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Living to 100 and Beyond— *Implications of Longer Life Spans*

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► **The challenge of longer life spans will center on the problem of allocating individual, family and social resources most effectively. To create a context for understanding the significance of measuring and forecasting mortality trends, this article addresses concerns about the implications of increasing longevity to very high ages for families, businesses and society as a whole.** ◀

The past century has brought substantial growth in the expected human life span the world over. In industrialized countries, many people will live past age 80, and more people than ever before will live past 100. It is becoming increasingly common to encounter healthy adults in their 70s, 80s and even 90s. Just as increasing longevity already has affected our lives in innumerable ways, future increases in longevity will create additional challenges throughout the world. These challenges will center on the problem of allocating individual, family and societal resources most effectively to support lengthened life spans.

Much of the increase in life spans to date has come from reductions in mortality among children and adults under age 65. Mortality rates at ages below 65 are low today, so that increases in life spans will need to come from mortality reductions at ages over 65. Experts disagree on how much further mortality can be reduced; this disagreement is due in part to the challenges around collecting accurate data and measuring mortality at very high ages—particularly over age 90. But rather than focus on the problems associated with measuring and forecasting mortality trends, this article addresses concerns about the implications of increasing longevity at the very high ages. By considering these ramifications, we create a context for understanding the significance of this research.

SOCIETAL IMPACTS OF INCREASED LONGEVITY—PAST AND FUTURE

Lengthening life expectancies in the industrialized nations have substantially changed those societies. Changes include:

- Large increases in the number of elderly and in the proportion of elderly in the population
- Changes in the type of economic activity, housing, social services and population makeup of communities
- Growth in the health care system and changes in the service mix provided, as the elderly consume more health care per capita and need different services
- Increasing burdens on family members and on society as a whole to care for the frail among this population

“ . . . the life expectancy for a 65-year-old male climbed 23%, from 12.7 years in 1940 to 15.6 years in 1990, and is expected to increase a total of 47% over the century ending in 2040.”

- The growth of insurance and other financial markets offering products targeted to meet the needs of the elderly
- The growth of private pension plans and their growing importance as engines for savings and capital accumulation
- Increasing liabilities on corporate balance sheets for pension and other retirement benefits
- Change in public pension systems and other programs offering support for the elderly as they compete with other programs for public resources
- Strains on long-term care facilities and programs and increasing shortages of both family and paid caregivers
- Need for redefinition of retirement and rethinking the relative roles of work and retirement throughout the life cycle.

Most of these changes have taken place over just the last century, but they are so institutionalized that we could not imagine a world without them. As we speculate about the likely future course of mortality, this article identifies the significant implications of further increases in life expectancy. While overall populations are aging because of the advancing baby boom generation and declining fertility rates, this article focuses on the implications of increasing longevity without addressing those other trends. And, although this discussion is primarily focused on the United States, it is important to note that parallel changes are taking place in many other industrialized countries.

PREPARING FOR INCREASED LONGEVITY

According to the U.S. Social Security Administration, the life expectancy for a 65-year-old male climbed 23%, from 12.7 years in 1940 to 15.6 years in 1990, and is expected to increase a total of 47% over the century ending in 2040. And as life expectancy increases, the period spent under some form of chronic disability also increases.

Even if mortality rates were to cease their long decline, industrialized and developing nations still need to cope with aging populations as the result of past changes in fertility and immigration. The prospect of continued improvements in mortality compounds the challenges of our changing society, forcing even greater diligence in preparing for them. If life spans can indeed continue to increase, and if this change is not accompanied by reduced rates of disability among the elderly, then all developing and developed nations need to begin to prepare now for what will be a very different future. The key questions to think about include:

- How long will people remain healthy and how might disability emerge? What support will they need?
- How will the families of the elderly be structured and how many will be widowed or divorced? How can family members help and what alternatives are there for those without family support?
- How will work and retirement be combined over the life cycle?
- Who is in poverty and how can poverty be reduced?
- What opportunities are available to businesses as their potential customer base becomes older?
- What support will employers and public programs offer?
- What is the role of the community? Of government?
- Will the competitiveness of different nations be influenced by their new demographic profiles?

THE ELDERLY, NOW AND IN THE FUTURE

We can begin to understand what longer life spans might look like by examining the family,

TABLE I

	Percent Female	Percent Married	Percent in Poverty
65 to 84	57.1% (1)	59.6% (2)	9.8% (3)
85 and older	70.7% (1)	25.9% (2)	13.7% (3)

Sources: (1) U.S. Census Bureau, *Statistical Abstract of the U.S.: 1999* (pg. 16, Table 16—"Resident Population, by Sex and Age: 1998"); (2) Current Population Survey, Marital Status and Living Arrangements: March 1998 (Update); (3) Current Population Survey, Annual Demographic Survey, March 2001 (Table 23—Single Years of Age—Poverty Status of People in 2000).

economic and health status of the elderly today. (See Table I.)

The oldest among the elderly are more likely to be female, unmarried and poor than the rest of the elderly. Furthermore, those aged 80 and over are almost twice as likely to have a severe disability as those under 80 years of age.¹

As women living alone constitute the most impoverished group of the elderly today, longer life spans will mean that more of the elderly will live in poverty in the future, unless there are changes in poverty rates by age and gender.

Convergence of Male and Female Mortality Rates

While longevity is important, it is not the only factor influencing these trends among the elderly. Recent experience in the United States and Canada shows a trend toward convergence of male and female mortality rates. The U.S. Census Bureau projects the female/male ratio of those aged 85 and over will shrink from 2.33-1 in 2000 to 1.60-1 in 2050. If this projection proves true, all of the above characteristics of the very old may reverse, as males are generally better off financially in retirement, more likely to be married and more likely to die after shorter periods of chronic disability than females.²

Financing Retirement

Longer life spans after retirement place an extra burden on people to adequately save for retirement during their working years. Actuaries, economists, demographers and other academicians are working to build a framework for understanding the risks of the postretirement

period. In the United States, several factors contribute to the need for this understanding:

- Changes in family composition, reducing the level of support available
- Long-term reductions in retirement ages, increasing the period when retirement systems and savings are to be relied on for support
- The decline of employer-provided defined benefit pension plans and lifetime postretirement medical coverage
- The increasing cost to the elderly for health care not covered by Medicare, especially prescription drugs and most nursing home care
- Uncertainty about the future of Social Security, with the prospect for a scaled-back system.

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TABLE II

Types of Caregivers: Adults Aged 65 and Over Receiving Long-Term Care Assistance in the Community in 1994

Unpaid caregivers	57%
Paid caregivers	36
Unpaid and paid caregivers	7
Total	100%

TABLE III

Who Provides Care?

Adult children	41%
Spouses	24
Other relatives	26
Nonrelatives	9
Total	100%

All of these factors work to compound the problem of financing retirement over longer life spans. Ideally, individual responses should include:

- More attention paid to saving for retirement
- More attention paid to the availability of employer-sponsored retirement plans
- Postponement of retirement by those who are able to continue working, including work after retirement from a career job and various forms of phased retirement
- More sophisticated understanding of risk management, including greater interest in annuities, long-term care, and other forms of private insurance, as well as diversification of assets.

There has been an upsurge in interest in most of these issues in the U.S. popular press. This interest, however, is largely triggered by the coming retirement of the baby boom generation and its members' common interest in planning for their own retirement. Indeed, this generation in the United States as well as other industrialized nations, combined with lower birth rates, will lead to sharp increases in the average national age in the coming decades. This will be true even if mortality improvements cease altogether. The potential for longer life spans merely adds another dimension to the planning process now

faced by millions of people, as well as employers, financial institutions and governments.

Unless they are very wealthy, most individuals planning for retirement face a complex dilemma: How can scarce financial resources, including pensions, personal savings, government-provided benefits and other forms of wealth be allocated in order to maximize financial security in retirement? Expected life span and functional status at retirement are key variables in this determination and the public is not well informed about either.

Expectations about functional and health status are key in planning life activities and in driving financial resources. Declines in functional status require support from family members and/or the community and generally lead to higher costs. This is particularly true where home health care, assisted living, or nursing home care is needed, as such care is considerably more costly than independent living. As we consider our lengthening life spans, we also need to pay close attention to just what those extra years will look like. If the postponement of death will coincide with the postponement of disability, the period of infirmity and greatest dependence on outside assistance will be relatively unchanged. This will vary by individual and country. The question must be considered globally, as different situations may lead to diverse outcomes that would have serious implications for those preparing for retirement worldwide.

IMPACT ON SPOUSES AND FAMILY MEMBERS

Traditionally, spouses and other family members have provided the primary network of caregiving support to the very elderly. According to the Urban Institute, unpaid caregivers provide the majority of community-based long-term care assistance in the United States.³ (See Table II.)

Furthermore, family members provide more than 90% of this unpaid care. (See Table III.)

In the future, lengthening life spans will put strains on these types of arrangements for the following reasons.

- In some countries, notably Japan, more of the elderly will be unmarried, lacking a spouse to provide primary support.

- In many developed nations, the elderly will have fewer children to rely upon in their old age and many of those children will be facing the simultaneous challenge of planning their own retirement. The availability of support for the elderly from their children will vary greatly by country.
- Expected declines in the available labor pool of long-term care providers will likely cause the cost of nursing home and other formal care to increase, effectively closing the door to this option for many families.

The Institute for Health and Aging has suggested that the “caregiving ratio” can be a useful tool for measuring the trends in the availability of unpaid caregiving. This ratio is the number of individuals in the population ages 50 and 64 (that is, those who are closest to the average age of caregivers) divided by the number of individuals aged 85 and over. In the United States, as in most developing nations, this ratio will shrink over the coming decades. (See Table IV.)

As there will be fewer unpaid caregivers, those who provide this care will be stretched further, and more of the disabled elderly will need to rely on paid caregivers, or no caregivers at all.

IMPACT ON BUSINESS— OPPORTUNITIES

In the United States, businesses that target the elderly already have experienced substantial growth in the size of the markets they serve, triggered by the growth in numbers of elderly, the lengthening of life spans and the increasing wealth of the elderly over the last century. In many ways, continued reductions in mortality rates will merely add momentum to this already powerful trend. In other ways, the very nature of the emerging business opportunities likely will change as the age profile of the elderly shifts upward.

Annuity Insurance

Insurance companies may play a key role in helping the elderly manage the risks associated with old age, risks that longer life spans will only magnify. The most direct way of managing the financial risks associated with longevity is through annuitization—purchase from an insurer of a guaranteed income stream that con-

TABLE IV

Caregiving Ratio in the United States		
	2000	2040
Caregiving Ratio	9.6	4.3

tinues as long as the beneficiary is alive. Insurers, in turn, need to manage their own risks in issuing these annuity policies; they are therefore keenly interested in understanding the future course of longevity, as well as the uncertainties they must insure themselves against through hedging, asset allocation and reinsurance. However, the future use of annuities is unclear, as relatively few members of the public recognize the need to insure against living too long.

Long-Term Care Insurance

Long-term care insurance policies are gaining prominence as a retirement planning tool, especially among those who are wealthier and can afford them. Such policies typically insure the beneficiary for nursing home care, home health care, adult day care, respite care and alternative care services. It is expected that the need for these services will explode in the coming decades, as the population of those over 65 with activity limitations is projected to more than double by 2030.⁴ There is a great opportunity for the development and sale of insurance for financing these services, but it is not clear how much penetration this financing mechanism will have.

The impact of increased longevity on the cost of providing long-term care insurance is difficult to predict. If the extra years bring additional years of infirmity, then this insurance will become more expensive. If the extra years merely result in a postponement of the period of covered infirmity, then the longer discount period may actually bring costs down. The large degree of uncertainty about this issue contributes to the current cost of this insurance, as insurers are forced to build appropriate margins into their pricing to account for the risk.

Financial Planning

Increasing longevity is one of the many factors contributing to the expected growth of the finan-

cial planning industry over the coming decades. Awareness of the increasing risks of longevity will likely drive more of the elderly and near-elderly to seek advice from a variety of financial planners. Technology has helped to make new types of financial planning services available.

Direct Caregiving Opportunities

A wide array of organizations will provide direct caregiving services to the elderly, including:

- Health care institutions, including hospitals, which are widely expected to experience increasing demand as the elderly population grows
- Organizations that provide home-based medical care and other types of assistance, allowing the individual to remain in his or her own residence
- A variety of assisted living facilities, ranging from adult day care to residential care to nursing homes.

Here again, increasing longevity merely compounds other demographic trends in magnifying the prospects for growth of these industries. Patterns of care are evolving, as are the needs of the population and methods of financing. We cannot predict the future with any degree of specificity unless we understand the future health status of the very old in addition to the financing of care. Even under the assumption of declining rates of disability, however, the Congressional Budget Office projects that inflation-adjusted expenditures for long-term care will grow by almost 70% over the next 20 years.⁵

Of greater concern is the fact that the health care industry could find itself ill-prepared to handle significant increases in the number of the very elderly. Hospitals across the United States are already experiencing difficulty recruiting adequate numbers of trained nurses and health care professionals, as the average age of active nurses continues to rise.⁶ Clearly, the medical professions have much to do before their memberships have adequate numbers and sufficient training to handle the expected needs of the elderly population.

Housing

Many of the elderly choose to live in retirement communities or housing, which often include some care plus other services. There has

been a great deal of growth in retirement housing, particularly in states that are popular retirement destinations. For the affluent, there are many choices. But the poor have fewer choices and may end up living with families when that option is available. This will be an area of significant growth in the future.

IMPACT ON BUSINESS IN GENERAL

While specific industries will find new and growing opportunities with the growth in the number of elderly, virtually every industry will face new problems as well. Many organizations will feel the impact of population aging in their employee benefit plans even if they do not see it in the demand for their services.

In the United States, as in many industrialized countries, corporations have made long-term commitments to many of their employees and retirees to provide lifetime pension benefits and medical benefits upon retirement. Medical benefits are often subject to annual review and modification. In some countries, these benefits are controlled by government mandates, while in others, they have been offered voluntarily but are subject to various legal and societal restrictions on whether they may be modified or taken away. Accounting rules have forced U.S. companies to place liabilities on their balance sheets to reflect the projected long-term costs for these benefits. New international accounting rules create similar requirements for companies worldwide. In response to finding their long-term promises generating higher operating costs and reducing shareholder equity, many companies have scaled back or terminated these commitments.

As an illustration, Mercer Human Resource Consulting constructed a sample corporation, with a typical pension and postretirement medical arrangement, in order to project the impact of greater longevity on the company's postretirement benefit obligations. The liabilities and annual costs were first measured with a commonly used mortality table. Then these mortality rates were adjusted downward to yield a one-year increase in life expectancy, and the liabilities and annual costs were remeasured. The results are shown in Table V.

As the table illustrates, increased longevity tends to have a greater impact on postretire-

TABLE V

	Original Mortality	Revised Mortality	Percent Change
1 Age 65 life expectancy	18 years	19 years	+5.5%
2 (a) Pension benefit liability (PBO)	\$195 m	\$201 m	+3.0%
(b) Annual pension cost	\$5.7 m	\$6.5 m	+11.6%
3 (a) Postretirement medical benefit liability (APBO)	\$115 m	\$121 m	+5.2%
(b) Annual postretirement medical benefit cost	\$12.9 m	\$13.6 m	+5.4%

ment health care liabilities. This is because the cash flows generated by these plans tend to grow with medical inflation, magnifying the costs of the last years of life. Pension obligations, on the other hand, typically are not indexed to inflation and therefore are not as sensitive to longevity. However, pension obligations typically are prefunded, while postretirement medical obligations typically are unfunded. As a result, relatively small changes in pension obligations can have a leveraged impact on a pension plan's surplus or deficit position, resulting in large swings in annual costs.

In general, greater longevity magnifies the size of these postretirement obligations and creates further incentives for companies to scale them back to the extent possible.

Likely Employer Actions

The unfortunate outcome of these likely employer actions will be to further increase the risks that the elderly face in retirement. As successive cohorts of the elderly live longer, they will be less and less likely to have guaranteed pension income or postretirement medical insurance. This further increases the burden on individuals to start their retirement planning earlier and earlier in their working careers, and correspondingly increases the burden on their employers to help them understand postretirement risks and give them the necessary tools to help them prepare. In addressing this obligation, employers have access to a number of tools.

- Many offer their employees tax-advantaged savings plans, and more employers have become aggressive about enrolling their employees in these plans and in communicating their advantages.

- There has been growing discussion of defined contribution approaches to retiree medical benefits, which help limit the financial risk to the employer of providing these benefits.
- Employers are considering other forms of insurance, including long-term care insurance, and more aggressive communication of annuity options for all types of pension distributions.

Employees, in turn, should respond by saving more aggressively for retirement and by working longer, as well as by employing various strategies to phase into retirement over a period of years.

IMPACT ON SOCIETY AS A WHOLE

Government-sponsored old-age security programs, such as Social Security in the United States, are financed by a variety of mechanisms, including individual accounts, pay-as-you-go from general revenues, pay-as-you-go from special taxes on wages, or various combinations. To the extent that these plans are financed on a pay-as-you-go basis, they are subject to financial and political risks, which may place their beneficiaries in financial peril. Furthermore, these plans, through their benefit provisions, can influence societal expectations about which retirement age is appropriate. Increasing longevity places a greater financial burden on all such plans if the additional years are not prefunded. For pay-as-you-go plans, the cost of greater longevity is passed on to younger generations that are still working and paying taxes.

One of the most important options for dealing with population aging is increasing the age for eligibility of benefits under Social Security, medical and other social programs. This idea is

very unpopular, making such changes politically difficult. The matter is further complicated in the United States now that those aged 65 and over can collect full benefits and at the same time continue working without any limit on earnings. The public is continuing to work to a somewhat later age, but wants to work and collect benefits at the same time. Retirement age, or age of benefit eligibility, will be a major consideration as programs are updated.

The form of social benefit programs varies by country. Many countries, particularly in Latin America, have adopted individual account arrangements as a significant component of their government-sponsored old-age security programs. Some, like Great Britain, have allowed individuals to opt out of some of the program, while others, like Australia, have mandated employer-provided benefits instead of directly providing government benefits. Others, including the United States, are debating the merits of moving toward a “privatized” approach such as adopted in several Latin America countries.

Under pure individual account arrangements, the cost of greater longevity is, in theory, borne by the account owner, who struggles to stretch a fixed amount of funds to pay for longer duration of retirement. Many privatization advocates recommend that individuals be required to purchase a lifetime annuity at retirement in order to remove the longevity risk. At this point, the longevity issue becomes a crucial one. Should increasing longevity be anticipated in annuity purchase rates? If so, how much? Should annuity purchase rates vary by sex or race, as current population statistics would indicate? Who bears the risk if longevity improves more than expected? And if the expected improvement does not materialize, how will any adjustments be made? These questions are among many that privatization advocates in the United States must tackle if they are to sell their proposed reforms.

MISMATCHES AND DISCONNECTS

As we look at the programs and benefits used to help support the elderly and their needs, we see a number of mismatches and disconnects. These are in areas where the total system leaves many people with less than ideal solutions. Increasing longevity makes these

disconnects worse. Some of the key disconnects are the following.

- At least in the United States, the public has not focused on outliving assets as a major issue, and many people are likely to find assets running out. This problem is likely to be most severe for widows.
- Public policy is mixed in its support for gradual retirement.
- For the poor, public financing of long-term care varies substantially by country. Relatively few people have private insurance for long-term care.
- Medical coverage for many of the elderly is often inadequate. In some of the countries with comprehensive health coverage, the costs of these systems have become a major issue and the systems are retrenching.
- The survivor benefits offered on the death of a spouse are often inadequate. This is a particular problem for two-earner families under the U.S. Social Security system.
- Private pensions are generally not indexed for inflation, and many people have inadequate inflation protection. Annuity products usually do not include inflation protection, and are not ideally matched to the pattern of need.
- As people reach retirement age, connection to family is important. In the early years of retirement, many help their parents; later on, many depend on help from their own children. However, the global trend toward smaller families means that fewer children will be available to help.
- Individuals who get large lump sums from pension plans are confronted with managing large amounts of invested assets, more than they have ever managed before.

These disconnects spring from the problem of matching resources earned during a working career to needs that spread over an increasing life span. To the extent that individuals cannot manage this problem themselves, the responsibility falls to families, businesses and governments to fill in the gaps.

CONCLUSION

Increasing longevity affects a fundamental balance in society, between those who work to provide goods and services and those who have

retired but continue to consume those goods and services. Its implications reach to the individual, the family, and the private and public sectors. It affects the future ability of all governmental programs to help the elderly and the poor in general. For these reasons, many voices worldwide have spoken out in favor of raising retirement ages as a way to maintain this balance as our populations age.

Are we prepared for this change? The answer is mixed:

- In much of the developed world, the economic status of the elderly has improved, and private and public systems to provide help are well developed. But there are still too many people in poverty, and the aging of the baby boom in the United States is likely to be accompanied by a decline in financial strength of these systems.
- Government-sponsored old-age insurance programs are carrying a substantial and growing burden. In the United States, over half of the elderly population depends heavily on Social Security, so that any benefit reductions will be politically difficult.
- Individuals are expected to care for themselves, but many do not save enough or provide well for the risks they are facing. It will work out well for many, but for others, old age is a time of difficulty and decline.
- Individuals are changing the way they work and retire, so that many people are leaving the labor force in steps. For them, current income is a supplement to retirement savings.

This picture is based on the world in 2002-2003 but, as life spans continue to increase, more questions will emerge. It is possible that the future shape of mortality may create risks for which we are not yet prepared. Under some

scenarios, an increase in expected life spans has little effect on the uncertainty we face regarding age at death. Under other scenarios, longer life spans also correspond to a wider dispersion, or standard deviation, around the expected life span. If the “risk” of greater longevity is truly rising, then this places even more burden on the individual to prepare for this risk and to focus on outliving assets as a specific issue. When this is added to the burden of preparing for more years of retirement, and with relatively fewer dollars from social, employer and governmental support to help ease this burden, the citizens of all nations face a formidable challenge. ◀

Note: This article is condensed from a paper published by the Society of Actuaries in the *North American Actuarial Journal*, July 2002. It was presented as the keynote address at the symposium “Living to 100 and Beyond,” sponsored by the Society of Actuaries and an international consortium of interested organizations in January 2002.

Endnotes

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