2002; Hagen et al., 2002, etc.).

d.) Strategies

Our preliminary studies with the NLTCS and economic simulations (Tolley et al., 2004) suggest that health costs will decrease if NIH research sponsors a wide range of new areas of investigation in human populations. With the recent doubling of NIH budget, proposals to diversify research are essential if the economic stimulation of the NIH funding is to be realized. The goals must be to improve diversity of research, benefit the nation's health, increase human capital (not only in the elderly, but also to reduce Medicaid expenditures in younger populations), improve the fiscal status of Medicare and Social Security, and stimulate the U.S. total economy. These factors, of course, will have to be related to tax policy and other initiatives to foster use of growing late-age human capital (including intangibles such as providing long-term care by one spouse to another; e.g., Lakdawalla and Philipson, 1998, 1999, etc.).

IX. A Demographic Analysis and Simulation to Show How Much Current Actuarial Assessments May Underestimate U.S. Health Improvements

It is often argued that U.S. life expectancy is lower than that of Japan, France and Scandinavian countries and that life expectancy in the U.S. has been relatively stagnant. First, the most recent "stagnation" of mortality (1954 to 1968) is no longer true (at least for males) because, in part, of declines in cancer mortality 1990-2001. Comparisons of life expectancy with Scandinavian countries are unfair because of the small size of those countries and the relative homogeneity of their populations. Japan and France are perhaps better comparisons, but Japan is less than half the U.S. population and is ethnically homogeneous. There are many large ethnic and racial groups in the U.S. with extremely different health distributions (Manton and Stallard, 1994). At advanced ages (i.e., ages 80+), it appears the U.S. may be the world's leader in life expectancy (Manton and Vaupel, 1995). To examine the situation look at Table 1:

Table 1. Life Expectancy for selected industrialized countries (2004)

Country		Japan	Andorra*	Germany	France	Sweden	Canada	U.S.
Population (Millions)		127	0.1	82	60	9	33	293
Life expectancy at birth (years)	Total	81	83.5	78.4	79.4	80.3	80	77.4
	Male	77.7	80.6	75.6	75.8	78.1	76.6	74.6
	female	84.5	86.6	81.7	83.3	82.8	83.5	80.4

*highest life expectancy in 2004 C.I.A. Fact book.

One scientific interpretation of these numbers is that, given the continuing rapid rises in life expectancy, the 1974 postulated limit to human life expectancy in 2000 by SSA actuaries (Myers, 1981) of 77 years was wrong (see above). Indeed the postulated limit of 85 years by Fries (1980) and Olshansky et al. (1990) now seems in jeopardy – and is occurring much faster than most scientists believed possible.

Second, it appears that, in terms of life expectancy at birth, the U.S. ranks last in this group. How could it be number 1 at age 80? The answer is twofold: a) problems in data and life expectancy models (which have tremendous effects on Medicare and Social Security trust funds) and b) the size and diversity of the U.S. population. We will address both those issues before addressing qualitative factors (i.e., ALE).

Vital Statistics and Demographic Data

One useful example is to compare the life tables from NCHS and those produced by the Social Security actuaries for the year 2001 in Figure 3. In these life tables we added adjustments described below for Hispanic and other non-documented immigrant farm workers to the 2001 N.C.H.S. estimate (i.e., 1.2 years).

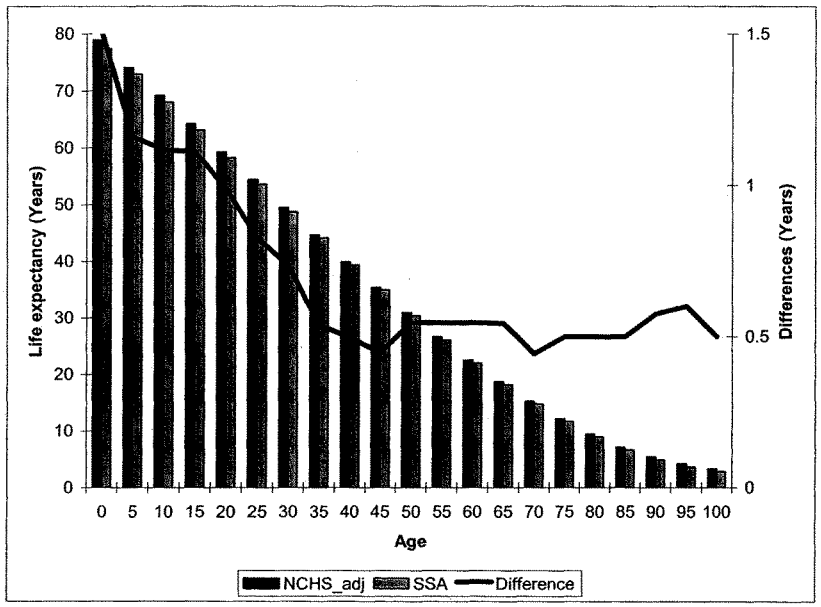


Fig 3. Life Expectancy Differences between data from (adjusted) NCHS and SSA.

In Figure 3, the left axis is absolute life expectancy; the right represents life expectancy (NCHS* – SSA) differences in years. The blue bar is the adjusted NCHS life expectancy, which is – at birth – 1.5 to 1.7 years higher than the unadjusted 2001 SSA estimate. This is from the same vital statistics data for roughly the same date using roughly similar life table calculations. Of interest is the fact that the difference in the SSA tables and the adjusted NCHS tables of about 0.5-0.6 years is relatively constant past age 35 (after the adjustment for non-documented workers ends about age 45), suggesting a simple shift in the life table functions. We would have expected the differences to decline with age (the early decline is dominated by an adjustment for illegal immigrants (especially Hispanic farm workers) health effects). Crucial to SSA and Medicare is that a 0.6-year difference in life expectancy at age 65 (of about 18 years) is about 3.3% – the relative differences at later ages grow. This is a serious problem in trust fund modeling – a fixed model error due apparently to actuarial assumptions for 2001, not the effects of assumptions to 2075.

We believe that the NCHS estimates are better than SSA – but still conservative. The differences we believe are both due to decisions made by SSA actuaries and heterogeneity in ethnic and racial groups in the U.S. In addition, as discussed, there are problems with actuarial long-range forecasts. Declines were detected for total cancer mortality in 1990 and have continued to 2001 at the rate of 0.9% per year (NCHS). The rate of decline in cancer mortality 1990 to 1995 was 0.57%. The rate of decline 1995 to 2001 was double; i.e., 1.14%. We can expect continuing increases in 2004 and beyond because of recent declines in female lung cancer mortality (smoking related) and reductions in breast cancer and possibly colorectal cancer mortality.

These declines were not only due to improved therapies (cytotoxic, radiation and surgery) but also due to the fact that the peak lung cancer risk due to smoking was reached for the Medicare male cohort becoming eligible in 1995 (i.e., males aged about 30 when the Surgeon General's report on smoking was first issued in 1962). These cancer mortality declines were superimposed on stroke mortality declines that have been in place since the 1930's, reductions in stomach cancer due to water quality improvement starting in the 1930's, and cardiovascular mortality declines that became evident for U.S. males in 1969.

b.) Reasons Vital Statistics and Public Health Measures Significantly Underestimate Health Improvements

One reason is the impact of illegal immigrants, and health disparities in some ethnic groups, on national health care measures such as life expectancy. Life expectancy is a crude measure because it, in part, is not adjusted for quality of life. Indeed, WHO has recommended that life expectancy be supplemented by measures of Active Life Expectancy – especially in developed countries. There is a long-standing international effort to advance the use of Active Life Expectancy as a public health measure because it reflects the economic potential of individuals (Reves: Réseau Espérance de Vie en Santé; the International Network on Health Expectancy and the Disability Process, website: http://www.prw.le.ac.uk/reves/). Yet neither Medicare nor SSA utilizes this concept in their projections. Apparently, several studies of inclusion of such factors are now being started by the new director of CMS (communication with CMS staff).

To illustrate the differences in life expectancy and active life expectancy, we provide Figures 4 and 5. They show changes in U.S. life expectancy 1982 to 1999 (4) and changes in ALE (5) using the 1982 to 1999 NLTCS data.

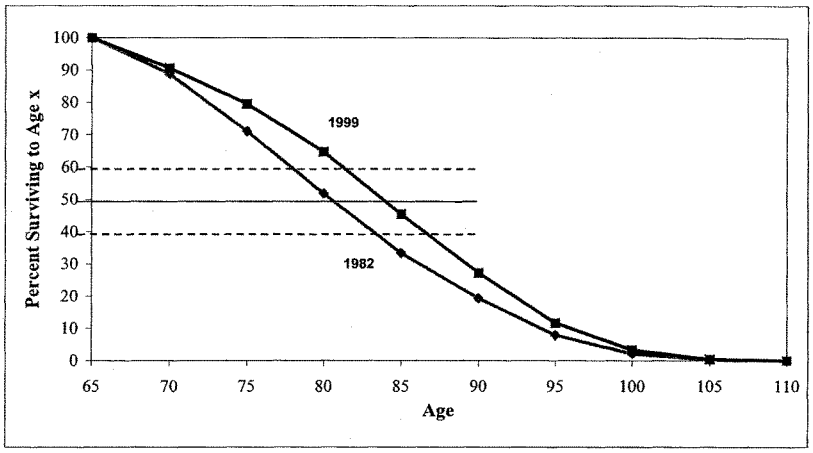


Fig 4. 1982 and 1999 Life Expectancy (and median (50%)) Estimates.

Clearly there are increases in life expectancy above age 65 whose magnitude peak about ages 80 to 85. The corresponding changes in Active Life Expectancy (and the median age at death, solid black line) are seen in Fig. 5.

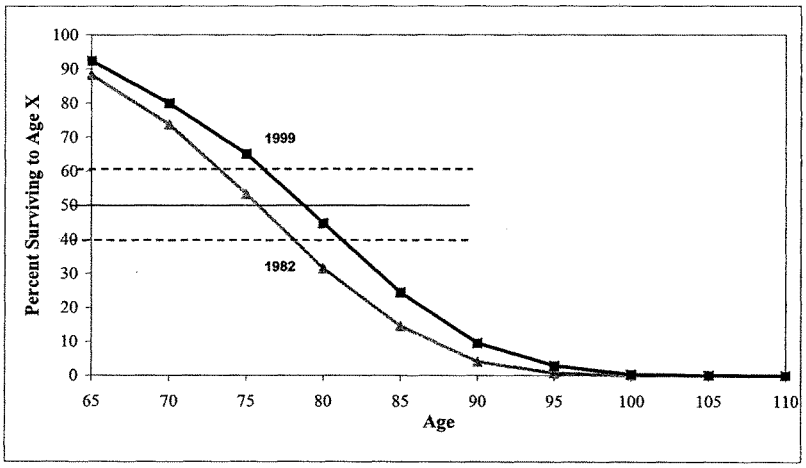


Fig 5. 1982 and 1999 Active Life Expectancy (and median (50%)) Estimates.

U.S. Active Life Expectancy increased 1982 to 1999 – in absolute terms – almost as fast as life expectancy (2.9 years vs. 3.5 years). In relative terms, there was a 4.3% increase in life expectancy 1982 to 1999 while ALE increased 3.8%. Thus the improvement in ALE in the U.S. is quite rapid – possibly the fastest in the world. Britain, for example, has been relatively stagnant in terms of disability declines (Waidmann and Manton, 1998). More important is that, in recent analyses, we found the rate of increase in ALE was much higher at advanced ages (e.g., 85+ and 95+) than at younger ages. We are developing the implications of this in several new papers.

One of the unique design features of the NLTCS to evaluate such trends was to supplement the extreme elderly sample population (i.e., aged 95+) in 1994 (by 540), in 1999 (by 600) and in 2004 (by 1000). This is a unique feature of the NLTCS which is scientifically important because this group is at an age where traditional medicine has relatively few answers and where fundamental research on the biology of physical and neurological degeneration is crucial (Manton et al., 2004).

OECD has drawn upon the NLTCS data time series to assess the effects of an aging population and the need for chronic care on the economic competitiveness of European countries – including relative to the U.S. (Jacobzone, 1999). They are continuing this assessment for the 1999 NLTCS in 2004-2005. Related findings were presented at the 1998 G-8 conference in Boulder, Colorado (ASPE). Yet the SSA and Medicare actuaries seem unaware that Europe and other countries (and WHO) are revamping their economic (especially human capital) indicators and data collection systems based on a long-standing and easy-to-understand U.S. model and linked data system (the NLTCS and linked Medicare and biomarker data).

c.) Effects of Census Undercounts and Population Heterogeneity on U.S. Health Assessments

One problem is the failure to assess, and adjust for, the adverse effects of illegal immigrants (especially Mexican farm workers in California and N.C.) on measures of U.S. health progress. There are estimated to be 7 to 14 million illegal immigrants in the U.S. who were not captured by the 2000 Census (estimates vary; about 0.5 million entering per year, U.N. report). Deaths in this group are counted in calculating mortality but are missing from the population counts, with most of those "illegals" likely in the 15-35 year age range (assumptions based on modification of Puerto Rico immigration age patterns). "Illegals" will have births while in the U.S. Thus, with an estimated life expectancy of 49 years in migrant farm workers, only the negative effects of these disproportionate numbers of deaths are reflected (in life expectancy estimates) without adding to the exposed population. In addition, infant mortality rates are extremely high among undocumented Mexican farm workers possibly causing the observed increase of U.S. infant mortality in 2002, while overall life expectancy reached its highest level ever.

Below we adjust for these effects by subtracting out projected deaths using the hypothesized population distribution of illegal immigrants by age and estimates of their elevation of mortality risk (i.e., the 49-year life expectancy). The calculations are meant simply to illustrate the effects – alternate assumptions could produce numbers higher and lower. We are simply attempting to illustrate the size of the effects, controlling for the health heterogeneity of specific U.S. ethnic groups in U.S. life expectancy estimates.

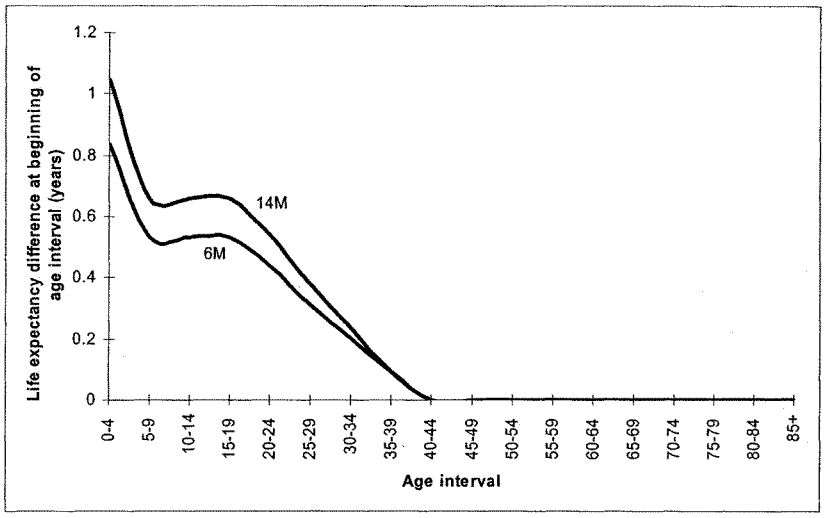


Fig 6. Life Expectancy Differences at Beginning of Age Interval.

We show the effects of Census Bureau undercount estimates on age-specific life expectancy in Figure 6. The low adjustment is over 0.8 years. The high adjustment is about 1.1 years.

In Table 2 we show selected illustrative numbers.

Table 2. U.S. Life Expectancy at Birth with Various Adjustments

)04 SSA (2001 76.7 years adjusted to 2004, + 0.6 years)	77
)04 NCHS (2001 77.4 years adjusted to 2004, + 0.6 years)	78
)04 NCHS with adjustment for undocumented workers (especially Hispanic) (+ 1.1 years)	79
)04 "Adjustment" for all African American health disparities as in NCHS life tables (+ 0.5 years)	79
)04 Low "Adjustment" for diabetes, smoking and obesity elevated risk in African Americans (+ 0.5 years)	80
)04 High "Adjustment" for Black Health Disparities (+ 0.5 years)	80

Table 2 shows that both the NCHS and SSA tables might raise the U.S. life expectancy at birth 0.8 to 1.1 years (depending on assumptions about illegal immigrants). Adding 1.1 years (high estimate), we add 1.8 years to the 2001 SSA life tables. Adjusting for African-American health disparities (e.g., a reduction of life expectancy by 20+ years for obesity and diabetes in African-Americans) raises the estimate 0.5 to 1.0 years, producing the progression in Table 2.

It is important to note that, just as there are large groups at elevated health risks in Hispanic and African-American groups due to behavioral risk factors and problems in health care access, there are also groups in those racial and ethnic categories with health better than that of the

average white American. We are simply attempting to illustrate how much major health problems in a relatively (to U.S. population) small group can bias life expectancy measures. Some of these "small" groups are larger than the entire Swedish population (9 million persons).

The adjusted estimate of life expectancy at birth of 80.6 years is better than Germany, France and Sweden (Table 1), with the U.S. being 0.4 years less than Japan. Now it is quite plausible to believe that U.S. survival at age 80 could be the highest in the world. If we were to further adjust for SES and education, U.S. life expectancy – for middle-income, educated people – could easily surpass that of Japan.

Taking this in the context of health expenditures we present Table 3.

Table 3. Spending (%) on health in the U.S. and other countries (2001)

	% of GDP	% of Govt. Spending
U.S.	13.9	17.6
Germany	10.9	16.6
France	9.6	13.7
Canada	9.5	16.2
Sweden	8.7	13.0
Japan	8.0	16.4

(Source: Economic Opportunity Institute, M.P. Watkins, May 2004)

Given the better performance of U.S. life expectancy (adjusted) than all but Japan, we see that Health Expenditures in the U.S. are proportionally (relative to government spending) not much different than in Germany, Canada or Japan. Thus the biggest difference in the U.S. appears to be in private investment in health in the U.S. – this investment being the likely source of U.S. success. Thus, one may construe the evidence to be that Americans are, out of pocket, more likely to invest in health. This, we believe, is because a) they are more optimistic that modern medicine makes a difference, and b) the general affluence of the U.S. population. We suggest, as a consequence, that the American cultural view of health and its maintenance (positive) is fundamentally different than that of the professional actuary (perhaps more British and negative).

These data might answer important questions about whether our "high" health care investments and increased NIH investments of the right type are worth it; i.e., we have the highest ALE (especially at late ages); we have the most rapidly-improving ALE; and in middle income educated persons with good access to health care we are probably better than Sweden – and perhaps Japan – with their highly homogenous (ethnically and socio-economically) and smaller populations.

X. Analysis of Specific Recent Concerns about the U.S. Health State

a.) Obesity

Questions have been raised about "obesity" as reflecting future declines in health. Again, the groups with the highest diabetes (and stroke and heart disease) risks are likely illegal Hispanic immigrants (and select subgroups of African Americans). In addition, the measure generally used – body mass index – doesn't reflect body composition; i.e., lean body mass. There are other simple measures (e.g., waist to hip ratio) that may reflect this better and might be considered (Willett et al., 1999).

Indeed, the problem in elderly Americans is more likely to be protein malnutrition, cellular dehydration, and avitaminitosis with, as hormone levels decline, increased fat and decreased muscle mass and tone – leading to serious disability, with slowly-declining body weight but increasing proportions of body fat. The physiological dynamics of the phenomena are complex and not fully understood (Manton, 2004b). However, exercise and proper nutritional supplementation may reverse it (Fiatarone et al., 1994). We are developing a mathematical model of aging and mortality, based on the work in Manton and Akushevich (2003), which views the thyroid gland as the master gland in aging processes, since it can influence mitochondrial function and number (Wrutniak-Cabello et al., 2001), and hence basal cellular metabolism.

Problems similar to that for illegal farm workers may affect African Americans. In particular, some ethnic groups have genes that store fat more efficiently – probably due to the need to survive long periods without food in aboriginal settings (e.g., Pima Indians). These groups, which include many Hispanics with an admixture of these "greedy" genes from Indian predecessors, may have a genetic predisposition towards obesity. One of these genes is the APOE gene with the $\varepsilon 4$ allele which, interestingly, is related to Alzheimer's disease risk. This is fundamentally a public health issue, not a failure of biomedical research.

As Professor Willet at Harvard has argued, the famous food pyramid published by the Department of Agriculture had problems because it was based on arguments that proteins and fats and oils might lead to poor health and obesity and should be de-emphasized in diet. The better health associated with the Mediterranean diet and Chinese dietary practices, and the fact that dietary fat and cholesterol have a tenuous connection, suggests a lack of validity of this position. As the basis for a public education program, this food pyramid could have had consequences for U.S. obesity trends – especially in children. Apparently, after interventions from OMB, this pyramid is now being revised to a more balanced form.

These changes are consistent with the research at NHLBI on cholesterol in the Framingham Heart Study in the 1950's and 1960's being modified to show there was "good" cholesterol (HDL) and bad cholesterol (LDL), with perhaps triglycerides (elevated by sugars, certain carbohydrates and stress) being the most dangerous component through its linkage to diabetes and hormonal dysfunction (e.g., insulin release and its relations to stress-induced cortisol elevation). We can expect that, with better diet, recent Congressional initiatives (Senator Frist) and the growing trend towards physical fitness and nutritional awareness, the obesity "epidemic" will subside – leaving the real problem, at later ages, of inadequate nutrition and cellular dehydration (Manton, 2004b).

b.) Alzheimer's Disease Trends

Another often cited population trend used to argue for pessimistic actuarial assumptions is the "epidemic" of Alzheimer's disease argued to emerge as the population ages. First, it is important to realize that not all dementia is of the Alzheimer's type (Manton et al., 2004). Much of it is vascular dementia, or Alzheimer's disease mixed with vascular dementia. The vascular dementia process can be modified much more easily than the Alzheimer's type, since it is driven by diabetes, hypertension and hyper-cholesterolemia and, ultimately, stroke.

Using data from the East Boston study in Figure 7 below, we see that adjusting for education reduces projected relative rates of increase by 40 to 60% past 2020; i.e., by 2050 from the often-quoted 14 million to less than 10 million.

The 3 to 3.5 million cases estimated for 1980 was based on a poorly-educated Italian immigrant population in East Boston and included mild cases of dementia/Alzheimer's disease that were hard to diagnose. A GAO report in 1998 challenged such projections by using meta analysis of 18 different studies – many European. In all of our NLTCS analyses of cognition in the elderly we focus on "severe cognitive impairment" to reduce false negative cases.

It is interesting that while the U.S. elderly population increased from 27 million in 1982 to 35 million in 1999 (about 30%), the actual number of cases of severe cognitive impairment estimated from the NLTCS dropped from about 1.5 million in 1982 to 1.03 million in 1999. If 1982 age-specific rates had not changed, the estimated number of severe cognitive impairment cases in 1999 would have been about 2.1 million – or a reduction of roughly 50% from that observed. This can be compared with the approximately 2.5 million cases of moderate and severe disease in 1980 in East Boston (more than double our estimate of severe cases). Our 1999 NLTCS estimate of 1.02 million cases in 1999 can be compared to the projected over 4 million cases (education adjusted) of mild, moderate, and severe Alzheimer's disease (presumably all cognitive impairment would be even higher) for 2000. The NLTCS estimate of 1.02 million cases in 1999 can be compared to over 4 million projected cases (education adjusted) of mild, moderate, and severe Alzheimer's disease (presumably all cognitive impairment would be even higher) for 2000.

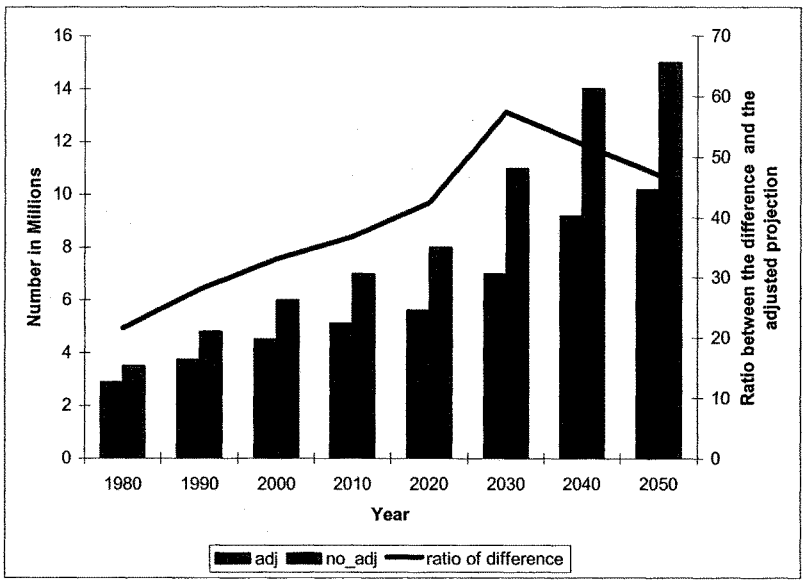


Fig 7. Projected number of persons over age 65 with AD in the US population with middle US Census projections of population growth with or without adjustments for years of education and the proportion change relative to the adjusted population.

In this context it is useful to compare our NLTCS numbers with the 1998 GAO report for moderate and severe cases based on their meta-analysis. Their (GAO, 1998) estimates of 1.1 million cases compare quite favorably with our estimate of about 1.1 million cases in 1994 (and the 1.02 million cases in 1999 reflecting the decline 1994 to 1999). Thus their prevalence estimates using meta-analysis and our analyses of the NLTCS data are very close – with ours likely being conservative (i.e., too high) because we only considered severe dementia (to eliminate false positives), not moderate dementia.

Second, we found large declines 1982 to 1999 in the prevalence of severe cognitive impairment (Manton and Gu, 2004), which in preliminary analyses (Manton et al., 2004) seem attributable to circulatory disease dementia (e.g., dementia as sequelae to stroke). This is in spite of a growing sensitivity by physicians to Alzheimer's disease and related dementia. The Alzheimer's disease rates were relatively stable – though prevention interneuron (i.e., Vitamin C, E and aspirin) could reduce them 93% (Zandi et al., 2004).

XI. Conclusion

We have provided several examples among many to document our assertion that the U.S. health care system is among the world's best – especially for the elderly, with its primary shortcoming being the lack of equitable distribution of health services to specific ethnic groups (e.g., Hispanic farm workers, undocumented workers, and African Americans). The difficulty of having a fully-equitable system is clear because of the size and diversity of the U.S. population.

It is equally clear that U.S. biomedical research is the world's best and has excellent effects on those with full access to it. Social Security and Medicare forecasts fail to recognize this and are overly pessimistic. They are also technically severely limited in that they use only time-to-death data and subjective inputs on health trends. Models could use multiple sources of health data and be based on objective model results with open scientific review of the model structure so it could be made scientifically valid (Manton, 1992; Manton et al., 1994). In this way many important mortality turning points could be predicted and interventions could be made to help promote them.

Overall, it is clear that the use of the NLTCS, and related linked data sets, would help better assess changes in health that could greatly benefit the financial soundness of the Medicare program and the beneficiaries it serves. This is both by more accurately assessing the health of the elderly U.S. population and by developing better strategies to improve health. From this will flow benefits for the Social Security and Medicare systems and, ultimately, the total U.S. economy.

References

Bailar J and Gornik H: Cancer Undefeated. *New England Journal of Medicine* 336:1569-1574, 1997.

Bailar J and Smith E: Progress against cancer? *New England Journal of Medicine* 314:1226-1232, 1986.

Bayo F and McKay S: United States Population Projections for OASDHI Cost Estimates. Actuarial Study. Washington, DC: US Department of Health, Education, and Welfare; Report No.: 72, July 1974.

Burkhauser R and Quinn J: Pro-work policy for older americans in the 21st century. Syracuse: Center for Policy Research, Maxwell School of Citizenship and Public Affairs, Syracuse University Report No.: Policy Brief No. 9, 1997.

Cohen HJ, Pieper CF, Harris T, Rao KM and Currie MS: The association of plasma IL-6 levels with functional disability in community-dwelling elderly. J. Gerontol. A Biol. Sci. Med. Sci 52:M201-M208, 1997.

Feldman J: Work ability of the aged under conditions of improving mortality. *Milbank Memorial Fund Quarterly* 61:430-444, 1983.

Fiatarone M, O'Neill E, Ryan N, Clements K, Solares G, Nelson M, et al: Exercise training and nutritional supplementation for physical frailty in very elderly people. *New England Journal of Medicine* 330(25):1769-1775, 1994.

Freedman V and Soldo B: Trends in disability at older ages. Washington, DC, Committee on National Statistics, 1994.

Fries J: Aging, natural death, and the compression of morbidity. *New England Journal of Medicine* 303:130-135, 1980.

Golubovsky M and Manton K: Genome organization and three kinds of heritable changes: General description and stochastic factors. In Press at *Frontiers in Bioscience Encyclopedia*, 2004a.

Golubovsky M, Manton K: A three-generation approach in biodemography is based on developmental profiles and the epigenetics of female gametes. In press at *Frontier in Bioscience Encyclopedia*, 2004b.

Gonzalez F and Nebert D: Evolution of the P450 gene superfamily: animal-plant 'welfare' molecular drive, and human genetic differences in drug oxidation. *Trends in Genetics* 6:182-186, 1990.

Gottesman S: Genetics of proteolysis in Escherichia coli*. *Annu Rev Genet* 23: 163-98, 1989.

Hagen T, Liu J, Lykkesfeldt J, Wehr C, Ingersoll R, Vinarsky V, et al: Feeding acetyl-L-carnitine and lipoic acid to old rats significantly improves metabolic function while decreasing oxidative stress. *Proceedings of the National Academy of Science* 99(4):1870-1875, 2002.

Huang H and Manton KG: The role of oxidative damage in mitochondria during aging. A review. *Frontiers in Bioscience* 9, 1100-1117, 2004.

Huang H, Patel DD Manton KG: The immune system in aging: Roles of cytokines, T cells and NK cells. *Biodemographic Effects of Genome-Proteome Interactions* in: the "Encyclopedia of Bioscience," published by Frontiers in Bioscience 2004 (to appear).

in't Veld B, Ruitenberg A, Hofman A, Launer L, van Duijn C, Stijnen T, et al: Nonsteroidal Antiinflammatory Drugs and the risk of Alzheimer's Disease. *The New England Journal of Medicine* 345(21):1515-1521, 2001.

Jacobzone S: An overview of international perspectives in the field of ageing and care for frail elderly persons. Labour Market and Social Policy Occasional Papers. Paris: OECD; Report No. 38, 1999.

Kaplan G and Keil J: Socioeconomic factors and cardiovascular disease: A review of the literature. *Circulation* 88(4):1973-1998, 1993.

Kramer M: The rising pandemic of mental disorders and associated chronic diseases and disabilities." *Acta Psychiatrica Scandinavica* 62(Suppl. 285): 382-397, 1980.

Lakdawalla D and Philipson T: The rise in old age longevity and the market for long-term care. NBER Working Paper Series 6980. Cambridge, MA: National Bureau of Economic Research, 1998.

Lakdawalla D and Philipson T: Aging and the growth of long-term care. Cambridge, MA: National Bureau of Economic Research, 1999.

Liu J, Killilea D, Ames B. Age-associated mitochondrial oxidative decay: Improvement of carnitine acetyltransferase substrate-binding affinity and activity in brain by feeding old rats acetyl-L-carnitine and/or R-a-lipoic acid. *Proceedings of National Academy of Science* 99(4):1876-1881, 2002.

Manton KG: Forecasting life expectancy. Testimony before the Subcommittee on Savings, Pensions, and Investment Policy of the Committee on Finance, U.S. Senate, July 15, 1983. Senate Hearing Document No 98-359, Washington, DC.

Manton KG: Changing concepts of morbidity and mortality in the elderly population. *Milbank Memorial Fund Quarterly* 60:183-244, 1982.

Manton KG: Epidemiological, demographic, and social correlates of disability among the elderly. *Milbank Quarterly* 67 Suppl 2 Pt 1: 13-58, 1989.

Manton KG: How could demographic changes affect the Social Security system: Perspectives on forecasting mortality. Testimony before the House Budget Committee, Task Force for Social Security, April 13, 1999, Washington, DC.

Manton KG: Aging and longevity of human populations. Contributed article in *Encyclopedia of Endocrine Diseases* (Martini L, Ed.). Elsevier: San Diego Volume 1 pp. 116-121, 2004a.

Manton KG: Letter to Editor re: "The Outlook for Hospital Spending: Rapid Growth Is Likely to Persist" by Shactman, Altman, Eilat, Thorpe, and Doonan and "Does the Aging of the Population Really Drive the Demand for Health Care?" by Reinhardt. *Health Affairs*, 23(1) 273-274, 2004b.

Manton KG, Akushevich I: State variable methods for demographic analysis: A mathematical theory of physiological regeneration and aging. *Nonlinear Phenomena in Complex Systems*, 6(3):1-11, 2003.

Manton K, Akushevich I and Kulminski A: Demographic analysis and modeling of human populations exposed to ionizing radiation. *Frontiers of Bioscience* 9:2144-2152, 2004.

Manton KG and Gu X: Changes in the prevalence of chronic disability in the United States black and nonblack population above age 65 from 1982 to 1999. *Proceedings of the National Academy of Sciences, U.S.A.* 98: 6354-6359, 2001.

Manton KG, Gu X: Change in physical and mental function: Prospects. Chapter in *New Dynamics in Old Age: Individual, Environmental, and Societal Perspectives* (Wahl HW, Tesch-Romer C, Hoff A, Eds.), in the Society and Aging Series (Hendricks J, Series Ed). Baywood: Amityville, NY, 2004.

Manton KG and Gu X: Disability Declines and Trends in Individual Medicare Expenditures. In preparation for *Health Affairs*, 2004.

Manton KG, Gu X and Ukraintseva SV: Factors Causing Declines in Chronic Disability 1982 to 1999 in the U.S. Elderly Population. Working Paper, Center for Demographic Studies, 2004.

Manton KG and Stallard E: A cohort analysis of U.S. stomach cancer mortality - 1950 to 1977. *International Journal Epidemiology* 11(1):49-61, 1982.

Manton KG and Stallard E: Ethnic health and disability differences in the U.S. elderly population. Presented at the Workshop on Racial and Ethnic Differences in Health in Late Life, sponsored by the National Institute on Aging and the National Research Council Commission on Behavioral and Social Sciences and Education, Washington, DC, December 12-13, 1994.

Manton KG, Stallard E and Singer BH: Projecting the future size and health status of the U.S. elderly population. *International Journal of Forecasting* 8:433-458, 1992.

Manton KG, Stallard E and Singer BH: Methods for projecting the future size and health status of the U.S. elderly population. Chapter 2 in *Studies of the Economics of Aging* (Wise D, Ed.). National Bureau of Economic Research, University of Chicago Press, pp. 41-77, 1994.

Manton KG and Vaupel JW: Survival after the age of 80 in the United States, Sweden, France, England, and Japan. *New England Journal of Medicine* 333(18):1232-1235, 1995.

Manton KG, Volovyk S, Kulminski A: ROS effects on neurodegeneration in Alzheimer's disease and related disorders: On environmental stresses of ionizing radiation. Accepted by *Current Alzheimer Research* (Lahiri DK, Ed.), 2004.

Myers G: Future age projections and society. In: Gilmore A, editor. *Aging: A Challenge to Science and Social Policy.* Oxford: Oxford University Press, p. 248-260, 1981.

Olshansky S, Carnes B and Cassal C. In search of Methuselah: Estimating the upper limits to human longevity. *Science* 250(4981):634-640, 1990.

Omran A: The Epidemiologic Transition: A theory of the epidemiology of population change. *Milbank Memorial Quarterly* XLIX: 509-38, 1971.

Singer B, Manton KG: The effects of health changes on projections of health service needs for the elderly population of the United States. *Proceedings of the National Academy of Sciences U.S.A.* 95 (26):15618-15622, 1998.

Tolley HD, Palmer H and Manton KG: On government funding of health care research. CDS Working Paper, 2004.

Ukraintseva SV and Yashin AI: Individual aging and cancer risks: How are they related? *Demographic Research* 9(8):163-196, 2003.

United Nations Economic and Social Council. Specific groups and individuals: Commission on Human Rights, Sixtieth session, Item 14 of the provisional agenda; March 3, 2004. Report No.: E/CN.4/2004/NGO/97, GE.04-11451.

United States General Accounting Office. Alzheimer's disease. Estimates of prevalence in the United States. Report to the Secretary of Health and Human Services: United States General Accounting Office; 1998 January 1998. Report No.: GAO/HEHS-98-16.

Waidmann T and Manton KG: International evidence on disability trends among the elderly. Final Report for the Department of Health and Human Services, 1998.

Walter P, Knutson M, Paler-Martinez A, Lee S, Xu Y, Viteri F, et al: Iron deficiency and iron excess damage mitochondria and mitochondrial DNA in rats. *Proceedings of National Academy of Science* 99(4):2264-2269, 2002.

Weisenthal L: Cell culture drug resistance testing (CCDRT). Chemosensitivity Testing http://virtualtrials.com/assay.cfm 2004.

Willett W, Dietz W and Colditz G: Primary Care: Guidelines for Healthy Weight. *The New England Journal of Medicine* 341(6):427-434, 1999.

Zandi PP, Anthony JC, Khachaturian AS, Stone SV, Gustafson D, et al: Reduced risk of Alzheimer disease in users of antioxidant vitamin supplements: the Cache County Study. *Arch Neurol* 61: 82-8, 2004.

STATEMENT OF JAMES LUBITZ, ACTING CHIEF, AGING AND CHRONIC DISEASES, STATISTICS BRANCH, NATIONAL CENTER FOR HEALTH STATISTICS CENTERS FOR DISEASE CONTROL AND PREVENTION, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Good morning Mr. Chairman and members of the Committee. I am James Lubitz, Acting Chief of the Aging and Chronic Disease Statistics Branch at the National Center for Health Statistics, Centers for Disease Control and Prevention. Before coming to CDC I worked for many years in the research office of the Centers for Medicare and Medicaid Services. I am pleased to be here today to participate in the hearing on "Getting Older, Staying Healthier: The Demographics of Health Care." I will discuss the highlights of research by myself and colleagues at CDC, CMS and the Urban Institute on the longitudinal patterns of medical expenditures from age 65 until death and how they relate to a broader picture of health and health care use by our elderly population.

BACKGROUND

The Medicare program is 38 years old. There has been enough time to follow the experience of cohorts of Medicare enrollees from enrollment to death and to observe their patterns of health care use as they age. Today, the nation's health care system has changed dramatically from what it was at Medicare's beginning in 1966. We have experienced a growth in health care spending above the overall inflation rate. Furthermore, medical spending has grown faster for the elderly than for the under age 65 group (Meara et al., 2004). In 2000, per capita, inflation-adjusted health care spending for the 65 and older was 8.4 times what it was in 1963; for those under 65 it was 4.6 times what it was in 1963. Medicare spending alone grew from 0.75 percent of GDP in 1970 to 2.6 percent last year and is predicted to nearly double to more than 5 percent of GDP by 2020.

Expectations for medical care have changed for the elderly. In the 1970's there was serious discussion of the idea that medical spending in the aggregate did little good and that we were "wasting" a large percentage of medical expenses for high tech procedures on seriously ill persons who would die shortly anyway. The idea of setting limits on health care spending was proposed. In these discussions, the percentage of Medicare spending for persons in their last year of life was often exaggerated, and it was commonly believed that 50 or 75 percent of Medicare spending was for the last year of life.

Today our population has high expectations for medical care and procedures like cataract removal, coronary revascularization, hip and knee replacements, and early treatment for heart attacks and strokes to restore function and reduce disability. Thus, although Medicare spending has grown and is expected to keep growing, Medicare beneficiaries may derive greater value from the program through better health and quality of life. Now there is increasing evidence that medical care is cost effective in the aggregate, as measured by treatment costs versus gains in life expectancy and improved health (Cutler and McClellan, 2001). There is also evidence that the overall health of the elderly has improved over the past few decades; although there is not complete agreement on the nature and degree of improvement. I expect the other witnesses will discuss in detail the topic of trends in the health of the elderly. The effect of improved health of the elderly on health spending is a complex subject, with some experts believing that improved health will lead to lower costs (Singer and Manton, 1998; Waidman and Liu, 2000). As I will try to make clear, the relationship between health, health care services and health care spending is complex, and under equally plausible scenarios better population health can lead to lower or higher health costs.

The analyses that I present here have been developed from the administrative and survey data bases of CMS and CDC's NCHS.

MEDICARE COSTS IN THE FINAL YEARS OF LIFE

The Medicare program is unique in that it is the only health insurance program in which people enroll (at age 65) and are expected to remain until their death. Consequently, Medicare covers the medical costs of the final years of life of 75 percent of the U.S. population. We would expect that Medicare costs in the final years would be higher than in the prior years, because patients are, in general, very sick before death and final year costs are high. Costs in the last year of life account for 28 percent of Medicare costs in a given year. But because this percentage has held steady for two decades—despite all the changes in medicine and in the health care delivery system—we can say that costs in the last year of life have just kept pace with overall growth in Medicare costs and are *not* disproportionately responsible for the Medi-

care spending increase. There is no evidence that "heroic" efforts to extend life, to whatever extent they occur, have been driving Medicare cost increases.

Perhaps it should not be surprising that this percentage has been steady. Physicians are often faced with uncertain prognoses for severely ill patients. This may limit the scope of changes in the care of dying patients. Within the last year of life, we find costs concentrated in the last months—the last 2 months of life account for over half of the average beneficiary's costs in the final year. And, again, this percent seems to have held steady.

We have also found that Medicare costs in the last year are lower for older decedents. Medicare spending in the last year of life for decedents age 90 or over is only 58 percent of that for decedents age 65–69. This may reflect an inclination on the part of providers toward less aggressive interventions for the very old in their final years. But, as we will note below, long-term care costs (of which only a small part are covered by Medicare), are considerably higher for older decedents than younger ones.

The high costs of the final years provide an insight into why Medicare spending per enrollee per year is higher for older than younger enrollees. To a large extent the difference reflects the higher death rate of older enrollees and the concomitant end of life costs; not advanced age, per se. All things being equal, falling death rates will decrease the annual, per enrollee Medicare costs in each age group, so the older aged may cost relatively less per capita tomorrow than today. In other words, it is the number of years before death, more than chronological age, which drives Medicare spending.

MEDICARE COSTS FROM AGE 65 TO DEATH

The medical care costs for the elderly in any year are made up of the costs of enrollees at various ages and various times before death. In any calendar year, some persons will have a life expectancy of many years; others will be in their final year and likely incurring high medical costs. The sum of the costs for all these enrollees comprises annual Medicare spending. We examined cumulative medical costs from age 65 until death for persons dying at each age from 65 to 100 to study the relationship between longevity past age 65 and total medical care costs, including both Medicare covered and other costs (Figure 1).

We find that, on average, past age 70 or 75, each additional year lived adds little to Medicare costs. This is especially true for long-lived individuals. A person who lived to 90 as compared to 89 cost Medicare only $404 more (in 1990 dollars), while a person who lived to 70 compared to 69 cost Medicare $3,571 more. The additional years covered by Medicare for longer lived persons are the years farthest from death. For any enrollee, whether they die at 80 or 90, Medicare will pay the high costs of their final illnesses. The added years covered for the long-lived persons are the relatively healthy, low-cost years far from the end of life. The farther an enrollee is from the final year, the less costly they are for Medicare. For instance, the added years covered for someone dying at age 90, rather than 85 are the 25th to the 21st year before death when the enrollee is likely to be in good health. The fact, noted earlier, that Medicare end-of-life costs are lower for older decedents is another reason that long-lived enrollees do not cost Medicare much more that shorter-lived ones.

COST FROM AGE 65 TO DEATH FOR SERVICES MEDICARE DOES NOT COVER

Up to now I have been discussing only Medicare costs. Now I will describe patterns of use of all services—both Medicare-covered and those that Medicare doesn't cover. As you know, Medicare on average pays about 55 percent of the health care costs of persons 65 and over. The rest is paid out-of-pocket by beneficiaries and their families, by Medicaid and other public programs, and by private supplementary insurance plans. Principal services not covered are nursing home care other than the specific Skilled Nursing Facility Benefit, most outpatient prescription drugs (though, of course, the New Medicare drug benefit will start in 2006), and home health care not eligible for Medicare reimbursement.

We saw that Medicare costs in the final years of life are considerably lower for older decedents. However, this is not the case for non-covered services. Nursing home expenses in the last 2 years of life are much higher for older decedents compared to younger ones. The nursing home expenses of persons dying at 90 are, on average about five times higher than that of persons dying at 70. In fact, from age 90 on, average per capita expenses in the final 2 years of life for nursing home care exceed the average per capita Medicare expenses in the final 2 years of life for all covered services combined, highlighting the high cost of long-term care for our oldest old. Although concern about costs in the final year of life has focused on the appro-

priateness of expensive, high tech care, long-term care costs are, in fact, of more importance for the oldest old.

The effect of longevity on *total* health spending is different from the effect on just Medicare spending. Because long-term care costs accelerate with age, they offset the considerably lower Medicare costs in the final years for older decedents. An added year of life from age 90 to 91 adds about the same amount to cumulative health care costs from 65 to death as an added year from age 70 to 71 (Figure 1). This illustrates the different effects age and demographic factors can have on total health spending as compared to just Medicare spending.

Over the next decades, our Nation will experience major demographic changes. They include a large growth in the number of persons age 65 and over as the baby boomers reach retirement age and increased life expectancy after age 65. We isolated the possible effects of these changes on both Medicare spending and overall health spending for elderly persons. The three specific demographic factors we considered were, (1) the increase in the numbers of persons born in 1955, who will turn 65 in 2020, as compared with the number born in 1925, who turned 65 in 1990, (2) the better survival from birth to age 65 of the 1955 birth cohort as compared to the 1925 birth cohort, and (3) increased life expectancy at age 65 for the 1955 cohort.

I need to make clear that the purpose of the simulations is only to isolate the effect on health spending of likely demographic changes. We do not account for possible medical advances, changes in patterns of utilization, disease or disability or, importantly, changes in Medicare or Medicaid rules about payment, benefits and eligibility.

First, we consider the effects of these changes on just Medicare. We find that of the 88 percent greater spending (in constant dollars) from age 65 to death for the cohort who turn 65 in 2020, by far the most important demographic factor behind that increase was the greater number of persons in the 1955 birth cohort (baby boomers who will turn 65 in 2020). The 1955 birth cohort was 58 percent larger than the 1925 birth cohort. The second most important factor was the improved survival from birth to age 65 of the later cohort. In the 1925 birth cohort, 69 percent survived to age 65; in the 1955 cohort an estimated 80 percent will survive to 65. The greater expected life span past age 65 of 1.4 years for the 1955 birth cohort was a minor factor in the increase.

To put the findings in quantitative terms; 74 percent of the greater Medicare spending (in constant dollars) for the baby boomers born in 1955 will be the result of a larger birth cohort, 23 percent will be due to a lower death rate from birth to age 65, and only 3 percent will be the result of longer life past 65. This reflects the finding noted earlier; given that Medicare covers the expensive final years of life, living to 90 as compared with 85 does not add that much in Medicare costs.

The findings are somewhat different when we consider overall health care spending, not just spending for what Medicare covers. The larger birth cohort is still by far the most important reason for increased total health care costs for the baby boomers once they become seniors, followed by better survival from birth to 65. But, because of its effect on long-term care costs, longer life expectancy at age 65 has a larger effect on long-term care costs than on Medicare costs. For example, the 3 percent increase in life expectancy at 65 for the cohort turning 65 in 2015 compared with those turning 65 in 2000 was responsible for a 1 percent increase in Medicare costs, but a 6 percent increase in nursing home costs.

EXPECTED SPENDING FOR PERSONS IN GOOD HEALTH VERSUS POOR HEALTH

Because the health of the elderly has been improving, as measured by improved life expectancy and functional status, it is of interest to compare the cumulative health care costs from 70 to death for healthy versus less healthy persons. We simulated total medical spending from age 70 to death by health status, as measured by both self-reported functional status and self-reported health status (from excellent to poor). Functional status measures the ability to perform a variety of activities and tasks, like climbing stairs; managing daily tasks, like housecleaning and meal preparation, and self-care activities, like bathing and dressing.

No matter what measure we used, we found that as expected, persons reporting better health at age 70 lived longer than persons in worse health. Furthermore, they spend most of their longer life span past age 70 in excellent or good health, while persons reporting poor health at age 70 lived only two thirds as long and spent most of that time in fair or poor health.

We found that the total, cumulative medical spending from age 70 until death was similar for persons in good health at 70 versus those in poor health at 70. This was so even though the healthier persons had more years to accumulate costs. This was also true whether we looked at just Medicare spending or at total health care spend-

ing. Better health, which produces lower yearly costs, offsets the effect of more years to accumulate costs.

IMPLICATIONS

If we imagine a situation in which the number of persons turning 65 and coming onto Medicare is constant, then increases in life expectancy past age 65 would not have a large effect on the Medicare budget under current patterns of health care spending (although the effect on Medicaid would likely be greater because of Medicaid's large role in paying for long-term care costs for the elderly). Increases in life expectancy can result from a mixture of better life styles (e.g. diet, exercise) and use of preventive and screening services, and from medical advances, which can mean both more efficient, money-saving treatments as well as innovative, costly new treatments. The extent of influence of each is unclear. A good example of how the role of these factors may change is the decline in mortality from cardiovascular diseases, which began in the 1950's. At the beginning the drop in mortality was attributed largely to improved life styles—less smoking, etc. Currently, however, experts attribute the continuation of the downward trend as much to new medical interventions as to improved life styles (Hunink et al. 1997).

Life style improvements generally come at low cost to the medical care delivery system because they result from behavior change prompted by public education. And, of course, the costs of health promotion efforts in the pre-Medicare years are not borne by the Medicare program. There is evidence from some epidemiologists that a favorable health risk profile in middle age may result in both longer life and lower than average Medicare costs (Daviglus et al. 2003; Lui et al. 2003). These researchers also find, interestingly, that Medicare costs in the last year of life are lower for persons with favorable risk profiles in middle age.

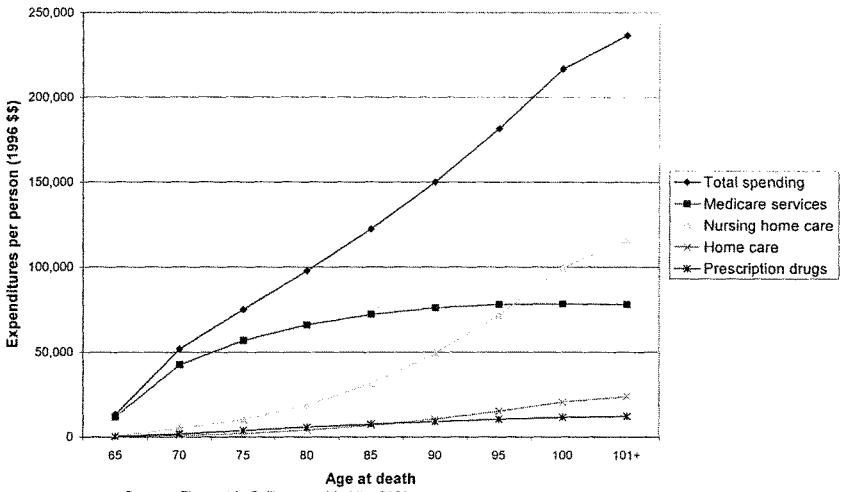
Today, it is not clear what the health of the future elderly will be. Favorable trends in reduced smoking, better control of hypertension and lower cholesterol compete with an alarming increase in the percent of persons in all age groups who are overweight or obese. This includes increases for those middle-aged baby boomers who will begin to enter Medicare in 2011, just 7 years from now.

Health improvements also result from expensive interventions. For example, the numbers of coronary artery bypass surgeries and coronary angioplasties, two procedures developed after the establishment of Medicare have greatly increased. Originally, they tended to be performed on the middle-aged and younger elderly. Now, as experience has grown among providers and techniques have improved, these heart procedures are frequently performed on the older aged. This example points out the difficulty of predicting future developments. It is difficult to predict whether improved health and life expectancy will result more from expensive interventions for the elderly or from better health in the middle aged, pre-Medicare group. It is possible to simulate the effects of various future scenarios, but not to predict the future, except, of course, for the certainty of a large increase in the number and percent of the U.S. population over age 65.

Under current patterns, greater longevity will increase the need for, and spending on, long-term care. And in contrast to acute care, long-term care is paid mostly by Medicaid and out of pocket by patients and families. Thus, longevity improvements may very well have different effects on Medicare and Medicaid—putting little extra pressure on Medicare but more on Medicaid. It may also increase the financial and care giving burdens on patients and families. There may be a concomitant movement from informal care to formal paid care because in the future there will be fewer working age persons in relation to the elderly. This would increase the direct costs of long-term care. This pessimistic picture assumes that the same age related patterns of frailty and cognitive loss that we see today will persist into the future. We do not know, however, if this will be the case. The compression of morbidity hypothesis posits that the amount of time in poor health will be less among the future elderly than among today's elderly. If morbidity is indeed becoming compressed, medical costs should be affected—possibly reducing them if the number of months in poor health declines (or increasing them if the improvement comes from expensive medical procedures). We plan to pursue this topic in future studies.

I thank you for your attention and look forward to answering any questions you may have.

Figure 1. Cumulative health care expenditures from the age of 65 years until death, according to the type of health service and the age at death



Source: Figure 1 in Spillman and Lubitz, 2000

TESTIMONY

Joint Economic Committee

July 22, 2004

Dirksen Senate Office Building, 628

Postponement of Illness

and the Future of Medicare Costs

James F. Fries, MD

Professor of Medicine

Stanford University School of Medicine

650.723.6003

jff@stanford.edu

POSTPONEMENT OF ILLNESS AND THE FUTURE OF MEDICARE COSTS

James F. Fries, M. D

SYNOPSIS

The Objectives:

(1) Improving the national health

(2) Decreasing medical care expenditures

The Facts:

(1) We already know how to improve health and save money, it requires postponement of the onset of illness in the individual.

(2) Barriers to implementing sound preventive approaches are based in old belief structures which are false, diverting and ultimately unsubstantial.

(3) The Compression of Morbidity paradigm provides an underlying structure.

(4) Morbidity compression is already occurring, with an annual 2 % reduction in disability rates and only a 1 % reduction in mortality rates.

(5) Epidemiologic studies show potential disability postponement of 12 years by lifestyle changes.

(6) Multiple, large, randomized scientific trials prove the ability to reduce health risks and medical care costs even in the first year of a program, even in seniors.

(7) Effective health enhancement and cost saving programs include components of risk reduction, self-efficacy, self management, high risk, chronic disease, and end-of-life components.

(8) Policy must be informed by evidence.

The Policies:

(1) Focus on the big targets; Three risk factors, Four diseases, Fifty percent of illness.

(2) Craft careful, prudent, yet urgent approaches.

(3) Use multiple approaches (legislative, community, worksite, public education, incentives, and others).

(4) Keep these approaches strictly bipartisan; they are.

(5) Use this Committee in a major role to reconcile health and economic goals.

(6) Immediately support the Senior Risk Reduction Project (SRRP) Demonstration, the HeLP bill (S2558), the Health Promotion FIRST Act, reimbursement initiatives for qualified prevention coverage, worksite initiatives for both small and large business, and rigorous external evaluation of these efforts.

Discussion

Health care costs have resumed double-digit annual increases and are in crisis. Existing "control" mechanisms principally based upon rationing of supply have failed to be effective. Current medical care costs currently approximate 16 % of GDP and have yearly increases which markedly exceed increases in GDP. These costs threaten budgets in other areas, and put the

Medicare program at risk. The illness burden of the nation, driven by the health problems of increasing numbers of seniors, is of mammoth amount. The ironic reality is that we already know how to improve health and at the same time reduce medial care costs. Healthier people need less medical care; they place less burden on the demand side of the equation. We know how to postpone illness; it is done by prevention. [1-14]

Three major beliefs lie behind our failure to systematically approach postponement of illness. (1) "The data are soft." False. There is far more evidence for the effectiveness of well-designed and applied preventive approaches than for most of "evidence-based medicine." (2) "There is a lag of 20 years or more before a change in a health risk behavior is likely to prevent a disease event, such as a heart attack, and we have a crisis now." "I will just be making my employees healthier for their next employer." False. For some events and some illnesses in some populations there is indeed a substantial lag, but for most populations, measurable reductions in cost and improvement of health and productivity, on the order of 10-20 %, are achievable in the first 12 months of a sound program, and continue to build thereafter. (3) "People with good health habits live longer and will have greater medical care costs." False. Healthier and longer-lived persons do not have increased cumulative lifetime or Medicare costs, as described by James Lubitz. [14]

I will make four points and explore their policy implications. First, the underlying theory behind health enhancement initiatives is the Compression of Morbidity. Second, disability rates in the United States can decline by at least 2 % per year, while mortality rates will decline more slowly, at about 1 % per year, as described by Kenneth Manton. Third, the onset age of chronic infirmity

potentially may be postponed by up to 12 years. Fourth, multiple large randomized, controlled scientific trials have proved the effectiveness and cost-effectiveness of sound preventive approaches to the postponement of illness.

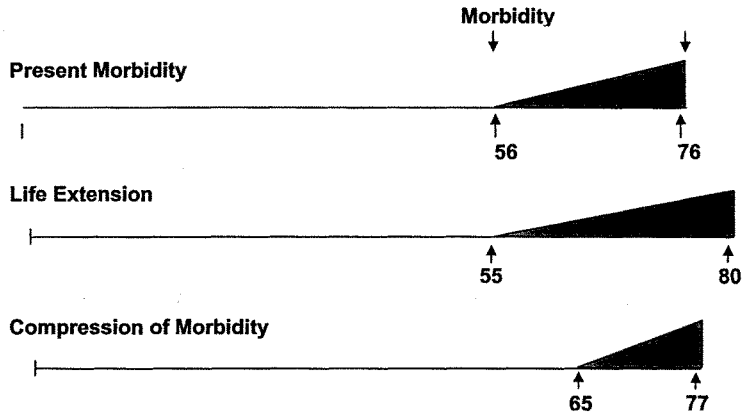
Compression of Morbidity

The Compression of Morbidity Paradigm Provides a Theoretical Structure for Improvement of Health and Reduction of Medical Care Costs. Compression of Morbidity occurs when the onset age of chronic illness rises more rapidly than the age at death, shortening the period of ill health toward the end of life. Morbidity compression occurs when disability rates decline more rapidly than mortality rates.

The Compression of Morbidity paradigm envisions reduction of lifetime infirmity, shown on the figure as the shaded area, and of medical care costs, by squeezing the period of morbidity between an increasing age at disability onset and the age at death. The healthy life is seen as a life vigorous and vital until shortly before its natural close. This becomes achievable by postponing the onset of disability and high medical costs through reduction of chronic illness and the pursuit of vigorous and healthy lifestyles.[6]

In the Figure below, current average disability is represented by the shaded areas on the top line and is concentrated between an onset at age 56 and the age at death, now averaging 76 years. Extension of morbidity, on the second line, occurs if longevity is increased but disability is not postponed; this is the worst-case scenario. Compression of morbidity, on the third line, occurs when disability is postponed more than longevity is extended, as with reduction in health risks. This scenario reduces costs and improves life quality.[3,6]

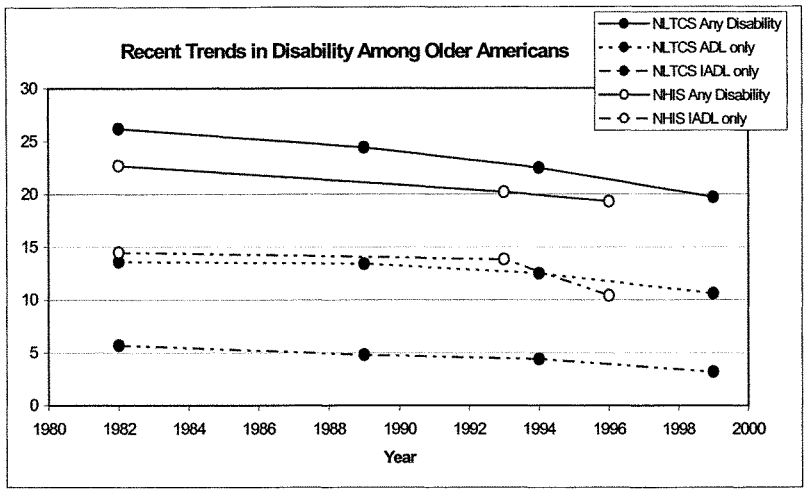
Compression of Morbidity



Declining Disability in the United States

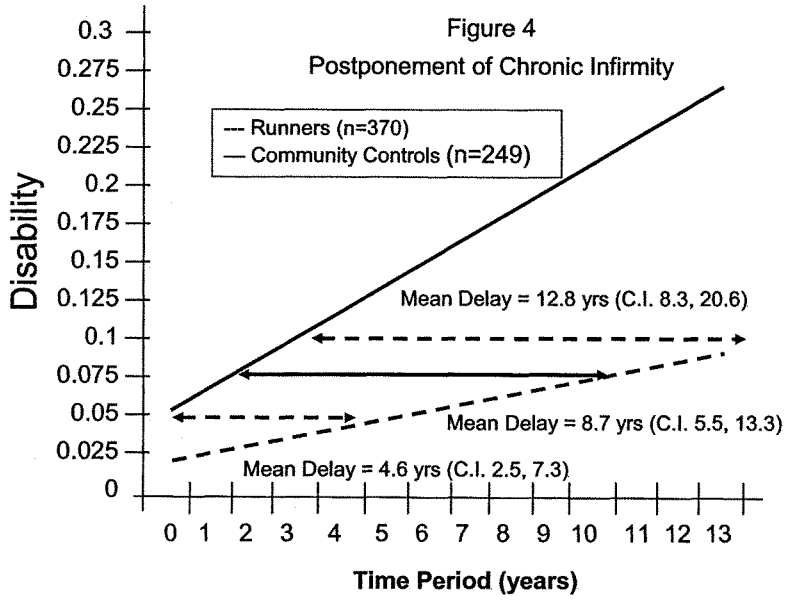
Disability in the United States is declining by more than 2% per year; mortality rates by only 1% per year. Declines in disability have been associated with reduction in smoking and saturated fat intake, improved control of hypertension, functional restoration procedures such as

knee and hip replacement, and wider use of cholesterol-lowering drugs. The declines have been impeded by the epidemic of obesity.



Disability, as documented by the National Health Interview Surveys and the National Long Term Care Surveys shown in the Figure above, has been declining at about 2 % per year since 1982 and even more rapidly in the most recent five year period, while mortality rates are declining at about 1 % per year. These data directly document compression of morbidity. These trends have many contributing causes, from declines in cigarette smoking to advances in medical science. It is important to note that these improvements in the national health to date have occurred despite

the absence of a systematic approach to reduction of health risks; our increasingly obese and sedentary population offers major opportunities for continued reduction in chronic illness. Manton and Singer have estimated that a decline of 1.6 % per year would be sufficient to keep Medicare solvent [7-10].



Postponement of Onset of Disability

The onset of chronic illness may be potentially postponed by up to 12 years by lifestyle changes. Cumulative lifetime disability may be reduced by a factor of four. Recent data from major longitudinal studies document the association between reduced health risks and postponement of disability. For eighteen years our research group at Stanford has studied the effects of long-distance running and other vigorous exercise, after age 58, on health outcomes. Results were remarkable, as shown in the Figure above. Those exercising regularly postponed disability by more than 12 years compared with controls, and health care costs were reduced.. Those who took up vigorous exercise later in life nearly achieved the same health benefits as lifetime exercisers. For those who died, the exercisers had far less disability in the year prior to death, as well as in all other prior years. In the University of Pennsylvania Alumni study we have reported similar results in those exercising, of moderate weight, and not smoking. Daviglus and colleagues showed substantial decreases in Medicare costs for those with few health risk factors in mid-life. Reed and colleagues prospectively determined the effects of health risks, with results similar to ours. These results from the major studies are consistent with the broader literature [4,5,12-16].

Randomized Controlled Trials Prove Effectiveness at Health Risk and Cost Reduction

Randomized controlled trials represent the highest standard of scientific proof. Such trials prove our ability to achieve healthier and less costly lives, both in mid-life and in seniors, through relatively inexpensive health improvement programs costing less than $100 per year per person annually. The most consistently effective approach has been "tailored print interventions,"

where each set of feedback materials to the participant is exquisitely configured for the precise characteristics and previous behaviors of that individual.

The Bank of America Retiree Study, the California Public Employee Retirement System trial, disease-specific trials in arthritis and other chronic illnesses, and trials of self-management materials have documented our ability to both reduce health risks and to achieve a substantial return on investment, ranging from 3 to 1 to 6 to 1, as shown in the Table below. These results indicate that investing about $100 per year per person annually, less than 2 % of the $5500 paid out to the average beneficiary, should be expected to reduce Medicare claims by about $400 per beneficiary per year, even in the first year [1,3,17,18].

	n	time	health risk score	cost per person	savings per person	ROI
Bank of America	4,712	12 months	-12%	$29	$179	6.1
CALPers	57,268	12 months	-10%	$59	$300	5.1
Arthritis	809	6 months	-7%	$50	$260	5.2
Parkinson's	290	6 months	-10%	$100	$570	5.7
Take Care of Yourself	2,833	12 months	-17%	$6	$20	3.5

Major Policy Axioms Follow:

The health of seniors is our greatest national health problem and improving senior health is a social imperative. There is an increasing national illness burden, driven by the increasing numbers of seniors.[19,20]

There is a medical care cost crisis today. Medicare is threatened, as is discretionary spending in other areas.

Crises require direct, aggressive, immediate action to avert future consequences; benign neglect is not an option.

All approaches to compression of morbidity (medical, social, and personal) have in common a valuation of the quality of life (morbidity) which is at least as high as the valuation of the quantity of life (mortality).

Effective approaches to the twin goals of health improvement and cost reduction must substantially postpone the onset of morbidity.

By definition, postponement can only occur through prevention, usually primary prevention (smoking cessation, exercise, weight control, baby aspirin), sometimes secondary prevention (hypertension treatment, cholesterol lowering), and occasionally tertiary prevention (joint replacement, pacemaker, heart transplant). Primary prevention is usually by far the most efficient, and tertiary prevention the least efficient [19].

Current medical practices reverse this order of valuation, with tertiary prevention (and even no prevention at all) valued more highly than secondary prevention, which in turn is valued more highly than primary prevention.

We have done well with public health measures, and we have done well in the personal medical care system. The need today is for a "population health" system which identifies risks and intervenes prior to a medical event. This will not be a job for doctors, nurses, and hospitals, which are over-worked and over-stressed doing their necessary tasks of care. Rather, driven by the need for population health systems which are efficient, inexpensive, and even cost-saving, they will be computer-aided and use the mail, telephone, and web to deliver complex but simple personalized interventions and health risk monitoring.

Interventions must include at least six components, directed at the largest prevention and cost targets: (1) health risk reduction, (2) personal self-efficacy (health confidence) improvement, (3) self-management skill training, (4) emphasis on high-risk persons, (5) use of chronic disease self-management techniques, and (6) encouragement of humane end-of-life care. Together, these components are directed at achieving initial health and cost goals in the first year [1]. They go beyond "health promotion" in the traditional sense to embrace a broader view of the exercise of personal autonomy.

Focus on the Big Targets: Three Risk Factors, Four Diseases, Fifty Percent of Illness. 3; 4; 50. Risk Factors - Smoking Cessation, Obesity and Diet, Lack of Exercise. Diseases - Heart disease, Diabetes, Cancer, Lung Disease. We of course need to broaden this model, which is increasingly discussed at the World Health Organization, but it must remain the focus.

Policy must be informed by evidence. The plan currently in process at the Centers for Medicare and Medicaid Services is a fine example. CMS (then HCFA) contracted with RAND to review the evidence behind the notion of population-based approaches to improvement of senior health driven by health risk appraisals. RAND found the evidence compelling but not certain and recommended a demonstration project among Medicare beneficiaries.[21] A large randomized controlled trial was designed, approved by CMS, announced by HHS Secretary Tommy Thompson, and should begin soon. If the demonstration project is successful, changes to sections 1861 and 1862 of the Medicare enabling legislation will need to be made, allowing for population-based preventive programs meeting appropriate quality standards to be reimbursed under Medicare. The anticipated benefit? For a cost of approximately $100 per Medicare beneficiary, about 2 % of average expenditures, approximately a $400 decrease in Medicare claims per person would be realized. The real dividend? A substantial improvement in senior heath, a reduction of the national illness burden, and compression of morbidity.

This careful, prudent, yet urgent approach should also employ other venues. There is a need for similar approaches from the private sector, including "pre-Medicare" age 55-64 population health programs sponsored by health plans, and worksite health promotion programs sponsored by the employer [healthproject.Stanford.edu]. Many such needs are identified in the HeLP legislation recently introduced into the Senate by Senator Harkin and the HealthPromotionFIRST legislation soon to be introduced [Appendix A, healthpromotionadvocates.org].

Multiple approaches to health risk reduction are required. For example, legislative measures to reduce passive exposure to cigarette smoke have been helpful. Public education has helped to drive down the intake of saturated fats and to reduce active cigarette smoking. Incentives for

positive health risk changes, of a variety of types, may be effective. Medical treatment of high blood pressure and of high cholesterol is an effective means of prevention.

This Committee must play a major role. The barriers to health enhancement and cost reduction programs, unexpectedly, are disbelief and misbelief, and authoritative economic endorsements are sorely needed.

There are seven immediate policy imperatives. First, support **the Medicare Senior Risk Reduction (SRRP) Demonstration Project** by CMS and encourage its early completion. It is critically important that this demonstration is initiated, completed, and implemented. Second, **support proven senior risk reduction programs as a Medicare benefit**; changes will be required in Sections 1861 and 1862 of the enabling legislation; these will improve the health of Medicare beneficiaries through population health measures. Third, **support (HeLP), the Healthy Lifestyle and Prevention Act (S2558),** recently introduced by Senator Harkin. Fourth, support the **Health Promotion FIRST (Funding Integrated Research Synthesis and Training) Act** which will be introduced by Senator Lugar this month and provides a strategic planning and research framework to support building a strong research base for health promotion. (See healthpromotionadvocates.org). Fifth, **encourage reimbursement by Federal, State, and private medical insurance for qualified health education and health promotion programs provided as population health initiatives.** We must develop a culture of health rather than of disease. Sixth, **encourage work-site health promotion activities to encourage health and productivity and to reduce costs**. Details may be found at healthproject.stanford.edu. Finally, **monitor and evaluate these initiatives rigorously**. We must only encourage and fund programs that are known to be effective.

We can improve health and reduce medical care costs substantially with currently proven health enhancement approaches. These approaches, in turn, can be refined and improved. Demand side health improvement initiatives benefit the individual, the payer, and the society. They do not encourage rationing or adversarial stances. They are entirely bipartisan. They are not inconsistent with other cost-containment initiatives and, indeed, will make such initiatives more effective. The need for a healthier society has never been more obvious or more important.

Appendix A

HeLP (Healthy Lifestyles and Prevention) America Act (S2558) [Introduced June 2004 by Senator Harkin]

I. **Healthier Kids and Schools**

II. **Healthier Communities and Workplaces**

III. **Responsible Marketing and Consumer Awareness**

IV. **Reimbursement for Prevention services**

V. **National Health Promotion Trust Fund**

VI. **Research**

[Title 2, content example] Provides 50 % tax credit for up to $200/employee for employers who provide a comprehensive health promotion program consisting of awareness programs, behavior change programs and supportive environments; funds to universities to provide program evaluation services for employers; grants to health promotion providers to deliver health promotion programs to small businesses, best practice guidance from CDC, and a national campaign to business decision makers on the financial returns of health promotion programs. This is important because workplace health promotion programs have been shown to be effective in improving employee health and reducing medical costs, yet small and medium employers are not aware of the benefits and have challenges in implementing programs. Estimated cost: $2.07 billion over five years. By the end of five years, all costs to the federal government will have been recovered and the government will receive a net gain of $42 million in federal tax receipts if the ROI from medical cost reductions is 1.0 in year 1,

1.5 in year 2, and 2.0 in years three, four, and five. This does not include savings related to reduction in absenteeism and increases in productivity.

Health Promotion FIRST (Funding Integrated Research Synthesis and Training) Act [To be Introduced July/August 2004 by Senator Lugar]

This Act develops an improved infrastructure for health promotion, a field which needs additional and more rigorously trained scientists. It provides a strategic planning and research backbone to support the growing area of health promotion, using a process that engages a broad range of scientific disciplines and experienced practitioners. In general, the NIH will fund basic structural research, and the CDC will complement these efforts with applied programs. Coordination and planning will encompass efforts to attract the best and the brightest into the field. This field is crucially important to the nation's health, yet remains greatly underdeveloped. The Act was developed with input from over 300 scientists and practitioners. Estimated cost: $141 million over 5 years.

References

1. Fries JF, Koop CE, Sokolov J, Beadle CE, et al. Beyond Health Promotion: Reducing health care costs by reducing need and demand for medical care. Health Affairs 1998;17:70-84.

2. Fries JF. Reducing disability in older age. JAMA 2002;288:3164-3165.

3. Fries JF. Measuring and monitoring progress in compressing morbidity. Annals Int Med 2003;139:455-459.

4. Vita AJ, Terry RB, Hubert HB, Fries JF. Aging, health risks, and cumulative disability. N Engl J Med 1998;338:1035-1041.

5. Wang BWE, Ramey DR, Schettler JD, Hubert HB, Fries JF. Postponed development of disability in senior runners: a 13-year longitudinal study. Arch Intern Med 2002;162:2285-2294.

6. Fries JF. Aging, natural death, and the compression of morbidity. N Engl J Med 1980;303:130-6.

7. Freedman VA, Martin LG, Schoeni RF. Recent trends in disability and functioning among older adults in the United States: a systematic review. JAMA 2002;288:3137-3146.

8. Cutler DM. Disability and the Future of Medicare. New Engl J Med 2003;349:1084-85.

9. Manton KG, Gu X. Changes in the prevalence of chronic disability in the United States black and non-black population above age 65 from 1982 to 1999. Proc Natl Acad Sci 2001;98:6354-6359.

10. Singer BH, Manton KG. The effects of health changes on projections of health service needs for the elderly population of the United States. Proc Natl Acad Sci 1998;95:15618-15622.

11. Hubert HB, Bloch DA, Oehlert JW, Fries JF. Lifestyle habits and compression of morbidity. J Gerontol 2002; 57A:M347-351.

12. Daviglus ML, Kiang L, Greenland P, et al. Benefit of a favorable cardiovascular risk factor profile in middle age with respect to Medicare costs. N Engl J Med 1998;339:1122-29.

13. Campion EW. Aging better. New Engl J Med 1998;338:1064-66.

14. Lubitz J, Liming C, Kramarow E, Lentzner H. Health, Life Expectancy, and Health Care Spending among the Elderly. N Engl J Med 2003; 349:1048-1055.

15. Reed DM, Foley DJ, White LR, et al. Predictors of health aging in men with high life expectancies. Am J Pub Health, 1998;88:1463-68.

16. Rowe JW. Geriatrics, prevention, and the remodeling of Medicare. N Engl J Med 1999;340:720-721.

17. Fries JF, et al. Two-year results of a randomized controlled trial of a health promotion program in a retiree population: the Bank of America Study. Am J Med 1993;94:455-62.

18. Fries JF, et al. Randomized controlled trial of cost reductions from a health education program: the California Public Employees Retirement System (PERS) Study. Am J Health Promotion 1994;8:216-223.

19. Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. JAMA 2004;291:1238-1245.

20. Yach D, Hawkes C, Gould CL, Hofman KJ. The global burden of chronic diseases: overcoming impediments to prevention and control. JAMA 2004;291:2616-2622.

21. RAND Corp. Evidence Report and Evidence-based Recommendations: Health Risk Appraisals and Medicare. Baltimore, MD:US Dept of Health and Human Services:2002. Available at: http://www.healthtrac.com/index.tam?tame?switch to=studies-rand-report. Accessed June 9,2003.

Websites:

Healthproject.stanford.edu

Proven effective need and demand reduction programs, exemplified by those 70 programs receiving the C. Everett Koop National Health Awards.

Healthpromotionadvocates.org

Grassroots health promotion advocacy group, summaries and texts of pending legislation.

STATEMENT OF JUDITH FEDER, PH.D., PROFESSOR AND DEAN, GEORGETOWN PUBLIC POLICY INSTITUTE, GEORGETOWN UNIVERSITY

Mr. Chairman, members of the Committee, I'm pleased to have the opportunity to testify before you today on future policy toward the growing elderly population. My focus will be on long-term care—specifically, on the implications of growing numbers of elderly for public policy toward long-term care financing. My testimony will reflect more than twenty-five years of research experience in long-term care, at Georgetown University and, before that, the Urban Institute. Based on that research, my policy conclusions are the following:

• In contrast to policies toward income and. health security (Social Security and Medicare), the Nation lacks a policy that assures people of all ages access to quality long-term care when they need it, without risk of impoverishment.

• The need for long-term care is unpredictable and, when extensive service is required, financially catastrophic—best dealt with through insurance, rather than personal savings. But neither Medicare nor private insurance provides that insurance protection.

• The Federal-State Medicaid program provides invaluable support to those who need long-term care, but only when and if they're impoverished. Its protections vary substantially across states, and, in most states, fail to assure access to quality care, especially in people's homes.

• A much larger elderly population—the aging of the baby boom—is likely to substantially increase the *numbers* of people who need long-term care, even if the *proportion* of elderly who need it declines. The result will be greater demand on an already significantly stressed Medicaid program, squeezing out states' ability to meet other needs and, at the same time, likely reducing equity and adequacy across states.

• Although private insurance and certainly private resources can contribute to financing, long-term care security—throughout the nation—requires new Federal policy and a significant investment of Federal funds.

The following will lay out inadequacies in current long-term care financing; the implications of growth in the elderly population for future inadequacies; and the importance of Federal policy to sustain and improve long-term care protection. Unless otherwise noted, I am drawing on research from the Georgetown Long-term Care Financing Project, funded by the Robert Wood Johnson Foundation, and available at our web site: *ltc.georgetown.edu.* The opinions I present are, of course, only my own.

People who need extensive assistance with basic tasks of living (like bathing, dressing and eating) face the risk of catastrophic costs and inadequate care. Today, almost 10 million people of all ages need long-term care. Only 1.6 million are in nursing homes. Most people needing long-term, especially younger people, live in the community. Among people not in nursing homes, fully three quarters rely solely on family and friends to provide the assistance they require. The range of needs in considerable—with some people requiring only occasional assistance and others needing a great deal. Intensive family care-giving comes at considerable cost—in employment, health status and quality of life—and may fail to meet care needs. Nationally, one in five people with long-term care needs who are not in nursing homes report "unmet" need, frequently resulting in significant consequences—falling, soiling oneself, or, inability to bathe or eat. The cost of paid care exceeds most families' ability to pay. In 2002, the average annual cost of nursing home care exceeded $50,000 and 4 hours per day of home care over a year were estimated to cost $26,000. Clearly, the need for extensive paid long-term care constitutes a catastrophic expense.

The likelihood of needing long-term care is also unpredictable. Although the likelihood increases with age, close to 40 percent of people with long-term care needs are under the age of 65. And the need for care among the elderly varies considerably. Over a lifetime, projections of people currently retiring indicate that 30 percent are likely to die without ever needing long-term care; fewer than 10 percent are likely to need less than a year of care, and about 20 percent are likely to need care for 5 years or more.

Given the reality that long-term care is an unpredictable need for a potentially catastrophic expense, insurance makes sense. Reliance on savings alone is inefficient and ineffective. People will either save too much or too little to cover expenses. But few people have adequate long-term care insurance. Although sales of private long-term care insurance are growing (the number of policies ever sold more than tripled over the 1990's), only about 6 million people are estimated to currently hold any type of private long-term care insurance. Although there is potential for substantial expansion of that market, private long-term care insurance policies offer a limited means to spread long-term care risk: they are not available to those who

already have long-term care needs; are not even advocated as a means of protecting young people against the risk of disability; offer benefits limited to fixed dollar amounts rather than to the cost of needed services; and are acknowledged to be unaffordable or insufficient to protect the substantial. segment of elderly persons, now and in the future, with low and modest incomes. We need only look at experience in health insurance to recognize that reliance on the individual market—plagued by risk selection, high marketing costs, benefit exclusions, and other problems—for long-term care will be grossly inadequate to assure adequate protection.

Current public policy also falls far short of assuring insurance protection. Medicare, which provides health insurance to many who need long-term care, covers very little long-term care. Its financing for nursing home care and home care is closely tied to the need for acute care and is available for personal care only if skilled services—like nursing and rehabilitation therapy—are also required. It is Medicaid that provides the nation's long-term care safety net. But Medicaid protections differ considerably from what we think of as "insurance". Medicaid provides invaluable coverage of long-term care expenses, but only after people have exhausted virtually all of their own resources. As a result, Medicaid does not protect against financial catastrophe; it finances services only after catastrophe strikes.

Further, Medicaid's benefits focus overwhelmingly on nursing home care—an important service for some, but not the home care services preferred by people of all ages. In the last decade, Medicaid home care spending has increased from 14 percent to 29 percent of Medicaid's total long-term care spending. But nursing homes still absorb the lion's share of Medicaid's support for long-term care.

Medicaid protection also varies considerably from State to state. As a Federal-State matching program, Medicaid gives states the primary role in defining the scope of eligibility and benefits. A recent Urban Institute analysis emphasized the resulting variation across states in service availability as a source of both inequity and inadequacy in our financing system. In an examination of 1998 spending in 13 states, long-term care dollars per aged, blind, or disabled enrollee in the highest spending states (New York and Minnesota) were more than 4 times greater than in the lowest (Alabama, Mississippi)—a differential even greater than that found for Medicaid's health insurance spending for low-income people.

Both our own research and that conducted by the General Accounting Office (now the Government Accountability Office) tells us that differences in State policies have enormous consequences for people who need long-term care. Studies comparing access for individuals with very similar needs in different communities show that people served in one community get little or no service in another. Georgetown research finds that the same person found financially eligible or sufficiently impaired to receive Medicaid services in one State might not be eligible for Medicaid in another—and, if found eligible, might receive a very different mix or frequency of service. And research (in progress) comparing use of paid services in 6 states finds almost twice the incidence of unmet need (56 percent) in the State with the smallest share of people likely to receive paid services as in the State with the largest (31 percent).

This variation—as well as ups and downs in the availability of benefits over time—undoubtedly reflects variation in states' willingness and ability to finance costly long-term care services. The recent recession demonstrated the impact on states of changes in their economies and the vulnerability of Medicaid recipients to states' reactions. In 2001, Medicaid accounted for 15 percent of State spending, with long-term care responsible for 35 percent of the total. Virtually all states were cutting their Medicaid spending as budget pressures struck, endangering access either for low-income people needing health insurance, older or disabled people needing long-term care, or both.

In sum, under current policy, neither public nor private insurance protects people against the risk of long-term care. Despite Medicaid's important role as a safety net, the overall result for people who need care is catastrophic expenses, limited access to service, and care needs going unmet.

Given inequities and inadequacies in our current approach for long-term care, it is no wonder that we are concerned about the future, when a far larger proportion of the nation's population will be over age 65 than are today. Experts disagree on whether disability rates among older people in the future will be the same as or lower than they are today. But even if the proportion of older people with disabilities declines, the larger number of older people will likely mean a larger number of older people will need long-term care in the future than need it today. The population aged 85 and older, who are most likely to have long-term care needs, will double by 2030 and quadruple by 2050.

States will vary in the aging of their populations—with resulting differences in the demand for long-term are and the ability of their working-aged population to support it. To identify future demands on Medicaid, forthcoming Georgetown anal-

ysis presents census data on the ratio of elderly people to working-age adults between 2002 and 2025. Nationally, this ratio changes from about one to five (one person over age 65 for every 5.2 people of working age) in 2002 to one to three—an increase of about 66 percent. But the changes differ across states, with some states well below the national average (e.g. California, Connecticut, D.C., Massachusetts) and others, far above. In many states, the ratio increases by more than three quarters and in a few (e.g. Colorado, Utah, and Oregon), it more than doubles. All states will be challenged to meet increased long-term care needs.

States are already struggling with Medicaid's fiscal demands, which challenge their ability to meet equally pressing needs in education and other areas. And State revenue capacity varies considerably. If current policies persist, pressure to make difficult tradeoffs will only get stronger. In the future, states with bigger increases in the elderly-to-worker ratio will face the greatest pressure. And, since many of the states with the most dramatic changes are currently spending the least on Medicaid long-term care, there is a strong likelihood that in the future, long-term care financing will be even less equitable and less adequate across the Nation than it is today.

What's needed for a different future is public policy action. Essentially, the Nation faces a choice: do we want to live in a society in which we assure access to affordable quality long-term care for people who need it or in a society in which we leave people in need to manage as best they can on their own? A recent CBO report emphasizes the latter approach—a combination of cutbacks in already inadequate Medicaid protection aimed essentially at forcing people to purchase private insurance and tax preferences to reduce the costs—and thereby promote the purchase—of private long-term care insurance. In my view, Medicaid cuts constitute cruel and unusual punishment for people truly unable to cope by themselves. Some people simply cannot afford insurance. And, as CBO recognizes, given the limited benefits of private long-term care insurance (relative to the potential cost of care), even those who purchase insurance may face catastrophic costs. Further, proposed tax preferences clearly favor the better off over those in greatest need. Experience with health insurance tells us that such credits are likely to primarily benefit those who would have purchased long-term care insurance even in the absence of credits—substituting public for private dollars—and, as currently proposed, are not even designed to reach the substantial portion of older and younger Americans with low and modest incomes.

The right way to address both current and future long-term care needs requires a commitment of public resources—and, to be adequate and effective in all states—Federal resources. Expanded public financing for long-term care could take a variety of forms and by no means need eliminate private contributions. One option, modeled on Social Security, would be to provide everyone access to a "basic" or "limited" long-term care benefit, supplemented by private insurance purchases for the better-off and enhanced public protection for the low-income population. Another option would be establishment of a public "floor" of asset protection—a national program assuring everyone access to affordable quality long-term care—at home as well as in the nursing home—without having to give up all their life savings as Medicaid requires today. The asset floor could be set to allow people who worked hard all their lives to keep their homes and modest assets, while allowing the better off to purchase private long-term care insurance to protect greater assets. Either public/private combination could not only better protect people in need; it could also provide substantial relief to states to focus on health insurance, education and other pressing needs—relief that Governors have explicitly requested by calling on the Federal Government to bear the costs of Medicare/Medicaid "dual eligibles". My highest priority for expenditure of the next Federal dollar would be responding to this call (along with supporting more home care and better quality care) with more Federal dollars to Medicaid.

Some will undoubtedly characterize proposals like these as "unaffordable", given the fiscal demands of Medicare and Social Security and the current Federal budget deficit. But that deficit reflects policy choices. And I would far rather see expenditure of the next Federal dollar devoted to enhanced Medicaid long-term care financing than to tax credits for long-term care or tax cuts in general. Indeed, the estate tax is especially appropriate for long-term care financing: taxing everyone's estate at certain levels, to provide reasonable estate protection for those unlucky enough to need long-term care.

As we look to the future, examination of the choices being made by other nations of the world is instructive. Analysis by the Organization for Economic Cooperation and Development (OECD) of long-term care policy in 19 OECD countries (presented at the June research meeting of AcademyHealth) found that the number of countries with universal public protection for long-term care (Germany, Japan and others) is growing. Public protection, they report, does not imply the absence of private

obligations (cost sharing and out-of-pocket spending), nor does it imply unlimited service or exploding costs. Rather, in general, it reflects a "fairer" balance between public and private financing—relating personal contributions to ability to pay and targeting benefits to the population in greatest need. Many of these nations have substantially larger proportions of elderly than the U.S. does today and therefore can be instructive to us as we adjust to an aging society.

Clearly, we will face choices in that adjustment. If we are to be the caring society I believe we wish ourselves to be, we too will move in the direction of greater risk-sharing and equity by adopting the national policy and committing the Federal resources which that will require.

○