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the GRAYING of the AMERICAN ECONOMY

2015 Annual Report

Exploring the impact of America's changing demographic profile on the nation's potential for economic growth.

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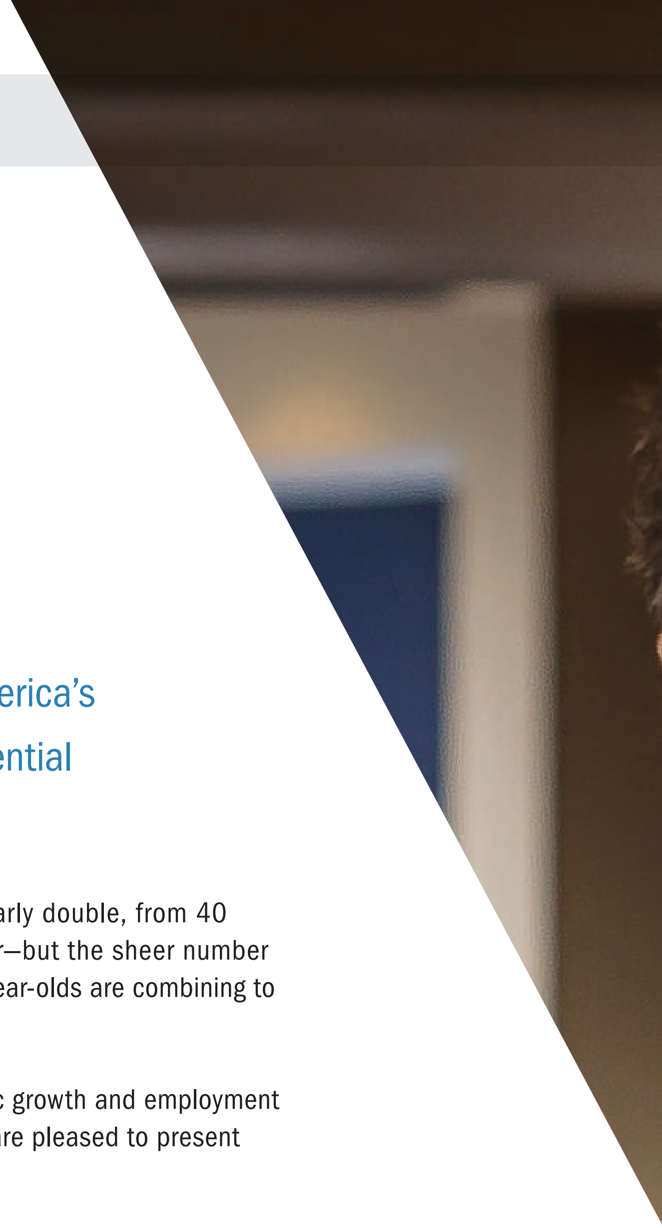


President’s Message

In our 2015 annual report, “The Graying of the American Economy,” we explore the impact of America’s changing demographic profile on the nation’s potential for economic growth.

Between 2010 and 2030, the number of Americans over 65 will nearly double, from 40 million to 74 million. As Americans live longer, they are retiring later—but the sheer number of older Americans and the slow growth in the number of 20- to 64-year-olds are combining to slow labor force growth.

The graying economy has broad implications for the nation’s economic growth and employment trends, and perhaps even for monetary policy. We at the Atlanta Fed are pleased to present some evidence-based insights to help navigate this challenging topic.

This year, we’re releasing many components of our Annual Report as we always have, including the first two of four essays. But for the first time ever, we’re serializing the release of the remaining two essays.

In part one of this report, we begin by describing our nation’s changing demographic profile.

In part two, we examine the fiscal challenges of a graying population, including the implications for benefits, social programs, and public pensions.

In part three, we’ll consider the impact demographic change will have on the labor force.

And in part four, we’ll examine the impact of these trends on consumption, GDP growth, and monetary policy.

As we release additional material, we hope to draw increasing attention to the implications and challenges of this demographic shift … and “The Graying of the American Economy.”

Dennis Lockhart
President and Chief Executive Officer
of the Federal Reserve Bank of Atlanta

Soaring Numbers of Elderly Reshaping U.S. Economy

In the next few decades, the nation will experience dramatic demographic change as the ranks of the old grow faster than the rest of the population.

These changes will bring fiscal challenges and will affect the nation's labor supply and demand for products and services.

The graying of the population is expected to be a significant driver of U.S. government spending over the next quarter-century, the Congressional Budget Office has projected, because older people tend to depend heavily on entitlements such as Social Security; Medicare, the national insurance program for those 65 and older; and needs-based programs such as Medicaid and Supplemental Social Security Income.

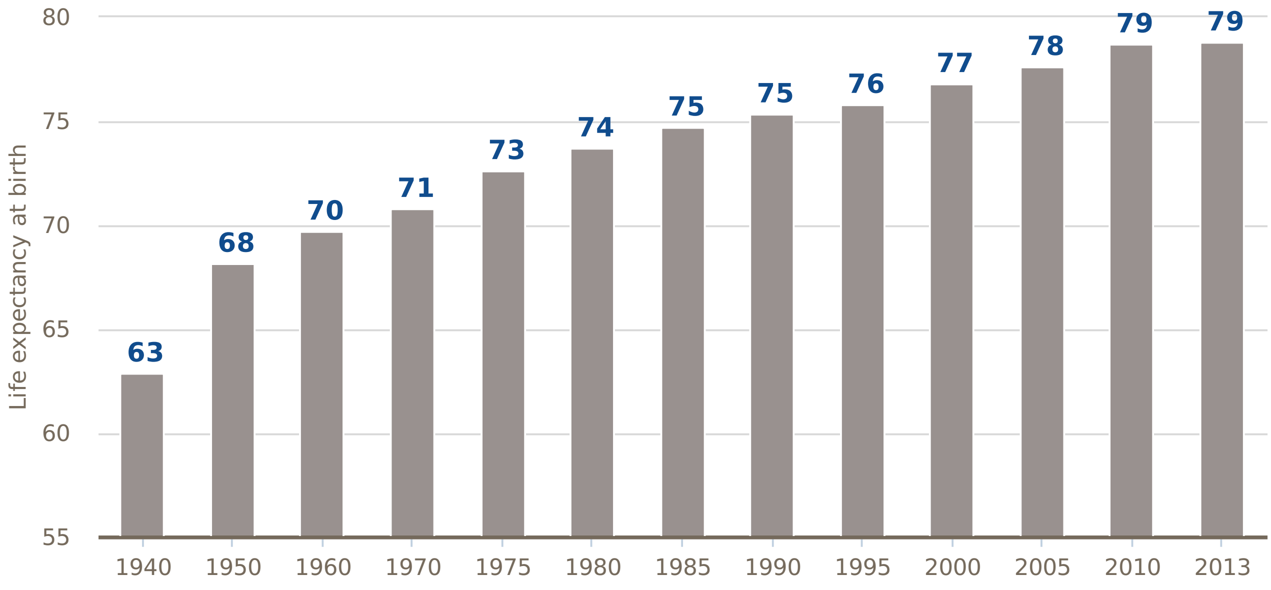
Living to 85 and beyond

People are living longer, thanks to medical advances and a public focus on healthy lifestyles. The average baby born in the United States in 2013 can expect to live 79 years, which is 25 years longer than an ancestor born in 1920 and 16 years longer than someone born in 1940, according to the Centers for Disease Control–National Center for Health Statistics (NCHS; see chart 1).

Another demographic trend: women are having fewer babies than decades ago. In recent years, the U.S. fertility rate reached record lows, falling about 1 percent in 2013 to 62.5 births per 1,000 women aged 15 to 44, NCHS data show. Teen births have also dropped to historic lows. The U.S. Census Bureau projects that fertility rates will continue to drop and the pace of immigration will decline modestly. (See chart 2.)

These trends will slow the nation's overall population growth just as the youngest baby boomers approach retirement. The

Chart 1
Americans are living longer



Sources: CDC–National Center for Health Statistics, University of California–Berkeley

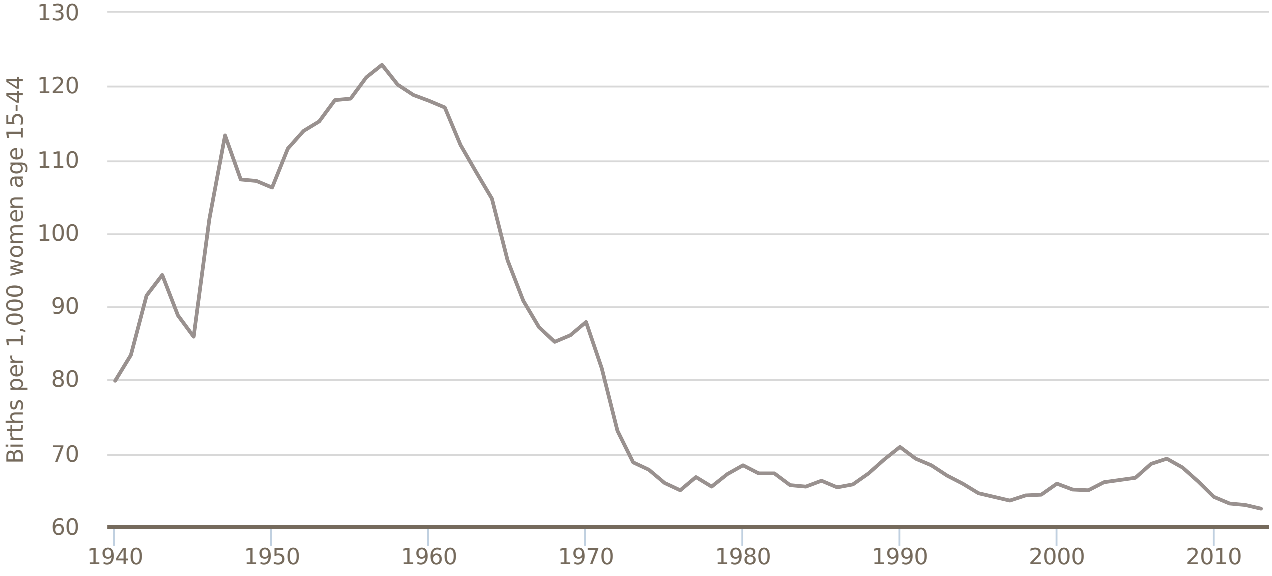
U.S. civilian noninstitutional population—that is, those people 16 years old and older who are neither in an institution nor on active duty in the armed services—is projected to rise 0.8 percent between 2014 and 2024, down from 1 percent growth in the previous 10-year period, according to the U.S. Census Bureau.

These two factors in conjunction with the aging of the baby boomers imply that the share of Americans 65 and older will rise from about 15 percent of the population today, or about 48 million people, to 21 percent, or 74 million, by 2030, the year the youngest baby boomers turn 65, according to U.S. Census Bureau projections. By 2050, that number is expected to nearly double to 88 million people, or 22 percent of the total U.S. populace. (See chart 3.)

The oldest of the old, those 85 and over, will account for a significant portion of the overall growth in the mature public. By the year 2050, adults at least 85 years old will account for 5 percent of the U.S. population, more than double their current 2 percent share, as their numbers triple to 18.9 million from 6.3 million now.

As the number of older people climbs, the proportion of working-age residents in the United States will shrink. Those 18 to 64 years old currently constitute 62 percent of the total population, but their share will drop to 58 percent by 2030 and 56.7 percent by 2060, Census figures show.

Chart 2
Repercussions of baby boom not nearly over



Source: CDC–National Center for Health Statistics, 2015

Shrinking labor market clouds future

The consequence of declining births and longer life expectancy is that in the future, proportionally fewer people of prime employment age will be around to pay the taxes that help fund Medicare, Social Security, and other government programs that support older people and children. (That goes also for critical national needs such as defense, security, border control, and education.)

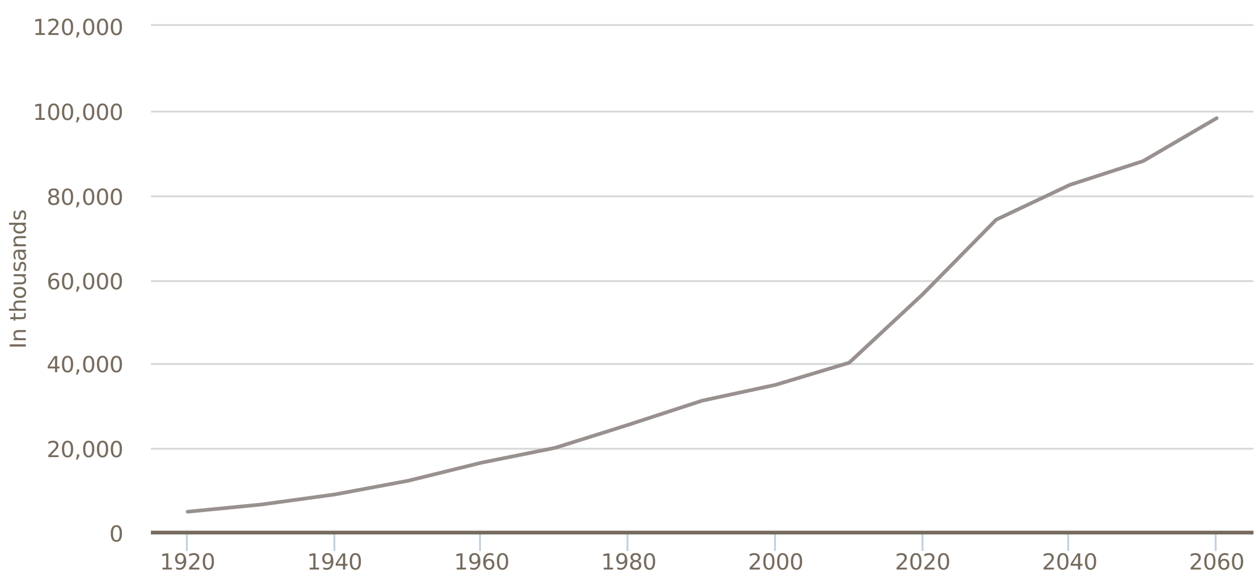
By 2030, there will be 2.86 people of working age (18 to 64 years old) for each U.S. citizen over 65. That compares with 5 people per older person in 2000 and 9.09 people in 1940. The decreased ranks of the working-age population and the higher costs of funding entitlements for retirees threaten to depress economic activity and slow economic growth.

These population changes are set to occur against the backdrop of an economy that has not fully recovered from the Great Recession, which left many U.S. households worse off financially. As some baby boomers look to their golden years, several million Americans have seen the value of their homes, their biggest source of wealth, decline. (Some home values have recovered and increased.) Skittishness about world markets, low oil prices, and the specter of slower growth in China have raised market jitters worldwide and depressed the value of stock equities that help many build assets to sustain them through retirement.

The emergence of an aging population is likely to have profound economic effects that may not be readily apparent. People of working age largely contribute more support and resources to society than they receive, while the very young and old generally consume more than they produce. Much of the consumption of older people is funded by the government through programs such as Social Security. As declining births reduce the supply of the nation's labor market producers, government's ability to support older people will become strained. The imbalance of consumers and producers is already spurring debate about difficult policy choices among legislators.

A 2015 report from the U.S. Bureau of Labor Statistics forecasted average annual growth in gross domestic product of 2.2 percent over the next decade, flat with the levels from 2010 through 2014, but slowing from 3 percent annually between 1960 and 2007. The agency cited slowing growth in the labor supply, which is mainly the result of aging.

Chart 3
Americans 65 and older



Source: U.S. Census Bureau, Population Division, 2015

Health a critical factor

Neil Mehta, a demographer and assistant professor of global health at Emory University in Atlanta, says the critical issue is not how many more older people there will be in the coming decades. "A lot of the ramifications that aging will have for society are going to be dependent on health," he said.

He pointed out that while chronic disease is always a risk with aging, the health of older people has generally improved in the past 20 to 30 years. And while people reaching the age of traditional retirement may not want to work 9 to 5, they may desire and need to be active in the labor market, he added.

With this in mind, Mehta said policies that allow alternative workplace arrangements, such as working at home or opportunities to work part-time, are the kinds of solutions that should be discussed to help mitigate the perceived adverse macroeconomic effects of an aging population.

"There may be creative ways to tap into the potential for older people to contribute to the economy," Mehta said. (See the sidebar "Challenges of Aging Are Not Hopeless.")

The next section, "Fiscal Math Is Daunting," offers more details about the hard fiscal reality the United States is facing because of its aging population, especially when it comes to Social Security and Medicare.

Section 3, "Profound Changes in Store for Labor Market," to be released in April, looks at how baby boomers are affecting the U.S. labor force participation rate. Finally, section 4, "Is an Older Economy a Weaker Economy?" explores the spending and saving habits of older people, including expenditures on health care and housing. Section 4 will be released in late May.

The critical issue is not how many more older people there will be in the coming decades.

Challenges of Aging Are Not Hopeless

While the aging of the population will produce economic and fiscal challenges, the outlook is not uniformly grim. There are reasons for optimism on several fronts, from the labor market to health care costs to the general dynamism of the U.S. economy.

For starters, the nature of retirement as we know it appears to be changing in ways that could lighten the burden on programs like Medicare and Social Security and benefit the macroeconomy. After steadily falling for decades, the average age of retirement in the United States began climbing in the late 1990s.

Nearly three times as many people age 65 and older are employed now as were employed in the late 1980s, according to the U.S. Bureau of Labor Statistics (BLS; see chart 4). The labor force participation rate among older Americans is likely to keep rising, even as the rate for the overall population declines (see chart 5). For example, the participation rate for those 75 and older will reach 10.6 percent in 2024, roughly double the rate in 1994, according to BLS projections.

Why are people retiring later? The answers are not certain, according to Atlanta Fed economists Toni Braun and Karen Kopecky.

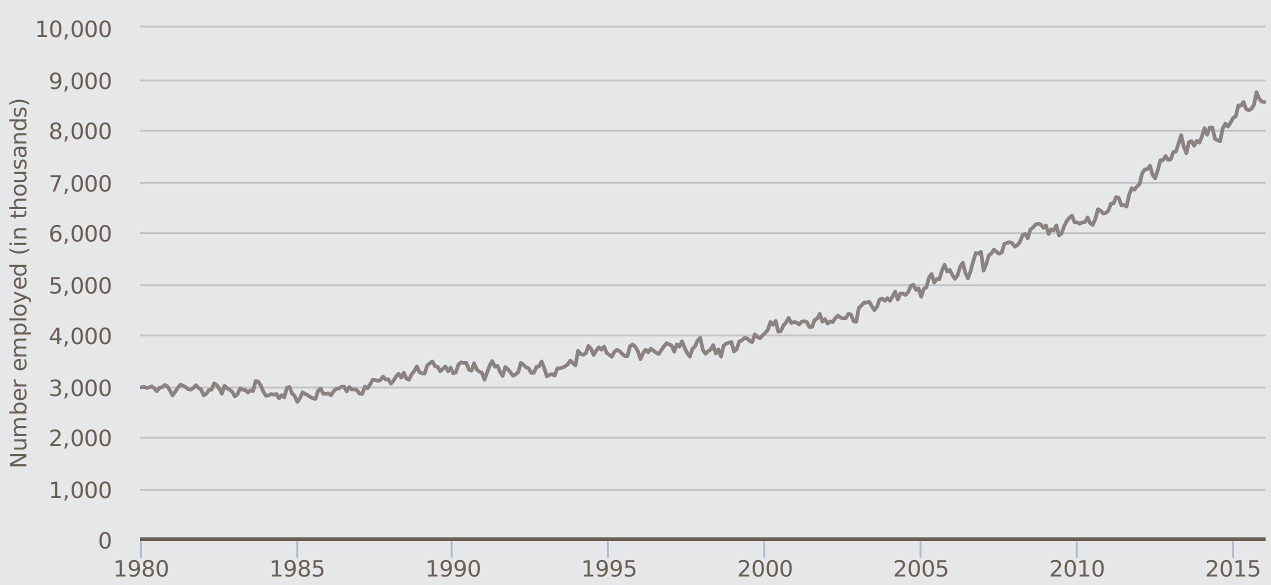
"It's not necessarily clear that these higher labor force participation rates later in life reflect that people are feeling poor and need to work longer," Braun says. "It could be that technology is changing in ways such that it's easier for them to transition into retirement, as opposed to abruptly stopping work entirely. That may not be a bad thing."

Smooth labor supply, not abrupt changes, is optimal

Basic economic models say a gradual transition into retirement is optimal for the macroeconomy, and probably for most individuals, too, Kopecky explains.

Even though older people are likely to continue working later in life, overall labor force growth will slow. The BLS projects that the labor force participation rate will continue to decline through 2024. The decline, coupled with comparatively slow

Chart 4
Labor force statistics from the Current Population Survey



Source: U.S. Bureau of Labor Statistics

growth in the working-age population, will produce labor force growth of just 0.5 percent a year on average through 2040, according to the Congressional Budget Office. That's less than a third of the average annual rate of labor force growth, 1.7 percent, between 1970 and 2007.

Slower labor force growth could pose a challenge to economic growth, says Julie Hotchkiss, an Atlanta Fed research economist and senior policy adviser. Then again, a slower-growing labor force is not necessarily a recipe for lower productivity and stunted economic growth.

It is true that as baby boomers enter old age, they become net consumers and not net producers. On the other hand, some older people amass lots of wealth by saving for many years. So the economy is transitioning from one with an age structure favorable to production—with a bigger share of working-age people—to one more favorable to deepening capital for investment, points out Gretchen Donehower, a demographer at the University of California-Berkeley's Center on the Economics and Demography of Aging.

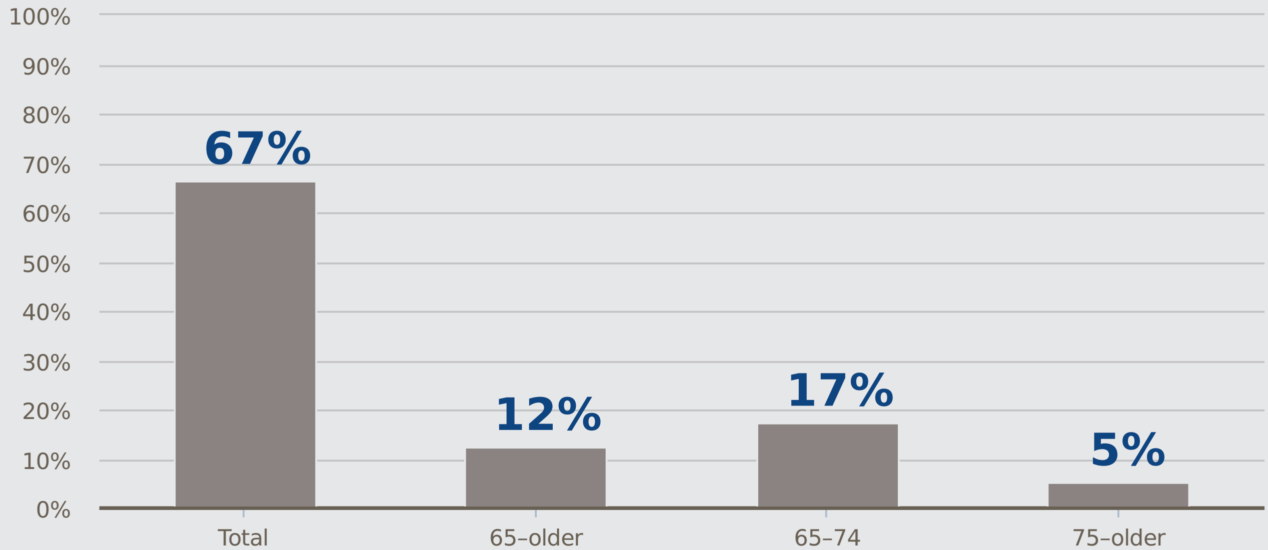
"If the amount of available labor goes down, you can perhaps compensate by giving each worker more capital to make them more productive," Donehower says. "This would counteract the population aging panic."

The more we save for retirement, the better for us and the macroeconomy

Of course, a surge of investment in human and physical capital won't happen by itself. Various policies and incentives would be required to channel wealth toward capital investment. And it's not certain this will happen. Braun does not subscribe to the theory that wealth accumulated by elderly people will lead to heavy capital investment and thus more productive, if fewer, workers.

He points to research suggesting that while elderly people save throughout their lives, they tend to spend their wealth in retirement. Moreover, shocks during old age—a spouse's death, a major health problem—tend to quickly wipe out wealth, according to research by

Chart 5
Labor force participation rates by age group: 1994



* projected
Source: U.S. Bureau of Labor Statistics, December 2015

economist James Poterba of the Massachusetts Institute of Technology.

Clearly, the more that all Americans save, the less difficult will be the demographic shift.

Pegging how much the elderly have saved is no simple matter, though. Many are well off. A 2012 study by Poterba, Steven Venti of Dartmouth College, and David Wise of Harvard University found that between 1993 and 2008, the median wealth of married senior-citizen couples, about a year before they died, exceeded $600,000. Yet they also found that 46 percent of the elderly in the United States had less than $10,000 in financial assets when they died.

The economist Ronald Lee of the UC-Berkeley Center on the Economics and Demography of Aging took wealth into account in constructing an alternative to the standard old-age support ratio. In a paper presented at the Federal Reserve Bank of Kansas City's 2014 Jackson Hole Economic Policy Symposium, Lee noted that the support ratio ignores capital and reflects only labor income in relation to consumption.

He concluded that "the impact of population aging is cut by three-fourths using the general support ratio," his new formulation. Using his general support ratio, he calculated that the growth of output per hypothetical consumer declines by 0.06 percent a year from 2010 to 2050, instead of 0.26 percent annually under the ordinary old-age dependency, or support, ratio. The standard support ratio refers to the ratio of elderly people to working-age people.

Another hopeful sign in the battle against the demographic wave: the growth in health care spending has slowed in recent years. Part of the story is that older people today generally are healthier than older people of earlier generations, thus requiring less expensive care, Donehower says. The percentage of people in nursing homes is declining as older people are generally healthier and as programs encourage people to avoid the very costly care nursing homes provide.

Population aging will have many and diverse economic impacts. But that alone is no cause to despair.

"The bottom line is that the nation has many good options for responding to population aging," notes *Aging and the Macroeconomy: Long-Term Implications of an Older Population*, a 2012 report compiled by the National Research Council for the U.S. Congress. "On the whole, America is strong and healthy enough to pay for increased years of consumption through increased years of work, if we so choose. Alternatively, we will be healthy enough to enjoy additional active years of retirement leisure if that is our decision, individually or collectively."

There are reasons for optimism on several fronts, from the labor market to health care costs to the general dynamism of the U.S. economy.

Fiscal Math Is Daunting

It's simple arithmetic, really. Thanks to increasing life expectancy and falling fertility rates, the share of older Americans is on the rise—and the number of working-age people is declining.

As a result, the United States and many other countries are experiencing large increases in the old-age dependency ratio.

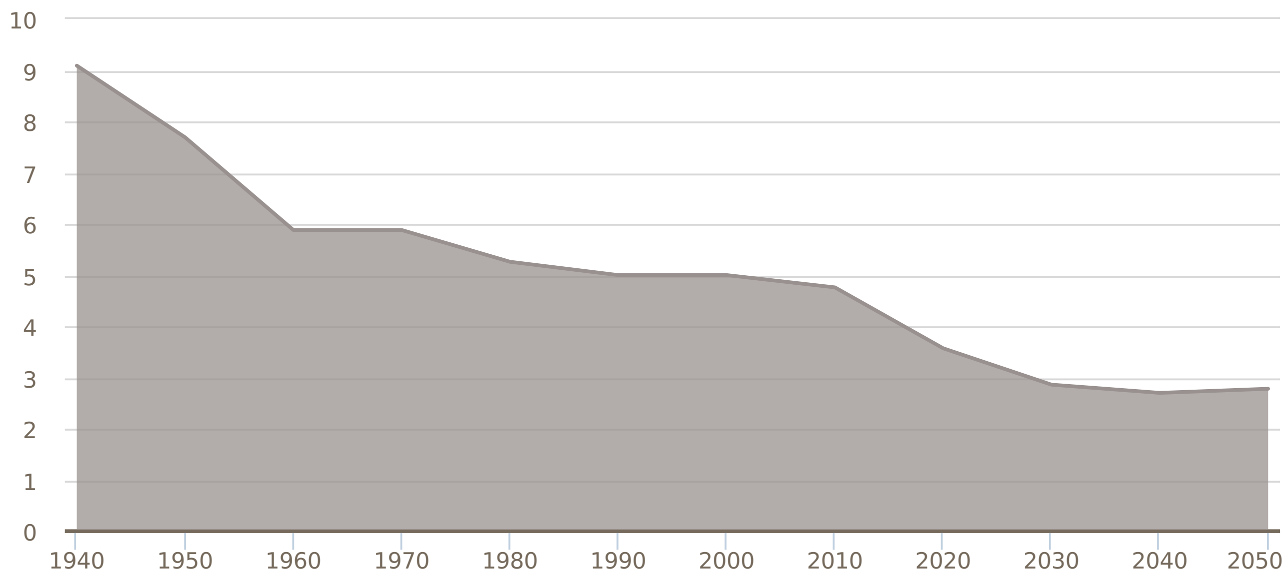
Americans 65 and older are disproportionately supported by social insurance programs like Social Security (Old Age, Survivors, and Disability Insurance, or OASDI), Medicare, Medicaid, and Supplementary Security Income (SSI). In the coming years, this oldest segment of the population is going to grow dramatically, as the working-age segment of the country, the people who mostly fund these programs through payroll and income taxes, will dwindle by comparison.

That's problematic, as it upsets the "support ratio," or, put another way, the old-age dependency ratio. The balance of the working-age population and the elderly—the old-age dependency ratio—is a key gauge of a country's ability to sustain old-age social insurance programs, points out Karen Kopecky, an Atlanta Fed research economist and associate policy adviser, who has studied the fiscal and economic effects of aging in the United States.

In 2010, there were 4.8 workers for each retiree. However, as the baby boomers—those born between about 1946 and 1964—age, this number will decline to just 2.7 by 2040, according to U.S. Census Bureau projections. (See chart 1.)

The math is daunting. Eventually either social insurance benefits must decline or taxes must increase, or some combination of both, according to Toni Braun, Atlanta Fed research economist and senior adviser.

Chart 1
Number of working-age people for each person 65 and over



Source: U.S. Census Bureau

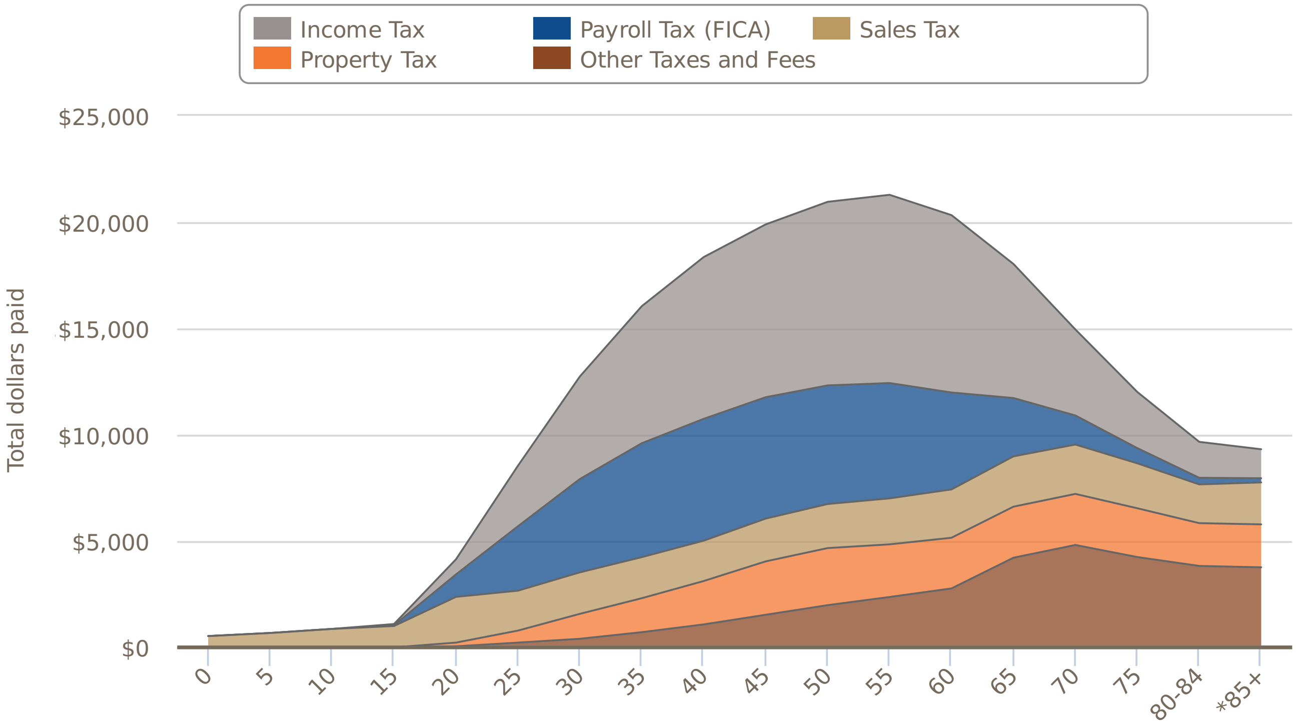
"This increase in fiscal burdens is one of the key macroeconomic effects of an aging population," Massachusetts Institute of Technology economist James Poterba writes in a 2014 research paper.

Aging to be the biggest driver of federal spending

Government transfers, or benefits, to retirees are large and increase with age. The nonpartisan Congressional Budget Office (CBO) reports that in 2006, the most recent year data are available, the 15 percent of U.S. households headed by someone 65 or older received more than 60 percent of net federal transfers, or government payments minus taxes paid. (See the infographic and charts 2 and 3.)

What this will mean in 25 years is that the aging of the population will be the single largest factor affecting U.S. government spending on major health care programs and

Chart 2
Per capita taxes and social contributions paid by age, 2011



Source: Gretchen Donehower, National Transfer Accounts Project (www.ntaccounts.org)

WHAT WE PAY & RECEIVE THROUGH THE LIFE CYCLE

	Per Capita Taxes & Social Contributions	Per Capita Public Transfers Received		
Age	Total taxes & fees	Medicare	Social Security	Medicaid
25	$8,539.85	$272.02	$112.06	$1,189.63
35	$16,047.90	$328.84	$280.15	$991.41
45	$19,893.43	$467.93	$502.78	$1,231.28
55	$21,285.65	$804.30	$1,176.26	$1,284.13
65	$18,034.29	$3,865.35	$8,926.21	$884.58
75	$12,011.61	$11,059.77	$14,034.50	$1,521.79
85+	$9,318.05	$17,223.42	$14,420.24	$7,115.31

Source: Gretchen Donehower, National Transfer Accounts Project (www.ntaccounts.org). Data from 2011.

Social Security recipients

2015: 59 million
2025: 78 million
2040: Nearly 100 million

Source: Congressional Budget Office

Social Security, according to the CBO. Expenditures for those two areas together already exceed all other noninterest spending, and that gap is likely to grow. In particular, expenditures on social insurance for retirees are predicted to more than double by 2040, according to CBO projections.

What is likely to happen varies by program.

Social Security and Medicare

The two biggest public programs that support the elderly are Social Security and Medicare. In 2014, Social Security outlays totaled about 5 percent of gross domestic product (GDP), and Medicare spending equaled about 3.5 percent of GDP. The Social Security Administration projects that Social Security expenditures will rise to 6 percent of GDP in 2034 and that Medicare costs will increase to 5.4 percent of GDP.

Increases in the old-age dependency ratio—more retirees per worker—significantly affect the sustainability of these programs because benefits to current retirees are largely financed by payroll taxes paid by current workers. If benefits are maintained at their current levels, the projected increases in the old-age dependency ratio will put a big dent in the paychecks of our children and grandchildren.

This is not a new issue. Congress has known of this problem for decades and created trust funds to ease the tax burden on future workers. However, Social Security Administration projections indicate that the funds are too small. Those projections show that the Medicare Trust Fund will be depleted in 2030 and the Social Security Trust Fund will be exhausted in 2034. Once the trust funds are gone, under current law, payments to retirees would have to fall suddenly and sharply. (See chart 4.)

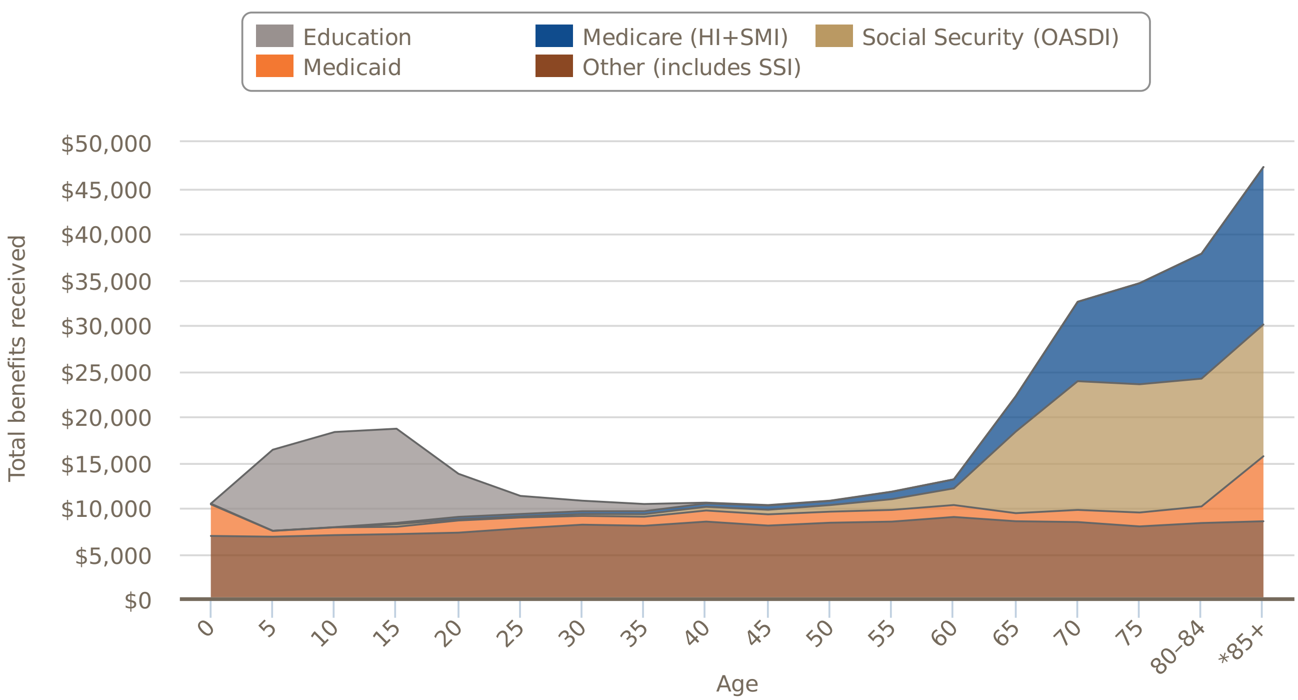
Medicare in some ways presents a more urgent and complex challenge than does Social Security, Kopecky notes. Medicare outlays are projected to grow more rapidly than Social Security spending, mainly because health care costs are rising faster than inflation, although the rate of increase has slowed in recent years. But because the size of Medicare outlays is so closely tied to health care costs, the growth rate of Medicare spending is more uncertain than that of Social Security.

Medicaid, SSI, and other means-tested benefits for retirees

In means-tested social insurance programs, benefit eligibility depends on a person's financial situation—their current income and wealth, for example. Put simply, the more you already have, the less you get. Medicaid and SSI, the two largest means-tested social insurance programs for retirees, are small compared to Social Security and Medicare. Together, outlays from Medicaid and SSI accounted for about 1 percent of GDP in 2014. These programs are smaller because instead of paying benefits to all retirees, they target those with the greatest financial and medical need.

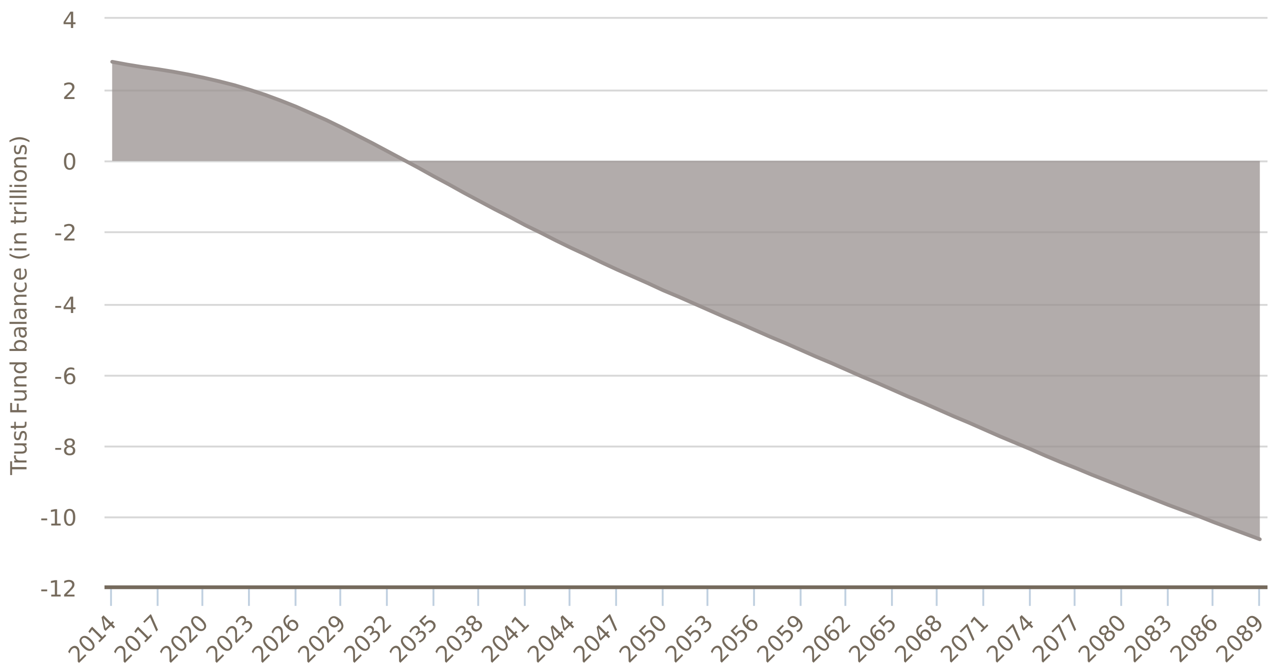
Although Medicaid expenditures on retirees are less than 1 percent of GDP, expenditures per enrollee age 65 and older are large and growing. They were about $15,000 in 2014—versus about $4,000 for working-age adults—and are projected to

Chart 3
Per capita public benefits received by age, 2011



*Slope rises dramatically because numbers represent all people 85 and older and not individuals of a single age.
Source: Gretchen Donehower, National Transfer Accounts Project (www.ntaaccounts.org)

Chart 4
Social Security Trust Fund balance



Source: 2015 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Trust Funds

exceed $23,000 by 2023, according to the Centers for Medicare and Medicaid Services (CMS).

Large costs for older enrollees are fueled by expenditures of the "oldest old" retirees—those age 85 and older—many of whom rely on Medicaid to finance long-term care costs including nursing home stays. As Kopecky notes, among public health care programs, Medicaid is the largest funder of long-term care for the elderly. In 2013, it financed 41 percent of all long-term care expenses, according to CMS, while Medicare covered just 18 percent.

SSI, the Supplementary Security Income program, is run and funded by the federal government. Medicaid is jointly operated and funded by the federal government and the states. These programs rely on revenue from income, payroll, sales, and property taxes, the bulk of which is collected from working-age individuals. (See the infographic.) As the old-age dependency ratio increases, total tax revenues from working-age individuals will decline relative to outlays to retirees from these programs.

How to fix the funding shortfalls today

To get a handle on how daunting the fiscal math is, consider what measures would be required to fix the budget imbalances immediately. To maintain Social Security benefits at their current levels over the next 75 years, the payroll tax would have to be immediately and permanently increased from its current level of 12.40 percent to 15.02 percent, the Social Security Administration estimates. In that scenario, a person earning $60,000 a year would pay about $1,500 more per year in taxes.

Alternatively, to keep taxes unchanged, benefits would have to be immediately slashed by 16.4 percent for all retirees. If that happened, a retiree receiving $20,000 a year in Social Security payments, roughly the average for someone who retired in 2014, would see a $3,280 cut in annual benefits. To maintain Medicare benefits at their current levels, the payroll tax rate would have to be immediately increased by 0.26 percentage points or, to keep taxes unchanged, benefits would have to be immediately reduced by 15 percent.

For fiscal policymakers, it would surely be very difficult to enact these drastic measures.

Unlike Social Security and Medicare, Medicaid and SSI are not funded by a dedicated revenue source and trust fund. Thus, the solvency of these programs is not an issue. Moreover, growth in Medicaid spending on long-term care has been somewhat mitigated by efforts to steer the elderly away from nursing home care in favor of less costly alternatives such as home care. Still, Medicaid and SSI combined constitute a significant portion of the federal budget, and Medicaid makes up a large portion of the states' budgets, Kopecky and Braun point out. In 2013, for example, these two programs accounted for 10 percent of federal spending and 19 percent of all state spending.

The costs of delaying reform

Digging out of this fiscal hole is a thorny political challenge. It is very difficult to legislate large increases in payroll or income taxes. And higher taxes have a depressing effect on the economy. Also, it is difficult to push through legislation that reduces benefits for retirees, who tend to be politically active. So there is a tendency for policymakers to delay taking either action. But the longer policymakers wait to address the fiscal challenges of aging, the more intractable the problems become, Braun observes, citing the case of Japan. (See the sidebar "Along with America, the World Is Graying.")

It's clear we need reform. So what do economists say about what potentially good reforms might look like?

An economic perspective on policy reforms

Social Security, Medicare, Medicaid, and SSI insure the elderly against various risks. Social Security furnishes a steady income to help insulate people from poverty very late in life. The size of one's Social Security benefits depends on one's earnings history. SSI provides additional transfers to elderly individuals whose Social Security benefits are especially low.

Of course, the elderly also face a high risk of large health care expenses. Medicare provides health insurance to all Americans 65 and older, but it does not cover long-term care expenses. That matters, as the prospect of long-term care is one of the two largest financial risks individuals face over their lifetime, second only to the risk of low lifetime earnings, according to a 2014 research paper by the Atlanta Fed's Kopecky and Tatyana Koreshkova of Concordia University.

Nursing home stays are particularly expensive. In 2010, it cost an average of $75,000 to spend a year in a semi-private room. Some seniors are fairly likely to face these costs. The average 50-year-old woman has a 38 percent chance of spending more than 100 days in a nursing home, and for the average 50-year-old male, the chance is 20 percent, Rand Corporation economist Michael Hurd and coauthors estimate in a 2014 research paper. Kopecky and Koreshkova report that 40 percent of those who enter a nursing home will stay for more than a year, 20 percent for more than three years, and 11 percent for more than five years.

Medicaid is the largest public insurer of long-term care. However, because only poorer individuals who meet a means test are covered by Medicaid, most of nursing home expenses are paid for out of pocket, from savings. Kopecky and Koreshkova calculate that savings for anticipated nursing home expenses account for 3.7 percent of private wealth in the U.S. economy, or more than $1 trillion. That's enough money to purchase the nation's entire stock of cars, pickup trucks, heavy cargo trucks, airplanes, ships, and every other form of transportation equipment.

Relatives are most common caregivers

Given how expensive long-term care can be, it is not surprising that family members provide much of this type of assistance. In fact, unpaid female family members are the most common care providers. As noted, females are also more likely to require long-term care.

Alzheimer's disease and other dementias are among the biggest reasons why people end up needing long-term care. Women and older minorities face heightened risks of dementia, numerous studies have found. In fact, women account for nearly two-thirds of Americans with Alzheimer's, according to the Alzheimer's Foundation. Taken together, these results suggest that minority females are most likely to require formal long-term care. (See the sidebar "Dementia Takes Large and Growing Economic Toll.")

Reforming social insurance for retirees

Though retirees face significant risks, it doesn't necessarily mean the government has a special role to insure against these risks, Kopecky and Braun point out. Americans, after all, have many years to prepare for retirement, and on average retirees have substantial savings. Private insurance markets sell a range of products that are specifically designed for retirees. Private annuities and reverse mortgages offer stable cash flows through the end of life, and private insurance markets also offer long-term care insurance.

Nevertheless, even if they plan well for retirement, some retirees will survive to an old age and find themselves sick, alone, and poor. This sad state may result from the death of a spouse or burdensome long-term care expenses due to dementia. And, again, this risk is particularly significant for females and minorities. What is special about the people who end up sick, alone, and poor is that they can't cope on their own by returning to work.

So in this sense, there is a special role for social insurance. In a formal analysis in 2016, Braun, Kopecky, and Koreshkova found that even though Medicaid, SSI, and other means-tested social insurance programs for retirees are relatively small, they provide valuable protections against these risks: households with both low and high lifetime earnings receive benefits, and means testing holds down the public costs of providing these benefits. Indeed, this research suggests that the current scale of these means-tested programs for retirees may be too small.

And even if the government were to fix the fiscal imbalances in the U.S. Social Security system now, its pay-as-you-go structure—current workers fund the benefits of current retirees—means that workers in future years will face larger payroll taxes to cover benefits of retirees.

Perhaps, then, it is time to consider an alternative way to provide public pensions, Braun and Kopecky suggest. One reform that has received considerable attention is a defined-contribution public pension, something like a 401(k) plan. Under this system, part of a worker's payroll taxes are used to fund a mandatory retirement savings account that belongs to an individual worker.

Defined-contribution public pensions have several advantages, the Atlanta Fed economists note. They work well when the old-age dependency ratio is high—the situation the United States is facing—because workers are saving for their own retirement. There is also less political uncertainty about the eventual size of benefits because the accounts are in workers' names, so there is not a shrinking pool of money that must be divvied up among all retirees. Contributions to these savings accounts also offer individuals a higher rate of return than their contributions to a pay-as-you-go social security system. Earlier research by economists including Atlanta Fed research director Dave Altig found that this type of social security reform enhances general social welfare.

The biggest hurdle would be in managing the transition from the current plan to a defined-contribution public pension system. In particular, how do you grandfather in current retirees? Economists have suggested strategies for dealing with this issue. One approach proposed by Juan Carlos Conesa of the Universitat Autonoma de Barcelona and Carlos Garriga, an economist at the Federal Reserve Bank of St. Louis, is to increase government debt to fund a couple of costly measures: to give those who are relatively close to retirement a deposit into their account for their previous contributions to Social Security, since they wouldn't be contributing to the savings account for an entire career, and to continue Social Security payments for existing retirees.

In this scenario, citizens at some future date would pay a minimal tax to cover interest on the newly issued government debt. The economists argue that this is good for future citizens because they have the benefit of their own personal retirement savings accounts and avoid high payroll taxes to support retirees in a society with a large old-age dependency ratio.

Other countries have done this. Sweden and a number of Latin American nations have implemented reforms along these lines. A lesson from Latin America: less affluent retirees still need a safety net, say Stephen Kay, a senior economist and director of the Atlanta Fed's Americas Center, and Tapen Sinha, an economist at Instituto Technologico de Mexico, who edited the 2008 book *Lessons from Pension Reform in the Americas*.

Means testing Social Security and Medicare

As an alternative to defined-contribution public pension plans, a somewhat less radical but perhaps more contentious solution would be to means test Social Security and Medicare benefits. Some countries, including Australia and the United Kingdom, have adopted means-tested public pension benefits. In those countries, the middle class and the needy continue to receive benefits. But benefits gradually fall with wealth, and the most affluent receive few or no benefits. In Australia, for instance, only about half of retirees receive public pensions.

In the United States, the sustainability of Social Security and Medicare is going to receive far more attention as the programs' trust funds dwindle. What specific reforms to make and how to implement them are difficult questions. Yet it is important to begin these discussions now and to take actions soon.

Japan's experience suggests that delaying public pension reforms casts a pall on the economy. The longer we wait, the larger are the tax increases or spending cuts needed to restore balance. And uncertainty about the nature of the eventual reforms makes it difficult for individuals to plan for retirement.

74 MILLION

THE NUMBER OF AMERICANS OVER AGE 65 BY 2030, AN 85% INCREASE FROM 2010

Source: U.S. Census Bureau

Along with America, the World Is Graying

Much of the world is undergoing a fundamental demographic shift.

Most developed nations, in fact, are graying even faster than America. Among large developed countries, only Russia was younger than the United States in 2012, according to the U.S. Census Bureau. Japan, meanwhile, has aged more—and faster—than any other country.

This demographic wave originated as a global baby boom that started right after World War II. The boom is following its predictable course: it produced lots of children, then a quarter-century later lots of working-age adults, and now lots of elderly people, according to *Population Aging and the Generational Economy: A Global Perspective*, a 2011 book edited by Ronald Lee, director for the Center for the Economics and Demography of Aging at the University of California-Berkeley, and Andrew Mason, professor of economics at the University of Hawaii at Manoa.

A surge in fertility meant the portion of children in the world's population swelled to a peak in 1975, Lee and Mason write. Then the second wave began in the mid-1970s as the huge baby-boom cohort entered adulthood, initiating rapid growth in the working-age population.

Rising numbers of workers, supplemented in some countries by greater numbers of women entering the workforce, fueled economic growth. Some economists and demographers even labeled this phenomenon a "demographic dividend."

The coming Old World

Now a third demographic phase is beginning: global growth in the older population. Worldwide, the working-age population in 2011 outnumbered those 60 and older by 4 to 1, according to Lee and Mason. By 2050, that ratio is projected to drop to 2 to 1.

"This third phase of the global age transition is without precedent," they write. "Populations in the future will be much older than ever before in human experience."

This phase will present fiscal and economic challenges. Older people are net consumers—they consume more than they produce—and compared to working-age adults, more of the consumption of the elderly is publicly funded. In the United States, for example, about 35 percent of the consumption of 75- to 79-year-olds in 2011 was financed publicly, versus roughly 20 percent of the consumption of those aged 40 to 44, according to the National Transfer Accounts, a database maintained by researchers at the University of California-Berkeley and the East-West Center in Hawaii.

So far, Japan offers a cautionary example

No country has aged as much or as quickly as Japan. The share of Japanese people 65 and older, nearly 25 percent, is already larger than the portion of Americans who will be elderly in 2050, the Census Bureau reports. (See chart 5.)

Japan offers a cautionary tale in grappling with the fiscal challenges of a rapidly aging population. As recently as 1990, Japan was the youngest of the "Group of 6" large, developed countries, Atlanta Fed economist Anton Braun and coauthor Douglas Joines of the University of Southern California write in a 2015 research paper. But the graying of the baby-boomer generation, combined with low fertility rates—the same forces changing the makeup of the U.S. population—produced rapid aging. From 1990 to 2005, the share of Japan's population 65 and older rose from 12 percent to 20 percent.

Along with sluggish economic growth since 1990, the rapid aging of the Japanese population has been associated with a dramatic increase in government debt, Braun and Joines found. Japan's net public sector debt increased from 8 percent of its GDP in 1990 to 150 percent of GDP in 2012. Meanwhile, spending on social insurance nearly doubled to 31.4 percent of government general account expenditures in 2013.

The accumulating debt is worrisome, Braun and Joines point out, because the government will spend even more on public pensions and medical care as the population continues to age. In other words, the fiscal challenges will only intensify.

A key measure of a country's capacity to support pay-as-you-go programs for the elderly is the so-called old-age dependency ratio—the proportion of the population 65 and older compared to those 18–64. Japan's dependency ratio will peak around 2080 at some 88 elderly residents for every 100 working-age people, Braun and Joines note.

By comparison, the United States' old-age dependency ratio is expected to crest at about 37 elderly residents for every 100 working-age people in 2040, according to the Census Bureau.

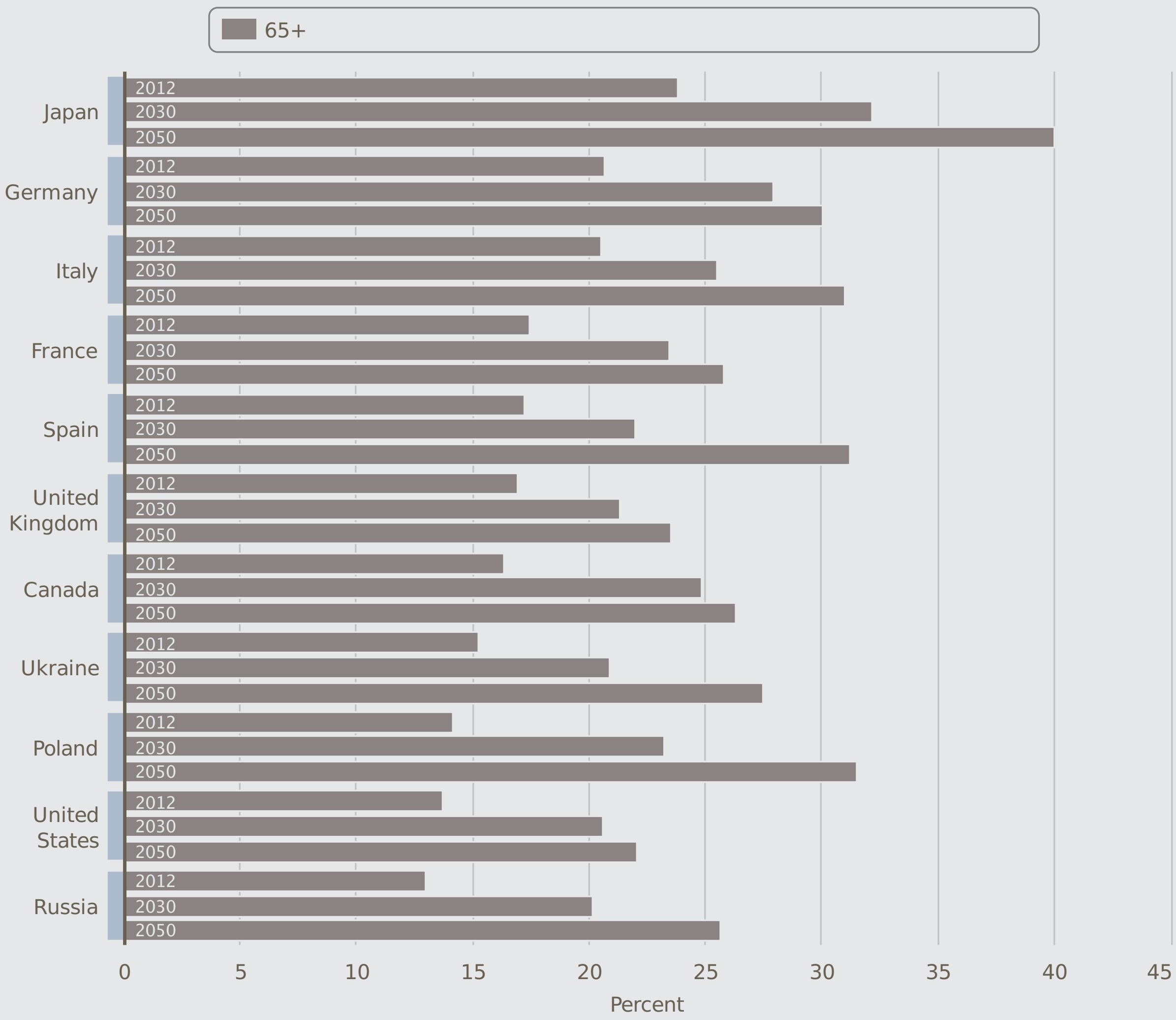
Along with America, the World Is Graying

Repairing Japan's fiscal imbalances will require both higher taxes and cuts in government spending, according to Braun and Joines. "We find that Japan faces a severe fiscal crisis if remedial action is not undertaken soon," they wrote.

In Braun's view, the main lesson from Japan's experience: the longer policymakers wait to take action, the worse the situation becomes, and thus the more severe the actions they must take.

For more information on the economic situation in Japan, listen to a podcast with Braun and Professor Masaaki Shirakawa, former governor of the Bank of Japan, at frbatlanta.org/podcasts/transcripts/economy-matters/160321-the-graying-of-the-japanese-economy.

Chart 5
Percent 65 and over in selected developed countries: 2012, 2030, and 2050



Source: U.S. Census Bureau, 2012 Population Estimates, 2012 National Projections, and International Data Base

Dementia Takes Large and Growing Economic Toll

Dementia directly costs the U.S. economy upwards of $100 billion a year, more than cancer or heart disease. Add the cost of "informal care," including earnings people forgo to look after suffering relatives, and the overall cost was an estimated $159 billion to $215 billion in 2010, according to research by Michael Hurd, an economist and director of the RAND Corporation's Center for the Study of Aging.

Dementia is strongly age-related, so as the country's population gets older, more and more people will develop the disease. Consequently, annual costs to the economy could exceed $500 billion by 2040, Hurd and other economists at RAND predict. Hurd was lead author of a groundbreaking 2013 study on the monetary cost of dementia in the United States. He defines dementia as a "serious loss of cognitive ability in a previously unimpaired person, beyond what might be expected from normal aging, leading to disability."

Dementia is a major driver of health care costs not just in the United States but throughout the developed world, according to Sube Banerjee, director of the Centre for Dementia Studies at the University of Sussex in the United Kingdom. "Dementia is the highest-ticket health and social care item that we have, making up 60 percent of long-term care spending according to some estimates," Banerjee wrote in the November 2012 edition of *Archives of Medical Research*.

Incidence of dementia rises with age

In the United States, dementia afflicts about 10 percent of people 75 to 79 years old, 20 percent of 80- to 84-year-olds, 35 percent of those aged 85 to 89, and more than 50 percent of people 90 and older, Hurd's research shows. By 2050, the portion of the U.S. population 85 and older will rise from 2 percent to 5 percent, according to the U.S. Census Bureau. The share of Americans 65 and older is projected to climb from 15 percent now to nearly 25 percent by 2060.

So if the rates of developing dementia hold steady, the ranks of sufferers will grow significantly.

Hurd wrote the 2013 paper along with four other economists and scientists. They arrived at a monetary cost of dementia that includes out-of-pocket spending by households, Medicare and Medicaid spending, and private insurance expenditures. Most dementia costs go toward institutional and home-based long-term care, and not medical services, as dementia sufferers typically require round-the-clock attention, Hurd said during an October 2015 presentation at the Federal Reserve Bank of Atlanta.

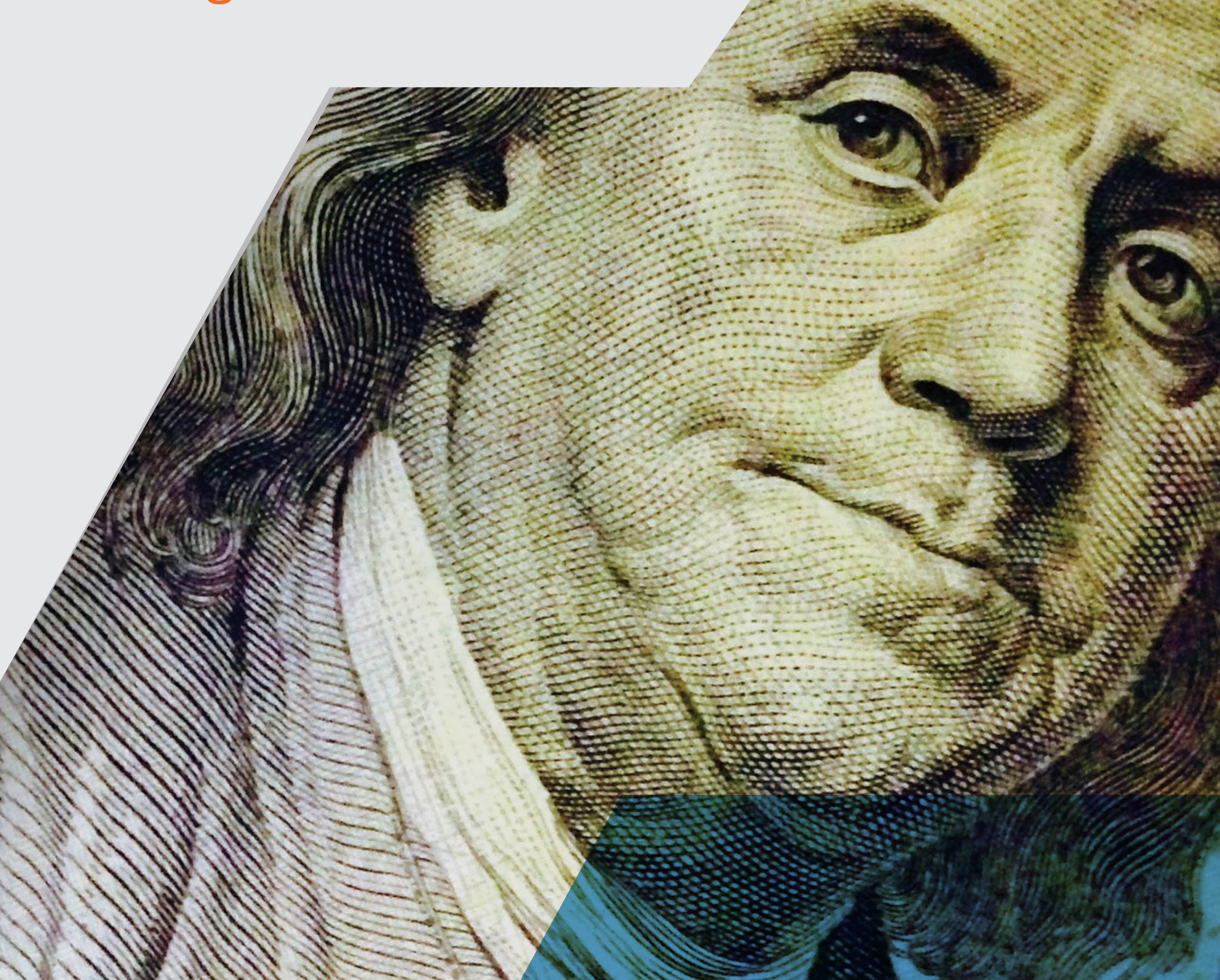
Hurd and his collaborators pegged the total, direct monetary cost of dementia at about $109 billion for the year 2010. Add the estimated costs for informal caregivers' time—or, alternatively, the cost to replace that time with hours of formal care in the marketplace—and the estimated 2010 cost for dementia totaled $159 billion to $215 billion, Hurd and his collaborators calculated. By 2020, the direct monetary cost will rise to $129 billion, while the wider cost will reach roughly $189 billion to $255 billion.

As much as 84 percent of dementia-related costs are attributable to long-term services and support, much of which is supplied by relatives and friends of dementia sufferers, according to an October 2015 RAND study. Overall, informal caregivers, mainly relatives and mostly daughters, provided 83 percent of the hours of care for the elderly. The percentage of informal care hours was a little lower for adults who likely had dementia, the RAND researchers found.

"Short of major technological breakthroughs, the need for care is only going to rise in the future as the population grows older," Hurd and his colleagues wrote in the October 2015 issue of the journal *Health Affairs*. "Future efforts to reform the U.S. system of long-term services and supports should include a focus on policies to supplement and support informal caregivers."

The need to care for dementia patients will contribute to the expected dramatic growth in demand for personal care and home health aides. The U.S. Bureau of Labor Statistics (BLS) projects that over the next decade, there will be more new jobs for personal care aides than for any occupation in the economy. A similar occupation, home health aide, is projected to add the third most jobs. "In both occupations," the BLS reports, "aides assist people, primarily the elderly, living in their own homes or in large care communities." Watch a video of Hurd discussing his work at frbatlanta.org/news/paforum/2015/1021-hurd.aspx.

"The need for care is only going to rise in the future as the population grows older."



Profound Changes in Store for Labor Market

Working more years before retiring might not sound appealing to everyone. But it could be critical to the nation's future economic health.

The macroeconomic impact of population aging will depend significantly on how long people remain in the workforce as they age. That's because the decision on whether to continue working, or continuing to look for work, will affect the size of the overall labor force. In turn, the size of the labor force is a key ingredient in the economy's growth potential. Put in the simplest terms, the economy's long-term growth rate is the sum of the growth rate of labor employed plus the growth rate of the productivity of that labor.

For the moment, at least, the first part of that equation—labor force growth—doesn't look especially promising. Already slowing, the rate of labor force growth is projected to decline further as 77 million baby boomers continue moving into older age and retirement. The oldest boomers hit 62 in 2008 and turn 70 in 2016. As large numbers of aging workers retire, there is a comparatively smaller cohort of younger workers to replenish the labor force. (See chart 1.)

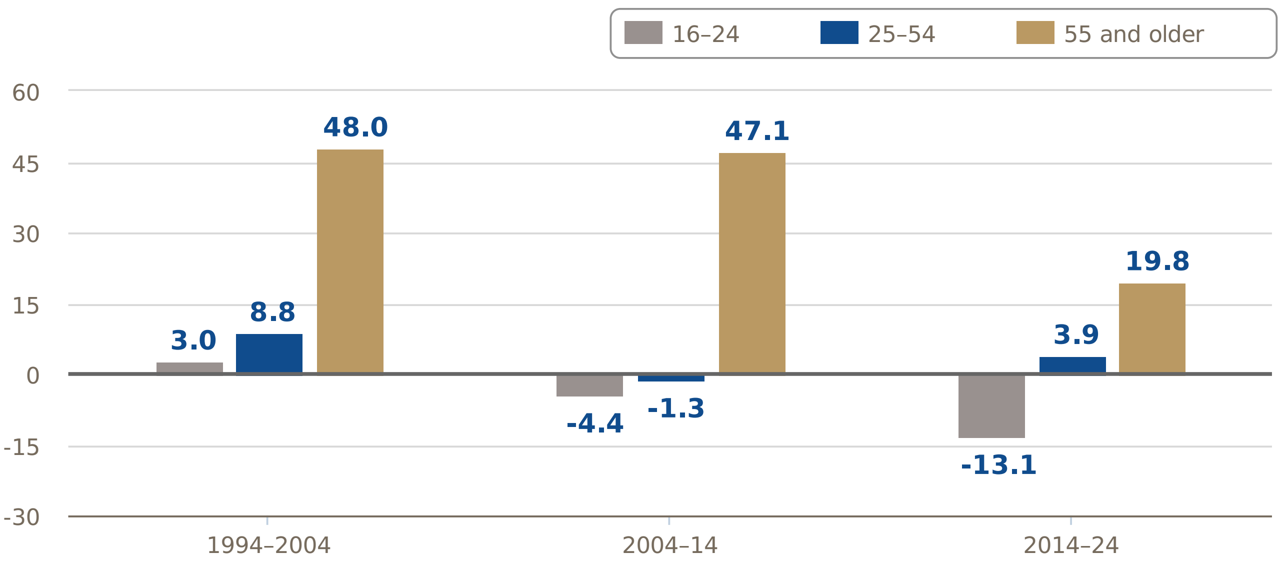
Aging population a big reason labor force growth is already slowing

The demographic erosion of the labor force from an aging population is powerful and appears unstoppable, absent a significant change such as a large influx of immigrants or a steep decline in the rate of retirement.

Several organizations, including the U.S. Bureau of Labor Statistics (BLS) and the Congressional Budget Office (CBO),

Chart 1
Seniority Rising

Percent change in civilian labor force by age group for 10-year periods



Source: U.S. Bureau of Labor Statistics

predict the labor force will expand about 0.5 to 0.6 percent a year on average between now and 2050. That's less than a third of the annual growth rate of 1.7 percent between 1970 and 2007. That slowdown is largely the result of an aging population, economists say.

Indeed, the rate of labor force growth has already slowed. That's partly because weak job prospects during the Great Recession of 2007 to 2009 pushed some discouraged job seekers out of the labor force entirely. To be counted as part of the nation's labor force, one must be working or seeking a job. While cyclical economic factors played a part, the dominant longer-term issue of population aging has accounted for more than half of the decline in labor force participation since 2007, according to the Federal Reserve Bank of Atlanta's Center for Human Capital Studies.

An aging population is not only slowing the growth of the nation's pool of workers. It could also be constraining wages. Research published in March by San Francisco Fed economists Mary C. Daly, Bart Hobijn, and Benjamin Pyle suggests that since the Great Recession, aging is partially responsible for slow growth in average wages. (Go to frbsf.org/economic-research/publications/economic-letter/2016/march/slow-wage-growth-and-the-labor-market/.)

Rising pay has been a key missing ingredient amid otherwise healthy labor market indicators during the recovery from the recession. There's no consensus explanation among economists of why growth in average wages has lagged even as unemployment has declined. But according to the new San Francisco Fed research, as higher-earning baby boomers have retired, lower-wage younger workers have taken new full-time jobs. So as lower-paid workers move into the workforce and higher-paid baby boomers retire, those two changes together have suppressed measures of growth in wages.

Longer working lives could boost labor force

One important factor could stem at least some of the erosion of labor force growth: longer working lives.

Labor economists concur that there is untapped capacity for work among older Americans. For one, life expectancy has increased, and people have become generally healthier in their later years. A 67-year-old in 2007 had about the same mortality rates as a 60-year-old in 1977, according to *Aging and the Macroeconomy*, a 2012 book compiled by the National Research Council (NRC). Plus, most jobs today are not as physically demanding as they once were, so more older people can perform them (See nap.edu/read/13465/chapter/1.)

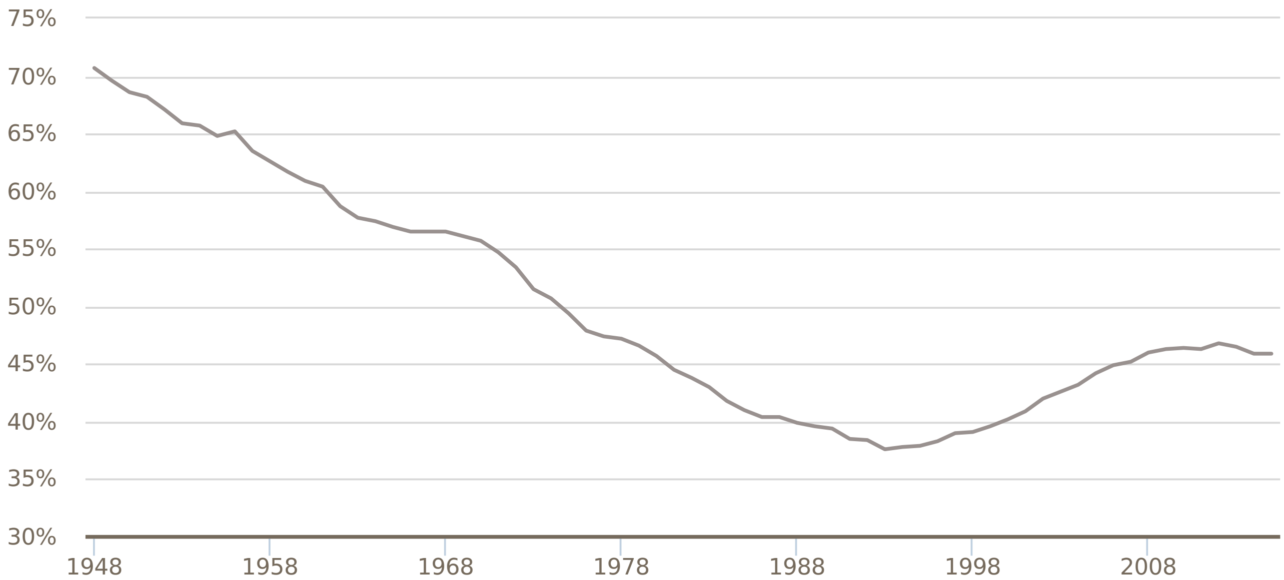
Careers are already lengthening. An almost 50-year trend toward earlier retirement reversed in the mid-to-late 1990s. From 1950 through 1995, the labor force participation rate of men 55 and older dropped from nearly 70 percent to about 38 percent, according to *Aging and the Macroeconomy*. As more men began retiring later, the participation rate for men 55 and older has since moved back up to 46 percent, though it has flattened and dipped a bit in the past couple of years, the BLS reports. (See chart 2 and see sidebar, "Retirement as We Know It Is a Modern Concept.")

It's clear there are more older workers—partly because there are more older people in the population, and partly because of a higher rate of labor force participation. The number of employed wage and salary workers age 65 and older has more than doubled in the 21st century, from 2.97 million in 2000 to 6.41 million in 2015, according to the BLS. Nearly two-thirds of those older employees are working full-time, up from less than half in 2000. (See chart 3.)

It appears the shift toward longer working lives will last. Even as overall labor force participation is projected to keep falling, the participation of older people is widely expected to resume climbing. (See infographic on page 26.)

It's not completely clear why older people began working longer in the 1990s, according to many experts including Atlanta Fed economists Julie Hotchkiss, Toni Braun, and Karen Kopecky. There's likely a combination of reasons. Some elderly people keep working for financial reasons, while others choose to work because they are healthy enough and

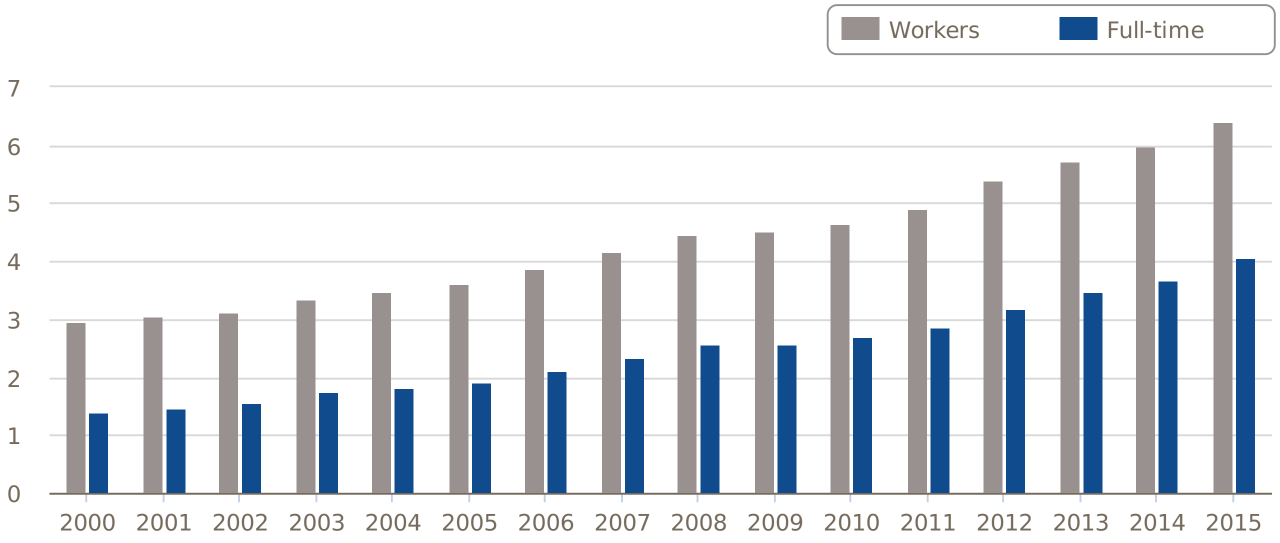
Chart 2
Labor Force Participation Rate, Men 55 and Over



Source: U.S. Bureau of Labor Statistics

Chart 3
Working Overtime

Employed wage and salary workers, 65 and over, in millions

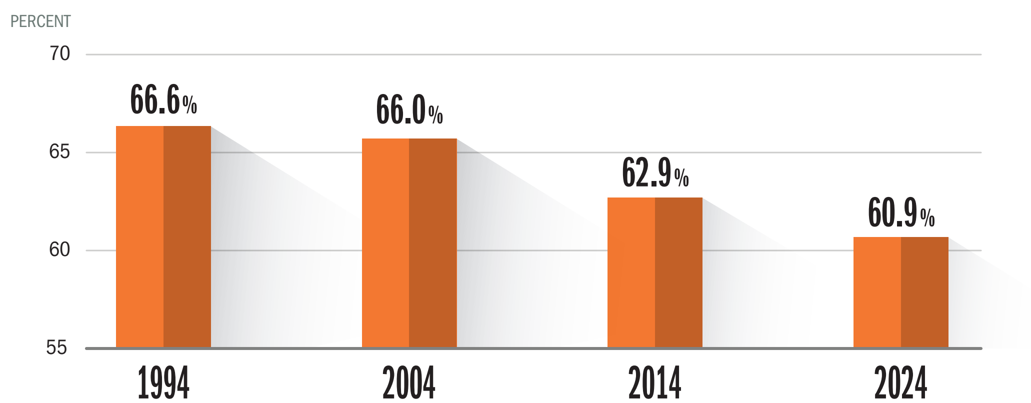


Source: U.S. Bureau of Labor Statistics

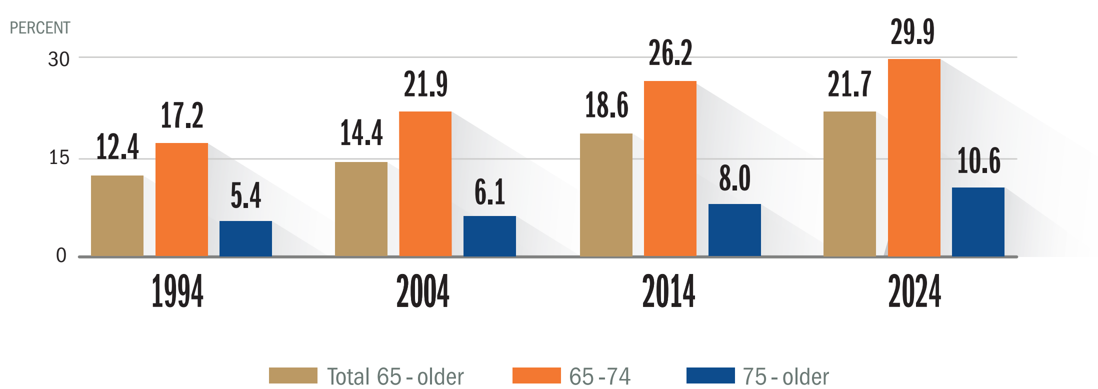
simply want to stay busy. What's more, the idea of "phased retirement," as opposed to abruptly walking away from work entirely, is becoming more common in the United States and other countries, according to the Organization for Economic Cooperation and Development's OECD Pensions Outlook 2014. (See oecd.org/finance/oecd-pensions-outlook-23137649.htm.) Allowing workers and employers more flexibility to gradually phase in retirement is important to promote longer working lives, according to the OECD and other researchers.

Changes in financial incentives can affect employment decisions. For example, certain tax rules and provisions in pension plans and retiree health insurance plans encourage earlier retirement and make it more costly for employers to keep older workers on the payroll. An extensive body of research indicates that average retirement age is strongly influenced by early retirement incentives in plan provisions. For instance, public pension plans in many countries do not allow those who delay retirement to collect additional annual benefits to offset those they would have collected had they retired sooner. In the United States, however, Social Security is more "actuarially fair," as researchers term it, because if you retire later—say, at 67 instead of the current earliest eligibility age of 62—you collect more benefits each year than if you begin collecting benefits at 62.

Defined-benefit pension plans are another story. Traditional pension plans are much less common in the private sector than they used to be, but are still widespread in the public sector. In those plans, benefits generally do not go up enough to make it worthwhile to delay retirement,



OVERALL LABOR FORCE PARTICIPATION RATE IS EXPECTED TO KEEP FALLING... BUT NOT FOR OLDER PEOPLE



Source: U.S. Bureau of Labor Statistics

according to the NRC. Thus, the advent of personal defined-contribution plans, such as 401(k)s in the 1980s, is probably one reason why older people began staying in the workforce longer in the mid-1990s, the NRC says in *Aging and the Macroeconomy*.

Another disincentive to work at older ages is a higher effective tax rate. The Social Security and Medicare payroll tax for those 60 and over is often a "pure tax" on work because older workers have often already put in the 35 years that count toward Social Security benefits, according to a 2011 paper by economists Gopi Shah Goda, John B. Shoven, and Sita Nataraj Slavov at Stanford University and the American Enterprise Institute. (Go to nber.org/chapters/c12222.pdf.) Therefore, depending on their pay, older workers may earn no incremental Social Security or Medicare benefits for staying in the workforce longer.

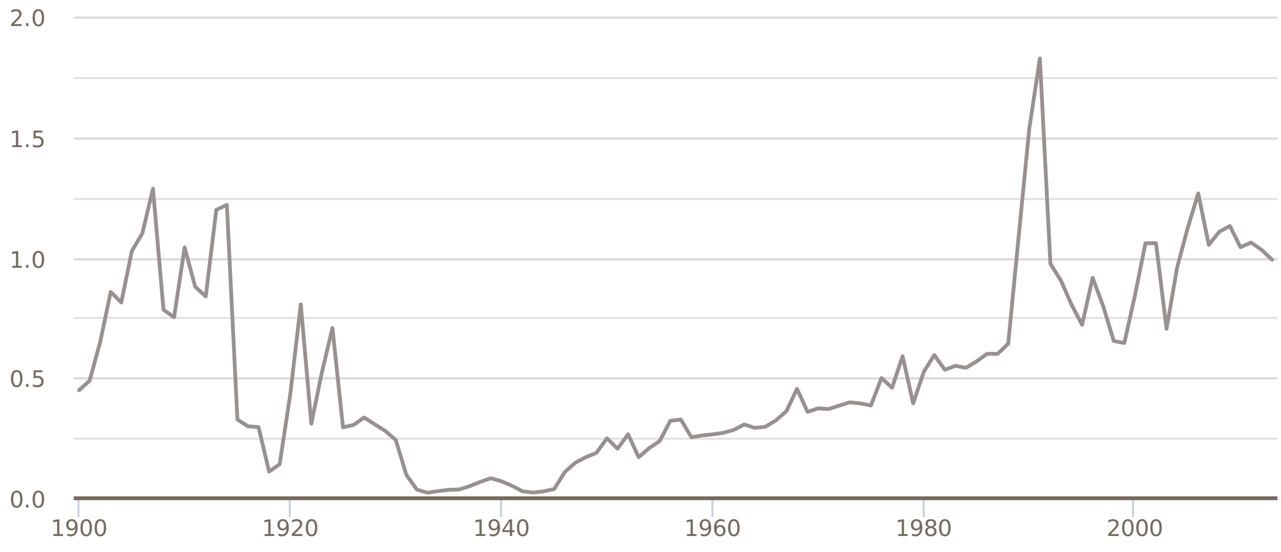
Employer-provided health benefits also create an implicit tax for many workers age 65 and over. If they receive health insurance from an employer with more than 20 employees, then Medicare doesn't cover the workers. This policy is known as "Medicare as a secondary payer." Under such circumstances, employees, along with their employer, pay for health insurance even though those workers are otherwise eligible for Medicare, according to the NRC. "This creates another large gap between the employer's cost of employing an older worker and the employee's net wage," says the NRC's *Aging and the Macroeconomy*.

Changing tax, Medicare policies would equate to a pay raise for older workers

Removing these extra costs would encourage workers to work longer because they would effectively get a pay raise. At the same time, employers' costs of employing older workers would also fall. Some economists have proposed creating a new category of older workers who, having paid their share of Social Security and Medicare payroll taxes over 35 or 40 years, would no longer be subject to the tax.

The NRC book suggests eliminating the "Medicare as a secondary payer" policy by simply granting Medicare benefits to workers 65 and over regardless of whether their employer provides a health plan. That way, neither the worker nor the employer would pay for private health coverage. The worker would theoretically also see a significant increase in net wages. While these ideas might help to increase labor force participation among older citizens, thus reducing the number of people supported by social insurance, the measures might also worsen the financial positions of the Social Security and Medicare trust funds.

Chart 4
Immigration Ebbs and Flows
Millions of persons obtaining lawful permanent resident status, 1900-2013



Source: U.S. Department of Homeland Security

Some European countries have had success with incentives aimed at encouraging workers to retire later. While the labor force participation rate of 55- to 64-year-olds in the United States leveled off around 2007 after rising over the prior couple of decades, the participation rate of this group continued climbing in several euro area nations. In the past several years, European nations raised retirement ages for pension benefits by an average of about two years and restricted early retirement eligibility. Also, Germany in the mid-2000s began instituting policy incentives for hiring older workers.

Clearly, American policymakers face difficult choices when it comes to aging and the course of the labor force and, more broadly, the macroeconomy.

The role of immigration in boosting labor force growth

Although a potentially effective tool for boosting the labor force, immigration policy is particularly contentious. An increase in future immigration would effectively be an increase in the projected labor force, according to the BLS. Recent history supports that view. From 1996 to 2014, according to BLS figures, the nation's labor force increased by about 21.9 million people. (Go to bls.gov/news.release/pdf/forbrn.pdf). Even though foreign-born workers are only a small share of the nation's labor force, they accounted for more than half of the increase in the labor force between 1996 and 2014. (See bls.gov/spotlight/2013/foreign-born/.)

Historically, immigration responds to labor shortages. In a 2012 paper, economists Federico Mandelman of the Atlanta Fed and Andrei Zlate of the Federal Reserve Board of Governors wrote that as business conditions in the United States improved, immigration from Mexico in particular increased. (Go to sites.google.com/site/federicomandelmanhomepage/PaperImmRem.JME.pdf.) Many of the foreign-born workers then returned to their home country when job opportunities in the United States dried up, and came back again when jobs were plentiful.

However, that pattern has changed. Since the U.S. government stepped up border enforcement in 2000, many immigrant workers have chosen to remain in America even during economic downturns. They don't want to risk going home and then not being able to return to the States, according to Mandelman and Zlate.

One reason immigration is a potentially potent antidote to slow labor force growth is that immigrants tend to be young. In 2012, for example, 76 percent of foreign-born members of the labor force were between the ages of 25 and 54, compared to 63 percent of the native-born labor force, the BLS reports. Forecasting immigration, and thus its future impact on the labor force, is fraught with uncertainty, as the Congressional Budget Office notes. Immigration numbers have fluctuated for a long time. Averaged over five-year periods, net annual immigration has ranged from nearly seven to fewer than two immigrants per 1,000 people in the U.S. population, according to the CBO's 2015 Long Term Budget Outlook. Go to [cbo.gov/publication/50250]). Since 1970, the number of people obtaining lawful permanent resident status in the country has ranged from 373,000 in 1970 to 1.8 million in 1991, according to the U.S. Department of Homeland Security's 2013 Yearbook of Immigration Statistics. (See chart 4.) While warning of a "great deal of uncertainty" involved in long-range predictions, the CBO projects net annual immigration of 1.2 million people in 2026 and 1.3 million in 2040. That would not amount to a huge increase over recent levels. (Go to dhs.gov/publication/yearbook-2013.)

Potential macroeconomic effects

The future population of older Americans is going to grow a lot. That much is clear. Immigration would help mitigate the effect of an aging population on labor force growth. But future levels of immigration are highly uncertain. Also subject to some uncertainty is the future rate of labor force participation of older workers. Although the trend toward greater participation has actually flattened in the last few years, the BLS projects it will increase over the next decade. If this happens, longer working lives would help fuel labor force growth and, in turn, boost the macroeconomy. An increase in the number of older workers would also lower the number of retirees that workers help to support.

If older workers indeed raise their labor force participation rate, tax revenues would also rise, which could strengthen funding for public old-age support programs such as Social Security and Medicare. If longer working lives lessen the burden on elderly support programs, they might also release more resources to fund other public priorities, including education of the young.

Government policy on retirement and work incentives will have a significant effect on the future growth of the labor force. Policy decisions will also affect the degree to which immigration supports labor force growth.

Retirement as We Know It Is a Modern Concept

Retirement as we know it is a relatively recent phenomenon.

We didn't always spend the golden years traveling, gardening, and cycling. Even though average retirement ages have been inching upward since the mid-1990s, fewer than 20 percent of Americans age 65 and older today are in the workforce.

"The United States was quite a different place in 1880, when more than 75 percent of men over the age of 65 were participating in the labor market," Federal Reserve Bank of Atlanta research economist Karen Kopecky writes in a 2011 research paper. (See onlinelibrary.wiley.com/doi/10.1111/j.1468-2354.2011.00629.x/full.)

A graphic in Kopecky's paper illustrates that in 1850, only 20 percent of men 75 to 79 were retired. Of course, a smaller share of the population lived to 75 in the antebellum years. Even 100 years later, in 1950, nearly half of U.S. men age 65 and older were in the labor force, according to the U.S. Bureau of Labor Statistics. The share of senior men in the workforce fell steadily to 16 percent by 1990 before starting a gradual climb to about 19 percent today.

Men spend 50 percent more time retired today than in the 1960s

In the big picture, though, retirement has become a more significant part of a typical American life. In the United States, the median number of years men spend in retirement increased almost 50 percent between 1965 and 2003, from 13 years to almost 19 years, according to the National Research Council's (NRC) book Aging and the Macroeconomy. About half of these additional years were a result of living longer and half were thanks to retiring earlier, the NRC says.

Men appear to be using those retirement years to relax. Kopecky writes that men age 55 to 64 years spend about 19 percent more time on recreation than men age 25 to 54, whereas men 65 and older spend nearly 43 percent more time in leisure activities than men 25 to 54. (She focused her study on men because in the early years she studied, women made up a tiny percentage of the nation's workforce.)

Kopecky argues that a blend of cheaper and higher-quality leisure goods—entertainment, books, sports gear, travel, and so on—and rising real wages created the retirement culture that emerged in the 20th century. Those two forces, she writes, "have made the leisure-intensive retirement lifestyle more affordable, driving a rise in retirement."

The demographic erosion of the labor force from an aging population is powerful and appears unstoppable.

Is an Older Economy a Weaker Economy?

Since the Great Recession, many people have asked Federal Reserve officials if they are penalizing senior citizens by keeping interest rates low. Questioners are concerned about retirees living mainly off savings and earning low rates on those savings.

But Fed policymakers are not unconcerned about seniors. In fact, the notion of monetary policy penalizing or rewarding one group or another highlights a misconception about policy's objectives and reach. Monetary policy does not seek to pick economic winners and losers. It is, rather, a "blunt tool" designed to create an environment conducive to broad economic prosperity.

Channeling resources toward one or more groups based on demographics or other factors—what economists call the "distributional effect"—is the province of fiscal policy. Research, including this from the Philadelphia Fed (see philadelphiafed.org/research-and-data/publications/business-review/2015/q2/brQ215_the_redistributive_consequences_of_monetary_policy.pdf) finds that the distributional effects of monetary policy are complex and uncertain.

Former Fed Chairman Ben Bernanke explained in a March 2015 post on his Brookings Institution blog that raising interest rates too soon would hurt and not help seniors (see brookings.edu/blogs/ben-bernanke/posts/2015/03/30-why-interest-rates-so-low). Such a premature move, Bernanke said, would likely slow the economy and lead to lower returns on capital investments for seniors and everyone else. (See the sidebar, "Graying of America Expected to Produce Slower Economic Growth.") "The slowing economy in turn would have forced the Fed to capitulate and reduce market interest rates again," Bernanke wrote. Several major central banks faced precisely that scenario in recent years.

The Federal Reserve concentrates on stable prices and low unemployment, the dual mandate handed down by the U.S. Congress. By law, the Fed sets policy for the economy as a whole, not to target particular economic sectors or to favor any demographic group, explains Atlanta Fed research economist Toni Braun.

A different question: Aging's impact on the environment in which policy is made

But what effect does an aging population have on the economic conditions in which monetary policy is formed? Many researchers have found, for example, that an aging population tends to put downward pressure on real interest rates, the rates of return after allowing for inflation.

Aging affects the real interest rate in a couple of basic ways. First, older people tend to be savers rather than borrowers. Younger people, by contrast, tend to be borrowers. Therefore, having relatively more savers and fewer borrowers drives interest rates lower because of supply and demand. More money flowing into savings means the banks and other institutions gathering those savings need not boost rates to attract those deposits.

Second, aggregate hours worked falls as the population ages and workers move into retirement. Lower aggregate labor input reduces the amount of output produced by each unit of capital. This in turn acts to reduce the real return from investing in capital, Braun explains.

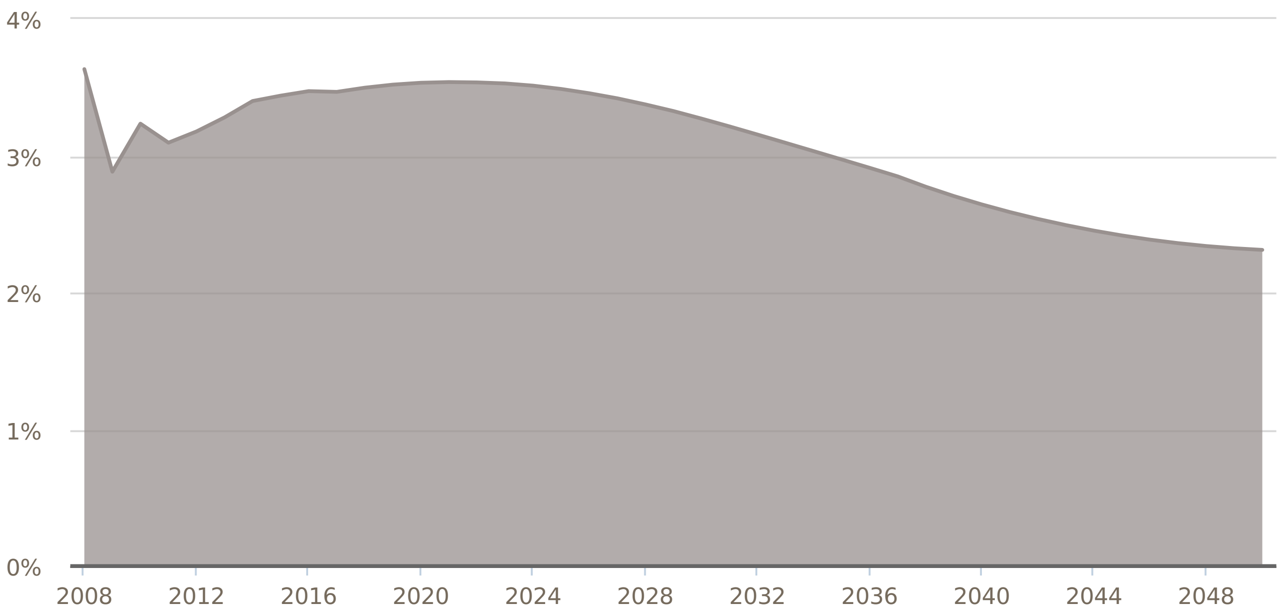
Aging societies are already starting to experience down-ward pressure on interest rates—most notably in Japan. A 2009 paper Braun authored with Daisuke Ikeda and Douglas Joines was among the early research to document the implications of population aging on the real interest rate in Japan (see onlinelibrary.wiley.com/enhanced/doi/10.1111/j.1468-2354.2008.00531.x).(See the chart.) The authors found that the two biggest factors underlying the decline in Japan's real interest rate from 6 percent to 3.9 percent between 1990 and 2000 were rapid population aging and lower productivity growth.

A large increase in life expectancy in Japan has meant that the baby boomers need to plan for longer retirement. Now, as they move into retirement, both the national savings

rate and the interest rate are falling. The decline in the real interest rate is compounded by a declining fertility rate. A lower fertility rate translates into a smaller fraction of younger workers who seek to borrow funds to purchase homes and cars. A subsequent 2015 paper by Braun and Joines predicts the after-tax real interest rate in Japan will decline by a further 2 percentage points between 2010 and 2050, with aging a key driver of those declines (see sciencedirect.com/science/article/pii/S0165188915000780).

Aging is acting to reduce interest rates in other advanced economies, too. San Francisco Fed economist Fernanda Nechio and coauthors Carlos Carvalho and Andrea Ferrero find that population aging in a hypothetical representative developed country can account for about a third to a half of the total decline in the real interest rate between 1990 and 2014 (see frbsf.org/economic-research/files/wp2016-05.pdf). An increase in life expectancy accounts for most of the drop, the authors conclude. As people expect to live longer and thus spend more years retired, they save more money for their

Japan's After-Tax Real Interest Rate



Source: R. Anton Braun and Douglas H. Joines, 2015 (www.sciencedirect.com/science/article/pii/S0165188915000780) retirement. The authors forecast that the real interest rate in their composite country will continue to fall for the next 40 years and then stabilize at about 2 percent.

Might monetary policy be less effective as the population ages?

Because of demography's downward pressure on interest rates, formulating effective monetary policy might be more difficult as the population ages. That's because interest rates set by market forces tend to move lower regardless of policy, Braun notes.

Again, Japan offers a model. The Pacific Rim nation is aging more than any other advanced country, as its working-age population is shrinking by roughly a million people a year. Aggressive monetary policy has made limited headway in reversing years of sluggish economic growth and falling prices, said Masaaki Shirakawa, professor of economics and former governor of Japan's central bank.

During a recent talk at the Atlanta Fed, Shirakawa said the mild deflation Japan experienced during the 1990s was often inaccurately cited as the cause of the country's slow economic growth. But the fundamental economic problem in Japan, Shirakawa said, is not deflation but rather a rapidly aging population.

Many researchers have found that an aging population tends to put downward pressure on real interest rates, the rates of return after allowing for inflation.

Research suggests that a big reason why younger people react more strongly to interest-rate changes than do older people is homeownership. Younger people generally carry larger mortgages because older people have typically had more years to pay down their home loans, according to research by Arlene Wong (see sites.northwestern.edu/awo760/files/2015/10/Arlene_Wong_JMP_Latest-2g9f9ga.pdf). Since they owe more money, younger people have more reason to refinance their mortgages when interest rates drop. And among those who refinance when rates fall, consumption rises much more than among those who don't refinance, according to Wong.

It comes down to this: the conventional tool central banks use to stimulate the economy is lowering short-term nominal interest rates. However, when deposit rates become too low (or even negative), eventually people and businesses will choose to keep their cash to avoid "earning" a negative interest rate. Stored at home, $1 today equals $1 next year. When short-term nominal rates are negative, a deposit of $1 at a bank today will be worth less than $1 if withdrawn after one year.

As short-term nominal rates approach this threshold—the effective lower bound, or ELB—central banks have little recourse but to rely on other measures such as quantitative easing to stimulate the economy. This scenario happened during the Great Recession. With an aging population that exerts downward pressure on interest rates, it is possible—but not certain—that the economy and policymakers could confront the ELB more often.

Demographics is just one of many forces that determine growth and interest rates. However, aging is occurring in all advanced economies, and in some nations, the aging of the population is widespread and rapid. How societies adapt to a higher ratio of retirees to workers will no doubt influence how the Federal Reserve seeks to achieve its congressional mandate of low inflation and maximum employment.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Graying of America Expected to Produce Slower Economic Growth

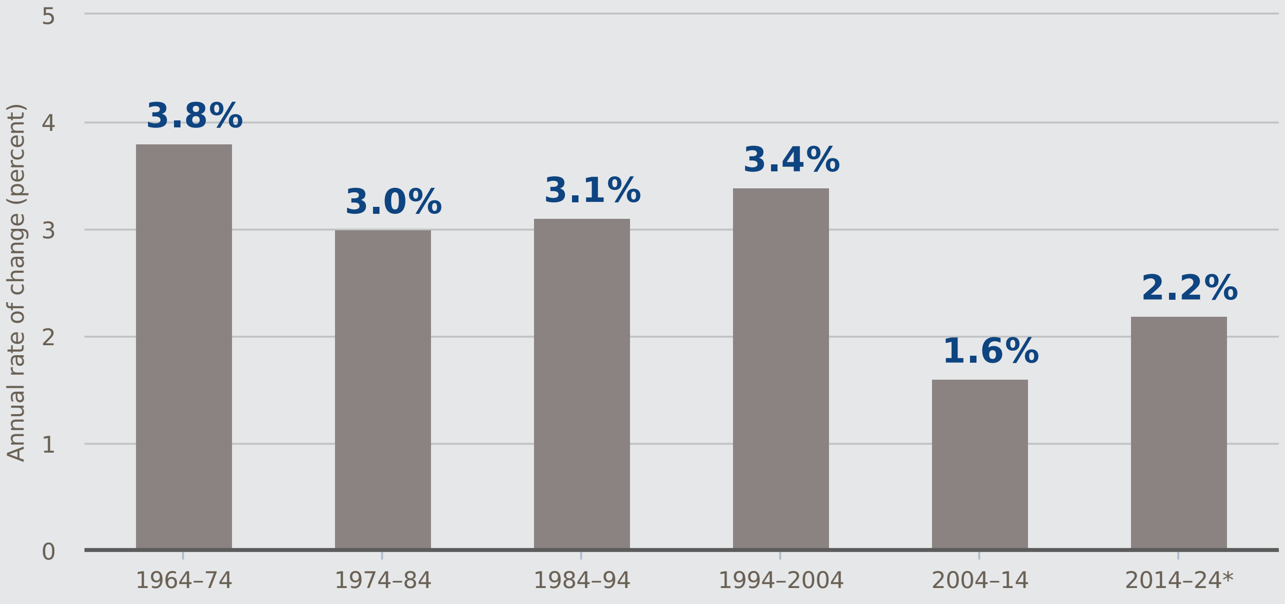
The changing age structure of the U.S. population is likely to result in slower economic growth and consumption as labor market participation declines. Much depends on the decisions policymakers take to address the fiscal challenges of aging.

The good news: experts predict economic expansion, just not as much compared with historical trends. The Bureau of Labor Statistics forecast in December 2015 that the U.S. economy will grow at a slower pace than before the 2007–09 recession, citing aging and declining labor force participation (see bls.gov/opub/mlr/2015/article/overview-of-projections-to-2024.htm).

Gross domestic product (GDP), the total value of goods and services produced in the nation, expanded at an average rate of 2.1 percent annually from 2010 to 2014, down from 3 percent or higher during the previous decades. The bureau expects GDP to grow 2.2 percent over the 10 years that will end in 2024 (see the chart).

Similarly, growth in personal consumption spending—the biggest component of GDP—will also ease, the labor agency said. From 2014 to 2024, personal consumption expenditures are expected to rise 2.4 percent on average. While that is stronger than the 2.2 percent growth from 2009 to 2014, it is lower than the 2.9 percent consumption expansion before the Great Recession and 3.8 percent growth from 1994 to 2004.

U.S. GDP Growth



*Projected
Source: U.S. Bureau of Labor Statistics

Many variables, many unknowns

Louise Sheiner, a senior fellow in economic studies and policy director for the Hutchins Center on Fiscal and Monetary Policy of the Brookings Institution, has coauthored research on aging concluding that without a marked rise in labor market participation, consumption growth will have to fall (see aeaweb.org/articles?id=10.1257/aer.104.5.218). In a 2006 research paper, she and her coauthors identify a number of factors that could affect consumption in the coming years (see federalreserve.gov/pubs/feds/2007/200701/200701pap.pdf). These variables include the personal saving rate, productivity growth or contraction, and the cost of health care.

Still, uncertainty over the direction of U.S. fiscal policy, especially with regard to whether lawmakers cut or raise U.S. deficits or change the rules governing Social Security and Medicare, makes it hard to predict when any economic effects from aging might materialize, she says.

“There are a lot of models that say consumption is going to fall and savings will increase” as a consequence of aging, said Sheiner, a former economist with the Federal Reserve Board of Governors. “But a lot of them assume that the government puts itself on a sustainable path and cuts benefits or raises taxes for pensions.”

Additionally, policies that might address the consequences of aging on issues such as labor force participation need to take into account the widening inequality in mortality by income in the United States, Sheiner said. For example, some have proposed boosting the retirement age as one possible solution to try to keep older people in the workforce longer. But a January 2016 report from the Center for Retirement Research at Boston College found a gap in life expectancy along lines of socioeconomic status, raising questions about the potential feasibility of such a policy (see crr.bc.edu/wp-content/uploads/2016/01/IB_16-1.pdf).

The report, titled *Does a Uniform Retirement Age Make Sense?*, is based on research that estimated trends in mortality from 1979 to 2011 by education. It concluded that although all workers were likely to live longer today than in the past, those with lower educational levels did not live as long as people with higher socioeconomic status (SES). “Policies seeking to extend work lives that treat all workers the same will tend to cut into the retirement of low-SES workers more than high-SES workers,” the center’s researchers wrote.

Now or later?

Ben Bernanke discussed various actions the nation’s policymakers could take to address changing U.S. demographics during his time as Federal Reserve chairman, including reforming entitlements, raising private savings rates, and making improvements to education. He warned that acting later rather than sooner on these fiscal issues could lead to gloomy outcomes for consumption and overall growth.

“If we decide to pass the burden on to future generations—that is, if we neither increase saving now nor reduce the benefits to be paid in the future by Social Security and Medicare—then the children and grandchildren of the baby boomers are likely to face much higher tax rates,” Bernanke said in a 2006 speech. “A large increase in tax rates would surely have adverse effects on a wide range of economic incentives, including the incentives to work and save, which would hamper economic performance” (federalreserve.gov/newsevents/speech/bernanke20061004a.htm).

Karen Jacobs
Staff writer for Economy Matters

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Federal Reserve Bank of Atlanta Milestones

Milestones

Research and Monetary Policy

The Atlanta Fed held the 20th annual Financial Markets Conference in March. The Reserve Bank's signature research and policy event assembled financial and economic policy-makers, academics, economists, and executives who explored the future of traditional commercial banks and non-bank financial firms, or "shadow banks." Speakers included Fed Vice Chairman Stanley Fischer and former U.S. Treasury Secretary Robert Rubin.

Atlanta Fed economists produced research and analysis on timely topics such as the federal rescue of Fannie Mae and Freddie Mac, methods of forecasting unemployment, financial stability, the health and dynamics of labor markets, China's macroeconomy, and stock market volatility.

Atlanta Fed economists received media attention for online tools that transform complex economic data and concepts into digestible packages. The real-time forecasting instrument GDPNow was widely hailed for accurately predicting quarterly economic growth. In 2015, the Bank introduced the Wage Growth Tracker to trace all-important readings of aggregate U.S. worker pay, and myCPI, which allows users to calculate their personal cost of living.

The Atlanta Fed's Americas Center cohosted with New York University's Stern School of Business a research conference on international economics.

The Americas Center in August hosted a trade delegation from Panama led by Minister of Commerce and Industry Melitón Arrocha and Panama City Deputy Mayor Raisa Banfield. Fed staff spoke to the delegation about outreach, monetary policy, bank supervision, and payments operations.

In February, the Americas Center and the Inter-American Development Bank cohosted "Non-Contributory Pensions, Social Assistance Programs, and Household Savings in Latin America and the Caribbean." Economists presented new research on noncontributory pensions in Argentina, Bolivia, Brazil, and Mexico. The keynote speaker was Atlanta Fed research economist Toni Braun.

The Community and Economic Development (CED) group convened conferences and published research on such topics as community development finance, links between education and labor market dynamics, neighborhood redevelopment and blight remediation, workforce development, and economic dynamism in smaller metropolitan areas.

The CED group collaborated with the Kansas City Fed and Rutgers University's Heldrich Center to publish *Transforming U.S. Workforce Development Policies for the 21st Century*. The book includes contributions from leading academics, policymakers, and practitioners.

Education and Public Outreach

The economic education team created a series of four personal finance infographics on the following topics: the importance of financial planning, building and maintaining good credit, the development of human capital, and banking. The team distributed more than 8,000 copies of the printed posters to teachers.

Attendance at economic education workshops increased 12 percent, to 5,781 attendees, and participation at

presentations rose about 8 percent, to 5,468. Through its economic education programs, the team met a strategic objective to reach 75 percent of high schools in the Sixth District that are identified as inner city, majority-minority, or girls' schools.

Atlanta Fed President Dennis Lockhart delivered more than a dozen public speeches on monetary policy and various aspects of the macroeconomy, including consumer spending, public pensions, and banking regulation. In the second half of the year, his talks focused increasingly on conditions he viewed as appropriate for raising the federal funds rate.

President Lockhart joined a roster of Atlanta business and civic legends when he was inducted into the Junior Achievement Atlanta Business Hall of Fame. In the group's hall, Lockhart joined luminaries such as cable TV pioneer Ted Turner, baseball great and businessman Henry Aaron, Ambassador Andrew Young, and Coca-Cola founder Asa Candler.

In the ECONversations series of webcasts, Atlanta Fed experts discussed subjects including oil markets, the state of the macroeconomy, inflation, and the nation's labor market. One ECONversation was held before a live audience at the Atlanta Fed headquarters.

Six Public Affairs Forums brought leading authorities to Atlanta Fed offices to offer economic perspectives on public policy issues. Forums explored topics including the monetary costs of dementia, the emergence of the "sharing economy," a historical perspective on financial crises, and the economic value of the Mississippi River.

In August, the Atlanta Fed launched *Economy Matters*, a continuously published digital magazine covering a variety of economic research, banking, regional, and community and economic development topics.

Payments

The Retail Payments Office selected IBM's Financial Transaction Manager product to replace the current mainframe-based ACH processing platform. Once installed, the replacement platform will provide flexibility for future technology changes, promote processing efficiencies, and enhance responsiveness to market demands.

In support of the Federal Reserve's *Strategies for Improving the U.S. Payment System*, the Retail Payments Office

collaborated across the payments industry and with the National Automated Clearing House Association and the Clearing House to support enhancements to same-day ACH services. The enhancements, to be implemented in phases beginning in September 2016, will facilitate the use of the ACH network for certain time-critical payments, accelerate final settlement, and improve funds availability to payment recipients.

Supervision and Regulation

The Supervision and Regulation staff and its Fed System counterparts put final touches on the latest round of stress tests and Comprehensive Capital Analysis and Reviews (CCAR) of the nation's largest financial institutions. More than 100 examiners from around the System gathered at the Bank's headquarters to discuss the CCAR, which is an annual process to ensure that the largest banking companies set aside enough of a financial cushion to weather a severe business downturn.

The Supervision and Regulation department expanded its efforts to inform the banking industry and general public with more ViewPoint Live webcasts. The online broadcast, which allows participants to ask questions in real time, takes its name from "ViewPoint," the department's quarterly publication on banking conditions and trends.

Corporate Citizenship

Georgia Commute Options awarded the Atlanta Fed headquarters top honors for its efforts to promote clean commuting options, including carpooling, taking public transit, walking or biking to work, and teleworking.

Atlanta Fed employees logged 2,500 volunteer hours to support more than 50 charities throughout the Sixth District, with a focus on education, youth and workforce development, and community development.

Fifty-three Atlanta Fed employees serve in leadership roles at 100 not-for-profit organizations, offering expertise in areas like strategy development, financial planning, and operations.

Atlanta Fed staff members contributed nearly $300,000 to United Way and other charities through workplace giving campaigns.

Diversity and Inclusion/Office of Minority and Women Inclusion

The Bank received external recognition based on multiple diversity and inclusion programs and initiatives. Recognitions included for the second straight year being named to DiversityInc's list of Top 10 Regional Companies for Diversity, moving up to fifth place from ninth in 2014, and earning a perfect score on the Human Rights Campaign's Corporate Equality Index.

The Urban Financial Services Coalition (UFSC), a group focused on creating opportunities for minorities in the financial services industry, held its annual summit at the Bank's headquarters in June. The Bank supported this effort through in-kind donations as well as engagement by Bank officers and staff through formal presentations, panel discussions, and evaluations for the UFSC's young professionals' oratorical competition.

The graying economy has broad implications for economic growth and employment trends, and perhaps even for economic policy.

Financial and Audit Statements

Financial Statements

The Board of Governors and the Federal Reserve Banks annually prepare and release audited financial statements reflecting balances (as of December 31) and income and expenses for the year then ended. The financial statements for the Atlanta Fed are available online at federalreserve.gov/monetarypolicy/files/atlantafinstmt2015.pdf.

Audit Statement

The Federal Reserve Board engaged KPMG to audit the 2015 combined and individual financial statements of the Reserve Banks and Maiden Lane LLC.*

In 2015, KPMG also conducted audits of internal controls over financial reporting for each of the Reserve Banks. Fees for KPMG services totaled $6.7 million, of which $0.4 million was for the audit of Maiden Lane LLC. To ensure auditor independence, the Board requires that KPMG be independent in all matters relating to the audits. Specifically, KPMG may not perform services for the Reserve Banks or others that would place it in a position of auditing its own work, making management decisions on behalf of the Reserve Banks, or in any other way impairing its audit independence. In 2015, the Bank did not engage KPMG for any non-audit services.

* In addition, KPMG audited the Office of Employee Benefits of the Federal Reserve System (OEB), the Retirement Plan for Employees of the Federal Reserve System (System Plan), and the Thrift Plan for Employees of the Federal Reserve System (Thrift Plan). The System Plan and the Thrift Plan provide retirement benefits to employees of the Board, the Federal Reserve Banks, the OEB, and the Consumer Financial Protection Bureau.

the GRAYING of the AMERICAN ECONOMY

2015 Annual Report

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