5. Disability Insurance Beneficiaries

The DI Trust Fund pays for benefits to workers who: (1) satisfy the disability insured requirements, (2) have applied for disabled-worker benefits, (3) are determined to be unable to engage in any substantial gainful activity due to a medically determinable physical or mental impairment severe enough to satisfy the requirements of the program, and (4) have not yet attained normal retirement age. Spouses and children of such disabled-worker beneficiaries may also receive DI benefits provided they satisfy certain criteria, primarily age and earnings requirements.

The Office of the Chief Actuary projects the number of disabled-worker beneficiaries in current-payment status (disability prevalence) for each future year. The projections start with the number in current-payment status as of December 2022. Projections of the number of applicants and new beneficiaries awarded benefits each year (disability incidence) and the number of beneficiaries leaving the disability rolls each year then determine the number in current-payment status in later years. Beneficiaries leave the rolls due to death and recovery (disability terminations) and due to conversion from disabled-worker to retired-worker beneficiary status at normal retirement age, after which the OASI Trust Fund pays for benefits. The remainder of this section describes the concepts of disability incidence, termination, and prevalence.

a. Disability Incidence

The disability incidence rate is the ratio of the number of applicants newly awarded disabled-worker benefits during each year to the number of individuals who meet insured requirements but are not yet receiving benefits (the disability-exposed population[1]). The Office of the Chief Actuary projects the number of newly awarded beneficiaries for each future year by multiplying assumed age-sex-specific disability incidence rates and the projected disability-exposed population by age and sex.

Figure V.C3 illustrates the projected incidence rates under the three alternatives along with historical rates. Incidence rates have varied substantially during the historical period since 1970 due to a variety of demographic and economic factors, along with changes in legislation and program administration. The solid lines in figure V.C3 show the age-sex-adjusted incidence rate consistent with the age-sex distribution of the disability-exposed population

[1] The disability-exposed population excludes those receiving benefits, while the disability insured population includes them. Section V.C.3 of this report describes the projection of the disability insured population.

for 2000. This adjustment allows a meaningful comparison of incidence rates over time by focusing on the likelihood of being awarded disabled-worker benefits, excluding the effects of a changing distribution of the population toward ages where disability is more or less likely.

The dashed lines in figure V.C3 represent the gross (unadjusted) incidence rates. The changing age-sex distribution of the exposed population over time influences these unadjusted rates. The gross incidence rate declined relative to the age-sex-adjusted rate between 1970 and 1990 as the baby-boom generation increased the size of the younger working-age population, where disability incidence is lower than in older populations. Between 1990 and 2010, the gross rate increased relative to the age-sex-adjusted rate as the baby-boom generation moved into an age range where disability incidence is higher. The projected gross incidence rate generally declines relative to the age-sex-adjusted rate as the baby-boom generation moves above the normal retirement age and the lower-birth-rate cohorts of the 1970s enter prime disability ages (50 to normal retirement age). As these smaller cohorts age beyond normal retirement age, by about 2050, the gross incidence rate returns to a higher relative level under the intermediate assumptions. Thereafter, the gross rate remains higher than the age-sex-adjusted rate, and reflects the persistently higher average age of the working-age population compared to the population in 2000, which is largely due to lower birth rates since 1965, and to the increase in the normal retirement age.

For the first 10 years of the projection period (through 2032), incidence rates reflect several factors following on the experience since the recession of 2007-09. At the beginning of the period of high unemployment that began in 2007, disability incidence rates started to rise to a level well above the general trend level, with rates reaching a peak in 2010. Between 2010 and 2012, incidence rates subsided as the economy recovered, but the decline continued after 2012, reaching levels well below those expected over the long-term. A portion of the elevation of disability incidence rates experienced during the recession of 2007-09 likely contributed to the lowering of incidence rates experienced during and subsequent to the economic recovery that followed, as many individuals applied for disability benefits earlier than they would have otherwise.

For 2022, the actual age-sex-adjusted incidence rate (2.9 per thousand) was below the level projected in last year's report (3.2 per thousand). In this year's report, incidence rates under the intermediate alternative are projected to rise more slowly early in the projection period than in last year's report, consistent with the low incidence levels experienced recently. Incidence rates are projected to rise to a temporary peak level for 2027 as some of the

reduced levels of new benefit awards in the pandemic period are realized in the next few years. After 2027, incidence rates gradually decline through the rest of the short-range period to the ultimate assumed level of incidence.

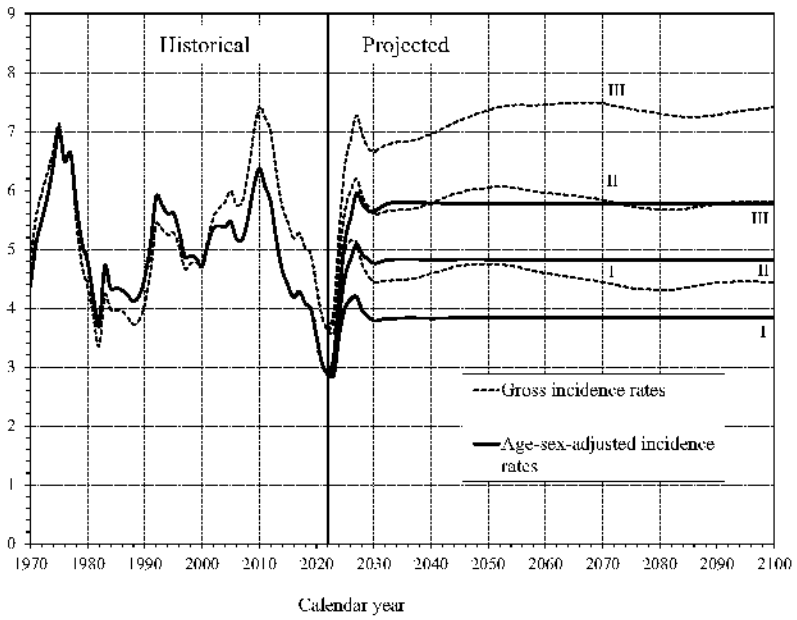
In 2032, at the end of the short-range period, age-sex-specific incidence rates are assumed to reach the ultimate rates assumed for the long-range projections. These ultimate age-sex-specific disability incidence rates were selected based on careful analysis of historical levels and patterns and expected future conditions, including the impact of scheduled increases in the normal retirement age.[1] The ultimate incidence rates represent the expected average rates of incidence for the future.

For the intermediate alternative, the Trustees assume that the ultimate age-sex-adjusted incidence rate (adjusted to the disability-exposed population for the year 2000) will be 4.8 awards per thousand exposed, which is the same as in last year's report. Figure V.C3 illustrates that the age-sex-adjusted incidence rate averaged 5.0 per thousand over the historical period 1970 through 2022, but has dropped substantially below that level since 2013. The rates seen in recent years are not consistent with an assumption of a full rise back to longer-term past historical averages. The Trustees continue to monitor experience and review the disability incidence rate assumption.

The Trustees assume that the ultimate age-sex-adjusted incidence rates for the low-cost and high-cost alternatives will be 3.8 and 5.8 awards per thousand exposed, or about 20 percent lower and higher, respectively, than the ultimate incidence rate for the intermediate alternative. These ultimate low-cost and high-cost incidence rates are similar to those in last year's report.

[1] Projected incidence rates are adjusted upward to account for additional workers who are expected to file for disability benefits (rather than retirement benefits) in response to reductions in retirement benefits as the normal retirement age rises.

Figure V.C3.—DI Disability Incidence Rates, 1970-2100
[Awards per thousand disability-exposed]



b. Disability Termination

Beneficiaries stop receiving disability benefits when they die, experience an improvement in their medically-determinable impairment such that they are deemed able to engage in substantial gainful activity, or return to substantial work. Disabled-worker beneficiaries who return to substantial work for an extended period are deemed to have recovered, and their benefits are then terminated. The termination rate is the ratio of the number of terminations for these reasons to the average number of disabled-worker beneficiaries during the year.

The Office of the Chief Actuary projects termination rates by age, sex, and reason for termination. In addition, the office projects termination rates by duration of entitlement to disabled-worker benefits in the long-range period (post-2032).

In the short-range period (through 2032), the projected age-sex-adjusted death rate (adjusted to the 2000 disabled-worker beneficiary population) under the intermediate assumptions declines from the temporarily elevated rate of 28.6 deaths per thousand beneficiaries for 2022 to about 23.8 per thousand for 2032. These rates are assumed to remain elevated through 2024

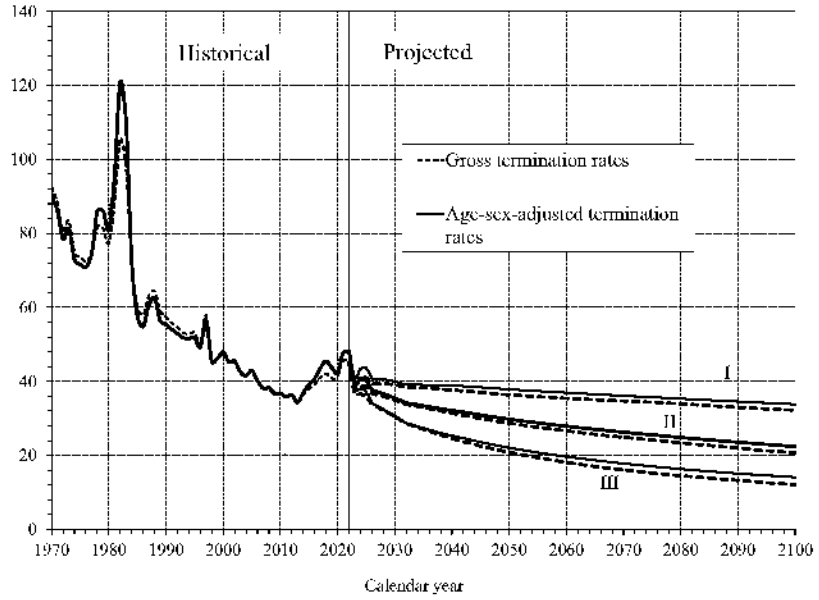
due to the COVID-19 pandemic, and then return to follow the underlying declining trend in general population mortality. The projected age-sex-adjusted recovery rate (medical improvement and return to substantial work) under the intermediate assumptions decreases from the relatively high level of 19.6 per thousand beneficiaries for 2022 to 10.4 per thousand beneficiaries for 2032. The recovery rate has been high in recent years due to an ongoing administrative effort to eliminate a backlog of medical continuing disability reviews. The recovery rate is expected to decrease as the backlog of disabled-worker reviews is assumed to be eliminated by the end of 2025. Thereafter, the rate decreases toward the expected long-term projected rate. Under the low-cost and high-cost assumptions, total age-sex-adjusted termination rates due to death and recovery are roughly 10 to 20 percent higher or lower, respectively, than under the intermediate assumptions.

For the long-range period (post-2032), the Office of the Chief Actuary projects death and recovery rates by age, sex, and duration of entitlement relative to the average level of rates experienced over the base period 2011 through 2015. The assumed ultimate age-sex-adjusted recovery rate for disabled-worker beneficiaries is 10.4 per thousand beneficiaries under the intermediate alternative.[1] The assumed ultimate age-sex-adjusted recovery rates for the low-cost and high-cost alternatives are 12.5 and 8.3 recoveries per thousand beneficiaries, respectively. Death rates by age and sex change throughout the long-range period at the same rate as death rates in the general population. The age-sex-adjusted death rate decreases from 28.6 per thousand beneficiaries in 2022 to 21.5, 12.4, and 6.1 per thousand disabled-worker beneficiaries for 2097 under the low-cost, intermediate, and high-cost assumptions, respectively.

Figure V.C4 illustrates gross and age-sex-adjusted total termination rates (including both recoveries and deaths) for disabled-worker beneficiaries for the historical period since 1970, and for the projection period through 2100. As with incidence rates, the age-sex-adjusted termination rate illustrates the real change in the tendency to terminate benefits. Changes in the age-sex distribution of the beneficiary population influence the gross termination rate. A shift in the disabled-worker beneficiary population to older ages, as occurred over the past 20 years when the baby-boom generation moved into pre-retirement ages, increases gross death termination rates relative to the age-sex-adjusted rates.

[1] The disability recovery rates for each alternative vary slightly over the last 65 years of the 75-year projection period, so the ultimate rates are presented as averages for years 2033 through 2097.

Figure V.C4.—DI Disability Termination Rates, 1970-2100
[Terminations per thousand disabled-worker beneficiaries]



c. Comparison of Incidence, Termination, and Conversion

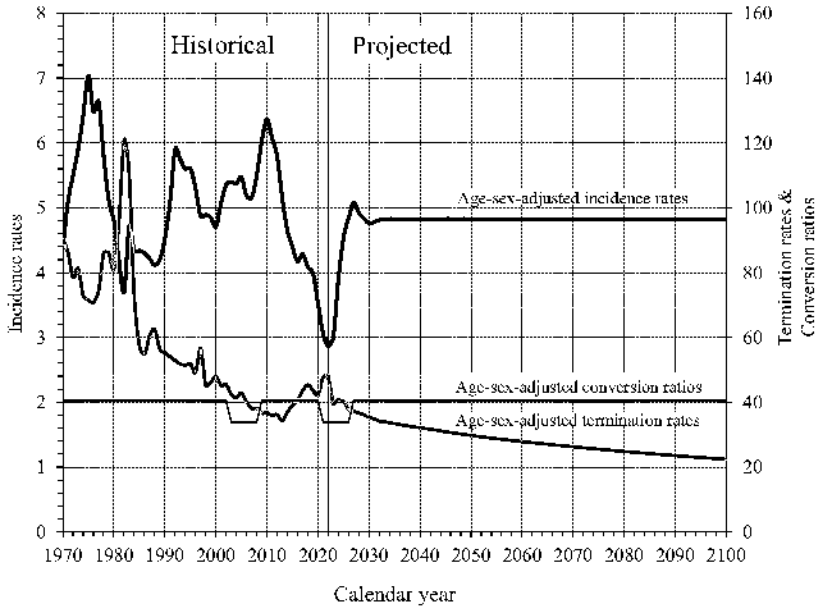
Incidence and termination rates are the foundation for projecting the number of disabled-worker beneficiaries in current-payment status. At normal retirement age, all disabled-worker beneficiaries convert to retired-worker status and leave the DI rolls.

Figure V.C5 compares the historical and projected (intermediate) levels of incidence, termination, and conversion on an age-sex-adjusted basis. Incidence rates have varied widely, and the Trustees expect the age-sex adjusted rates under the intermediate assumptions to remain near the middle of the high and low extremes experienced since 1970. Termination rates have declined and the Trustees expect them to continue to decline, largely because of declining death rates.

Conversions are a transfer of beneficiaries at normal retirement age from the DI program to the OASI program. Therefore, the disability "conversion" rate is 100 percent for disabled-worker beneficiaries reaching normal retirement age in a given year. After conversion, recovery from the disabling condition is no longer relevant for benefit eligibility. The conversion ratio is the number of conversions in a given year (that is, beneficiaries who reach normal

retirement age) divided by the average number of disabled-worker beneficiaries at all ages in that year. The ratio is constant on an age-sex-adjusted basis, except for the two periods during which normal retirement age increases under current law.

Figure V.C5.—Comparison of DI Disability Incidence Rates, Termination Rates and Conversion Ratios Under Intermediate Assumptions, 1970-2100
[Awards per thousand disability-exposed;
terminations and conversions per thousand disabled-worker beneficiaries]



d. DI Beneficiaries and Disability Prevalence Rates

The Office of the Chief Actuary makes detailed projections of disabled-worker awards, terminations, and conversions and combines these to project the number of disabled workers receiving benefits over the next 75 years. Table V.C5 presents the projected numbers of disabled-worker beneficiaries in current-payment status. The number of disabled-worker beneficiaries in current-payment status grows from 7.6 million at the end of 2022, to 10.9 million, 12.6 million, and 12.6 million at the end of 2100, under the low-cost, intermediate, and high-cost assumptions, respectively. Of course, much of this growth results from the growth and changing age distribution of the population described earlier in this chapter. Table V.C5 also presents projected numbers of auxiliary beneficiaries and disability prevalence rates on both a gross basis and an age-sex-adjusted basis.

Table V.C5.—DI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1960-2100

[Beneficiaries in thousands; prevalence rates per thousand persons insured for disability benefits]

Calendar year	Disabled-worker beneficiaries	Auxiliary beneficiaries		Total beneficiaries	Disability prevalence rates	
		Spouse	Child		Gross	Age-sex-adjusted[a]
Historical data:						
1960	455	77	155	687		
1965	988	193	558	1,739		
1970	1,493	283	889	2,665	20	18
1975	2,488	453	1,411	4,351	29	28
1980	2,856	462	1,359	4,677	28	31
1985	2,653	306	945	3,904	24	26
1990	3,007	266	989	4,261	25	28
1995	4,179	264	1,409	5,852	33	35
2000	5,036	165	1,466	6,667	36	36
2005	6,519	157	1,633	8,309	45	40
2010	8,204	161	1,820	10,185	55	44
2015	8,909	143	1,756	10,808	59	45
2016	8,809	136	1,667	10,612	58	44
2017	8,695	127	1,590	10,412	57	43
2018	8,537	119	1,507	10,164	55	41
2019	8,378	114	1,434	9,927	54	40
2020	8,151	105	1,364	9,620	52	39
2021	7,877	97	1,245	9,219	50	37
2022	7,604	92	1,146	8,842	48	34
Intermediate:						
2023	7,416	90	1,100	8,606	46	33
2025	7,518	90	1,092	8,700	47	33
2030	7,845	89	1,211	9,145	48	35
2035	8,233	90	1,357	9,681	49	37
2040	8,775	91	1,589	10,455	52	39
2045	9,518	103	1,784	11,405	55	40
2050	10,040	106	1,900	12,046	58	41
2055	10,433	108	1,966	12,507	59	42
2060	10,509	104	1,982	12,595	59	42
2065	10,658	106	1,987	12,751	59	42
2070	10,795	110	2,020	12,926	59	42
2075	10,756	110	2,086	12,952	58	43
2080	10,851	111	2,168	13,131	57	43
2085	11,106	114	2,242	13,461	57	43
2090	11,667	121	2,302	14,090	58	43
2095	12,185	125	2,350	14,660	59	43
2100	12,550	129	2,399	15,078	60	43
Low-cost:						
2023	7,379	90	1,093	8,562	46	33
2025	7,301	90	1,056	8,447	45	32
2030	6,948	88	1,077	8,112	42	31
2035	6,826	74	1,164	8,064	40	30
2040	6,998	70	1,359	8,427	41	30
2045	7,447	75	1,528	9,050	42	31
2050	7,779	75	1,622	9,476	43	31
2055	8,054	75	1,677	9,805	43	32
2060	8,119	71	1,699	9,889	43	32
2065	8,259	73	1,727	10,058	42	32
2070	8,415	75	1,795	10,285	41	32
2075	8,481	75	1,899	10,455	40	32
2080	8,705	76	2,014	10,795	40	32
2085	9,134	78	2,114	11,326	40	32
2090	9,860	86	2,200	12,146	41	32
2095	10,450	90	2,279	12,819	42	32
2100	10,870	91	2,368	13,329	42	32

Table V.C5.—DI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1960-2100 (Cont.)

[Beneficiaries in thousands; prevalence rates per thousand persons insured for disability benefits]

Calendar year	Disabled-worker beneficiaries	Auxiliary beneficiaries		Total beneficiaries	Disability prevalence rates	
		Spouse	Child		Gross	Age-sex-adjusted[a]
High-cost:						
2023	7,452	90	1,105	8,647	47	33
2025	7,750	91	1,129	8,969	48	34
2030	8,706	90	1,312	10,107	54	40
2035	9,627	107	1,491	11,225	59	44
2040	10,556	114	1,689	12,358	63	47
2045	11,614	135	1,861	13,609	69	49
2050	12,332	142	1,972	14,446	74	51
2055	12,839	146	2,033	15,018	78	52
2060	12,894	141	2,027	15,062	79	53
2065	13,001	143	1,986	15,130	80	53
2070	13,028	148	1,947	15,123	81	53
2075	12,740	146	1,927	14,813	81	53
2080	12,492	145	1,934	14,571	80	54
2085	12,249	143	1,948	14,340	79	54
2090	12,230	144	1,954	14,327	80	54
2095	12,421	147	1,945	14,513	81	54
2100	12,556	150	1,927	14,632	82	54

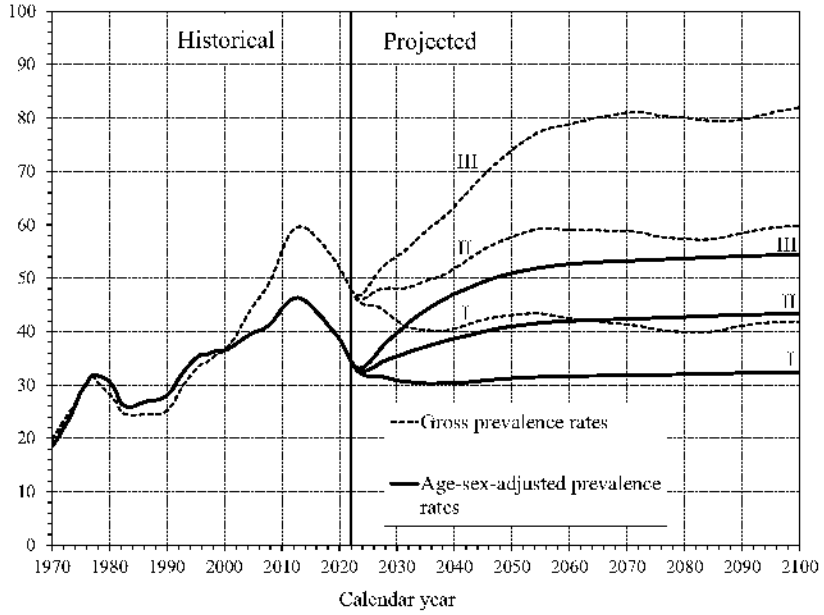
[a] Adjusted to the age-sex distribution of the disability insured population for the year 2000.

Note: Components may not sum to totals because of rounding.

The disability prevalence rate is the ratio of the number of disabled-worker beneficiaries in current-payment status to the number of persons insured for disability benefits. Figure V.C6 illustrates the historical and projected disability prevalence rates on both a gross basis and on an age-sex-adjusted basis (adjusted to the age-sex distribution of the disability insured population for the year 2000).

Changes in prevalence rates are a direct result of changes in incidence rates and termination rates. Figure V.C5 depicts patterns for incidence and termination rates, which are helpful for understanding the trend in prevalence rates. Annual incidence and termination rates are not directly comparable or combinable because their denominators differ.

Figure V.C6.—DI Disability Prevalence Rates, 1970-2100
[Rate per thousand persons insured for disability benefits]



Age-sex-adjusted prevalence rates have increased primarily because: (1) termination rates, in particular death termination rates, have declined; (2) incidence rates at younger ages have increased relative to rates at older ages (new beneficiaries at younger ages have more potential years on the disability rolls); (3) incidence rates have increased substantially for women to parity with men; and (4) the maturation of the DI program (disabled-worker benefits became available to those over age 50 at the start of the program in 1957 and to younger workers in 1960, and disability insured status requirements were eased for those under age 31 in 1968). Gross prevalence rates have increased more than age-sex-adjusted prevalence rates since the baby-boom generation began to reach ages 45 through normal retirement age, a time of life when disability incidence rates are relatively high. The Office of the Chief Actuary projects both gross and age-sex adjusted prevalence rates to grow at a slower pace based on assumed stabilization in these four factors: (1) the age distribution of the general population, (2) the age distribution of the disability insured population, (3) incidence rates by age and sex, and (4) DI program age and insured requirements. As these factors gradually stabilize, the declining death termination rate continues to have a small influence toward higher disability prevalence rates.

As mentioned above in the discussion of incidence and termination rates, the age-sex-adjusted prevalence rate isolates the changing trend in the underlying likelihood of receiving benefits for the insured population, without reflecting changes in the age and sex distribution of the population. As with incidence rates, gross disability prevalence rates declined relative to the age-sex-adjusted rate when the baby-boom generation reached working age between 1970 and 1990; this trend reflects the lower disability prevalence rates associated with younger ages. Conversely, the gross rate of disability prevalence has increased relative to the age-sex-adjusted rate after 1990 due to the aging of the baby-boom generation into ages with higher disability prevalence rates.

Under the intermediate assumptions, the projected age-sex-adjusted disability prevalence rate grows from 34.4 per thousand disability insured workers at the end of 2022 to 43.4 per thousand at the end of 2100. The projected age-sex-adjusted disability prevalence rate at the end of 2100 is 32.4 per thousand under the low-cost assumptions and 54.4 per thousand under the high-cost assumptions.

Table V.C5 presents projections of the numbers of auxiliary beneficiaries paid from the DI Trust Fund. As indicated at the beginning of this subsection, auxiliary beneficiaries are qualifying spouses and children of disabled-worker beneficiaries. A spouse must either be at least age 62 or have an eligible child beneficiary in his or her care who is either under age 16 or disabled prior to age 22. A child must be: (1) under age 18, (2) age 18 or 19 and still a student in high school, or (3) age 18 or older and disabled prior to age 22.

The projection of the number of auxiliary beneficiaries relies on the projected number of disabled-worker beneficiaries. In the short-range period (2023 through 2032), the Office of the Chief Actuary projects incidence and termination rates for each category of auxiliary beneficiary. After 2032, the office projects child beneficiaries at ages 18 and under in relation to the projected number of children in the population using the probability that either of their parents is a disabled-worker beneficiary. The office projects the remaining categories of children and spouses in a similar manner.

6. Covered and Taxable Earnings, Taxable Payroll, and Payroll Tax Contributions

Covered earnings include both covered wages and covered self-employment net earnings. The Office of the Chief Actuary projects covered wages for component sectors of the economy (i.e., private, State and local government, Federal civilian, and military) based on the projected overall growth of sec-

toral and total wages in the U.S. economy. The projections of covered wages also reflect changes in covered employment due to a relative increase in non-covered undocumented immigrants and to the mandatory coverage of new hires in the Federal civilian sector. The office projects covered self-employment net earnings based on the growth in net proprietors' income in the U.S. economy.

Taxable earnings are the portion of covered earnings subject to the Social Security payroll tax. Taxable wages for an employee are total covered wages from all wage employment up to the contribution and benefit base. Taxable wages for an employer are the sum of all covered wages paid to each employee up to the base. Employees with multiple jobs whose total wages exceed the base are eligible for a refund of excess employee taxes withheld; employers are not eligible for a refund on this basis. For self-employed workers with no taxable wages, taxable earnings are the amount of covered self-employment net earnings up to the base. For self-employed workers with taxable wages less than the base, covered self-employment net earnings are taxable up to the difference between the base and their taxable wages. For projection purposes, the Office of the Chief Actuary computes taxable earnings based on a proportion of covered earnings that is at or below the base.

The OASDI taxable payroll (see table VI.G6) for a year is computed as the amount of earnings which, when multiplied by the combined OASDI employee-employer payroll tax rate for that year, yields the total amount of payroll taxes due from wages paid and self-employment net earnings for the year. Taxable payroll is used as the denominator for income rates, cost rates, and actuarial balances. Taxable payroll is derived by adjusting total taxable earnings to account for categories of earnings that are taxed at rates other than the combined employee-employer rate and to take into account amounts credited as wages that were not included in normally reported wages. For 1951 and later, taxable earnings are reduced by one-half of the amount of wages paid to employees with multiple jobs that exceed the contribution and benefit base. For 1983 through 2001, deemed wage credits for military service after 1956 are added to taxable earnings. The self-employment tax rates for 1951 through 1983 were less than the combined employee-employer rates; therefore, the self-employment component of taxable payroll for those years is reduced by multiplying the ratio of the self-employment rate to the combined employee-employer rate times the taxable self-employment net earnings. Finally, for 1966 through 1979, employers were exempt from paying their share of payroll tax on their employees' tips and, for 1980 through 1987, employers paid tax on only part of their employees' tips. For those

years, the taxable payroll is reduced by half of the amount of tips for which the employer owed no payroll tax.

The ratio of taxable payroll to covered earnings (the taxable ratio) declined from 88.6 percent for 1984 to 82.6 percent for 2000, mostly due to much larger increases in wage levels for very high earners than for all other earners. From 2000 to 2010, the taxable ratio varied with the business cycle, rising during economic downturns and declining during recoveries. Specifically, the taxable ratio rose to 85.7 percent for 2002, declined to 82.4 percent for 2007, rose to 85.2 percent for 2009, and averaged 83.0 percent for the period 2010 to 2019.

The ratio declined to 82.2 percent for 2020 from the previous year's 83.1 percent. Unlike previous economic downturns, the pandemic-induced recession led to a much greater decrease in wages for earners at the low end of the earnings distribution than for those at the high end. This resulted in a relatively higher proportion of total wages being above the contribution and benefit base than has typically been the case in other economic downturns. The ratio declined further to 81.0 percent for 2021, mainly due to increases in bonuses paid to high earners and the exercising of stock options.

The taxable ratio for 2022 is estimated to increase to 82.3 percent for all three alternatives. The ratio for the intermediate assumptions increases to 83.1 for 2023 and 83.2 for 2024. For the low-cost and high-cost alternatives, the ratio for 2023 increases to 83.1 and 83.5, respectively. Subsequently, for all three alternatives, the ratio gradually decreases to the levels assumed for the end of the short-range period.

For this report, the Trustees assume a level for the taxable ratio at the end of the short-range period (2032) of 84.0 percent for the low-cost assumptions, 82.5 percent for the intermediate assumptions, and 81.0 percent for the high-cost assumptions.[1] These are the same assumptions that the Trustees used for the end of the short-range period (2031) for the 2022 report.

The Office of the Chief Actuary projects payroll tax contributions using the patterns of tax collection required by Federal laws and regulations. The office determines payroll tax liabilities by multiplying the scheduled tax rates for each year by the amount of taxable wages and self-employment net earnings for that year. The office then splits these liabilities into amounts by collection period. For wages, Federal law requires that employers withhold

[1] The taxable ratio drifts down slightly after 2032, to 84.0, 82.3, and 80.7 percent for 2097 for the low-cost, intermediate, and high-cost assumptions, respectively, as self-employment income (which has a lower percent taxable than wages) becomes an increasing share of total earnings.

OASDI and HI payroll taxes and Federal individual income taxes from employees' pay. As an employer's accumulation of such taxes (including the employer share of payroll taxes) meets certain thresholds, which the Department of the Treasury determines, the employer must deposit these taxes with the U.S. Treasury by a specific day, depending on the amount of money involved.[1] For projection purposes, the office splits the payroll tax contributions related to wages into amounts paid in the same quarter as incurred and in the following quarter. Self-employed workers must make estimated tax payments on their earnings four times during the year and make up any underestimate on their individual income tax returns. The projection splits the self-employed tax liabilities by collection quarter to reflect this pattern.

The projected tax contributions also reflect the method used to ensure that money transferred to the trust funds is adjusted, over time, to equal the actual liability owed. Because payers generally make tax payments without identifying the separate OASDI contribution amounts, Treasury makes daily transfers of money from the General Fund to the trust funds on an initial estimated basis. The Social Security Administration periodically certifies the amounts of wages and self-employment net earnings on which tax contributions are owed for each year, at which time Treasury determines adjustments to appropriations to reconcile tax liabilities with deposits in the trust funds. This process also includes periodic transfers from the trust funds to the General Fund for contributions on wages in excess of the contribution and benefit base.

Table V.C6 shows the payroll tax contribution rates applicable under current law in each calendar year and the allocation of these rates between the OASI and DI Trust Funds.[2] It also shows the contribution and benefit base for each year through 2023.

[1] Generally, the higher the amount of liability, the sooner the taxes must be paid. For smaller employers, payment is due by the middle of the month following when the liability was incurred. Medium-size employers have three banking days in which to make their deposits. Larger employers must make payment on the next business day after paying their employees.

[2] Table VI.G1 shows the payroll tax contribution rates for the Hospital Insurance (HI) program.

Table V.C6.—Contribution and Benefit Base and Payroll Tax Contribution Rates

Calendar years	Contribution and benefit base	Payroll tax contribution rates (percent)					
		Employees and employers, combined[a]			Self-employed[b]		
		OASDI	OASI	DI	OASDI	OASI	DI
1937-49	$3,000	2.00	2.00				
1950	3,000	3.00	3.00				
1951-53	3,600	3.00	3.00	—	2.2500	2.2500	—
1954	3,600	4.00	4.00	—	3.0000	3.0000	—
1955-56	4,200	4.00	4.00	—	3.0000	3.0000	—
1957-58	4,200	4.50	4.00	0.50	3.3750	3.0000	0.3750
1959	4,800	5.00	4.50	.50	3.7500	3.3750	.3750
1960-61	4,800	6.00	5.50	.50	4.5000	4.1250	.3750
1962	4,800	6.25	5.75	.50	4.7000	4.3250	.3750
1963-65	4,800	7.25	6.75	.50	5.4000	5.0250	.3750
1966	6,600	7.70	7.00	.70	5.8000	5.2750	.5250
1967	6,600	7.80	7.10	.70	5.9000	5.3750	.5250
1968	7,800	7.60	6.65	.95	5.8000	5.0875	.7125
1969	7,800	8.40	7.45	.95	6.3000	5.5875	.7125
1970	7,800	8.40	7.30	1.10	6.3000	5.4750	.8250
1971	7,800	9.20	8.10	1.10	6.9000	6.0750	.8250
1972	9,000	9.20	8.10	1.10	6.9000	6.0750	.8250
1973	10,800	9.70	8.60	1.10	7.0000	6.2050	.7950
1974	13,200	9.90	8.75	1.15	7.0000	6.1850	.8150
1975	14,100	9.90	8.75	1.15	7.0000	6.1850	.8150
1976	15,300	9.90	8.75	1.15	7.0000	6.1850	.8150
1977	16,500	9.90	8.75	1.15	7.0000	6.1850	.8150
1978	17,700	10.10	8.55	1.55	7.1000	6.0100	1.0900
1979	22,900	10.16	8.66	1.50	7.0500	6.0100	1.0400
1980	25,900	10.16	9.04	1.12	7.0500	6.2725	.7775
1981	29,700	10.70	9.40	1.30	8.0000	7.0250	.9750
1982	32,400	10.80	9.15	1.65	8.0500	6.8125	1.2375
1983	35,700	10.80	9.55	1.25	8.0500	7.1125	.9375
1984[c]	37,800	11.40	10.40	1.00	11.4000	10.4000	1.0000
1985[c]	39,600	11.40	10.40	1.00	11.4000	10.4000	1.0000
1986[c]	42,000	11.40	10.40	1.00	11.4000	10.4000	1.0000
1987[c]	43,800	11.40	10.40	1.00	11.4000	10.4000	1.0000
1988[c]	45,000	12.12	11.06	1.06	12.1200	11.0600	1.0600
1989[c]	48,000	12.12	11.06	1.06	12.1200	11.0600	1.0600
1990	51,300	12.40	11.20	1.20	12.4000	11.2000	1.2000
1991	53,400	12.40	11.20	1.20	12.4000	11.2000	1.2000
1992	55,500	12.40	11.20	1.20	12.4000	11.2000	1.2000
1993	57,600	12.40	11.20	1.20	12.4000	11.2000	1.2000
1994	60,600	12.40	10.52	1.88	12.4000	10.5200	1.8800
1995	61,200	12.40	10.52	1.88	12.4000	10.5200	1.8800
1996	62,700	12.40	10.52	1.88	12.4000	10.5200	1.8800
1997	65,400	12.40	10.70	1.70	12.4000	10.7000	1.7000
1998	68,400	12.40	10.70	1.70	12.4000	10.7000	1.7000
1999	72,600	12.40	10.70	1.70	12.4000	10.7000	1.7000
2000	76,200	12.40	10.60	1.80	12.4000	10.6000	1.8000
2001	80,400	12.40	10.60	1.80	12.4000	10.6000	1.8000
2002	84,900	12.40	10.60	1.80	12.4000	10.6000	1.8000
2003	87,000	12.40	10.60	1.80	12.4000	10.6000	1.8000
2004	87,900	12.40	10.60	1.80	12.4000	10.6000	1.8000
2005	90,000	12.40	10.60	1.80	12.4000	10.6000	1.8000

Table V.C6.—Contribution and Benefit Base and Payroll Tax Contribution Rates (Cont.)

Calendar years	Contribution and benefit base	Payroll tax contribution rates (percent)					
		Employees and employers, combined[a]			Self-employed[b]		
		OASDI	OASI	DI	OASDI	OASI	DI
2006	$94,200	12.40	10.60	1.80	12.4000	10.6000	1.8000
2007	97,500	12.40	10.60	1.80	12.4000	10.6000	1.8000
2008	102,000	12.40	10.60	1.80	12.4000	10.6000	1.8000
2009	106,800	12.40	10.60	1.80	12.4000	10.6000	1.8000
2010[d]	106,800	12.40	10.60	1.80	12.4000	10.6000	1.8000
2011[d]	106,800	10.40	8.89	1.51	10.4000	8.8900	1.5100
2012[d]	110,100	10.40	8.89	1.51	10.4000	8.8900	1.5100
2013	113,700	12.40	10.60	1.80	12.4000	10.6000	1.8000
2014	117,000	12.40	10.60	1.80	12.4000	10.6000	1.8000
2015	118,500	12.40	10.60	1.80	12.4000	10.6000	1.8000
2016	118,500	12.40	10.03	2.37	12.4000	10.0300	2.3700
2017	127,200	12.40	10.03	2.37	12.4000	10.0300	2.3700
2018	128,400	12.40	10.03	2.37	12.4000	10.0300	2.3700
2019	132,900	12.40	10.60	1.80	12.4000	10.6000	1.8000
2020	137,700	12.40	10.60	1.80	12.4000	10.6000	1.8000
2021	142,800	12.40	10.60	1.80	12.4000	10.6000	1.8000
2022	147,000	12.40	10.60	1.80	12.4000	10.6000	1.8000
2023	160,200	12.40	10.60	1.80	12.4000	10.6000	1.8000
2024 and later	[e]	12.40	10.60	1.80	12.4000	10.6000	1.8000

[a] Except as noted below, the combined employee/employer rate is divided equally between employees and employers.
[b] Beginning in 1990, self-employed persons receive a deduction, for purposes of computing their net earnings, equal to half of the combined OASDI and HI contributions that would be payable without regard to the contribution and benefit base. The OASDI contribution rate then applies to net earnings after this deduction, but subject to the OASDI base.
[c] In 1984 only, employees received an immediate credit of 0.3 percent of taxable wages against their OASDI payroll tax contributions. The self-employed received similar credits of 2.7 percent, 2.3 percent, and 2.0 percent against their combined OASDI and Hospital Insurance (HI) contributions on net earnings from self-employment in 1984, 1985, and 1986-89, respectively. The General Fund of the Treasury reimbursed the trust funds for these credits.
[d] Public Law 111-147 exempted most employers from paying the employer share of OASDI payroll tax on wages paid during the period March 19, 2010 through December 31, 2010 to certain qualified individuals hired after February 3, 2010. Public Law 111-312 reduced the OASDI payroll tax rate for 2011 by 2 percentage points for employees and for self-employed workers. Public Law 112-96 extended the 2011 rate reduction through 2012. These laws require that the General Fund of the Treasury reimburse the OASI and DI Trust Funds for these temporary reductions in 2010 through 2012 payroll tax revenue, in order to "replicate to the extent possible" revenue that would have been received if the combined employee/employer payroll tax rates had remained at 12.4 percent for OASDI (10.6 percent for OASI and 1.8 percent for DI).
[e] Subject to automatic adjustment based on increases in average wages.

7. Income From Taxation of Benefits

Under current law, the OASI and DI Trust Funds are credited with income tax revenue from the taxation of up to the first 50 percent of taxpayers' OASI and DI benefit payments. (The HI Trust Fund receives the remainder of the income tax revenue from the taxation of up to 85 percent of taxpayers' OASI and DI benefit payments.) Benefits are partially subject to federal income tax for beneficiaries with income (defined for this purpose as adjusted gross income excluding Social Security benefits, plus half of their Social Security benefits and all of their non-taxable interest income) in excess of specified

threshold amounts. The threshold amounts are $25,000 for single filers, $32,000 for joint filers, and $0 for those married individuals filing separately.

For the short-range period, the Office of the Chief Actuary estimates the income to the OASI and DI Trust Funds from taxation of benefits by applying the following two factors (projected by the Office of Tax Analysis, Department of the Treasury) to total OASI and DI scheduled benefits: (1) the percentage of taxpayers' scheduled benefits (limited to 50 percent) that is taxable and (2) the average marginal tax rate applicable to those benefits. Up to 85 percent of benefits may be subject to federal income tax, with any tax on more than 50 percent of a taxpayer's benefits credited to the Medicare Hospital Insurance Trust Fund.

For the long-range period, the office estimates the income to the trust funds from taxation of benefits by applying projected ratios of taxation of OASI and DI benefits to total OASI and DI scheduled benefits. These tax ratios rely on estimates from the Office of Tax Analysis in the Department of the Treasury. The Office of the Chief Actuary's estimates reflect the following assumptions: (1) The income thresholds used for benefit taxation are specified in the Internal Revenue Code to be constant in the future, and have never been changed, while income and benefit levels continue to rise. Accordingly, projected ratios of income from taxation of benefits to the amount of benefits increase gradually. (2) A permanent level shift upward in the ratios is projected for 2026 and beyond due to the expiration of the personal income tax provisions in Public Law 115-97, the Tax Cuts and Jobs Act of 2017. (3) Because indexation of income tax brackets is not specified in the Social Security Act, and because periodic changes have been made in the past to avoid indefinite compression of the income tax brackets relative to income levels (bracket creep), the Trustees assume that such periodic changes will occur in the future. As a result, after the tenth year of the projection period, income tax brackets are assumed to rise with average wages, rather than with the C-CPI-U as specified under current law. Thus, the income tax brackets are projected to roughly maintain their levels relative to the income distribution.

8. Average Benefits

Projections of average benefits for each benefit type reflect recent historical averages, projected average primary insurance amounts (PIAs), and projected ratios of average benefits to average PIAs. Calculations of average PIAs are based on projected distributions of beneficiaries by duration from year of initial entitlement, average PIAs at initial entitlement, and increases in PIAs after initial entitlement. Projected increases in average PIAs after ini-

tial entitlement depend on automatic benefit increases, recomputations to reflect additional covered earnings, and differences in mortality by level of lifetime earnings. Calculations of future average PIAs at initial entitlement are based on projected earnings histories, which in turn reflect a combination of the actual earnings histories associated with a sample of 2019 initial entitlements and more recent actual earnings levels by age and sex for covered workers.

For retired-worker, aged-spouse, and aged-widow(er) benefits, the percentage of the PIA that is payable depends on the age at initial entitlement to benefits. Projected ratios of average benefits to average PIAs for these types of benefits are based on projections of age distributions at initial entitlement.

9. Scheduled Benefits

For each type of benefit, scheduled benefits are the product of the number of beneficiaries and the corresponding average monthly benefit. The short-range model calculates scheduled benefits on a quarterly basis. The long-range model calculates all scheduled benefits on an annual basis, using the number of beneficiaries at the beginning and end of the year. Adjustments to these annual scheduled benefits include retroactive payments to newly awarded beneficiaries and other amounts not reflected in the regular monthly scheduled benefits.

Scheduled lump-sum death benefits are estimated as the product of: (1) the number of lump-sum death payments projected on the basis of the assumed death rates, the projected fully insured population, and the estimated percentage of the fully insured population that will qualify for lump-sum death payments; and (2) the amount of the lump-sum death payment, which is $255 (unindexed since 1973).

10. Illustrative Scheduled Benefit Amounts

Table V.C7 shows, under the intermediate assumptions, future scheduled benefit amounts payable upon retirement at the normal retirement age and at age 65, for various hypothetical workers attaining age 65 in 2023 and subsequent years. The illustrative benefit amounts in table V.C7 are presented in CPI-indexed 2023 dollars—that is, adjusted to 2023 levels by the CPI indexing series shown in table VI.G6. Table V.C7 also shows each benefit amount as a percentage of the average of each hypothetical worker's highest 35 years

of Social Security covered earnings, indexed by national average wage growth to the year prior to initial entitlement to retired worker benefits.[1]

The normal retirement age was 65 for individuals who reached age 62 before 2000. It increased to age 66 during the period 2000 through 2005, at a rate of 2 months per year as workers attained age 62. Under current law, the normal retirement age increases to age 67 during the period 2017 through 2022, also by 2 months per year as workers attain age 62. The illustrative benefit amounts shown in table V.C7 for retirees at age 65 are lower than the amounts shown for retirees at normal retirement age because monthly benefits taken before normal retirement age are reduced to reflect the expected additional years benefits will be collected. For example, those who start collecting benefits at age 65 in 2027 and survive to age 67 will receive benefits for two more years than if they had instead waited to start collecting benefits at normal retirement age in 2029.

Table V.C7 shows five different pre-retirement earnings patterns. Four of these patterns assume the earnings history of workers with scaled-earnings patterns[2] and reflect very low, low, medium, and high career-average levels of pre-retirement earnings starting at age 21. The fifth pattern assumes the earnings history of a steady maximum earner starting at age 22. The four scaled-earnings patterns derive from earnings experienced by insured workers during calendar years 2000 through 2019. These earnings levels differ by age. The career-average level of earnings for each scaled case targets a percent of the AWI.

For the scaled medium earner, the career-average earnings level is about equal to the AWI (estimated to be $66,147 for 2023). For the scaled very low, low, and high earners, the career-average earnings level, wage-indexed to the year before starting benefits, is about 25 percent, 45 percent, and 160 percent of the AWI, respectively (estimated to be $16,537, $29,766, and $105,835, respectively, for 2023). The steady maximum earner has earnings at or above the contribution and benefit base ($160,200 for 2023) for each year starting at age 22 through the year prior to retirement.

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[1] Actuarial Note 2023.9 has additional detail on illustrative benefits for hypothetical workers. See www.ssa.gov/OACT/NOTES/ran9/.

[2] Actuarial Note 2023.3 has more details on scaled-earnings patterns. See www.ssa.gov/OACT/NOTES/ran3/.

Table V.C7.—Annual Scheduled Benefit Amounts[a] for Retired Workers With Various Pre-Retirement Earnings Patterns Based on Intermediate Assumptions, Calendar Years 2023-2100

Year attain age 65[b]	Retirement at normal retirement age			Retirement at age 65		
	Age at retirement	CPI-indexed 2023 dollars[c]	Percent of 35-year average earnings	Age at retirement	CPI-indexed 2023 dollars[c]	Percent of 35-year average earnings
Scaled very low earnings:[d]						
2023	66:8	$13,041	78.9	65:0	$11,311	71.3
2025	67:0	12,790	75.8	65:0	11,063	67.7
2030	67:0	13,581	74.3	65:0	11,758	66.4
2035	67:0	14,707	75.6	65:0	12,730	67.1
2040	67:0	15,703	76.0	65:0	13,601	67.4
2045	67:0	16,686	76.3	65:0	14,454	67.6
2050	67:0	17,676	76.5	65:0	15,306	67.7
2055	67:0	18,675	76.5	65:0	16,169	67.7
2060	67:0	19,730	76.5	65:0	17,088	67.7
2065	67:0	20,852	76.4	65:0	18,060	67.7
2070	67:0	22,067	76.4	65:0	19,109	67.7
2075	67:0	23,356	76.4	65:0	20,226	67.7
2080	67:0	24,713	76.4	65:0	21,401	67.7
2085	67:0	26,150	76.4	65:0	22,646	67.7
2090	67:0	27,668	76.4	65:0	23,959	67.7
2095	67:0	29,262	76.5	65:0	25,341	67.7
2100	67:0	30,942	76.4	65:0	26,795	67.7
Scaled low earnings:[e]						
2023	66:8	17,082	57.4	65:0	14,824	51.9
2025	67:0	16,787	55.2	65:0	14,499	49.3
2030	67:0	17,791	54.1	65:0	15,390	48.3
2035	67:0	19,265	55.0	65:0	16,677	48.8
2040	67:0	20,570	55.3	65:0	17,806	49.0
2045	67:0	21,858	55.5	65:0	18,922	49.2
2050	67:0	23,139	55.7	65:0	20,035	49.3
2055	67:0	24,455	55.7	65:0	21,173	49.3
2060	67:0	25,835	55.6	65:0	22,366	49.3
2065	67:0	27,307	55.6	65:0	23,639	49.2
2070	67:0	28,896	55.6	65:0	25,014	49.2
2075	67:0	30,583	55.6	65:0	26,475	49.2
2080	67:0	32,362	55.6	65:0	28,017	49.2
2085	67:0	34,244	55.6	65:0	29,645	49.2
2090	67:0	36,229	55.6	65:0	31,363	49.2
2095	67:0	38,318	55.6	65:0	33,173	49.2
2100	67:0	40,515	55.6	65:0	35,075	49.2
Scaled medium earnings:[f]						
2023	66:8	28,204	42.6	65:0	24,463	38.5
2025	67:0	27,753	41.1	65:0	23,947	36.6
2030	67:0	29,374	40.2	65:0	25,399	35.8
2035	67:0	31,793	40.9	65:0	27,501	36.2
2040	67:0	33,939	41.1	65:0	29,361	36.4
2045	67:0	36,064	41.2	65:0	31,209	36.5
2050	67:0	38,183	41.3	65:0	33,043	36.6
2055	67:0	40,342	41.3	65:0	34,914	36.6
2060	67:0	42,626	41.3	65:0	36,887	36.6
2065	67:0	45,054	41.3	65:0	38,989	36.5
2070	67:0	47,676	41.2	65:0	41,259	36.5
2075	67:0	50,459	41.3	65:0	43,664	36.5
2080	67:0	53,390	41.3	65:0	46,205	36.5
2085	67:0	56,496	41.3	65:0	48,890	36.5
2090	67:0	59,770	41.3	65:0	51,726	36.5
2095	67:0	63,215	41.3	65:0	54,708	36.5
2100	67:0	66,843	41.3	65:0	57,845	36.5

Table V.C7.—Annual Scheduled Benefit Amounts[a] for Retired Workers With Various Pre-Retirement Earnings Patterns Based on Intermediate Assumptions, Calendar Years 2023-2100 (Cont.)

Year attain age 65[b]	Retirement at normal retirement age			Retirement at age 65		
	Age at retirement	CPI-indexed 2023 dollars[c]	Percent of 35-year average earnings	Age at retirement	CPI-indexed 2023 dollars[c]	Percent of 35-year average earnings
Scaled high earnings:[g]						
2023	66:8	$37,269	35.2	65:0	$32,345	31.9
2025	67:0	36,579	33.9	65:0	31,621	30.2
2030	67:0	38,822	33.2	65:0	33,598	29.6
2035	67:0	42,037	33.8	65:0	36,391	30.0
2040	67:0	44,882	33.9	65:0	38,861	30.1
2045	67:0	47,693	34.1	65:0	41,301	30.2
2050	67:0	50,503	34.2	65:0	43,734	30.2
2055	67:0	53,360	34.2	65:0	46,209	30.2
2060	67:0	56,375	34.1	65:0	48,821	30.2
2065	67:0	59,587	34.1	65:0	51,598	30.2
2070	67:0	63,052	34.1	65:0	54,601	30.2
2075	67:0	66,732	34.1	65:0	57,785	30.2
2080	67:0	70,612	34.1	65:0	61,146	30.2
2085	67:0	74,718	34.1	65:0	64,702	30.2
2090	67:0	79,048	34.1	65:0	68,452	30.2
2095	67:0	83,607	34.1	65:0	72,400	30.2
2100	67:0	88,402	34.1	65:0	76,553	30.2
Steady maximum earnings:[h]						
2023	66:8	45,587	28.0	65:0	39,456	25.3
2025	67:0	45,010	27.0	65:0	38,640	24.0
2030	67:0	47,766	26.4	65:0	41,085	23.5
2035	67:0	51,747	26.8	65:0	44,540	23.7
2040	67:0	55,205	27.0	65:0	47,556	23.8
2045	67:0	58,704	27.1	65:0	50,551	23.9
2050	67:0	62,112	27.2	65:0	53,489	23.9
2055	67:0	65,531	27.2	65:0	56,430	24.0
2060	67:0	69,185	27.2	65:0	59,578	24.0
2065	67:0	73,106	27.2	65:0	62,957	24.0
2070	67:0	77,373	27.2	65:0	66,645	23.9
2075	67:0	81,897	27.2	65:0	70,541	23.9
2080	67:0	86,659	27.2	65:0	74,644	23.9
2085	67:0	91,701	27.2	65:0	78,988	23.9
2090	67:0	97,014	27.2	65:0	83,564	24.0
2095	67:0	102,606	27.2	65:0	88,383	24.0
2100	67:0	108,487	27.2	65:0	93,448	24.0

[a] Annual amounts are the total for the 12-month period starting with the month of retirement.
[b] Attains age 65 on January 1 of the year.
[c] CPI-indexed dollar adjustment uses the adjusted CPI indexing series shown in table VI.G6.
[d] Career average earnings at about 25 percent of the national Average Wage Index (AWI).
[e] Career average earnings at about 45 percent of the AWI.
[f] Career average earnings at about 100 percent of the AWI.
[g] Career average earnings at about 160 percent of the AWI.
[h] Earnings for each year at or above the contribution and benefit base.

11. Administrative Expenses

The projection of administrative expenses through the short-range period is based on historical experience and the projected growth in average wages. The Office of Budget of the Social Security Administration provides estimates for the first several years of the projection. For years after the short-range period, projected administrative expenses reflect increases in the number of beneficiaries in current-payment status, and increases in the average wage. However, the increases in average wage are partially offset by assumed administrative productivity gains.

12. Railroad Retirement Financial Interchange

Railroad workers are covered under a separate multi-tiered benefit plan, with a first tier of coverage similar to OASDI coverage. An annual financial interchange between the Railroad Retirement fund and the OASI and DI Trust Funds is made to resolve the difference between: (1) the amount of OASDI benefits that would be paid to railroad workers and their families if railroad employment had been covered under the OASDI program, plus administrative expenses associated with these benefits; and (2) the amount of OASDI payroll tax and income tax that would be received with allowances for interest from railroad workers.

The Office of the Chief Actuary's projection of future amounts for the financial interchange with the Railroad Retirement fund reflects trends similar to those used in estimating the cost of OASDI benefits. The annual short-range net cost for the OASI and DI Trust Funds is about $6 to $7 billion and the long-range summarized net cost for the OASI and DI Trust Funds is 0.05 percent of taxable payroll.

VI. APPENDICES

A. HISTORY OF OASI AND DI TRUST FUND OPERATIONS

The Federal Old-Age and Survivors Insurance (OASI) Trust Fund was established on January 1, 1940 as a separate account in the United States Treasury. The Federal Disability Insurance (DI) Trust Fund, another separate account in the United States Treasury, was established on August 1, 1956. These funds conduct the financial operations of the OASI and DI programs. The Board of Trustees is responsible for overseeing the financial operations of these funds. The following paragraphs describe the various components of trust fund income and cost. Following this description, tables VI.A1 and VI.A2 present the historical operations of the separate trust funds since their inception, and table VI.A3 presents the operations of the hypothetical combined trust funds[1] during the period when they have co-existed.

The primary income of these two funds comes from appropriations under permanent authority on the basis of payroll tax contributions. Federal law requires that all employees who work in OASDI covered employment, and their employers, make payroll tax contributions on their wages up to a specified annual maximum amount (the contribution and benefit base). Employees and their employers must also make payroll tax contributions on monthly cash tips if such tips are at least $20. Self-employed persons must make payroll tax contributions on their covered net earnings from self-employment subject to the annual contribution and benefit base. The Federal Government pays amounts equivalent to the combined employer and employee contributions that would be paid on deemed wage credits attributable to military service performed between 1957 and 2001, if such wage credits were covered wages. Treasury initially deposits payroll tax contributions to the trust funds each day on an estimated basis. Subsequently, Treasury makes adjustments based on the certified amount of wages and self-employment earnings in the records of the Social Security Administration.

Income also includes various reimbursements from the General Fund of the Treasury, such as: (1) the cost of noncontributory wage credits for military service before 1957, and periodic adjustments to previous determinations of this cost; (2) the cost in 1971 through 1982 of deemed wage credits for military service performed after 1956; (3) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (4) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984 through 1989 by Public Law 98-21; (5) the cost in 2009 through 2017 of excluding certain self-employment earnings from SECA taxes under Public

[1] The OASI and DI Trust Funds are distinct legal entities which operate independently. To illustrate the actuarial status of the program as a whole, the fund operations are often combined on a hypothetical basis.

Law 110-246; and (6) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, 112-78, and 112-96. This also includes a portion of proceeds of repayments of loans authorized by Public Law 116-136.

Beginning in 1984, Federal law subjected up to 50 percent of an individual's or couple's OASDI benefits to Federal income taxation under certain circumstances. Effective for taxable years beginning after 1993, the law increased the maximum percentage from 50 percent to 85 percent. Treasury credits the proceeds from this taxation of up to 50 percent of benefits to the OASI and DI Trust Funds in advance, on an estimated basis, at the beginning of each calendar quarter, with no reimbursement to the General Fund for interest costs attributable to the advance transfers.[1] Treasury makes subsequent adjustments based on the actual amounts shown on annual income tax records. Each of the OASI and DI Trust Funds receives the income taxes paid on the benefits from that trust fund.[2]

Another source of income to the trust funds is interest received on investments held by the trust funds. On a daily basis, Treasury invests trust fund income in interest-bearing obligations of the U.S. Government. These investments include the special public-debt obligations described in the next paragraph. The Social Security Act also authorizes the trust funds to hold obligations guaranteed as to both principal and interest by the United States. The act therefore permits the trust funds to hold certain Federally sponsored agency obligations and marketable obligations.[3] The trust funds may acquire any of these obligations on original issue at the issue price or by purchase of outstanding obligations at their market price.

The Social Security Act authorizes the issuance of special public-debt obligations for purchase exclusively by the trust funds. The act provides that the interest rate for special obligations newly issued in any month is the average market yield, as of the last business day of the prior month, on all of the outstanding marketable U.S. obligations that are due or callable more than 4 years in the future. This rate is rounded to the nearest one-eighth of one percent. Beginning January 1999, in calculating the average market yield rate for this purpose, the Treasury incorporates the yield to the call date when a callable bond's market price is above par.

Although the Social Security Act does not authorize the purchase or sale of special issue securities in the open market, Treasury redeems special issue

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[1] The HI Trust Fund receives the additional tax revenue resulting from the increase to 85 percent.

[2] A special provision applies to benefits paid to nonresident aliens. Effective for taxable years beginning after 1994, Public Law 103-465 subjects benefits to a flat-rate tax, usually 25.5 percent, before they are paid. Therefore, this tax remains in the trust funds. From 1984 to 1994, the flat-rate tax was usually 15 percent.

[3] The Social Security Act requires the trust funds to acquire special-issue obligations unless the Managing Trustee determines that the purchase of marketable obligations is in the public interest. The purchase of marketable obligations has been quite limited and has not occurred since 1980.

securities prior to maturity at par value when needed to meet current operating expenses. As a result, changes in market yield rates after issuance of special issue securities do not cause fluctuations in the value of these securities. As is true for marketable Treasury securities held by the public, the full faith and credit of the U.S. Government backs all of the investments held by the trust funds.

Annual cost for the OASI and DI Trust Funds primarily consists of: (1) OASDI benefit payments[1], net of any reimbursements from the General Fund of the Treasury for unnegotiated benefit checks; and (2) expenses incurred by the Social Security Administration and the Department of the Treasury in administering the OASDI program and the provisions of the Internal Revenue Code relating to the collection of contributions. Such administrative expenses include, among other items, the cost of (1) payroll; (2) construction, rental, lease, or purchase of office buildings and related facilities for the Social Security Administration; and (3) information technology systems. The Social Security Act prohibits payments from the OASI and DI Trust Funds for any purpose not related to the payment of benefits or administrative costs for the OASDI program.

Annual cost also includes: (1) the costs of vocational rehabilitation services furnished to disabled persons receiving cash benefits because of their disabilities, where such services contributed to their successful rehabilitation; and (2) net costs of the provisions of the Railroad Retirement Act that provide for a system of coordination and financial interchange between the Railroad Retirement program and the Social Security program. Under the financial interchange provisions, the Railroad Retirement program's Social Security Equivalent Benefit Account and the trust funds interchange amounts on an annual basis so that each trust fund is in the same position it would have been had railroad employment always been covered under Social Security.

The statements of the operations of the trust funds in this report do not include the net worth of facilities and other fixed capital assets because the value of fixed capital assets is not available in the form of a financial asset redeemable for the payment of benefits or administrative costs. As a result of this unavailability, the actuarial status of the trust funds does not take these assets into account.

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[1] Periodically, benefit payments which were scheduled to be paid on January 3 were actually paid on December 31 of the preceding year as required by the statutory provision included in the 1977 Social Security Amendments for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. Such advance payments have occurred about every 7 years, first for benefits scheduled for January 3, 1982. The most recent such accelerated payment affected benefits scheduled to be paid on January 3, 2021. For comparability with the values for historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment each year without regard to the accelerated payments described above.

Table VI.A1.— Operations of the OASI Trust Fund, Calendar Years 1937-2022
[Dollar amounts in billions]

Calendar year	Income					Cost				Asset Reserves[a]		Trust fund ratio at start of year[b]
	Total	Net payroll tax contributions[c]	GF reimbursements[d]	Taxation of benefits[e]	Net interest[e]	Total[a]	Benefit payments[a,f]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
1937[g]	$0.8	$0.8			h	h	h			$0.8	$0.8	
1938[g]	.4	.4	—	—	h	h	h	—	—	.4	1.1	7,660
1939[g]	.6	.6	—	—	h	h	h	—	—	.6	1.7	8,086
1940	.4	.3			h	$0.1	h	h		.3	2.0	2,781
1941	.8	.8			$0.1	.1	$0.1	h		.7	2.8	1,782
1942	1.1	1.0	—	—	.1	.2	.1	h	—	.9	3.7	1,737
1943	1.3	1.2	—	—	.1	.2	.2	h	—	1.1	4.8	1,891
1944	1.4	1.3	—	—	.1	.2	.2	h	—	1.2	6.0	2,025
1945	1.4	1.3	—	—	.1	.3	.3	h	—	1.1	7.1	1,975
1946	1.4	1.3	—	—	.2	.4	.4	h	—	1.0	8.1	1,704
1947	1.7	1.6	h	—	.2	.5	.5	h	—	1.2	9.4	1,592
1948	2.0	1.7	h		.3	.6	.6	$0.1		1.4	10.7	1,542
1949	1.8	1.7	h		.1	.7	.7	.1		1.1	11.8	1,487
1950	2.9	2.7	h	—	.3	1.0	1.0	.1	—	1.9	13.7	1,156
1951	3.8	3.4	h		.4	2.0	1.9	.1		1.8	15.5	698
1952	4.2	3.8			.4	2.3	2.2	.1		1.9	17.4	681
1953	4.4	3.9			.4	3.1	3.0	.1		1.3	18.7	564
1954	5.6	5.2	—	—	.4	3.7	3.7	.1	h	1.9	20.6	500
1955	6.2	5.7			.5	5.1	5.0	.1	h	1.1	21.7	405
1956	6.7	6.2			.5	5.8	5.7	.1	h	.9	22.5	371
1957	7.4	6.8	—	—	.6	7.5	7.3	.2	h	-.1	22.4	300
1958	8.1	7.6	—	—	.6	8.6	8.3	.2	$0.1	-.5	21.9	259
1959	8.6	8.1	—	—	.5	10.3	9.8	.2	.3	-1.7	20.1	212
1960	11.4	10.9	—	—	.5	11.2	10.7	.2	.3	.2	20.3	180
1961	11.8	11.3	—	—	.5	12.4	11.9	.2	.3	-.6	19.7	163
1962	12.6	12.1	—	—	.5	14.0	13.4	.3	.4	-1.4	18.3	141
1963	15.1	14.5			.5	14.9	14.2	.3	.4	.1	18.5	123
1964	16.3	15.7			.6	15.6	14.9	.3	.4	.6	19.1	118
1965	16.6	16.0	—	—	.6	17.5	16.7	.3	.4	-.9	18.2	109
1966	21.3	20.6	$0.1		.6	19.0	18.3	.3	.4	2.3	20.6	96
1967	24.0	23.1	.1		.8	20.4	19.5	.4	.5	3.7	24.2	101
1968	25.0	23.7	.4		.9	23.6	22.6	.5	.4	1.5	25.7	103
1969	29.6	27.9	.4	—	1.2	25.2	24.2	.5	.5	4.4	30.1	102
1970	32.2	30.3	.4		1.5	29.8	28.8	.5	.6	2.4	32.5	101
1971	35.9	33.7	.5		1.7	34.5	33.4	.5	.6	1.3	33.8	94
1972	40.1	37.8	.5	—	1.8	38.5	37.1	.7	.7	1.5	35.3	88
1973	48.3	46.0	.4	—	1.9	47.2	45.7	.6	.8	1.2	36.5	75
1974	54.7	52.1	.4	—	2.2	53.4	51.6	.9	.9	1.3	37.8	68
1975	59.6	56.8	.4	—	2.4	60.4	58.5	.9	1.0	-.8	37.0	63
1976	66.3	63.4	.6	—	2.3	67.9	65.7	1.0	1.2	-1.6	35.4	54
1977	72.4	69.6	.6	—	2.2	75.3	73.1	1.0	1.2	-2.9	32.5	47
1978	78.1	75.5	.6		2.0	83.1	80.4	1.1	1.6	-5.0	27.5	39
1979	90.3	87.9	.6		1.8	93.1	90.6	1.1	1.4	-2.9	24.7	30
1980	105.8	103.5	.5	—	1.8	107.7	105.1	1.2	1.4	-1.8	22.8	23
1981	125.4	122.6	.7		2.1	126.7	123.8	1.3	1.6	-1.3	21.5	18
1982	125.2	123.7	.7		.8	142.1	138.8	1.5	1.8	[1].6	22.1	15
1983	150.6	138.3	5.5		6.7	153.0	149.2	1.5	2.3	-2.4	19.7	14
1984	169.3	159.5	4.7	$2.8	2.3	161.9	157.8	1.6	2.4	7.4	27.1	[2]20
1985	184.2	175.1	4.0	3.2	1.9	171.2	167.2	1.6	2.3	[1]8.7	35.8	[2]24
1986	197.4	189.1	1.8	3.4	3.1	181.0	176.8	1.6	2.6	[1]3.2	39.1	[2]28
1987	210.7	201.1	1.7	3.3	4.7	187.7	183.6	1.5	2.6	23.1	62.1	[2]30
1988	240.8	227.7	2.1	3.4	7.6	200.0	195.5	1.8	2.8	40.7	102.9	[2]41
1989	264.7	248.1	2.1	2.4	12.0	212.5	208.0	1.7	2.8	52.2	155.1	[2]59

Table VI.A1.— Operations of the OASI Trust Fund, Calendar Years 1937-2022 (Cont.)
[Dollar amounts in billions]

Calendar year	Income					Cost				Asset Reserves[a]		Trust fund ratio at start of year[b]
	Total	Net payroll tax contributions[c]	GF reimbursements[d]	Taxation of benefits[e]	Net interest[e]	Total[a]	Benefit payments[a,f]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
1990 . .	$286.7	$266.1	-$0.7	$4.8	$16.4	$227.5	$223.0	$1.6	$3.0	$59.1	$214.2	[i]78
1991 . .	299.3	272.5	.1	5.9	20.8	245.6	240.5	1.8	3.4	53.7	267.8	87
1992 . .	311.2	281.1	-.1	5.9	24.3	259.9	254.9	1.8	3.1	51.3	319.1	103
1993 . .	323.3	290.9	[h]	5.3	27.0	273.1	267.8	2.0	3.4	50.2	369.3	117
1994 . .	328.3	293.3	[h]	5.0	29.9	284.1	279.1	1.6	3.4	44.1	413.5	130
1995 . .	342.8	304.7	-.2	5.5	32.8	297.8	291.6	2.1	4.1	45.0	458.5	139
1996 . .	363.7	321.6	[h]	6.5	35.7	308.2	302.9	1.8	3.6	55.5	514.0	149
1997 . .	397.2	349.9	[h]	7.4	39.8	322.1	316.3	2.1	3.7	75.1	589.1	160
1998 . .	424.8	371.2	[h]	9.1	44.5	332.3	326.8	1.9	3.7	92.5	681.6	177
1999 . .	457.0	396.4	[h]	10.9	49.8	339.9	334.4	1.8	3.7	117.2	798.8	201
2000 . .	490.5	421.4	[h]	11.6	57.5	358.3	352.7	2.1	3.5	132.2	931.0	223
2001 . .	518.1	441.5	[h]	11.9	64.7	377.5	372.3	2.0	3.3	140.6	1,071.5	247
2002 . .	539.7	455.2	.4	12.9	71.2	393.7	388.1	2.1	3.5	146.0	1,217.5	272
2003 . .	543.8	456.1	[h]	12.5	75.2	406.0	399.8	2.6	3.6	137.8	1,355.3	300
2004 . .	566.3	472.8	[h]	14.6	79.0	421.0	415.0	2.4	3.6	145.3	1,500.6	322
2005 . .	604.3	506.9	-.3	13.8	84.0	441.9	435.4	3.0	3.6	162.4	1,663.0	340
2006 . .	642.2	534.8	[h]	15.6	91.8	461.0	454.5	3.0	3.5	181.3	1,844.3	361
2007 . .	675.0	560.9	[h]	17.2	97.0	495.7	489.1	3.1	3.6	179.3	2,023.6	372
2008 . .	695.5	574.6	[h]	15.6	105.3	516.2	509.6	3.2	3.6	179.3	2,202.9	392
2009 . .	698.2	570.4	[h]	19.9	107.9	564.3	557.2	3.4	3.7	133.9	2,336.8	390
2010 . .	677.1	544.8	2.0	22.1	108.2	584.9	577.4	3.5	3.9	92.2	2,429.0	400
2011 . .	698.8	482.4	87.8	22.2	106.5	603.8	596.2	3.5	4.1	95.0	2,524.1	402
2012 . .	731.1	503.9	97.7	26.7	102.8	645.5	637.9	3.4	4.1	85.6	2,609.7	391
2013 . .	743.8	620.8	4.2	20.7	98.1	679.5	672.1	3.4	3.9	64.3	2,674.0	384
2014 . .	769.4	646.2	.4	28.0	94.8	714.2	706.8	3.1	4.3	55.2	2,729.2	374
2015 . .	801.6	679.5	.3	30.6	91.2	750.5	742.9	3.4	4.3	51.0	2,780.3	364
2016 . .	797.5	678.8	.1	31.6	87.0	776.4	768.6	3.5	4.3	21.1	2,801.3	358
2017 . .	825.6	706.5	[h]	35.9	83.2	806.7	798.7	3.7	4.3	19.0	2,820.3	347
2018 . .	831.0	715.9	[h]	34.5	80.7	853.5	844.9	3.8	4.8	-22.4	2,797.9	330
2019 . .	917.9	805.1	[h]	34.9	77.9	911.4	902.8	3.7	4.9	6.5	2,804.3	307

Table VI.A1.— Operations of the OASI Trust Fund, Calendar Years 1937-2022 (Cont.)
[Dollar amounts in billions]

Calendar year	Income					Cost				Asset Reserves[a]		Trust fund ratio at start of year[b]
	Total	Net payroll tax contributions[c]	GF reimbursements[d]	Taxation of benefits[c]	Net interest[e]	Total[a]	Benefit payments[a,f]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
2020 ..	$968.3	$856.0	h	$39.0	$73.3	$961.0	$952.4	$3.7	$4.8	$7.4	$2,811.7	292
2021 ..	942.9	838.2	h	37.2	67.5	1,001.9	993.1	4.0	4.8	-59.1	2,752.6	281
2022 ..	1,056.7	945.9	0.2	47.1	63.5	1,097.5	1,088.1	4.0	5.3	-40.7	2,711.9	251

[a] Beginning in 1979, benefit payments scheduled to be paid on January 3 of a given year were paid on December 31 of the preceding year as required by the statutory provision included in the 1977 Social Security Amendments for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. Such advance payments have occurred about every 7 years, first for benefits scheduled for January 3, 1982. For comparability with other historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment in each year without regard to the accelerated payments described above.

[b] Represents asset reserves at the beginning of a year as a percentage of cost during the year. The table shows no ratio for 1937 because no reserves existed at the beginning of the year.

[c] Includes adjustments for prior calendar years.

[d] Includes net reimbursements from the General Fund of the Treasury to the OASI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost in 1971-82 of deemed wage credits for military service performed after 1956; (3) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (4) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (5) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (6) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, 112-78, and 112-96. Also includes transfers of a portion of proceeds from repayments of loans authorized under Public Law 116-136.

[e] Net interest includes net profits or losses on marketable investments. Beginning in 1967, the trust fund pays administrative expenses on an estimated basis, with a final adjustment including interest made in the following fiscal year. Net interest includes the amounts of these interest adjustments. The 1970 report describes the accounting for administrative expenses for years prior to 1967. Beginning in October 1973, figures include relatively small amounts of gifts to the fund. Net interest for 1983-86 reflects payments for interest on amounts owed under the interfund borrowing provisions. During 1983-90, net interest reflects interest reimbursements paid from the trust fund to the General Fund on advance tax transfers.

[f] Beginning in 1966, includes payments for vocational rehabilitation services furnished to disabled persons receiving benefits because of their disabilities. Beginning in 1983, net benefit amounts include reimbursements paid from the General Fund to the trust fund for unnegotiated benefit checks. Excluding the portion attributable to vocational rehabilitation services and unnegotiated benefit checks, amounts are the same as benefits scheduled under law at that time for all historical years.

[g] Operations prior to 1940 are for the Old-Age Reserve Account established by the original Social Security Act. The 1939 Amendments transferred the asset reserves of the Account to the OASI Trust Fund effective January 1, 1940.

[h] Between -$50 million and $50 million.

[i] Reflects interfund borrowing of $17.5 billion by the OASI Trust Fund from the DI and HI Trust Funds in 1982 and the subsequent repayment of those loans in 1985 ($4.4 billion) and 1986 ($13.2 billion).

[j] Reserves used for the trust fund ratio calculation include January advance tax transfers.

Note: Components may not sum to totals because of rounding.

Table VI.A2.— Operations of the DI Trust Fund, Calendar Years 1957-2022
[Dollar amounts in billions]

Calendar year	Income					Cost				Asset Reserves[a]		Trust fund ratio at start of year[b]
	Total	Net payroll tax contributions[c]	GF reimbursements[d]	Taxation of benefits[c]	Net interest[e]	Total[a]	Benefit payments[a f]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
1957 ..	$0.7	$0.7			[g]	$0.1	$0.1	[g]		$0.6	$0.6	
1958 ..	1.0	1.0			[g]	.3	.2	[g]		.7	1.4	249
1959 ..	.9	.9	—	—	[g]	.5	.5	[g]	[g]	.4	1.8	284
1960 ..	1.1	1.0			$0.1	.6	.6	[g]	[g]	.5	2.3	304
1961 ..	1.1	1.0			.1	1.0	.9	$0.1	[g]	.1	2.4	239
1962 ..	1.1	1.0			.1	1.2	1.1	.1	[g]	-.1	2.4	206
1963 ..	1.2	1.1	—	—	.1	1.3	1.2	.1	[g]	-.1	2.2	183
1964 ..	1.2	1.2	—	—	.1	1.4	1.3	.1	[g]	-.2	2.0	159
1965 ..	1.2	1.2			.1	1.7	1.6	.1	[g]	-.4	1.6	121
1966 ..	2.1	2.0	[g]	—	.1	1.9	1.8	.1	[g]	.1	1.7	82
1967 ..	2.4	2.3	[g]	—	.1	2.1	1.9	.1	[g]	.3	2.0	83
1968 ..	3.5	3.3	[g]	—	.1	2.5	2.3	.1	[g]	1.0	3.0	83
1969 ..	3.8	3.6	[g]		.2	2.7	2.6	.1	[g]	1.1	4.1	111
1970 ..	4.8	4.5	[g]	—	.3	3.3	3.1	.2	[g]	1.5	5.6	126
1971 ..	5.0	4.6	$0.1	—	.4	4.0	3.8	.2	[g]	1.0	6.6	140
1972 ..	5.6	5.1	.1		.4	4.8	4.5	.2	[g]	.8	7.5	140
1973 ..	6.4	5.9	.1		.5	6.0	5.8	.2	[g]	.5	7.9	125
1974 ..	7.4	6.8	.1		.5	7.2	7.0	.2	[g]	.2	8.1	110
1975 ..	8.0	7.4	.1		.5	8.8	8.5	.3	[g]	-.8	7.4	92
1976 ..	8.8	8.2	.1		.4	10.4	10.1	.3	[g]	-1.6	5.7	71
1977 ..	9.6	9.1	.1		.3	11.9	11.5	.4	[g]	-2.4	3.4	48
1978 ..	13.8	13.4	.1	—	.3	13.0	12.6	.3	[g]	.9	4.2	26
1979 ..	15.6	15.1	.1	—	.4	14.2	13.8	.4	[g]	1.4	5.6	30
1980 ..	13.9	13.3	.1		.5	15.9	15.5	.4	[g]	-2.0	3.6	35
1981 ..	17.1	16.7	.2	—	.2	17.7	17.2	.4	[g]	-.6	3.0	21
1982 ..	22.7	22.0	.2	—	.5	18.0	17.4	.6	[g]	[h] -.4	2.7	17
1983 ..	20.7	18.0	1.1	—	1.6	18.2	17.5	.6	[g]	2.5	5.2	15
1984 ..	17.3	15.5	.4	$0.2	1.2	18.5	17.9	.6	[g]	-1.2	4.0	[i] 35
1985 ..	19.3	17.0	1.2	.2	.9	19.5	18.8	.6	[g]	[h] 2.4	6.3	[i] 27
1986 ..	19.4	18.2	.2	.2	.8	20.5	19.9	.6	$0.1	[h] 1.5	7.8	[i] 38
1987 ..	20.3	19.5	.2	[g]	.6	21.4	20.5	.8	.1	-1.1	6.7	[i] 44
1988 ..	22.7	21.8	.2	.1	.6	22.5	21.7	.7	.1	.2	6.9	[i] 38
1989 ..	24.8	23.8	.2	.1	.7	23.8	22.9	.8	.1	1.0	7.9	[i] 38
1990 ..	28.8	28.4	-.6	.1	.9	25.6	24.8	.7	.1	3.2	11.1	[i] 40
1991 ..	30.4	29.1	[g]	.2	1.1	28.6	27.7	.8	.1	1.8	12.9	39
1992 ..	31.4	30.1	[g]	.2	1.1	32.0	31.1	.8	.1	-.6	12.3	40
1993 ..	32.3	31.2	[g]	.3	.8	35.7	34.6	1.0	.1	-3.4	9.0	35
1994 ..	52.8	51.4	[g]	.3	1.2	38.9	37.7	1.0	.1	14.0	22.9	23
1995 ..	56.7	54.4	-.2	.3	2.2	42.1	40.9	1.1	.1	14.6	37.6	55
1996 ..	60.7	57.3	[g]	.4	3.0	45.4	44.2	1.2	[g]	15.4	52.9	83
1997 ..	60.5	56.0	[g]	.5	4.0	47.0	45.7	1.3	.1	13.5	66.4	113
1998 ..	64.4	59.0	[g]	.6	4.8	49.9	48.2	1.6	.2	14.4	80.8	133
1999 ..	69.5	63.2	[g]	.7	5.7	53.0	51.4	1.5	.1	16.5	97.3	152
2000 ..	77.9	71.1	-.8	.7	6.9	56.8	55.0	1.6	.2	21.1	118.5	171
2001 ..	83.9	74.9	[g]	.8	8.2	61.4	59.6	1.7	[g]	22.5	141.0	193
2002 ..	87.4	77.3	[g]	.9	9.2	67.9	65.7	2.0	.2	19.5	160.5	208
2003 ..	88.1	77.4	[g]	.9	9.7	73.1	70.9	2.0	.2	15.0	175.4	219
2004 ..	91.4	80.3	[g]	1.1	10.0	80.6	78.2	2.2	.2	10.8	186.2	218
2005 ..	97.4	86.1	[g]	1.1	10.3	88.0	85.4	2.3	.3	9.4	195.6	212
2006 ..	102.6	90.8	[g]	1.2	10.6	94.5	91.7	2.3	.4	8.2	203.8	207
2007 ..	109.9	95.2	[g]	1.4	13.2	98.8	95.9	2.5	.4	11.1	214.9	206
2008 ..	109.8	97.6	[g]	1.3	11.0	109.0	106.0	2.5	.4	.9	215.8	197
2009 ..	109.3	96.9	[g]	2.0	10.5	121.5	118.3	2.7	.4	-12.2	203.5	178

Table VI.A2.— Operations of the DI Trust Fund, Calendar Years 1957-2022 (Cont.)
[Dollar amounts in billions]

Calendar year	Income					Cost				Asset Reserves[a]		Trust fund ratio at start of year[b]
	Total	Net payroll tax contributions[c]	GF reimbursements[d]	Taxation of benefits[c]	Net interest[c]	Total[a]	Benefit payments[a,f]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
2010 ..	$104.0	$92.5	$0.4	$1.9	$9.3	$127.7	$124.2	$3.0	$0.5	-$23.6	$179.9	159
2011 ..	106.3	81.9	14.9	1.6	7.9	132.3	128.9	2.9	.5	-26.1	153.9	136
2012 ..	109.1	85.6	16.5	.6	6.4	140.3	136.9	2.9	.5	-31.2	122.7	110
2013 ..	111.2	105.4	.7	.4	4.7	143.4	140.1	2.8	.6	-32.2	90.4	86
2014 ..	114.9	109.7	.1	1.7	3.4	145.1	141.7	2.9	.4	-30.2	60.2	62
2015 ..	118.6	115.4	[g]	1.1	2.1	146.6	143.4	2.8	.4	-28.0	32.3	41
2016 ..	160.0	157.4	[g]	1.2	1.4	145.9	142.8	2.8	.4	14.1	46.3	22
2017 ..	171.0	167.1	[g]	2.0	1.9	145.8	142.8	2.8	.2	25.1	71.5	32
2018 ..	172.3	169.2	[g]	.5	2.6	146.8	143.7	2.9	.2	25.6	97.1	49
2019 ..	143.9	139.4	[g]	1.6	2.9	147.9	145.1	2.7	.1	-4.0	93.1	66
2020 ..	149.7	145.3	[g]	1.7	2.8	146.3	143.6	2.6	.1	3.5	96.6	64
2021 ..	145.5	142.4	[g]	.5	2.6	142.6	140.1	2.5	.1	2.8	99.4	68
2022 ..	165.1	160.7	[g]	1.6	2.8	146.5	143.6	2.7	.2	18.6	118.0	68

[a] Beginning in 1979, benefit payments scheduled to be paid on January 3 of a given year were paid on December 31 of the preceding year as required by the statutory provision included in the 1977 Social Security Amendments for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. Such advance payments have occurred about every 7 years, first for benefits scheduled for January 3, 1982. For comparability with other historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment in each year without regard to the accelerated payments described above.

[b] Represents asset reserves at the beginning of a year as a percentage of cost during the year. The table shows no ratio for 1957 because no reserves existed at the beginning of the year.

[c] Includes adjustments for prior calendar years.

[d] Includes net reimbursements from the General Fund of the Treasury to the DI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost in 1971-82 of deemed wage credits for military service performed after 1956; (3) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (4) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (5) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, 112-78, and 112-96.

[e] Net interest includes net profits or losses on marketable investments. Beginning in 1967, the trust fund pays administrative expenses on an estimated basis, with a final adjustment including interest made in the following fiscal year. Net interest includes the amounts of these interest adjustments. The 1970 report describes the accounting for administrative expenses for years prior to 1967. Beginning in July 1974, figures include relatively small amounts of gifts to the fund. Net interest for 1983-86 reflects payments for interest on amounts owed under the interfund borrowing provisions. During 1983-90, net interest reflects interest reimbursements paid from the trust fund to the General Fund on advance tax transfers.

[f] Beginning in 1966, includes payments for vocational rehabilitation services furnished to disabled persons receiving benefits because of their disabilities. Beginning in 1983, net benefit amounts include reimbursements paid from the General Fund to the trust fund for unnegotiated benefit checks. Excluding the portion attributable to vocational rehabilitation services and unnegotiated benefit checks, amounts are the same as benefits scheduled under law at that time for all historical years.

[g] Between -$50 million and $50 million.

[h] Reflects interfund borrowing by the OASI Trust Fund from the DI Trust Fund in 1982 of $5.1 billion and the subsequent repayment of that loan in 1985 ($2.5 billion) and 1986 ($2.5 billion).

[i] Reserves used for the trust fund ratio calculation include January advance tax transfers.

Note: Components may not sum to totals because of rounding.

Table VI.A3.— Operations of the Combined OASI and DI Trust Funds, Calendar Years 1957-2022
[Dollar amounts in billions]

Calendar year	Income					Cost				Asset Reserves[a]		Trust fund ratio at start of year[b]
	Total	Net payroll tax contributions[c]	GF reimbursements[d]	Taxation of benefits[e]	Net interest[e]	Total[a]	Benefit payments[a,f]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
1957	$8.1	$7.5	—	—	$0.6	$7.6	$7.4	$0.2	[g]	$0.5	$23.0	298
1958	9.1	8.5	—	—	.6	8.9	8.6	.2	$0.1	.2	23.2	259
1959	9.5	8.9	—	—	.6	10.8	10.3	.2	.3	-1.3	22.0	215
1960	12.4	11.9	—	—	.6	11.8	11.2	.2	.3	.6	22.6	186
1961	12.9	12.3	—	—	.6	13.4	12.7	.3	.3	-.5	22.2	169
1962	13.7	13.1	—	—	.6	15.2	14.5	.3	.4	-1.5	20.7	146
1963	16.2	15.6			.6	16.2	15.4	.3	.4	[g]	20.7	128
1964	17.5	16.8			.6	17.0	16.2	.4	.4	.5	21.2	122
1965	17.9	17.2	—	—	.7	19.2	18.3	.4	.5	-1.3	19.8	110
1966	23.4	22.6	$0.1		.7	20.9	20.1	.4	.5	2.5	22.3	95
1967	26.4	25.4	.1		.9	22.5	21.4	.5	.5	3.9	26.3	99
1968	28.5	27.0	.4		1.0	26.0	25.0	.6	.5	2.5	28.7	101
1969	33.3	31.5	.5	—	1.3	27.9	26.8	.6	.5	5.5	34.2	103
1970	37.0	34.7	.5		1.8	33.1	31.9	.6	.6	3.9	38.1	103
1971	40.9	38.3	.5		2.0	38.5	37.2	.7	.6	2.4	40.4	99
1972	45.6	42.9	.5	—	2.2	43.3	41.6	.9	.7	2.3	42.8	93
1973	54.8	51.9	.5	—	2.4	53.1	51.5	.8	.8	1.6	44.4	80
1974	62.1	58.9	.5	—	2.7	60.6	58.6	1.1	.9	1.5	45.9	73
1975	67.6	64.3	.5	—	2.9	69.2	67.0	1.2	1.0	-1.5	44.3	66
1976	75.0	71.6	.7	—	2.7	78.2	75.8	1.2	1.2	-3.2	41.1	57
1977	82.0	78.7	.7	—	2.5	87.3	84.7	1.4	1.2	-5.3	35.9	47
1978	91.9	88.9	.8		2.3	96.0	93.0	1.4	1.6	-4.1	31.7	37
1979	105.9	103.0	.7		2.2	107.3	104.4	1.5	1.5	-1.5	30.3	30
1980	119.7	116.7	.7	—	2.3	123.5	120.6	1.5	1.4	-3.8	26.5	25
1981	142.4	139.4	.8		2.2	144.4	141.0	1.7	1.6	-1.9	24.5	18
1982	147.9	145.7	.9		1.4	160.1	156.2	2.1	1.8	[h].2	24.8	15
1983	171.3	156.3	6.7		8.3	171.2	166.7	2.2	2.3	.1	24.9	14
1984	186.6	175.0	5.2	$3.0	3.4	180.4	175.7	2.3	2.4	6.2	31.1	[i]21
1985	203.5	192.1	5.2	3.4	2.7	190.6	186.1	2.2	2.4	[h]11.1	42.2	[i]24
1986	216.8	207.4	1.9	3.7	3.9	201.5	196.7	2.2	2.7	[h]4.7	46.9	[i]29
1987	231.0	220.6	1.9	3.2	5.3	209.1	204.1	2.4	2.6	21.9	68.8	[i]31
1988	263.5	249.5	2.3	3.4	8.2	222.5	217.1	2.5	2.9	41.0	109.8	[i]41
1989	289.4	271.9	2.3	2.5	12.7	236.2	230.9	2.4	2.9	53.2	163.0	[i]57
1990	315.4	294.5	-1.3	5.0	17.2	253.1	247.8	2.3	3.0	62.3	225.3	[i]75
1991	329.7	301.6	.1	6.1	21.9	274.2	268.2	2.6	3.5	55.5	280.7	82
1992	342.6	311.3	-.1	6.1	25.4	291.9	286.0	2.7	3.2	50.7	331.5	96
1993	355.6	322.0	.1	5.6	27.9	308.8	302.4	3.0	3.4	46.8	378.3	107
1994	381.1	344.7	[g]	5.3	31.1	323.0	316.8	2.7	3.5	58.1	436.4	117
1995	399.5	359.1	-.4	5.8	35.0	339.8	332.6	3.1	4.1	59.7	496.1	128
1996	424.5	378.9	[g]	6.8	38.7	353.6	347.0	3.0	3.6	70.9	567.0	140
1997	457.7	406.0	[g]	7.9	43.8	369.1	362.0	3.4	3.7	88.6	655.5	154
1998	489.2	430.2	[g]	9.7	49.3	382.3	375.0	3.5	3.8	106.9	762.5	171
1999	526.6	459.6	[g]	11.6	55.5	392.9	385.8	3.3	3.8	133.7	896.1	194
2000	568.4	492.5	-.8	12.3	64.5	415.1	407.6	3.8	3.7	153.3	1,049.4	216
2001	602.0	516.4	[g]	12.7	72.9	438.9	431.9	3.7	3.3	163.1	1,212.5	239
2002	627.1	532.5	.4	13.8	80.4	461.7	453.8	4.2	3.6	165.4	1,378.0	263
2003	631.9	533.5	[g]	13.4	84.9	479.1	470.8	4.6	3.7	152.8	1,530.8	288
2004	657.7	553.0	[g]	15.7	89.0	501.6	493.3	4.5	3.8	156.1	1,686.8	305
2005	701.8	592.9	-.3	14.9	94.3	529.9	520.7	5.3	3.9	171.8	1,858.7	318
2006	744.9	625.6	[g]	16.9	102.4	555.4	546.2	5.3	3.8	189.5	2,048.1	335
2007	784.9	656.1	[g]	18.6	110.2	594.5	584.9	5.5	4.0	190.4	2,238.5	345
2008	805.3	672.1	[g]	16.9	116.3	625.1	615.3	5.7	4.0	180.2	2,418.7	358
2009	807.5	667.3	[g]	21.9	118.3	685.8	675.5	6.2	4.1	121.7	2,540.3	353

Table VI.A3.— Operations of the Combined OASI and DI Trust Funds, Calendar Years 1957-2022 (Cont.)
[Dollar amounts in billions]

Calendar year	Income					Cost				Asset Reserves[a]		Trust fund ratio at start of year[b]
	Total	Net payroll tax contributions[c]	GF reimbursements[d]	Taxation of benefits[c]	Net interest[e]	Total[a]	Benefit payments[a,f]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
2010 ..	$781.1	$637.3	$2.4	$23.9	$117.5	$712.5	$701.6	$6.5	$4.4	$68.6	$2,609.0	357
2011 ..	805.1	564.2	102.7	23.8	114.4	736.1	725.1	6.4	4.6	69.0	2,677.9	354
2012 ..	840.2	589.5	114.3	27.3	109.1	785.8	774.8	6.3	4.7	54.4	2,732.3	341
2013 ..	855.0	726.2	4.9	21.1	102.8	822.9	812.3	6.2	4.5	32.1	2,764.4	332
2014 ..	884.3	756.0	.5	29.6	98.2	859.2	848.5	6.1	4.7	25.0	2,789.5	322
2015 ..	920.2	794.9	.3	31.6	93.3	897.1	886.3	6.2	4.7	23.0	2,812.5	311
2016 ..	957.5	836.2	.1	32.8	88.4	922.3	911.4	6.2	4.7	35.2	2,847.7	305
2017 ..	996.6	873.6	[g]	37.9	85.1	952.5	941.5	6.5	4.5	44.1	2,891.8	299
2018 ..	1,003.4	885.1	[g]	35.0	83.3	1,000.2	988.6	6.7	4.9	3.1	2,894.9	289
2019 ..	1,061.8	944.5	[g]	36.5	80.8	1,059.3	1,047.9	6.4	4.9	2.5	2,897.4	273
2020 ..	1,118.1	1,001.3	[g]	40.7	76.1	1,107.2	1,095.9	6.3	5.0	10.9	2,908.3	262
2021 ..	1,088.3	980.6	[g]	37.6	70.1	1,144.6	1,133.2	6.5	4.9	-56.3	2,852.0	254
2022 ..	1,221.8	1,106.6	.2	48.6	66.4	1,243.9	1,231.7	6.7	5.5	-22.1	2,829.9	229

[a] Beginning in 1979, benefit payments scheduled to be paid on January 3 of a given year were paid on December 31 of the preceding year as required by the statutory provision included in the 1977 Social Security Amendments for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. Such advance payments have occurred about every 7 years, first for benefits scheduled for January 3, 1982. For comparability with other historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment in each year without regard to the accelerated payments described above.

[b] Represents asset reserves at the beginning of a year as a percentage of cost during the year.

[c] Includes adjustments for prior calendar years.

[d] Includes net reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost in 1971-82 of deemed wage credits for military service performed after 1956; (3) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (4) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (5) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (6) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, 112-78, and 112-96. Also includes transfers of a portion of proceeds from repayments of loans authorized under Public Law 116-136.

[e] Net interest includes net profits or losses on marketable investments. Beginning in 1967, the trust funds pay administrative expenses on an estimated basis, with a final adjustment including interest made in the following fiscal year. Net interest includes the amounts of these interest adjustments. The 1970 report describes the accounting for administrative expenses for years prior to 1967. Beginning in October 1973, figures include relatively small amounts of gifts to the funds. Net interest for 1983-86 reflects payments for interest on amounts owed under the interfund borrowing provisions. During 1983-90, net interest reflects interest reimbursements paid from the trust funds to the General Fund on advance tax transfers.

[f] Beginning in 1966, includes payments for vocational rehabilitation services furnished to disabled persons receiving benefits because of their disabilities. Beginning in 1983, net benefit amounts include reimbursements paid from the General Fund to the trust funds for unnegotiated benefit checks. Excluding the portion attributable to vocational rehabilitation services and unnegotiated benefit checks, amounts are the same as benefits scheduled under law at that time for all historical years.

[g] Between -$50 million and $50 million.

[h] Reflects interfund borrowing by the OASI Trust Fund from the HI Trust Fund in 1982 of $12.4 billion and the subsequent repayment of that loan in 1985 ($1.8 billion) and 1986 ($10.6 billion).

[i] Reserves used for the trust fund ratio calculation include January advance tax transfers.

Note: Components may not sum to totals because of rounding.

Tables VI.A4 and VI.A5 show the total asset reserves of the OASI Trust Fund and the DI Trust Fund, respectively, at the end of calendar years 2021 and 2022. The tables show the invested asset reserves by interest rate and year of maturity. Bonds issued to the trust funds in 2022 had an interest rate of 3.000 percent, compared with an interest rate of 1.500 percent for bonds issued in 2021.

Table VI.A4.—OASI Trust Fund Asset Reserves, End of Calendar Years 2021 and 2022
[In thousands]

	December 31, 2021	December 31, 2022
Obligations sold only to the trust funds (special issue securities):		
Certificates of indebtedness:		
1.500 percent, 2022	$53,944,023	—
3.875 percent, 2023	—	$44,376,263
4.000 percent, 2023	—	72,467,687
4.250 percent, 2023	—	71,154,194
Bonds:		
0.750 percent, 2023	14,931,408	—
0.750 percent, 2024-25	29,862,816	29,862,816
0.750 percent, 2026-33	119,451,256	119,451,256
1.375 percent, 2023	6,693,020	—
1.375 percent, 2024-25	13,386,040	13,386,040
1.375 percent, 2026	6,693,019	6,693,019
1.375 percent, 2027	173,240,401	173,240,401
1.500 percent, 2023	12,696,179	—
1.500 percent, 2024-25	25,392,358	25,392,358
1.500 percent, 2026-32	88,873,260	88,873,260
1.500 percent, 2033	12,696,179	12,696,179
1.750 percent, 2023	4,908,185	—
1.750 percent, 2024-25	9,816,370	9,816,370
1.750 percent, 2026-27	9,816,372	9,816,372
1.750 percent, 2028	178,148,587	178,148,587
1.875 percent, 2023	2,320,956	—
1.875 percent, 2024-27	9,283,824	9,283,824
1.875 percent, 2028-30	6,962,865	6,962,865
1.875 percent, 2031	188,111,583	188,111,583
2.000 percent, 2023	3,655,628	—
2.000 percent, 2024-25	7,311,256	7,311,256
2.000 percent, 2026-29	14,622,516	14,622,516
2.000 percent, 2030	185,790,628	185,790,628
2.250 percent, 2023	5,582,927	—
2.250 percent, 2024-25	11,165,854	11,165,854
2.250 percent, 2026-27	11,165,852	11,165,852
2.250 percent, 2028	5,582,927	5,582,927
2.250 percent, 2029	183,731,514	183,731,514
2.250 percent, 2030-31	3,193,030	3,193,030
2.250 percent, 2032	189,708,097	189,708,097
2.250 percent, 2033	12,818,538	12,818,538
2.250 percent, 2034	177,899,339	177,899,339
2.500 percent, 2023	5,971,787	—
2.500 percent, 2024-25	11,943,574	11,943,574
2.500 percent, 2026	166,547,382	166,547,382
2.875 percent, 2023	7,264,432	—
2.875 percent, 2024	7,264,432	7,264,432
2.875 percent, 2025	160,575,595	160,575,595
2.875 percent, 2032	1	1
2.875 percent, 2033	176,889,560	176,889,560
3.000 percent, 2024-28	—	86,332,165
3.000 percent, 2029-32	—	69,065,728
3.000 percent, 2033	—	17,266,433
3.250 percent, 2023	10,628,270	—
3.250 percent, 2024	153,311,163	153,311,163
4.000 percent, 2023	142,682,893	—
5.000 percent, 2022	130,152,459	—
Total investments	2,752,688,355	2,711,918,658
Undisbursed balances[a]	-52,566	-19,502
Total asset reserves	2,752,635,789	2,711,899,156

[a] A negative amount for a given year represents a situation where actual program cost exceeded the amount of invested securities of the OASI Trust Fund that were redeemed to cover such cost. In this situation, future redemption of additional invested securities will be required to pay for this shortfall.

Note: Amounts of special issue securities are at par value. The trust fund purchases and redeems special issue securities at par value. The table groups equal amounts that mature in two or more years at a given interest rate.

Table VI.A5.—DI Trust Fund Asset Reserves, End of Calendar Years 2021 and 2022
[In thousands]

	December 31, 2021	December 31, 2022
Obligations sold only to the trust funds (special issue securities):		
Certificates of indebtedness:		
1.500 percent, 2022	$7,651,929	
1.625 percent, 2022	352,540	—
3.875 percent, 2023	—	$9,749,638
4.250 percent, 2023		10,542,313
Bonds:		
0.750 percent, 2024-26	1,438,419	1,438,419
0.750 percent, 2027-29	1,438,422	1,438,422
0.750 percent, 2030-34	2,397,365	2,397,365
0.750 percent, 2035	5,348,270	5,348,270
1.500 percent, 2024-29	845,268	845,268
1.500 percent, 2030-35	845,274	845,274
1.500 percent, 2036	5,489,148	5,489,148
2.250 percent, 2024-25	2,489,358	2,489,358
2.250 percent, 2026	1,244,680	1,244,680
2.250 percent, 2027-32	7,468,074	7,468,074
2.250 percent, 2033-34	9,737,594	9,737,594
2.875 percent, 2024-25	7,248,238	7,248,238
2.875 percent, 2026-32	25,368,826	25,368,826
3.000 percent, 2024-29		8,953,524
3.000 percent, 2030-35		8,953,518
3.000 percent, 2036	—	1,492,254
3.000 percent, 2037	—	6,981,402
4.000 percent, 2023	14,675,554	
5.000 percent, 2022	5,398,822	
Total investments	99,437,781	118,031,585
Undisbursed balances[a]	-43,640	-43,856
Total asset reserves	99,394,141	117,987,729

[a] A negative amount for a given year represents a situation where actual program cost exceeded the amount of invested securities of the DI Trust Fund that were redeemed to cover such cost. In this situation, future redemption of additional invested securities will be required to pay for this shortfall.

Note: Amounts of special issue securities are at par value. The trust fund purchases and redeems special issue securities at par value. The table groups equal amounts that mature in two or more years at a given interest rate.

B. HISTORY OF ACTUARIAL STATUS ESTIMATES

This appendix chronicles the history of the long-range OASDI actuarial balance and the year of combined OASI and DI Trust Fund reserve depletion since 1982 under the intermediate assumptions. The actuarial balance is the principal summary measure of actuarial status for the long-range period as a whole. The year of trust fund reserve depletion is also critical, as it indicates the year by which legislative action would be needed in order to maintain timely payment of scheduled benefits.

The 1983 report was the last report for which the actuarial balance was positive for the OASDI program. The two basic components of actuarial balance are the summarized income rate and the summarized cost rate, both of which are expressed as percentages of taxable payroll over the period. Section IV.B.4 defines the summarized income rate, summarized cost rate, and actuarial balance in detail. For any given period, the actuarial balance includes the difference between the present value of non-interest income for the period and the present value of the cost for the period, each divided by the present value of taxable payroll for all years in the period. The computation of the actuarial balance also includes:

- In the reports for 1988 and later, the amount of the trust fund asset reserves on hand at the beginning of the valuation period; and
- In the reports for 1991 and later, the present value of a target trust fund asset reserve equal to 100 percent of the annual cost to be reached and maintained at the end of the valuation period.

Reports of 1973-87 used the average-cost method, a simpler method which approximates the results of the present-value approach for computing the actuarial balance. Under the average-cost method, the sum of the annual cost rates over the 75-year projection period was divided by the total number of years, 75, to obtain the average cost rate per year. A similar computation produced the average income rate. The actuarial balance was the difference between the average income rate and the average cost rate.

When the 1973 report introduced the average-cost method, the financing of the program was more nearly on a pay-as-you-go basis over the long-range. Also, the long-range demographic and economic assumptions in that report produced an annual rate of growth in total taxable payroll which was about the same as the annual rate at which the trust funds earned interest. In either circumstance (i.e., pay-as-you-go financing, where the annual income rate is the same as the annual cost rate, or an annual rate of growth in total taxable payroll equal to the annual interest rate), the average-cost method produces

the same result as the present-value method. However, by 1988, neither of these circumstances still existed.

After the 1977 and 1983 Social Security Amendments, projections indicated substantial increases in the trust fund reserves continuing well into the 21st century. These laws changed the program's financing from essentially pay-as-you-go to partial advance funding through the 75-year period. Also, for the reports from 1973 through 1987, long-range fertility rates and average real wage growth assumptions were gradually reduced, resulting in an annual rate of growth in taxable payroll that was significantly lower than the assumed interest rate by 1987. As a result of the difference between this rate of growth and the assumed interest rate, the results of the average-cost method and the present-value method began to diverge in the reports for 1973 through 1987, and by 1988 they were quite different. While the average-cost method reflected most of the effects of assumed interest rates, it no longer reflected all interest effects. The present-value method, by contrast, accurately reflects the implications of assumed interest rates. As a result, the 1988 report reintroduced the present-value method of calculating the actuarial balance.

A positive actuarial balance indicates that estimated income (plus starting reserves, beginning with the 1988 report) is more than sufficient to meet estimated trust fund obligations (plus the ending target fund, beginning with the 1991 report) for the period as a whole. Even with a positive actuarial balance, it is possible for reserves to become temporarily depleted within the long-range period. An actuarial balance of zero indicates that the estimated income (plus starting reserves, beginning with the 1988 report) exactly matches estimated trust fund obligations (plus the ending target fund, beginning with the 1991 report) for the period as a whole. A negative actuarial balance indicates that estimated income (plus starting reserves, beginning with the 1988 report) is insufficient to meet estimated trust fund obligations (plus the ending target fund, beginning with the 1991 report) for the entire period.

Table VI.B1 contains the long-range OASDI actuarial balances, summarized income rates, and summarized cost rates for the 1982 report through the current report. The reports presented these values on the basis of the intermediate assumptions, which recent reports refer to as alternative II and reports from 1982 to 1990 referred to as alternative II-B.

Table VI.B1.—Long-Range OASDI Actuarial Balances and Trust Fund Reserve Depletion Dates as Shown in the Trustees Reports for 1982-2023 under Intermediate Assumptions[a]

[As a percentage of taxable payroll]

Year of report	Summarized income rate	Summarized cost rate	Actuarial balance[b]	Change from previous year[c]	Year of combined trust fund reserve depletion
1982	12.27	14.09	-1.82	[d]	1983
1983	12.87	12.84	+.02	−1.84	[e]
1984	12.90	12.95	-.06	-.08	[c]
1985	12.94	13.35	-.41	-.35	2049
1986	12.96	13.40	-.44	-.03	2051
1987	12.89	13.51	-.62	-.18	2051
1988	12.94	13.52	-.58	+.04	2048
1989	13.02	13.72	-.70	-.13	2046
1990	13.04	13.95	-.91	-.21	2043
1991	13.11	14.19	-1.08	-.17	2041
1992	13.16	14.63	-1.46	-.38	2036
1993	13.21	14.67	-1.46	[d]	2036
1994	13.24	15.37	-2.13	-.66	2029
1995	13.27	15.44	-2.17	-.04	2030
1996	13.33	15.52	-2.19	-.02	2029
1997	13.37	15.60	-2.23	-.03	2029
1998	13.45	15.64	-2.19	1.04	2032
1999	13.49	15.56	-2.07	1.12	2034
2000	13.51	15.40	-1.89	+.17	2037
2001	13.58	15.44	-1.86	+.03	2038
2002	13.72	15.59	-1.87	-.01	2041
2003	13.78	15.70	-1.92	-.04	2042
2004	13.84	15.73	-1.89	+.03	2042
2005	13.87	15.79	-1.92	-.04	2041
2006	13.88	15.90	-2.02	-.09	2040
2007	13.92	15.87	-1.95	1.06	2041
2008	13.94	15.63	-1.70	+.26	2041
2009	14.02	16.02	-2.00	-.30	2037
2010	14.01	15.93	-1.92	1.08	2037
2011	14.02	16.25	-2.22	-.30	2036
2012	14.02	16.69	-2.67	-.44	2033
2013	13.88	16.60	-2.72	-.05	2033
2014	13.89	16.77	-2.88	-.16	2033
2015	13.86	16.55	-2.68	1.20	2034
2016	13.84	16.50	-2.66	1.02	2034
2017	13.84	16.67	-2.83	-.17	2034
2018	13.84	16.69	-2.84	-.02	2034
2019	13.81	16.60	-2.78	1.06	2035
2020	13.85	17.06	-3.21	-.43	2035
2021	13.78	17.31	-3.54	-.32	2034
2022	13.78	17.20	-3.42	+.12	2035
2023	13.78	17.38	-3.61	-.19	2034

[a] The 1982-90 reports referred to the intermediate assumptions as alternative II-B; the 1991 and later reports refer to the intermediate assumptions as alternative II.

[b] The definition and method of calculating the actuarial balance were changed in 1988 and 1991. See text for details.

[c] A detailed year-by-year breakdown of the reasons for the changes in the actuarial balance since the 1983 Trustees Report may be found in Actuarial Note 2023.8 at www.ssa.gov/OACT/NOTES/ran8/.

[d] Between -0.005 and 0.005 percent of taxable payroll.

[e] Not projected to become depleted during the 75-year projection period.

Note: Components may not sum to totals because of rounding.

For several of the years included in the table, significant legislative changes or definitional changes affected the actuarial balance. The Social Security Amendments of 1983 account for the largest single change shown in the table: the actuarial balance of -1.82 for the 1982 report improved to +0.02 for the 1983 report. In 1985, the actuarial balance changed largely because of an adjustment made to the method for estimating the age distribution of immigrants.

Rebenchmarking of the National Income and Product Accounts and changes in demographic assumptions contributed to the change in the actuarial balance for 1987. Various changes in assumptions and methods for the 1988 report had roughly offsetting effects on the actuarial balance. In 1989 and 1990, changes in economic assumptions accounted for most of the changes in the actuarial balance.

In 1991, the effect of legislation, changes in economic assumptions, and the introduction of the cost of reaching and maintaining an ending target trust fund level combined to produce the change in the actuarial balance. In 1992, changes in disability assumptions and the method for projecting average benefit levels accounted for most of the change in the actuarial balance. In 1993, numerous small changes in assumptions and methods had offsetting effects on the actuarial balance. In 1994, changes in the real wage assumptions, disability rates, and the earnings sample used for projecting average benefit levels accounted for most of the change in the actuarial balance. In 1995, numerous small changes had largely offsetting effects on the actuarial balance, including a substantial reallocation of the payroll tax rate, which reduced the OASI actuarial balance, but increased the DI actuarial balance.

In 1996, a change in the method of projecting dually-entitled beneficiaries produced a large increase in the actuarial balance, which almost totally offset decreases produced by changes in the valuation period and in the demographic and economic assumptions. Various changes in assumptions and methods for the 1997 report had roughly offsetting effects on the actuarial balance. In 1998, increases caused by changes in the economic assumptions, although partially offset by decreases produced by changes in the valuation period and in the demographic assumptions, accounted for most of the changes in the actuarial balance. In 1999, increases caused by changes in the economic assumptions (related to improvements in the CPI by the Bureau of Labor Statistics) accounted for most of the changes in the actuarial balance. For the 2000 report, changes in economic assumptions and methodology caused increases in the actuarial balance, although reductions in the balance caused by the change in valuation period and changes in demographic assumptions partially offset these increases.

For the 2001 report, increases caused by changes in the demographic starting values, although partially offset by a decrease produced by the change in the valuation period, accounted for most of the changes in the actuarial balance. For the 2002 report, changes in the valuation period and the demographic assumptions—both decreases in the actuarial balance—were offset by changes in the economic assumptions, while an increase due to disability assumptions was slightly more than offset by a decrease due to changes in the projection methods and data. For the 2003 report, an increase due to the change in program assumptions was more than offset by decreases due to the change in valuation period and changes in demographic assumptions. In the 2004 report, increases due to changing the method of projecting benefit levels for higher earners more than offset decreases in the actuarial balance arising from the change in the valuation period and the net effect of other changes in programmatic data and methods. For the 2005 report, an increase due to changing the method of projecting future average benefit levels was more than offset by decreases due to changes in the valuation period, updated starting values for the economic assumptions, and other methodological changes.

In 2006, decreases in the actuarial balance due to the change in the valuation period, a reduction in the ultimate annual real interest rate, and improvements in calculating mortality for disabled workers, were greater in aggregate than increases in the actuarial balance due to changes in demographic starting values and the ultimate total fertility rate, as well as other programmatic data and method changes. For the 2007 report, increases in the actuarial balance arising from revised disability incidence rate assumptions, improvements in average benefit level projections, and changes in near-term economic projections, more than offset decreases in the balance due to the valuation period change and updated historical mortality data. For the 2008 report, the large increase in the actuarial balance was primarily due to changes in immigration projection methods and assumptions. These changes more than offset the decreases in the actuarial balance due to the change in the valuation period and the lower starting and ultimate mortality rates. In 2009, changes in starting values and near-term economic assumptions due to the economic recession, faster ultimate rates of decline in death rates for ages 65-84, and the change in the valuation period accounted for most of the large decrease in the actuarial balance. Legislative changes, in particular the estimated effects of the Patient Protection and Affordable Care Act and the Health Care and Education Reconciliation Act of 2010, were the main reason for the increase in the actuarial balance for the 2010 report. The change in the valuation period partially offset this increase; there were also changes in

several assumptions, methods, and recent data which had largely offsetting effects.

For the 2011 report, changes in mortality projections, due to new starting values and revised methods, were the most significant of several factors contributing to the increase in the deficit. In 2012, changes in economic assumptions and starting values accounted for about half of the decrease in actuarial balance. Other factors worsening the actuarial balance were the change in valuation period, changes to starting demographic values, changes to ultimate disability incidence assumptions, and methodology changes and data updates. For the 2013 report, the change in valuation period accounted for the entire net change in the actuarial balance. The effects of substantially lower death rates for 2009 than previously projected and the American Taxpayer Relief Act of 2012 (which lowered the Federal marginal income tax rates) were offset by updates of program-specific data and methodology improvements. In 2014, changes in economic data and assumptions accounted for the majority of the net change in the actuarial balance. Other factors worsening the actuarial balance were the change in the valuation period and various methodology improvements and data updates. For the 2015 report, methodological improvements and updates of programmatic data accounted for the majority of the net increase in the actuarial balance. Also increasing the actuarial balance were a lower assumed ultimate average wage differential and changes in near-term economic assumptions. These increases were offset somewhat by the change in the valuation period and updates to historical and near-term projected birth rates.

For the 2016 report, the actuarial balance increased primarily due to the effects of the Bipartisan Budget Act of 2015 and improvements made to immigration methods. The most notable immigration change was a revision to the method for projecting emigration of the never-authorized population to reflect lower rates of emigration for those who have resided here longer. These increases in the actuarial balance were largely offset by the effects of changes in ultimate economic assumptions, including a lower real interest rate and a lower annual increase in the rate of price inflation. In 2017, the change in the valuation period and various methodology improvements accounted for most of the net reduction in the actuarial balance. Other economic factors also contributed to worsening the actuarial balance, including a lower real wage differential assumption and an assumed weaker recovery from the recent recession. These reductions were offset somewhat by lower estimated disability incidence rates over the short-range period. For the 2018 report, incorporating the effects of lower-than-expected birth rates, lower near-term fertility assumptions, and the change in the valuation period

decreased the actuarial balance. Offsetting these factors to a large degree were the effects of higher-than-expected death rates and several methods improvements, most notably an update to the sample used to project average benefit levels for newly-entitled worker beneficiaries. For the 2019 report, the actuarial balance increased primarily due to higher-than-expected death rates and lower near-term and ultimate disability incidence rate assumptions. Partially offsetting these factors were the effects of a lower ultimate real interest rate assumption and the change in the valuation period. For the 2020 report, the actuarial balance decreased primarily due to the following factors. First, the repeal of the Affordable Care Act's excise tax on employer-sponsored group health insurance premiums reduced projected earnings as a share of employee compensation, having a significant negative financial effect on the trust funds. In addition, lower assumed values for the ultimate total fertility rate, the ultimate rate of price inflation, and the ultimate real interest rate, as compared to the rates assumed for the 2019 report, decreased the actuarial balance.

In 2021, the actuarial balance decreased due to the change in the valuation period and three main additional factors. First, economic assumptions were updated to reflect experience during and following the COVID-19 pandemic. In particular, the levels of productivity and potential GDP were assumed to be roughly 1 percent lower beginning with the second quarter of 2020. Second, the data and methodology used for projecting average benefit levels were updated and improved. Third, data and estimates provided by the Office of Tax Analysis at the Department of the Treasury indicated lower near-term and ultimate levels of taxation of benefits.

For the 2022 report, the actuarial balance increased primarily due to a decrease in the assumed ultimate disability incidence rate, incorporating recent economic data, and changes in near-term economic assumptions. In particular, employment, earnings, and GDP following the 2020 recession recovered much faster than had been assumed in the 2021 report. These disability and economic factors were partially offset by the change in the valuation period and updates for recent demographic data.

Section IV.B.6 describes changes affecting the actuarial balance shown for the 2023 report.

C. FISCAL YEAR HISTORICAL AND PROJECTED TRUST FUND OPERATIONS THROUGH 2032

Tables VI.C1, VI.C2, and VI.C3 contain details of the fiscal year 2022 operations of the OASI, DI, and the combined OASI and DI Trust Funds, respectively. The fiscal year for the U.S. Government is the 12-month period ending September 30. Fiscal year 2022 is the most recent fiscal year for which complete information is available. The descriptions of the values in these tables are similar to the corresponding descriptions and values in the calendar year operations tables in section III.A. Please see that section for a description of the various items of income and cost.

Table VI.C1.—Operations of the OASI Trust Fund, Fiscal Year 2022
[In millions]

Total asset reserves, September 30, 2021		$2,755,799
Income:		
Net payroll tax contributions:		
Payroll tax contributions[a]	$933,445	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund	-4,403	
Net payroll tax contributions[a]		929,042
Reimbursements from the General Fund:		
Reduction in payroll tax contributions due to P.L.s 111-312, 112-78, and 112-96[a]	b	
Payroll tax credits due to P.L. 98-21[a]	b	
Net General Fund reimbursements[a]		b
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	259	
All other, not subject to withholding	46,711	
Total income from taxation of benefits		46,970
Investment income and interest adjustments:		
Interest on investments	65,081	
Interest adjustments[c]	b	
Total investment income and interest adjustments		65,081
Gifts		b
Total income		1,041,093
Cost:		
Benefit payments:		
Monthly benefits and lump-sum death payments[d]	1,063,929	
Reimbursement from the General Fund for unnegotiated checks	-52	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	19	
Net benefit payments[d]		1,063,896
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		5,316
Administrative expenses:		
Costs incurred by:		
Social Security Administration	3,452	
Department of the Treasury	603	
Offsetting miscellaneous receipts	-1	
Miscellaneous reimbursements from the General Fund[e]	-5	
Net administrative expenses		4,050
Total cost		1,073,262
Net increase in asset reserves		-32,169
Total invested assets	2,723,601	
Undisbursed balances[f]	29	
Total asset reserves, September 30, 2022		2,723,629

[a] Includes adjustments for prior years.

[b] Between -$0.5 and $0.5 million.

[c] Includes: (1) interest on adjustments in the allocation of administrative expenses between the trust fund and the General Fund account for the Supplemental Security Income program, (2) interest arising from the revised allocation of administrative expenses among the trust funds, and (3) interest on certain reimbursements to the trust fund.

[d] Includes net reductions for the recovery of overpayments.

[e] Reimbursements for costs incurred in performing certain legislatively mandated activities not directly related to administering the OASI program.

[f] A positive balance represents a situation where the invested securities of the OASI Trust Fund that were redeemed to make cash payments exceeded actual program cash payments. In this situation, this excess amount will be used to partially offset future redemption of additional invested securities.

Note: Components may not sum to totals because of rounding.

Table VI.C2.—Operations of the DI Trust Fund, Fiscal Year 2022
[In millions]

Total asset reserves, September 30, 2021		$98,063
Income:		
Net payroll tax contributions:		
Payroll tax contributions[a]	$158,563	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund	-746	
Net payroll tax contributions[a]		157,816
Reimbursements from the General Fund:		
Reduction in payroll tax contributions due to P.L.s 111-312, 112-78, and 112-96[a]	[b]	
Payroll tax credits due to P.L. 98-21[a]	[b]	
Net General Fund reimbursements[a]		[b]
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	4	
All other, not subject to withholding[a]	1,529	
Total income from taxation of benefits[a]		1,533
Investment income and interest adjustments:		
Interest on investments	2,657	
Interest adjustments[c]	2	
Total investment income and interest adjustments		2,658
Gifts		[b]
Total income		162,007
Cost:		
Benefit payments:		
Monthly benefits[d]	142,386	
Reimbursement from the General Fund for unnegotiated checks	-28	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	101	
Net benefit payments[d]		142,459
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		156
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,655	
Department of the Treasury	105	
Demonstration projects	7	
Miscellaneous reimbursements from the General Fund[e]	-2	
Net administrative expenses		2,764
Total cost		145,379
Net increase in asset reserves		16,628
Total invested assets	114,679	
Undisbursed balances[f]	12	
Total asset reserves, September 30, 2022		114,691

[a] Includes adjustments for prior years.
[b] Between -$0.5 and $0.5 million.
[c] Includes: (1) interest on adjustments in the allocation of administrative expenses between the trust fund and the General Fund account for the Supplemental Security Income program, (2) interest arising from the revised allocation of administrative expenses among the trust funds, and (3) interest on certain reimbursements to the trust fund.
[d] Includes net reductions for the recovery of overpayments.
[e] Reimbursements for costs incurred in performing certain legislatively mandated activities not directly related to administering the DI program.
[f] A positive balance represents a situation where the invested securities of the DI Trust Fund that were redeemed to make cash payments exceeded actual program cash payments. In this situation, this excess amount will be used to partially offset future redemption of additional invested securities.

Note: Components may not sum to totals because of rounding.

Table VI.C3.—Operations of the Combined OASI and DI Trust Funds, Fiscal Year 2022
[In millions]

Total asset reserves, September 30, 2021		$2,853,862
Income:		
Net payroll tax contributions:		
Payroll tax contributions[a]	$1,092,007	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund	-5,149	
Net payroll tax contributions[a]		1,086,858
Reimbursements from the General Fund:		
Reduction in payroll tax contributions due to P.L.s 111-312, 112-78, and 112-96[a]	b	
Payroll tax credits due to P.L. 98-21[a]	b	
Net General Fund reimbursements[a]		b
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	262	
All other, not subject to withholding[a]	48,240	
Total income from taxation of benefits[a]		48,502
Investment income and interest adjustments:		
Interest on investments	67,738	
Interest adjustments[c]	2	
Total investment income and interest adjustments		67,740
Gifts		b
Total income		1,203,100
Cost:		
Benefit payments:		
Monthly benefits and lump-sum death payments[d]	1,206,315	
Reimbursement from the General Fund for unnegotiated checks	-80	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	120	
Net benefit payments[d]		1,206,355
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		5,471
Administrative expenses:		
Costs incurred by:		
Social Security Administration	6,108	
Department of the Treasury	708	
Offsetting miscellaneous receipts	-1	
Demonstration projects	7	
Miscellaneous reimbursements from the General Fund[e]	-7	
Net administrative expenses		6,814
Total cost		1,218,641
Net increase in asset reserves		-15,541
Total invested assets	2,838,279	
Undisbursed balances[f]	41	
Total asset reserves, September 30, 2022		2,838,320

[a] Includes adjustments for prior years.
[b] Between -$0.5 and $0.5 million.
[c] Includes: (1) interest on adjustments in the allocation of administrative expenses between the trust funds and the General Fund account for the Supplemental Security Income program, (2) interest arising from the revised allocation of administrative expenses among the trust funds, and (3) interest on certain reimbursements to the trust funds.
[d] Includes net reductions for the recovery of overpayments.
[e] Reimbursements for costs incurred in performing certain legislatively mandated activities not directly related to administering the OASI and DI programs.
[f] A positive balance represents a situation where the invested securities of the combined OASI and DI Trust Funds that were redeemed to make cash payments exceeded actual program cash payments. In this situation, this excess amount will be used to partially offset future redemption of additional invested securities.

Note: Components may not sum to totals because of rounding.

Tables VI.C4, VI.C5, and VI.C6 show estimates of the operations and status of the OASI, DI, and the hypothetical combined OASI and DI Trust Funds, respectively, during fiscal years 2018 through 2032.

Table VI.C4.—Operations of the OASI Trust Fund, Fiscal Years 2018-2032[a]
[Dollar amounts in billions]

Fiscal year	Income					Cost				Asset Reserves		Trust fund ratio at start of year[b]
	Total	Net payroll tax contributions[c]	GF reimbursements[d]	Taxation of benefits[ce]	Net interest	Total	Scheduled benefits	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
Historical data:												
2018	$822.4	$706.1	[f]	$34.7	$81.6	$841.5	$833.0	$3.7	$4.8	-$19.0	$2,801.1	335
2019	900.1	785.6	[f]	34.9	79.6	896.8	888.1	3.9	4.9	3.2	2,804.3	312
2020	955.6	841.7	[f]	37.9	76.0	948.7	940.2	3.7	4.8	6.9	2,811.2	296
2021	936.0	831.1	[f]	34.3	70.5	991.4	982.7	3.9	4.8	-55.4	2,755.8	284
2022	1,041.1	929.0	[f]	47.0	65.1	1,073.3	1,063.9	4.0	5.3	-32.2	2,723.6	257
Intermediate:												
2023	1,149.1	1,035.3	$0.2	50.4	63.2	1,200.4	1,190.9	4.1	5.4	-51.3	2,672.3	227
2024	1,153.0	1,037.1	[f]	55.6	60.3	1,301.7	1,291.4	4.3	6.1	-148.7	2,523.6	205
2025	1,211.1	1,093.7	[f]	59.2	58.2	1,383.1	1,372.6	4.3	6.1	-171.9	2,351.7	182
2026	1,272.9	1,147.6	[f]	70.9	54.4	1,465.2	1,454.4	4.5	6.3	-192.3	2,159.4	161
2027	1,327.3	1,195.5	.2	79.1	52.5	1,549.6	1,538.5	4.6	6.4	-222.3	1,937.1	139
2028	1,390.0	1,255.5	[f]	85.4	49.2	1,638.9	1,627.6	4.8	6.5	-248.9	1,688.3	118
2029	1,440.3	1,304.4	[f]	92.1	43.9	1,731.2	1,719.7	5.0	6.6	-290.9	1,397.4	98
2030	1,495.3	1,358.4	[f]	99.6	37.3	1,825.7	1,813.9	5.1	6.7	-330.4	1,067.0	77
2031	1,549.2	1,412.6	[f]	107.6	29.0	1,921.2	1,909.2	5.3	6.8	-372.0	695.0	56
2032	1,599.3	1,464.8	[f]	116.2	18.3	2,017.6	2,005.2	5.4	6.9	-418.2	276.7	34
Low-cost:												
2023	1,152.1	1,038.1	.2	50.4	63.4	1,199.9	1,190.4	4.1	5.4	-47.8	2,675.8	227
2024	1,191.2	1,072.0	[f]	55.4	63.8	1,298.0	1,287.7	4.3	6.0	-106.8	2,569.0	206
2025	1,276.5	1,153.7	[f]	59.2	63.6	1,382.8	1,372.4	4.3	6.1	-106.3	2,462.7	186
2026	1,370.2	1,234.0	[f]	71.2	65.0	1,471.3	1,460.5	4.6	6.2	-101.1	2,361.6	167
2027	1,454.3	1,305.5	.2	79.8	68.8	1,562.8	1,551.7	4.8	6.3	-108.6	2,253.1	151
2028	1,551.9	1,393.6	[f]	86.5	71.9	1,660.2	1,648.7	5.1	6.4	-108.3	2,144.8	136
2029	1,639.0	1,471.7	[f]	93.7	73.6	1,761.8	1,749.9	5.3	6.6	-122.8	2,022.0	122
2030	1,733.8	1,556.9	[f]	101.8	75.1	1,866.8	1,854.5	5.5	6.7	-133.0	1,889.0	108
2031	1,831.6	1,644.7	[f]	110.6	76.4	1,974.5	1,961.9	5.8	6.8	-142.9	1,746.1	96
2032	1,928.3	1,732.0	[f]	120.1	76.2	2,084.8	2,071.8	6.0	7.0	-156.5	1,589.6	84
High-cost:												
2023	1,140.3	1,027.0	.2	50.5	62.6	1,200.9	1,191.3	4.1	5.4	-60.6	2,663.1	227
2024	1,107.0	990.9	[f]	55.9	60.2	1,310.3	1,299.9	4.3	6.1	-203.3	2,459.8	203
2025	1,159.6	1,046.1	[f]	59.9	53.6	1,398.4	1,387.8	4.3	6.3	-238.7	2,221.1	176
2026	1,207.3	1,088.0	[f]	71.5	47.7	1,477.7	1,466.8	4.4	6.5	-270.5	1,950.6	150
2027	1,246.5	1,124.0	.2	79.4	42.9	1,556.2	1,545.1	4.6	6.5	-309.6	1,641.0	125
2028	1,286.9	1,165.5	[f]	85.4	36.1	1,639.2	1,627.9	4.7	6.6	-352.2	1,288.7	100
2029	1,312.1	1,193.0	[f]	91.7	27.4	1,724.2	1,712.8	4.7	6.7	-412.1	876.6	75
2030	1,341.0	1,223.7	[f]	98.8	18.6	1,810.4	1,798.8	4.8	6.8	-469.4	407.3	48
2031	[g]	1,252.9	[f]	106.2	[g]	1,896.6	1,884.9	4.9	6.8	[g]	[g]	21
2032	[g]	1,278.7	[f]	114.2	[g]	1,982.8	1,970.9	5.0	6.9	[g]	[g]	[g]

[a] The OASI Trust Fund reserves become depleted in fiscal year 2031 under the high-cost assumptions. For any period during which reserves would be depleted, scheduled benefits could not be paid in full on a timely basis, income from taxing benefits would be less than would apply to scheduled benefits, and interest on trust fund reserves would be negligible.
[b] Represents asset reserves at the beginning of a year (which are identical to reserves at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.
[c] Includes adjustments for prior years.
[d] Includes reimbursements from the General Fund of the Treasury to the OASI Trust Fund for: (1) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (and (2) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, 112-78, and 112-96. Also includes transfers of a portion of proceeds from repayments of loans authorized under Public Law 116-136.
[e] Revenue from taxation of benefits is the amount that would be assessed on benefit amounts scheduled in law.
[f] Between -$50 million and $50 million.
[g] When the fund reserves are depleted, values under current law would reflect permissible expenditures only, which would be less than the full cost of paying scheduled benefits shown in this table.

Note: Components may not sum to totals because of rounding.

Table VI.C5.—Operations of the DI Trust Fund, Fiscal Years 2018-2032
[Dollar amounts in billions]

Fiscal year	Income					Cost				Asset Reserves		Trust fund ratio at start of year[a]
	Total	Net payroll tax contributions[b]	GF reimbursements[c]	Taxation of benefits[b,d]	Net interest	Total	Scheduled benefits	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
Historical data:												
2018	$170.3	$167.0	[c]	$1.0	$2.2	$146.6	$143.6	$2.8	$0.2	$23.7	$93.1	47
2019	151.0	146.8	[e]	1.2	2.9	147.7	144.9	2.8	.1	3.3	96.4	63
2020	147.4	142.9	[e]	1.7	2.8	146.7	144.1	2.5	.1	.7	97.1	66
2021	144.4	141.2	[c]	.5	2.7	143.4	140.7	2.5	.1	1.0	98.1	68
2022	162.0	157.8	[c]	1.5	2.7	145.4	142.5	2.8	.2	16.6	114.7	67
Intermediate:												
2023	180.1	175.8	[c]	1.1	3.2	151.0	148.0	2.9	[e]	29.1	143.8	76
2024	182.0	176.1	[c]	1.7	4.2	158.5	155.5	3.0	[e]	23.5	167.3	91
2025	192.7	185.7	[e]	1.8	5.1	168.4	165.3	3.1	[e]	24.3	191.5	99
2026	203.1	194.9	[e]	2.2	6.0	178.5	175.3	3.2	[e]	24.6	216.1	107
2027	212.5	203.0	[e]	2.4	7.1	187.1	183.7	3.4	[e]	25.4	241.5	115
2028	224.1	213.2	[e]	2.6	8.3	193.5	189.9	3.6	[e]	30.6	272.1	125
2029	234.0	221.5	[e]	2.7	9.8	199.2	195.5	3.7	[e]	34.8	306.9	137
2030	245.2	230.7	[e]	2.9	11.6	205.2	201.2	3.9	[e]	40.0	346.9	150
2031	256.7	239.9	[c]	3.1	13.7	212.2	208.1	4.1	.1	44.5	391.3	163
2032	268.1	248.7	[c]	3.3	16.0	220.3	216.0	4.3	.1	47.8	439.1	178
Low-cost:												
2023	180.6	176.3	[c]	1.1	3.3	150.1	147.2	2.9	[e]	30.5	145.2	76
2024	188.5	182.0	[e]	1.7	4.8	155.5	152.4	3.0	[e]	33.0	178.2	93
2025	204.2	195.9	[e]	1.8	6.5	163.0	160.0	3.1	[e]	41.1	219.3	109
2026	220.5	209.6	[e]	2.1	8.8	170.9	167.7	3.3	[e]	49.6	268.9	128
2027	235.8	221.7	[c]	2.3	11.8	177.0	173.6	3.5	[e]	58.7	327.7	152
2028	254.6	236.6	[e]	2.4	15.6	180.7	177.0	3.7	[e]	74.0	401.6	181
2029	272.5	249.9	[e]	2.5	20.1	184.1	180.2	3.9	[e]	88.4	490.1	218
2030	292.5	264.4	[c]	2.7	25.5	188.1	184.0	4.1	[e]	104.4	594.5	261
2031	313.9	279.3	[c]	2.8	31.8	193.3	188.9	4.3	[e]	120.6	715.0	308
2032	336.4	294.1	[c]	3.0	39.3	199.8	195.2	4.5	[e]	136.6	851.7	358
High-cost:												
2023	178.7	174.4	[e]	1.1	3.2	151.8	148.9	2.9	[e]	26.8	141.5	76
2024	174.0	168.3	[e]	1.7	4.0	162.3	159.3	3.0	[e]	11.6	153.2	87
2025	183.8	177.6	[e]	1.9	4.2	176.0	172.9	3.1	[e]	7.8	161.0	87
2026	191.5	184.8	[c]	2.3	4.4	188.5	185.2	3.2	[e]	3.0	164.0	85
2027	198.0	190.9	[c]	2.6	4.5	199.2	195.8	3.4	[e]	-1.2	162.8	82
2028	205.2	197.9	[e]	2.8	4.5	207.6	204.1	3.5	[e]	-2.4	160.4	78
2029	210.0	202.6	[c]	3.0	4.4	214.7	211.1	3.6	[e]	-4.8	155.6	75
2030	215.3	207.8	[c]	3.2	4.3	222.1	218.3	3.8	.1	-6.8	148.8	70
2031	220.3	212.7	[c]	3.4	4.2	230.7	226.7	3.9	.1	-10.4	138.4	64
2032	224.6	217.1	[e]	3.6	3.9	240.2	236.1	4.0	.1	-15.6	122.8	58

[a] Represents asset reserves at the beginning of a year (which are identical to reserves at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.
[b] Includes adjustments for prior years.
[c] Includes reimbursements from the General Fund of the Treasury to the DI Trust Fund for: (1) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; and (2) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, 112-78, and 112-96.
[d] Revenue from taxation of benefits is the amount that would be assessed on benefit amounts scheduled in law.
[e] Between -$50 million and $50 million.

Note: Components may not sum to totals because of rounding.

Table VI.C6.—Operations of the Combined OASI and DI Trust Funds, Fiscal Years 2018-2032[a]

[Dollar amounts in billions]

Fiscal year	Income					Cost				Asset Reserves		Trust fund ratio at start of year[b]
	Total	Net payroll tax contributions[c]	GF reimbursements[d]	Taxation of benefits[c,e]	Net interest	Total	Scheduled benefits	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	
Historical data:												
2018	$992.7	$873.2	[f]	$35.7	$83.8	$988.0	$976.7	$6.4	$4.9	$4.7	$2,894.2	292
2019	1,051.1	932.4	[f]	36.1	82.5	1,044.5	1,033.0	6.6	4.9	6.5	2,900.7	277
2020	1,103.0	984.6	[f]	39.6	78.8	1,095.4	1,084.3	6.2	5.0	7.5	2,908.2	265
2021	1,080.4	972.3	[f]	34.8	73.3	1,134.8	1,123.4	6.4	4.9	-54.4	2,853.9	256
2022	1,203.1	1,086.9	[f]	48.5	67.7	1,218.6	1,206.4	6.8	5.5	-15.5	2,838.3	234
Intermediate:												
2023	1,329.2	1,211.1	$0.2	51.5	66.4	1,351.4	1,338.9	7.0	5.4	-22.2	2,816.2	210
2024	1,335.0	1,213.3	[f]	57.3	64.4	1,460.2	1,446.9	7.3	6.1	-125.3	2,690.9	193
2025	1,403.8	1,279.5	[f]	61.1	63.3	1,551.5	1,537.9	7.4	6.2	-147.7	2,543.2	173
2026	1,476.1	1,342.5	[f]	73.1	60.4	1,643.8	1,629.7	7.7	6.3	-167.7	2,375.5	155
2027	1,539.8	1,398.5	.2	81.6	59.6	1,736.7	1,722.3	8.0	6.4	-196.9	2,178.7	137
2028	1,614.1	1,468.7	[f]	88.0	57.5	1,832.4	1,817.5	8.4	6.5	-218.3	1,960.4	119
2029	1,674.4	1,525.9	[f]	94.8	53.7	1,930.5	1,915.1	8.7	6.6	-256.1	1,704.3	102
2030	1,740.5	1,589.1	[f]	102.5	48.9	2,030.9	2,015.1	9.0	6.8	-290.4	1,413.9	84
2031	1,805.9	1,652.5	[f]	110.7	42.7	2,133.4	2,117.2	9.4	6.9	-327.6	1,086.3	66
2032	1,867.4	1,713.6	[f]	119.6	34.3	2,237.9	2,221.2	9.7	7.0	-370.5	715.8	49
Low-cost:												
2023	1,332.8	1,214.4	.2	51.5	66.7	1,350.1	1,337.6	7.0	5.4	-17.3	2,821.0	210
2024	1,379.7	1,254.1	[f]	57.1	68.6	1,453.5	1,440.1	7.3	6.1	-73.8	2,747.2	194
2025	1,480.7	1,349.6	[f]	61.0	70.1	1,545.8	1,532.4	7.4	6.1	-65.2	2,682.1	178
2026	1,590.7	1,443.6	[f]	73.3	73.8	1,642.3	1,628.2	7.8	6.2	-51.5	2,630.5	163
2027	1,690.1	1,527.2	.2	82.1	80.6	1,739.9	1,725.3	8.3	6.3	-49.8	2,580.7	151
2028	1,806.6	1,630.2	[f]	88.9	87.5	1,840.9	1,825.8	8.7	6.4	-34.3	2,546.4	140
2029	1,911.5	1,721.6	[f]	96.2	93.7	1,945.8	1,930.1	9.2	6.6	-34.3	2,512.0	131
2030	2,026.3	1,821.3	[f]	104.5	100.6	2,054.9	2,038.5	9.6	6.7	-28.6	2,483.5	122
2031	2,145.5	1,924.0	[f]	113.4	108.1	2,167.8	2,150.8	10.1	6.8	-22.3	2,461.2	115
2032	2,264.7	2,026.1	[f]	123.1	115.5	2,284.6	2,267.0	10.6	7.0	-19.9	2,441.3	108
High-cost:												
2023	1,319.0	1,201.4	.2	51.5	65.8	1,352.7	1,340.2	7.0	5.4	-33.7	2,804.6	210
2024	1,281.0	1,159.2	[f]	57.7	64.2	1,472.6	1,459.2	7.3	6.1	-191.6	2,613.0	190
2025	1,343.4	1,223.7	[f]	61.8	57.9	1,574.4	1,560.7	7.4	6.3	-230.9	2,382.0	166
2026	1,398.8	1,272.8	[f]	73.8	52.1	1,666.2	1,652.1	7.7	6.5	-267.4	2,114.6	143
2027	1,444.5	1,314.8	.2	82.1	47.4	1,755.3	1,740.9	7.9	6.5	-310.8	1,803.8	120
2028	1,492.1	1,363.4	[f]	88.2	40.6	1,846.8	1,832.0	8.2	6.6	-354.7	1,449.1	98
2029	1,522.1	1,395.6	[f]	94.7	31.8	1,939.0	1,923.9	8.4	6.7	-416.9	1,032.2	75
2030	1,556.3	1,431.5	[f]	101.9	22.9	2,032.5	2,017.1	8.6	6.8	-476.2	556.0	51
2031	1,585.9	1,465.6	[f]	109.6	10.7	2,127.3	2,111.6	8.8	6.9	-541.4	14.6	26
2032	[g]	1,495.8	[f]	117.9	[g]	2,223.0	2,207.0	9.0	7.0	[g]	[g]	1

[a] The OASDI Trust Fund reserves become depleted in fiscal year 2032 under the high-cost assumptions. For any period during which reserves would be depleted, scheduled benefits could not be paid in full on a timely basis, income from taxing benefits would be less than would apply to scheduled benefits, and interest on trust fund reserves would be negligible.

[b] Represents asset reserves at the beginning of a year (which are identical to reserves at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.

[c] Includes adjustments for prior years.

[d] Includes reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds for: (1) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; and (2) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, 112-78, and 112-96. Also includes transfers of a portion of proceeds from repayments of loans authorized under Public Law 116-136.

[e] Revenue from taxation of benefits is the amount that would be assessed on benefit amounts scheduled in law.

[f] Between -$50 million and $50 million.

[g] When the fund reserves are depleted, values under current law would reflect permissible expenditures only, which would be less than the full cost of paying scheduled benefits shown in this table.

Note: Components may not sum to totals because of rounding.

D. LONG-RANGE SENSITIVITY ANALYSIS

This appendix presents estimates that illustrate the sensitivity of the long-range actuarial status of the OASDI program to changes in selected individual assumptions. The estimates based on the three alternative sets of assumptions, which were presented earlier in this report, illustrate the effects of varying all of the principal assumptions simultaneously, in order to portray a significantly more optimistic or pessimistic future. For each sensitivity analysis presented in this appendix, the intermediate alternative II projection is the reference point, and one assumption is varied within that alternative. The variation used for each individual assumption is the same as the level used for that assumption in the low-cost alternative I and high-cost alternative III projections.

Each table in this section shows the effects of changing a particular assumption on the OASDI summarized income rates, summarized cost rates, and actuarial balances for 25-year, 50-year, and 75-year valuation periods. Each table also shows the effects on the annual balance for 2097 and on the year of combined trust fund reserve depletion. Following each table is a discussion of the estimated changes in cost rates. The change in each of the actuarial balances is approximately equal to the change in the corresponding cost rate, but in the opposite direction. This appendix does not discuss income rates following each table because income rates vary only slightly with changes in assumptions that affect revenue from taxation of benefits.

1. Total Fertility Rate

Table VI.D1 shows selected measures of OASDI actuarial status on the basis of alternative II with three different assumptions for the future paths of total fertility rates. Under the Trustees' assumptions, the average annual total fertility rate for the period 2033 through 2097 is 1.69, 1.99, and 2.19 children per woman under alternatives III, II, and I, respectively. The ultimate total fertility rate (1.70 under the alternative III assumptions, 2.00 under the alternative II assumptions, and 2.20 under the alternative I assumptions) is reached on a cohort basis over the lifetime of girls attaining age 14 in 2021 and later, so that the ultimate fertility rate on an annual (or period) basis is reached in 2056.

Table VI.D1.—Sensitivity of OASDI Measures to Fertility Assumptions
[As a percentage of taxable payroll]

Valuation period	Average total fertility rate[a, b]		
	1.69	1.99	2.19
Summarized income rate:			
25-year: 2023-47	14.34	14.34	14.34
50-year: 2023-72	13.93	13.90	13.88
75-year: 2023-97	13.85	13.78	13.73
Summarized cost rate:			
25-year: 2023-47	16.83	16.85	16.85
50-year: 2023-72	17.47	17.14	16.92
75-year: 2023-97	18.17	17.38	16.87
Actuarial balance:			
25-year: 2023-47	-2.49	-2.50	-2.51
50-year: 2023-72	-3.54	-3.24	-3.04
75-year: 2023-97	-4.32	-3.61	-3.14
Annual balance for 2097	-6.69	-4.35	-3.07
Year of combined trust fund reserve depletion	2034	2034	2034

[a] The total fertility rate for any year is 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, the selected year, and if she were to survive the entire childbearing period. The average total fertility rate shown is for the period 2033 through 2097.

[b] The total fertility rates used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

For the 25-year period, the cost rate for the three fertility assumptions varies by only about 0.02 percent of taxable payroll. In contrast, the 75-year cost rate varies over a wide range, decreasing from 18.17 percent to 16.87 percent, as the average total fertility rate for the period 2033 through 2097 increases from 1.69 for alternative III to 2.19 for alternative I. Similarly, while the 25-year actuarial balance varies by only 0.02 percent of taxable payroll, the 75-year actuarial balance varies over a much wider range, from -4.32 percent to -3.14 percent.

During the 25-year period, the very slight increases in the working-age population and tax income resulting from higher fertility (than that experienced in an alternative scenario) are more than offset by the effects of decreases in female labor force participation and increases in the number of child beneficiaries. Therefore, program cost as a percent of taxable payroll increases slightly with higher fertility. For the 75-year long-range period, however, changes in fertility have a relatively greater effect on the working-age population than on the beneficiary population. As a result, an increase in fertility significantly reduces the cost rate. Each increase of 0.1 in the average total fertility rate increases (improves) the long-range actuarial balance by about 0.24 percent of taxable payroll.

2. Death Rates

Table VI.D2 shows selected measures of OASDI actuarial status on the basis of alternative II with three different assumptions about future reductions in death rates for the period from 2032 to 2097. These assumptions are described in section V.A.2. Under the Trustees' assumptions, the age-sex-adjusted death rates[1] decline at average annual rates of 0.28 percent, 0.74 percent, and 1.24 percent for alternatives I, II, and III, respectively.

Table VI.D2.—Sensitivity of OASDI Measures to Death-Rate Assumptions
[As a percentage of taxable payroll]

Valuation period	Average annual death-rate reduction[a] [b]		
	0.28 percent	0.74 percent	1.24 percent
Summarized income rate:			
25-year: 2023-47	14.34	14.34	14.34
50-year: 2023-72	13.88	13.90	13.92
75-year: 2023-97	13.74	13.78	13.82
Summarized cost rate:			
25-year: 2023-47	16.65	16.85	17.10
50-year: 2023-72	16.66	17.14	17.72
75-year: 2023-97	16.65	17.38	18.21
Actuarial balance:			
25-year: 2023-47	-2.31	-2.50	-2.75
50-year: 2023-72	-2.78	-3.24	-3.79
75-year: 2023-97	-2.91	-3.61	-4.39
Annual balance for 2097	-2.88	-4.35	-5.82
Year of combined trust fund reserve depletion	2034	2034	2034

[a] The average annual death-rate reduction is the average annual geometric rate of decline in the age-sex-adjusted death rate for the period from 2032 to 2097.
[b] The death-rate reductions used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

The variation in cost for the 25-year period is less pronounced than the variation for the 75-year period because decreases in death rates have cumulative effects. The 25-year cost rate increases from 16.65 percent (for an average annual death-rate reduction of 0.28 percent from 2032 to 2097) to 17.10 percent (for an average annual death-rate reduction of 1.24 percent from 2032 to 2097). The 75-year cost rate increases from 16.65 percent to 18.21 percent. The actuarial balance decreases from -2.31 percent to -2.75 percent for the 25-year period, and from -2.91 percent to -4.39 percent for the 75-year period.

Lower death rates raise both the income (through increased taxable payroll) and the cost of the OASDI program. The relative increase in cost, however,

[1] Based on the enumerated total population as of April 1, 2010, if that population were to experience the death rates by age and sex for the selected year.

exceeds the relative increase in taxable payroll. For any given year, reductions in the death rates for people who are age 62 and over (ages at which death rates are the highest) increase the number of retired-worker beneficiaries (and, therefore, the amount of retirement benefits paid) without adding significantly to the number of covered workers (and, therefore, to the taxable payroll). Reductions in death rates for people at age 50 to retirement eligibility age result in significant increases to the taxable payroll. However, those increases are not large enough to offset the sum of the additional retirement benefits mentioned above and the disability benefits paid to additional beneficiaries at these pre-retirement ages, which are ages of high disability incidence. At ages 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. Consequently, if death rates decline by about the same relative amount for all ages, the cost increases faster than the rate of growth in payroll, which results in higher cost rates and lower actuarial balances. Each additional 0.1-percentage-point increase in the average annual rate of decline in the death rate decreases (worsens) the long-range actuarial balance by about 0.15 percent of taxable payroll.

3. Immigration

Table VI.D3 shows selected measures of OASDI actuarial status under alternative II with three different assumptions about the magnitude of total net immigration (sum of net lawful permanent resident (LPR) immigration and net other-than-LPR immigration). See section V.A.3 for more information on immigration assumptions and methods. Under the Trustees' assumptions, total net annual immigration averages 829,000 persons, 1,245,000 persons, and 1,683,000 persons for the period 2033 through 2097 under alternatives III, II, and I, respectively.

Table VI.D3.—Sensitivity of OASDI Measures to Total Net Immigration Assumptions
[As a percentage of taxable payroll]

Valuation period	Average annual total net immigration[a, b]		
	829,000	1,245,000	1,683,000
Summarized income rate:			
25-year: 2023-47	14.37	14.34	14.31
50-year: 2023-72	13.94	13.90	13.86
75-year: 2023-97	13.82	13.78	13.73
Summarized cost rate:			
25-year: 2023-47	17.09	16.85	16.61
50-year: 2023-72	17.50	17.14	16.79
75-year: 2023-97	17.85	17.38	16.94
Actuarial balance:			
25-year: 2023-47	-2.71	-2.50	-2.30
50-year: 2023-72	-3.56	-3.24	-2.92
75-year: 2023-97	-4.02	-3.61	-3.21
Annual balance for 2097	-5.17	-4.35	-3.66
Year of combined trust fund reserve depletion	2034	2034	2034

[a] Average annual total net immigration is the annual total net immigration to the Social Security area, including both LPR and other-than-LPR immigration, averaged for 2033 through 2097.
[b] The total net immigration assumptions used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

For all three periods, when total net immigration increases, the cost rate decreases. For the 25-year period, the cost rate decreases from 17.09 percent of taxable payroll (for average annual total net immigration of 829,000 persons for 2033 through 2097) to 16.61 percent (for an average annual total net immigration of 1,683,000 persons for 2033 through 2097). For the 50-year period, it decreases from 17.50 percent to 16.79 percent, and for the 75-year period, it decreases from 17.85 percent to 16.94 percent. The actuarial balance increases from -2.71 percent to -2.30 percent for the 25-year period, from -3.56 percent to -2.92 percent for the 50-year period, and from -4.02 percent to -3.21 percent for the 75-year period.

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. Increasing average annual total net immigration by 100,000 persons increases (improves) the long-range actuarial balance by about 0.09 percent of taxable payroll.

4. Real Wage Growth

Table VI.D4 shows selected measures of OASDI actuarial status on the basis of alternative II with three different assumptions about the real growth rate in the average annual wage in OASDI covered employment. Under the Trust-

ces' assumptions, the average annual real growth rate in the average wage in covered employment from 2032 to 2097 is 0.54 percent, 1.14 percent, and 1.74 percent under alternatives III, II, and I, respectively.

Table VI.D4.—Sensitivity of OASDI Measures to Real Wage Growth Assumptions
[As a percentage of taxable payroll]

Valuation period	Average annual real wage growth [a b]		
	0.54	1.14	1.74
Summarized income rate:			
25-year: 2023-47	14.46	14.34	14.22
50-year: 2023-72	14.05	13.90	13.76
75-year: 2023-97	13.94	13.78	13.62
Summarized cost rate:			
25-year: 2023-47	17.68	16.85	16.03
50-year: 2023-72	18.36	17.14	15.97
75-year: 2023-97	18.75	17.38	16.05
Actuarial balance:			
25-year: 2023-47	-3.22	-2.50	-1.81
50-year: 2023-72	-4.30	-3.24	-2.21
75-year: 2023-97	-4.81	-3.61	-2.44
Annual balance for 2097	-6.36	-4.35	-2.60
Year of combined trust fund reserve depletion	2033	2034	2035

[a] The average annual real wage growth is the average annual real growth rate in the average wage in OASDI covered employment from 2032 to 2097.
[b] The real wage growth assumptions used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

For the 25-year period, the cost rate decreases from 17.68 percent (for a real growth rate in the average wage in OASDI covered employment of 0.54 percent) to 16.03 percent (for a real growth rate of 1.74 percent). For the 50-year period, it decreases from 18.36 percent to 15.97 percent, and for the 75-year period it decreases from 18.75 percent to 16.05 percent. The actuarial balance increases from -3.22 percent to -1.81 percent for the 25-year period, from -4.30 percent to -2.21 percent for the 50-year period, and from -4.81 percent to -2.44 percent for the 75-year period.

The cost rate decreases with increasing real wage growth. Higher wages increase taxable payroll immediately, but they increase benefit levels only gradually as new beneficiaries become entitled. In addition, cost-of-living adjustments (COLA) to benefits depend not on changes in wages, but on changes in prices. Each 0.1-percentage-point increase in real wage growth increases (improves) the long-range actuarial balance by about 0.20 percent of taxable payroll.

5. Consumer Price Index

Table VI.D5 shows selected measures of OASDI actuarial status on the basis of alternative II with three different assumptions about the rate of increase for the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI). Under the Trustees' assumptions, the annual increase in the CPI is 3.00 percent, 2.40 percent, and 1.80 percent under alternatives I, II, and III, respectively. These ultimate rates of increase are reached by 2026 under all three alternatives.

Table VI.D5.—Sensitivity of OASDI Measures to CPI-Increase Assumptions
[As a percentage of taxable payroll]

Valuation period	Ultimate annual increase in CPI[a]		
	3.00	2.40	1.80
Summarized income rate:			
25-year: 2023-47	14.32	14.34	14.36
50-year: 2023-72	13.89	13.90	13.92
75-year: 2023-97	13.76	13.78	13.79
Summarized cost rate:			
25-year: 2023-47	16.74	16.85	16.94
50-year: 2023-72	17.00	17.14	17.28
75-year: 2023-97	17.23	17.38	17.53
Actuarial balance:			
25-year: 2023-47	-2.42	-2.50	-2.59
50-year: 2023-72	-3.12	-3.24	-3.36
75-year: 2023-97	-3.47	-3.61	-3.74
Annual balance for 2097	-4.17	-4.35	-4.51
Year of combined trust fund reserve depletion	2034	2034	2034

[a] The CPI assumptions used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

For all three periods, the cost rate increases when the assumed rates of increase in the CPI are smaller. For the 25-year period, the cost rate increases from 16.74 percent (for a CPI increase of 3.00 percent) to 16.94 percent (for a CPI increase of 1.80 percent). For the 50-year period, it increases from 17.00 percent to 17.28 percent, and for the 75-year period, it increases from 17.23 percent to 17.53 percent. The actuarial balance decreases from -2.42 percent to -2.59 percent for the 25-year period, from -3.12 percent to -3.36 percent for the 50-year period, and from -3.47 percent to -3.74 percent for the 75-year period.

The time lag between the effects of the CPI changes on taxable payroll and on scheduled benefits explains these patterns. When the rate of increase in the CPI is greater and real wage growth is constant, then: (1) the effect on taxable payroll due to a greater rate of increase in average wages occurs immediately and (2) the effect on benefits due to a larger COLA occurs with

a lag of about 1 year. As a result of these effects, the higher taxable payrolls have a stronger effect than the higher benefits, which results in lower cost rates. Each 0.1-percentage-point decrease in the rate of the change in the CPI decreases (worsens) the long-range actuarial balance by about 0.02 percent of taxable payroll.

6. Real Interest Rate

Table VI.D6 shows selected measures of OASDI actuarial status under alternative II with three different assumptions about the annual real interest rate (compounded semiannually) for special public-debt obligations issuable to the trust funds. Under the Trustees' assumptions, the ultimate annual real interest rate is 1.8 percent, 2.3 percent, and 2.8 percent under alternatives III, II, and I, respectively. These ultimate rates are reached by 2033 under all three alternatives. In each case, the ultimate annual increase in the CPI is 2.40 percent, which is consistent with alternative II. Therefore, the ultimate annual yields are 4.2, 4.8, and 5.3 percent, respectively.

Table VI.D6.—Sensitivity of OASDI Measures to Real Interest Rate Assumptions
[As a percentage of taxable payroll]

Valuation period	Ultimate annual real interest rate[a] [b]		
	1.8 percent	2.3 percent	2.8 percent
Summarized income rate:			
25-year: 2023-47	14.30	14.34	14.38
50-year: 2023-72	13.85	13.90	13.95
75-year: 2023-97	13.72	13.78	13.83
Summarized cost rate:			
25-year: 2023-47	16.90	16.85	16.79
50-year: 2023-72	17.24	17.14	17.05
75-year: 2023-97	17.51	17.38	17.26
Actuarial balance:			
25-year: 2023-47	-2.60	-2.50	-2.41
50-year: 2023-72	-3.39	-3.24	-3.09
75-year: 2023-97	-3.79	-3.61	-3.43
Annual balance for 2097	-4.35	-4.35	-4.35
Year of combined trust fund reserve depletion	2034	2034	2034

[a] The annual real interest rate is the effective annual yield on asset reserves held by the trust funds divided by the annual rate of growth in the CPI.
[b] The real interest rate assumptions used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

For the 25-year period, the cost rate decreases with increasing real interest rates from 16.90 percent (for an ultimate real interest rate of 1.8 percent) to 16.79 percent (for an ultimate real interest rate of 2.8 percent). For the 50-year period, it decreases from 17.24 percent to 17.05 percent and, for the 75-year period, it decreases from 17.51 percent to 17.26 percent. The actuar-

ial balance increases from -2.60 percent to -2.41 percent for the 25-year period, from -3.39 percent to -3.09 percent for the 50-year period, and from -3.79 percent to -3.43 percent for the 75-year period. A relatively higher real interest rate has the effect of discounting more distant future years relatively more. To the extent that annual cost rates and annual deficits are larger in later years, a higher interest rate decreases the summarized rates, and a lower interest rate increases the summarized rates. Each 0.1-percentage-point increase in the real interest rate increases (improves) the long-range actuarial balance by about 0.04 percent of taxable payroll.

7. Taxable Ratio

Table VI.D7 shows selected measures of OASDI actuarial status under alternative II with three different assumptions about the ratio of taxable payroll to OASDI covered earnings (the taxable ratio). Note that covered earnings are the sum of wages and net self-employment earnings covered by Social Security, and taxable payroll is essentially the amount of covered earnings subject to the Social Security payroll tax up to the contribution and benefit base ($160,200 for 2023). Under the Trustees' assumptions, the taxable ratio at the end of the short-range period (2032) is 81.0 percent, 82.5 percent, and 84.0 percent under alternatives III, II, and I, respectively.

Table VI.D7.—Sensitivity of OASDI Measures to Taxable Ratio Assumptions
[As a percentage of taxable payroll]

Valuation period	Taxable ratio in 2032[a] [b]		
	81.0 percent	82.5 percent	84.0 percent
Summarized income rate:			
25-year: 2023-47	14.37	14.34	14.31
50-year: 2023-72	13.92	13.90	13.88
75-year: 2023-97	13.80	13.78	13.76
Summarized cost rate:			
25-year: 2023-47	17.08	16.85	16.61
50-year: 2023-72	17.37	17.14	16.93
75-year: 2023-97	17.58	17.38	17.19
Actuarial balance:			
25-year: 2023-47	-2.71	-2.50	-2.30
50-year: 2023-72	-3.44	-3.24	-3.05
75-year: 2023-97	-3.79	-3.61	-3.43
Annual balance for 2097	-4.46	-4.35	-4.23
Year of combined trust fund reserve depletion	2033	2034	2034

[a] The taxable ratio is the ratio of taxable payroll to OASDI covered earnings. These concepts are described in further detail in section V.C.6 of this report.
[b] The taxable ratio assumptions used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

Because the combined employee-employer tax rate of 12.4 percent is unchanged across all alternatives, the income rate changes a relatively small amount as the taxable ratio increases, due to changes in taxation of benefits and the initial fund as a percentage of taxable payroll.

For the 25-year period, the cost rate decreases with increasing taxable ratios, from 17.08 percent (for a taxable ratio in 2032 of 81.0 percent) to 16.61 percent (for a taxable ratio in 2032 of 84.0 percent). For the 50-year period, it decreases from 17.37 percent to 16.93 percent and, for the 75-year period, it decreases from 17.58 percent to 17.19 percent. The actuarial balance increases from -2.71 percent to -2.30 percent for the 25-year period, from -3.44 percent to -3.05 percent for the 50-year period, and from -3.79 percent to -3.43 percent for the 75-year period.

The cost rate decreases with an increase in taxable payroll because the increase in taxable payroll occurs immediately. The increase in benefit amounts occurs much more gradually as new beneficiaries become entitled. In addition, the change in the taxable ratio does not affect COLAs or the national average wage index. Each 1.0 percentage-point increase in the taxable ratio in 2032 increases (improves) the long-range actuarial balance by about 0.12 percent of taxable payroll.

8. Disability Incidence Rates

Table VI.D8 shows selected measures of OASDI actuarial status on the basis of alternative II with three different assumptions about future disability incidence rates. Under the Trustees' assumptions, the ultimate age-sex-adjusted[1] incidence rate is 3.8, 4.8, and 5.8 awards per thousand exposed for alternatives I, II, and III, respectively. These ultimate rates are reached by 2032 under all three alternatives. Under the Trustees' assumptions, incidence rates by age and sex for all three alternatives vary during the early years of the projection period before reaching their long-term average values.

[1] Age-sex-adjusted to the disability-exposed population as of the year 2000.

Table VI.D8.—Sensitivity of OASDI Measures to Disability Incidence Assumptions
[As a percentage of taxable payroll]

Valuation period	Ultimate disability incidence rate[a] 3.8	4.8	5.8
Summarized income rate:			
25-year: 2023-47	14.33	14.34	14.35
50-year: 2023-72	13.89	13.90	13.92
75-year: 2023-97	13.76	13.78	13.79
Summarized cost rate:			
25-year: 2023-47	16.53	16.85	17.15
50-year: 2023-72	16.78	17.14	17.50
75-year: 2023-97	17.01	17.38	17.77
Actuarial balance:			
25-year: 2023-47	-2.20	-2.50	-2.79
50-year: 2023-72	-2.89	-3.24	-3.58
75-year: 2023-97	-3.25	-3.61	-3.98
Annual balance for 2097	-3.92	-4.35	-4.89
Year of combined trust fund reserve depletion	2034	2034	2033

[a] The disability incidence rates used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

For the 25-year period, the cost rate increases with increasing disability incidence rates, from 16.53 percent (for the relatively low rates assumed for alternative I) to 17.15 percent (for the relatively high rates assumed for alternative III). For the 50-year period, it increases from 16.78 percent to 17.50 percent, and for the 75-year period, it increases from 17.01 percent to 17.77 percent. The actuarial balance decreases from -2.20 percent to -2.79 percent for the 25-year period, from -2.89 percent to -3.58 percent for the 50-year period, and from -3.25 percent to -3.98 percent for the 75-year period.

9. Disability Termination Rates

Table VI.D9 shows selected measures of OASDI actuarial status on the basis of alternative II with three different assumptions about future disability termination rates, including deaths and recoveries.

Under the Trustees' assumptions, death rates for disabled-worker beneficiaries for all three alternatives decline throughout the long-range period. The age-sex-adjusted death rate[1] of 28.6 deaths per thousand disabled-worker beneficiaries in 2022 declines to 21.5, 12.4, and 6.1 deaths per thousand in 2097 for alternatives I, II, and III, respectively. These levels are about 25 percent, 57 percent, and 79 percent lower, respectively, than the level in

[1] Age-sex-adjusted to the disabled-worker population as of the year 2000.

2022. For this sensitivity analysis, total population death rates by age and sex are assumed to be the same as those used for the alternative II assumptions.

The ultimate age-sex-adjusted recovery rate[1] used for this analysis is 12.5 recoveries per thousand disabled-worker beneficiaries for the alternative I assumptions, 10.4 recoveries per thousand disabled-worker beneficiaries for the alternative II assumptions, and 8.3 recoveries per thousand disabled-worker beneficiaries for the alternative III assumptions.

Table VI.D9.—Sensitivity of OASDI Measures to Disability Termination Assumptions
[As a percentage of taxable payroll]

Valuation period	Disability termination rates (death; recovery)[a]		
	21.5; 12.5	12.4; 10.4	6.1; 8.3
Summarized income rate:			
25-year: 2023-47	14.34	14.34	14.34
50-year: 2023-72	13.90	13.90	13.90
75-year: 2023-97	13.77	13.78	13.78
Summarized cost rate:			
25-year: 2023-47	16.79	16.85	16.89
50-year: 2023-72	17.07	17.14	17.20
75-year: 2023-97	17.31	17.38	17.45
Actuarial balance:			
25-year: 2023-47	-2.45	-2.50	-2.55
50-year: 2023-72	-3.18	-3.24	-3.29
75-year: 2023-97	-3.53	-3.61	-3.67
Annual balance for 2097	-4.23	-4.35	-4.50
Year of combined trust fund reserve depletion	2034	2034	2034

[a] The disability termination rates used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

For the 25-year period, the cost rate increases with decreasing disability termination rates, from 16.79 percent (for the relatively high termination rates assumed for alternative I) to 16.89 percent (for the relatively low termination rates assumed for alternative III). For the 50-year period, it increases from 17.07 percent to 17.20 percent, and for the 75-year period, it increases from 17.31 percent to 17.45 percent. The actuarial balance decreases from -2.45 percent to -2.55 percent for the 25-year period, from -3.18 percent to -3.29 percent for the 50-year period, and from -3.53 percent to -3.67 percent for the 75-year period.

[1] Age-sex-adjusted to the disabled-worker population as of the year 2000. The disability recovery rates for each alternative vary slightly over the last 65 years of the 75-year projection period, so the ultimate rates are presented as averages for years 2033 through 2097.

E. STOCHASTIC PROJECTIONS AND UNCERTAINTY

Significant uncertainty surrounds the estimates under the intermediate assumptions, especially for a period as long as 75 years. This appendix presents stochastic projections, a way to illustrate the uncertainty of these estimates. The stochastic projections supplement the traditional methods of examining such uncertainty.

1. Background

The Trustees have traditionally shown estimates using the low-cost and high-cost sets of specified assumptions to illustrate the potential implications of uncertainty. These low-cost and high-cost estimates provide a range of possible outcomes for the projections. However, they do not provide an indication of the probability that actual future experience will be inside or outside this range. This appendix presents the results of a stochastic model that estimates a probability distribution of future outcomes of the financial status of the combined OASI and DI Trust Funds. This model was introduced in the 2003 report and enhanced in the 2021 report to include parameter uncertainty for the expected mean for the key variables described in the next section.

2. Stochastic Methodology

Other sections of this report provide estimates of the financial status of the combined OASI and DI Trust Funds using a scenario-based model. For the scenario-based model, the Trustees use three alternative scenarios (low-cost, intermediate, and high-cost) that use specific assumptions for key variables. In general, the Trustees assume that each of these variables will reach an ultimate value at a specific point during the long-range period, and will maintain that value throughout the remainder of the period. The three alternative scenarios assume separate, specified values for each of these variables. Chapter V contains more details about each of these assumptions.

This appendix presents estimates of the probability that key measures of OASDI solvency will fall in certain ranges, based on 5,000 independent stochastic simulations. Each simulation allows key variables to vary throughout the long-range period. These key variables include total fertility rates, changes in mortality rates, new arrival lawful permanent resident (LPR) and other-than-LPR immigration levels, rates of adjustment of status (from other-than-LPR to LPR), rates of legal emigration (from the population of citizens and LPRs), changes in the Consumer Price Index, changes in average real wages, unemployment rates, trust fund real yield rates, and disability incidence and recovery rates. The fluctuation of each variable over time is simu-

lated using historical data and standard time-series techniques. Generally, each variable is modeled using an equation that: (1) captures a relationship between current and prior years' values of the variable, and (2) introduces random variation based on variation observed in the historical period. For some variables, the equations also reflect relationships with other variables. The equations contain parameters that are estimated using historical data for periods from about 20 years to over 100 years, depending on the nature and quality of the available data. Each time-series equation is designed so that, in the absence of random variation over time, the value of the variable for each year equals its value for the intermediate scenario.[1]

For each equation in a given simulation, the stochastic model assigns random variation to (1) year-by-year error term values and (2) simulation-specific mean term levels that provide variation in the central tendency across simulations. Each simulation produces estimates for all key variables and for the overall financial status of the combined OASI and DI Trust Funds. This appendix shows the distribution of results from 5,000 simulations of the model.

Readers should interpret the results from this model with an understanding of the model's limitations. Results are sensitive to equation specifications, degrees of interdependence among variables, and the historical periods used for estimating model coefficients. For some variables, recent historical variation may not provide a realistic representation of the potential variation for the future. Also, results would differ if additional variables (such as labor force participation rates, retirement rates, marriage rates, and divorce rates) were also allowed to vary randomly. Time-series modeling reflects only what occurred in the historical period. Future uncertainty exists not only for the underlying central tendency but also for the frequency and size of occasional longer-term shifts in the central tendency. Many experts predict, and history suggests, that the future will likely bring substantial shifts that are not fully reflected in the historical period used for the current model. As a result, readers should understand that the true range of uncertainty might be larger than indicated in this appendix.

3. Stochastic Results

This section illustrates the results for the stochastic simulations of two fundamental measures of actuarial status: annual cost rates and trust fund ratios.

[1] More detail on this model and stochastic modeling in general, is available at www.ssa.gov/OACT/stochastic/index.html.

The latter measure is highlighted in section II.D of this report. Section 4 of this appendix follows with a comparison of stochastic results to results from the alternative scenarios for these and other measures, and an analysis of the differences.

Figure VI.E1 displays the probability distribution of the year-by-year OASDI cost rates (that is, cost as a percentage of taxable payroll). The range of the annual cost rates widens as the projections move further into the future, which reflects increasing uncertainty. Because there is relatively little variation in income rates across the 5,000 stochastic simulations, the figure includes only the income rate for the intermediate scenario. The two outermost cost rate lines in this figure indicate the range within which future annual cost rates are projected to occur 95 percent of the time (i.e., a 95-percent confidence interval). In other words, the current model estimates that there is a 2.5 percent probability that the cost rate for a given year will exceed the upper end of this range and a 2.5 percent probability that it will fall below the lower end of this range. Other lines in the figure delineate the 80-percent confidence interval and the median cost rate. The median (50th percentile) cost rate for each year is the rate for which half of the simulated outcomes are higher and half are lower for that year. These lines do not represent the results of individual stochastic simulations. Instead, for each given year, they represent the percentile distribution of annual cost rates based on all stochastic simulations for that year.

Figure VI.E1.—Long-Range OASDI Cost Rates From Stochastic Modeling

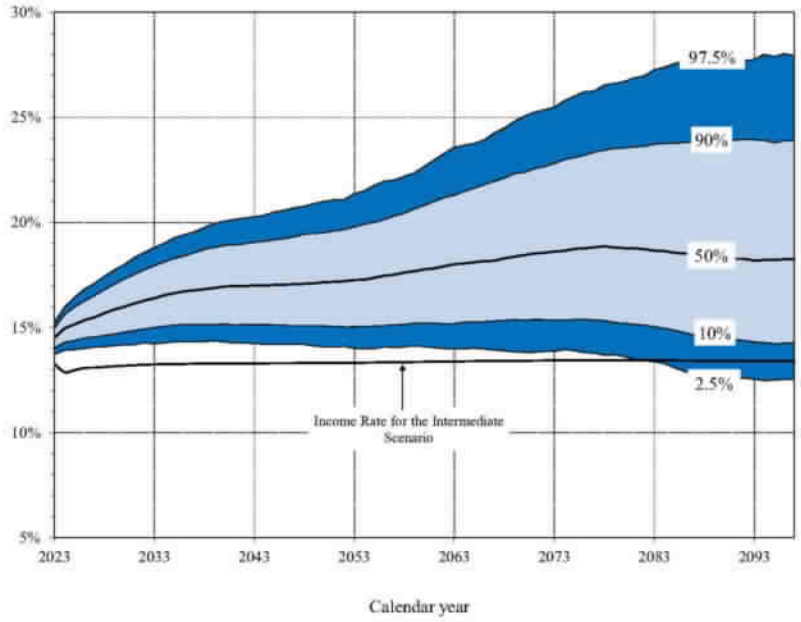
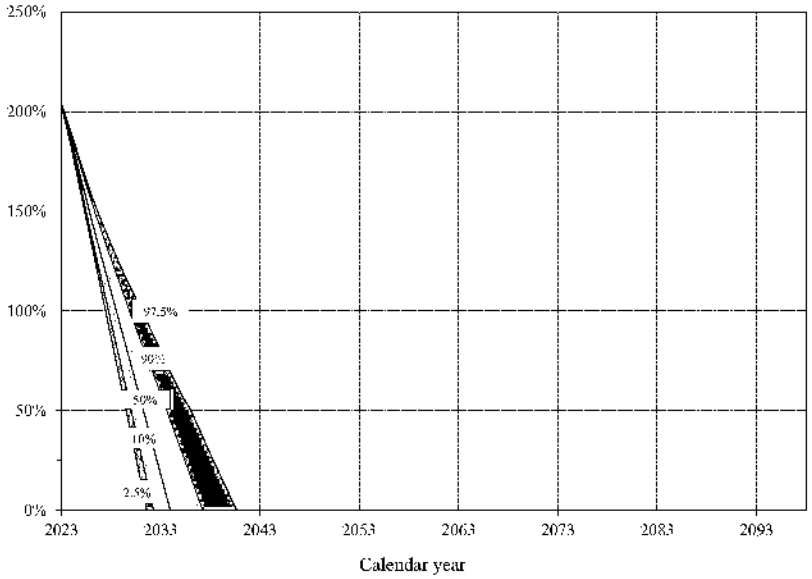


Figure VI.E2 presents the simulated probability distribution of the annual trust fund ratios for the combined OASI and DI Trust Funds. The lines in this figure display the median set (50th percentile) of estimated annual trust fund ratios and delineate the 95-percent and 80-percent confidence intervals estimated for future annual trust fund ratios. Again, none of these lines represent the path of a single simulation. For each given year, they represent the percentile distribution of trust fund ratios based on all stochastic simulations for that year.

Figure VI.E2 shows that the 95-percent confidence interval for the trust fund reserve depletion year ranges from 2031 to 2040, relatively early in the 75-year projection period. The figure also shows that there is a 50-percent probability of trust fund reserve depletion by the end of 2033 (the median reserve depletion year). The median reserve depletion date is late in 2033; the reserve depletion date for the intermediate scenario is in mid-2034.

Figure VI.E2.—Long-Range OASDI Trust Fund Ratios From Stochastic Modeling



4. Comparison of Results: Stochastic to Low-Cost, Intermediate, and High-Cost Alternative Scenarios

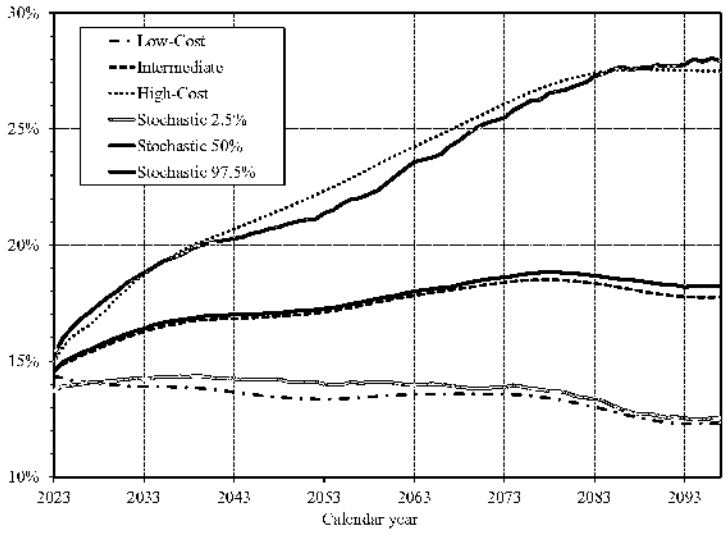
This section compares results from two different approaches for illustrating ranges of uncertainty in measures of trust fund actuarial status. One approach uses results from the low-cost, intermediate, and high-cost alternative scenarios. The other approach uses distributions of results from the stochastic simulations. Each of these approaches provides insights into uncertainty. Comparing the results requires an understanding of fundamental differences in the approaches.

One fundamental difference relates to the presentation of distributional results. Figure VI.E3 shows projected OASDI annual cost rates for the low-cost, intermediate, and high-cost alternative scenarios along with the annual cost rates at the 2.5th percentile, 50th percentile, and 97.5th percentile for the stochastic simulations. While all values on each line for the alternative scenarios are results from a single specified scenario, the values on each stochastic line may be results from different simulations for different years. The one stochastic simulation (from the 5,000 simulations) that yields results closest to a particular percentile for one projected year may yield results that

are distant from that percentile in another projected year. Because each stochastic simulation shows substantial variability from year to year, the range shown between the 2.5th and 97.5th percentiles is broader than would be seen if simulations followed a smooth trend like in the alternative scenarios.

Both the alternative scenarios and the stochastic results suggest that the range of potential cost rates above the central levels (those for the intermediate scenario and for the stochastic median, respectively) is larger than the range below these central results. The difference between the central results and the higher cost levels (the high-cost alternative scenario and the upper end of the 95-percent confidence range, respectively) is about 1.6 to 1.8 times as large as the difference between the central and lower cost levels for both models by the end of the projection period.

Figure VI.E3.—OASDI Cost Rates: Comparison of Stochastic to Low-Cost, Intermediate, and High-Cost Alternative Scenarios
[As a percentage of taxable payroll]



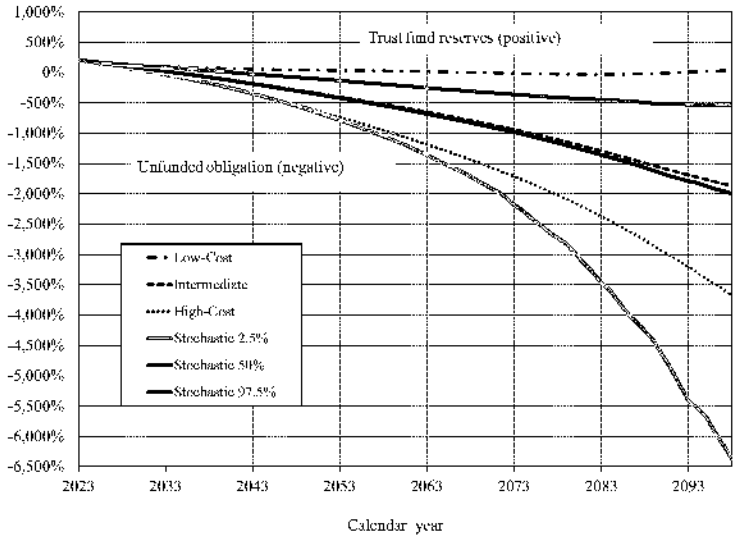
Another fundamental difference between the alternative scenarios and the stochastic simulations is the method of assigning values for assumptions. For the alternative scenarios, specific values are assigned for each of the key demographic, economic, and program-specific variables. The high-cost alternative scenario uses parameter values that increase estimated annual cost as a percent of payroll, while the low-cost alternative scenario uses parameter

values that decrease annual cost as a percent of payroll. (One parameter, the interest rate, has no effect on annual cost as a percent of payroll for either the alternative scenarios or the stochastic simulations.) In contrast, the stochastic method independently assigns random variation to each of the key demographic and economic variables for each year in each of the 5,000 stochastic simulations. For each of the stochastic simulations, the assigned values for different variables result in varying and often offsetting effects on projected cost as a percent of payroll, with some tending toward higher cost and some tending toward lower cost. This difference tends to narrow the range of cost as a percent of payroll across the 95-percent confidence interval.

It is important to understand that the stochastic model's 95-percent confidence intervals for any summary measure of trust fund finances would tend to be narrower than the range produced for the low-cost and high-cost alternative scenarios, even if the stochastic model's 95-percent confidence interval for annual cost rates were identical to the range defined by the low-cost and high-cost scenarios. This is true because summary measures of trust fund finances depend on cost rates for many years, and the probability that annual cost rates, on average for individual stochastic simulations, will be at least as low (high) as the 2.5 (97.5) percentile line is significantly lower than 2.5 percent. As a result, the relationship between the ranges presented for annual cost rates and summary measures of trust fund finances is fundamentally different for the stochastic model than it is for the low-cost and high-cost alternative scenarios.

Figure VI.E4 compares the ranges of trust fund (unfunded obligation) ratios for the alternative scenarios to the 95-percent confidence interval of the stochastic simulations. This figure extends figure VI.E2 to show unfunded obligation ratios, expressed as negative values below the zero percent line. An unfunded obligation ratio is the ratio of the unfunded obligation accumulated through the beginning of the year to the cost for that year.

Figure VI.E4.—OASDI Trust Fund (Unfunded Obligation) Ratios: Comparison of Stochastic to Low-Cost, Intermediate, and High-Cost Alternative Scenarios[a]
[Trust fund reserves (unfunded obligation) as a percentage of annual cost]



[a] An unfunded obligation, shown as a negative value in this figure, is equivalent to the amount the trust funds would need to have borrowed to date in order to pay all scheduled benefits (on a timely basis) after trust fund reserves are depleted. Note that current law does not permit the trust funds to borrow.

As mentioned above, a summary measure that accumulates annual values tends to smooth the kind of annual fluctuations that occur in stochastic simulations. Therefore, one might expect the range across the stochastic confidence interval for trust fund (unfunded obligation) ratios to be narrower and fall within the range seen across the high-cost and low-cost alternative scenarios, as it does for the actuarial balance measure. But this is not the case, largely due to the way interest rates are assigned.

For the stochastic model, real interest rates for each simulation are assigned to be essentially independent of other variables, so the rate for compounding of trust fund reserves (unfunded obligations) is essentially uncorrelated with the level of cost as a percent of payroll. On the other hand, real interest rates are assigned to be higher for the low-cost alternative scenario and lower for the high-cost alternative scenario. High interest rates raise the level of the positive trust fund ratio in the low-cost alternative scenario somewhat, but this effect is limited because the magnitude of reserves is small. However, low interest rates substantially reduce the magnitude of the unfunded obligation ratio for the high-cost alternative scenario because the magnitude of

unfunded obligations is relatively large. As a result, the trust fund (unfunded obligation) ratios are shifted, albeit unevenly, higher (or less negative) for both the high-cost and low-cost alternative scenarios relative to those of the stochastic simulations.

This interest rate effect on the alternative scenarios is not as evident for some other summary measures of actuarial status, such as the actuarial balance. Because the actuarial balance reflects the cumulative effects of interest in both its numerator and denominator, the interest rate effect is much less pronounced. In contrast, cumulative interest affects only the numerator of the trust fund (unfunded obligation) ratio. There is also no significant interest rate effect on the trust fund depletion date.

Other factors also contribute, to varying degrees, to the difference in ranges between the results of the alternative scenarios and the stochastic simulations. The contrasts in results and methods do not mean that either approach to illustrating ranges of uncertainty is superior to the other. The ranges are different and explainable.

Table VI.E1 displays long-range actuarial estimates for the combined OASDI program using the two methods of illustrating uncertainty: alternative scenarios and stochastic simulations. The table shows scenario-based estimates for the intermediate, low-cost, and high-cost assumptions. It also shows stochastic estimates for the median (50th percentile) and for the 80-percent and 95-percent confidence intervals. Each individual stochastic estimate in the table is the level at that percentile from the distribution of the 5,000 simulations. For each given percentile, the values in the table for each long-range actuarial measure are generally from different stochastic simulations.

The median stochastic estimates displayed in table VI.E1 are similar to the intermediate scenario-based estimates. The median estimate of the long-range actuarial balance is -3.69 percent of taxable payroll, about 0.08 percentage point lower (more negative) than projected in the intermediate scenario. The median estimate for the open-group unfunded obligation is $22.8 trillion, about $0.4 trillion larger than the $22.4 trillion estimate in the intermediate scenario. The median first projected year for which cost exceeds non-interest income (as it did in 2010 through 2022), and remains in excess of non-interest income throughout the remainder of the long-range period, is 2023. This is the same year as projected in the intermediate scenario. The median projected date at which trust fund reserves first become depleted is late in 2033; the reserve depletion date for the intermediate scenario is mid-2034. The median estimates of the annual cost rate for the 75th year of the projection period are 18.25 percent of taxable payroll and

6.14 percent of gross domestic product (GDP). The comparable estimates in the intermediate scenario are 17.75 percent of payroll and 5.98 percent of GDP.

For three measures in table VI.E1 (the actuarial balance, the first projected year cost exceeds non-interest income and remains in excess through 2097, and the first year trust fund reserves become depleted), the 95-percent stochastic confidence interval falls within the range defined by the low-cost and high-cost scenarios. For the remaining three measures (the open-group unfunded obligation, the annual cost in the 75th year as a percent of taxable payroll, and the annual cost in the 75th year as a percent of GDP), one or both of the bounds of the 95-percent stochastic confidence interval fall outside the range defined by the low-cost and high-cost scenarios.

Table VI.E1.—Long-Range Estimates Relating to the Actuarial Status of the Combined OASDI Program
[Comparison of scenario-based and stochastic results]

	Traditional scenario-based model			Stochastic model				
				Median	80-percent confidence interval		95-percent confidence interval	
	Intermediate	Low-cost	High-cost	50th percentile	10th percentile	90th percentile	2.5th percentile	97.5th percentile
Actuarial balance	-3.61	-0.10	-8.37	-3.69	-5.75	-2.03	-7.17	-1.18
Open-group unfunded obligation (in trillions)	$22.4	-$.4	$42.9	$22.8	$10.5	$44.3	$5.8	$60.9
First projected year cost exceeds non-interest income and remains in excess through 2097	2023	[a]	2023	2023	2023	2023	2023	[a]
First year trust fund reserves become depleted [b]	2034	2067	2031	2033	2032	2037	2031	2040
Annual cost in 75th year (percent of taxable payroll)	17.75	12.34	27.48	18.25	14.29	23.89	12.52	27.93
Annual cost in 75th year (percent of GDP)	5.98	4.52	8.54	6.14	4.84	7.97	4.25	9.21

[a] Cost is projected to exceed non-interest income for a temporary period, before falling below non-interest income by the end of the projection period.
[b] For the low-cost scenario and for some stochastic simulations, the first year in which trust fund reserves become depleted does not indicate a permanent depletion of reserves.

F. INFINITE HORIZON PROJECTIONS

Another measure of trust fund financial status is the infinite horizon unfunded obligation, which takes account of all past and future annual balances, even those after the next 75 years. The extension of the time period past 75 years assumes that the current law for the OASDI program and the demographic and economic trends used for the 75-year projection continue indefinitely.

Table VI.F1 shows that the OASDI open-group unfunded obligation over the infinite horizon is $65.9 trillion in present value, which is $43.4 trillion larger than for the 75-year period. The $43.4 trillion increment reflects a significant financing gap projected for OASDI for years after 2097 into perpetuity. Of course, the degree of uncertainty associated with estimates increases substantially for years further in the future.

The $65.9 trillion infinite horizon open-group unfunded obligation is equal to 4.6 percent of taxable payroll or 1.4 percent of GDP over the same period. These relative measures of the unfunded obligation over the infinite horizon express its magnitude in relation to the resources potentially available to finance the shortfall.

The summarized shortfalls for the 75-year period and through the infinite horizon both reflect annual cash-flow shortfalls for all years after trust fund reserve depletion. The annual shortfalls after trust fund reserve depletion rise slowly and reflect increases in life expectancy. The summarized shortfalls over the infinite horizon, as percentages of taxable payroll and GDP, are larger than the shortfalls for the 75-year period.

To illustrate the magnitude of the projected infinite horizon shortfall, consider that it could be eliminated with additional revenue equivalent to an immediate increase in the combined payroll tax rate from 12.4 percent to about 17.0 percent,[1] or with cost reductions equivalent to an immediate and permanent reduction in benefits for all current and future beneficiaries by about 26.9 percent.

[1] While an increase in the payroll tax rate would cause some behavioral changes in earnings and ensuing changes in benefit levels, such changes are not included in the calculations because they are assumed to have roughly offsetting effects on OASDI actuarial status over the infinite horizon.

Table VI.F1.—Unfunded OASDI Obligations Through the Infinite Horizon and the 75-Year Projection Period, Based on Intermediate Assumptions
[Present values as of January 1, 2023; dollar amounts in trillions]

		Expressed as a percentage of future payroll and GDP	
	Present value	Taxable payroll	GDP
Unfunded obligation through the infinite horizon[a]	$65.9	4.6	1.4
Unfunded obligation through 2097[b]	22.4	3.4	1.2

[a] Present value of future cost less future non-interest income, reduced by the amount of trust fund asset reserves at the beginning of 2023. Expressed as a percentage of payroll and GDP for the period 2023 through the infinite horizon.

[b] Present value of future cost less future non-interest income through 2097, reduced by the amount of trust fund reserves at the beginning of 2023. Expressed as a percentage of payroll and GDP for the period 2023 through 2097.

Notes:
1. The present values of future taxable payroll for 2023-97 and for 2023 through the infinite horizon are $655.0 trillion and $1,439.1 trillion, respectively.
2. The present values of GDP for 2023-97 and for 2023 through the infinite horizon are $1,865.3 trillion and $4,612.7 trillion, respectively. Present values of GDP shown in the Medicare Trustees Report differ slightly due to the use of discount rates that are specific to each program's trust fund holdings.

Last year, the Trustees projected that the infinite horizon unfunded obligation was $61.8 trillion in present value discounted to January 1, 2022. If the assumptions, methods, and starting values had not changed, moving the valuation date forward by 1 year to January 1, 2023 would have discounted future values by 1 year less, thus increasing the measured unfunded obligation by about $1.4 trillion, to $63.2 trillion. The net effects of changes in assumptions, methods, law, and starting values increased the infinite horizon unfunded obligation by an additional $2.7 trillion. This net increase occurred for a variety of reasons, particularly changes in recent economic data and near-term assumptions, and changes in programmatic data and methods. See section IV.B.6 for details regarding changes in law, data, methods, and assumptions.

Compared to last year's report, the unfunded obligation over the infinite horizon in this year's report increased by 0.1 percentage point as both a share of taxable payroll and a share of GDP. The unfunded obligation over the 75-year projection period increased by 0.2 percentage point as a share of taxable payroll and increased by 0.1 percentage point as a share of GDP.

a. Unfunded Obligations for Past, Current, and Future Participants

Table VI.F2 separates the components of the infinite horizon unfunded obligation (with the exception of General Fund reimbursements) among past, current, and future participants. The table does not separate past General Fund reimbursements among participants because there is no clear basis for attributing the reimbursements across generations.

Past participants are defined as those no longer alive as of the valuation date. Current participants are those age 15 and older as of 2023. Future participants are those under age 15 or not yet born.

The excess of the present value of cost for past and current participants over the present value of dedicated tax income for past and current participants produces an unfunded obligation for past and current participants of $49.1 trillion. Table V1.F2 also shows an unfunded obligation of $48.4 trillion for past and current participants, including past and future General Fund reimbursements. Future participants are scheduled to pay dedicated taxes of $17.5 trillion less into the system than the cost of their scheduled benefits ($148.8 trillion of dedicated tax income as compared to $166.3 trillion of cost). The unfunded obligation for all participants through the infinite horizon thus equals $65.9 trillion.

Making Social Security solvent over the infinite horizon requires some combination of increased revenue or reduced benefits for current and future participants amounting to $65.9 trillion in present value, 4.6 percent of future taxable payroll, or 1.4 percent of future GDP.

Table VI.F2.—Present Values Through the Infinite Horizon for Various Categories of Program Participants, Based on Intermediate Assumptions

[Present values as of January 1, 2023; dollar amounts in trillions]

	Present value	Expressed as a percentage of future payroll and GDP	
		Taxable payroll	GDP
Present value of past cost	$76.4	5.3	1.7
Less present value of past dedicated tax income	78.5	5.5	1.7
Plus present value of future cost for current participants	95.7	6.6	2.1
Less present value of future dedicated tax income for current participants	44.4	3.1	1.0
Equals unfunded obligation for past and current participants excluding General Fund reimbursements	49.1	3.4	1.1
Less present value of past General Fund reimbursements[a]	.7	[b]	[c]
Less present value of future General Fund reimbursements through the infinite horizon[a]	[d]	[b]	[c]
Equals unfunded obligation for past and current participants including General Fund reimbursements	48.4	3.4	1.0
Plus present value of cost for future participants through the infinite horizon	166.3	11.6	3.6
Less present value of dedicated tax income for future participants through the infinite horizon	148.8	10.3	3.2
Equals unfunded obligation for all participants through the infinite horizon	65.9	4.6	1.4

[a] Distribution of General Fund reimbursements among past, current, and future participants cannot be determined.

[b] Less than 0.05 percent of taxable payroll.

[c] Less than 0.05 percent of GDP.

[d] Less than $50 billion.

Notes:

1. The present value of future taxable payroll for 2023 through the infinite horizon is $1,439.1 trillion.

2. The present value of GDP for 2023 through the infinite horizon is $4,612.7 trillion.

3. Components may not sum to totals because of rounding.

G. ESTIMATES FOR OASDI AND HI, SEPARATE AND COMBINED

In this appendix, the Trustees present long-range actuarial estimates for the OASDI and Hospital Insurance (HI) programs both separately and on a combined basis. These estimates facilitate analysis of the adequacy of the income and asset reserves of these programs relative to their cost under current law. This appendix does not include estimates for the Supplementary Medical Insurance (SMI) program because adequate financing is guaranteed in the law and because the SMI program is not financed through a payroll tax. For more information on Medicare estimates, please see the 2023 Medicare Trustees Report.

The information in this appendix on combined operations, while significant, should not obscure the analysis of the financial status of the individual trust funds, which are legally separate and cannot be commingled. In addition, the factors which determine the costs of the OASI, DI, and HI programs differ substantially.

1. Estimates as a Percentage of Taxable Payroll

Comparing cost and income rates for the OASDI and HI programs as percentages of taxable payroll requires a note of caution. The taxable payrolls for the HI program are larger than those for the OASDI program because: (1) a larger maximum taxable amount was established for the HI program in 1991, with the maximum eliminated altogether for the HI program in 1994; (2) larger proportions of Federal, State, and local government employees are covered under the HI program; and (3) the earnings of railroad workers are included directly in the HI taxable payroll but are not included in the OASDI taxable payroll. (Railroad worker contributions for the equivalent of OASDI benefits are accounted for in a net interchange that occurs annually between the OASDI and Railroad Retirement programs.) As a result, the HI taxable payroll is 25 percent larger than the OASDI taxable payroll on average over the long-range period.

As with the OASI and DI Trust Funds, income to the HI Trust Fund comes primarily from contributions paid by employees, employers, and self-employed persons. Table VI.G1 shows the OASDI and HI contribution rates that are authorized in the Federal Insurance Contributions Act.

Table VI.G1.—Payroll Tax Contribution Rates for the OASDI and HI Programs
[In percent]

	Employees and employers, combined[a]		Employees only	Self employed[b]		
Calendar years	OASDI up to base[c]	HI all earnings[d]	HI over limit[e]	OASDI up to base[c]	HI all earnings[d]	HI over limit[e]
1966	7.70	0.70		5.80	0.35	
1967	7.80	1.00	—	5.90	.50	—
1968	7.60	1.20	—	5.80	.60	—
1969-70	8.40	1.20		6.30	.60	
1971-72	9.20	1.20		6.90	.60	
1973	9.70	2.00		7.00	1.00	
1974-77	9.90	1.80	—	7.00	.90	—
1978	10.10	2.00	—	7.10	1.00	—
1979-80	10.16	2.10		7.05	1.05	
1981	10.70	2.60	—	8.00	1.30	—
1982-83	10.80	2.60	—	8.05	1.30	—
1984[f]	11.40	2.60	—	11.40	2.60	—
1985[f]	11.40	2.70		11.40	2.70	
1986-87[f]	11.40	2.90		11.40	2.90	
1988-89[f]	12.12	2.90	—	12.12	2.90	—
1990-2010[g]	12.40	2.90	—	12.40	2.90	—
2011-2012[h]	10.40	2.90		10.40	2.90	
2013 and later	12.40	2.90	0.90	12.40	2.90	0.90

[a] Except as noted below, the combined employee/employer rate is divided equally between employees and employers.

[b] Beginning in 1990, self-employed persons receive a deduction, for purposes of computing their net earnings, equal to half of the combined OASDI and HI contributions that would be payable without regard to the contribution and benefit base. The OASDI contribution rate then applies to net earnings after this deduction, but subject to the OASDI base.

[c] The payroll tax on earnings for the OASDI program applies to annual earnings up to a contribution and benefit base indexed to the average wage level. The base is $160,200 for 2023.

[d] Prior to 1994, the payroll tax on earnings for the HI program applied to annual earnings up to a contribution base. The HI contribution base was eliminated beginning in 1994.

[e] Starting with Federal personal income tax returns for tax year 2013, earned income exceeding $200,000 for individual filers and $250,000 for married couples filing jointly is subject to an additional HI tax of 0.9 percent. These income limits are not indexed after 2013.

[f] In 1984 only, employees received an immediate credit of 0.3 percent of taxable wages against their OASDI payroll tax contributions. The self-employed received similar credits of 2.7 percent, 2.3 percent, and 2.0 percent against their combined OASDI and Hospital Insurance (HI) contributions on net earnings from self-employment in 1984, 1985, and 1986-89, respectively. The General Fund of the Treasury reimbursed the trust funds for these credits.

[g] Public Law 111-147 exempted most employers from paying the employer share of OASDI payroll tax on wages paid during the period March 19, 2010 through December 31, 2010 to certain qualified individuals hired after February 3, 2010. The General Fund of the Treasury reimbursed the trust funds for the payroll tax revenue forgone under this law.

[h] Public Law 111-312, Public Law 112-78, and Public Law 112-96 reduced the OASDI payroll tax rate for 2011 and 2012 by 2 percentage points for employees and for self-employed workers. The General Fund of the Treasury reimbursed the trust funds for the payroll tax revenue forgone under these laws.

Table VI.G2 shows the Trustees' estimates of annual income rates and cost rates for the OASDI program and the HI program under the intermediate, low-cost, and high-cost sets of assumptions described earlier in this report. The income rates reflect the payroll tax rates shown in table VI.G1, revenue from taxation of scheduled OASDI benefits for both the OASDI and HI

Trust Funds, and any reimbursements from the General Fund of the Treasury. For the HI program, the income rates also reflect: (1) the additional 0.9-percent tax on employees for relatively high earnings and the portion of total payroll to which the 0.9-percent rate applies, (2) premium revenues, and (3) monies from fraud and abuse control activities. Annual income and cost rates indicate the cash-flow operation of the programs. Therefore, income rates exclude interest earned on trust fund asset reserves. Table VI.G2 also shows annual balances, which are the differences between annual income rates and cost rates.

The Trustees project that the OASDI and HI cost rates will rise generally above current levels under the intermediate and high-cost sets of assumptions. The greatest increase occurs from 2023 to about 2040 under the intermediate and high-cost assumptions for OASDI and the intermediate assumptions for HI, and from 2023 to 2060 under the high-cost assumptions for HI. Under the intermediate assumptions, the OASDI cost rate increases by 22 percent from its current level by 2097, while under the high-cost assumptions, the cost rate increases by 84 percent by 2097. For HI, cost rates increase by 37 percent and 177 percent from 2023 to 2097 under the intermediate and high-cost assumptions, respectively. Under the low-cost assumptions, the OASDI and HI cost rates decrease from 2023 to 2097 by 14 percent and 36 percent, respectively.

The Trustees project annual deficits for every year of the projection period for both the OASDI and HI programs under the high-cost assumptions and for OASDI under the intermediate assumptions. Under the intermediate assumptions, HI annual balances are projected to be positive in 2023 and 2024 and negative and decreasing from 2025 through 2044. Thereafter, HI annual balances slowly increase (become less negative). Under the low-cost assumptions, OASDI annual balances are negative through 2081, and are positive and mostly increasing thereafter, reaching 0.74 percent of payroll for 2097. HI annual balances as a percent of payroll are positive and mostly increasing throughout the projection period under the low-cost assumptions, reaching 2.24 percent of HI taxable payroll by 2097.

Table VI.G2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2023-2100

[As a percentage of taxable payroll[a]]

Calendar year	OASDI			HI		
	Income rate	Cost rate[b]	Balance[b]	Income rate	Cost rate	Balance
Intermediate:						
2023	13.29	14.53	-1.24	3.43	3.40	0.03
2024	12.89	14.87	-1.98	3.44	3.41	.02
2025	12.97	15.04	-2.07	3.45	3.50	-.05
2026	13.08	15.23	-2.15	3.52	3.59	-.07
2027	13.09	15.38	-2.29	3.55	3.70	-.15
2028	13.13	15.55	-2.42	3.57	3.81	-.24
2029	13.16	15.72	-2.56	3.60	3.93	-.33
2030	13.18	15.87	-2.69	3.62	4.02	-.40
2031	13.21	16.00	-2.79	3.65	4.11	-.46
2032	13.24	16.14	-2.91	3.68	4.22	-.54
2035	13.27	16.48	-3.21	3.75	4.50	-.75
2040	13.30	16.78	-3.48	3.83	4.71	-.89
2045	13.31	16.86	-3.55	3.89	4.81	-.92
2050	13.32	16.99	-3.67	3.96	4.83	-.87
2055	13.34	17.23	-3.89	4.03	4.81	-.78
2060	13.37	17.62	-4.24	4.11	4.81	-.70
2065	13.40	17.95	-4.54	4.18	4.85	-.66
2070	13.42	18.23	-4.81	4.26	4.89	-.64
2075	13.44	18.46	-5.02	4.32	4.92	-.60
2080	13.45	18.47	-5.02	4.37	4.90	-.54
2085	13.43	18.23	-4.79	4.40	4.85	-.45
2090	13.41	17.89	-4.48	4.43	4.77	-.35
2095	13.40	17.74	-4.34	4.45	4.69	-.24
2100	13.41	17.83	-4.42	4.49	4.60	-.12
Low-cost:						
2023	13.22	14.34	-1.12	3.42	3.30	.12
2024	12.90	14.27	-1.38	3.42	3.19	.23
2025	12.93	14.15	-1.22	3.43	3.21	.23
2026	13.02	14.11	-1.08	3.50	3.22	.27
2027	13.03	14.05	-1.03	3.52	3.25	.26
2028	13.05	14.02	-.97	3.54	3.28	.25
2029	13.07	14.00	-.93	3.56	3.32	.24
2030	13.09	13.97	-.88	3.58	3.33	.25
2031	13.10	13.93	-.82	3.60	3.33	.27
2032	13.11	13.90	-.78	3.63	3.35	.28
2035	13.13	13.90	-.77	3.69	3.36	.34
2040	13.14	13.80	-.66	3.78	3.18	.60
2045	13.13	13.56	-.43	3.85	2.94	.91
2050	13.13	13.39	-.27	3.92	2.68	1.25
2055	13.13	13.38	-.25	4.00	2.46	1.54
2060	13.15	13.51	-.36	4.08	2.32	1.75
2065	13.16	13.58	-.42	4.14	2.25	1.89
2070	13.16	13.58	-.42	4.20	2.23	1.97
2075	13.16	13.53	-.37	4.25	2.24	2.01
2080	13.14	13.27	-.12	4.28	2.24	2.05
2085	13.12	12.83	.29	4.30	2.21	2.09
2090	13.09	12.41	.68	4.32	2.18	2.14
2095	13.08	12.30	.78	4.35	2.14	2.21
2100	13.09	12.45	.64	4.39	2.01	2.38

Table VI.G2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2023-2100 (Cont.)
[As a percentage of taxable payroll[a]]

Calendar year	OASDI			HI		
	Income rate	Cost rate[b]	Balance[b]	Income rate	Cost rate	Balance
High-cost:						
2023	13.41	14.91	-1.49	3.43	3.55	-0.12
2024	12.82	15.61	-2.79	3.45	3.67	-.22
2025	13.02	16.04	-3.02	3.47	3.83	-.35
2026	13.13	16.30	-3.17	3.55	3.99	-.44
2027	13.15	16.58	-3.42	3.58	4.18	-.60
2028	13.20	16.94	-3.74	3.61	4.39	-.78
2029	13.24	17.31	-4.07	3.64	4.61	-.97
2030	13.28	17.69	-4.41	3.67	4.80	-1.13
2031	13.32	18.05	-4.73	3.71	5.00	-1.29
2032	13.36	18.43	-5.07	3.75	5.22	-1.48
2035	13.41	19.24	-5.83	3.82	5.88	-2.06
2040	13.48	20.24	-6.76	3.91	6.75	-2.84
2045	13.52	21.00	-7.48	3.98	7.58	-3.60
2050	13.58	21.81	-8.23	4.06	8.40	-4.34
2055	13.63	22.69	-9.06	4.14	9.06	-4.92
2060	13.70	23.68	-9.98	4.23	9.62	-5.39
2065	13.77	24.60	-10.83	4.31	10.06	-5.74
2070	13.83	25.52	-11.69	4.40	10.33	-5.93
2075	13.89	26.43	-12.53	4.48	10.39	-5.92
2080	13.94	27.12	-13.18	4.55	10.36	-5.81
2085	13.97	27.51	-13.53	4.61	10.24	-5.63
2090	13.98	27.56	-13.58	4.65	10.08	-5.43
2095	13.98	27.50	-13.52	4.68	9.92	-5.23
2100	13.98	27.51	-13.53	4.72	10.22	-5.50

[a] The taxable payroll for HI is significantly larger than the taxable payroll for OASDI because the HI taxable maximum amount was eliminated beginning in 1994, and because HI covers all Federal civilian employees, all State and local government employees hired after April 1, 1986, and railroad employees.

[b] OASDI benefit payments which were scheduled to be paid on January 3 for some past and future years were actually paid on December 31 as required by the statutory provision for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. For comparability with the values for historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment each year.

Notes:

1. The income rate excludes interest income.

2. The Trustees show income and cost estimates generally on a cash basis for the OASDI program and on an incurred basis for the HI program.

3. Components may not sum to totals because of rounding.

Table VI.G3 shows summarized values over the 25-year, 50-year, and 75-year valuation periods. For each of those periods, the summarized income rates include beginning trust fund asset reserves, and the summarized cost rates include the cost of accumulating an ending fund reserve equal to 100 percent of annual cost at the end of the period.

Table VI.G3.—Summarized OASDI and HI Income Rates and Cost Rates for Valuation Periods,[a] Calendar Years 2023-2097
[As a percentage of taxable payroll[b]]

Valuation period	OASDI			HI		
	Income rate	Cost rate[c]	Actuarial balance	Income rate	Cost rate	Actuarial balance
Intermediate:						
25-year:						
2023-47.....	14.34	16.85	-2.50	3.77	4.48	-0.70
50-year:						
2023-72.....	13.90	17.14	-3.24	3.92	4.63	-.70
75-year:						
2023-97.....	13.78	17.38	-3.61	4.05	4.67	-.62
Low-cost:						
25-year:						
2023-47.....	14.10	14.42	-.31	3.73	3.32	.42
50-year:						
2023-72.....	13.65	13.94	-.29	3.89	2.86	1.04
75-year:						
2023-97.....	13.49	13.59	-.10	4.02	2.65	1.37
High-cost:						
25-year:						
2023-47.....	14.60	19.49	-4.89	3.84	5.98	-2.15
50-year:						
2023-72.....	14.22	21.18	-6.97	4.00	7.46	-3.46
75-year:						
2023-97.....	14.16	22.52	-8.37	4.14	8.08	-3.94

[a] Income rates include beginning trust fund asset reserves and cost rates include the cost of reaching an ending target trust fund equal to 100 percent of annual cost at the end of the period.

[b] The taxable payroll for HI is significantly larger than the taxable payroll for OASDI because the HI taxable maximum amount was eliminated beginning 1994, and because HI covers all Federal civilian employees, all State and local government employees hired after April 1, 1986, and railroad employees.

[c] OASDI benefit payments which were scheduled to be paid on January 3 for some past and future years were actually paid on December 31 as required by the statutory provision for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. For comparability with the values for historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment each year.

Note: Components may not sum to totals because of rounding.

The Trustees project that the OASDI and HI programs will each experience large actuarial deficits for the 25-year, 50-year, and 75-year valuation periods under the high-cost assumptions. Actuarial deficits under the intermediate assumptions are smaller than those for the high-cost assumptions for all three valuation periods. Under the low-cost assumptions, the OASDI program has relatively small actuarial deficits for all three valuation periods, while the HI program has positive actuarial balances for all three valuation periods.

2. Estimates as a Percentage of Gross Domestic Product

This section presents long-range projections of the operations of the combined Old-Age and Survivors Insurance and Disability Insurance (OASI and DI) Trust Funds and of the Hospital Insurance (HI) Trust Fund, expressed as a percentage of gross domestic product (GDP). While expressing fund operations as a percentage of taxable payroll is a very useful approach for assessing the financial status of the programs (see section IV.B.1), expressing them as a percentage of the total value of goods and services produced in the United States provides an additional perspective.

Table VI.G4 shows non-interest income, total cost, and the resulting balance of the combined OASI and DI Trust Funds, of the HI Trust Fund, and of the combined OASI, DI, and HI Trust Funds, expressed as percentages of GDP on the basis of each of the three alternative sets of assumptions. Table VI.G4 also contains estimates of GDP. For OASDI, non-interest income consists of payroll tax contributions, proceeds from taxation of scheduled OASDI benefits, and any reimbursements from the General Fund of the Treasury. Cost consists of scheduled benefits, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. For HI, non-interest income consists of payroll tax contributions (including contributions from railroad employment), up to an additional 0.9 percent tax on earned income for relatively high earners, proceeds from taxation of scheduled OASDI benefits, premium revenues, monies from fraud and abuse control activities, and any reimbursements from the General Fund of the Treasury. Cost consists of outlays (benefits and administrative expenses) for beneficiaries. The Trustees show income and cost estimates generally on a cash basis for the OASDI program[1] and on an incurred basis for the HI program.

The Trustees project the OASDI annual balance (non-interest income less cost) as a percentage of GDP to be negative throughout the projection period under the intermediate and high-cost assumptions. Under the low-cost assumptions, the OASDI annual deficit as a percentage of GDP increases from 2023 to 2024, and then generally decreases through 2053. After 2053, the annual deficits slightly increase through 2067 and then decrease through 2081 before becoming positive for 2082 and later. Under the intermediate assumptions, the OASDI annual deficits as a percentage of GDP increase

[1] OASDI benefits paid for entitlement for a particular month are generally paid in the succeeding month. There are two primary exceptions to this general rule. First, payments can occur with a greater delay when a benefit award is made after the month of initial benefit entitlement. At the time of benefit award, benefits owed for months of prior entitlement are then also paid to the beneficiary. For the projections in this report, such retroactive payments are included in the period where they are paid (at time of award). Second, when benefit payments scheduled for January 3 are paid on the prior December 31, because January 3 falls on a Sunday, such payments are shown in this report for the period they were scheduled to be paid.

from 2023 through 2077, and generally decrease thereafter. Under the high-cost assumptions, annual deficits increase relatively rapidly through 2086, and then slightly decrease through the end of the projection period.

The Trustees project that the HI annual balance as a percentage of GDP will be positive and mostly increasing throughout the projection period, under the low-cost assumptions. Under the intermediate assumptions, the HI annual balance is positive in 2023 and 2024 and negative in 2025. After 2025, annual deficits increase through 2044, and then decline thereafter. Under the high-cost assumptions, the HI annual balance is negative for all years, with annual deficits reaching a peak in 2070 and declining thereafter.

The combined OASDI and HI annual balance as a percentage of GDP is negative throughout the projection period under both the intermediate and high-cost assumptions. Under the low-cost assumptions, the combined OASDI and HI annual balance is negative through 2039, and then positive and mostly rising thereafter. Under the intermediate assumptions, the combined OASDI and HI annual deficits generally increase through 2076 and then decline thereafter, reaching 1.55 percent of GDP by 2097. Under the high-cost assumptions, combined annual deficits rise to a peak of 6.63 percent in 2081 and decrease thereafter.

By 2097, the combined OASDI and HI annual balances as percentages of GDP range from a positive annual balance of 1.28 percent for the low-cost assumptions to an annual deficit of 6.24 percent for the high-cost assumptions. Annual balances differ by a much smaller amount for the tenth projection year, 2032, ranging from an annual deficit of 0.16 percent for the low-cost assumptions to an annual deficit of 2.48 percent for the high-cost assumptions.

The summarized long-range (75-year) actuarial balance as a percentage of GDP for the combined OASDI and HI programs varies among the three alternatives by a relatively large amount, from a positive actuarial balance of 0.58 percent under the low-cost assumptions to an actuarial deficit of 4.54 percent under the high-cost assumptions. The 25-year summarized actuarial balance varies by a smaller amount, from a positive actuarial balance of 0.07 percent of GDP to an actuarial deficit of 2.70 percent. Summarized rates are calculated on a present-value basis. They include the trust fund reserve balances on January 1, 2023 and the cost of reaching a target trust fund level equal to 100 percent of the following year's annual cost at the end of the period. (See section IV.B.4 for further explanation.)

Table VI.G4.—OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2023-2100

	Percentage of GDP									GDP in dollars (billions)
	OASDI			HI			Combined			
Calendar year	Income[a]	Cost[b]	Balance[b]	Income[a]	Cost	Balance	Income[a]	Cost[b]	Balance[b]	
Intermediate:										
2023	4.77	5.22	-0.45	1.53	1.52	0.01	6.30	6.74	-0.44	$26,592
2024	4.65	5.37	-.72	1.54	1.53	.01	6.19	6.90	-.71	27,655
2025	4.70	5.45	-.75	1.55	1.58	-.02	6.25	7.02	-.77	28,902
2026	4.74	5.52	-.78	1.59	1.62	-.03	6.34	7.15	-.81	30,177
2027	4.76	5.59	-.83	1.61	1.68	-.07	6.37	7.27	-.90	31,478
2028	4.78	5.66	-.88	1.62	1.73	-.11	6.40	7.39	-.99	32,778
2029	4.80	5.73	-.93	1.64	1.79	-.15	6.43	7.52	-1.08	34,125
2030	4.81	5.79	-.98	1.65	1.83	-.18	6.46	7.62	-1.16	35,521
2031	4.82	5.84	-1.02	1.67	1.88	-.21	6.49	7.72	-1.23	36,976
2032	4.82	5.88	-1.06	1.68	1.93	-.25	6.50	7.81	-1.31	38,487
2035	4.81	5.97	-1.16	1.70	2.04	-.34	6.51	8.01	-1.50	43,392
2040	4.78	6.03	-1.25	1.72	2.12	-.40	6.50	8.15	-1.65	52,850
2045	4.74	6.01	-1.27	1.74	2.15	-.41	6.48	8.15	-1.68	64,333
2050	4.71	6.01	-1.30	1.75	2.14	-.39	6.46	8.14	-1.68	78,438
2055	4.68	6.05	-1.37	1.77	2.11	-.34	6.46	8.16	-1.71	95,785
2060	4.66	6.14	-1.48	1.80	2.10	-.31	6.46	8.25	-1.79	116,988
2065	4.64	6.22	-1.58	1.82	2.10	-.29	6.46	8.32	-1.86	142,731
2070	4.63	6.28	-1.66	1.84	2.11	-.28	6.47	8.40	-1.93	173,850
2075	4.61	6.33	-1.72	1.86	2.12	-.26	6.47	8.45	-1.98	211,710
2080	4.59	6.30	-1.71	1.87	2.10	-.23	6.46	8.40	-1.94	258,358
2085	4.57	6.20	-1.63	1.88	2.07	-.19	6.44	8.26	-1.82	316,227
2090	4.54	6.06	-1.52	1.88	2.03	-.15	6.42	8.09	-1.66	387,813
2095	4.52	5.99	-1.46	1.88	1.99	-.10	6.41	7.97	-1.57	475,384
2100	4.51	5.99	-1.48	1.89	1.94	-.05	6.40	7.93	-1.53	581,611
Summarized rates:[c]										
25-year:										
2023-47 . .	5.18	6.08	-.90	1.70	2.02	-.32	6.88	8.10	-1.22	
50-year:										
2023-72 . .	4.94	6.09	-1.15	1.75	2.06	-.31	6.69	8.15	-1.46	
75-year:										
2023-97 . .	4.84	6.10	-1.27	1.78	2.05	-.27	6.62	8.16	-1.54	
Low-cost:										
2023	4.72	5.13	-.40	1.52	1.47	.05	6.24	6.59	-.35	27,042
2024	4.63	5.13	-.49	1.53	1.43	.10	6.16	6.56	-.39	28,782
2025	4.67	5.11	-.44	1.54	1.44	.10	6.21	6.55	-.34	30,730
2026	4.73	5.12	-.39	1.58	1.46	.12	6.31	6.58	-.27	32,533
2027	4.76	5.14	-.38	1.59	1.47	.12	6.35	6.61	-.26	34,356
2028	4.79	5.15	-.36	1.61	1.49	.11	6.40	6.64	-.24	36,241
2029	4.82	5.16	-.34	1.62	1.51	.11	6.44	6.67	-.23	38,217
2030	4.84	5.17	-.33	1.63	1.52	.12	6.48	6.69	-.21	40,290
2031	4.86	5.17	-.31	1.65	1.52	.12	6.51	6.69	-.18	42,475
2032	4.88	5.17	-.29	1.66	1.53	.13	6.54	6.70	-.16	44,755
2035	4.87	5.15	-.29	1.68	1.53	.15	6.55	6.68	-.13	52,381
2040	4.84	5.09	-.24	1.71	1.44	.27	6.55	6.53	.03	67,898
2045	4.81	4.97	-.16	1.74	1.32	.41	6.55	6.29	.26	88,210
2050	4.79	4.89	-.10	1.76	1.20	.56	6.56	6.09	.46	115,112
2055	4.78	4.87	-.09	1.79	1.10	.69	6.57	5.97	.60	150,549
2060	4.78	4.91	-.13	1.82	1.04	.78	6.60	5.95	.65	196,798
2065	4.78	4.93	-.15	1.85	1.00	.84	6.62	5.93	.69	256,786
2070	4.78	4.93	-.15	1.87	1.00	.88	6.65	5.93	.72	334,496
2075	4.78	4.91	-.13	1.90	1.00	.89	6.67	5.91	.76	436,091
2080	4.78	4.82	-.05	1.91	1.00	.91	6.69	5.82	.87	570,560

Table VI.G4.—OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2023-2100 (Cont.)

	Percentage of GDP									GDP in dollars (billions)
	OASDI			HI			Combined			
Calendar year	Income[a]	Cost[b]	Balance[b]	Income[a]	Cost	Balance	Income[a]	Cost[b]	Balance[b]	
Low-cost (Cont.):										
2085	4.78	4.67	0.10	1.93	0.99	0.94	6.70	5.66	1.04	$749,476
2090	4.78	4.53	.25	1.94	.98	.96	6.71	5.51	1.21	985,569
2095	4.78	4.50	.28	1.95	.96	.99	6.74	5.46	1.28	1,292,776
2100	4.80	4.56	.23	1.98	.91	1.07	6.77	5.47	1.31	1,690,135
Summarized rates: [c]										
25-year:										
2023-47 . .	5.19	5.30	-.12	1.69	1.50	.19	6.88	6.80	.07	
50-year:										
2023-72 . .	4.99	5.10	-.11	1.75	1.29	.47	6.75	6.39	.36	
75-year:										
2023-97 . .	4.93	4.97	-.04	1.81	1.19	.61	6.74	6.16	.58	
High-cost:										
2023	4.83	5.37	-.54	1.53	1.58	-.05	6.36	6.95	-.59	25,892
2024	4.61	5.62	-1.01	1.54	1.64	-.10	6.15	7.26	-1.10	26,696
2025	4.68	5.77	-1.09	1.56	1.72	-.16	6.24	7.48	-1.24	27,746
2026	4.73	5.87	-1.14	1.60	1.80	-.20	6.33	7.67	-1.34	28,771
2027	4.74	5.97	-1.23	1.62	1.89	-.27	6.36	7.87	-1.51	29,762
2028	4.76	6.11	-1.35	1.64	1.99	-.35	6.40	8.10	-1.70	30,614
2029	4.77	6.24	-1.47	1.66	2.10	-.44	6.43	8.33	-1.91	31,452
2030	4.78	6.36	-1.59	1.67	2.19	-.51	6.45	8.55	-2.10	32,320
2031	4.78	6.47	-1.70	1.69	2.28	-.59	6.47	8.75	-2.29	33,222
2032	4.77	6.58	-1.81	1.71	2.38	-.67	6.48	8.96	-2.48	34,138
2035	4.76	6.82	-2.07	1.73	2.66	-.93	6.48	9.48	-3.00	37,070
2040	4.73	7.10	-2.37	1.75	3.02	-1.27	6.47	10.12	-3.64	42,423
2045	4.69	7.28	-2.59	1.76	3.36	-1.59	6.45	10.64	-4.19	48,300
2050	4.66	7.48	-2.82	1.78	3.68	-1.90	6.43	11.15	-4.72	54,825
2055	4.62	7.69	-3.07	1.79	3.92	-2.13	6.41	11.62	-5.20	62,192
2060	4.60	7.94	-3.35	1.81	4.12	-2.31	6.41	12.06	-5.65	70,544
2065	4.57	8.16	-3.59	1.83	4.26	-2.44	6.40	12.43	-6.03	79,912
2070	4.54	8.38	-3.84	1.84	4.33	-2.49	6.38	12.71	-6.33	90,302
2075	4.51	8.59	-4.07	1.86	4.32	-2.46	6.37	12.90	-6.53	101,834
2080	4.48	8.72	-4.24	1.87	4.26	-2.39	6.35	12.98	-6.63	114,766
2085	4.45	8.75	-4.31	1.88	4.17	-2.29	6.32	12.92	-6.60	129,504
2090	4.40	8.68	-4.28	1.88	4.07	-2.19	6.28	12.75	-6.47	146,448
2095	4.36	8.58	-4.22	1.87	3.96	-2.09	6.23	12.54	-6.31	165,801
2100	4.32	8.50	-4.18	1.87	4.04	-2.18	6.19	12.54	-6.36	187,740
Summarized rates: [c]										
25-year:										
2023-47 . .	5.18	6.91	-1.74	1.73	2.69	-.97	6.90	9.60	-2.70	
50-year:										
2023-72 . .	4.92	7.33	-2.41	1.76	3.28	-1.52	6.68	10.62	-3.93	
75-year:										
2023-97 . .	4.80	7.64	-2.84	1.79	3.49	-1.70	6.59	11.14	-4.54	

[a] Income for individual years excludes interest on the trust funds. Interest is implicit in all summarized values.

[b] OASDI benefit payments which were scheduled to be paid on January 3 for some past and future years were actually paid on December 31 as required by the statutory provision for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. For comparability with the values for historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment each year.

[c] Summarized rates are calculated on a present-value basis. They include the value of the trust funds on January 1, 2023 and the cost of reaching a target trust fund level equal to 100 percent of annual cost at the end of the period.

Notes:

1. The Trustees show income and cost estimates generally on a cash basis for the OASDI program and on an incurred basis for the HI program.

2. Components may not sum to totals because of rounding.

Table VI.G5 displays annual ratios of OASDI taxable payroll to GDP. These ratios facilitate comparisons of trust fund operations expressed as percentages of taxable payroll and those expressed as percentages of GDP. HI taxable payroll is 25 percent larger than the OASDI taxable payroll on average over the long-range period; see section I of this appendix for a detailed description of the difference. For each year, the cost as a percentage of GDP is equal to the cost as a percentage of taxable payroll multiplied by the ratio of taxable payroll to GDP.

Table VI.G5.—Ratio of OASDI Taxable Payroll to GDP, Calendar Years 2023-2100

Calendar year	Intermediate	Low-cost	High-cost
2023	0.359	0.357	0.360
2024	.361	.359	.360
2025	.362	.361	.359
2026	.363	.363	.360
2027	.364	.365	.360
2028	.364	.367	.361
2029	.364	.369	.360
2030	.365	.370	.360
2031	.365	.371	.359
2032	.364	.372	.357
2035	.363	.371	.355
2040	.359	.369	.351
2045	.356	.367	.347
2050	.354	.365	.343
2055	.351	.364	.339
2060	.349	.363	.335
2065	.347	.363	.332
2070	.345	.363	.328
2075	.343	.363	.325
2080	.341	.363	.321
2085	.340	.364	.318
2090	.339	.365	.315
2095	.337	.366	.312
2100	.336	.366	.309

Projections of GDP reflect projected increases in U.S. employment, labor productivity, average hours worked, and the GDP price index (GDP deflator). Projections of taxable payroll reflect the components of growth in GDP along with assumed changes in the ratio of total labor compensation to GDP, the ratio of earnings to total labor compensation, the ratio of OASDI covered earnings to total earnings, and the ratio of taxable to total covered earnings.

Over the long-range period, the ratio of OASDI taxable payroll to GDP is projected to decline mostly due to a projected decline in the ratio of wages and salaries to employee compensation. Over the last six complete economic cycles, the ratio of wages and salaries to employee compensation declined at an average annual rate of 0.17 percent. Over the 65-year period ending in 2097, the ratio of wages and salaries to employee compensation is projected to remain the same for the low-cost assumptions and decline at an average annual rate of 0.10, and 0.20 percent for the intermediate and high-cost assumptions, respectively.

3. Estimates in Dollars

This section presents long-range projections, in dollars, of the operations of the combined OASI and DI Trust Funds and in some cases the HI Trust Fund. Comparing current dollar values over long periods of time is difficult because of the effect of inflation. In order to compare dollar values in a meaningful way, table VI.G6 provides several economic series or indices which can be used to adjust current dollars for changes in prices, wages, or other aspects of economic growth during the projection period. Any series of values can be adjusted by dividing the value for each year by the corresponding index value for the year.

One of the most common forms of standardization is price indexing, which uses some measure of change in the prices of consumer goods. The Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W, hereafter referred to as CPI), published by the Bureau of Labor Statistics, Department of Labor, is one such price index. Consistent with the law, the Social Security Administration (SSA) uses this index to determine the annual cost-of-living increases for OASDI monthly benefits. The ultimate annual rate of increase in the CPI is assumed to be 3.0, 2.4, and 1.8 percent for the low-cost, intermediate, and high-cost sets of assumptions, respectively. Table VI.G7 provides CPI-indexed dollar values (those adjusted using the CPI in table VI.G6), which indicate the relative purchasing power of the values over time.

Wage indexing is another type of standardization. It combines the effects of price inflation and real wage growth. The wage index presented here is the national average wage index, as defined in section 209(k)(1) of the Social Security Act. SSA uses this index to annually adjust the contribution and benefit base and other earnings-related program amounts. The average wage is assumed to grow by an average rate of 4.8, 3.6, and 2.4 percent under the low-cost, intermediate, and high-cost assumptions, respectively, between 2032 and 2097. Wage-indexed values indicate the level of a series of values relative to the changing standard of living of workers over time.

The taxable payroll series is used as an index to adjust for the effects of changes in the number of workers and changes in the proportion of earnings that are taxable, as well as for the effects of price inflation and real wage growth. The OASDI taxable payroll consists of all earnings subject to OASDI taxation, with an adjustment for the lower effective tax rate on multiple-employer excess wages. A series of values, divided by the taxable payroll, indicates the percentage of payroll that each value represents, and thus

the extent to which the series of values increases or decreases as a percent of payroll over time.

The GDP series is used as an index to adjust for the growth in the aggregate amount of goods and services produced in the United States. Values adjusted by GDP (see section 2 of this appendix) indicate their relative share of the total output of the economy. No direct assumption is made about growth in taxable payroll or GDP. These series reflect the basic demographic and economic assumptions, as discussed in sections V.A and V.B, respectively.

Discounting at the rate of interest is another way of standardizing current dollars. The compound new-issue interest factor shown in table VI.G6 increases each year by the assumed effective annual nominal yield for special public-debt obligations issuable to the trust funds in the 12 months of the prior year. The compound effective trust-fund interest factor shown in table VI.G6 uses the effective annual yield on all currently-held securities in the combined OASI and DI Trust Funds. The reciprocal of the compound effective trust-fund interest factor approximates the cumulative discount factor used to convert nominal dollar values to present values as of the start of the valuation period in order to create summarized values for this report.

Table VI.G6.—Selected Economic Variables, Calendar Years 2022-2100
[GDP and taxable payroll in billions]

Calendar year	Adjusted CPI[a]	Average wage index	Taxable payroll[b]	Gross domestic product	Compound new-issue interest factor[c]	Compound effective trust-fund interest factor[d]
Intermediate:						
2022	96.15	$63,467.98	$9,069	$25,422	0.9711	0.9884
2023	100.00	66,147.17	9,552	26,592	1.0000	1.0117
2024	102.53	68,627.58	9,986	27,655	1.0357	1.0356
2025	104.99	71,411.99	10,465	28,902	1.0727	1.0602
2026	107.51	74,348.48	10,944	30,177	1.1112	1.0862
2027	110.09	77,393.67	11,443	31,478	1.1530	1.1140
2028	112.73	80,510.73	11,934	32,778	1.1985	1.1442
2029	115.44	83,757.03	12,438	34,125	1.2492	1.1768
2030	118.21	87,106.49	12,954	35,521	1.3051	1.2125
2031	121.04	90,574.48	13,492	36,976	1.3656	1.2512
2032	123.95	93,995.33	14,023	38,487	1.4295	1.2946
2035	133.09	104,726.27	15,730	43,392	1.6429	1.4693
2040	149.85	125,312.66	18,992	52,850	2.0725	1.8502
2045	168.71	149,423.47	22,925	64,333	2.6144	2.3337
2050	189.95	177,750.26	27,736	78,438	3.2980	2.9438
2055	213.87	211,432.09	33,623	95,785	4.1603	3.7136
2060	240.79	251,610.19	40,795	116,988	5.2481	4.6846
2065	271.11	299,758.28	49,472	142,731	6.6204	5.9095
2070	305.24	357,187.25	59,924	173,850	8.3514	7.4546
2075	343.67	425,523.96	72,602	211,710	10.5351	9.4038
2080	386.94	506,962.67	88,194	258,358	13.2897	11.8627
2085	435.65	603,863.51	107,502	316,227	16.7646	14.9644
2090	490.50	719,124.11	131,330	387,813	21.1481	18.8772
2095	552.26	856,091.73	160,374	475,384	26.6778	23.8131
2100	621.79	1,019,162.94	195,457	581,611	33.6533	30.0396
Low-cost:						
2022	96.24	63,432.25	9,065	25,463	.9711	.9884
2023	100.00	66,442.68	9,665	27,042	1.0000	1.0120
2024	103.02	70,258.88	10,343	28,782	1.0425	1.0369
2025	106.12	74,575.71	11,089	30,730	1.0886	1.0639
2026	109.30	78,782.82	11,816	32,533	1.1411	1.0937
2027	112.58	83,005.63	12,555	34,356	1.2005	1.1276
2028	115.96	87,405.28	13,307	36,241	1.2672	1.1661
2029	119.43	92,010.68	14,090	38,217	1.3379	1.2096
2030	123.02	96,841.91	14,910	40,290	1.4125	1.2586
2031	126.71	101,915.61	15,771	42,475	1.4915	1.3140
2032	130.51	107,046.81	16,650	44,755	1.5776	1.3764
2035	142.61	123,656.58	19,420	52,381	1.8728	1.6083
2040	165.32	157,054.51	25,023	67,898	2.4925	2.1267
2045	191.66	198,412.60	32,341	88,210	3.3174	2.8275
2050	222.18	250,115.49	42,038	115,112	4.4152	3.7630
2055	257.57	315,518.44	54,815	150,549	5.8762	5.0083
2060	298.59	398,402.81	71,511	196,798	7.8208	6.6656
2065	346.15	503,681.03	93,206	256,786	10.4088	8.8714
2070	401.29	636,729.90	121,376	334,496	13.8533	11.8071
2075	465.20	804,422.07	158,315	436,091	18.4376	15.7143
2080	539.29	1,016,051.44	207,395	570,560	24.5389	20.9144
2085	625.19	1,283,116.99	272,944	749,476	32.6594	27.8354
2090	724.77	1,619,988.11	359,689	985,569	43.4670	37.0466
2095	840.20	2,044,788.30	472,758	1,292,776	57.8510	49.3061
2100	974.03	2,581,302.68	619,206	1,690,135	76.9950	65.6224

Table VI.G6.—Selected Economic Variables, Calendar Years 2022-2100 (Cont.)
[GDP and taxable payroll in billions]

Calendar year	Adjusted CPI[a]	Average wage index	Taxable payroll[b]	Gross domestic product	Compound new-issue interest factor[c]	Compound effective trust-fund interest factor[d]
High-cost:						
2022.....	95.64	$63,460.05	$9,067	$25,417	0.9711	0.9884
2023.....	100.00	64,726.55	9,322	25,892	1.0000	1.0117
2024.....	102.92	67,055.34	9,613	26,696	1.0347	1.0352
2025.....	104.83	69,534.32	9,974	27,746	1.0650	1.0589
2026.....	106.72	71,952.76	10,360	28,771	1.0951	1.0831
2027.....	108.64	74,431.84	10,727	29,762	1.1282	1.1083
2028.....	110.60	76,626.52	11,038	30,614	1.1641	1.1346
2029.....	112.59	78,738.96	11,334	31,452	1.2018	1.1619
2030.....	114.61	80,892.11	11,623	32,320	1.2413	1.1911
2031.....	116.68	83,098.17	11,914	33,222	1.2835	1.2216
2032.....	118.78	85,191.64	12,189	34,138	1.3290	1.2601
2035.....	125.31	91,526.06	13,149	37,070	1.4792	1.4026
2040.....	137.00	103,154.86	14,877	42,423	1.7680	1.6765
2045.....	149.78	116,129.77	16,748	48,300	2.1134	2.0039
2050.....	163.75	130,383.43	18,799	54,825	2.5261	2.3952
2055.....	179.03	146,212.61	21,086	62,192	3.0194	2.8630
2060.....	195.74	163,914.93	23,657	70,544	3.6092	3.4222
2065.....	214.00	183,892.10	26,514	79,912	4.3140	4.0906
2070.....	233.96	206,377.12	29,646	90,302	5.1566	4.8895
2075.....	255.79	231,654.52	33,081	101,834	6.1637	5.8444
2080.....	279.66	260,139.82	36,896	114,766	7.3674	6.9858
2085.....	305.75	292,107.05	41,212	129,504	8.8063	8.3501
2090.....	334.28	328,026.09	46,140	146,448	10.5262	9.9810
2095.....	365.46	368,262.47	51,724	165,801	12.5820	11.9303
2100.....	399.56	413,333.48	57,994	187,740	15.0393	14.2603

[a] CPI-W indexed to calendar year 2023.
[b] Total earnings subject to OASDI contribution rates, adjusted to reflect the lower effective contribution rates (compared to the combined employee-employer rate) that apply to multiple-employer "excess wages."
[c] For each alternative, incorporates the average of the assumed annual yield for special public-debt obligations issuable to the trust funds in the 12 months of the prior year.
[d] For each alternative, incorporates the annual effective yield for all outstanding special public-debt obligations held by the trust fund, with a half-year's interest effect in each row. The effective yield for a period equals total interest earned during the period divided by the total exposure to interest on asset reserves and all income and cost items during the period. The reciprocals of the factors approximate the discounting/accumulation factors that are used to calculate summarized rates and balances in this report.

Table VI.G7 shows the operations of the combined OASI and DI Trust Funds in CPI-indexed 2023 dollars—that is, adjusted by the CPI indexing series as discussed above. The following items are presented in the table: (1) non-interest income, (2) interest income, (3) total income, (4) cost, and (5) asset reserves at the end of the year. Non-interest income consists of payroll tax contributions, income from taxation of scheduled OASDI benefits, and any reimbursements from the General Fund of the Treasury. Cost consists of scheduled benefits, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. Table VI.G7 shows trust fund operations under the intermediate, low-cost, and high-cost sets of assumptions.

Table VI.G7.—Operations of the Combined OASI and DI Trust Funds, in CPI-Indexed 2023 Dollars,[a] Calendar Years 2023-2100
[In billions]

Calendar year	Non-interest income	Interest income	Total income	Cost[b]	Asset reserves at end of year[b]
Intermediate:					
2023	$1,269.0	$65.7	$1,334.7	$1,387.9	$2,776.7
2024	1,255.0	62.4	1,317.4	1,448.0	2,577.6
2025	1,293.2	58.6	1,351.8	1,499.5	2,369.5
2026	1,331.5	55.8	1,387.3	1,550.7	2,150.6
2027	1,361.1	53.0	1,414.2	1,598.9	1,915.4
2028	1,390.1	49.3	1,439.4	1,646.7	1,663.3
2029	1,418.1	44.5	1,462.6	1,693.7	1,393.2
2030	1,444.9	38.8	1,483.7	1,739.3	1,105.0
2031	1,472.7	31.9	1,504.6	1,783.8	800.0
2032[c]	1,497.7	23.7	1,521.3	1,826.6	476.0
Low-cost:					
2023	1,277.3	67.4	1,344.8	1,386.0	2,788.7
2024	1,294.7	67.1	1,361.8	1,432.8	2,635.9
2025	1,351.5	67.6	1,419.1	1,479.1	2,499.0
2026	1,407.8	70.4	1,478.3	1,524.9	2,379.6
2027	1,452.7	74.4	1,527.2	1,567.4	2,270.1
2028	1,497.9	78.1	1,575.9	1,609.4	2,170.4
2029	1,542.2	81.3	1,623.5	1,651.5	2,079.2
2030	1,585.9	84.6	1,670.5	1,692.7	1,996.5
2031	1,630.8	88.3	1,719.1	1,733.3	1,924.1
2032	1,673.1	91.5	1,764.6	1,773.1	1,859.5
2035	1,788.0	93.5	1,881.5	1,893.3	1,673.8
2040	1,988.7	80.7	2,069.4	2,088.9	1,362.2
2045	2,215.9	67.0	2,282.9	2,288.0	1,118.0
2050	2,483.7	59.8	2,543.6	2,533.9	987.0
2055	2,794.7	55.1	2,849.8	2,847.0	893.2
2060	3,148.5	43.8	3,192.3	3,235.4	661.5
2065	3,542.4	20.6	3,562.9	3,656.1	220.0
2070	[d]	[d]	[d]	[d]	[d]
2075	[d]	[d]	[d]	[d]	[d]
2080	[d]	[d]	[d]	[d]	[d]
2085	[d]	[d]	[d]	[d]	[d]
2090	[d]	[d]	[d]	[d]	[d]
2095	7,361.7	93.8	7,455.5	6,923.4	1,719.1
2100	8,324.1	243.3	8,567.4	7,917.5	4,367.9
High-cost:					
2023	1,250.6	65.4	1,316.0	1,390.0	2,755.9
2024	1,197.1	59.3	1,256.3	1,458.1	2,476.0
2025	1,238.4	52.5	1,290.9	1,525.9	2,195.8
2026	1,274.7	46.7	1,321.4	1,582.3	1,896.1
2027	1,298.7	40.7	1,339.5	1,636.6	1,565.4
2028	1,317.4	33.0	1,350.5	1,690.4	1,197.9
2029	1,333.1	24.5	1,357.6	1,742.7	791.6
2030[c]	1,346.7	15.3	1,362.0	1,793.7	346.0

[a] CPI-indexed 2023 dollars equal current dollars adjusted by the CPI indexing series in table VI.G6.
[b] Benefit payments which were scheduled to be paid on January 3 for some past and future years were actually paid on December 31 as required by the statutory provision for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. For comparability with the values for historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment each year.
[c] The combined OASI and DI Trust Funds become depleted in 2034 under the intermediate assumptions and in 2031 under the high-cost assumptions, so estimates for later years are not shown.
[d] The combined OASI and DI Trust Funds become depleted in 2067 under the low-cost assumptions, but combined asset reserves become positive again by the beginning of 2093 and remain positive through the remainder of the projection period. Estimates are not shown for years in which asset reserves are negative.

Note: Components may not sum to totals because of rounding.

Figure VI.G1 compares annual cost with annual total income and annual non-interest income. The figure shows only the OASDI program under intermediate assumptions, and presents values in CPI-indexed 2023 dollars, consistent with table VI.G7. The difference between the income values for each year is equal to the trust fund interest earnings. The figure illustrates that, under intermediate assumptions, annual cost exceeds both total income and non-interest income for 2023 through 2034, when trust fund reserves become depleted. Estimates after reserve depletion are not shown. For 2023 through 2033 (the year preceding the year of trust fund reserve depletion), annual cost is covered by drawing down combined trust fund reserves. Note that income for 2023 is relatively high because of an estimated large positive adjustment to payroll tax contributions to be made in June 2023.

Figure VI.G1.—Estimated OASDI Income and Cost in CPI-Indexed 2023 Dollars, Based on Intermediate Assumptions
[In billions]

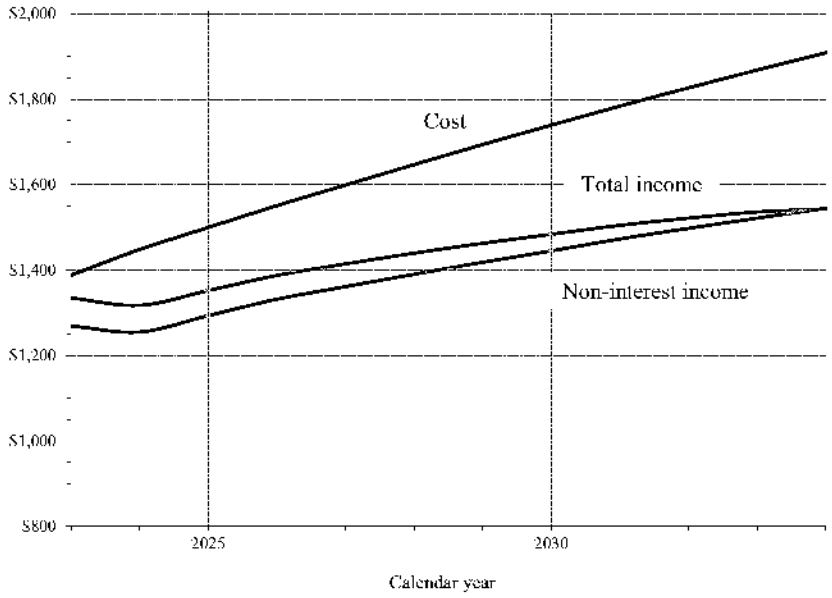


Table VI.G8 presents the operations of the combined OASI and DI Trust Funds in current, or nominal, dollars—that is, in dollars unadjusted for inflation. The following items are presented in the table: (1) non-interest income, (2) interest income, (3) total income, (4) cost, and (5) asset reserves at the end of the year. These estimates are presented using the intermediate, low-cost, and high-cost sets of demographic and economic assumptions to facilitate independent analysis.

Table VI.G8.—Operations of the Combined OASI and DI Trust Funds, in Current Dollars, Calendar Years 2023-2100
[In billions]

Calendar year	Non-interest income	Interest income	Total income	Cost[a]	Asset reserves at end of year[a]
Intermediate:					
2023	$1,269.0	$65.7	$1,334.7	$1,387.9	$2,776.7
2024	1,286.7	64.0	1,350.7	1,484.6	2,642.8
2025	1,357.7	61.6	1,419.3	1,574.3	2,487.7
2026	1,431.5	60.0	1,491.5	1,667.2	2,312.0
2027	1,498.5	58.4	1,556.9	1,760.2	2,108.7
2028	1,567.0	55.6	1,622.7	1,856.3	1,875.1
2029	1,637.0	51.4	1,688.4	1,955.2	1,608.3
2030	1,707.9	45.9	1,753.9	2,056.0	1,306.2
2031	1,782.6	38.6	1,821.3	2,159.1	968.3
2032[b]	1,856.3	29.3	1,885.7	2,264.1	589.9
Low-cost:					
2023	1,277.3	67.4	1,344.8	1,386.0	2,788.7
2024	1,333.9	69.1	1,403.0	1,476.1	2,715.6
2025	1,434.1	71.7	1,505.8	1,569.6	2,651.8
2026	1,538.8	77.0	1,615.7	1,666.7	2,600.9
2027	1,635.5	83.8	1,719.2	1,764.5	2,555.6
2028	1,736.8	90.5	1,827.4	1,866.2	2,516.7
2029	1,841.9	97.1	1,939.0	1,972.4	2,483.3
2030	1,950.9	104.1	2,055.1	2,082.3	2,456.0
2031	2,066.4	111.8	2,178.2	2,196.2	2,438.0
2032	2,183.6	119.4	2,302.9	2,314.1	2,426.8
2035	2,549.9	133.3	2,683.2	2,700.0	2,387.0
2040	3,287.8	133.5	3,421.2	3,453.5	2,252.0
2045	4,246.9	128.5	4,375.4	4,385.2	2,142.8
2050	5,518.4	132.9	5,651.4	5,629.9	2,192.9
2055	7,198.4	142.0	7,340.3	7,332.9	2,300.5
2060	9,401.2	130.7	9,531.9	9,660.7	1,975.2
2065	12,262.0	71.2	12,333.2	12,655.7	761.5
2070	[c]	[c]	[c]	[c]	[c]
2075	[c]	[c]	[c]	[c]	[c]
2080	[c]	[c]	[c]	[c]	[c]
2085	[c]	[c]	[c]	[c]	[c]
2090	[c]	[c]	[c]	[c]	[c]
2095	61,853.4	788.2	62,641.7	58,170.7	14,443.6
2100	81,078.6	2,369.9	83,448.5	77,118.8	42,544.3
High-cost:					
2023	1,250.6	65.4	1,316.0	1,390.0	2,755.9
2024	1,232.0	61.0	1,293.0	1,500.7	2,548.2
2025	1,298.2	55.1	1,353.3	1,599.6	2,301.9
2026	1,360.4	49.8	1,410.2	1,688.7	2,023.5
2027	1,411.0	44.2	1,455.2	1,778.0	1,700.7
2028	1,457.1	36.5	1,493.6	1,869.5	1,324.8
2029	1,500.9	27.6	1,528.5	1,962.0	891.3
2030[b]	1,543.5	17.6	1,561.1	2,055.8	396.5

[a] Benefit payments which were scheduled to be paid on January 3 for some past and future years were actually paid on December 31 as required by the statutory provision for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. For comparability with the values for historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment each year.

[b] The combined OASI and DI Trust Funds become depleted in 2034 under the intermediate assumptions and in 2031 under the high-cost assumptions, so estimates for later years are not shown.

[c] The combined OASI and DI Trust Funds become depleted in 2067 under the low-cost assumptions, but combined asset reserves become positive again by the beginning of 2093 and remain positive through the remainder of the projection period. Estimates are not shown for years in which asset reserves are negative.

Note: Components may not sum to totals because of rounding.

Table VI.G9 presents values in CPI-indexed 2023 dollars—that is, adjusted by the CPI indexing series discussed at the beginning of this section. This table contains the annual non-interest income and cost of the combined OASI and DI Trust Funds, of the HI Trust Fund, and of the combined OASI, DI, and HI Trust Funds, based on the intermediate, low-cost, and high-cost sets of assumptions. For OASDI, non-interest income consists of payroll tax contributions, proceeds from taxation of scheduled OASDI benefits, and any reimbursements from the General Fund of the Treasury. Cost consists of scheduled benefits, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. For HI, non-interest income consists of payroll tax contributions (including contributions from railroad employment), up to an additional 0.9 percent tax on earned income for relatively high earners, proceeds from the taxation of scheduled OASDI benefits, premium revenues, monies from fraud and abuse control activities, and any reimbursements from the General Fund of the Treasury. Total cost consists of scheduled benefits and administrative expenses. The Trustees show income and cost estimates generally on a cash basis for the OASDI program[1] and on an incurred basis for the HI program. Table VI.G9 also shows the annual balance, which equals the difference between non-interest income and cost.

[1] OASDI benefits paid for entitlement for a particular month are generally paid in the succeeding month. There are two primary exceptions to this general rule. First, payments can occur with a greater delay when a benefit award is made after the month of initial benefit entitlement. At the time of benefit award, benefits owed for months of prior entitlement are then also paid to the beneficiary. For the projections in this report, such retroactive payments are included in the period where they are paid (at time of award). Second, when benefit payments scheduled for January 3 are paid on the prior December 31, because January 3 falls on a Sunday, such payments are shown in this report for the period they were scheduled to be paid.

Table VI.G9.—OASDI and III Annual Non-Interest Income, Cost, and Balance in CPI-Indexed 2023 Dollars,[a] Calendar Years 2023-2100
[In billions]

Calendar year	OASDI			III			Combined		
	Non-interest income	Cost[b]	Balance[b]	Non-interest income	Cost	Balance	Non-interest income	Cost[b]	Balance[b]
Intermediate:									
2023	$1,269	$1,388	-$119	$407	$404	$3	$1,676	$1,792	-$116
2024	1,255	1,448	-193	416	413	3	1,671	1,861	-190
2025	1,293	1,500	-206	428	434	-6	1,721	1,934	-213
2026	1,332	1,551	-219	447	456	-9	1,778	2,006	-228
2027	1,361	1,599	-238	460	479	-20	1,821	2,078	-257
2028	1,390	1,647	-257	472	503	-31	1,862	2,150	-288
2029	1,418	1,694	-276	484	528	-44	1,902	2,222	-320
2030	1,445	1,739	-294	496	551	-54	1,941	2,290	-349
2031	1,473	1,784	-311	509	574	-64	1,982	2,357	-375
2032	1,498	1,827	-329	522	598	-76	2,019	2,425	-405
2035	1,568	1,948	-379	554	665	-111	2,122	2,613	-491
2040	1,685	2,127	-442	607	748	-141	2,292	2,875	-582
2045	1,808	2,291	-483	662	818	-156	2,470	3,109	-639
2050	1,945	2,480	-535	723	882	-159	2,668	3,363	-694
2055	2,098	2,709	-611	794	947	-153	2,891	3,656	-765
2060	2,266	2,985	-719	872	1,022	-149	3,138	4,006	-868
2065	2,445	3,275	-829	957	1,108	-151	3,402	4,383	-981
2070	2,635	3,579	-944	1,047	1,204	-157	3,682	4,783	-1,101
2075	2,840	3,901	-1,061	1,144	1,303	-159	3,984	5,204	-1,220
2080	3,065	4,209	-1,144	1,248	1,401	-153	4,313	5,610	-1,297
2085	3,315	4,498	-1,183	1,362	1,500	-138	4,677	5,997	-1,321
2090	3,591	4,791	-1,200	1,486	1,602	-116	5,077	6,393	-1,316
2095	3,892	5,153	-1,260	1,622	1,709	-88	5,514	6,862	-1,348
2100	4,216	5,604	-1,388	1,769	1,815	-46	5,985	7,419	-1,434
Low-cost:									
2023	1,277	1,386	-109	411	397	14	1,688	1,782	-94
2024	1,295	1,433	-138	427	399	29	1,722	1,831	-109
2025	1,351	1,479	-128	447	417	30	1,799	1,897	-98
2026	1,408	1,525	-117	470	434	36	1,878	1,959	-81
2027	1,453	1,567	-115	486	450	36	1,939	2,017	-78
2028	1,498	1,609	-112	502	466	36	2,000	2,075	-76
2029	1,542	1,651	-109	518	483	35	2,060	2,134	-74
2030	1,586	1,693	-107	535	497	38	2,121	2,190	-69
2031	1,631	1,733	-103	552	511	42	2,183	2,244	-61
2032	1,673	1,773	-100	569	525	44	2,242	2,298	-56
2035	1,788	1,893	-105	618	562	56	2,406	2,455	-49
2040	1,989	2,089	-100	703	592	111	2,692	2,681	11
2045	2,216	2,288	-72	799	609	190	3,015	2,897	117
2050	2,484	2,534	-50	912	623	290	3,396	3,157	240
2055	2,795	2,847	-52	1,046	644	402	3,841	3,491	350
2060	3,148	3,235	-87	1,200	684	516	4,348	3,919	430
2065	3,542	3,656	-114	1,371	745	627	4,914	4,401	513
2070	3,980	4,109	-129	1,562	831	731	5,542	4,939	603
2075	4,478	4,604	-125	1,778	939	839	6,256	5,542	714
2080	5,055	5,103	-48	2,024	1,057	967	7,079	6,160	919
2085	5,727	5,601	125	2,308	1,186	1,122	8,035	6,788	1,248
2090	6,496	6,160	337	2,634	1,327	1,307	9,130	7,487	1,643
2095	7,362	6,923	438	3,007	1,480	1,527	10,368	8,403	1,965
2100	8,324	7,918	407	3,429	1,571	1,858	11,753	9,489	2,265

Table VI.G9.—OASDI and HI Annual Non-Interest Income, Cost, and Balance in CPI-Indexed 2023 Dollars,[a] Calendar Years 2023-2100 (Cont.)
[In billions]

Calendar year	OASDI			HI			Combined		
	Non-interest income	Cost[b]	Balance[b]	Non-interest income	Cost	Balance	Non-interest income	Cost[b]	Balance[b]
High-cost:									
2023	$1,251	$1,390	-$139	$396	$410	-$14	$1,646	$1,800	-$153
2024	1,197	1,458	-261	399	425	-25	1,596	1,883	-286
2025	1,238	1,526	-288	412	454	-42	1,651	1,980	-329
2026	1,275	1,582	-308	432	486	-54	1,707	2,068	-361
2027	1,299	1,637	-338	444	519	-75	1,743	2,156	-413
2028	1,317	1,690	-373	454	552	-98	1,771	2,242	-471
2029	1,333	1,743	-410	463	586	-123	1,796	2,328	-533
2030	1,347	1,794	-447	472	617	-145	1,819	2,410	-592
2031	1,360	1,844	-483	482	649	-167	1,842	2,493	-651
2032	1,371	1,892	-521	491	684	-193	1,862	2,576	-714
2035	1,407	2,019	-612	511	787	-276	1,918	2,805	-888
2040	1,463	2,198	-734	541	935	-394	2,005	3,133	-1,128
2045	1,512	2,348	-836	568	1,082	-514	2,080	3,430	-1,350
2050	1,559	2,504	-945	594	1,231	-636	2,153	3,734	-1,581
2055	1,606	2,673	-1,067	622	1,362	-740	2,228	4,035	-1,807
2060	1,656	2,862	-1,206	653	1,484	-832	2,309	4,346	-2,038
2065	1,706	3,048	-1,342	683	1,592	-909	2,388	4,640	-2,252
2070	1,752	3,233	-1,481	712	1,672	-960	2,464	4,906	-2,441
2075	1,797	3,418	-1,621	740	1,719	-978	2,537	5,137	-2,599
2080	1,840	3,579	-1,739	768	1,748	-980	2,608	5,327	-2,719
2085	1,884	3,707	-1,824	795	1,766	-971	2,678	5,473	-2,795
2090	1,930	3,804	-1,874	821	1,781	-959	2,751	5,585	-2,834
2095	1,978	3,891	-1,913	848	1,797	-948	2,827	5,688	-2,861
2100	2,029	3,993	-1,964	878	1,900	-1,023	2,907	5,893	-2,986

[a] CPI-indexed 2023 dollars equal current dollars adjusted by the CPI indexing series in table VI.G6.
[b] OASDI benefit payments which were scheduled to be paid on January 3 for some past and future years were actually paid on December 31 as required by the statutory provision for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. For comparability with the values for historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment each year.

Note: Components may not sum to totals because of rounding.

Table VI.G10 shows values in current, or nominal, dollars—that is, in dollars unadjusted for inflation. This table presents the annual non-interest income, cost, and balance of the combined OASI and DI Trust Funds, of the HI Trust Fund, and of the combined OASI, DI, and HI Trust Funds, based on the intermediate, low-cost, and high-cost sets of assumptions.

Table VI.G10.—OASDI and HI Annual Non-Interest Income, Cost, and Balance in Current Dollars, Calendar Years 2023-2100
[In billions]

Calendar year	OASDI			HI			Combined		
	Non-interest income	Cost[a]	Balance[a]	Non-interest income	Cost	Balance	Non-interest income	Cost[a]	Balance[a]
Intermediate:									
2023	$1,269	$1,388	-$119	$407	$404	$3	$1,676	$1,792	-$116
2024	1,287	1,485	-198	426	423	3	1,713	1,908	-195
2025	1,358	1,574	-217	449	456	-7	1,807	2,030	-223
2026	1,432	1,667	-236	480	490	-10	1,912	2,157	-245
2027	1,498	1,760	-262	506	528	-22	2,004	2,288	-283
2028	1,567	1,856	-289	532	567	-35	2,099	2,423	-325
2029	1,637	1,955	-318	558	610	-51	2,195	2,565	-369
2030	1,708	2,056	-348	587	651	-64	2,295	2,707	-412
2031	1,783	2,159	-377	616	694	-78	2,399	2,853	-454
2032	1,856	2,264	-408	647	741	-95	2,503	3,005	-502
2035	2,087	2,592	-505	738	886	-148	2,825	3,477	-653
2040	2,525	3,187	-662	910	1,121	-211	3,435	4,308	-872
2045	3,051	3,866	-815	1,117	1,380	-264	4,168	5,246	-1,079
2050	3,695	4,712	-1,017	1,374	1,676	-302	5,069	6,388	-1,319
2055	4,486	5,794	-1,308	1,697	2,025	-328	6,183	7,819	-1,635
2060	5,456	7,187	-1,731	2,100	2,460	-360	7,556	9,647	-2,091
2065	6,629	8,878	-2,248	2,594	3,004	-410	9,224	11,882	-2,658
2070	8,044	10,925	-2,881	3,196	3,675	-479	11,239	14,599	-3,360
2075	9,760	13,405	-3,645	3,931	4,478	-547	13,691	17,883	-4,192
2080	11,859	16,286	-4,427	4,829	5,422	-593	16,689	21,708	-5,020
2085	14,442	19,594	-5,153	5,932	6,533	-601	20,374	26,127	-5,754
2090	17,615	23,499	-5,884	7,287	7,858	-571	24,902	31,357	-6,455
2095	21,496	28,457	-6,961	8,955	9,438	-483	30,451	37,895	-7,444
2100	26,211	34,844	-8,633	11,001	11,286	-285	37,213	46,131	-8,918
Low-cost:									
2023	1,277	1,386	-109	411	397	14	1,688	1,782	-94
2024	1,334	1,476	-142	440	411	29	1,774	1,887	-113
2025	1,434	1,570	-135	474	443	31	1,909	2,013	-104
2026	1,539	1,667	-128	514	474	40	2,053	2,141	-88
2027	1,635	1,765	-129	547	507	41	2,183	2,271	-88
2028	1,737	1,866	-129	582	540	42	2,319	2,407	-88
2029	1,842	1,972	-131	619	577	42	2,461	2,549	-89
2030	1,951	2,082	-131	658	611	47	2,609	2,694	-84
2031	2,066	2,196	-130	700	647	53	2,766	2,843	-77
2032	2,184	2,314	-131	743	685	57	2,926	3,000	-73
2035	2,550	2,700	-150	881	801	80	3,431	3,501	-70
2040	3,288	3,453	-166	1,162	978	184	4,450	4,432	18
2045	4,247	4,385	-138	1,531	1,168	363	5,778	5,553	225
2050	5,518	5,630	-111	2,027	1,384	644	7,546	7,014	532
2055	7,198	7,333	-135	2,695	1,658	1,036	9,893	8,991	902
2060	9,401	9,661	-259	3,583	2,041	1,542	12,984	11,702	1,283
2065	12,262	12,656	-394	4,747	2,578	2,169	17,009	15,234	1,775
2070	15,973	16,488	-516	6,268	3,333	2,935	22,241	19,821	2,419
2075	20,833	21,416	-583	8,270	4,367	3,902	29,102	25,783	3,319
2080	27,261	27,518	-257	10,917	5,702	5,215	38,177	33,220	4,958
2085	35,803	35,020	783	14,432	7,416	7,017	50,235	42,435	7,799
2090	47,084	44,643	2,441	19,090	9,620	9,470	66,174	54,263	11,911
2095	61,853	58,171	3,683	25,262	12,434	12,828	87,115	70,605	16,510
2100	81,079	77,119	3,960	33,401	15,303	18,097	114,479	92,422	22,057

Table VI.G10.—OASDI and HI Annual Non-Interest Income, Cost, and Balance in Current Dollars, Calendar Years 2023-2100 (Cont.)
[In billions]

Calendar year	OASDI			HI			Combined		
	Non-interest income	Cost[a]	Balance[a]	Non-interest income	Cost	Balance	Non-interest income	Cost[a]	Balance[a]
High-cost:									
2023	$1,251	$1,390	-$139	$396	$410	-$14	$1,646	$1,800	-$153
2024	1,232	1,501	-269	411	437	-26	1,643	1,938	-295
2025	1,298	1,600	-301	432	476	-44	1,731	2,076	-345
2026	1,360	1,689	-328	461	518	-58	1,821	2,207	-386
2027	1,411	1,778	-367	483	564	-81	1,894	2,342	-448
2028	1,457	1,869	-412	502	610	-109	1,959	2,480	-521
2029	1,501	1,962	-461	521	659	-139	2,022	2,621	-600
2030	1,543	2,056	-512	541	707	-166	2,085	2,763	-678
2031	1,587	2,151	-564	562	757	-195	2,149	2,908	-759
2032	1,629	2,247	-618	583	812	-229	2,211	3,059	-848
2035	1,763	2,530	-766	640	986	-346	2,403	3,515	-1,112
2040	2,005	3,011	-1,006	742	1,281	-539	2,746	4,292	-1,545
2045	2,265	3,517	-1,252	851	1,621	-770	3,116	5,138	-2,022
2050	2,552	4,100	-1,548	974	2,015	-1,042	3,526	6,115	-2,590
2055	2,875	4,785	-1,910	1,114	2,439	-1,325	3,989	7,224	-3,235
2060	3,241	5,602	-2,360	1,277	2,906	-1,628	4,519	8,507	-3,989
2065	3,650	6,523	-2,873	1,461	3,407	-1,946	5,111	9,929	-4,819
2070	4,100	7,565	-3,465	1,666	3,913	-2,247	5,766	11,477	-5,712
2075	4,596	8,743	-4,146	1,894	4,397	-2,503	6,490	13,139	-6,649
2080	5,145	10,008	-4,863	2,148	4,889	-2,741	7,293	14,897	-7,605
2085	5,759	11,336	-5,577	2,430	5,399	-2,969	8,189	16,735	-8,546
2090	6,451	12,717	-6,266	2,746	5,953	-3,207	9,197	18,670	-9,473
2095	7,230	14,222	-6,992	3,101	6,566	-3,465	10,331	20,788	-10,456
2100	8,108	15,954	-7,846	3,507	7,593	-4,086	11,615	23,547	-11,931

[a] OASDI benefit payments which were scheduled to be paid on January 3 for some past and future years were actually paid on December 31 as required by the statutory provision for early delivery of benefit payments when the normal payment delivery date is a Saturday, Sunday, or legal public holiday. For comparability with the values for historical years and the projections in this report, all trust fund operations and asset reserves reflect the 12 months of benefits scheduled for payment each year.

Note: Components may not sum to totals because of rounding.

H. ANALYSIS OF BENEFIT PAYMENTS FROM THE OASI TRUST FUND WITH RESPECT TO DISABLED BENEFICIARIES

(Required by section 201(c) of the Social Security Act)

Effective January 1957, the OASI Trust Fund pays monthly benefits to disabled children aged 18 and over of retired and deceased workers if the disability began before age 18. The age by which disability must have begun was later changed to age 22. Effective February 1968, the OASI Trust Fund pays reduced monthly benefits to disabled widows and widowers at ages 50 and over. Effective January 1991, the requirements for the disability of the widow or widower were made less restrictive.

At the end of 2022, the OASI Trust Fund was providing monthly benefit payments to about 1,128,000 people because of their disabilities or the disabilities of children. This total includes approximately 21,000 mothers and fathers (wives or husbands under normal retirement age of retired-worker beneficiaries and widows or widowers of deceased insured workers) who met all other qualifying requirements and were receiving unreduced benefits solely because they had disabled-child beneficiaries (or disabled children aged 16 or 17) in their care. In calendar year 2022, the OASI Trust Fund paid a total of $13,266 million to the people described above. Table VI.H1 shows OASI scheduled benefits for disability for selected calendar years during 1960 through 2022 and estimates for 2023 through 2032 based on the intermediate set of assumptions.

Table VI.H1.—Scheduled Benefit Payments From the OASI Trust Fund With Respect to Disabled Beneficiaries

[Beneficiaries in thousands; scheduled benefits in millions]

Calendar year	Disabled beneficiaries, end of year			Amount of scheduled benefits[a, b]		
	Total	Children[c]	Widows-widowers[d]	Total	Children[c]	Widows-widowers[c]
Historical data:						
1960	117	117		$59	$59	
1965	214	214		134	134	
1970	316	281	36	301	260	$41
1975	435	376	58	664	560	104
1980	519	460	59	1,223	1,097	126
1985	594	547	47	2,072	1,885	187
1990	662	613	49	2,882	2,649	233
1995	772	681	91	4,202	3,672	531
2000	811	707	104	5,203	4,523	680
2005	836	728	108	6,449	5,556	834
2010	996	879	117	8,671	7,662	1,008
2015	1,096	972	124	10,640	9,528	1,109
2016	1,109	988	121	10,909	9,818	1,087
2017	1.124	1.006	117	11.222	10.156	1.061
2018	1.139	1.027	112	11.767	10.729	1.031
2019	1.144	1.041	103	12.148	11.152	983
2020	1,147	1,051	95	12,351	11,403	934
2021	1,136	1,050	86	12,453	11,578	861
2022	1,128	1,051	78	13,266	12,414	829
Estimates under the intermediate assumptions:						
2023	1,141	1,069	71	14,514	13,669	822
2024	1.153	1.084	69	15.265	14.419	822
2025	1.170	1.102	68	15.939	15.088	826
2026	1.189	1.121	68	16.706	15.828	853
2027	1,209	1,140	69	17,515	16,606	883
2028	1.227	1.157	70	18.343	17.395	921
2029	1.246	1.177	69	19.204	18.224	952
2030	1.264	1.196	68	20.081	19.092	960
2031	1,284	1,216	68	21,006	19,989	987
2032	1,305	1,236	69	21,996	20,938	1,028

[a] Beginning in 1966, includes payments for vocational rehabilitation services.

[b] Amounts for 2020 and 2021 are adjusted to include in 2021 operations those benefit payments regularly scheduled in the law to be paid on January 3, 2021, which were actually paid on December 31, 2020 as required by the statutory provision for early benefit payments when the normal delivery date is on a weekend or holiday. Such shifts in payments across calendar years have occurred in the past, including in 2016, and will occur periodically in the future whenever January 3rd falls on a Sunday. In order to provide a consistent perspective on trust fund operations over time, all trust fund operations in each year reflect the 12 months of benefits that are regularly scheduled for payment in that year.

[c] Also includes certain mothers and fathers (see text).

[d] In 1984 and later years, includes only disabled widows and widowers aged 50-59, because disabled widows and widowers age 60 and older are eligible for the same benefit as a nondisabled aged widow or widower. Therefore, they are not receiving benefits solely because of a disability.

[e] In 1983 and prior years, includes the offsetting effect of lower benefits payable to disabled widows and widowers who continued to receive benefits after attaining age 60 (62, for disabled widowers prior to 1973), compared to the higher nondisabled widow's and widower's benefits that would otherwise be payable. In 1984 and later years, includes only scheduled benefits to disabled widows and widowers aged 50-59 (see footnote d).

Note: Components may not sum to totals because of rounding.