

**GLOBAL HEALTH
AND AGING**

**NATIONAL
INSTITUTE OF
AGING**



Global Health and Aging



National Institute on Aging
National Institutes of Health
U.S. Department of Health and Human Services

World Health Organization

Global Health and Aging

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Global Health and Aging



Rebecca Stone

W. H. S.

Preface

The world is facing a situation without precedent: We soon will have more older people than children and more people at extreme old age than ever before. As both the proportion of older people and the length of life increase throughout the world, key questions arise. Will population aging be accompanied by a longer period of good health, a sustained sense of well-being, and extended periods of social engagement and productivity, or will it be associated with more illness, disability, and dependency?

How will aging affect health care and social costs? Are these futures inevitable, or can we act to establish a physical and social infrastructure that might foster better health and wellbeing in older age? How will population aging play out differently for low-income countries that will age faster than their counterparts have, but before they become industrialized and wealthy?

This brief report attempts to address some of these questions. Above all, it emphasizes the central role that health will play moving forward. A better understanding of the changing relationship between health with age is crucial if we are to create a future that takes full advantage of the powerful resource inherent in older populations. To do so, nations must develop appropriate data systems and research capacity to monitor and understand these patterns and relationships, specifically longitudinal studies that incorporate measures of health, economic status, family, and well-being. And research needs to be better coordinated if we are to discover the most cost-effective ways to maintain healthful life styles and everyday functioning in countries at different stages of economic development and with varying resources. Global efforts are required to understand and find cures or ways to prevent such age-related diseases as Alzheimer's and frailty and to implement existing knowledge about the prevention and treatment of heart disease, stroke, diabetes, and cancer.

Managing population aging also requires building needed infrastructure and institutions as soon as possible. The longer we delay, the more costly and less effective the solutions are likely to be.

Population aging is a powerful and transforming demographic force. We are only just beginning to comprehend its impacts at the national and global levels. As we prepare for a new demographic reality, we hope this report raises awareness not only about the critical link between global health and aging, but also about the importance of rigorous and coordinated research to close gaps in our knowledge and the need for action based on evidence-based policies.

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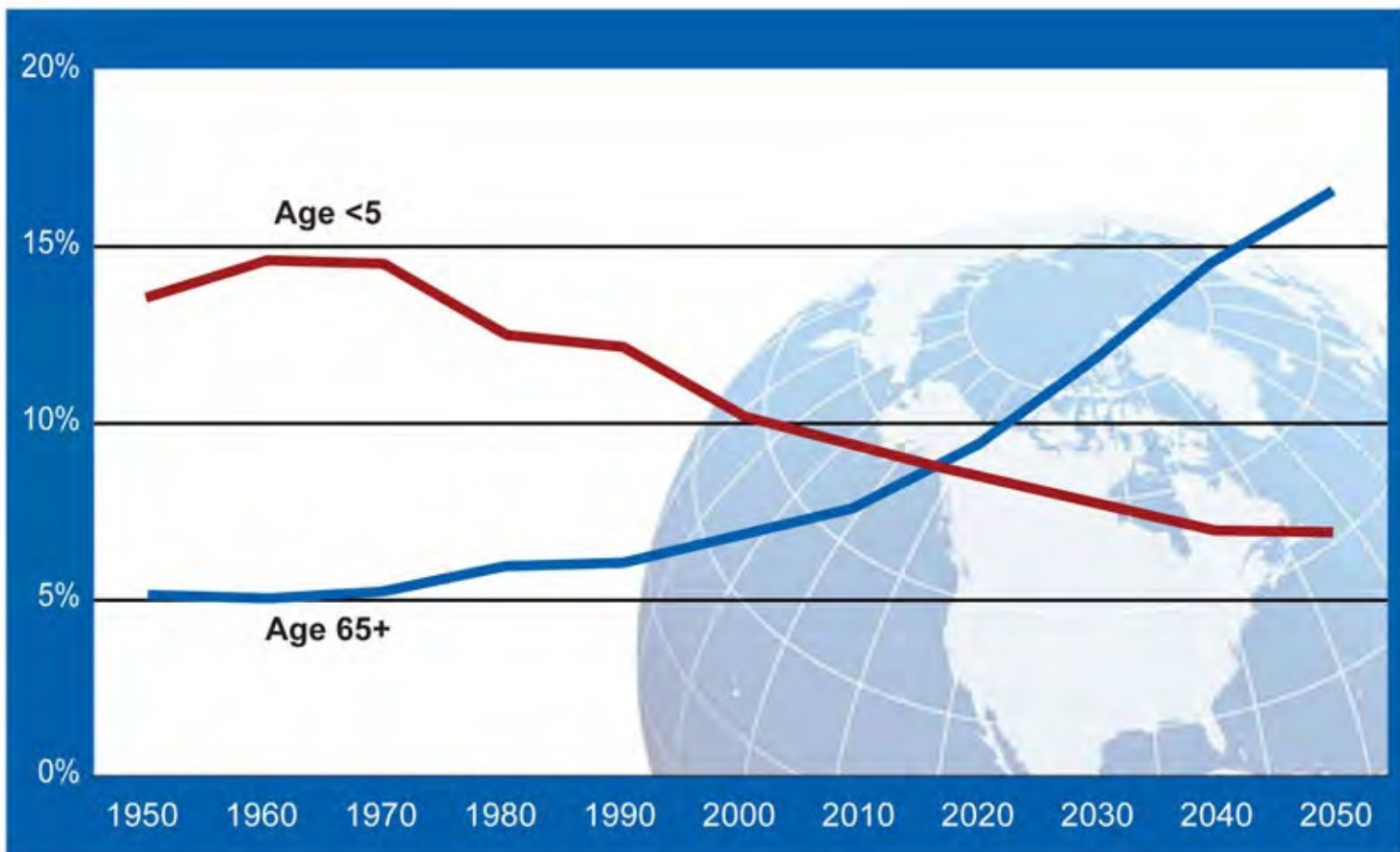
World Health Organization

National Institutes of Health

Preface

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1



Overview

The world is on the brink of a demographic
the major health threats were infectious and
milestone. Since the beginning of recorded

parasitic diseases that most often claimed history, young children have outnumbered the lives of infants and children. Currently, their elders. In about five years' time, however, noncommunicable diseases that more commonly the number of people aged 65 or older will affect adults and older people impose the outnumber children under age 5. Driven by greatest burden on global health.

falling fertility rates and remarkable increases in life expectancy, population aging will continue,

In today's developing countries, the rise of even accelerate (**Figure 1**). The number of chronic noncommunicable diseases such as people aged 65 or older is projected to grow heart disease, cancer, and diabetes reflects from an estimated 524 million in 2010 to nearly changes in lifestyle and diet, as well as aging.

1.5 billion in 2050, with most of the increase in

The potential economic and societal costs of developing countries.

noncommunicable diseases of this type rise sharply with age and have the ability to affect

The remarkable improvements in life economic growth. A World Health Organization

expectancy over the past century were part
analysis in 23 low- and middle-income countries
of a shift in the leading causes of disease
estimated the economic losses from three
and death. At the dawn of the 20th century,
noncommunicable diseases (heart disease,

Figure 1.

Young Children and Older People as a Percentage of Global Population: 1950-2050

Source: United Nations. *World Population Prospects: The 2010 Revision*.

Available at: <http://esa.un.org/unpd/wpp>.

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stroke, and diabetes) in these countries would

With continuing declines in death rates among total US\$83 billion between 2006 and 2015.

older people, the proportion aged 80 or older is rising quickly, and more people are living

Reducing severe disability from disease

past 100. The limits to life expectancy and

and health conditions is one key to holding

lifespan are not as obvious as once thought.

down health and social costs. The health

And there is mounting evidence from cross-

and economic burden of disability also can

national data that—with appropriate policies

be reinforced or alleviated by environmental

and programs—people can remain healthy

characteristics that can determine whether

and independent well into old age and can

an older person can remain independent

continue to contribute to their communities

despite physical limitations. The longer people

and families.

can remain mobile and care for themselves,

the lower are the costs for long-term care to

The potential for an active, healthy old age

families and society.

is tempered by one of the most daunting and potentially costly consequences of ever-longer life expectancies: the increase in people with dementia, especially Alzheimer's disease. Most dementia patients eventually need constant care and help with the most basic activities of daily living, creating a heavy economic and social burden. Prevalence of dementia rises sharply with age. An estimated 25-30 percent of people aged 85 or older have dementia. Unless new and more effective interventions are found to treat or prevent Alzheimer's disease, prevalence is expected to rise dramatically with the aging of the population in the United States and worldwide.

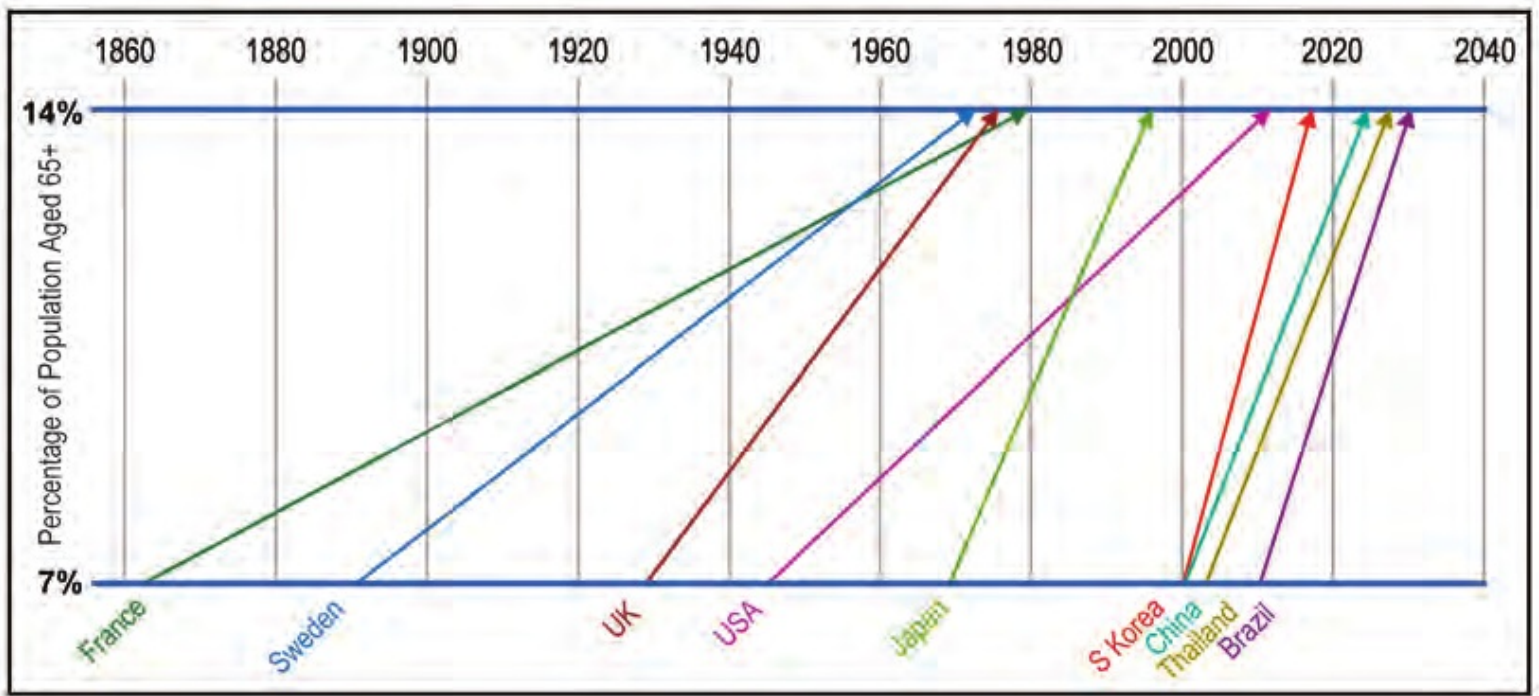
Aging is taking place alongside other broad social trends that will affect the lives of older people. Economies are globalizing, people are more likely to live in cities, and technology is evolving rapidly. Demographic and family changes mean there will be fewer older people with families to care for them. People today have fewer children, are less likely to be married, and are less likely to live with older generations. With declining support from families, society will need better information and tools to ensure the well-being of the world's growing number of older citizens.

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Overview

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Humanity's Aging

In 2010, an estimated 524 million people were nearly three children per woman around 1950.

aged 65 or older—8 percent of the world's

Even more crucial for population aging, fertility

population. By 2050, this number is expected to fell with surprising speed in many less developed nearly triple to about 1.5 billion, representing

countries from an average of six children in

16 percent of the world's population. Although

1950 to an average of two or three children

more developed countries have the oldest

in 2005. In 2006, fertility was at or below the

population profiles, the vast majority of

two-child replacement level in 44 less developed

older people—and the most rapidly aging

countries.

populations—are in less developed countries.

Between 2010 and 2050, the number of older

Most developed nations have had decades to

people in less developed countries is projected to adjust to their changing age structures. It took increase more than 250 percent, compared with

more than 100 years for the share of France's

a 71 percent increase in developed countries.

population aged 65 or older to rise from 7

percent to 14 percent. In contrast, many less

This remarkable phenomenon is being driven

developed countries are experiencing a rapid

by declines in fertility and improvements in

increase in the number and percentage of older

longevity. With fewer children entering the

people, often within a single generation (**Figure**

population and people living longer, older

2). For example, the same demographic aging

people are making up an increasing share of the

that unfolded over more than a century in

total population. In more developed countries,

France will occur in just two decades in Brazil.

fertility fell below the replacement rate of two

Developing countries will need to adapt quickly

live births per woman by the 1970s, down from

to this new reality. Many less developed nations

Figure 2.

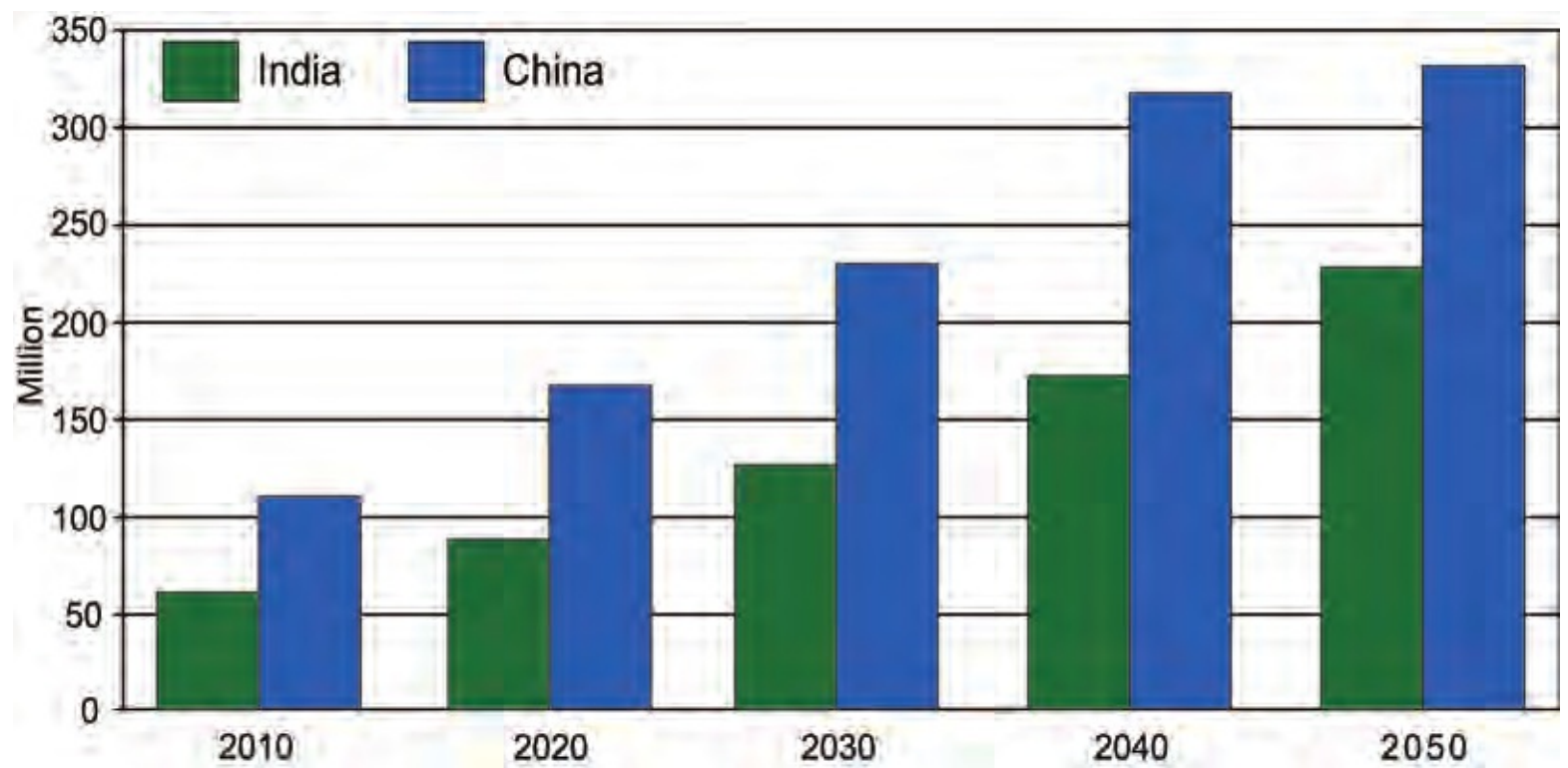
The Speed of Population Aging

Time required or expected for percentage of population aged 65 and over to rise from 7 percent to 14 percent

Source: Kinsella K, He W. *An Aging World: 2008*. Washington, DC: National Institute on Aging and U.S. Census Bureau, 2009.

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Global Health and Aging





will need new policies that ensure the financial security of older people, and that provide the health and social care they need, without the same extended period of economic growth experienced by aging societies in the West.

In other words, some countries may grow old before they grow rich.

In some countries, the sheer number of

people entering older ages will challenge national infrastructures, particularly health systems. This numeric surge in older people is dramatically illustrated in the world's two most populous countries: China and India (**Figure 3**). China's older population – those over age 65 – will likely swell to 330 million by 2050 from 110 million today. India's current older population of 60 million is projected to exceed 227 million in 2050, an increase of nearly 280 percent from today. By the middle of this century, there could be 100 million Chinese over the age of 80. This is an amazing achievement considering that there were fewer than 14 million people this age on the entire planet just a century ago.

Crystal Craig | Dreamstime.com

Figure 3.

Growth of the Population Aged 65 and Older in India and China: 2010-2050

Source: United Nations. *World Population Prospects: The 2010 Revision*.

Available at: <http://esa.un.org/unpd/wpp>.

Humanity's Aging



Living Longer

The dramatic increase in average life expectancy pathways. This transition encompasses a during the 20th century ranks as one of

broad set of changes that include a decline

society's greatest achievements. Although most

from high to low fertility; a steady increase

babies born in 1900 did not live past age 50, life

in life expectancy at birth and at older ages;

expectancy at birth now exceeds 83 years in

and a shift in the leading causes of death and

Japan—the current leader—and is at least 81

illness from infectious and parasitic diseases

years in several other countries. Less developed

to noncommunicable diseases and chronic

regions of the world have experienced a steady

conditions. In early nonindustrial societies, the

increase in life expectancy since World War

risk of death was high at every age, and only a

II, although not all regions have shared in

small proportion of people reached old age. In

these improvements. (One notable exception

modern societies, most people live past middle

is the fall in life expectancy in many parts of

age, and deaths are highly concentrated at older

Africa because of deaths caused by the HIV/

ages.

AIDS epidemic.) The most dramatic and rapid

gains have occurred in East Asia, where life expectancy at birth increased from less than 45 years in 1950 to more than 74 years today. The victories against infectious and parasitic diseases are a triumph for public health projects of the 20th century, which immunized millions of people against smallpox, polio, and major childhood killers like measles. Even these improvements are part of a major transition in human health spreading around the globe at different rates and along different earlier, better living standards, especially more nutritious diets and cleaner drinking water, began to reduce serious infections and prevent deaths among children. More children were surviving their vulnerable early years and reaching adulthood. In fact, more than 60 percent of the improvement in female life expectancy at birth in developed countries between 1850 and 1900 occurred because more children were living to age 15, not because more adults were reaching old age. It wasn't until the 20th century that mortality rates began to decline within the older ages. Research for more recent periods shows a surprising and

continuing improvement in life expectancy

among those aged 80 or above.

The progressive increase in survival in these oldest age groups was not anticipated by demographers, and it raises questions about how high the average life expectancy can realistically rise and about the potential length of the human lifespan. While some experts assume that life

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expectancy must be approaching an upper limit,

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Global Health and Aging

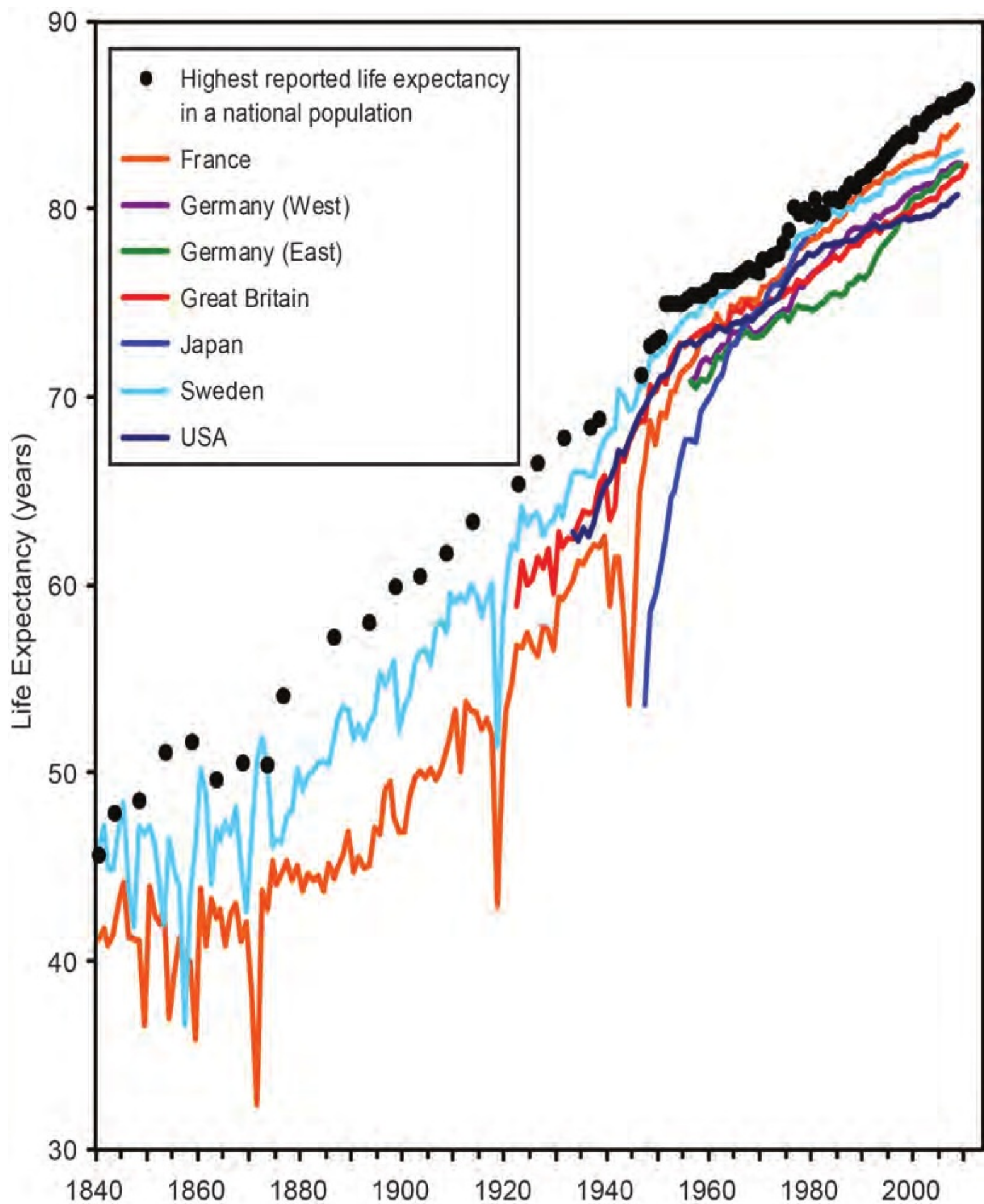


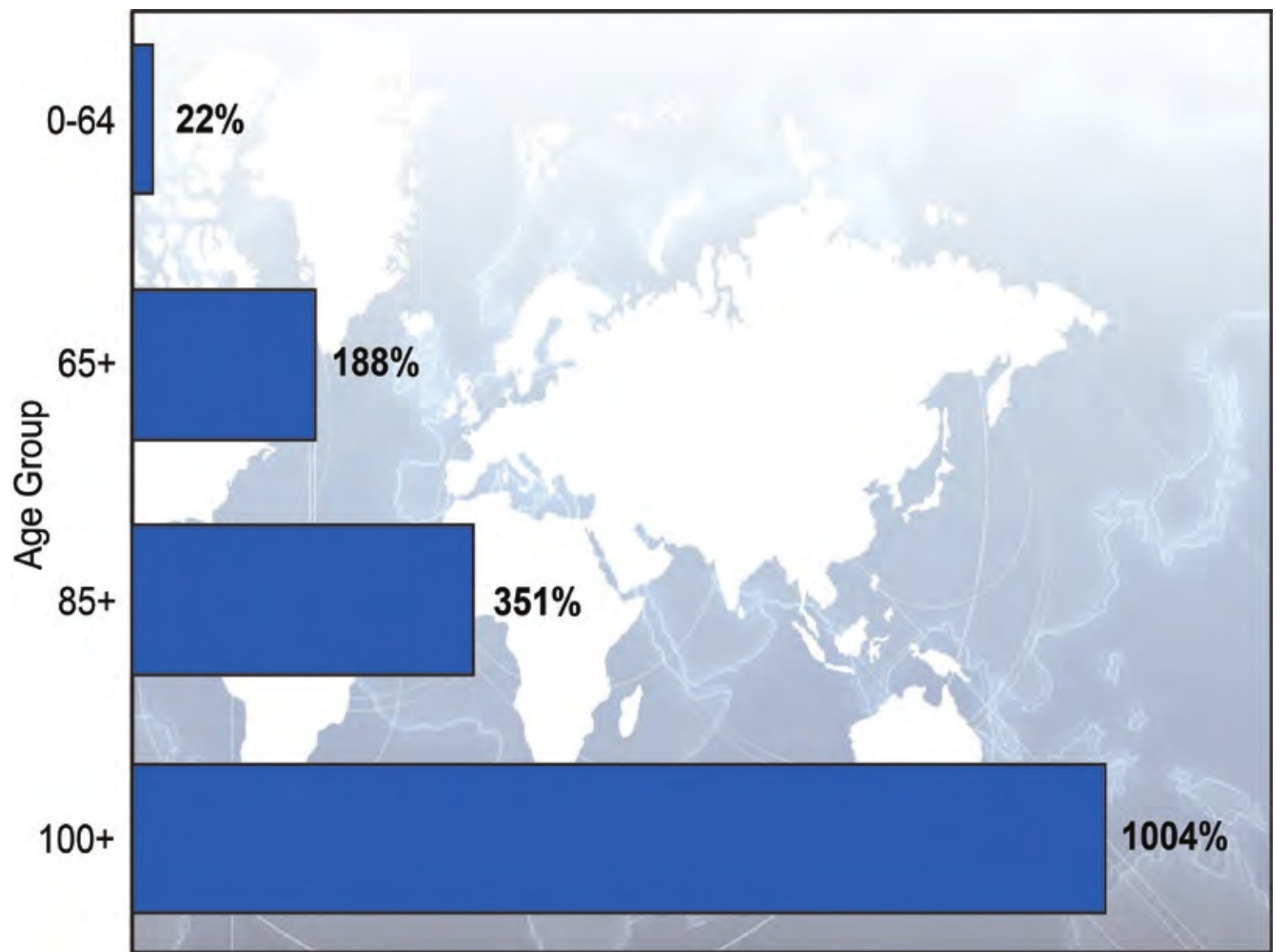
Figure 4.

Female Life Expectancy in Developed Countries: 1840-2009

Source: Highest reported life expectancy for the years 1840 to 2000 from online supplementary material to Oeppen J, Vaupel JW. Broken limits to life expectancy. *Science* 2002; 296:1029-1031. All other data points from the Human Mortality Database (<http://www.mortality.org>) provided by Roland Rau (University of Rostock). Additional discussion can be found in Christensen K, Doblhammer G, Rau R, Vaupel JW. Aging populations: The challenges ahead.

The Lancet 2009; 374/9696:1196-1208.

Living Longer



data on life expectancies between 1840 and 2007
 global level, the 85-and-over population is
 show a steady increase averaging about three
 projected to increase 351 percent between 2010
 months of life per year. The country with the
 and 2050, compared to a 188 percent increase for
 highest average life expectancy has varied over
 the population aged 65 or older and a 22 percent
 time (**Figure 4**). In 1840 it was Sweden and
 increase for the population under age 65 (**Figure 5**).
 today it is Japan—but the pattern is strikingly

similar. So far there is little evidence that life

The global number of centenarians is projected

expectancy has stopped rising even in Japan.

to increase 10-fold between 2010 and 2050. In

the mid-1990s, some researchers estimated that,

The rising life expectancy within the older

over the course of human history, the odds of

population itself is increasing the number and

living from birth to age 100 may have risen from

proportion of people at very old ages. The

1 in 20,000,000 to 1 in 50 for females in low-

“oldest old” (people aged 85 or older) constitute

mortality nations such as Japan and Sweden.

8 percent of the world’s 65-and-over population: This group’s longevity may increase even faster 12 percent in more developed countries and 6

than current projections assume—previous

percent in less developed countries. In many

population projections often underestimated

countries, the oldest old are now the fastest

decreases in mortality rates among the oldest

growing part of the total population. On a

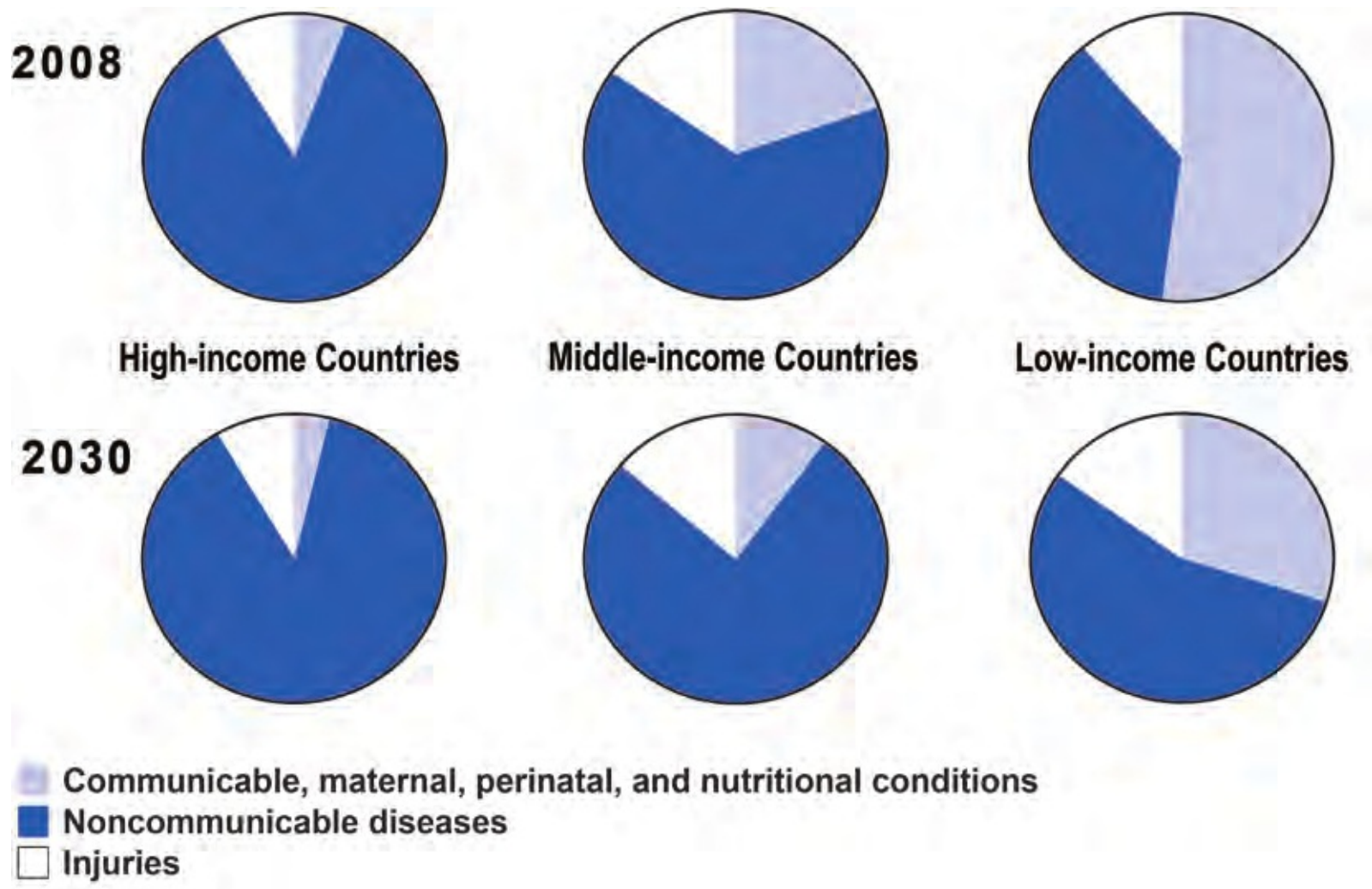
old.

Figure 5.

Percentage Change in the World’s Population by Age: 2010-2050

Source: United Nations, *World Population Prospects: The 2010 Revision*.

Available at: <http://esa.un.org/unpd/wpp>.



The transition from high to low mortality major epidemiologic trends of the current and fertility that accompanied socioeconomic century is the rise of chronic and degenerative development has also meant a shift in diseases in countries throughout the world—the leading causes of disease and death.

regardless of income level.

Demographers and epidemiologists describe this

shift as part of an “epidemiologic transition”

Evidence from the multicountry Global Burden

characterized by the waning of infectious and

of Disease project and other international

acute diseases and the emerging importance of

epidemiologic research shows that health

chronic and degenerative diseases. High death

problems associated with wealthy and aged

rates from infectious diseases are commonly

populations affect a wide and expanding

associated with the poverty, poor diets, and

swath of world population. Over the next

limited infrastructure found in developing

10 to 15 years, people in every world region

countries. Although many developing countries

will suffer more death and disability from

still experience high child mortality from such noncommunicable diseases as heart infectious and parasitic diseases, one of the disease, cancer, and diabetes than from

Figure 6.

The Increasing Burden of Chronic Noncommunicable Diseases: 2008 and 2030

Source: World Health Organization, *Projections of Mortality and Burden of Disease, 2004-2030*.

Available at: http://www.who.int/healthinfo/global_burden_disease/projections/en/index.html.

New Disease Patterns

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infectious and parasitic diseases. The myth

Lasting Importance of Childhood Health

that noncommunicable diseases affect mainly affluent and aged populations was dispelled by

A growing body of research finds that many the project, which combines information about health problems in adulthood and old age stem mortality and morbidity from every world region from infections and health conditions early in life.

to assess the total health burden from specific

Some researchers argue that important aspects of diseases. The burden is measured by estimating the adult health are determined before birth, and that loss of healthy years of life due to a specific cause nourishment in utero and during infancy has a

based on detailed epidemiological information. In direct bearing on the development of risk factors for 2008, noncommunicable diseases accounted for an adult diseases—especially cardiovascular diseases.

estimated 86 percent of the burden of disease in Early malnutrition in Latin America is highly high-income countries, 65 percent in middle-income correlated with self-reported diabetes, for example, countries, and a surprising 37 percent in low-income and childhood rheumatic fever is a frequent cause of countries.

adult heart disease in developing countries.

By 2030, noncommunicable diseases are projected to account for more than one-half of the disease

Research also shows that delayed physical growth in burden in low-income countries and more than childhood reduces physical and cognitive functioning three-fourths in middle-income countries.

in later years. Data on China's oldest old show that

Infectious and parasitic diseases will account for rarely or never suffering from serious illnesses or 30 percent and 10 percent, respectively, in low- and receiving adequate medical care during childhood middle-income countries (**Figure 6**). Among the results in a much lower risk of suffering cognitive

60-and-over population, noncommunicable diseases impairments or physical limitations at ages 80 or already account for more than 87 percent of the older.

burden in low-, middle-, and high-income countries.

Proving links between childhood health conditions

But the continuing health threats from

and adult development and health is a complicated

communicable diseases for older people cannot

research challenge. Researchers rarely have the data

be dismissed, either. Older people account for a

necessary to separate the health effects of changes

growing share of the infectious disease burden in

in living standards or environmental conditions

low-income countries. Infectious disease programs,

during a person's life from health effects related

including those for HIV/AIDS, often neglect

to his or her birth or childhood diseases. However,

older people and ignore the potential effects of

a Swedish study with excellent historical data

population aging. Yet, antiretroviral therapy is

concluded that reduced early exposure to infectious

enabling more people with HIV/AIDS to survive

diseases was related to increases in life expectancy.

to older ages. And, there is growing evidence

A cross-national investigation of data from two that older people are particularly susceptible surveys of older populations in Latin America to infectious diseases for a variety of reasons, and the Caribbean also found links between early including immunosenescence (the progressive conditions and later disability. The older people in deterioration of immune function with age) the studies were born and grew up during times and frailty. Older people already suffering from of generally poor nutrition and higher risk of one chronic or infectious disease are especially exposure to infectious diseases. In the Puerto Rican vulnerable to additional infectious diseases. For survey, the probability of being disabled was more example, type 2 diabetes and tuberculosis are well- than 64 percent higher for people growing up in known “comorbid risk factors” that have serious health consequences for older people.



Lasting Importance of Childhood Health

poor conditions than for people growing up in good distress and disadvantage as children than their conditions. A survey of seven urban centers in Latin counterparts in the developed world, and studies America and the Caribbean found the probability such as those described above suggest that they are of disability was 43 percent higher for those from at much greater risk of health problems in older age, disadvantaged backgrounds than for those from more often from multiple noncommunicable diseases. favorable ones (**Figure 7**).

Behavior and exposure to health risks during a

If these links between early life and health at older person's adult life also influence health in older age.

ages can be established more directly, they may have

Exposure to toxic substances at work or at home,

especially significant implications for less developed

arduous physical work, smoking, alcohol consumption,

countries. People now growing old in low- and middle-

diet, and physical activity may have long-term health

income countries are likely to have experienced more

implications.

Figure 7.

Probability of Being Disabled among Elderly in Seven Cities of Latin America and the Caribbean (2000) and Puerto Rico (2002-2003) by Early Life Conditions

Source: Monteverde M, Norohna K, Palloni A. 2009. Effect of early conditions on disability among the elderly in Latin-America and the Caribbean. *Population Studies* 2009;63/1: 21-35.

New Disease Patterns



Longer Lives and Disability

Are we living healthier as well as longer lives, or
forward. A 2006 analysis sponsored by the U.S.
are our additional years spent in poor health?

National Institute on Aging (NIA), part of

There is considerable debate about this question the U.S. National Institutes of Health, found among
researchers, and the answers have broad

surprising health differences, for example,

implications for the growing number of older

between non-Hispanic whites aged 55 to 64

people around the world. One way to examine

in the United States and England. In general,

the question is to look at changes in rates of

people in higher socioeconomic levels have better

disability, one measure of health and function.

health, but the study found that older adults in

Some researchers think there will be a decrease in the prevalence of disability as life expectancy increases, termed a “compression of morbidity.” The health differences among these “young” British counterparts at all socioeconomic levels. Others see an “expansion of morbidity”—an increase in the prevalence of disability as life expectancy increases. Yet others argue that, as life expectancy increases, the health differences among these “young” older people were much greater than the gaps in life expectancy between the two countries. Because the analysis was limited to non-Hispanic whites, the differences did not reflect chronic disease to disability, severe disability the generally lower health status of blacks or advances in medicine slow the progression from chronic disease to disability, severe disability the generally lower health status of blacks or will lessen, but milder chronic diseases will increase. The analysis also found that differences in education and behavioral risk factors (such as smoking, obesity, and alcohol use) explained few among those aged 65 or older even as life expectancy increased. This very positive trend suggests that we can affect not only how long we live but also the quality of our lives. This analysis subsequently included comparable

we live, but also how well we can function with NIA-funded surveys in 10 other European countries and was expanded to adults aged 50 to 74. The findings were similar: American adults among those now entering older ages reported worse health than did European adults. We have less information about disability in middle- and lower-income countries. With the rapid growth of older populations throughout levels of wealth, Americans were less healthy than their European counterparts. Analyses of people with disabilities—continuing and better the same data sources also showed that cognitive assessment of trends in disability in different countries will help researchers discover more about why there are such differences across countries.

work might help preserve cognitive functioning.

Subsequent analyses of these and other studies

Some new international, longitudinal research

should shed more light on these national

designed to compare health across countries

differences and similarities and should help guide

promises to provide new insights, moving

policies to address the problems identified.

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Global Health and Aging

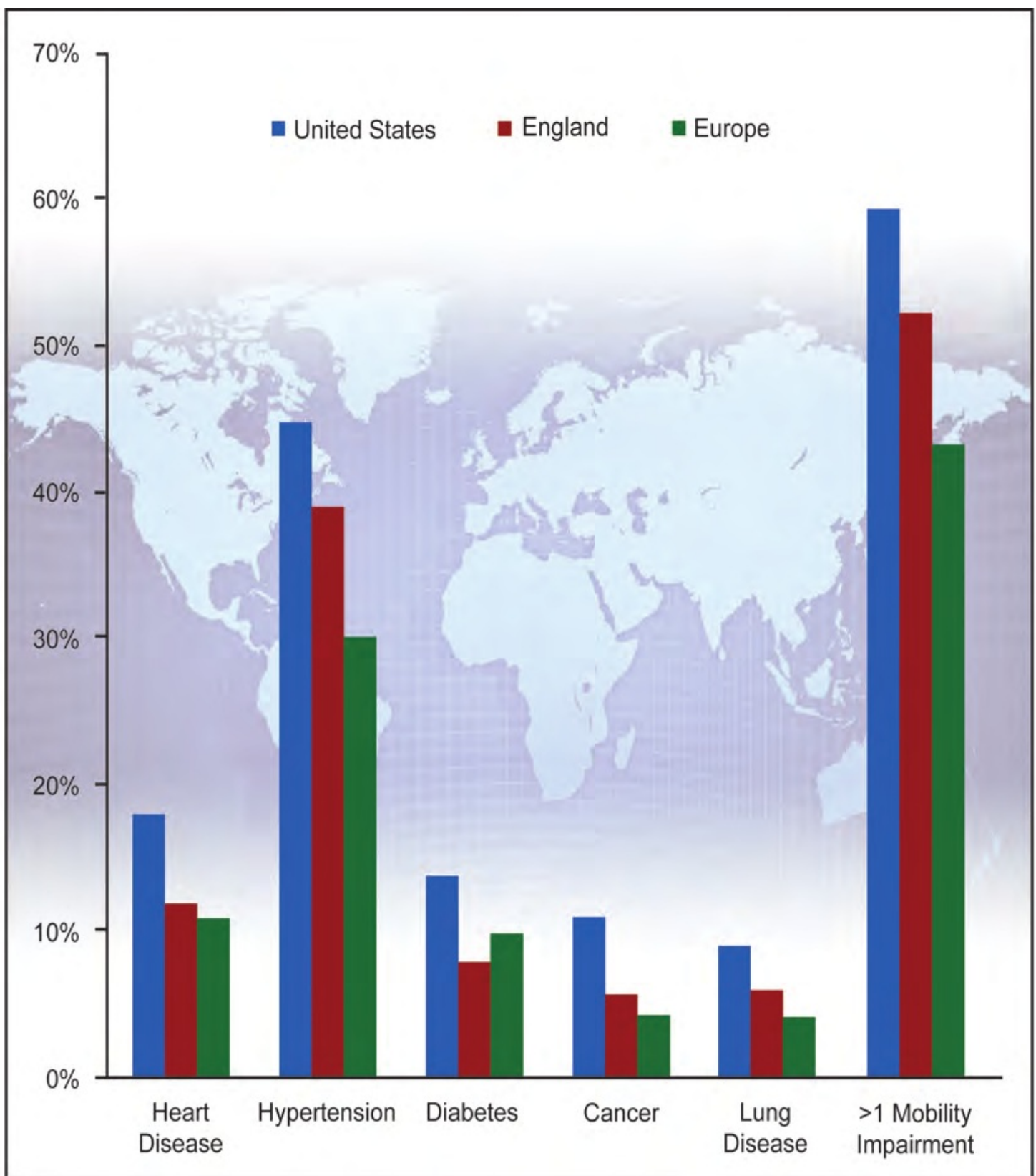


Figure 8.

Prevalence of Chronic Disease and Disability among Men and Women Aged 50-74 Years in the United States, England, and Europe: 2004

Source: Adapted from Avendano M, Glymour MM, Banks J, Mackenbach JP. Health disadvantage in US adults aged 50 to 74 years: A comparison of the health of rich and poor Americans with that of Europeans. *American Journal of Public Health* 2009; 99/3:540-548, using data from the Health and Retirement Study, the English Longitudinal Study of Ageing, and the Survey of Health, Ageing and



The Burden of Dementia

The cause of most dementia is unknown, but the final stages of this disease usually means a loss of memory, reasoning, speech, and other cognitive functions. The risk of dementia increases sharply with age and, unless new strategies for prevention and management are developed, this syndrome is expected to place growing demands on health and long-term care providers as the world's population ages. Dementia prevalence estimates vary considerably internationally, in part

because diagnoses and reporting systems are not standardized. The disease is not easy to diagnose, especially in its early stages. The memory problems, misunderstandings, and behavior common in the early and intermediate stages are often attributed to normal effects of aging, accepted as personality traits, or simply ignored. Many cases remain undiagnosed even in the intermediate, more serious stages. A cross-national worldwide cost of dementia exceeded US\$600 billion in 2010, including informal care provided by family and others, social care provided by community care professionals, and direct costs of medical care. Family members often play a key role, especially in the initial stages of what is typically a slow decline. Ten years ago, Alzheimer's disease (AD) is the most common form of dementia and accounted for between two-fifths and four-fifths of all dementia cases in the United States was US\$18 billion.

cited in the OECD report. More recent analyses have estimated the worldwide number of people living with AD/dementia at between 27 million and 36 million. The prevalence of AD and other dementias is very low at younger ages, then nearly doubles with every five years of age after age 65. In the OECD review, for example, dementia in the less developed world, where an estimated affected fewer than 3 percent of those aged 65 to 69, but almost 30 percent of those aged 85 to 89. The complexity of the disease and the wide variety of living arrangements can be difficult for people and families dealing with dementia, and and social impact. The challenge is even greater in countries must cope with the mounting financial and social impact. The challenge is even greater

65. In the OECD review, for example, dementia in the less developed world, where an estimated affected fewer than 3 percent of those aged 65 to two-thirds or more of dementia sufferers live but where few coping resources are available. More than one-half of women aged 90 or older had dementia in France and Germany, as did Projections by Alzheimer's Disease International suggest that 115 million people worldwide will be living with AD/dementia in 2050, with a about 40 percent in the United States, and just under 30 percent in Spain. markedly increasing proportion of this total in less developed countries (**Figure 9**). Global efforts are underway to understand and find cures or

The projected costs of caring for the growing

numbers of people with dementia are daunting.

ways of preventing such age-related diseases as

The 2010 World Alzheimer Report by Alzheimer's Alzheimer's.

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Global Health and Aging

Number of people with dementia (millions)

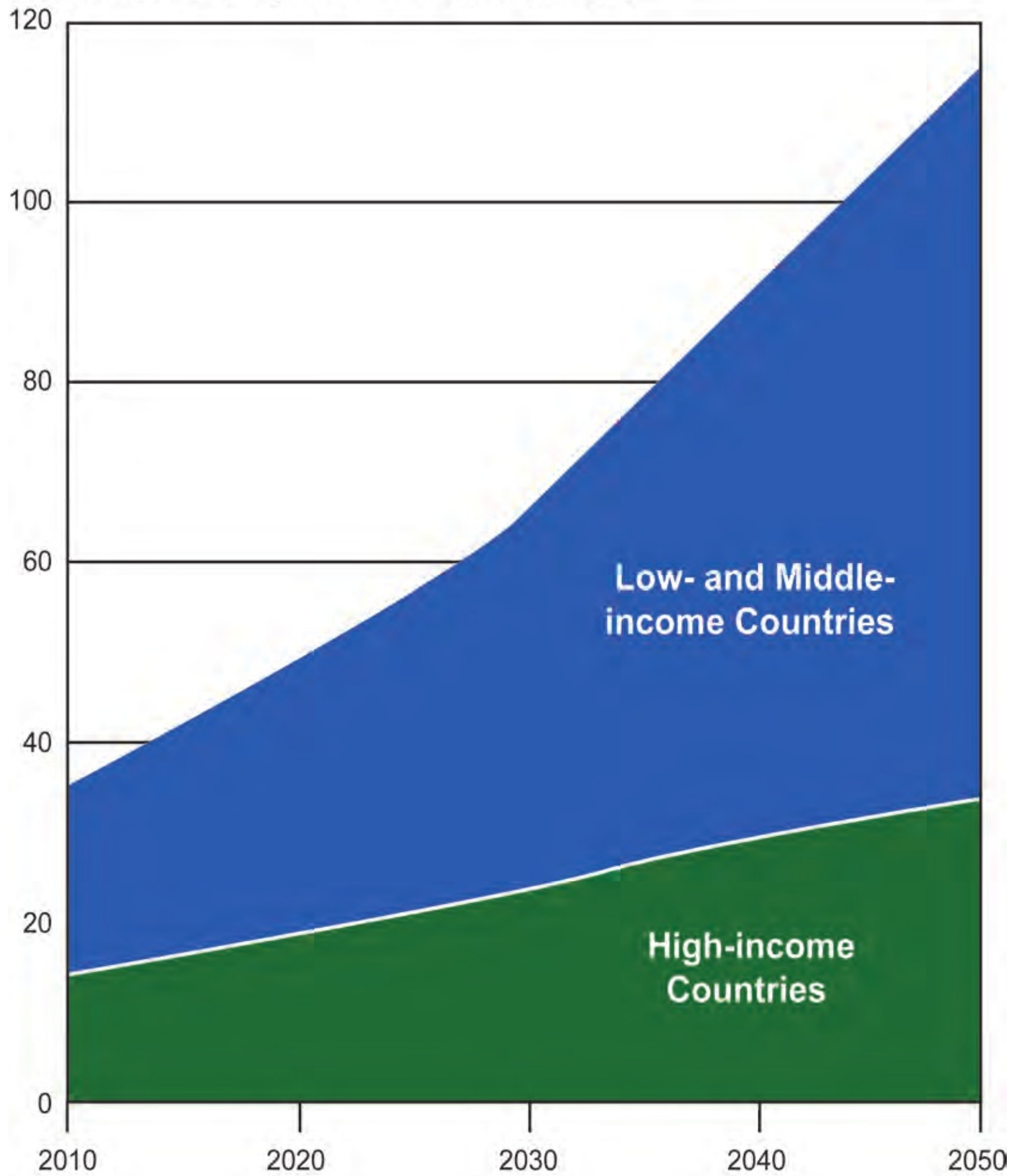


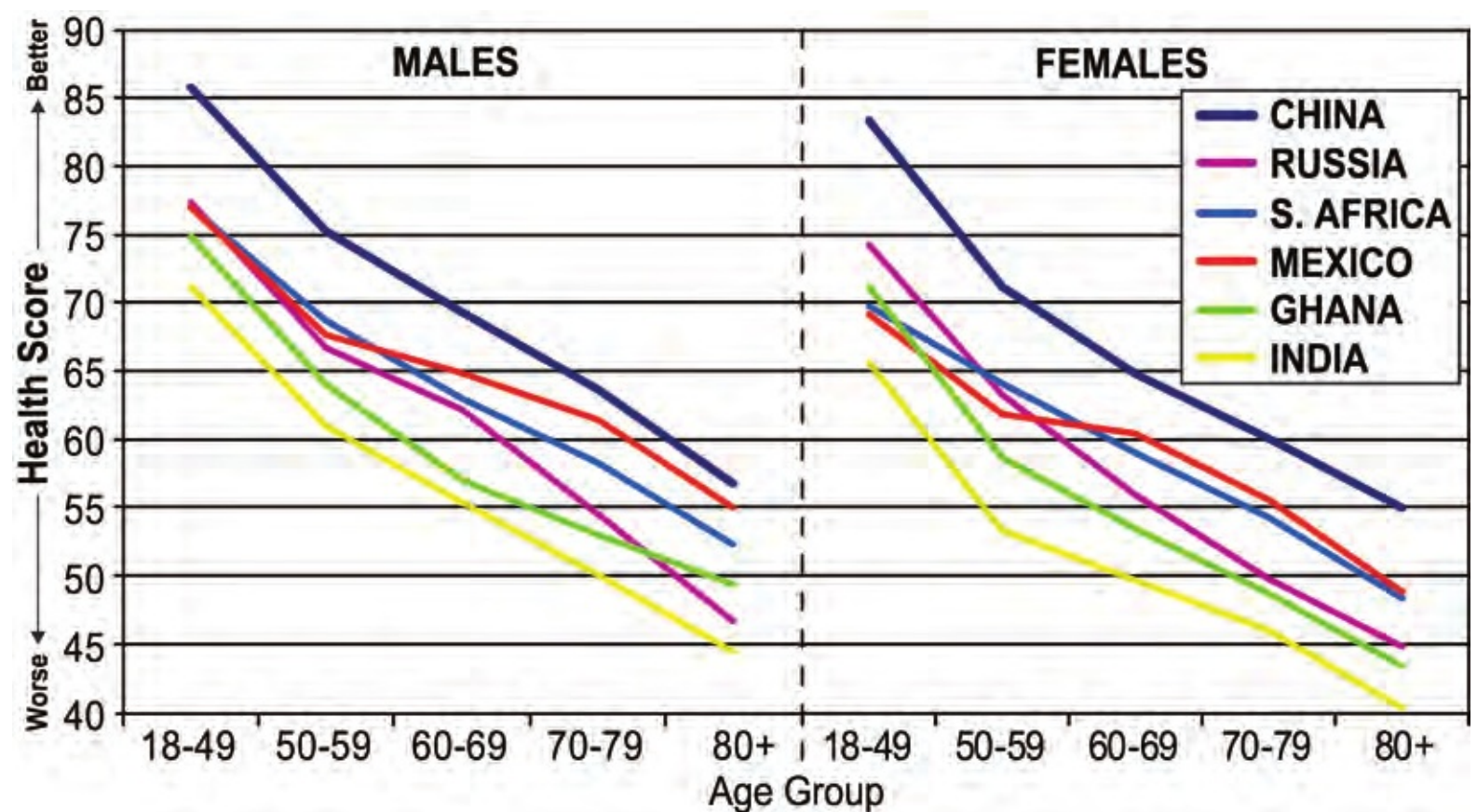
Figure 9.

The Growth of Numbers of People with Dementia in High- income Countries and Low- and Middle-income Countries: 2010-2050

Source: Alzheimer's Disease International, *World Alzheimer Report, 2010*. Available at: <http://www.alz.co.uk/research/files/WorldAlzheimerReport2010.pdf>.

Longer Lives and Disability

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New Data on Aging and Health

The transition from high to low mortality and countries (China, Ghana, India, Mexico, Russia, fertility—and the shift from communicable to and South Africa), who will be followed as they age.

noncommunicable diseases—occurred fairly

A cohort of respondents aged 18 to 49 also will be

recently in much of the world. Still, according

followed over time in each country for comparison.

to the World Health Organization (WHO), most

The first wave of SAGE data collection (2007-2010)

countries have been slow to generate and use

has been completed, with future waves planned for

evidence to develop an effective health response

2012 and 2014.

to new disease patterns and aging populations.

In light of this, the organization mounted a

In addition to myriad demographic and

multicountry longitudinal study designed to

socioeconomic characteristics, the study collects

simultaneously generate data, raise awareness of

data on risk factors, health exams, and biomarkers.

the health issues of older people, and inform public Biomarkers such as blood pressure and pulse rate, policies.

height and weight, hip and waist circumference,

and blood spots from finger pricks, are valuable

The WHO Study on Global Ageing and Adult Health (SAGE) involves nationally representative cohorts of respondents aged 50 and over in six countries. SAGE also collects data on grip strength and lung capacity

Figure 10.

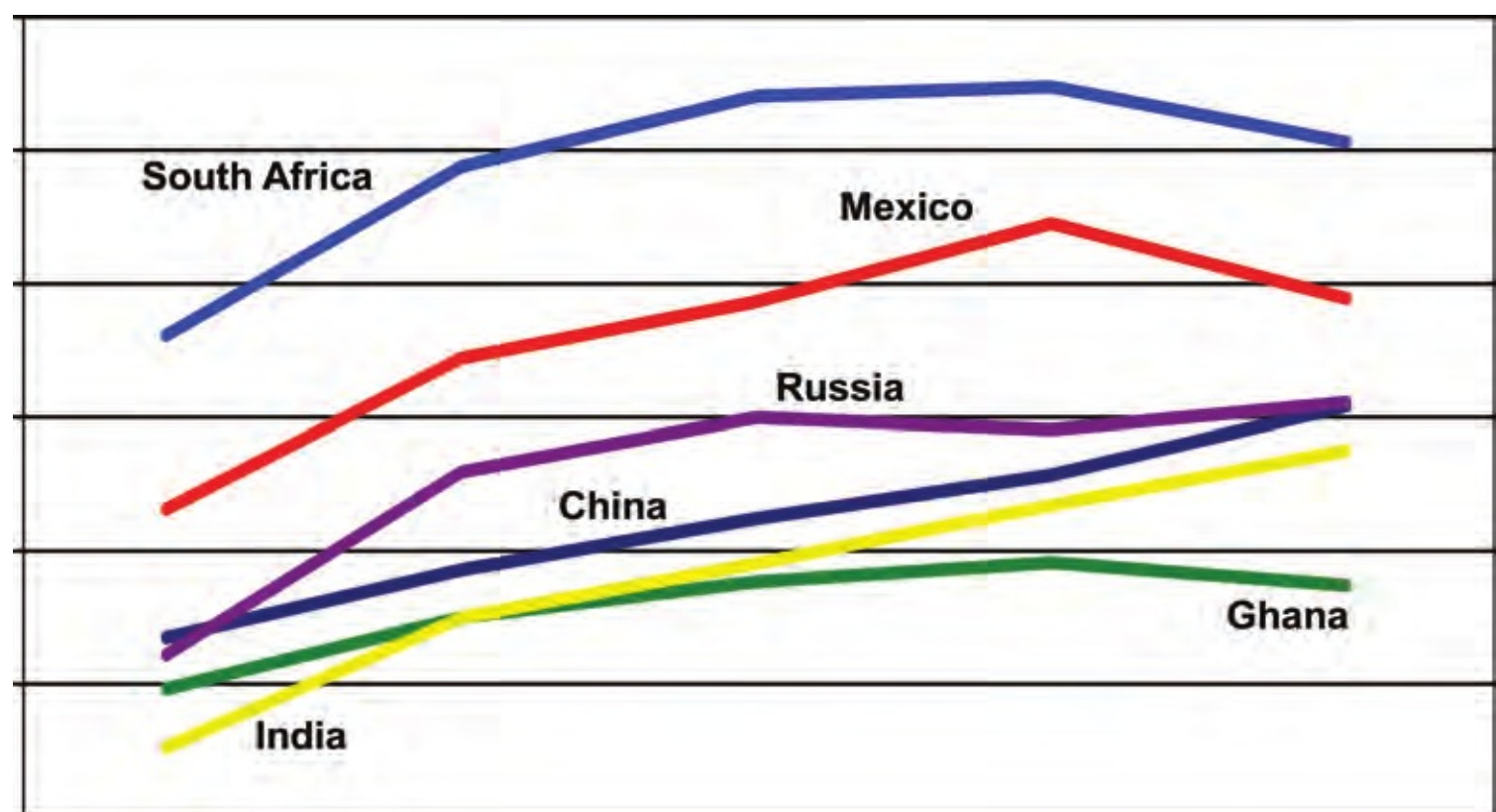
Overall Health Status Score in Six Countries for Males and Females: Circa 2009

Notes: Health score ranges from 0 (worst health) to 100 (best health) and is a composite measure derived from 16 functioning questions using item response theory. National data collections conducted during the period 2007-2010.

Source: Tabulations provided by the World Health Organization Multi-Country Studies Unit, Geneva, based on data from the Study on global AGEing and adult health (SAGE).

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Global Health and Aging



and administers tests of cognition, vision, and

The number of disabled people in most developing countries seems certain to increase as the number of older people continues to rise. Health systems need better data to understand the health risks of data are collected during these respondents' later years, the study will seek to monitor health prevention and intervention services. The interventions and address changes in respondents' SAGE data show that the percentage of people well-being.

with at least three of six health risk factors (physical inactivity, current tobacco use, heavy alcohol consumption, a high-risk waist-hip ratio, hypertension, or obesity) rises with comparisons. Researchers derive a composite age, but the patterns and the percentages measure from responses to 16 questions about

vary by country (**Figure 11**). One of SAGE's health and physical limitations. This health score important contributions will be to assess

ranges from 0 (worst health) to 100 (best health)

how these risk-factor profiles affect current

and is shown for men and women in each of the six and future disability. Smaller family size and SAGE countries in **Figure 10**. In each country, the

declining prevalence of co-residence by multiple

health status score declines with age, as expected.

generations likely will introduce further

And at each age in each country, the score for males challenges for families in developing countries in is higher than for females. Women live longer than

caring for older relatives.

men on average, but have poorer health status.

Figure 11.

Percentage of Adults with Three or More Major Risk Factors: Circa 2009

60%

50%

40%

30%

20%

10%

0%

18-49

50-59

60-69

70-79

80+

Age Group

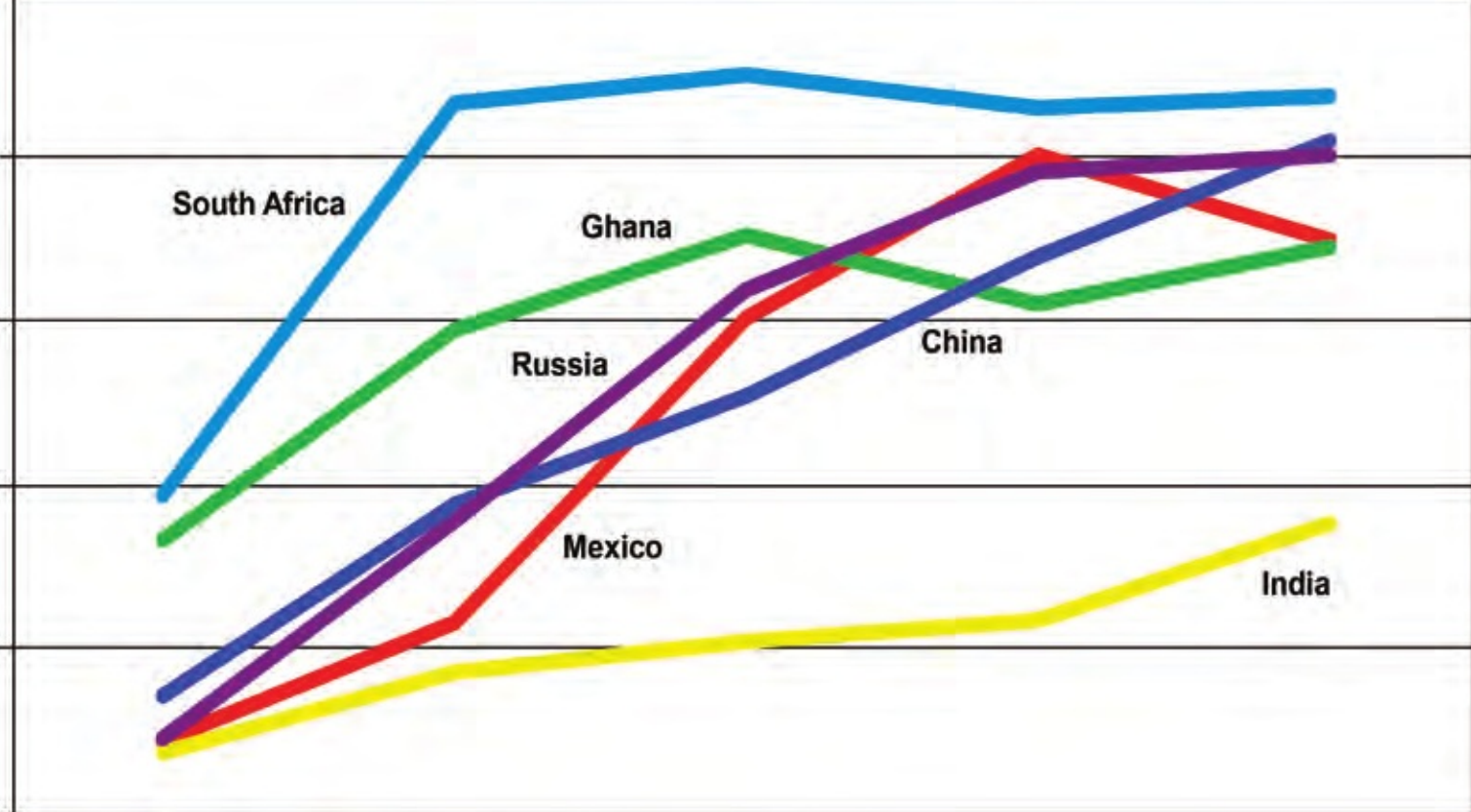
Notes: Major risk factors include physical inactivity, current tobacco use, heavy alcohol consumption, a high-risk waist-hip ratio, hypertension, and obesity. National data collections conducted during the period 2007-2010.

Source: Tabulations provided by the World Health Organization Multi-Country Studies Unit, Geneva, based on data from the Study on global AGEing and adult health (SAGE).

New Data on Aging and Health

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Assessing the Costs of Aging and Health Care

Population aging is likely to influence patterns of health care spending in both developed and health care costs in the developing world. Many developing countries in the decades to come. developing nations are just now establishing baseline estimates of the prevalence and incidence of various diseases and conditions. Initial findings available, the use of medical care services by adults rises with age, and per capita expenditures on blood pressure among women in six developing

on health care are relatively high among older age countries, show an upward trend by age in the groups. Accordingly, the rising proportion of older percentage of women with moderate or severe people is placing upward pressure on overall health hypertension (see **Figure 12**), although the patterns care spending in the developed world, although and age-specific levels of hypertension vary among other factors such as income growth and advances the countries. If rising hypertension rates in in the technological capabilities of medicine those populations are not adequately addressed, generally play a much larger role. the resulting high rates of cerebrovascular and

Figure 12.

Percentage of Women with Moderate or Severe Hypertension in Six Countries: Circa 2009



Note: National data collections conducted during the period 2007-2010.

Source: Tabulations provided by the World Health Organization Multi-Country Studies Unit, Geneva, based on data from the Study on global AGEing and adult health (SAGE).

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Global Health and Aging

Assessing the Costs of Aging

cardiovascular disease are likely to require costly

A large proportion of health care costs associated

medical treatments that might have been avoided

with advancing age are incurred in the year or so

and Health Care

with antihypertensive therapies costing just a

few cents per day per patient. Early detection

before death. As more people survive to increasingly

older ages, the high cost of prolonging life is shifted

and effective management of risk factors such as

to ever-older ages. In many societies, the nature

hypertension—and other important conditions

and extent of medical treatment at very old ages

such as diabetes, which can greatly complicate the

is a contentious issue. However, data from the

treatment of cardiovascular disease—in developing United States suggest that health care spending at countries can be inexpensive and effective ways of

the end of life is not increasing any more rapidly

controlling future health care costs. An important

than health care spending in general. At the same time, governments and international organizations are stressing the need for cost-of-illness studies on status with health expenditures and other relevant age-related diseases, in part to anticipate the likely burden of increasingly prevalent and expensive chronic conditions—Alzheimer’s disease in health interventions.

particular. Also needed are studies of comparative performance or comparative effectiveness in low-income countries of various treatments and interventions.

The Costs of Cardiovascular Disease and Cancer

In high-income countries, heart disease, stroke, and cancer have long been the leading contributors to the overall disease burden. The burden from these and other chronic and noncommunicable diseases is increasing in middle- and low-income countries as well (Figure 6). A recent analysis of global cancer trends by the Economist Intelligence Unit (EIU) estimated that

there were 13 million new cancer cases in 2009. The

To gauge the economic impact of shifting disease

cost associated with these new cases was at least

profiles in developing countries, the World Health

US\$286 billion. These costs could escalate because

Organization (WHO) estimated the loss of

of the silent epidemic of cancer in less well-off,

economic output associated with chronic disease in resource-scarce regions as people live longer and 23 low- and middle-income nations, which together adopt Western diets and lifestyles. The EIU

account for about 80 percent of the total chronic

analysis estimated that less developed countries

disease mortality in the developing world.

accounted for 61 percent of the new cases in 2009.

The WHO analysis focused on a subset of leading

Largely because of global aging, the incidence

chronic diseases: heart disease, stroke, and

of cancer is expected to accelerate in coming

diabetes. In 2006, this subset of diseases incurred

decades. The annual number of new cancer cases

estimated economic losses ranging from US\$20

is projected to rise to 17 million by 2020, and reach

million to US\$30 million in Vietnam and Ethiopia,

27 million by 2030. A growing proportion of the

and up to nearly US\$1 billion in China and India.

global total will be found in the less developed

Short-term projections (to 2015) indicate that

world, and by 2020, almost half of the world's new losses will nearly double in most of the countries cases will occur in Asia.

if no preventive actions are taken. The potential

Assessing the Costs of Aging and Health Care

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Health and Work

In the developed world, older people often

Other than the economic incentives of leave the formal workforce in their later years, pensions, what would make people stay in the although they may continue to contribute to workforce longer? To start, misconceptions society in many ways, including participating about older workers abound and perceptions in the informal workforce, volunteering, or may need to change. In addition to having providing crucial help for their families. There acquired more knowledge and job skills is no physiologic reason that many older people through experience than younger workers, cannot participate in the formal workforce, but most older adults show intact learning and the expectation that people will cease working thinking, although there are some declines in when they reach a certain age has gained cognitive function, most notably in the speed credence over the past century. Rising incomes, of information processing. Moreover, there is along with public and private pension systems, some evidence that staying in the labor force have allowed people to retire based on their age after age 55 is associated with slower loss of rather than any health-related problem. cognitive function, perhaps because of the stimulation of the workplace and related social It is ironic that the age at retirement from the engagement. workforce has been dropping at the same time

that life expectancy has been increasing. Older
Even physical abilities may not deteriorate
people today spend many years in retirement.
as quickly as commonly assumed. Although
In OECD countries, in 2007, the average man
relatively little is known about the relationship
left the labor force before age 64 and could
between age and productivity (which takes
expect 18 years of retirement (**Figure 13**). The
wages into account), one study of German
average woman stopped working at age 63
assembly line workers in an automotive plant
and looked forward to more than 22 years of
found that the average age-productivity profile
retirement if they adopt similar concepts of
of workers increased until age 65.

retirement.

Whether older people spend more years in
Many high-income countries now want people
the labor market also will depend on the
to work for more years to slow escalating
types of jobs available to them. Many jobs in
costs of pensions and health care for retirees,
industrialized countries do not require physical
especially given smaller cohorts entering the

exertion that might be difficult for an older labor force. Most middle- and low-income worker, but they may necessitate acquiring countries will face similar challenges.

new skills and retraining to adjust to changing work environments. Evidence is needed on the capacity of older workers, especially those with low education levels, to profit from retraining.

Older people with limited mobility or other health problems may require more flexible schedules or adapted work environments.

Considerations may need to be given to the value of building new approaches at work or institutions that will increase the ease with which older people can contribute outside of

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their families.

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Global Health and Aging

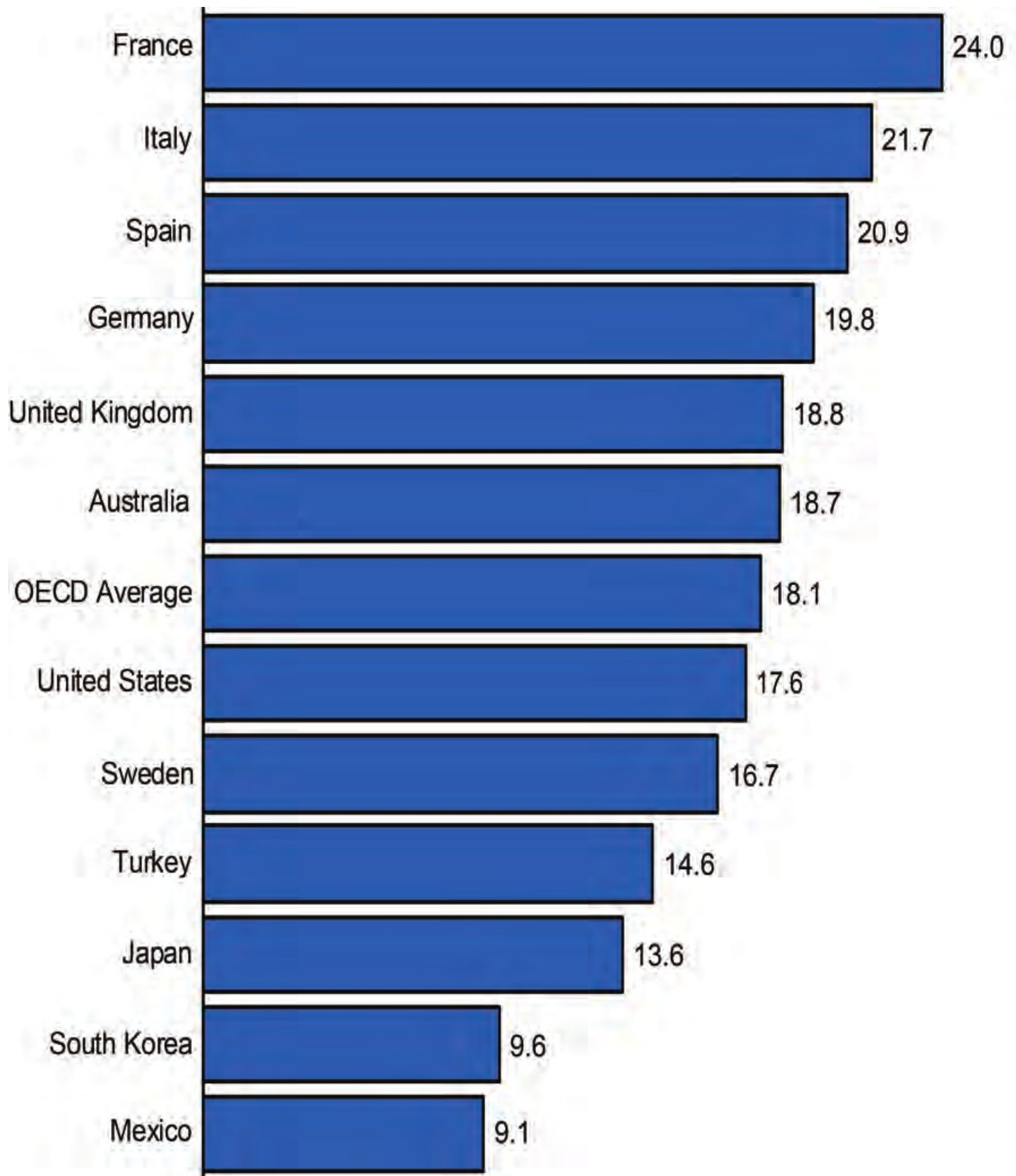


Figure 13.

Expected Years of Retirement for Men in Selected OECD Countries: 2007

Note: OECD average is for 30 OECD member nations.

Source: Organization for Economic Cooperation and Development. *OECD Society at a Glance 2009*. Available at: <http://public.tableausoftware.com/views/Retirement/LFEA>.

Health and Work

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Changing Role of the Family

Familial support and caregiving among older person or couple resides with at least one generations typically run in both directions. grandchild but no middle-generation family Older people often provide care for a variety members—has become increasingly common of others (spouses, older parents, children, because of high mortality from HIV/AIDS. grandchildren, and nonfamily members), while In Zambia, for example, 30 percent of older

families, and especially adult children, are the women head such households. In developed primary source of support and care for their countries, couples and single mothers often older relatives. Most older people today have delay childbearing until their 30s and 40s, children, and many have grandchildren and households increasingly have both adults living siblings. However, in countries with very working, and more children are being raised in low birth rates, future generations will have few single-parent households.

if any siblings. The global trend toward having fewer children assures that there will be less The number, and often the percentage, of older potential care and support for older people from people living alone is rising in most countries. their families in the future.

In some European countries, more than 40 percent of women aged 65 or older live alone.

As life expectancy increases in most nations, so Even in societies with strong traditions of older do the odds that several generations are alive at parents living with children, such as in Japan,

the same time. In more developed countries, this traditional living arrangements are becoming is manifested as a “beanpole family,” a vertical

less common (**Figure 14**).

extension of family structure characterized by more but smaller generations. As mortality rates continue to improve, more people in their 50s and 60s are likely to have surviving parents, aunts, and uncles. Consequently, more children in cultural settings shows that older people prefer to be in their own homes and communities, especially their great-grandparents, even if that means living alone. This preference is reinforced by greater longevity, expanded social benefits, increased home ownership, elder-friendly housing, and an emphasis in many nations on community care. However, while the number of surviving generations in a family may have increased, patterns on health is unknown. Older people

today these generations are more likely to live who live alone are less likely to benefit from separately. In many countries, the shape of sharing goods that might be available in a larger the family unit reflects changing social norms; family, and the risk of falling into poverty in economic security; rising rates of migration, older age may increase as family size falls. On divorce, and remarriage; and blended and the other hand, older people are also a resource stepfamily relations. In addition, more adults for younger generations, and their absence may are choosing not to marry or have children at create an additional burden for younger family all. In parts of sub-Saharan Africa, the skipped-members.

generation family household—in which an

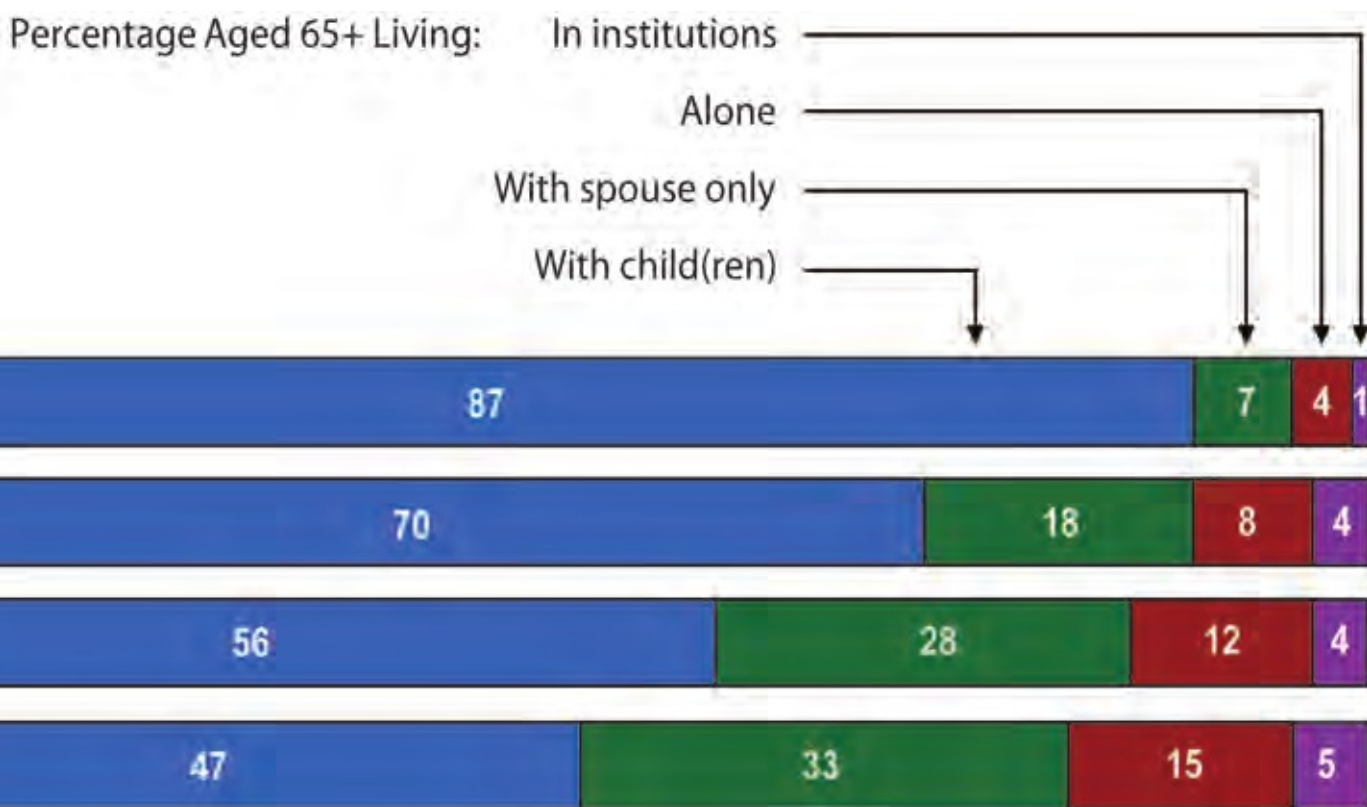


Figure 14.

Living Arrangements of People Aged 65 and Over in Japan: 1960 to 2005

Note: Percentages living with child(ren) include small numbers of people living in unspecified arrangements.

Sources: Japan National Institute of Population and Social Security Research. *Population Statistics of Japan 2008*.

Available at: <http://www.ipss.go.jp/p-info/e/psj2008/PSJ2008-07.xls>.

Long-Term Care

Many of the oldest-old lose their ability to live

The future need for long-term care services

independently because of limited mobility,

(both formal and informal) will largely be

frailty, or other declines in physical or cognitive

determined by changes in the absolute number

functioning. Many require some form of long-

of people in the oldest age groups coupled with

term care, which can include home nursing, trends in disability rates. Given the increases in community care and assisted living, residential life expectancy and the sheer numeric growth care, and long-stay hospitals. The significant of older populations, demographic momentum costs associated with providing this support will likely raise the demand for care. This may need to be borne by families and society. growth could, however, be alleviated by declines In less developed countries that do not have in disability among older people. Further, the an established and affordable long-term care narrowing gap between female and male life infrastructure, this cost may take the form expectancy reduces widowhood and could mean of other family members withdrawing from a higher potential supply of informal care by employment or school to care for older relatives. older spouses. The great opportunity for public And, as more developing country residents seek health programs in the first half of the 21st jobs in cities or other areas, their older relatives century is to keep older people healthy longer, back home will have less access to informal delaying or avoiding disability and dependence. family care.

A Note About the Data Behind This Report

The findings highlighted throughout this in Europe (SHARE) – involving 15 countries booklet underscore the value of cross-national as of 2010 (Austria, Belgium, Czech Republic, data for research and policy. International Denmark, France, Germany, Greece, Ireland, and multi-country data help governments and Israel, Italy, the Netherlands, Poland, Spain, policymakers better understand the broader Sweden, Switzerland) – and the World Health Organization (WHO) Study on global AGEing implications and consequences of aging, learn from the experiences in other countries, and adult health (SAGE) in six countries including those with different health care (China, Ghana, India, Mexico, Russian systems and at a different point along the aging Federation, and South Africa) greatly expand and development continuum, and facilitate the the number of countries by which informative crafting of appropriate policies, especially in the comparisons can be made of the impact of

developing world.

policies and interventions on trends in aging,

health, and retirement. A key aspect of this

Valuable new information is coming from

new international community of researchers is

nationally representative surveys, often panel

that data are shared very soon after collected

studies that follow the same group of people

with all researchers in all countries.

as they age. The U.S. Health and Retirement

Study (HRS), begun in 1990, has painted a

Many other cross-national aging-related

detailed picture of older adults' health, work,

datasets and initiatives offer comparable

retirement, income and wealth, and family

demographic indicators that reveal historical

characteristics and intergenerational transfers.

trends and offer projections to help

In recent years, other nations have used the

international organizations and governments,

HRS – a biennial survey of more than 20,000

planners, and businesses make informed

Americans over age 50 – as a model for planning

decisions. These sources include, for example,

similar large-scale, longitudinal studies

the International Database on Aging, involving
of their own populations. Several parallel
227 countries; the International Network for
studies have been established throughout the
the Demographic Evaluation of Populations
world, including in China, England, India,
and Their Health (INDEPTH), involving 19
Ireland, Japan, Korea, and Mexico, with more
developing nations; the Human Mortality
planned in other countries such as Thailand
Database, involving 28 countries; and the
and Brazil. In addition, coordinated multi-
2006 Global Burden of Disease and Risk
country panel studies are effectively building
Factors initiative, which is strengthening
an infrastructure of comprehensive and
the methodological and empirical basis for
comparable data on households and individuals
undertaking comparative assessments of
to understand individual and societal aging.
health problems and their determinants and
The Survey of Health, Ageing and Retirement
consequences in aging population worldwide.



Suggested Resources

Readings

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Suggested Resources

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Web Resources

English Longitudinal Study of Ageing

<http://www.ifs.org.uk/elsa/>

European Statistical System (EUROSTAT)

<http://epp.eurostat.ec.europa.eu>

Health and Retirement Study

<http://hrsonline.isr.umich.edu/>

Human Mortality Database

<http://www.mortality.org/>

International Network on Health Expectancy and the Disability Process <http://reves.site.ined.fr/en>

Organization for Economic Cooperation and Development Health Data 2010: Statistics and Indicators
<http://www.oecd.org/health/healthdata> (may require a fee)

Survey of Health, Ageing and Retirement in Europe

<http://www.share-project.org/>

United Nations. *World Population Prospects: The 2010 Revision.*

<http://esa.un.org/unpd/wpp>

U.S. Census Bureau International Data Base

<http://www.census.gov/ipc/www/idb/>

U.S. National Institute on Aging

<http://www.nia.nih.gov/>

World Alzheimer's Report

<http://www.alz.co.uk/research/worldreport/>

World Health Organization. *Projections of Mortality and Burden of Disease, 2004-2030.*

http://www.who.int/healthinfo/global_burden_disease/projections/en/index.html.

World Health Organization Study on global AGEing and adult health (SAGE)

<http://www.who.int/healthinfo/systems/sage/en/>

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Global Health and Aging



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