



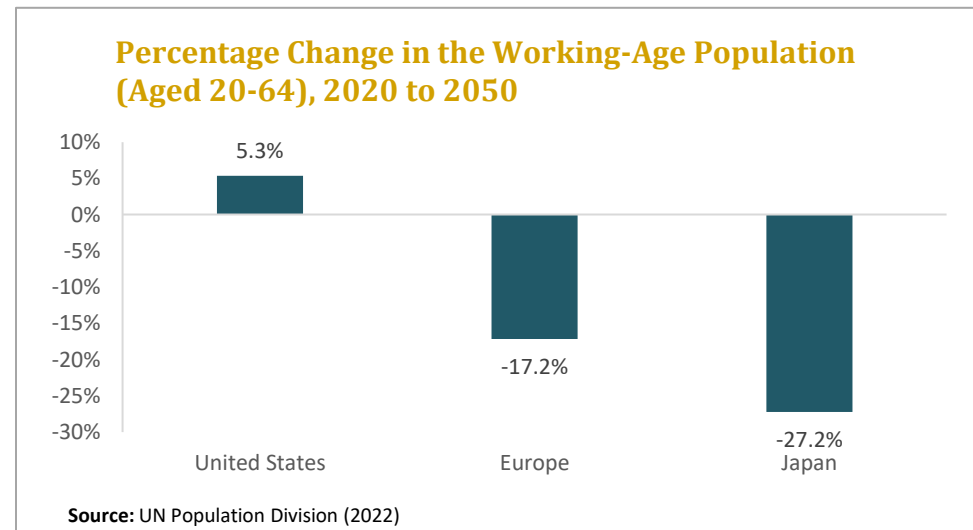
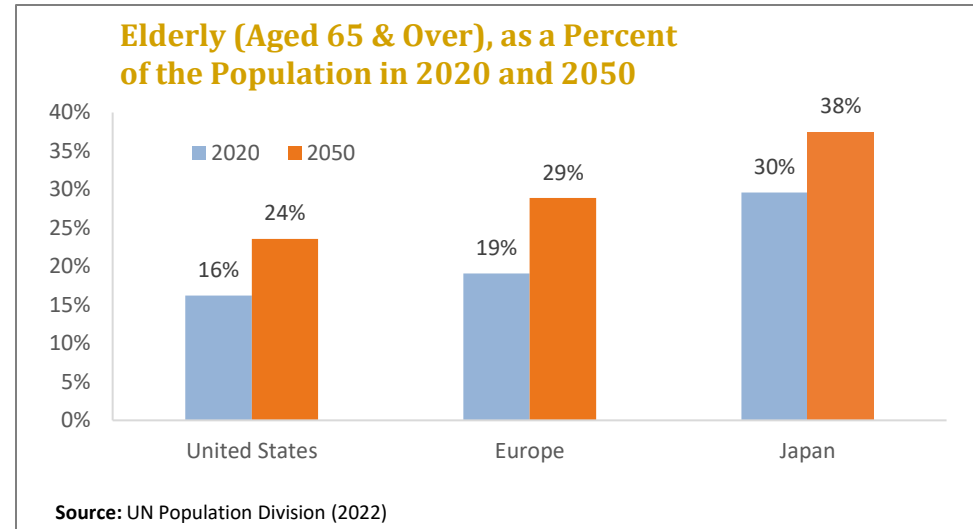
Envision Tomorrow

American Academy of Actuaries
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Population Aging, the Economy, and the Future Environment for Social Security

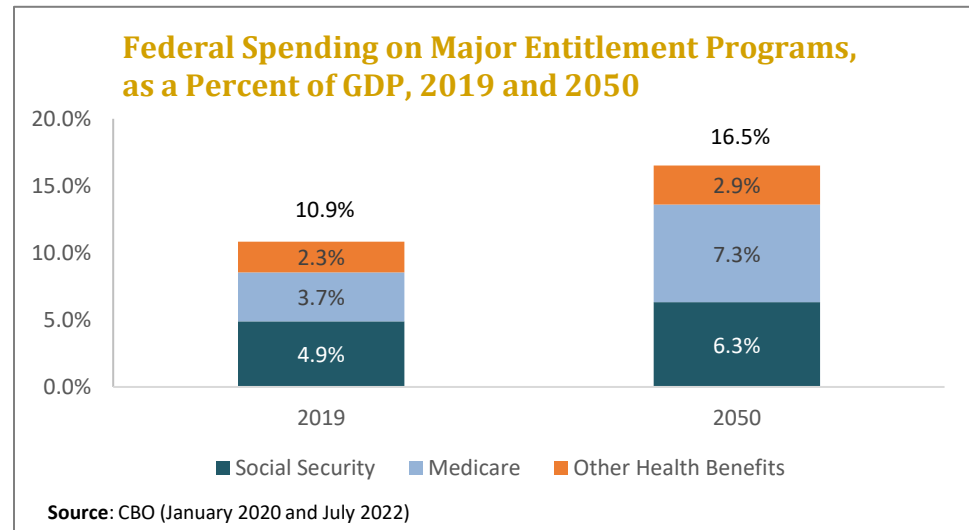
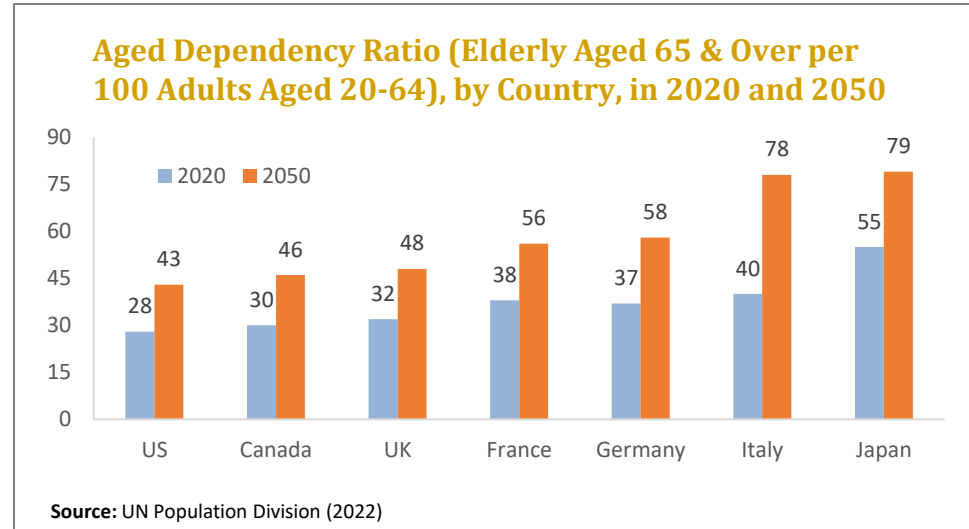
Richard Jackson, Ph.D.

- ❑ The extent of population aging varies greatly across the developed world, mainly because fertility rates have fallen much further in some countries than in others.
- ❑ Until recently, America's relatively high fertility rate, together with substantial net immigration, seemed to ensure that it would remain the youngest of the major developed countries for the foreseeable future.
- ❑ Since the Great Recession, however, the U.S. fertility rate has fallen sharply, while net immigration has also declined.
- ❑ The latest UN projections still show that America will age significantly less than most European countries and much less than Japan. Yet its relative demographic advantage has narrowed considerably compared with previous UN projections.



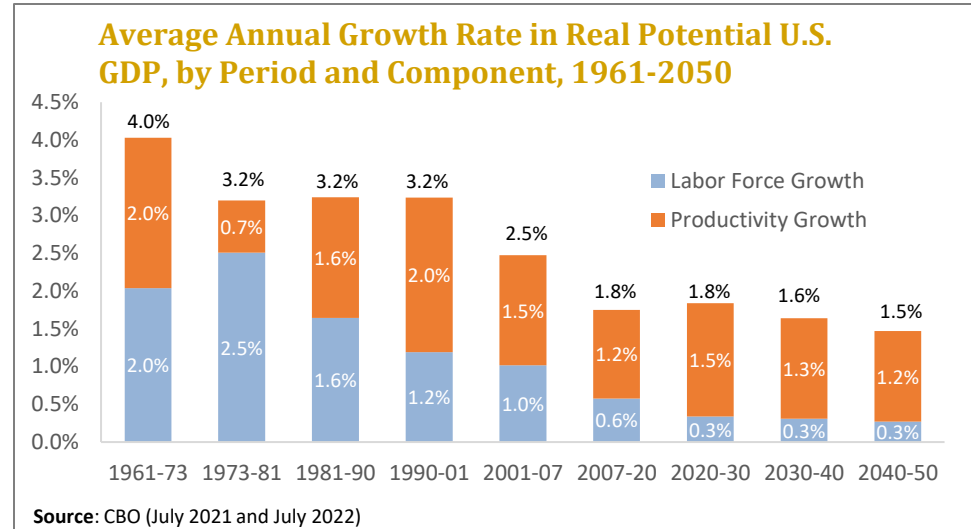
The Impact on Dependency Burdens

- ❑ Over time, lower fertility and higher life expectancy translate into a higher aged dependency ratio, which in turn translates into a higher cost rate for old-age benefit programs like Social Security and Medicare.
- ❑ Higher old-age dependency costs may be partially offset by lower youth dependency costs.
- ❑ However, the youth dependency ratio is projected to fall much less than the aged dependency ratio is projected to rise, the old consume more per capita than the young, and most developed countries have socialized the cost of being old to a much greater extent than the cost of being young.



The Impact on Economic Growth

- ❑ Over time, lower fertility also translates into slower growth in the working-age population, which in turn translates into slower growth in employment and GDP.
- ❑ As employment growth slows, economic growth will increasingly depend on productivity gains. Yet, population aging may also put downward pressure on productivity:
 - ❑ More slowly growing workforces mean less demand for capital-broadening investment and a slower turnover in the capital stock.
 - ❑ Aging workforces may be less flexible, less mobile, and less entrepreneurial.
 - ❑ Economies will be increasingly dominated by service industries resistant to productivity improvements (“Baumol’s Cost Disease”).
 - ❑ Rising fiscal burdens could lead to “crowding out” in capital markets and/or government budgets.
- ❑ Real GDP growth in the United States could fall to just half of its postwar average. Japan and some European countries may face “secular stagnation”—that is, zero growth in real GDP across the business cycle.

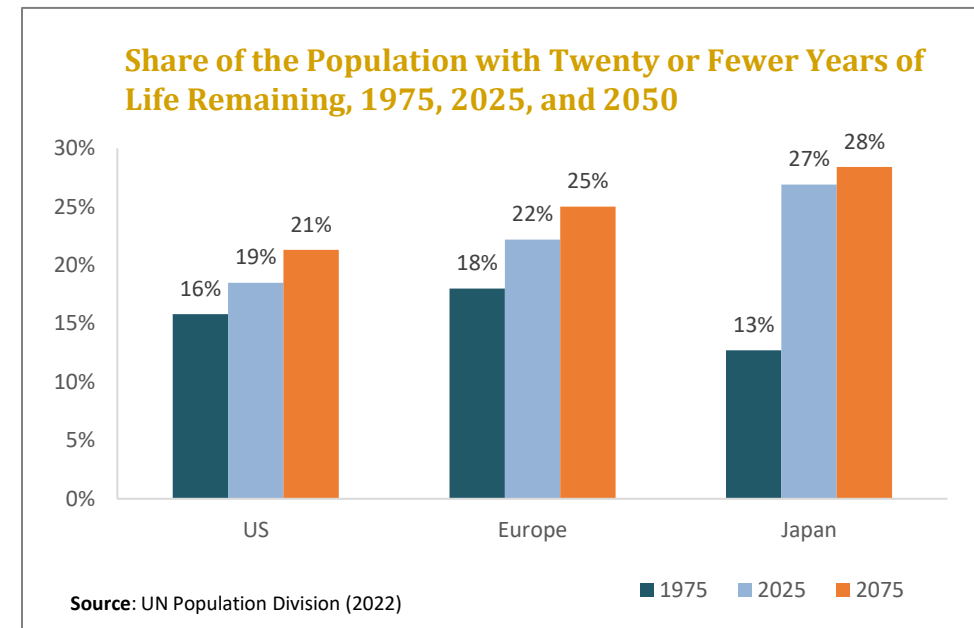


Average Annual Growth Rate in the Working-Age Population (Aged 20-64), by Decade

	1980s	1990s	2000s	2010s	2020s	2030s	2040s
Canada	1.7%	1.1%	1.3%	0.7%	0.2%	0.5%	0.3%
France	1.0%	0.4%	0.6%	-0.3%	-0.2%	-0.2%	-0.3%
Germany	1.1%	0.3%	-0.5%	0.1%	-0.9%	-0.6%	-0.4%
Italy	0.9%	0.2%	0.2%	-0.3%	-0.8%	-1.4%	-1.1%
Japan	0.7%	0.4%	-0.4%	-1.0%	-0.6%	-1.3%	-1.2%
UK	0.7%	0.4%	0.7%	0.4%	0.0%	0.1%	-0.1%
US	1.3%	1.2%	1.1%	0.6%	0.2%	0.2%	0.1%

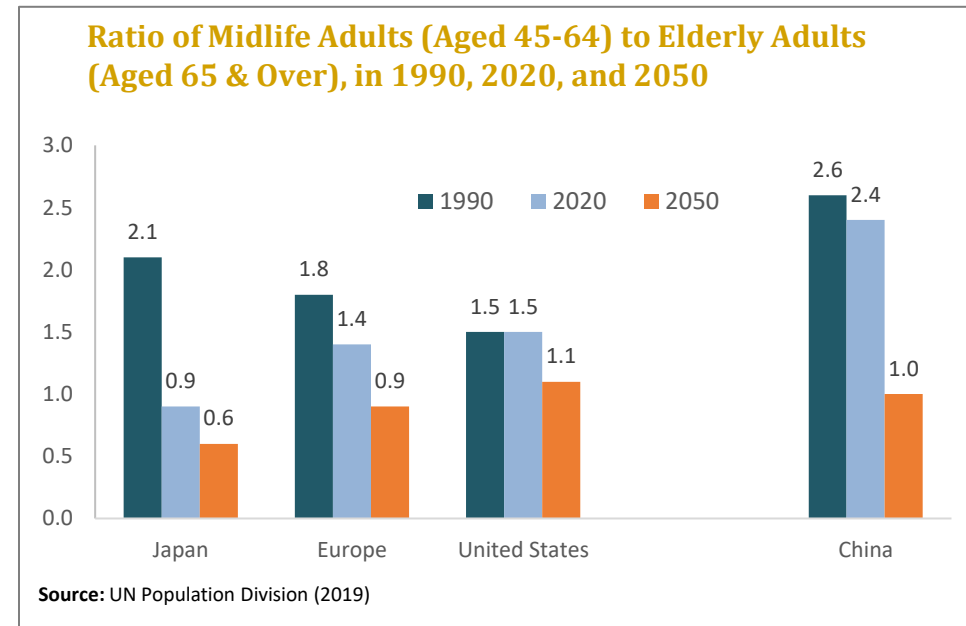
Source: UN Population Division (2022)

- ❑ Along with the economic dynamics of slow growth, there may also be psychological dynamics that put further downward pressure on economic growth.
- ❑ With the size of domestic markets growing more slowly, we may see more cartel behavior to protect market share and more restrictive rules on hiring and firing to protect jobs. We may also see increasing pressure to block foreign competition.
- ❑ Shifts in business and market psychology could be mirrored by broader shifts in the social mood. Slow-growth, aging societies may become more risk averse, have shorter time horizons, and be less willing to make investments with long-term payoffs.
- ❑ A robust statistical literature establishes that extremely youthful societies are often dysfunctional. Extremely aged societies may also prove dysfunctional in some ways, favoring consumption over investment, the past over the future, and the old over the young.



The Savings Puzzle

- ❑ Standard economic theory (Modigliani’s “Lifecycle Consumption Hypothesis”) assumes that people smooth consumption across their lifecycle. They borrow when young to launch careers and establish independent households, become large net savers in midlife, then draw down their savings in retirement.
- ❑ To date, there is little evidence of dissaving by the elderly. Although the developed countries are already aging rapidly, the world is still awash in excess savings.
- ❑ The reasons why savings has failed to fall may include:
 - Government old-age benefits
 - Rising life expectancy
 - Delayed retirement
 - Growing income inequality
- ❑ As large postwar baby boom generations more fully enter retirement, it is possible that many countries will reach a tipping point where savings rates finally fall.



Interest Rates

- ❑ According to the neoclassical growth model, slower GDP growth should reduce real interest rates, while a lower savings rate should increase them.
- ❑ Since population aging can both slow GDP growth (through its impact on employment and productivity) *and* lower savings rates (as more of the population enters the retirement years), the impact is uncertain. Aging could either pull interest rates down or push them up.
- ❑ To date, the growth effect has dominated, pulling interest rates down. In the future, the lifecycle effect may come to dominate, pushing them back up.

Inflation

- ❑ The traditional view: Aging is deflationary. The old consume less than working-age adults, depressing economic activity and prices.
- ❑ The new view: Aging is inflationary. Consumer demand will outstrip productive capacity, driving prices up.

SOLOW-SWAN GROWTH MODEL

Formula for the Equilibrium Real Rate of Return in a Growing Economy

$$r = \alpha * \underbrace{\frac{n+g+\delta}{s}}_{\text{Marginal Product of Capital Stock}} - (\text{Risk Premium})$$

r = Real Interest Rate

g = Productivity Growth Rate

n = Employment Growth Rate

s = Savings Rate

α = Capital Share of National Income

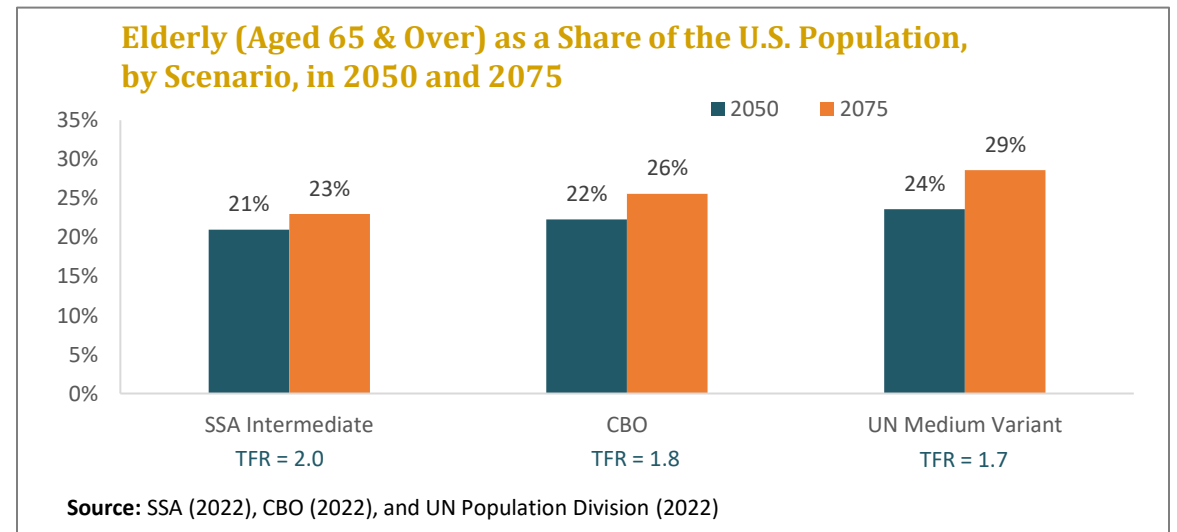
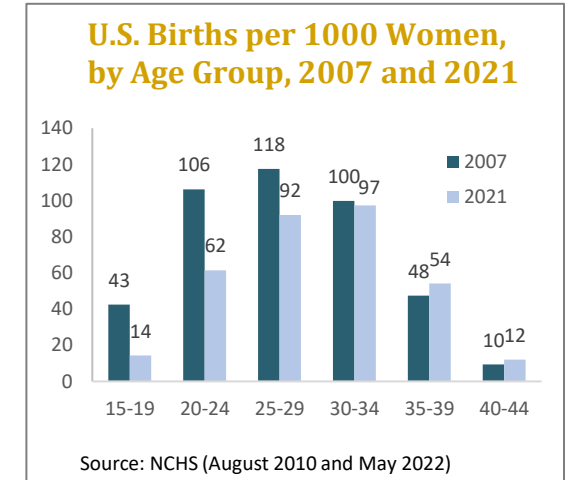
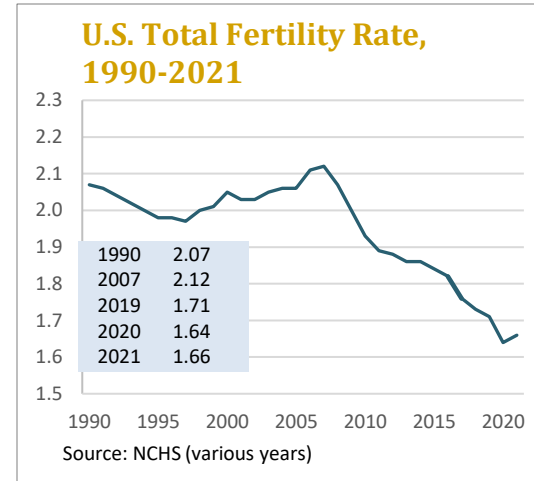
δ = Rate of Depreciation

Three Policy Imperatives

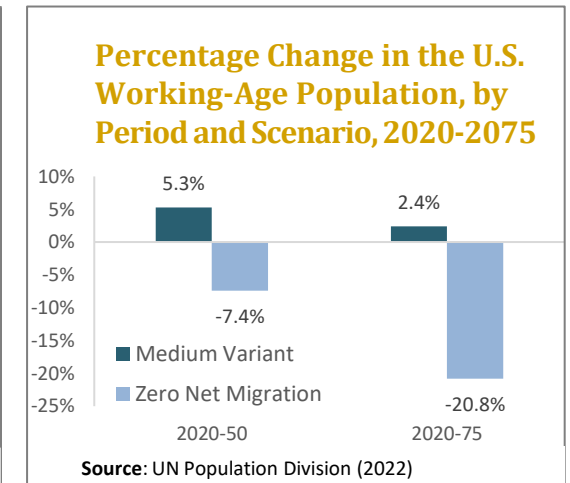
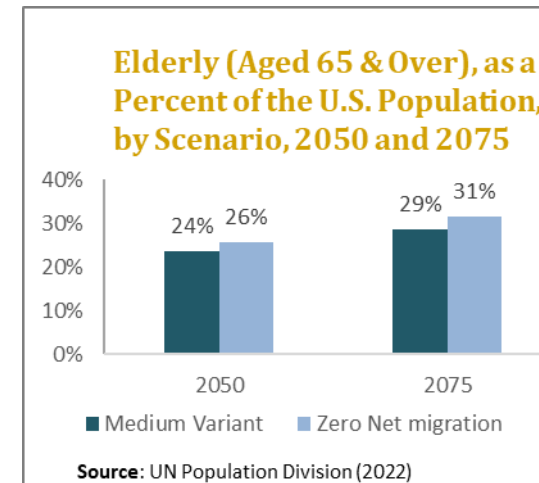
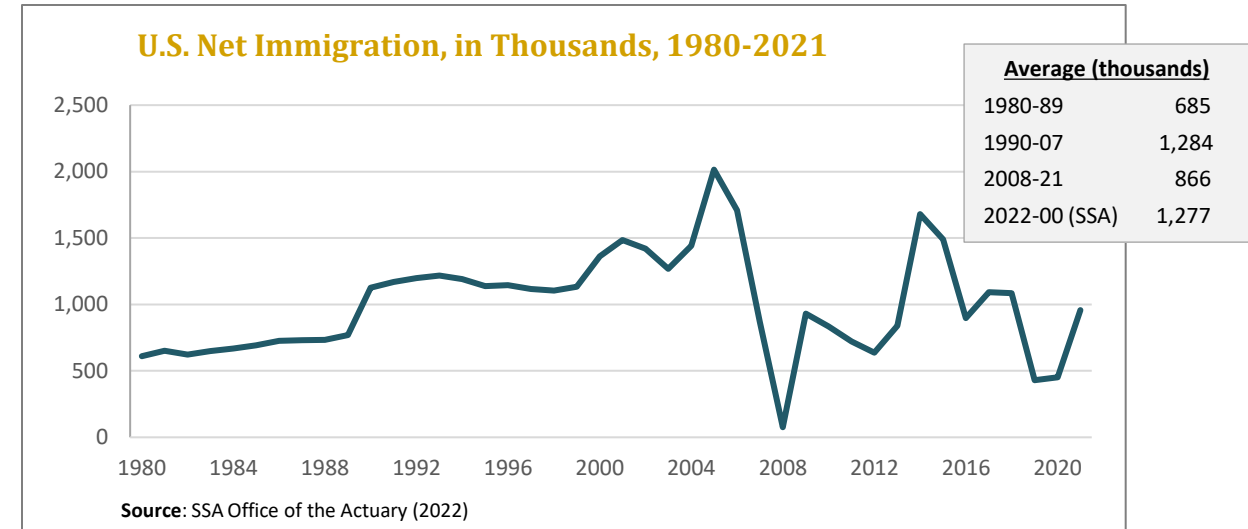
- ❑ **Facilitate Higher Birthrates:** Policies that help workers, and especially women, to balance jobs and family could help to reverse the recent decline in birthrates.
- ❑ **Ensure Adequate Immigration:** Some developed countries, notably Australia and Canada, have made immigration a lynchpin of their strategy to address the aging challenge. So could the United States.
- ❑ **Encourage Productive Aging:** The elderly are not only the fastest growing segment of America's population, but its most underutilized human resource. Removing disincentives to work at older ages and making new investments in the health of the elderly could help America more fully leverage their productive potential.

Facilitate Higher Birthrates

- With the exception of minor upticks in 2014 and 2021, the U.S. TFR has fallen every year since the Great Recession, from 2.12 in 2007 to 1.66 in 2021.
- The decline in the U.S. TFR is not large enough to put America on the ruinous demographic trajectory of an Italy, Japan, or South Korea. Unless birthrates rise again, however, the United States will age considerably more than current SSA projections suggest.
- The persistent gap between ideal and expected fertility on the one hand and realized fertility on the other hand suggests that new policy initiatives which help workers, and especially women, balance jobs and family may be an important part of the solution.



- Over the past fifteen years, U.S. net immigration has followed a roller-coaster course, plunging in the wake of the Great Recession, partially recovering in the early 2010s, declining again starting in 2016, then once more plunging in 2020 amid the pandemic border closings.
- The SSA assumes that net immigration will recover to pre-Great Recession levels. Ensuring that this happens should be an explicit goal of U.S. policy. Although immigration cannot reverse the aging of the U.S. population, it can help to ensure that America still has a growing workforce and economy.
- During the 2020s and 2030s, immigration will be the only reason that the United States has a growing working-age population. By the 2040s, it could be the only reason that it still has a growing total population.



Encourage Productive Aging

- ❑ After falling steeply from the 1950s through the 1970s, the elderly labor-force participation rate bottomed out in the 1980s and 1990s. Since then it has risen substantially. During the 2010s, the elderly accounted for three-fifths of all growth in U.S. employment.
- ❑ The trend toward longer work lives could have many benefits for an aging America:
 - In economic terms, longer work lives could help to offset the drag that slower growth in the working-age population would otherwise have on economic growth.
 - In fiscal terms, the extra tax revenue they generate could help to alleviate the burden of rising old-age benefit costs.
 - In individual terms, some studies suggest that longer work lives may have a positive effect on the physical health, cognitive function, and emotional well-being of older adults.
- ❑ More fully leveraging the productive potential of the elderly may require adjustments to policies that continue to discourage work at older ages, as well as large new investments in the health of the elderly, and especially of the future elderly.

