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# Social Security's Projected Shortfall: The Role of Demographic Factors

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SUMMARY

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# Social Security's Projected Shortfall: The Role of Demographic Factors

Social Security is a social insurance program that provides income replacement to workers and their families due to a loss of earnings after a worker's retirement, death, or disability. Yet Social Security, the federal government's largest benefit program, is facing a projected funding shortfall. Social Security's ability to pay benefits to current and future beneficiaries is determined by its revenues, costs, and trust funds. The program's projected shortfall is the result of rising benefit costs, which, absent congressional action, will impact the program's ability to pay full benefits on time. Under the Social Security Board of Trustees' intermediate assumptions—their best estimate as to the future experience—the program will be able to pay about 80% of scheduled payments beginning sometime in 2035. At that time, and absent changes to current law, Social Security beneficiaries would receive a de facto reduction in benefits of about 20%.

Over time, Social Security's rising costs relative to revenues have created a financial imbalance. Social Security's revenues and costs are determined by demographic (e.g., fertility, mortality, and immigration), economic (e.g., wage growth, price growth, and productivity), and program-specific factors (e.g., disability benefits claim rates). For example, these factors affect the number of covered workers and their earnings levels, as well as the size and makeup of the beneficiary population and the level of monthly benefits. Demographic factors are the biggest driver of Social Security's projected shortfall—primarily, the aging of the U.S. population caused by decreases in fertility and increases in longevity, which have resulted over time in a lower ratio of workers paying into the program (i.e., revenues) relative to beneficiaries collecting from the program (i.e., costs).

This report analyzes key demographic assumptions of the Social Security–covered population and their relationship to the financing of Social Security. First, this report provides an overview of Social Security's financial status, including trends since the Social Security Amendments of 1983 (P.L. 98-21), commonly considered the last major reform to Social Security. Next, the report provides background on the three demographic factors that determine a population—fertility, mortality, and immigration—as well as trends over time in these factors in the United States. This report then analyzes the sensitivity of the program's financial status to different fertility, mortality, and immigration scenarios, relying on projections from the Social Security Board of Trustees and the Congressional Budget Office.

Hypothetical increases in either fertility or immigration would improve Social Security's financial status. According to the trustees' estimates, fertility in the United States would need to more than double from its value in 2023 to eliminate Social Security's total projected financial shortfall. Specifically, each woman would immediately need to birth almost two more children, on average, to move from current fertility, which is at a historical low, to a level that would eliminate the projected shortfall. Such a high level of fertility in the United States has not been experienced since 1962. Based on the trustees' estimates, it would take an average annual total net immigration of about 3.9 million, effective immediately, to eliminate Social Security's entire funding shortfall. Since 1940, there has not been a recorded year of total net immigration of more than 2 million in the United States. Hypothetical decreases in mortality would have the opposite effect, worsening Social Security's funding shortfall. According to the trustees' estimates, decreases in the rate of mortality declines would lead to only small decreases in Social Security's funding shortfall. Even an assumption of no reduction in death rates at all would not eliminate the projected financial shortfall. Of the three demographic factors, Social Security's financial status is most sensitive to fertility. Based on recent trends, the magnitude of the future increases in fertility necessary to bring Social Security back into financial balance appear unlikely to occur in the United States.

This report ends with a brief discussion of policy considerations related to demographic factors and Social Security's funding shortfall. Although researchers have evaluated the effects of policies that could increase fertility—such as parental leave, child care, or cash transfers—there is no widespread consensus that these policies could significantly increase fertility in the United States, much less double fertility. Therefore, it is doubtful whether policy responses to fertility itself are a viable solution to addressing Social Security's projected shortfall. Policymakers may instead choose to look at reforms to the Social Security program that would increase revenues or reduce costs. Policy changes implemented sooner rather than later, in addition to requiring cost-reducing or revenue-increasing provisions that are smaller in magnitude, would allow workers and beneficiaries more time to change behavior.

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# Introduction

Social Security is the federal government's largest benefit program. It protects workers and their families against loss of earnings due to a worker's retirement, death, or disability.[1] Among aged individuals, Social Security is the most common source of income (over 90% of aged individuals receive Social Security benefits) and is also the largest single source of income for aged individuals (Social Security supports over one-quarter of aggregate income for aged individuals).[2] Moreover, research has demonstrated Social Security's role in income support accounts for most of the decline in poverty among aged individuals over the past 50 years.[3] Yet Social Security is facing a projected financial shortfall. Since 2021, Social Security's costs, which are mainly benefit payments, have exceeded its revenues, which are primarily payroll taxes. Currently, the program's asset reserves held in the Social Security trust funds are augmenting the program's tax revenues so that full scheduled benefits can be paid. However, on a combined, hypothetical basis, the Social Security trust funds are projected to be depleted in 2035.[4] At that time, and absent changes to current law, Social Security beneficiaries would receive a de facto reduction in benefits of about 20%.[5]

Demographic factors are the biggest drivers of Social Security's projected shortfall—primarily, the aging of the U.S. population caused by decreases in fertility and increases in longevity. This report analyzes key demographic trends of the Social Security–covered population and their relationship to the financing of Social Security.[6] First, this report provides an overview of Social Security's financial status, including trends in costs and revenues. Next, this report discusses the three demographic factors that are the components of a population: fertility, mortality, and immigration. This report then analyzes how trends in fertility, mortality, and immigration are projected to impact Social Security's financial status. Hypothetical increases in either fertility or immigration would improve Social Security's financial status. Hypothetical decreases in mortality would have the opposite effect, worsening Social Security's funding shortfall. Of the three demographic factors, Social Security's financial status is most sensitive to fertility. However, the magnitude of the future increases in fertility necessary to bring Social Security back into financial balance is unlikely to occur in the United States. Finally, this report ends with a discussion of policy considerations related to demographic factors and Social Security's funding shortfall.

[1] For an overview of Social Security, see CRS Report R42035, *Social Security Primer*.

[2] See, for example, CRS Report R47341, *Income for the Population Aged 65 and Older: Evidence from the Health Retirement Study (HRS)*.

[3] For more information, see CRS Report R45791, *Poverty Among the Population Aged 65 and Older*.

[4] Under current law, there are two separate trust funds for the Social Security program: (1) the Old-Age and Survivors Insurance (OASI) trust fund and (2) the Disability Insurance (DI) trust fund. Monies credited to each trust fund cannot be lent or transferred to the other trust fund without authorization from lawmakers. OASI benefits can be paid only from the OASI trust fund, and DI benefits can be paid only from the DI trust fund. For the purposes of this report, the trust funds—and other program information—will be considered on a combined, hypothetical basis.

[5] For a brief discussion of Social Security's financial status, see CRS In Focus IF12844, *Social Security: Finances and Policy Options*.

[6] Because of its focus on Social Security, this report analyzes demographic trends in the U.S. population. Other countries have experienced similar demographic trends. For international comparative information, see **Appendix A** for global trends in fertility, mortality, and immigration.

# Overview of Social Security's Financial Status

Social Security's ability to pay benefits to current and future workers is determined by its revenues, costs, and trust funds. Current and projected imbalances among these elements indicate that the program will not be able to pay the full amounts of scheduled benefits in about 10 years.[7] Under the Social Security Board of Trustees' intermediate assumptions—its best estimate as to the future experience—the program will be able to pay about 80% of scheduled payments beginning sometime in 2035.[8]

## Sources of Revenue and Cost

Social Security is primarily financed through a payroll tax applied to covered earnings up to an annual limit.[9] Some beneficiaries pay income tax on a portion of their Social Security benefits, providing a second source of program financing.[10] Together, these two revenue sources comprise the program's tax revenues (i.e., non-interest revenues). The program's tax revenues are credited to the program's trust funds, from which its costs are also paid. As such, the trust funds provide an accounting mechanism that tracks the program's revenues and costs. Additionally, the trust funds also provide a means to hold any accumulated assets—that is, tax revenues not immediately needed to support costs. The excess tax revenues are held as asset reserves in the trust funds and invested in interest-bearing U.S. Treasury securities. The resulting interest income provides a third revenue source.[11]

Social Security has three main costs: monthly benefit payments, administrative expenses,[12] and the Railroad Retirement financial interchange.[13] Administrative expenses and the financial interchange typically account for about 1% of program costs on an annual basis.[14] Thus, a

[7] Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, p. 14, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf (hereinafter *2024 Annual Report*).

[8] *2024 Annual Report*, p. 3.

[9] In 2024, payroll taxes accounted for 91.2% of program revenues, income from the taxation of benefits accounted for 3.9% of revenues, and interest income accounted for 4.9% of revenues. See Social Security Administration (SSA), "Financial Data for a Selected Time Period," https://www.ssa.gov/OACT/ProgData/allOps.html.

[10] For additional information, see CRS In Focus IF11397, *Social Security Benefit Taxation Highlights*.

[11] As a social insurance program, Social Security's revenues are credited to the trust funds, where they are used to pay benefits. This relationship can be summarized as a transfer of monies between current workers (i.e., those paying into the system) to current beneficiaries (i.e., those collecting benefits from the system). Tax revenues, specifically payroll tax revenues, are not credited or held in personal or private accounts from which benefits are later paid out. For these reasons, the relationship between the number of current workers and current beneficiaries is crucial to Social Security's financial status and is discussed throughout this report.

[12] The program's administrative expenses are incurred by SSA and the Department of the Treasury for administering the program and provisions of the Internal Revenue Code (*2024 Annual Report*, p. 240). Administrative expenses are paid from the trust funds. Nearly all of SSA's administrative expenses are funded by appropriations to its limitation on administrative expenses account, and almost all of the funding for this account is provided each year as part of the annual appropriations process. For more information, see CRS Report R47746, *Social Security Administration (SSA): FY2024 Annual Limitation on Administrative Expenses (LAE) Appropriation: In Brief*.

[13] For more information about the financing of railroad retirement benefits and its connection with the financing of Social Security benefits, see CRS Report RS22350, *Railroad Retirement Board: Retirement, Survivor, Disability, Unemployment, and Sickness Benefits*.

[14] See SSA, "Cost Components," https://www.ssa.gov/OACT/ProgData/tsOps.html.

discussion of the program's costs is essentially a discussion of monthly benefits, which account for about 99% of costs on an annual basis.

## Cash Deficits, Annual Deficits, and Payable Benefits

The Social Security Amendments of 1983 (P.L. 98-21) are commonly considered the most recent major reform to Social Security.[15] When the amendments were passed, Social Security was months away from being unable to pay full benefits. Among other provisions, the amendments used a combination of revenue-increasing and cost-reducing measures to improve the program's long-range financial status. As a result, from 1983 through 2009, Social Security operated with a *cash surplus* (i.e., tax revenues exceeded costs).[16] Each of those year's cash surpluses accumulated in the trust funds and were invested in government securities—as required by law—earning interest.[17]

Since 2010, the Social Security program has operated with *cash deficits* (i.e., costs exceeded tax revenues).[18] Thus, starting in 2010 the program has relied in part on interest income to pay the full amounts of scheduled benefits. Under the intermediate assumptions, the trustees project cash deficits for the remainder of the 75-year projection period.[19]

Starting in 2021, the Social Security program has been operating *annual deficits* (i.e., total costs exceed total revenue). Said differently, tax revenues and interest together have not covered the amount of scheduled benefits. Thus, since 2021, Social Security has redeemed a portion of the asset reserves held in the trust funds in order to pay the full amounts of scheduled benefits. Under the intermediate assumptions, the trustees project continuing and generally increasing annual deficits that will require redeeming increasing amounts of asset reserves.[20] The program is projected to be able to rely on asset reserves to help pay scheduled benefits for about 10 more years. (The projected date of total asset reserve depletion is 2035.) At that point, with no trust fund assets to redeem, Social Security would be able to pay out in benefits only what it receives in tax revenues, which is projected to vary from 73% to 83% of scheduled benefits over the remainder of the 75-year projection period.[21]

Given expected program changes over the 75-year projection period—in terms of the number of workers, the proportion of earnings subject to the payroll tax,[22] price growth, and wage growth—a common practice is to compare the program's tax revenues and costs as a rate of *taxable*

[15] For more information on the development of the 1983 amendments, see CRS Report R47040, *Social Security: Trust Fund Status in the Early 1980s and Today and the 1980s Greenspan Commission*.

[16] See SSA, "Old-Age, Survivors, and Disability Insurance Trust Funds, 1957-2024," https://www.ssa.gov/OACT/STATS/table4a3.html.

[17] 42 U.S.C. §401(d).

[18] See "Income Components" and "Cost Components" at SSA, "Time Series for Selected Financial Items," https://www.ssa.gov/OACT/ProgData/tsOps.html.

[19] For background on the 75-year period used for Social Security projections, see CRS In Focus IF11851, *Social Security Long-Range Projections: Why 75 Years?*

[20] *2024 Annual Report*, Table IV.A3, pp. 50-51.

[21] *2024 Annual Report*, Figure II.D2, p. 14.

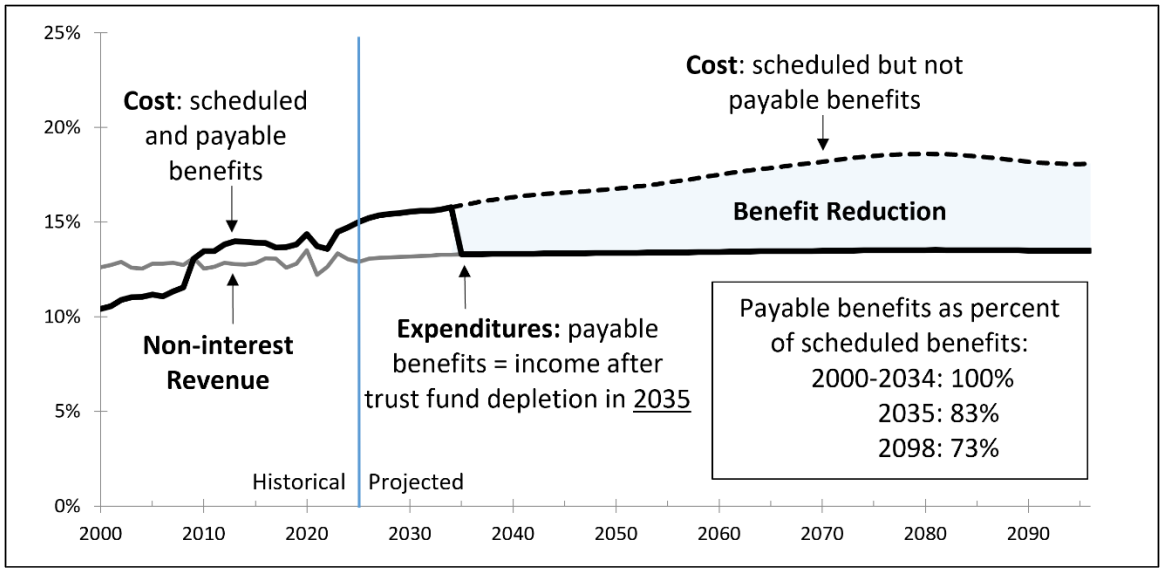
[22] While the number of covered workers is expected to increase, and price and wage growth are expected to be positive, the proportion of earnings subject to the payroll tax is expected to be relatively stable. From a proportion of 82.1% in 2022, the trustees expect this to increase to 82.5% by 2033 and remain constant thereafter. For more information, see SSA, Office of the Chief Actuary (OACT), *The Long-Range Economic Assumptions for the 2024 Trustees Report*, May 6, 2024, p. 81, https://www.ssa.gov/OACT/TR/2024/2024_Long-Range_Economic_Assumptions.pdf.

*payroll*.[23] As the program grows—in terms of number of covered workers (i.e., revenue) and number of beneficiaries (i.e., cost)—this practice provides a means to compare revenues and cost in a standardized manner. **Figure 1** displays this standardization with tax revenue (i.e., non-interest revenue) and costs displayed as a percentage of taxable payroll from 2000 to 2098.[24]

**Figure 1** shows that the projected revenue rate is relatively stable (flat) over the projection period at just over 13%. Because the revenue rate is expressed as a percentage of taxable payroll, and the combined Social Security payroll tax rate is fixed under current law at 12.4% of taxable earnings, any remaining variation in the revenue rate is due to assumptions about the income from the taxation of benefits, which is a relatively small portion of revenue.[25] The cost rate, which has been higher than the revenue rate since 2010, is projected to rise rapidly through 2040 because of demographic factors and then rise more gradually through 2080 before declining somewhat afterwards.[26] The trustees project that costs will continue to exceed total tax revenues indefinitely. That is, the program will continue to experience annual deficits.[27] At the point of projected trust fund depletion (2035)—when no trust fund asset reserves or interest income will be available—the difference between the projected cost rate and projected non-interest revenue rate reflects a benefit reduction. At this point, there will be a difference between scheduled benefits (benefit amounts specified under law) and payable benefits (percentage of scheduled benefits supported by tax revenues).

**Figure 1. Social Security Cash Flow as a Percentage of Taxable Payroll, 2000-2098**

On a Combined Basis Under the 2024 Intermediate Assumptions




**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal*

[23] *2024 Annual Report*, pp. 224-225. *Taxable payroll* is the weighted sum of taxable wages and taxable self-employment income. When this sum is multiplied by the Social Security payroll tax rate (i.e., 12.4%), it results in the total amount of payroll taxes (*2024 Annual Report*, p. 254). See **Appendix B** for a comprehensive glossary of terms used in this report.

[24] For the remainder of this report, the non-interest revenue rate—or tax revenue rate—will be described more simply as the revenue rate.

[25] *2024 Annual Report*, p. 60.

[26] *2024 Annual Report*, pp. 13-15.

[27] *2024 Annual Report*, pp. 13-15.

*Disability Insurance Trust Funds*, May 6, 2024, underlying data for Figure II.D2, p. 14, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf.

**Note:** The trustees' intermediate assumptions reflect their best estimate as to the future experience.

## Causes of Relative Revenue and Cost Divergence

The current and projected imbalance between the program's revenues and costs, as shown using revenue rates and cost rates in **Figure 1**, is caused by demographic factors (e.g., fertility, mortality, and immigration), economic factors (e.g., wage growth, price growth, and productivity), and program-specific factors (e.g., disability benefits claim rates). Considered together, projections of these factors show program costs and revenues diverging—with projected costs rising and projected revenues remaining relatively stable.

Projected demographic, economic, and program-specific factors affect all aspects of the projected financial status of the program, such as the number of covered workers and their levels of earnings, as well as the size and makeup of the beneficiary population and the level of monthly benefits. Assumptions for all three categories of factors contribute to the projected imbalance. For instance, economic factors—such as recessions—could lead to lower-than-expected payroll tax revenues and higher-than-expected costs.

According to the trustees, the divergence between the two rates is largely attributable to demographic factors. That is, demographic factors alone are expected to cause the cost rate to increase markedly in coming years. The trustees write, "Under the intermediate assumptions, demographic factors cause the projected cost rate to rise rapidly until about 2040, then rise more gradually through 2080, and then generally decline through 2098."[28]

# Overview of Demographic Factors

Because of their important role in Social Security's projected funding shortfall, demographic factors and how they affect the program's finances take up the remainder of this report. In classical demography, three processes determine the size, growth, and structure of any population of individuals: *fertility*, *mortality*, and *net immigration* (composed of both in-migration and out-migration).[29] *Fertility* refers to the number or rate[30] of births, through which individuals enter a population. Mortality accounts for the number or rate of deaths, through which individuals exit a population. Individuals may also enter or exit a population through net immigration, which can be counted as a number or expressed as a rate.

Below is a discussion of historical trends in these demographic factors in the United States as well as a brief review of prior research on the causes of these trends. Demographic concepts can be measured in a variety of ways. Additionally, there are different sources that publish counts or estimates of demographic factors. This report relies on the specific demographic measures employed by the Social Security trustees and the Congressional Budget Office (CBO) as these estimates are used in the program's projections of financial status and cost estimates for policy

[28] *2024 Annual Report*, p. 13.

[29] Samuel Preston et al., *Demography: Measuring and Modeling Population Processes* (Blackwell Publishing, 2001).

[30] For the purpose of demography, *rate* refers to the number of events (e.g., births or deaths) occurring relative to the population exposed to the risk of the event (i.e., women of childbearing age for birth or individuals still alive at a given age for deaths) in a defined population, or an "occurrence-exposure" rate. A variety of conventional occurrence-exposures rates are used in demography, most of which are adjusted for age and sex. For the purposes of this report, which focuses on the Social Security program, the fertility, mortality, and immigration measures published by the Social Security Board of Trustees and the Congressional Budget Office (CBO) will be discussed.

changes. The glossary in **Appendix B** provides definitions of technical terms, including those related to demographic factors.

## Fertility in the United States

Births are discrete events recorded through vital statistics reports but are not evenly distributed across the lifespan of an individual. Thus, one conventional measure of fertility that captures age-specific birth rates is the *total fertility rate* (TFR). The TFR is calculated as the average number of children that would be born to a woman throughout her lifetime if she were to experience, at each age of her life, the birth rate observed in that year.[31] The TFR in the United States has generally been declining since 1965. Given a population with low mortality and little immigration, a TFR of 2.1 is generally considered to be replacement-level fertility, meaning it is the fertility rate at which a population can maintain its size.[32]

Historical and projected TFRs—and their effects on the financial status of the Social Security program—are of interest to Congress. For example, in an April 2023 hearing by the House Committee on Ways and Means, Subcommittee on Social Security, low fertility rates and their implication for worker-to-beneficiary ratios prompted Member questions.[33]

### Historical Fertility Rates

For the purposes of Social Security, the trustees calculate TFRs as "the sum of the single-year-of-age birth rates for girls and women aged 14 through 49, where the rate for age 14 includes births to girls aged 14 and under, and the rate for age 49 includes births to women aged 49 and over."[34]

In 1918, the TFR in the United States was 3.31 children per woman.[35] By 1940, the TFR was comparatively lower, at a rate of 2.23 children per woman. This was the lowest TFR that had been observed to date. This decrease was reversed within the decade when a period of high fertility following World War II created the baby boom cohort—those born between 1946 and 1964 (**Figure 2**). This period of high fertility shown in **Figure 2** is marked on either side by periods of relatively low fertility. Fertility rates after 1964 (i.e., immediately following the baby boomers) decreased to the lowest levels recorded in the United States. Much of what makes the baby boom generation so significant is that the cohort was both preceded and followed by lower fertility rates.[36]

As shown in **Figure 2**, the TFR began to increase in the early 1980s and generally showed an increasing trend until the late 2000s. In 2007, the TFR was 2.12, the highest it had been since 1971. However, starting in 2008, the TFR began to decrease and reached a low—in the 1940-2022 period—of 1.64 in 2020. The TFR increased slightly in 2021 and 2022 before returning to 1.64 in 2023.

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[31] Preston et al., *Demography*, p. 95.

[32] This number is greater than two (i.e., two parents) to account for infant mortality. For additional details on the concept of replacement-level fertility, see the section on "Replacement-Level Fertility and the Role of Immigration."

[33] U.S. Congress, House Committee on Ways and Means, Subcommittee on Social Security, *Social Security Fundamentals: A Fact-Based Foundation*, 118th Cong., 1st sess., April 26, 2023.

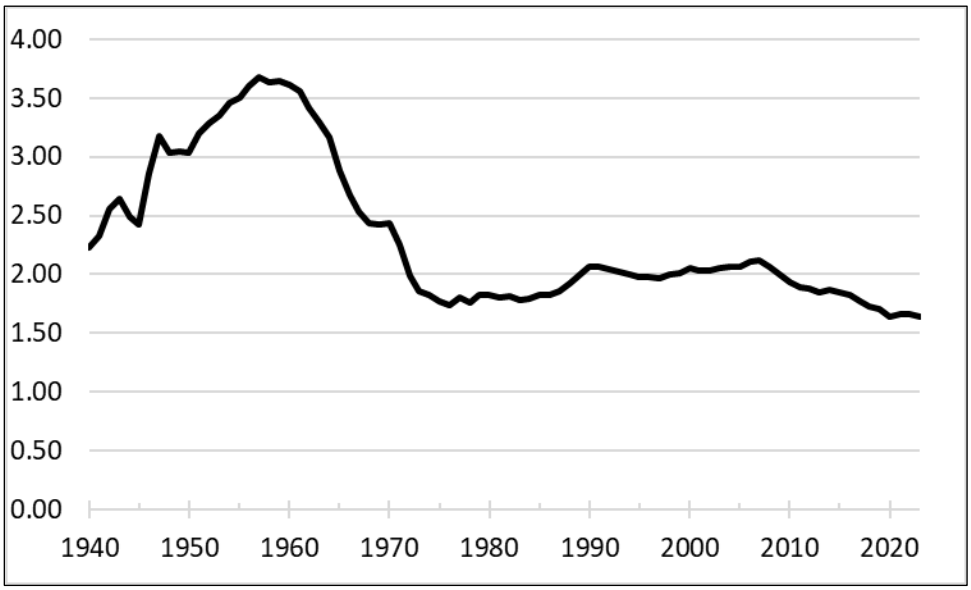
[34] See **Appendix B** for a comprehensive glossary of terms used in this report.

[35] *2024 Annual Report*, p. 84.

[36] This point is further reinforced by observing the crude birth rate, which is the number of births per 1,000 females ages 15-44 over a broader historical period. See **Figure A-1**.

**Figure 2. Historical Total Fertility Rates in the United States**

1940-2023




**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, Table V.A1, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf.

**Note:** The total fertility rate for a year is defined as the average number of children that would be born to a woman in her lifetime if, at each age of her life, she were to experience the birth rate observed for a specified year.

## Causes of the Decrease in Fertility Rates

Research suggests that many factors contribute to the decline in fertility rates.[37] For instance, increases in women's education have been linked to decreased fertility (i.e., education delays childbearing, which reduces fertility).[38] Similarly, research has documented the role of women's increasing labor force participation in the United States—especially for college-educated women—in reordering work and family experiences, with implications for delays and decreases in fertility.[39] Other studies show that changes in fertility rates are closely tied to changes in personal income and changes in the employment rate.[40] This perhaps helps explain why a

[37] See, for example, Melissa Kearney and Phillip Levine, "The Causes and Consequence of Declining U.S. Fertility," in *Economic Policy in a More Uncertain World* (Aspen Economic Strategy Group, 2023). The United States is not alone in experiencing declining fertility. World Bank data show that a majority of countries experienced a decline in fertility rates from 1960 to 2020 (see https://data.worldbank.org/indicator/sp.dyn.tfrt.in). See also David Bloom et al., "Fertility in High-Income Countries: Trends, Patterns, Determinants, and Consequences," *Annual Review of Economics*, vol. 16 (2024), pp. 159-184. For international comparative information on global trends in fertility, see **Appendix A**.

[38] Jennie Brand and Dwight Davis, "The Impact of College Education on Fertility: Evidence for Heterogeneous Effects," *Demography*, vol. 48, no. 3 (2011), pp. 863-887.

[39] See Claudia Goldin, "The Quiet Revolution That Transformed Women's Employment, Education, and Family," *American Economic Association Papers and Proceedings*, vol. 96 (2006), pp. 1-21; Claudia Goldin, "The Long Road to the Fast Track: Career and Family," *Annals of the American Academy of Political and Social Science*, vol. 596 (2004), pp. 20-35; Arleen Leibowitz and Jacob Klerman, "Explaining Changes in Married Mother's Employment Over Time," *Demography*, vol 32 (1995), pp. 365-378; and James Smith and Michael Ward, "Time-Series Growth in the Female Labor Force," *Journal of Labor Economics*, vol. 3 (1985), pp. S59-S90.

[40] See, for example, Paul Taylor et al., "In a Down Economy, Fewer Births," Pew Research Center, October 12, 2011, (continued...)

decrease in fertility coincided with the 2008-2009 financial crisis, before which the fertility rate was increasing. Additional research reinforces the effect of economic and financial uncertainty on fertility and birth rates. Studies have shown that individuals who worried more frequently about future job prospects were more likely to have doubts about having children and expected to have them later in life.[41] Research has also suggested that a mother's postponement of childbearing increases her children's socioeconomic opportunities.[42]

Costs associated with raising children may have effects on fertility as well. From 1960 to 2015, the average cost of raising a single child from birth to age 17 for a middle-income married couple had risen 16% in real terms.[43] Over this period, the portion of costs attributable to housing, food, transportation, and clothing have decreased. However, the costs associated with health care doubled as a percentage of total cost, and the costs associated with childcare and education increased from 2% of total costs to 16% of total costs.[44] To the degree that parents contribute to the costs of higher education, the effect of the increasing trend in education costs on fertility may be understated.[45]

The decision to have children later in life is reflected in historical data. Specifically, since the 1970s, the decline in fertility has been more prominent among younger women, whereas fertility among women ages 30-34 and 34-39 has been generally increasing (see **Figure A-2**). Additionally, since the 1960s, the U.S. teen birth rate has generally been in decline, reaching a record low in 2023 (the year for which the most recent data are available).[46] Available data suggest that although the desire to have children remains, the age at which it is done has increased. This postponement of childbearing results in a lower overall fertility rate.[47] Additionally, delaying childbearing runs into biological limits that reduce the chances of pregnancy and increase the risks of pregnancy complications that can result in terminations.[48]

p. 4, https://www.pewresearch.org/wp-content/uploads/sites/3/2011/10/REVISITING-FERTILITY-AND-THE-RECESSION-FINAL.pdf.

[41] Sarah Brauner-Otto and Claudia Geist, "Uncertainty, Doubts, and Delays: Economic Circumstances and Childbearing Expectations Among Emerging Adults," *Journal of Family and Economic Issues*, vol. 39, no. 1 (March 2018), p. 100.

[42] Mikko Myrskyla et al., "Advantages of Later Motherhood," *Der Gynäkologe*, vol. 10 (2017), p. 767, https://link.springer.com/content/pdf/10.1007%2Fs00129-017-4124-1.pdf.

[43] Mark Lino et al., *Expenditures on Children by Families*, U.S. Department of Agriculture, January 2017, p. 21, https://fns-prod.azureedge.net/sites/default/files/crc2015_March2017_0.pdf.

[44] Lino et al., *Expenditures on Children by Families*, p. 21.

[45] For example, the College Board found that in-state tuition at public four-year institutions increased at an average of 3.1% beyond inflation from 2008 to 2018. College Board, "Trends in College Pricing 2018," 2018, p. 3, https://trends.collegeboard.org/sites/default/files/2018-trends-in-college-pricing.pdf.

[46] For more information on this topic, see CRS Report R45184, *Teen Births in the United States: Overview and Recent Trends*. This report cites research that attributes the decline in the teen birth rate over the past 30 years to improved contraceptive use as well as broad economic and social variables.

[47] Eva Beaujouan, "Delayed Fertility as a Driver of Fertility Decline?," in *The Demography of Transforming Families. The Springer Series on Demographic Methods and Population Analysis*, ed. Robert Schoen (Springer, 2023); S. Philip Morgan, "Is Low Fertility a Twenty-First-Century Demographic Crisis?," *Demography*, vol. 40, no. 4 (2003), pp. 589-603.

[48] See, for example, Angela Gantt et al., "Obstetric Care Consensus #11, Pregnancy at Age 35 Years or Older," *American Journal of Obstetrics and Gynecology*, vol. 228 (March 2023), pp. B25-B40.

### Replacement-Level Fertility and the Role of Immigration[49]

As mentioned earlier, a TFR of 2.1 is commonly cited as *replacement-level* fertility. This is the TFR necessary for a country with low mortality and negligible immigration to maintain a constant population.[50] The Organisation for Economic Co-operation and Development (OECD) states:

> Assuming there are no migration flows and that mortality remained unchanged, a total fertility rate of 2.1 children per woman generates broad stability of the population: it is also referred to as the "replacement rate" as it ensures replacement of the woman and her partner with another 0.1 children per woman to counteract infant mortality.[51]

Thus, for a country with relatively low mortality such as the United States, were it not for immigration, a sustained TFR below 2.1 would result in a declining population over time. To the degree that the U.S. population continues to increase while the TFR remains below 2.1, immigration is increasingly the reason. For instance, CBO projects that beginning in 2042, population growth will remain positive only due to immigration.[52]

Immigration is significant for a second reason. On average, fertility rates among immigrants have been higher than those of U.S.-born parents.[53] Thus, in times of low (i.e., below 2.1) TFRs, positive immigration flows have helped to stabilize population levels and TFRs. The most recent increases in TFRs experienced in the 2000s are largely attributed to foreign-born Hispanic women.[54]

## Mortality in the United States

Like fertility, death is a discrete event, but the risk of death in a population varies by age and sex. Thus, mortality is often measured as a rate that is adjusted by these characteristics.[55] For the enumerated population—those with Social Security numbers—the trustees use an age-sex-adjusted death rate that captures the average deaths per 100,000 persons if they were to experience death rates by age and sex for that year.[56] In general, mortality rates in the United States have declined over time—with exceptions, such as during the COVID-19 pandemic.

As with policy issues related to fertility, Congress has expressed recent interest in the role of mortality with regard to various policy issues. Discussions at recent congressional hearings have

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[49] Additional information on immigration as a demographic factor is provided in the section on "Immigration in the United States."

[50] Preston et al., *Demography*, p. 115.

[51] OECD, "OECD Factbook 2014: Economic, Environmental and Social Statistics," p. 16, https://www.oecd.org/content/dam/oecd/en/publications/reports/2014/05/oecd-factbook-2014_g1g3fd7d/factbook-2014-en.pdf.

[52] CBO, *The Demographic Outlook: 2025 to 2055*, January 13, 2025, p. 1, https://www.cbo.gov/system/files/2023-01/58612-Demographic-Outlook.pdf.

[53] Gretchen Livingston, "Births Outside of Marriage Decline for Immigrant Women," Pew Research Center, October 2016, https://www.pewresearch.org/social-trends/2016/10/26/births-outside-of-marriage-decline-for-immigrant-women/.

[54] Anne Morse, "Fertility Rates: Declined for Younger Women, Increased for Older Women," U.S. Census Bureau, April 6, 2022, https://www.census.gov/library/stories/2022/04/fertility-rates-declined-for-younger-women-increased-for-older-women.html.

[55] Another conventional measure of mortality is life expectancy, which is a population-level measure that refers to the average number of years an individual will live. Life expectancy has an inverse relationship with mortality rates (referred to as death rates in this report). For additional background on life expectancy in the United States, see CRS Report R44846, *The Growing Gap in Life Expectancy by Income: Recent Evidence and Implications for the Social Security Retirement Age*.

[56] *2024 Annual Report*, pp. 86-88.

focused on the implications of mortality specifically for Social Security as well as policy issues more broadly.[57]

## Historical Death Rates

**Figure 3** displays the historical age-sex-adjusted death rate in the United States for 1940-2023. As shown in **Figure 3**, the age-sex-adjusted death rate has exhibited a generally decreasing trend.

In 1940, the age-sex-adjusted death rate was 1,919 per 100,000 persons. By 1954, the death rate had decreased to 1,433 per 100,000 persons. From 1955 through 1970, the death rate demonstrated relatively small overall decreases, and in some years during that period, the death rate increased.[58] After 1970, the age-sex-adjusted death rate continued its generally decreasing trend. From 1940 through 2023, the death rate declined from 1,919 persons per 100,000 to 824 persons per 100,000, an approximate decline of 57%.

Despite this overall trend of decreasing mortality in the United States, over the past decade, two sets of factors have been identified that have led to either increases in mortality for some Americans or temporary overall increases in mortality. First, work by Anne Case and Angus Deaton has documented that, for White, non-Hispanic Americans ages 45-54 with high school degrees or less, mortality rates have increased over recent decades, while mortality rates have fallen over this same period for all other age and race groups.[59] According to Case and Deaton, the increased mortality for middle-aged, non-Hispanic Whites in recent years is due to deaths from drug and alcohol poisoning, suicide, and chronic liver diseases and cirrhosis (what the authors refer to as "deaths of despair"[60]). Second, the COVID-19 pandemic increased mortality rates in the United States in 2020 and 2021,[61] particularly for racial minorities.[62]

**Figure 3** also shows that the overall improvement in mortality (i.e., the decreasing death rate) is slowing. The trustees note that developments leading to decreases in death rates are expected to make smaller contributions to annual rates of mortality improvement in the future.[63] The 2024

[57] With regard to mortality and Social Security, see U.S. Congress, House Committee on Ways and Means, Subcommittee on Social Security, *Social Security Fundamentals: A Fact-Based Foundation*, 118th Cong., 1st sess., April 26, 2023; and U.S. Congress, Senate Committee on the Budget, *Social Security Forever: Delivering Benefits and Protecting Retirement Security*, 118th Cong., 2nd sess., September 11, 2024. On mortality and broader policy issues, for example, see U.S. Congress, Senate Special Committee on Aging, *Optimizing Longevity: From Research to Action*, 119th Cong., 1st sess., February 12, 2025.

[58] This period is marked by the emergence of heart disease as the leading cause of death in the United States. See **Figure A-4**.

[59] Anne Case and Angus Deaton, "Rising Morbidity and Mortality in Midlife Among White Non-Hispanic Americans in the 21st Century," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 112, no. 49 (2015), pp. 15078-15083; and Anne Case and Angus Deaton, *Mortality and Morbidity in the 21st Century*, Brookings Institution, March 17, 2017.

[60] Case and Deaton propose that the recent increases in mortality for middle-aged, non-Hispanic Whites with a high school education or less may be due to cumulative disadvantages for these individuals over time and across a number of social and economic dimensions, including the labor market, health, and family structure.

[61] Elizabeth Arias et al., "Provisional Life Expectancy Estimates for 2021," National Center for Health Statistics (NCHS), August 2022, https://www.cdc.gov/nchs/data/vsrr/vsrr023.pdf; and Elizabeth Arias et al., "Provisional Life Expectancy Estimates for 2022," NCHS, November 2023, https://www.cdc.gov/nchs/data/vsrr/vsrr031.pdf.

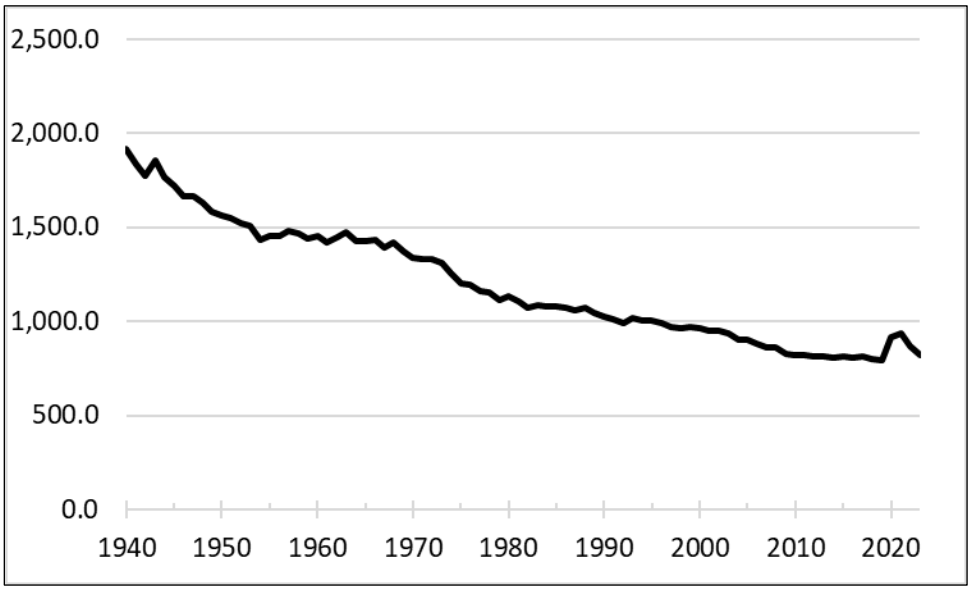
[62] See Theresa Andrasfay and Noreen Goldman, "Reductions in 2020 US Life Expectancy Due to COVID-19 and the Disproportionate Impact on the Black and Latino Populations," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 118, no. 5 (February 2021); and Thomas B. Foster et al., "Racial and Ethnic Disparities in Excess All-Cause Mortality in the First Year of the COVID-19 Pandemic," *Demography*, vol. 61, no. 1 (February 2024), pp. 59-85.

[63] OACT, *The Long-Range Demographic Assumptions for the 2024 Trustees Report*, p. 5.

Annual Report notes, "The total age-sex-adjusted death rate declined at an average annual rate of 1.02 percent between 1900 and 2019. Between 1979 and 2019, the period for which death rates were analyzed by cause, the total age-sex-adjusted death rate, for all causes combined, declined at an average rate of 0.86% per year."[64] As with decreases in fertility, other OECD member countries have also experienced this mortality trend.[65]

**Figure 3. Historical Total Age-Sex-Adjusted Death Rates in the United States**

1940-2023, Per 100,000




**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, Table V.A1, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf.

**Note:** The age-sex-adjusted death rate is defined as the average number of deaths per 100,000 were that population to experience the death rates by age and sex in that year.

## Causes of the Decrease in Death Rates

The trustees cite several developments over the past century that contributed to the lower mortality rates, including:

- access to primary medical care for the general population,
- discovery and general availability of antibiotics and immunizations,
- clean water supplies and waste removal, and
- the rapid rate of growth in the general standard of living.[66]

Changes in the leading causes of death support the effectiveness of the developments cited by the trustees. In 1900, the leading cause of death in the United States was infectious diseases, such as influenza or tuberculosis (see **Figure A-4** and **Table A-1**). From 1900 to 1940, the decline in infectious disease as a major cause of death was largely attributed to nutritional improvements and public health measures. The subsequent development of medical treatments further reduced

[64] *2024 Annual Report*, p. 87.

[65] For international comparative information on global trends in mortality, see **Appendix A**.

[66] OACT, *The Long-Range Demographic Assumptions*, p. 5.

infectious disease as a leading cause of death.[67] As the proportion of deaths due to infectious diseases declined, the proportion of deaths due to diseases of old age increased. From 1900 to 1940, diseases associated with old age—cardiovascular disease and cancer—became the two leading causes of death. By 1950, cardiovascular disease alone led to more deaths than the next four leading causes did. However, largely owing to improvements in medical treatments and access to those treatments, the age-adjusted death rate for cardiovascular disease decreased by more than 70% by 2015.[68] In addition, this time period overlaps with the 1965 creation of Medicare,[69] which has provided older Americans with increased access to health care.

## Immigration in the United States

Net immigration involves inflows of individuals into a population like that of the United States. Yet in many ways, immigration is a more complex demographic factor than fertility or mortality. It is a dynamic process shaped by economic, social, political, and environmental forces.[70] Immigration can offset decreases in fertility. Recent data document that immigration accounted entirely for U.S. population growth between 2022 and 2023—the first time since 1850.[71]

The trustees report net immigration in the United States as a count of individuals. CBO notes that, unlike fertility and mortality estimates, estimates and projections of net immigration are particularly uncertain due to changing conditions in immigrants' countries of origins as well as the potential for future legislative or administrative changes.[72] Regardless, immigration is a multifaceted policy issue for Congress.[73]

### Historical Net Immigration

The trustees define total net immigration as the result of four flows:

1. *Lawful permanent resident (LPR) immigration*: persons who enter the Social Security population[74] and are granted LPR status or who are already in the Social Security population and adjust their status to become LPRs;
2. *Legal emigration*: LPRs and citizens who leave the Social Security population;
3. *Other-than-LPR immigration*: persons who enter the Social Security population and stay to the end of the year without being granted LPR status, such as

[67] David Cutler and Ellen Meara, *Changes in the Age Distribution of Mortality Over the 20th Century*, National Bureau of Economic Research, October 1, 2001, p. 12.

[68] See historical data at https://www.cdc.gov/nchs/nvss/mortality_historical_data.htm and http://www.cdc.gov/nchs/deaths.htm.

[69] P.L. 89-97 established Medicare under Title XVIII of the Social Security Act.

[70] See, for example, Douglas Massey et al., "Theories of International Migration: A Review and Appraisal," *Population and Development Review*, vol. 19, no. 3 (1993), pp. 431-466.

[71] Migration Policy Institute, "Frequently Requested Statistics on Immigrants and Immigration in the United States," March 12, 2025, https://www.migrationpolicy.org/article/frequently-requested-statistics-immigrants-and-immigration-united-states.

[72] CBO, *Demographic Outlook*, p. 6.

[73] See, for example, CRS In Focus IF10520, *Immigration*; and CRS Report R45020, *Primer on U.S. Immigration Policy*.

[74] The Social Security population includes the residents of the 50 states and the District of Columbia; civilian residents of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands; federal civilian employees and persons in the U.S. Armed Forces abroad and their dependents; noncitizens living abroad who are insured for Social Security benefits; and all other U.S. citizens abroad. See *2024 Annual Report*, p. 252.

undocumented immigrants, foreign workers, and students entering with temporary visas; and

4. *Other-than-LPR emigration*: other-than-LPR immigrants who leave the Social Security population or adjust their status to become LPRs.[75]

The combination of LPR immigration and legal emigration results in the net LPR immigration. The combination of other-than-LPR immigration and other-than-LPR emigration results in the net other-than-LPR immigration. These two results, taken together, reflect the total net immigration for the Social Security population. The net results of the combination of the four flows have resulted in a generally increasing total net immigration over time. However, as shown in **Figure 4**, it has demonstrated more variation than fertility rates and death rates have. As can be seen, there is a relatively large difference in historical total net immigration as calculated by the trustees and CBO in recent years.

CBO separates net immigration into three flows: (1) LPR immigration plus those eligible to apply to become LPRs (e.g., asylees and refugees), (2) people admitted as nonimmigrants under the Immigration and Nationality Act (e.g., students and temporary workers), and (3) other foreign nationals (OFNs).[76] CBO attributes its relatively larger net immigration numbers in recent years to increases in the OFN category, which includes people who entered the United States illegally and people who were allowed to enter through parole authority and may be awaiting proceedings in immigration court.[77]

## Causes of the Change in Immigration

Decisions by individuals and families to migrate to the United States are complex and shaped by many factors, including economic, social, and political conditions in both the United States and countries of origin.[78] Researchers often organize discussions of international migration through the lens of "push" and "pull" factors. Demands for labor in the United States and existing social networks of immigrants from sending countries are examples of pull factors that contribute to immigration. Less advantageous economic and political conditions in countries of origin are examples of push factors that contribute to immigration. Additionally, policy and legal frameworks impact migration flows.[79] For example, the enactment of federal laws—such as the Immigration and Nationality Act Amendments of 1965[80] and the Immigration Act of 1990[81]—

[75] *2024 Annual Report*, p. 91.

[76] CBO, *Demographic Outlook*, p. 7. CBO defines OFNs as "people in the following groups who did not later become U.S. citizens or receive LPR, asylee, or nonimmigrant status: people who entered the United States illegally; people who entered legally in a temporary status and remained after that legal status expired; and people who were permitted to enter despite not being admissible as an LPR, asylee, refugee, or nonimmigrant."

[77] CBO, *Demographic Outlook*, p. 7. For a discussion of how CBO projects for this category of immigration, see CBO, *Demographic Outlook*, p. 13, "Changes to Projected Net Immigration." In some cases, the SSA cannot post earnings to an individual's work record because the name and Social Security number on the W-2 form submitted by an employer to the SSA do not match SSA records. When this occurs, SSA maintains those earnings in an Earnings Suspense File that tracks wages that cannot be posted to a specific work record. For more information, see CRS Report RL32004, *Social Security Benefits for Noncitizens*.

[78] See, for example, Douglas Massey et al., "Theories of International Migration: A Review and Appraisal," *Population and Development Review*, vol. 19, no. 3 (1993), pp. 431-466; and Asad Asad and Filiz Garip, "Migration in Time: From Economic to Social Mechanisms," *Annals of the American Academy of Political and Social Science*, vol. 684, no. 1 (2019), pp. 60-84.

[79] For an overview of U.S. immigration policy, see CRS Report R45020, *Primer on U.S. Immigration Policy*.

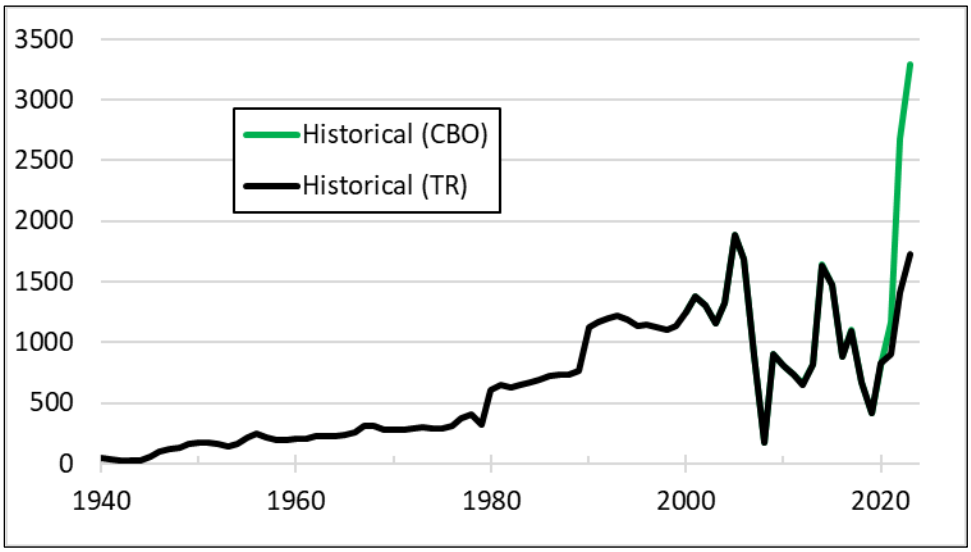
[80] P.L. 89-236, also known as the Immigration and Nationality Act of 1965 and the Hart-Celler Act. For additional background, see CRS Report R42866, *Permanent Legal Immigration to the United States: Policy Overview*.

[81] P.L. 101-649.

have led to increases in immigration. According to the trustees, as presented in **Figure 4**, total net immigration in the United States was 610,000 in 1980 compared with 1.12 million in 1990, 1.25 million in 2000, 802,000 in 2010, and 1.73 million in 2023 (the most recent year of historical data).[82]

**Figure 4. Historical Total Net Immigration in the United States**

1940-2023, in Thousands




**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, Table V.A2, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf; and Congressional Budget Office, *The Demographic Outlook: 2025 to 2055*, January 13, 2025, p. 8, https://www.cbo.gov/system/files/2025-01/60875-demographic-outlook.pdf.

**Notes:** TR=Social Security Board of Trustees. CBO=Congressional Budget Office. Total net immigration is the sum of net lawful permanent resident (LPR) immigration (i.e., persons who enter the Social Security population and are granted LPR status or those who adjust their status to become LPRs less those who leave the Social Security population) and net other-than-lawful permanent immigration (i.e., persons who enter the Social Security population without being granted LPR status less those other-than-LPRs who leave the Social Security population).

## Population Aging in the United States

The demographic factors described above have led to a shift in U.S. age structure toward older ages and an increase in the median age over time. **Figure 5** displays this shift in the age composition of the U.S. population across three time periods: 1980, 2020, and 2060 (projected). This *population aging* has significant consequences for Social Security financing, resulting in a higher ratio of Social Security beneficiaries (i.e., cost) to Social Security workers (i.e., revenue).

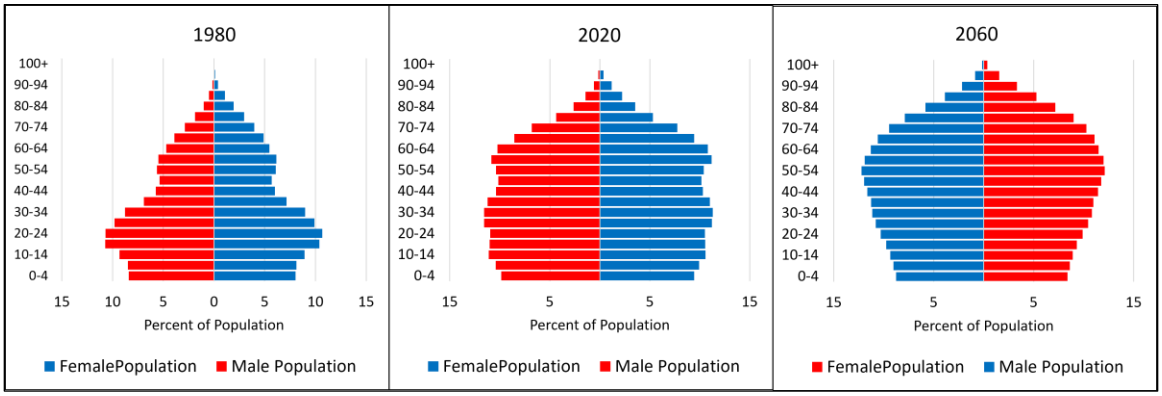
In 1980, the left panel of **Figure 5** shows that the U.S. population has a greater proportion concentrated in the younger age groups (i.e., ages generally associated with working as opposed to collecting benefits). By 2060, however, the right panel demonstrates how the U.S. population is expected to become more concentrated in the older ages (i.e., ages generally associated with collecting benefits as opposed to working). The changes in the age distribution from the left panel

[82] *2024 Annual Report*, p. 95.

(i.e., 1980) and the right panel (i.e., 2060) of **Figure 5** reflect general population aging in the United States.

**Figure 5. The Shifting Age Distribution of the U.S. Population**

In 1980, 2020, and 2060 (Projected)




**Source:** U.S. Census Bureau.

**Figure 6** shows a rising ratio of beneficiaries to workers for the Social Security program, plus the parallel trend of the increasing Social Security cost rate (also displayed in **Figure 1**). The cost rate is the quotient of (1) the product of the number of beneficiaries and the average benefit and (2) the product of the number of covered workers and their average taxable earnings.[83] With the numerator reflecting beneficiaries and the denominator reflecting workers, the cost rate is essentially a reflection of the ratio of beneficiaries to workers. The trustees note that the beneficiary-to-worker ratio was stable from 1975 through 2008 but began to rise after that point, initially due to 2007-2009 recession. Overall, however, the trustees identify the movement of the baby boom cohort (born 1946-1964) into retirement and increases in longevity at older ages as the cause of the demographic shift from workers to beneficiaries.[84]

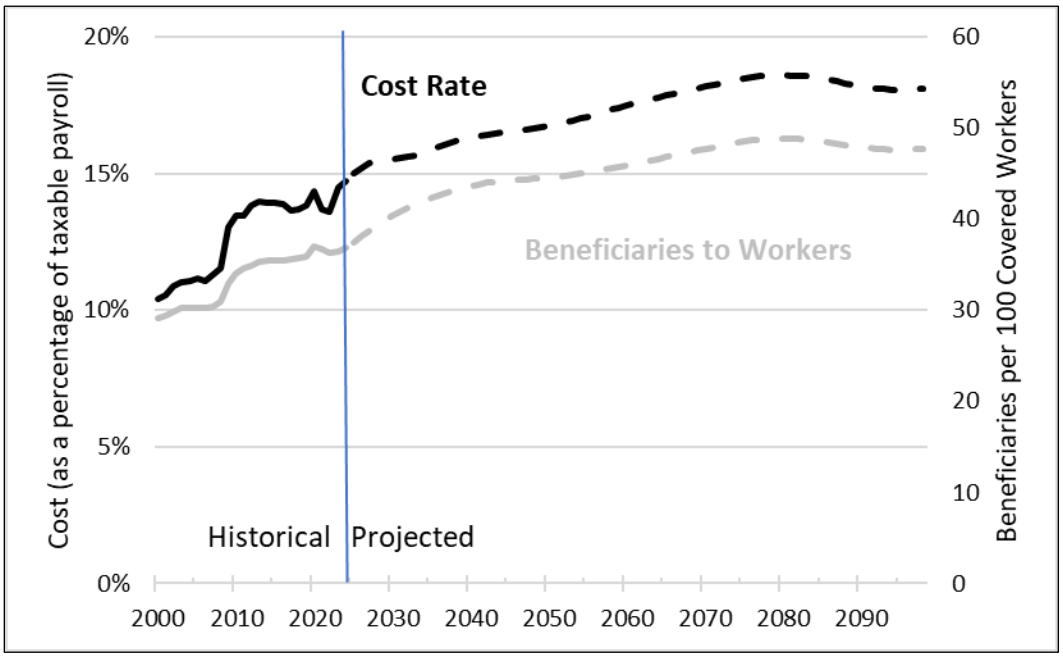
Thus, any change in projected demographic factors that would decrease the projected ratio of beneficiaries to workers would, in turn, also be reflected in a flatter or lower cost rate. Such a change would reduce the imbalance between the program's projected cost and revenue rates. Specifically, it would bring the cost and revenue rates in **Figure 1** closer and permit a higher percentage of scheduled benefits to be paid once the asset reserves held in the trust funds are depleted (i.e., 2035 under the trustees' intermediate assumptions). The analysis presented next in this report examines how changes in projected demographic factors would affect the program's cost and revenue rates.

[83] *2024 Annual Report*, p. 66.

[84] *2024 Annual Report*, p. 14.

**Figure 6. Comparison of Social Security Cost Rate and Beneficiaries per Worker, 2000-2098**

On a Combined Basis Under the 2024 Intermediate Assumptions




**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, underlying data for Figure II.D2, p. 14, and Table IV.B3, pp. 63-64, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf.

**Note:** The trustees' intermediate assumptions reflect their best estimate as to the future experience.

# Demographic Factors and Social Security Financing

Population aging has resulted in an imbalance between the number of workers paying *into* the Social Security system (i.e., workers subject to the payroll tax) and the number of retired workers collecting *from* the Social Security system (i.e., beneficiaries). The previous section demonstrated how this imbalance is represented in Social Security's generally increasing cost rate relative to its revenue rate. This section will discuss how changes in projected demographic factors would affect the program's projected financial shortfall.

For each demographic factor (fertility, mortality, and net immigration), the analysis presented below considers a range of values and discusses how three summary measures would be impacted:

1. The summarized revenue rate is the ratio of the *present value* of non-interest (tax) revenue to the present value of taxable payroll for a period.[85]

[85] The summarized revenue rate also includes asset reserves on hand at the beginning of a period. The *present value* is the equivalent value, at the present time, of a stream of future values. Present values are discounted using the effective yields on combined trust fund asset reserves. See *2024 Annual Report*, pp. 249-252. Alternatively, CBO defines *present value* as a single number that expresses a flow of current and future income (in taxes) or payments (in benefits) in terms of an equivalent lump sum received or paid at a specific time. The value depends on the rate of interest, known as the discount rate, used to translate past and future cash flows into dollars at that time. See CBO, *CBO's 2016 Long-Term* (continued...)

2. The summarized cost rate is the ratio of the present value of cost to the present value of taxable payroll for a period.[86]
3. The actuarial balance is the difference between the summarized revenue rate and the summarized cost rate, expressed as a percentage of taxable payroll.

Social Security analysis commonly uses a 75-year projection period. This practice allows for policy analysis over a time period that likely covers the lifetime of workers paying into the system and allows lawmakers a *long-term* (75-year) horizon to consider the effects of current law and any potential changes. Analysis of *short-term* (25-year) and *medium-term* (50-year) periods may also be useful to lawmakers seeking to understand how changes to projected demographic factors may affect the program's finances over time and also in considering policy proposals designed to postpone the projected year of trust fund depletion (i.e., eliminate a portion of the projected shortfall).

In the 2024 Annual Report, the trustees estimated a 75-year summarized revenue rate of 13.80% of taxable payroll. In the same report, the 75-year summarized cost rate was calculated to be 17.30% of taxable payroll. The difference between the two summarized rates, or actuarial balance, was -3.50% of taxable payroll. A negative actuarial balance is commonly referred to as an actuarial deficit. The magnitude of this deficit indicates the size of the policy options that would be required to eliminate any financial shortfall. For instance, an immediate, hypothetical payroll tax increase of 3.50 percentage points would eliminate the actuarial deficit.

Alternatively, as shown in this section's analysis, changes in projected demographic factors could also change the actuarial deficit. For instance, a demographic shift that would result in more future workers would, all else equal, generally improve the ratio of people paying into the system relative to those collecting from the system. As discussed, this would result in a cost rate that is lower than currently projected (**Figure 1**). Such a change, which would bring the cost rate closer to the revenue rate, would essentially bring the program closer into actuarial balance (i.e., reduce the actuarial deficit).

## Fertility and Social Security Financing

The long-range projections for TFRs are an important factor in estimating the future financial status of the Social Security trust funds—including their reserve depletion—and the program's ability to pay scheduled benefits. The following section first summarizes projections from the trustees and CBO. The section then analyzes the sensitivity of the program's financial status to different TFR assumptions and briefly discusses the accuracy of past long-range TFR assumptions.[87] As explained below, according to the trustees' intermediate assumptions, the TFR in the United States would need to immediately increase to about 3.42—or more than double its value in 2023—to eliminate Social Security's total projected financial shortfall. Fertility in the United States has not been at that high a rate since 1962 during the baby boom.

### Projected TFRs

In the 2024 Annual Report, the trustees present three alternative (intermediate, low-cost, and high-cost) sets of assumptions for demographic, economic, and program-specific factors. The

*Projections for Social Security: Additional Information*, December 2016, https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/52298-socialsecuritychartbook.pdf.

[86] This measure of the cost rate also includes a target trust fund level equal to one year of projected annual cost.

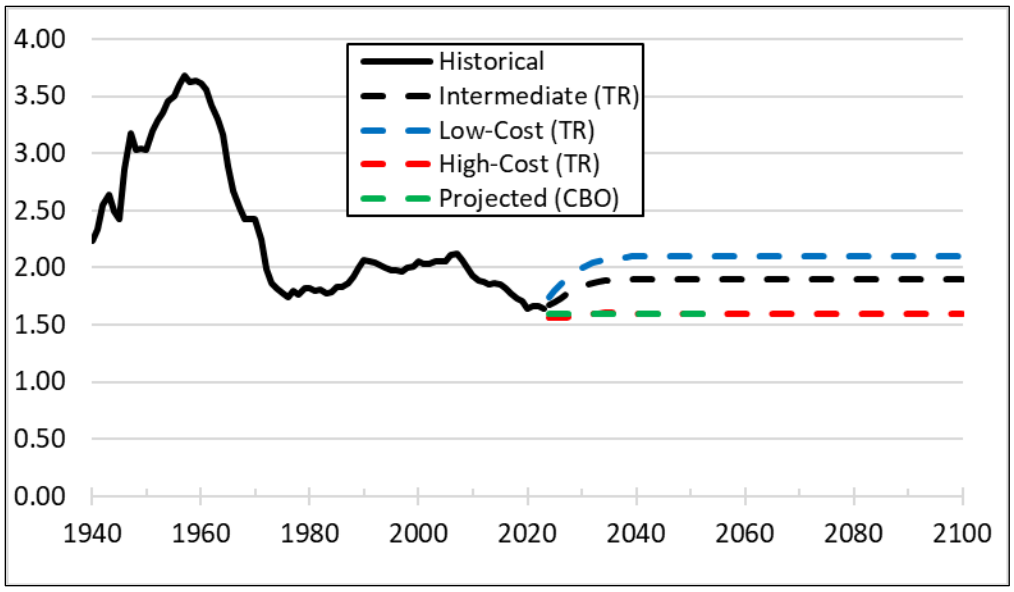
[87] These analyses—including those for mortality and immigration in following section—use a range of assumptions published in the trustees' annual reports. CBO demographic projections do not include a range of estimates.

intermediate set of assumptions represents the trustees' best estimate of likely future conditions. In the 2024 Annual Report, the trustees assume that the recent historical trend in birth rates will continue. Specifically, they assume that birth rates for women below age 20 will continue to decrease while birth rates for women 30 and older will generally increase.[88] For the intermediate assumptions, the trustees assume that the TFR "gradually increases from the estimated 2023 value through the ultimate value attained in 2040, with more gradual increases in the TFR as the ultimate year approaches. For the low-cost and high-cost alternatives, the Trustees assume that the paths of the TFRs gradually grade away from the intermediate alternative path."[89] The historical TFRs and the three projected paths for TFRs are shown in **Figure 7**. The high-cost set of assumptions assumes lower TFRs (i.e., *fewer* future workers) at the end of the projection period, while the low-cost set of assumptions assumes higher TFRs (i.e., *more* future workers). For the intermediate set of assumptions—the trustees' best estimate—the TFRs are projected to reach a value of 1.90 in 2036 and remain at that level indefinitely.[90]

CBO also estimates the actuarial status of the Social Security program, including projections for TFRs. In its 2025 demographic outlook, CBO projects the TFR to be 1.60 births per woman, where it will remain though 2055, an assumption identical to the trustees' high-cost alternative.[91] As can be seen in **Figure 7**, CBO's projections for TFRs are lower than the trustees' intermediate projections.

**Figure 7. Historical and Projected Total Fertility Rates (TFRs), 1940-2100**

Congressional Budget Office (CBO) Projections and Board of Trustees' 2024 Assumptions




**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, 2023, Table V.A1, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf; and Congressional Budget Office, *The Demographic Outlook: 2025 to 2055*, January 13, 2025, p. 3, https://www.cbo.gov/system/files/2025-01/60875-demographic-outlook.pdf.

[88] OACT, *The Long-Range Demographic Assumptions*, p. 4.

[89] OACT, *The Long-Range Demographic Assumptions*, p. 5.

[90] The ultimate TFR for the low-cost assumptions is 2.10, and the ultimate TFR for the high-cost assumptions is 1.60. *2024 Annual Report*, p. 187.

[91] CBO, *Demographic Outlook*, p. 3.

**Note:** The total fertility rate for a year is defined as the average number of children that would be born to a woman in her lifetime if, at each age of her life, she were to experience the birth rate observed for a specified year.

## The Projected Financial Shortfall and TFRs

**Table 1** shows the Social Security program's long-range summary measures for the TFR reaching three different levels by 2034 and remaining at those rates through the end of the projection period (2098). Typically, the low-cost, intermediate, and high-cost projections vary all assumptions simultaneously to illustrate the most optimistic, best estimate, and most pessimistic future, respectively.[92] Alternatively, the sensitivity analyses presented in **Table 1** use the intermediate set of assumptions but allow one assumption—fertility—to vary.

The projected summarized revenue rates are expected to change only slightly. Because these rates are expressed as a percentage of taxable payroll, and the current law combined Social Security payroll tax is fixed at 12.4%, the rates are projected to vary based only on changes in assumptions that affect the smaller portion of revenues from taxation of benefits.[94]

### What Increase in TFR Would Eliminate the Projected Financial Shortfall?

The trustees state, "Each increase of 0.1 in the average total fertility rate increases (improves) the long-term actuarial balance by about 0.23 percent of taxable payroll."[93] Thus, it would seem to take an increase in the TFR of about 1.52 above the intermediate projections to eliminate the 75-long term actuarial deficit (i.e., 3.50% of taxable payroll). That is, holding all other intermediate assumptions constant, the TFR would need to reach about 3.42—or more than double its value in 2023—to eliminate the total projected financial shortfall. The last TFR this high was in 1962 when it was also 3.42.

The projected summarized cost rates, however, do change as the assumptions for average TFRs are allowed to vary. This is because a lower TFR would result in a smaller working-age population, which would also yield lower revenues. For instance, under intermediate assumptions but with a lower average TFR of 1.60, the cost rates decrease slightly over the *short-term* 25-year period, increase over the *medium-term* 50-year period, and continue to increase over the *long-term* 75-year period. Over the long-term period, the lower average TFR leads to an increase in the cost rates and, therefore, leads to a more negative actuarial balance (i.e., larger actuarial deficit).

Alternatively, under intermediate assumptions but with a higher average TFR of 2.10, the cost rates stay the same over the short term, decrease over the medium term, and continue to decrease over the long term. In the short term, the trustees project that improvement in the trust fund's financial position from increases in the working-age population (i.e., higher tax revenues) resulting from higher fertility would be offset by decreases in revenues from lower female labor force participation and increases in child beneficiaries.[95] Over the long-term period, though, an

[92] The *low-cost* set of assumptions represents a future experience that is the most advantageous (i.e., most favorable) to the program's financial status. The *high-cost* set of assumptions represents a future experience that is the least advantageous (i.e., most unfavorable) to the program's financial status. In actual experience, it is unlikely that all demographic, economic, and program-specific factors all move in a manner that is either favorable or unfavorable to the program's financial status. Thus, the trustees use the intermediate set of assumptions to illustrate their best guess as to the future experience.

[93] *2024 Annual Report*, pp. 187-188.

[94] *2024 Annual Report*, pp. 56, 187-188. The taxation of benefits is a relatively small portion of income.

[95] *2024 Annual Report*, p. 188.

increasing working-age population resulting from higher fertility "significantly reduces the cost rate."[96]

As **Table 1** shows, under each assumption for average TFR, the projected date for combined trust fund depletion is 2035. This highlights that, although a higher average fertility rate would be advantageous to the Social Security program on a cash flows basis (i.e., lower long-term cost rates), it would be enough to eliminate only *some* of the projected financial shortfall. The negative actuarial balance in the 25-, 50-, and 75-year periods—under each of the average fertility assumptions—reflects the financial imbalance facing the Social Security program across all three time periods.

Using all intermediate assumptions, the long-term actuarial balance is -3.50% of taxable payroll. This amount represents the average increase in the payroll tax over the 75-year projection period that would be needed for the program to pay full scheduled benefits on time. Under a higher average fertility rate (2.10), the actuarial balance increases to -3.05% of taxable payroll. This indicates that although higher fertility would eliminate only *some* of the projected shortfall, it would allow for a higher percentage of payable benefits once trust fund reserves are depleted.[97]

**Table 1. Sensitivity of Projected Social Security Revenue Rates, Cost Rates, Actuarial Balances, and Combined Trust Fund Reserve Depletion Dates to Total Fertility Rate**

As a Percentage of Total Taxable Payroll

| | Total Fertility Rate | | |
|---|---|---|---|
| | **1.60** High-Cost TFR Assumption | **1.90** Intermediate TFR Assumption | **2.10** Low-Cost TFR Assumption |
| **Summarized Revenue Rate** | | | |
| 25-Years (2023-2047) | 14.30 | 14.30 | 14.30 |
| 50-Years (2023-2072) | 13.93 | 13.90 | 13.88 |
| 75-Years (2023-2097) | 13.87 | 13.80 | 13.76 |
| **Summarized Cost Rate** | | | |
| 25-Years (2023-2047) | 16.56 | 16.57 | 16.58 |
| 50-Years (2023-2072) | 17.28 | 16.96 | 16.76 |
| 75-Years (2023-2097) | 18.07 | 17.30 | 16.81 |
| **Actuarial Balance** | | | |
| 25-Years (2023-2047) | -2.26 | -2.28 | -2.29 |
| 50-Years (2023-2072) | -3.34 | -3.06 | -2.88 |
| 75-Years (2023-2097) | -4.20 | -3.50 | -3.05 |
| **Year of Project Combined Trust Fund Reserve Depletion** | 2035 | 2035 | 2035 |

[96] *2024 Annual Report*, p. 188.

[97] For more information on payable and scheduled benefits, see CRS In Focus IF12231, *Social Security: Scheduled Versus Payable Benefits*.

**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, Table V1.D1, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf.

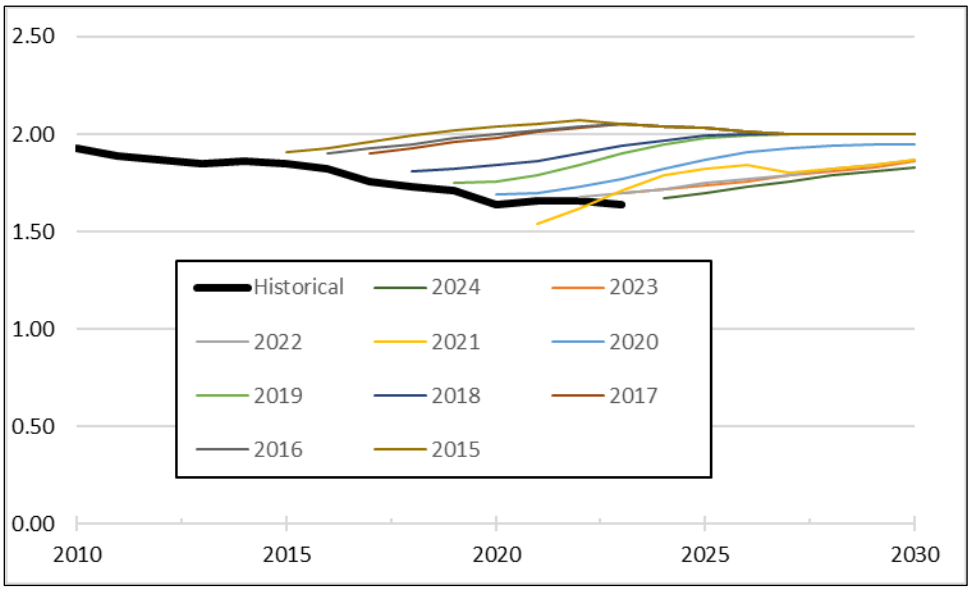
**Notes:** The total fertility rate may be interpreted as the average number of children that would be born to a woman if she were to experience, at each age of her life, the birth rate observed in, or assumed for, a specified year. See glossary in **Appendix B** for a more detailed definition.

## Projected vs. Actual TFRs

The last measured TFR that was at least 2.0 was in 2009. The last measured TFR that was at least 2.10 was in 2007. Over the past 10 annual reports, the trustees have generally overestimated the short-term TFRs. **Figure 8** shows the historical TFRs and the intermediate projections for TFRs from the 10 most recent annual reports (2015-2024). With few exceptions, the actual TFR experienced was less than what had been projected. If experienced (historical) TFRs are lower than projected, it would suggest that the intermediate assumptions are too optimistic. As shown in **Table 1**, a lower TFR more in line with the high-cost assumptions would reflect a larger actuarial deficit.

**Figure 8. Selected Historical and Projected Total Fertility Rates (TFRs)**

Under Each Annual Report's Intermediate Assumptions




**Source:** CRS.

**Note:** The TFR for a year is defined as the average number of children that would be born to a woman in her lifetime, at each age of her life, if she were to experience the birth rate observed for a specified year.

The Social Security Advisory Board's[98] 2019 Technical Panel on Assumptions and Methods—which is responsible for reviewing key economic and demographic assumptions—stated that the decreasing fertility rates in the early 2010s were attributable to the consequences of the Great Recession (i.e., 2007-2009).[99] The panel further stated that the trend in lower-than-expected

[98] The Social Security Advisory Board was created as part of the Social Security Independence and Program Improvements Act of 1994 (P.L. 103-296).

[99] 2019 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board*, September 2019, p. 5, https://s3-us-gov-west-1.amazonaws.com/cg-778536a2-e58c-44f1-9173-29749804ec54/uploads/2020/04/TPAM-2019-FINAL-REPORT_508.pdf.

fertility rates continued even as the economy recovered from the Great Recession. In its final report, the panel writes:

> A number of explanations have emerged, including large declines in the fertility of Hispanics, both natives and immigrants; the continuation of economic uncertainty for young adults; and the increased use of more effective contraception. An additional factor making it difficult to forecast future fertility is that an unusually large part of the decline in period fertility has been at younger ages, making it unclear whether births have been foregone or simply postponed.[100]

Regarding the projected TFRs, the panel did find—at the time—the trustees' projections to be "plausible and well grounded."[101] However, citing the persistence of low fertility among younger women, the panel recommended the trustees lower their TFR to 1.95.[102] The panel also expected fertility to rise from the 2019 levels.

Other research indicates that the trend in decreasing fertility may continue. For instance, researchers have looked at the gap between expected and achieved fertility.[103] On average, the number of children a woman expects to bear (*fertility expectations*) has been consistent at two children. But these fertility expectations have been higher than the actual number of children born per woman, especially in recent cohorts.[104]

## Mortality and Social Security Financing

Projections of long-range mortality are another important factor in estimating the future financial status of the Social Security trust funds—including their reserve depletion—and the program's ability to pay scheduled benefits. The following section first summarizes projections from the trustees and CBO. The section then analyzes the sensitivity of the program's financial status to different mortality assumptions and briefly discusses the accuracy of past long-range mortality assumptions.[105]

According to the trustees' intermediate assumptions, decreases in the decline of death rates improve Social Security's long-range actuarial balance, because more deaths reduce costs. Specifically, when considering the change in the death rate as an annual average, each additional *decrease* of 0.1 percentage point in the average annual rate of decline in the death rate improves Social Security's long-range actuarial balance by 0.16% of taxable payroll.[106] Yet assuming no reductions in death rates would not eliminate the projected financial shortfall. It is unclear how an average annual rate of *increase* in the death rate would affect the long-range actuarial balance. Thus, although a higher death rate would be advantageous to the Social Security program on a

[100] Ibid., p. 35.

[101] Ibid.

[102] Ibid.

[103] Anqi Chen and Nilufer Gok, "Will Women Catch Up to Their Fertility Expectations?," Center for Retirement Research at Boston College, March 2021, p. 5, https://crr.bc.edu/wp-content/uploads/2021/03/IB_21-6-1.pdf.

[104] Karen Guzzo and Sarah Hayford, "Evolving Fertility Goals and Behaviors in Current U.S. Childbearing Cohorts," *Population and Development Review*, vol. 49, no. 1 (2023), pp. 7-42.

[105] Unlike the trustees' fertility projections, which use specific fertility rates (i.e., TFRs), for mortality the trustees project a continually decreasing death rate under all three alternatives. However, the three alternatives differ in the *rate* at which the death rate changes. As illustrated in **Figure 9**, the low-cost assumption assumes a relatively higher overall death rate and is reflected in a relatively flatter slope than the high-cost assumption that assumes a relatively lower overall death rate and is reflected in a steeper slope.

[106] *2024 Annual Report*, p. 190.

financial basis (i.e., lower long-term cost rates), it would be enough to eliminate only *some* of the projected financial shortfall.

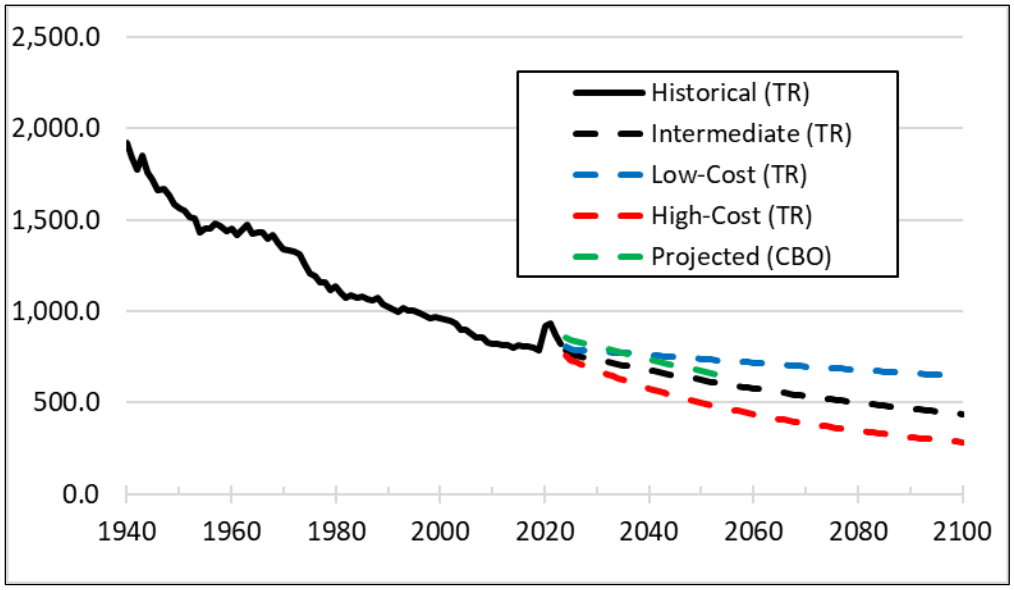
## Projected Death Rates

The 2024 Annual Report presents three alternative (intermediate, low-cost, and high-cost) sets of assumptions for age-sex-adjusted death rates. Similar to the TFR, the intermediate set of assumptions represents the trustees' best estimate of likely future conditions. As shown in **Figure 9**, the trustees project—under their intermediate (best estimate) assumptions—that the average annual rate of decline for the age-sex-adjusted death rate will be 0.82% over the projection period.[107] This appears to be in line with CBO's most recent demographic projections. Specifically, CBO projected that the total death rate would decrease by a total of approximately 25% over the next 30-year period, whereas the trustees project a decrease of 23% over the same 30-year period.[108]

**Figure 9** also shows the trustees' low-cost and high-cost projections. Their low-cost projection for the age-sex-adjusted death rate results in an average annual rate of decline of 1.35% (i.e., a higher death rate than the intermediate assumption). Their high-cost projection for the age-sex-adjusted death rate results in an average annual rate of decline of 0.35% (i.e., a lower death rate than the intermediate assumption).[109] The low-cost projection assumes a higher overall death rate, which, all else equal, is synonymous with fewer average annual beneficiaries. Conversely, the high-cost projection assumes a lower overall death rate, which, all else equal, corresponds to more average annual beneficiaries.

**Figure 9. Historical and Projected Total Age-Sex-Adjusted Death Rates, 1940-2100**

Congressional Budget Office (CBO) Projections and Board of Trustees' 2023 Assumptions, per 100,000




**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, Table V.A1, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf; and

[107] *2024 Annual Report*, p. 88.

[108] CBO, *Demographic Outlook*.

[109] *2024 Annual Report*, p. 88.

Congressional Budget Office, *The Demographic Outlook: 2024 to 2054*, January 18, 2024, p. 3, https://www.cbo.gov/system/files/2024-01/59697-Demographic-Outlook.pdf.

**Notes:** The age-sex-adjusted death rate is defined as the average number of deaths per 100,000 were that population to experience the death rates by age and sex in that year.

## The Projected Financial Shortfall and Death Rates

**Table 2** shows the Social Security program's long-range financial measures under three different assumptions for average annual reductions in the age-sex-adjusted death rate.[110] **Table 2** presents an analysis similar to **Table 1** in that it uses the trustees' intermediate set of assumptions but allows one assumption—death rates—to vary. Also similar to changes in fertility rates, the program's cost rates are generally more sensitive to changes in the age-sex-adjusted death rates than the program's revenue rates are in both short-range and long-range periods. Because **Table 2** reflects changes in measures resulting from an average annual percentage reduction, the changes are more pronounced in the long term than in the short term (i.e., 25-year periods), reflecting the cumulative effect of persistent year-over-year changes in the death rates.

Under the trustees' intermediate assumptions, the trustees project an average annual decrease in the age-sex-adjusted death rate of 0.73%. Under this assumption, the revenue rate decreases from 14.30% of taxable payroll in the 25-year period to 13.80% of taxable payroll in the 75-year period. Likewise, the cost rate increases from 16.57% of taxable payroll in the 25-year period to 17.30% of taxable payroll in the 75-year period. Using all intermediate assumptions, the long-term actuarial balance is -3.50% of taxable payroll versus -2.28% of taxable payroll in the short term. This amount represents the average increase in the payroll tax over the 75-year projection period that would be needed for the program to pay full scheduled benefits on time. These are the same projected measures for the intermediate scenario presented in **Table 1**, with each set representing the trustees' best estimate.

The right column in **Table 2** uses all of the trustees' intermediate assumptions, except it assumes an average annual decrease in the age-sex-adjusted death rate of 1.23%, which is a larger average annual decrease in the age-sex-adjusted death rates than in the intermediate assumptions. If experienced, this assumption of a *higher* decrease in the death-rate reduction would lead to an overall *lower* death rate than the intermediate (best estimate) assumption. **Table 2** shows that, with this change in the intermediate assumptions, the short-term revenue rate remains unchanged at 14.30% of taxable payroll, but the long-term revenue rate increases from 13.80% to 13.84% of taxable payroll.

### What Increase in Death Rates Would Eliminate the Projected Financial Shortfall?

The trustees state, "Each increase of 0.1 in the average annual rate of decline in the death rate decreases (worsens) the long-term actuarial balance by about 0.16% of taxable payroll."[111] Assuming each additional *decrease* of 0.1 percentage point in the average annual rate of decline in the death rate increases (improves) the long-term actuarial balance by 0.16% of taxable payroll, it seems the removal of all reductions in death rates would not eliminate the projected financial shortfall. It is unclear how an average annual rate of *increase* in the death rate would affect the long-range actuarial balance.

Under this scenario, the cost rates are projected to increase as well. **Table 2** shows that, under an assumption of lower death rates, with all other intermediate assumptions, the cost rate would

[110] "The projected average annual rate of decline between 2023 and 2098 for the total age-sex-adjusted death rate is about 0.35 percent for alternative I, 0.82 percent for alternative II, and 1.35 percent for alternative III" (*2024 Annual Report*, p. 88). This corresponds to the low-cost (0.28%), intermediate (0.73%), and high-cost (1.73%) for 2033-2098, as reflected in **Table 2**.

[111] *2024 Annual Report*, p. 189-190.

increase from 16.57% to 16.83% of taxable payroll in the short term and continue to increase to 18.14% of taxable payroll in the long run. Taken together, this would decrease the 75-year actuarial balance to -4.29% of taxable payroll. The assumed lower death rates increase both the revenue rates (i.e., more people subject to the payroll tax) and the cost rates (i.e., more people collecting benefits).[112] However, the increase in taxable payroll would be more than offset by the larger increase in costs (i.e., benefits).

Alternatively, the left column in **Table 2** considers the intermediate assumptions but with a lower average annual decrease in death rates of 0.28%. If experienced, this assumption of a *lower* decrease in the death rate would lead to an overall *higher* death rate than the intermediate (best estimate) assumption. In general, higher death rates would result in fewer workers and less taxable payroll—and fewer workers would eventually lead to fewer beneficiaries. More specifically, a lower average annual decrease in the death rate would lead to a decrease in the revenue rate from 14.30% to 14.29% of taxable payroll over the short term and from 13.80% to 13.76% of taxable payroll over the long term. A higher death rate would also decrease the short-term cost rate to 16.36% of taxable payroll and decrease the long-term cost rate to 16.55% of taxable payroll (i.e., lower rates compared to the intermediate assumptions). With the lower average annual decrease in death rate, the 75-year actuarial balance would be -2.79% of taxable payroll compared with -3.50% under the intermediate assumptions. This difference represents an improvement in the actuarial balance, or the trust fund's financial position.

As **Table 2** shows, under each assumption for average annual reduction in the death rates, the projected date for combined trust fund depletion is 2035. This highlights that, although a higher death rate would be advantageous to the Social Security program on a financial basis (i.e., lower long-term cost rates), it would be enough to eliminate only *some* of the projected financial shortfall. More specifically, it would allow for a higher percentage of payable benefits once trust fund reserves are depleted (i.e., it would reduce the divergence between the cost rate and revenue rate).

The negative actuarial balance in the 25-, 50-, and 75-year periods under each of the death rate assumptions reflects the financial imbalance facing the Social Security program across all three time periods. The trustees state that if deaths decline equally for all ages, the cost increases faster than the rate of growth in payroll taxes, resulting in higher cost rates and lower actuarial balances.[113]

[112] *2024 Annual Report*, p. 189-190.

[113] *2024 Annual Report*, p. 189-190. However, if age groups experience different rates of decline in the death rates, it can have different effects on cost rates and actuarial balances. Generally speaking, reductions in death rates for those 62 and over increase the number of retired-worker beneficiaries (i.e., increase in cost) without adding significantly to the number of covered workers (i.e., no increase in income). However, reductions in death rates for those at age 50 to retirement eligibility age result in significant increases to the taxable payroll, but those increases in income are not large enough to offset the sum of the additional retired-worker benefits and the disability-worker benefits paid to additional beneficiaries at these pre-retirement ages, which are ages of high disability incidence. For those under 50, death rates are so low that even substantial reductions in death rates do not result in significant increases in the numbers of covered workers or beneficiaries.

There is evidence of recent increases in U.S. cancer rates for individuals younger than age 50. See, for example, Benjamin Koh et al., "Patterns in Cancer Incidence Among People Younger Than 50 Years in the US, 2010 to 2019," *JAMA Network Open*, vol. 6, no. 8 (2023). Although these trends have been documented, the trustees did not incorporate this evidence into their mortality assumptions for the purpose of the 2024 annual report.

**Table 2. Sensitivity of Projected Social Security Revenue Rates, Cost Rates, Actuarial Balances, and Combined Trust Fund Reserve Depletion Dates to Total Age-Sex-Adjusted Death Rate**

As a Percentage of Total Taxable Payroll

| | Average Annual Reduction in Age-Sex-Adjusted Death Rate | | |
|---|---|---|---|
| | **0.28%** Low-Cost Reduction Assumption | **0.73%** Intermediate Reduction Assumption | **1.23%** High-Cost Reduction Assumption |
| **Summarized Revenue Rate** | | | |
| 25-Years (2024-2048) | 14.29 | 14.30 | 14.30 |
| 50-Years (2024-2073) | 13.88 | 13.90 | 13.93 |
| 75-Years (2024-2098) | 13.76 | 13.80 | 13.84 |
| **Summarized Cost Rate** | | | |
| 25-Years (2024-2048) | 16.36 | 16.57 | 16.83 |
| 50-Years (2024-2073) | 16.47 | 16.96 | 17.55 |
| 75-Years (2024-2098) | 16.55 | 17.30 | 18.14 |
| **Actuarial Balance** | | | |
| 25-Years (2024-2048) | -2.07 | -2.28 | -2.53 |
| 50-Years (2024-2073) | -2.58 | -3.06 | -3.62 |
| 75-Years (2024-2098) | -2.79 | -3.50 | -4.29 |
| **Year of Project Combined Trust Fund Reserve Depletion** | 2035 | 2035 | 2035 |

**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, Table V1.D2, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf.

**Note:** The average annual death rate reduction is the average annual geometric rate of decline in the age-sex-adjusted death rate for 2033-2098. See glossary in **Appendix B** for a more detailed definition.

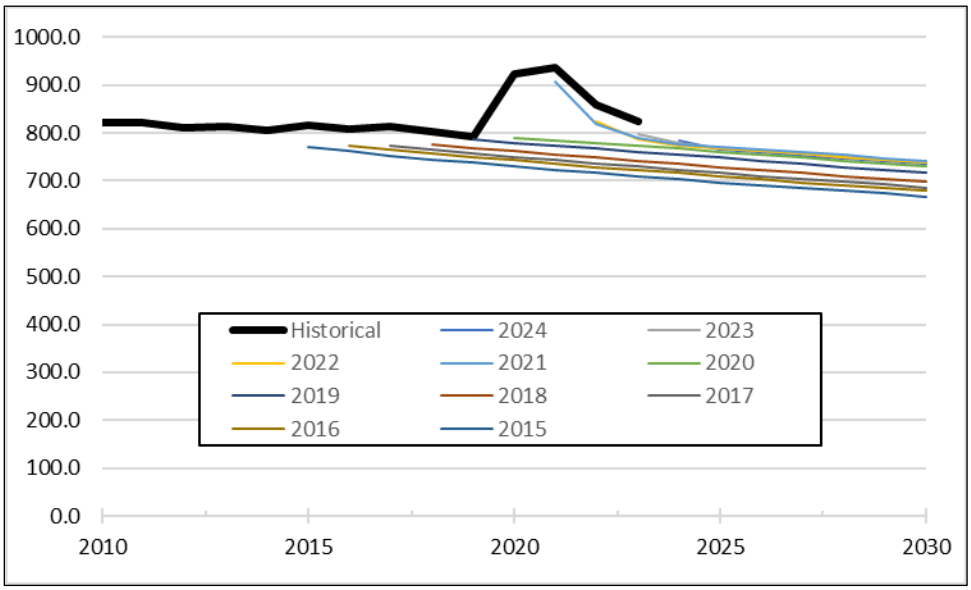
## Projected vs. Actual Death Rates

Over the past 10 annual reports, the trustees have generally underestimated the short-term total death rates. **Figure 10** shows the historical death rates and the intermediate projections for death rates from the 10 most recent annual reports (2015-2024). For these more recent reports, without exception, the death rate experienced has been greater than what had been projected.

If experienced (historical) death rates are higher than projected, it would suggest that the intermediate assumptions are too pessimistic. As shown in **Table 2**, a higher death rate more in line with the low-cost assumptions would reflect a smaller actuarial deficit.

**Figure 10. Selected Historical and Projected Age-Sex-Adjusted Death Rates**

Under Each Annual Report's Intermediate Assumptions




**Source:** CRS.

**Note:** The age-sex-adjusted death rate is defined as the average number of deaths per 100,000 were that population to experience the death rates by age and sex in that year.

## Immigration and Social Security Financing

As with fertility and mortality, long-range assumptions for immigration are an important factor in estimating the future financial status of the Social Security trust funds—including their reserve depletion—and the program's ability to pay scheduled benefits. The following section first summarizes projections from the trustees and CBO. The section then analyzes the sensitivity of the program's financial status to different immigration assumptions and briefly discusses the accuracy of past long-range immigration assumptions. Based on the trustees' intermediate assumptions, it would seem to take an average annual total net immigration of about 3.9 million to eliminate the 75-year long range actuarial deficit (i.e., 3.50% of taxable payroll). Since 1940, there has not been a recorded year of total net immigration of more than 2 million. According to the trustees' historical data, the highest single year of total net immigration was recorded in 2005 at 1,884,000.[114]

### Projected Total Net Immigration

As with the preceding demographic factors, the 2024 Annual Report presents three alternative (intermediate, low-cost, and high-cost) sets of assumptions for net immigration. As with the other factors, the intermediate set of assumptions represents the trustees' best estimate of likely future conditions.

As shown in **Figure 11**, the trustees project—under their intermediate (best estimate) assumptions—that the average annual net immigration will eventually reach about 1,244,000

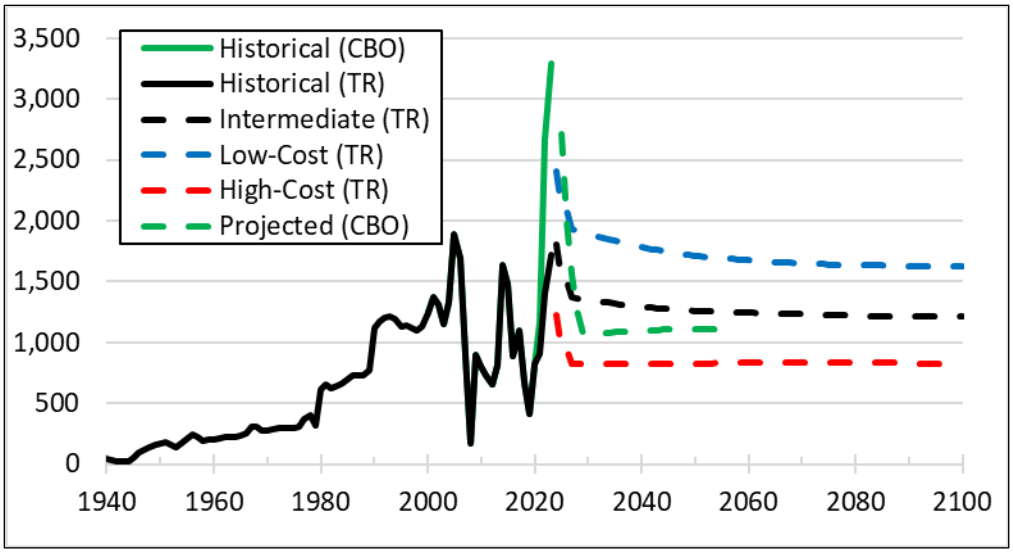
[114] In 2023—the most recent year for which the trustees have published data—the total net immigration was estimated to be 1,725,000. See *2024 Annual Report*, Table V.A2 and supplemental single-year table, https://www.ssa.gov/OACT/TR/2024/lr5a2.html.

persons per year starting in 2034.[115] This estimate is higher than CBO's projection, which averages 1,104,000 per year from 2034 to 2055.[116]

**Figure 11** also shows the trustees' low-cost and high-cost projections. Their low-cost projection for the average annual net migration is 1,683,000 starting in 2034, whereas their high-cost projection for average annual net migration is 829,000 starting in 2034. Put more simply, the low-cost assumption would result in more workers and the high-cost assumption would result in fewer workers, all else equal.

**Figure 11. Historical and Projected Total Net Immigration, 1940-2100**

Congressional Budget Office (CBO) Projections and Board of Trustees' 2024 Assumptions, in Thousands




**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, Table V.A2, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf; and Congressional Budget Office, *The Demographic Outlook: 2025 to 2055*, January 13, 2025, p. 8, https://www.cbo.gov/system/files/2025-01/60875-demographic-outlook.pdf.

**Note:** Total net immigration is the annual total net immigration into the Social Security population (both LPR and other-than-LPR). See glossary in **Appendix B** for a more detailed definition.

## The Projected Financial Shortfall and Total Net Immigration

**Table 3** shows the Social Security program's long-range financial measures under three different assumptions for average annual total net immigration over the 2034-2098 period. Under the trustees' intermediate assumptions, but with three levels for average annual total net immigration, the projected summarized revenue rates and projected summarized cost rates are expected to change only slightly.

Under all intermediate assumptions—including the assumption of an average annual total net immigration of 1.244 million for 2034-2098—the trustees project a decrease in the revenue rate from 14.30% of taxable payroll in the short term to 13.80% of taxable payroll in the nearest 75-year period. Under these assumptions, the trustees project an increase in the cost rate from 16.57% of taxable payroll in the short term to 17.30% of taxable payroll in the long term. This

[115] *2024 Annual Report*, p. 191.

[116] CBO, *Demographic Outlook*, p. 6 and Data Underlying Figures.

combination results in the 75-year actuarial balance being -3.50% of taxable payroll. These are the same conditions presented in the fertility and death rate sections.

Alternatively, under intermediate assumptions, but with a lower average annual total net immigration of 829,000, the short-term revenue rate increases to 14.33% of taxable payroll, and the long-term revenue rate increases to 13.85% of taxable payroll. That is, the revenue rates change slightly. The summarized cost rates, however, are projected to show relatively higher increases. Under the lower assumption for average annual net immigration, the cost rate would increase to 16.80% of taxable payroll in the short term and increase to 17.75% of taxable payroll over the long term. Over the 75-year period, the relatively larger increase in cost rates would result in a higher long-range actuarial deficit of -3.90% of taxable payroll.

Conversely, the intermediate assumptions—but with a higher average annual total net immigration of 1,683,000—would generally result in a closer balance between revenue and cost rates. Under this change, the revenue rate decreases in the short term to 14.26% of taxable payroll and decreases over the long term to 13.76% of taxable payroll. However, the cost rates improve by a larger margin. Specifically, the cost rates would decrease to 16.34% of taxable payroll in the short term and 16.87% of taxable payroll in the long term. This combination results in a lower long-term actuarial balance of -3.12% of taxable payroll.

**What Increase in Immigration Would Eliminate the Projected Financial Shortfall?**

The trustees state, "Increasing average annual total net immigration by 100,000 persons increases (improves) the long-term actuarial balance by about 0.09 percent of taxable payroll."[117] Based on this relationship, it would take an average total net immigration of about 3.9 million per year to eliminate the 75-year long range actuarial deficit (i.e., 3.50% of taxable payroll). Since 1940, there has not been a recorded year of total net immigration of more than 2 million.

Under each change for average annual total net immigration, the projected date of trust fund depletion remains 2035. However, higher assumed immigration improves the balance between program revenue and costs. The trustees state, "The cost rate decreases with an increase in total net immigration because immigration occurs at relatively young ages, thereby increasing the numbers of covered workers earlier than the numbers of beneficiaries."[118] Thus, an increase in net immigration above intermediate assumptions would eliminate *some* of the projected financial shortfall.

**Table 3. Sensitivity of Projected Social Security Revenue Rates, Cost Rates, Actuarial Balances, and Combined Trust Fund Reserve Depletion Dates to Total Net Immigration**

As a Percentage of Total Taxable Payroll

| | Average Annual Total Net Immigration (TNI) | | |
|---|---|---|---|
| | **829,000** Low-Cost TNI Assumption | **1,244,000** Intermediate TNI Assumption | **1,683,000** High-Cost TNI Assumption |
| **Summarized Revenue Rate** | | | |
| 25-Years (2024-2048) | 14.33 | 14.30 | 14.26 |
| 50-Years (2024-2073) | 13.94 | 13.90 | 13.87 |

[117] *2024 Annual Report*, pp. 190-191.

[118] *2024 Annual Report*, pp. 190-191.

| | Average Annual Total Net Immigration (TNI) | | |
|---|---|---|---|
| | **829,000** Low-Cost TNI Assumption | **1,244,000** Intermediate TNI Assumption | **1,683,000** High-Cost TNI Assumption |
| 75-Years (2024-2098) | 13.85 | 13.80 | 13.76 |
| **Summarized Cost Rate** | | | |
| 25-Years (2024-2048) | 16.80 | 16.57 | 16.34 |
| 50-Years (2024-2073) | 17.31 | 16.96 | 16.62 |
| 75-Years (2024-2098) | 17.75 | 17.30 | 16.87 |
| **Actuarial Balance** | | | |
| 25-Years (2024-2048) | -2.48 | -2.28 | -2.08 |
| 50-Years (2024-2073) | -3.37 | -3.06 | -2.76 |
| 75-Years (2024-2098) | -3.90 | -3.50 | -3.12 |
| **Year of Project Combined Trust Fund Reserve Depletion** | 2035 | 2035 | 2035 |

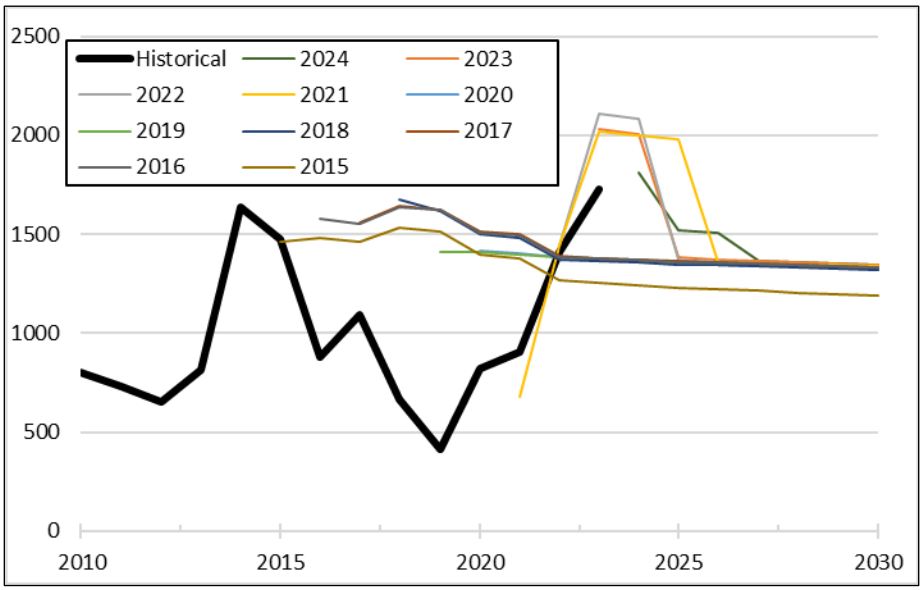
**Source:** Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 6, 2024, Table V1.D3, https://www.ssa.gov/OACT/TR/2024/tr2024.pdf.

## Projected vs. Actual Total Net Immigration

**Figure 12** shows the historical net immigration and the intermediate projections for net immigration from the 10 most recent annual reports (2015-2024). Unlike projections for fertility and mortality, which exhibit trends for historical and thus projected time periods, those for net immigration show more variance.

**Figure 12. Selected Historical and Projected Total Net Immigration**

In Thousands Under Each Annual Report's Intermediate Assumptions




**Source:** CRS.

**Note:** Total net immigration is the annual total net immigration into the Social Security population (both LPR and other-than-LPR). See glossary in **Appendix B** for a more detailed definition.

# Policy Considerations

The analysis presented in this report illustrates how hypothetical increases in either fertility or immigration would improve Social Security's financial status.[119] Between these two factors, increases in fertility would have a larger impact on the projected shortfall.[120] To eliminate all of Social Security's projected financial shortfall, the TFR in the United States would need to more than double from 1.64 in 2023 to reach 3.42—that is, on average each woman would need to have almost two more children than currently. It is doubtful whether available policy options to increase fertility would be able to shift the TFR by this magnitude.

For example, some researchers have hypothesized that, once fertility has been low for an extended period, it will be difficult for fertility levels to increase, creating a "low-fertility trap." Specifically, this work hypothesizes that once the TFR falls below a threshold of 1.5, it is difficult to increase it due to the negative population momentum created by an older age structure—itself a consequence of years of low fertility.[121]

[119] Increases in mortality would also improve Social Security's financial status. However, in general, policies to directly support broad, population-level increases in mortality are likely undesirable. Additionally, policies that have the potential to increase mortality—such as reducing health care access or spending or reducing other spending that has the effect of increasing mortality—may encounter public resistance.

[120] As explained in the section on "Replacement-Level Fertility and the Role of Immigration," there is the potential for interactions between fertility and immigration and related policy issues. This section discusses fertility separately from immigration primarily because previous research on the effects of various policies on fertility have not evaluated such interaction effects.

[121] Wolfgang Lutz and Vegard Skirbekk, "Policies Addressing the Tempo Effect in Low-Fertility Countries," *Population and Development Review*, vol. 31, no. 4 (2005), pp. 699-723.

Researchers have analyzed several policies—such as increasing paid parental leave, child care, and cash transfers to parents—with regard to whether they increase fertility or slow the decrease in fertility across countries. Some prior studies found weak, mixed, or temporary effects of these policies on fertility across multiple countries.[122] The results of additional, single-country studies have similarly failed to identify strong, long-term effects of such policies on fertility.[123] One recent meta-analysis, however, found more significant effects.[124] For example, the meta-analysis concluded that increasing access to child care and parental leave were both linked to increases in fertility and suggested that increasing subsidies for assisted reproductive technology may increase fertility for women over age 35,[125] but it also found that the effects of cash transfers on fertility were temporary. Given the lack of rigorous evidence that policies can increase—much less double—fertility, it is unclear whether policy responses targeting fertility alone are a viable solution to Social Security's projected shortfall.

Because policy options designed to shift demographic factors have a low or uncertain chance of eliminating the shortfall, policymakers may instead choose to look at Social Security program-specific reform proposals that would increase revenue or reduce costs. For example, Congress could choose to increase revenue by increasing the amount of earnings subject to the Social Security payroll tax or reduce costs by changing the benefit formula to control benefit increases.[126] As the projected date of trust fund depletion approaches, increasing annual deficits imply that Social Security will experience a weaker financial position with each year. This means the magnitude of the changes needed to eliminate the projected shortfall will increase with each year. Given this, it is likely that no *individual* revenue-increasing or cost-reducing measure would be sufficient to eliminate the projected shortfall.[127]

Congress may choose to combine revenue-increasing and cost-reducing measures as was done in the most recent major reform. The Social Security Amendments of 1983 (P.L. 98-21) included measures that increased revenues (e.g., income from the taxation of benefits), reduced costs (e.g., increase of the full retirement age), and expanded coverage (e.g., for newly hired federal employees), among many other provisions.[128] Yet the solvency-related issue facing lawmakers

[122] See, for example, Anne Gauthier, "The Impact of Family Policies on Fertility in Industrialized Countries: A Review of the Literature," *Population Research and Policy Review*, vol. 26, no. 3 (2007), pp. 323-346; Joelle Sleebos, "Low Fertility Rates in OECD Countries: Facts and Policy Responses," *OECD Labour Market and Social Policy Occasional Papers*, vol. 15 (2003); and Thomas Sobotka et al., "Policy Responses to Low Fertility: How Effective Are They?," United Nations Population Fund, 2020.

[123] See, for example, Ilia Sorvachev and Evgeny Yakovlev, "Short- and Long-Run Effects of a Sizable Child Subsidy: Evidence from Russia," Institute of Labor Economics, 2020; Ke Shen et al., "Government Policy and Global Fertility Change: A Reappraisal," *Asian Population Studies*, vol. 16, no. 2 (2020), pp. 145-166; Ronald Rindfuss et al., "Child-Care Availability and Fertility in Norway," *Population and Development Review*, vol. 36, no. 4 (2010), pp. 725-748; and Daniel Parent and Ling Wang, "Tax Incentives and Fertility in Canada: Quantum vs Tempo Effects," *Canadian Journal of Economics*, vol. 40 (2007), pp. 371-400.

[124] Janna Bergsvik et al., "Can Policies Stall the Fertility Fall? A Systematic Review of the (Quasi-) Experimental Literature," *Population and Development Review*, vol. 47, no. 4 (2021), pp. 913-964.

[125] For background on assisted reproductive technology, see Centers for Disease Control and Prevention, "About ART," https://www.cdc.gov/art/about/index.html.

[126] For more information and examples of these policy options, see CRS Report RL32896, *Social Security: Raising or Eliminating the Taxable Earnings Base*; and CRS Report R48224, *Social Security Benefits and Price Indexing: Analysis of Selected Policy Options*.

[127] CBO, *Social Security Policy Options*, 2015, p. 2, https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/51011-SocSecOptions-2.pdf; and OACT, *Summary of Provisions That Would Change the Social Security Program*, 2024, https://www.ssa.gov/OACT/solvency/provisions/summary.pdf.

[128] For a description of all provisions, see John A. Svahn and Mary Ross, "Social Security Amendments of 1983: Legislative History and Summary of Provisions," *Social Security Bulletin*, July 1983, https://www.ssa.gov/policy/docs/ssb/v46n7/v46n7p3.pdf.

today is larger.[129] For this reason, the trustees recommend that "lawmakers address the projected trust fund shortfalls in a timely way in order to phase in necessary changes gradually and give workers and beneficiaries time to adjust to them. Implementing changes sooner rather than later would allow more generations to share in the needed revenue increases or reductions in scheduled benefits."[130] Depending on what provisions may be included in future legislation, program changes may affect groups of workers and beneficiaries in different ways. Policy changes implemented sooner rather than later, in addition to requiring cost-reducing or revenue-increasing provisions that are smaller in magnitude, would allow current workers and beneficiaries more time to change behavior.

[129] The actuarial deficit facing lawmakers in 1983 was 1.80% of taxable payroll.

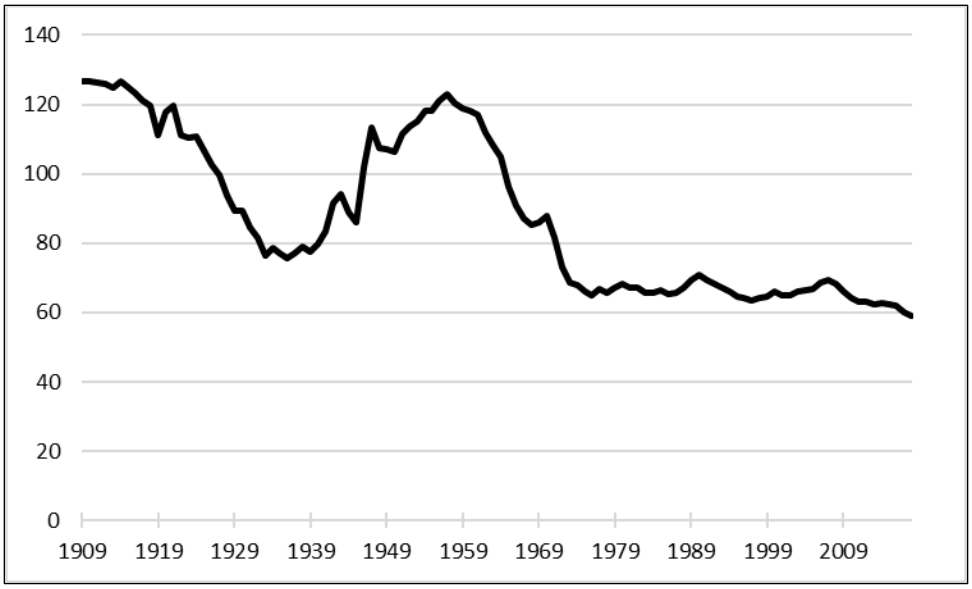
[130] *2024 Annual Report*, p. 6.

# Appendix A. Supporting Information

## Fertility Trends in the United States

**Figure A-1. Crude Birth Rate**

1909-2018

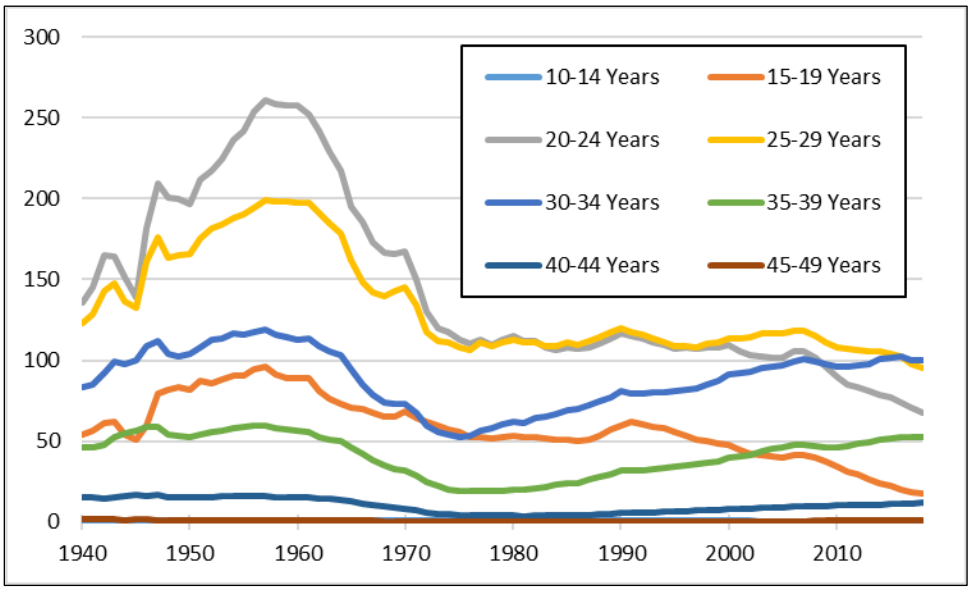



**Source:** Brady Hamilton et al., "Natality Trends in the United States/Births and General Fertility Rates, 1909-2018," National Center for Health Statistics, 2020, https://www.cdc.gov/nchs/data-visualization/natality-trends/index.htm.

**Note:** The crude birth rate is the annual number of births per 1,000 females ages 15-44.

**Figure A-2. Birth Rates by Age Group**

1940-2018




**Source:** Brady Hamilton et al., "Natality Trends in the United States/Birth Rates by Age Group, 1909-2015," National Center for Health Statistics, 2017, https://www.cdc.gov/nchs/data-visualization/natality-trends/index.htm.

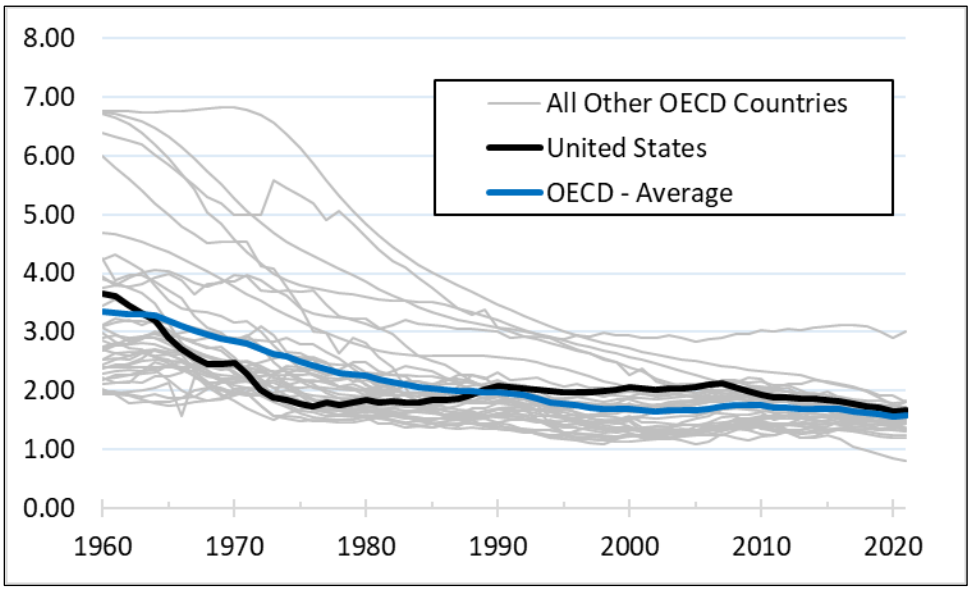
**Note:** Birth rate is defined as the number of births per 1,000 females in the specified age group.

## Global Trends in Fertility

Historical TFRs for OECD countries are shown in **Figure A-3**. As can be seen in **Figure A-3**, the U.S. experience of declining TFRs is not unique. Among the 38 counties of the OECD, the U.S. TFR in 2021 was higher than all but 11. **Figure A-3** also shows that the U.S. TFR has been above the OECD average since 1988. Furthermore, a decreasing TFR is becoming a characteristic across OECD countries. For instance, over the most recent five-year period, eight of the 38 OECD countries experienced increasing fertility rates, and none of those countries experienced a TFR above the replacement rate of 2.1. **Figure A-3** shows that one country has a TFR above the replacement rate of 2.1 (Israel). That is, the recent U.S. TFR experience is not that different from other relatively richer and industrialized countries.

**Figure A-3. Total Fertility Rates of Organisation for Economic Co-operation and Development (OECD) Countries**

1960-2021



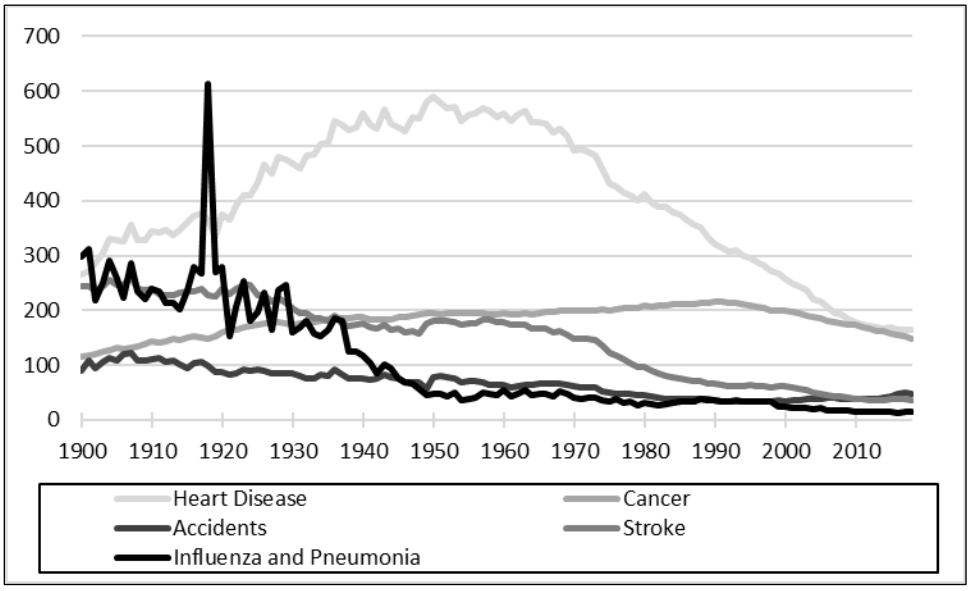

**Source:** OECD, "Fertility Rates," https://data.oecd.org/pop/fertility-rates.htm.

**Notes:** The OECD has 38 member countries.

## Mortality Trends in the United States

**Figure A-4. Major Causes of Death in the United States, 1900-2018**

Age-Adjusted Death Rates per 100,000




**Source:** Boris Bastian et al., "Mortality Trends in the United States, 1900-2018," National Center for Health Statistics, 2020, https://www.cdc.gov/nchs/data-visualization/mortality-trends/index.htm.

**Notes:** Death rates are age-adjusted to show the effects of changes in death rates unobscured by changing age distributions.

**Table A-1. Leading Causes of Death in the United States**

Numbers of Death (Rank)

| Cause | 1900 | 1950 | 2000 | 2019 |
|---|---|---|---|---|
| **Top Five** | | | | |
| Heart Disease | 27,427 (5) | 535,705 (1) | 710,760 (1) | 659,041 (1) |
| Cancer | - | 210,733 (2) | 553,091 (2) | 599,601 (2) |
| Accidents | - | 91,249 (4) | 97,900 (5) | 173,040 (3) |
| Chronic Respiratory Diseases | - | - | 122,009 (4) | 156,979 (4) |
| Stroke | 21,353 (4) | - | 167,661 (3) | 150,005 (5) |
| **Other** | | | | |
| Certain Diseases of Infancy | - | 60,989 (5) | - | |
| Influenza/Pneumonia | 40,362 (1) | - | - | |
| Tuberculosis | 38,820 (2) | - | - | |
| Diarrhea/Enteritis/Ulcerative Colitis | 28,491 (3) | - | - | |
| Vascular Lesions | - | 156,751 (3) | - | |

**Source:** Boris Bastian et al., "Mortality Trends in the United States, 1900-2018," National Center for Health Statistics. 2020, and *National Vital Statistics Report*, Table C, National Center for Health Statistics.

**Notes:** Data are shown only if the cause was among the top five causes of death for that year. The data show causes such as influenza or tuberculosis being leading causes of death in 1900 but not among the top five causes by 1950. Heart disease, a disease associated with old age, is shown to increase from 1900 to 2000.

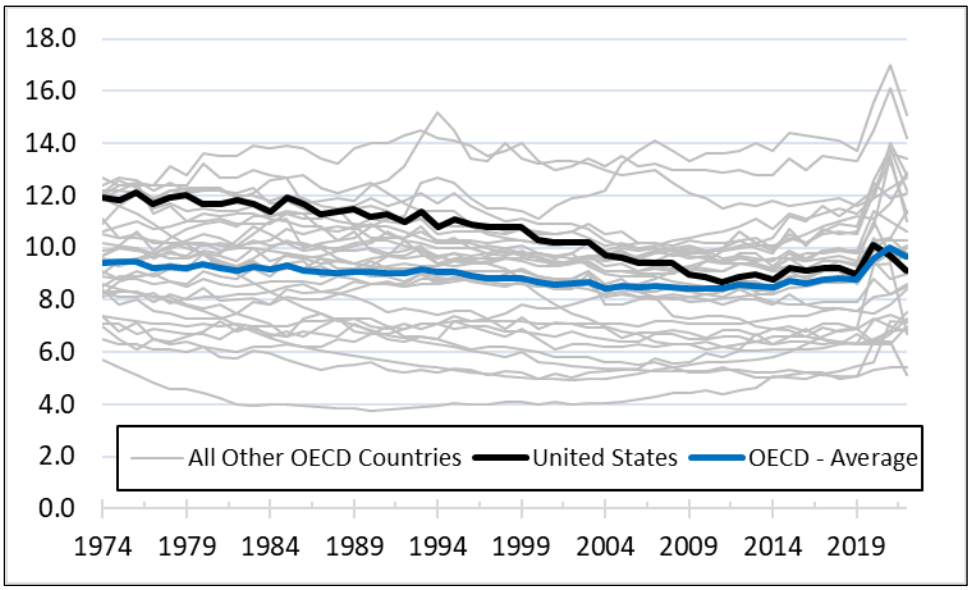
## Global Trends in Mortality

**Figure A-5** displays the historical *crude death rates* for the 38 countries of the OECD from 1974 through 2022.[131] **Figure A-5** shows that through 2019—before the effects of COVID—most of the OECD countries exhibited decreases in their respective crude death rates and that from 2020 through 2022—after the effects of COVID—most of the OECD countries exhibited temporary increases in their respective crude death rates. That is, the U.S. experience is similar to the average OECD experience, as shown in **Figure A-5**.

[131] The *crude death rate* is the number of deaths per 1,000.

**Figure A-5. Crude Death Rates of Organisation for Economic Co-operation and Development (OECD) Countries**

1974-2022, per 1,000




**Source:** World Bank, "Crude Death Rates," https://databank.worldbank.org/source/world-development-indicators#.

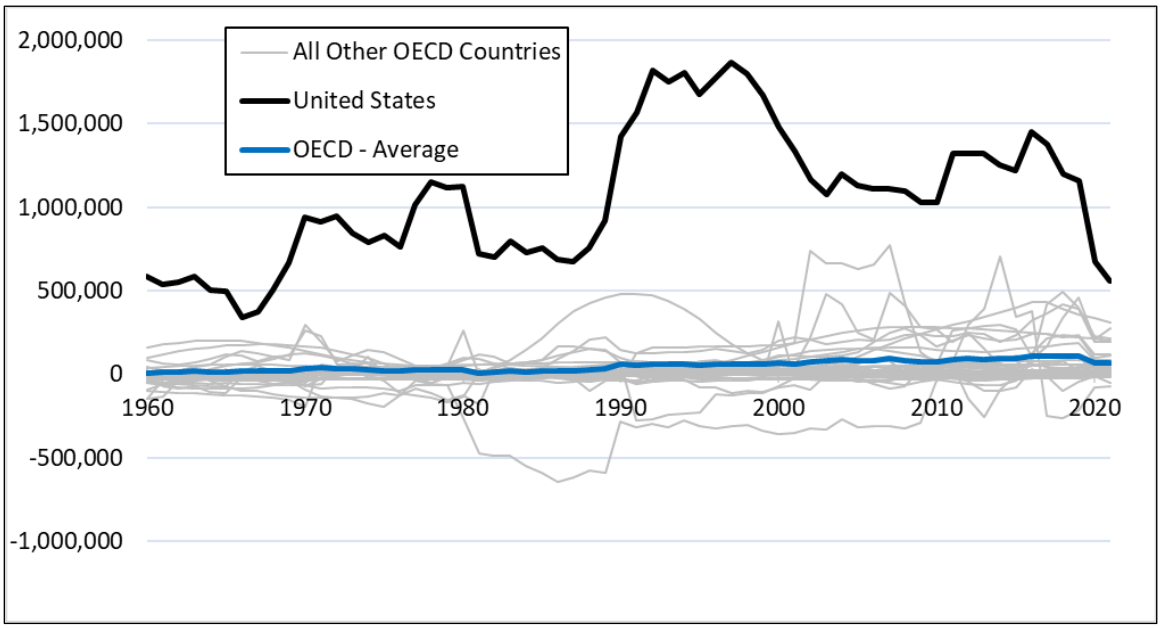
**Notes:** The OECD has 38 member countries.

## Global Trends in Immigration

**Figure A-6** displays historical net migration for the 38 countries of the OECD from 1960 through 2023. **Figure A-6** shows that the United States is an outlier among this group of countries with regard to immigration. While the average net immigration of OECD countries is close to zero, the United States experienced significantly higher net migration during this period (i.e., a net volume of approximately 1 million).

**Figure A-6. Total Net Migration of Organisation for Economic Co-operation and Development (OECD) Countries**

1960-2023




**Source:** World Bank, "Net Migration—OECD Members," https://data.worldbank.org/indicator/SM.POP.NETM?locations=OE.

**Notes:** The OECD has 38 member countries.

# Appendix B. Glossary

**Glossary of Selected Terms as Defined by the Social Security Trustees and the Congressional Budget Office (CBO)**

| | Trustees | CBO |
|---|---|---|
| **Actuarial balance** | The difference between the summarized income rate and the summarized cost rate as a percentage of taxable payroll over a given valuation period. | A common measure of the sustainability of a program that has a trust fund and a dedicated revenue source. It summarizes the trust fund's current balance and future annual streams of revenues and outlays as a single number. The actuarial balance equals the sum of the present value of the fund's projected income over a given period and the fund's current balance minus the sum of the present value of its projected outlays and a year's worth of benefits at the end of the period. |
| **Assumptions** | Values related to future trends in key factors that affect the trust funds. Demographic assumptions include fertility, mortality, net immigration, marriage, and divorce. Economic assumptions include unemployment rates, average earnings, inflation, interest rates, and productivity. Program-specific assumptions include retirement patterns, disability incidence, and termination rates. | |
| **Beneficiary** | A person who has been awarded benefits on the basis of his or her own or another's earnings record. The benefits may be either in current payment status or withheld. For example, this is used in a beneficiary-to-covered-worker ratio. | |
| **Cash flow** | Actual or projected revenue (other than interest paid to the trust funds) and costs reflecting the levels of payroll tax contribution rates and benefits scheduled in the law. Net cash flow is the difference between non-interest income and cost. | |
| **Cost** | The cost shown for a year includes benefits scheduled for payment in the year (without regard to the ability to make the payments in full), administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. | |
| **Cost rate** | The cost rate for a year is the ratio of the cost of the program to the taxable payroll for the year. | The present value of outlays for a period plus the present value of a year's worth of benefits at the end of the period divided by the present value of gross domestic product or taxable payroll over the same period. |
| **Covered worker** | A person who has earnings creditable for Social Security purposes based on services for wages in covered employment or income from | |

| | Trustees | CBO |
|---|---|---|
| | covered self-employment. For example, this is used in a beneficiary-to-covered-worker ratio. | |
| **Death rate (also "mortality rate")** | The average deaths per 100,000 persons if they were to experience death rates by age and sex for that year. | The mortality rate adjusted for age and sex represents the rate that would be observed if the projected mortality rates by age and sex occurred in a population that had the same age and sex composition as the population in a reference year. For its reference population, CBO uses the population in 2020. |
| **Income** | Income for a given year is the sum of tax revenue on a cash basis (payroll tax contributions and income from the taxation of scheduled benefits), reimbursements from the General Fund of the Treasury (if any), and interest credited to the trust funds. | |
| **Income rate** | Ratio of non-interest income to the OASDI (i.e., Social Security) taxable payroll for the year. | The present value of tax revenues for a period plus the trust funds' initial balance divided by the present value of taxable payroll or gross domestic product (GDP) over the same period. |
| **Lawful permanent resident (LPR) immigration** | The flow of persons who enter the Social Security area population and are granted LPR status or who are already in the Social Security area population and adjust their status to become LPRs. Persons who enter the country with legal visas but without LPR status, such as temporary foreign workers and students, are not included in the LPR immigration category. | |
| **Legal emigration** | The flow of LPRs and citizens who leave the Social Security area population. | |
| **Life expectancy** | Average remaining number of years expected prior to death. Period life expectancy is calculated for a given year using the actual or expected death rates at each age for that year. Cohort life expectancy, sometimes referred to as generational life expectancy, is calculated for individuals at a specific age in a given year using actual or expected death rates from the years in which the individuals would actually reach each succeeding age if they survive. | Life expectancy in a given year is the amount of time a person would expect to survive on the basis of that year's mortality rates for people of various ages. It is sometimes referred to as period life expectancy. |
| **Long-range period (or "long range")** | The first 75 projection years. The trustees make long-range actuarial estimates for this period because it covers approximately the maximum remaining lifetime for virtually all current Social Security participants. | |
| **Other-than-LPR emigration** | The flow of other-than-LPR immigrants who leave the Social Security population or who adjust their status to become LPRs. | |
| **Other-than-LPR immigration** | The flow of persons who enter the Social Security population and stay to the end of the year without being granted LPR status, such as undocumented immigrants and foreign | |

| | Trustees | CBO |
|---|---|---|
| | workers and students entering with temporary visas. | |
| **Non-interest income** | The sum of tax revenue on a cash basis (payroll tax contributions and income from the taxation of scheduled benefits) and reimbursements from the General Fund of the Treasury, if any. | |
| **Present value** | The equivalent value, at the present time, of a stream of values (either income or cost, past or future). Present value is used widely in calculations involving financial transactions over long periods of time to account for the time value of money by discounting or accumulating these transactions at the rate of interest. Present-value calculations for this report use the effective yield on combined OASI and DI Trust Fund asset reserves. | A single number that expresses a flow of current and future income (in taxes) or payments (in benefits) in terms of an equivalent lump sum received or paid at a specific time. The value depends on the rate of interest, known as the discount rate, used to translate past and future cash flows into dollars at that time. |
| **Short-range period (or "short range")** | The first 10 projection years. The Social Security Act requires estimates for five years. The trustees prepare estimates for an additional five years to help clarify trends that are only starting to develop in the mandated first five-year period. | |
| **Social Security population** | The population composed of (1) residents of the 50 states and the District of Columbia (adjusted for net census undercount); (2) civilian residents of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands; (3) federal civilian employees and persons in the U.S. Armed Forces abroad and their dependents; (4) noncitizens living abroad who are insured for Social Security benefits; and (5) all other U.S. citizens abroad. | The population includes all residents of the 50 states and the District of Columbia, as well as civilian residents of U.S. territories. It also includes federal civilian employees and members of the U.S. Armed Forces living abroad and their dependents, U.S. citizens living abroad, and noncitizens living abroad who are eligible for Social Security benefits on the basis of their earnings while in the United States. |
| **Solvency** | A program is solvent at a point in time if it is able to pay scheduled benefits when due with scheduled financing. For example, the OASDI program is solvent over any period for which the trust funds maintain a positive level of asset reserves. | |
| **Summarized balance** | The difference between the summarized income rate and the summarized cost rate, expressed as a percentage of GDP. The difference between the summarized income rate and cost rate as a percentage of taxable payroll is referred to as the actuarial balance. | |
| **Summarized cost rate** | The ratio of the present value of cost to the present value of the taxable payroll (or GDP) for the years in a given period, expressed as a percentage. | |
| **Summarized income rate** | The ratio of the present value of scheduled noninterest income to the present value of taxable payroll (or GDP) for the years in a given period, expressed as a percentage. | |

| | Trustees | CBO |
|---|---|---|
| **Taxable payroll** | A weighted sum of taxable wages and taxable self-employment income. When multiplied by the combined employee-employer payroll tax rate, taxable payroll yields the total amount of payroll taxes incurred by employees, employers, and the self-employed for work during the period. | The total amount of earnings (wages and self-employment income) from employment covered by Social Security that is below the applicable annual taxable maximum. |
| **Total fertility rate (TFR)** | The sum of the single-year-of-age birth rates for girls and women ages 14-49, where the rate for age 14 includes births to girls ages 14 and under, and the rate for age 49 includes births to women ages 49 and over. The TFR may be interpreted as the average number of children that would be born to a woman if she were to experience, at each age of her life, the birth rate observed in, or assumed for, a specified year and if she were to survive the entire childbearing period. | The average number of children that a woman would have if, in each year of her life, she experienced the birth rates observed or assumed for that year and if she survived her entire childbearing period. (CBO and SSA estimate that period as ages 14-49, and the Census Bureau estimates it as ages 14-44.) |
| **Trust funds** | Separate accounts in the U.S. Treasury that hold the payroll taxes received under the Federal Insurance Contributions Act and the Self-Employment Contributions Act, payroll taxes resulting from coverage of state and local government employees, any sums received under the financial interchange with the Railroad Retirement account, voluntary hospital and medical insurance premiums, and reimbursements or payments from the General Fund of the Treasury. | The accounts to which Social Security taxes are credited and from which benefits are paid. Interest on the funds' balances is also credited to the trust funds, and administrative expenses are withdrawn from them. |
| **Trust fund balance** | | At any given time, the balance in a program's trust fund is an indicator of the historical relationship between receipts and expenditures. Trust funds have an important legal meaning in that their balances are a measure of the amounts that the government is permitted to spend for certain purposes under current law. In a given year, the receipts credited to a trust fund—along with any interest credited on previous balances—minus spending for benefits and administrative costs constitute its surplus or deficit. |
| **Trust fund exhaustion date** | | The year in which a trust fund's balance will reach zero. |
| **Trust fund ratio** | A measure of trust fund adequacy. The asset reserves at the beginning of a year (equal to the reserves at the end of the prior year)—which do not include advance tax transfers—expressed as a percentage of the cost for the year. The trust fund ratio represents the proportion of a year's cost that could be paid solely with the reserves at the beginning of the year | The balance in a trust fund at the beginning of the year divided by projected outlays for that year. |

| | |
|---|---|
| **Trust fund reserve** | The cumulative excess of trust fund income over trust fund cost over all years to date. These reserves are held by the trust funds in the form of Treasury notes and bonds, other securities guaranteed by the federal government, certain federally sponsored agency obligations, and cash. |
| **Trust fund reserve depletion** | The point at which reserves in a trust fund are insufficient to pay scheduled benefits in full and on time. |
| **Valuation period** | A period of years (e.g., 25, 50, or 75) considered as a unit for purposes of calculating the financial status of a trust fund. |

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## Disclaimer