Reference has been made in earlier sections to the financial interchanges between the railroad retirement account and the two trust funds under the provisions of the Railroad Retirement Act. The estimates shown in tables 13, 14, 17, and 18 reflect the effect of future financial interchanges.

Reference has also been made previously to the provision in the 1965 amendments authorizing expenditures from the old-age and survivors insurance and disability insurance trust funds for the cost of vocational rehabilitation services. The estimates in tables 13–19 reflect the effect of such future expenditures.

Section 217(g) of the Social Security Act, as amended by the 1965 amendments, provides that the old-age and survivors insurance trust fund and the disability insurance trust fund shall be reimbursed from general revenues for past and future expenditures resulting from the provisions that granted noncontributory $160 monthly wage credits to persons who served in the Armed Forces at some time during the period September 16, 1940 through December 31, 1956, and from the provisions enacted in 1946 that granted survivor protection to certain World War II veterans for a period of 3 years after leaving service. A description of the legislative history of provisions relating to credit for military service, including the provisions for reimbursement for the additional costs arising from payments made before September 1950, is contained in appendix II.

The estimated total additional costs arising from payments that have been made after August 1950 and that will be made in future years are intended to be amortized by level annual appropriations to the trust funds over a 50-year period beginning in fiscal year 1966 according to a determination made by the Secretary of Health, Education, and Welfare in September 1965. (The annual amount of this determination for the old-age and survivors insurance trust fund was $87.4 million, and for the disability insurance trust fund, $18.4 million.) Periodically, the estimated amounts of annual payment will be refigured to reflect actual costs incurred and revision in the future estimates.

The Budget of the United States Government for the fiscal year 1967 makes provision for appropriations initiating these reimbursements (for both fiscal years 1966 and 1967, at $78 million each year for the old-age and survivors insurance trust fund and $16 million each year for the disability insurance trust fund). The estimates shown in the various tables in this section reflect the effect of these future annual reimbursements, beginning in fiscal year 1966.

ACTUARIAL STATUS OF THE TRUST FUNDS

Old-age, survivors, and disability insurance benefit payments will increase for many years—not only in dollars but also as a percentage of taxable payroll. Long-range estimates are needed, therefore, to show how much the cost is likely to increase and to indicate whether the scheduled tax rates are adequate.

The cost of benefits to aged persons, which constitute almost 85 percent of the total cost, will rise for several reasons. The U.S. population will, in the long run, almost certainly become relatively much older on the average. A relatively older population will tend to result from the fact that the present aged population is made up of

the survivors from past periods when death rates were much higher than they are now. Another such factor is that, after the turn of the century, the larger birth cohorts of the 1940's, 1950's, and 1960's will be attaining retirement age. Thus, in the future, relatively more persons, both in total and in each cohort, will attain age 65 and older ages.

The cost of the program is closely related to the ratio of the population aged 65 and over (potential beneficiaries) to the population aged 20–64 (potential contributors). On June 30, 1965, this ratio was 18.2 percent. In a stationary population that would result if the death rates of the U.S. Life Tables for 1959–61 were applied to a constant annual number of births the ratio would be 25.4 percent, but such a situation is not likely to occur within the next century. Ultimately this ratio may become even greater than 25 percent because decreases in mortality below present rates would, in a stationary population, have the effect of increasing the proportion at the oldest ages.

Another reason for the increasing cost is that the proportion of the aged population eligible for and receiving benefits will increase. Some of the present persons aged 65 and over were not in covered employment long enough to obtain benefits, or, in the case of widows, their husbands were not sufficiently long in covered employment. Although the system began in 1937, many jobs were not covered until 1951 or 1955. It is estimated that the proportion of the aged population eligible for some type of benefit under the system will increase from the level of about 81 percent on June 30, 1965 to between 95 and 98 percent by the end of the century.

Since the long-term future cost of the old-age, survivors, and disability insurance program will be affected by many factors that are difficult to determine, the assumptions used in the actuarial cost estimates may differ widely and yet be reasonable. The long-term cost estimates for the program (shown for 1980 and thereafter) are presented here on a range basis to indicate the plausible variation in future costs depending on the actual trends that develop for the various cost factors. Both the low- and high-cost estimates are based on assumptions that represent close to full employment, with the average annual earnings remaining at about the level that prevailed in 1963. Each estimate provides data on taxable payroll and contributions and on beneficiaries and benefit payments for every future year. The data are presented here for selected future years.

It is considered likely, although by no means certain, that actual costs as a percentage of taxable payroll will lie between the low-cost and high-cost figures. Also, a single estimate of costs is needed as a guide in considering proposed legislation and developing tax schedules intended to make the system self-supporting. For these reasons, an intermediate-cost estimate is prepared, in which numbers of beneficiaries, amount of benefit payments, and taxable payrolls are taken halfway between the low-cost and high-cost figures. The intermediate percentage-of-payroll figures are obtained by dividing total benefit payments by taxable payroll, each on the intermediate basis, and are therefore not exactly equal to the average of low-cost and high-cost percentage-of-payroll figures.

Table 20 shows benefit-payment costs for selected years and the corresponding level-costs over the next 75 years, expressed as per-

centages of taxable payroll, under each of the three estimates.   The level-cost of the program on this basis is the constant combined employer-employee tax rate that, together with a tax on the self-employed of about 75 percent of such combined rate (in the 1965 Act a maximum self-employed tax rate of 7.0 percent was established), would exactly pay for future benefits and administrative expenses, after making allowance for the effect of the future interest earnings of the existing trust fund and for all other future interest earnings.   All percentage-of-payroll figures are adjusted so that they represent the tax rate that employees and employers combined, and the self-employed at three-quarters of the combined rate, would have to pay in any given year to meet exactly the disbursements in that year.

TABLE 20.—*Estimated costs of old-age, survivors, and disability insurance system as percent of payroll,*[1] *1963 level-earnings assumptions, 1980–2040*

[In percent]

Calendar year	Low-cost estimate	High-cost estimate	Intermediate-cost estimate [2]
OLD-AGE AND SURVIVORS INSURANCE BENEFITS			
1980	7.85	8.88	8.36
1985	8.17	9.72	8.91
1990	8.28	10.42	9.28
2000	7.64	10.51	8.94
2025	8.77	13.97	10.91
2040	9.95	15.01	11.95
Level-cost [3]	7.74	10.23	8.82
DISABILITY INSURANCE BENEFITS			
1980	0.57	0.71	0.64
1985	.56	.73	.64
1990	.54	.72	.62
2000	.54	.74	.63
2025	.61	.81	.70
2040	.65	.86	.73
Level-cost [3]	.60	.78	.67

[1] Taking into account the lower contribution rate for the self-employed, as compared with the combined employer-employee rate.
[2] Based on the averages of the dollar contributions and dollar costs under the low-cost and high-cost estimates.
[3] Level contribution rate. at an interest rate of 3.25 percent for high-cost, 3.50 percent for intermediate-cost, and 3.75 percent for low-cost, for benefits after 1964, taking into account interest on the trust fund on Dec. 31, 1964, future administrative expenses, the railroad retirement financial interchange provisions, reimbursement for additional cost of noncontributory credit for military service, and the lower contribution rates payable by the self-employed.

Tables 21 and 22 show, for each set of estimates, the contributions, benefit payments, administrative expenses, amount paid to or received from the railroad retirement system, and the balance in the trust funds for selected years.

TABLE 21.—*Estimated progress of old-age and survivors insurance trust fund, 1963 level earnings assumption* [1]

[In millions]

Calendar year	Contributions	Benefit payments	Administrative expenses	Financial interchange [2]	Interest on fund	Fund at end of year [3]
ACTUAL DATA						
1955	$5,713	$4,968	$119	$7	$454	$21,663
1956	6,172	5,715	132	5	526	22,519
1957	6,825	7,347	[4] 162	2	556	22,393
1958	7,566	8,327	[4] 194	−124	552	21,864
1959	8,052	9,842	184	−282	532	20,141
1960	10,866	10,677	203	−318	516	20,324
1961	11,285	11,862	239	−332	548	19,725
1962	12,059	13,356	256	−361	526	18,337
1963	14,541	14,217	281	−423	521	18,480
1964	15,689	14,914	296	−403	569	19,125
1965	16,017	16,737	328	−436	593	18,235
LOW-COST ESTIMATE						
1980	$32,080	$27,996	$398	−$105	$2,767	$81,283
1985	34,834	31,559	434	4	3,969	114,398
1990	37,965	34,882	469	52	5,316	151,886
2000	45,265	38,365	515	112	9,525	270,603
2025	60,287	58,766	731	147	34,610	963,886
HIGH-COST ESTIMATE						
1980	$30,129	$29,661	$464	−$155	$1,212	$40,370
1985	31,623	34,063	507	−46	1,124	37,080
1990	33,235	38,376	550	−7	537	18,064
2000	37,320	43,487	603	42	(5)	(5)
2025	42,190	65,470	807	67	(5)	(5)
INTERMEDIATE-COST ESTIMATE						
1980	$31,105	$28,828	$431	−$130	$1,895	$59,891
1985	33,228	32,811	470	−21	2,399	74,184
1990	35,600	36,629	510	23	2,689	82,433
2000	41,293	40,926	559	77	3,287	101,233
2025	51,238	62,118	769	107	4,476	132,792

[1] Interest rates of 3.25 percent for high-cost, 3.50 percent for intermediate-cost, and 3.75 percent for low-cost, were used in determining the level-cost, but in developing the progress of the trust fund, varying rates in the early years were used, which—when averaged over a long period of time—are equivalent to such fixed rates.

[2] A positive figure indicates payment to the trust fund from the railroad retirement account; a negative figure indicates the reverse.

[3] Not including amounts in the railroad retirement account to the credit of the old-age and survivors insurance trust fund. In millions of dollars, these amounted to $377 for 1953, $284 for 1954, $163 for 1955, $60 for 1956, and nothing for 1957 and thereafter.

[4] These figures are artificially high because of the method of reimbursements between this trust fund and the disability insurance trust fund (and, likewise, the figure for 1959 is too low).

[5] Fund exhausted in 1993.

NOTE.—Contributions include reimbursement for additional cost of noncontributory credit for military service.

TABLE 22.—*Estimated progress of disability insurance trust fund, 1963 level earnings assumption* [1]

[In millions]

Calendar year	Contribu-tions	Benefit payments	Adminis-trative expenses	Financial inter-change [2]	Interest on fund	Fund at end of year
ACTUAL DATA						
1957	$702	$57	[3] $3		$7	$649
1958	966	249	[3] 12		25	1,379
1959	891	457	50	$22	40	1,825
1960	1,010	568	36	5	53	2,289
1961	1,038	887	64	-5	66	2,437
1962	1,046	1,105	66	-11	68	2,368
1963	1,099	1,210	68	-20	66	2,235
1964	1,154	1,309	79	-19	64	2,047
1965	1,188	1,573	90	-24	59	1,606
LOW-COST ESTIMATE						
1980	$2,501	$2,050	$95	$15	$311	$8,986
1985	2,716	2,182	94	18	456	13,076
1990	2,960	2,283	94	18	655	18,647
2000	3,529	2,723	103	18	1,252	35,287
2025	4,702	4,126	146	18	3,917	109,004
HIGH-COST ESTIMATE						
1980	$2,250	$2,372	$117	$7	$36	$1,217
1985	2,466	2,558	120	8	2	330
1990	2,592	2,661	120	8	(4)	(4)
2000	2,911	3,091	137	8	(4)	(4)
2025	3,291	3,815	166	8	(4)	(4)
INTERMEDIATE-COST ESTIMATE						
1980	$2,425	$2,211	$106	$11	$166	$5,177
1985	2,591	2,370	107	13	219	6,780
1990	2,776	2,472	107	13	291	8,965
2000	3,220	2,907	120	13	509	15,443
2025	3,996	3,970	156	13	1,113	33,264

[1] Interest rates of 3.25 percent for high-cost, 3.50 percent for intermediate-cost, and 3.75 percent for low-cost were used in determining the level-cost, but in developing the progress of the trust fund, varying rates in the early years were used, which—when averaged over a long period of time—are equivalent to such fixed rates.

[2] A positive figure indicates payment to the trust fund from the railroad retirement account; a negative figure indicates the reverse.

[3] These figures are artificially low because of the method of reimbursements between the trust fund and the old-age and survivors insurance trust fund (and, likewise, the figure for 1959 is too high).

[4] Fund exhausted in 1986.

NOTE.—Contributions include reimbursement for additional cost of noncontributory credit for military service.

It should be emphasized that dollar figures projected for so many years into the future have only limited significance because of changes that are likely to occur in the general economy, as well as in the system itself. What is really the most significant are relative figures such as those in table 20, showing the benefit costs as a percentage of taxable payroll.

For old-age and survivors insurance, annual benefit payments as a percentage of payroll are less than or close to the scheduled tax rates in the early future years, but they eventually rise well above the ultimate combined employer-employee rate of 9.0 percent. For disability insurance the benefit payments are lower than the present combined employer-employee tax rate of 0.7 percent in the next 40 to 50 years.

To measure the extent to which the financing arrangements of the system result in a surplus or deficiency, a level rate equivalent to the actual increasing contribution rates has been computed, taking into account future interest. The level-equivalent rate of contributions minus the level-cost of benefit payments and administrative costs expressed as a percentage of taxable payroll (after making allowance for the interest-earning effect of the existing trust fund), gives the amount by which the contribution rate in all years would have to be changed to put the system in exact long-range balance according to the estimate. A negative figure would indicate that an increase in the tax rate is needed to make the system self-supporting.

The long-range balance of the system is shown by the following level-equivalent costs and contributions, expressed in percentages of taxable payroll, which are computed as of the beginning of calendar year 1965, at interest rates of 3.25 percent for high-cost, 3.50 percent for intermediate-cost, and 3.75 percent for low-cost:

[In percent]

Item	OASI	DI	Total
LOW-COST ESTIMATE			
Contributions [1]	8.72	0.70	9.42
Benefits [2]	7.74	.60	8.34
Actuarial balance	.98	.10	1.08
HIGH-COST ESTIMATE			
Contributions [1]	8.72	0.70	9.42
Benefits [2]	10.23	.78	11.01
Actuarial balance	−1.51	−.08	−1.59
INTERMEDIATE-COST ESTIMATE			
Contributions [1]	8.72	0.70	9.42
Benefits [2]	8.82	.67	9.49
Actuarial balance	−.10	.03	−.07

[1] Based on adjusted payroll that reflects the lower contribution rate for the self-employed as compared with the combined employer-employee rate.
[2] Including adjustments (a) to reflect the lower contribution rate for the self-employed as compared with the combined employer-employee rate, (b) for interest on the existing trust fund, (c) for administrative expenses, (d) for the railroad retirement financial interchange provisions, and (e) for reimbursement of military-wage-credits cost.

The lack of actuarial balance of the old-age, survivors, and disability insurance program (0.07 percent of taxable payroll on the intermediate-cost basis) is within the acceptable limit of variation of 0.10 percent of taxable payroll that has been used in the past by the congressional committees which deal with this program. The disability insurance program is overfinanced by 0.03 percent of taxable payroll, while the old-age and survivors program has an actuarial imbalance of 0.10 percent of taxable payroll.

If the intermediate-cost estimate had been based on higher interest rate than 3.50 percent (which is somewhat above the current average being earned by the total investments of the trust funds, although considerably below the prevailing market rate of interest on long-term Government obligations, which is currently slightly above $4\frac{1}{4}$ percent),

the actuarial balance of the total program would have been considerably improved and in fact, if an interest rate of 4 percent had been assumed, the total program would have been overfinanced by 0.12 percent of taxable payroll.

If the experience exactly follows the assumptions, future computations would show a gradual increase in the actuarial balance (or lack of balance) under the intermediate-cost estimate for both the old-age and survivors insurance system and the disability insurance system. The reason for this is that interest accumulations increase any surplus in the system, but the failure to accumulate all interest income that would have been earned in an exactly-balanced system increases any deficit. In the case of a surplus, the excess contributions actually earn interest, while a deficit grows because of the absence of the annual interest that would have been earned if the contributions required for balance had been paid.

Continuing study of the emerging experience under the program provides a basis for prompt changes in the tax rate or other changes that may be necessary to keep the system from growing excessively out of actuarial balance in either direction.

It is important to note that these estimates are made on the assumption that earnings will remain at about the level prevailing in 1963. If earnings levels rise, as they have in the past, the benefits and the taxable earnings base under the program will undoubtedly be modified. If such changes are made concurrently and proportionately with changes in general earnings levels, and if the experience follows all the other assumptions, the future year-by-year costs of the system as a percentage of taxable payroll would be the same as those shown. However, the existing trust fund accumulated in the past, and its interest earnings, will represent a smaller proportion of the future taxable payrolls than if earnings were not to increase in future years. As a result, since interest earnings of the trust fund will play a relatively smaller role in the financing of the system, the "net" level-cost—taking into account benefit payments, administrative expenses, and interest on the existing trust fund—would be somewhat higher. However, the level-cost might not rise this much, or might even decline, if benefit adjustments do not fully reflect rising earnings. Again, the effect of such events can be observed in ample time to make any needed changes in the contribution schedule or any other appropriate changes in the system.

This analysis includes the benefits and contributions in respect to all persons anticipated to be covered in the future under present statutory provisions and not merely (a) the benefits to be paid to workers who have been covered by the system in the past and to their dependents and survivors, (b) the future taxes to be paid by such workers, and (c) the existing trust funds. An insurance company must set up reserves equal to all currently accrued liabilities, since it cannot compel individuals to become new policyholders and must be in a position at any time so that in the future it can pay all benefits that will become due with respect to its present and past policyholders, using only its present assets and the future premiums to be paid by present policyholders. In analyzing the actuarial condition of a compulsory social insurance system that will continue indefinitely, the income and outgo with respect to new entrants should properly

be included, thus obviating the need to set up reserves for all currently accrued liabilities.

A discussion of the assumptions under which these estimates have been made is presented in appendix I.

MEDIUM–RANGE COST ESTIMATES

The preceeding sections have presented both short-range cost estimates (for the next 5 years) and long-range cost estimates (for many decades into the future) for the old-age, survivors, and disability insurance system.   This section presents medium-range cost estimates covering a period of 15 to 20 years that take into account possible variations in economic factors, such as level of earnings and level of employment, as well as variations in demographic factors.

Tables 23 and 24 present two medium-range projections based on different assumptions.   For both projections, it is assumed that economic activity will have normal expansion throughout the period, with employment increasing steadily and with the average total earnings of covered workers increasing at an annual rate of 3 percent. In the first one (table 23), the maximum taxable earnings base is assumed to remain at the 1966 level of $6,600 per year, while for the second one (table 24), the base is assumed to be kept up-to-date, i.e., it is assumed that the base is changed periodically so as to cover about the same proportion of total earnings that was covered in 1966 by the $6,600 base.   These assumptions imply that for the first projection, of the estimated 75 percent increase in average earnings that will occur in the 1966–85 period, only 27 percent or 36 percent relatively, will be taxable under the program, due to the dampening effect of the fixed maximum taxable earnings base.   For the second projection, the entire 75-percent increase will be taxable because of the constant up-dating of the earnings base.

TABLE 23.—*Estimated progress of trust funds, increasing earnings assumption, fixed earnings base and equivalent 3.5 percent interest rate basis* [1]

[In millions]

Calendar year	Contribu-tions [2]	Benefit payments	Adminis-trative expenses	Financial inter-change [3]	Interest on fund	Fund at year end
OLD-AGE AND SURVIVORS INSURANCE TRUST FUND						
1975	$35,210	$26,036	$472	−$252	$2,127	$89,821
1980	40,031	30,413	549	−35	4,170	130,444
1985	44,748	34,868	627	102	6,648	204,748
DISABILITY INSURANCE TRUST FUND						
1975	$2,711	$2,223	$152	$7	$132	$4,270
1980	3,102	2,399	164	19	239	7,582
1985	3,488	2,529	175	23	411	12,800

[1] On the same basis as used to develop the trust funds for the long-range intermediate-cost estimates in tables 21 and 22.
[2] Includes reimbursement for additional cost of noncontributory credits for military service.
[3] A positive figure indicates payment to the trust funds from the railroad retirement account; a negative figure indicates the reverse.

TABLE 24.—*Estimated progress of trust funds, increasing earnings and benefits assumptions, variable earnings base and equivalent 3.50 percent interest rate basis* [1]

[In millions]

Calendar year	Contributions [2]	Benefit payments	Administrative expenses	Financial interchange [3]	Interest on fund	Fund at year end
OLD-AGE AND SURVIVORS INSURANCE TRUST FUND						
1975	$39,802	$33,997	$536	−$390	$1,710	$56,482
1980	49,818	45,956	688	−188	2,542	87,177
1985	61,712	60,941	873	−35	3,498	109,473
DISABILITY INSURANCE TRUST FUND						
1975	$3,097	$2,787	$163	$4	$120	$3,895
1980	3,876	3,534	181	15	170	5,470
1985	4,802	4,392	198	22	237	7,560

[1] On the same basis as used to develop the trust funds for the long-range intermediate-cost estimates in tables 21 and 22.
[2] Includes reimbursement for additional cost of noncontributory credits for military service.
[3] A positive figure indicates payment to the trust funds from the railroad retirement account; a negative figure indicates the reverse.

It is assumed for the first projection that all provisions of the law would remain as they were after the 1965 Amendments. This projection is based on dynamic earnings-level assumptions and static benefit-provision assumptions. However, over the 20-year period covered by the estimates, changes will undoubtedly be made. The purpose of this estimate is to indicate the size of the financial commitments of present law even though it is recognized that the law itself would undoubtedly be changed during the period. The extent and timing of these changes are, of course, unpredictable.

It is assumed for the second projection that the maximum taxable earnings base and the benefit provisions of the law are amended periodically so that the relationships among total earnings, taxable earnings, and benefit expenditures during each of the years 1966–85 under the amended law are the same as those shown in the long-range intermediate-cost estimates prepared on level-earnings assumptions. The cost estimate shown in table 24 is, therefore, very similar to the long-range cost estimate if costs are considered in terms of percentages of taxable payroll, but it has the advantage of presenting dollar figures of a more realistic magnitude. This projection, accordingly, is based on dynamic earnings-level assumptions, combined with an assumption that the law is frequently amended to keep the system fully up-to-date.

As shown in tables 23 and 24, according to the medium-range estimates, the old-age and survivors insurance trust fund grows more or less steadily through the period up to 1985—reaching in 1980 about $130 billion in the first projection and about $87 billion in the second one. For 1985, the corresponding figures for the balance in the trust fund are $205 billion and $109 billion. In 1985, estimated contribution income exceeds benefit outgo by about 28 percent under the assumptions of dynamic earnings-level conditions and static benefit provisions, but by only 1 percent under the "double dynamic" assumptions basis.

The disability insurance trust fund, according to the medium-range estimates, increases continuously reaching a level at the end of the

projected period of $12.8 billion under the static benefit provisions, and $7.6 billion under the "double dynamic" basis.

CONCLUSION

The current long-range actuarial cost estimates for the old-age, survivors, and disability insurance program indicate that the program is in close actuarial balance. The program as a whole has a small actuarial imbalance of 0.07 percent of taxable payroll, which is within what the Congress has considered as an acceptable margin of variation for the intermediate-cost estimate, 0.10 percent of taxable payroll.

Before the 1965 amendments, although the program as a whole was in close actuarial balance, the disability insurance portion was under-financed. The increased allocation of contributions to the disability insurance trust fund provided in the 1965 amendments has placed this part of the program in close actuarial balance. The estimates are made for a period of 75 years. Both the old-age and survivors insurance and the disability insurance programs will have sufficient income from contributions (based on the tax schedule and taxable earnings base now in the law) and from investments to meet the cost of benefit payments and administrative expenses during this period.

APPENDIXES

APPENDIX I. ASSUMPTIONS, METHODOLOGY, AND DETAILS OF LONG-RANGE COST ESTIMATES

The basic assumptions used in the long-range estimates for the old-age, survivors, and disability insurance system are described in this appendix.[1] Also given are more detailed data in connection with the results of these estimates.

Population

Projections were made of the United States population (including overseas areas covered by the old-age, survivors, and disability insurance program) for future quinquennial years, by 5-year age groups and by sex. The starting point was the population on July 1, 1955, as estimated by the Bureau of the Census from the 1950 census and from births, deaths, and migration in 1950–55. This population estimate was increased to allow for probable under-enumeration in the 1950 census. The projections used were developed before the results of the 1960 census became available; the long-range cost estimates were not revised because the effect is negligible.[2]

In the projections for both cost estimates it is assumed that mortality rates will decline until the year 2000. In the high-cost estimates, mortality rates for the year 2000 are about 50 to 55 percent of the 1953 level up to age 70, with the rates at the older ages showing somewhat smaller improvements. The low-cost estimate assumes roughly half of the improvement in mortality used in the high-cost estimate.

In the low-cost estimate, fertility rates are assumed to remain at about the level of recent years until 1975 and then decrease slowly through 2040 until ultimately they reach about the level required to maintain a stationary population. The high-cost fertility rates begin decreasing at once and in 2005–10 reach about the level required to maintain a stationary population. Both estimates assume a small amount of net immigration.

The low-cost estimate is based on high fertility and high mortality, while the high-cost estimate assumes low fertility and low mortality. This makes the high-cost population relatively much older than the low-cost population, which is reasonable in view of the fact that benefits to aged persons account for nearly 85 percent of the cost of the system. Complete details about the population projections are given in *Actuarial Study No. 46*, Social Security Administration.

Employment

Assumptions as to the percentage of the population who have covered employment during a year were made for each age group by sex for each quinquennial year. The estimated percentages for 1960 were projected to decrease in the younger ages for males to allow for a greater utilization of schools. For males aged 25 and over, the proportions were assumed to increase slightly except for the older ages where they were assumed to decrease for both the low-cost and high-cost assumptions (thus recognizing the possibility of higher retirement rates). An increase was assumed for females, except for the very young and very old ages; these increases are higher in the middle ages and are a continuation of trends in the past. Assumptions were also made about the percentage of covered workers in each age group who have 4 quarters of coverage during the year.

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[1] For more details as to the procedures followed in making the long-range cost estimates, see *Actuarial Study No. 49*, Social Security Administration, May 1959, which deals with the 1956 Act but also indicates the modified procedures that were used in connection with estimates for the 1958 and 1960 Acts. A detailed discussion of the cost estimates for the 1961 Act can be found in *Actuarial Study No. 58*.

[2] The 1960 census revealed a greater number of persons aged 65 and over than earlier estimates had indicated, with most of this excess at ages 65–74. However, since people in these age groups are subject to high mortality and will thus not survive for many years, this discrepancy will have little effect on the long-range population projections. The 1960 census reported 16,560,000 persons aged 65 and over, as compared with the 1960 estimates of 16,413,000 in the high-cost projection and 16,319,000 in the low-cost projection. (For comparability, the projection figures should be reduced by about 200,000 because they are as of July 1 instead of April 1, and they include Puerto Rico and several other geographic areas.)

All the foregoing assumptions may be characterized as representing moderately full employment. A depression could substantially increase the cost, but it is believed that any periods of low employment would be of short duration and would not have a significant long-range effect.

Earnings

Level average earnings at about the 1963 level were assumed for each sex. This assumption implies that within each sex group the earnings level would not rise on account of changes in the distribution of covered workers by occupation or industry.

In the past, average earnings have increased greatly, partly because of inflation, partly because of increased productivity, and partly because of the changed occupational composition of the labor force and related factors. If this trend continues and if the benefit formula is not changed the cost relative to payroll would be less than the estimates show because the formula provides a benefit that is a decreasing percentage of average wage as the average wage increases.

It is likely, however, that if average earnings increase, the benefit formula and the earnings base used for contributions will be modified.

If benefit payments are increased in exactly the same ratio as the increase in average earnings, the year-by-year cost estimates of benefit payments expressed as a percentage of payroll would be unchanged. There would, however, be some increase in the level-premium cost because of the diminished relative value of interest earnings on the trust funds.

Insured Population

The term "insured" is used as meaning either fully or currently insured. Separate estimates of fully insured, currently insured, and both fully and currently insured have not been made, because almost all aged insured persons and almost all younger male insured persons are fully insured, and also because either fully or currently insured status generally gives eligibility to all young survivor benefits.

The percentages of insured persons by age and sex in various future years are estimated from the percentages of persons covered. It is evident that eventually almost all males in the country will be insured for old-age and survivor benefits; the ultimate percentage for aged males is estimated at 95 percent in the low-cost estimate and 98 percent in the high-cost estimate. For females there is much greater uncertainty; it is estimated that the corresponding proportions for aged females will eventually be 67 percent in the low-cost estimate and 73 percent in the high-cost estimate (the differential reflecting the range possible because of women moving in and out of the labor market and whether thereby they do or do not obtain insured status).

The estimated numbers of persons insured for disability benefits are lower than those insured for old-age and survivor benefits because of the more restrictive insured status provisions for disability benefits.

Aged Beneficiaries

Old-age beneficiaries are estimated from the aged insured population. The proportions, by age and sex, of the insured population that were receiving benefits at the beginning of 1963 were projected to increase slightly, following the trends in the past—thus, reflecting the assumed gradual increase in retirement rates.

Wives aged 62 and over of male old-age beneficiaries were estimated by using census data and mortality projections. These potential wife beneficiaries, after adjustment for eligibility to benefits on their own account, were assumed to claim benefits as soon as they are eligible, even if this occurred at ages 62–64, when they would have to take reduced benefits. The experience to date indicates that in the vast majority of the cases such immediate claiming of wife's benefits does occur.

To estimate widow beneficiaries the proportions of widows in the female aged population were projected according to mortality assumptions and adjusted for both eligibility to benefits on their own account and for the insured status of their deceased husbands. These uninsured eligible widows were assumed to claim benefits as soon as available.

It can be observed that the assumed wife and widow beneficiaries consist of the uninsured potential beneficiaries. In actual practice, some of the insured potential beneficiaries also receive a residual benefit consisting of the excess of the potential wife's or widow's benefit over their own old-age benefit. These residual benefits, although not giving rise to additional aged beneficiaries, were considered in the cost of the particular type of dependent or survivor benefit concerned.

The minor category of parent beneficiaries is estimated as a constant proportion of aged persons not eligible for any other benefit. The insignificant effect of the retirement test as it applies to wife's, widow's, and parent's benefits was ignored . No estimates were made for benefits to dependent husbands and widowers since their cost is relatively negligible.

Appendix table 1 shows the estimated numbers of aged beneficiaries.

Beneficiaries Under Retirement Age

Young wives and children of retired workers were estimated by reference to their ratios to male old-age beneficiaries, as derived from recent actual data and projected according to the population fertility assumptions.

Child survivor beneficiaries were obtained from estimates of total paternal orphans in the country in future years. The projected child population by age groups was multiplied by the probability of being a paternal orphan. These probabilities were derived by using distributions of age of fathers at birth of child and death rates consistent with the population projections. The number of paternal orphans was then adjusted to eliminate orphans of uninsured men, to add the small numbers of orphans of insured women and to include the eligible disabled orphans aged 18 and over. For the non-disabled children aged 18–21, a further reduction was made to exclude those not attending school. Mother survivor beneficiaries are estimated by assuming a constant ratio of mothers to children. The numbers of lump-sum death payments were estimated by multiplying the insured population by death rates consistent with the survival rates used in the population projections.

Disabled Beneficiaries and Their Dependents

Future numbers of persons receiving monthly disability benefits based on their own earnings records are estimated by applying disability prevalence rates (by age and sex) to the population insured for disability benefits. Prevalence rates may be defined as the proportion of the relevant population (population insured for disability in this case) that has a specific characteristic (receiving disability benefits in this case).

APPENDIX TABLE 1.—*Monthly retirement beneficiaries in current-payment status,*[1] *1955–2025*

[In thousands]

Calendar year	Old-age beneficiaries		Wives of old-age benefi- ciaries [2]	Aged widows [3]	Dependent parents	Total
	Male	Female				
			ACTUAL DATA			
1955	3,252	1,222	1,144	701	25	6,344
1956	3,572	1,540	1,376	913	27	7,428
1957	4,198	1,999	1,779	1,095	29	9,101
1958	4,617	2,303	1,979	1,233	30	10,162
1959	4,937	2,589	2,123	1,394	35	11,077
1960	5,217	2,845	2,236	1,544	36	11,877
1961	5,765	3,160	2,368	1,697	37	13,027
1962	6,244	3,494	2,510	1,859	37	14,145
1963	6,497	3,766	2,561	2,011	37	14,872
1964	6,657	4,011	2,587	2,159	36	15,451
			LOW-COST ESTIMATE			
1980	9,211	7,441	3,052	3,461	34	23,199
1985	10,006	8,568	3,131	3,607	33	25,345
1990	10,709	9,564	3,176	3,845	32	27,326
2000	11,177	10,682	2,913	3,862	28	28,662
2025	17,391	17,681	3,603	5,021	33	43,729
			HIGH-COST ESTIMATE			
1980	10,828	9,368	3,251	2,991	34	26,472
1985	12,219	10,972	3,436	3,136	34	29,797
1990	13,584	12,405	3,662	3,283	32	32,966
2000	15,134	14,010	3,573	3,326	28	36,071
2025	23,009	21,521	4,013	4,272	29	52,844

[1] Persons qualifying both for old-age benefits and for wife's, widow's, husband's, widower's, and parent's benefits are shown only as old-age beneficiaries. Minimum retirement age was 65 until November 1956, when it was lowered to 62 for women, and until August 1961, when it was also reduced to 62 for men. Actual data as of the end of the year (except for 1958—November); estimated data as of the middle of the year. Excluding effect of railroad financial interchange provisions.
[2] Including dependent husbands and including wives of any age with child beneficiaries in their care (both relatively small categories).
[3] Including dependent widowers.

The prevalence rates were developed from assumed disability incidence and termination rates. The incidence rates were based on the so-called 165 percent modification of class 3 rates (which includes increasingly higher percentages for ages above 45). This 165 percent modification corresponds roughly to life insurance company experience during the early 1930's. These rates were reduced by 10 percent to account for the fact that unlike the general definition in insurance company policies, disability is not presumed to be total and of expected long-continued duration after 6 months' duration. Rather, the likelihood of the disability being of a long-continued and indefinite-nature condition must be proved at the time. To take into consideration the fact that according to the 1965 amendments the disability should be expected to last at least 12 months instead of being of a long-continued duration, the final prevalence rates were increased by 1.5 percent relatively.

The original estimates of the cost of the disability insurance system (prepared at the time of the 1956 amendments) assumed, for high cost, incidence rates based on the 165 percent modification of class 3 rates. For low cost, the rates were assumed to be 25% of those used in the high-cost estimate. These incidence rates are basically those in current use except for a narrowing of the range between low and high to reflect the operating experience analyzed up to now. This experience has shown the actual incidence rates to fall roughly mid-range between the high incidence and low incidence originally assumed.

Benefit termination rates because of death and recovery in current use are those used in the original disability insurance cost estimate—i.e., class 3 rates for high-cost and 1924–27 German social insurance experience for low-cost estimate.

The prevalence rates resulting from the above incidence and termination rates were adjusted to reflect current operating experience and the new definition in the 1965 amendments and then used to calculate the numbers of beneficiaries in the future.   These future prevalence rates are thus based on the incidence and termination rates originally assumed, but they are adjusted to reflect the latest available experience.   The modified methodology that has been followed allows for a prompt reflection, in the estimated cost, of any changes in the experience of the program.

In accordance with current experience the prevalence rates for females were assumed to be about 75 percent of those for male workers.

Appendix table 2 shows the estimates of number of beneficiaries under the minimum retirement age (including disability insurance beneficiaries and their dependents).

APPENDIX TABLE 2.—*Monthly beneficiaries under minimum retirement age in current-payment status* [1] *and number of deaths resulting in lump-sum death payments, 1955–2025.*

[In thousands]

Calendar year	Children [2]	Widowed mothers	Disability beneficiaries			Total monthly benefi-ciaries	Lump-sum death cases
			Workers	Wives [3]	Children [4]		
ACTUAL DATA							
1955	1,276	292				1,568	567
1956	1,341	301				1,642	547
1957	1,502	328	150			1,980	689
1958	1,606	354	238	12	18	2,228	[5] 657
1959	1,754	376	334	48	78	2,590	[6] 822
1960	1,845	401	455	77	155	2,934	779
1961	1,989	428	618	118	291	3,444	813
1962	2,160	452	741	147	387	3,887	865
1963	2,230	462	827	168	457	4,144	969
1964	2,298	471	894	179	490	4,332	1,011
LOW-COST ESTIMATE							
1980	3,941	733	1,184	217	702	6,777	1,436
1985	4,226	795	1,247	222	721	7,211	1,557
1990	4,503	858	1,289	231	729	7,610	1,677
2000	4,796	939	1,543	271	808	8,357	1,930
2025	5,417	1,024	2,426	384	988	10,239	2,863
HIGH-COST ESTIMATE							
1980	2,712	461	1,451	238	642	5,504	1,400
1985	2,746	467	1,557	251	645	5,666	1,532
1990	2,770	468	1,607	253	637	5,735	1,680
2000	2,649	446	1,879	278	684	5,936	1,985
2025	2,930	444	2,369	326	754	6,823	2,769

[1] See footnote 1 of appendix table 1 for definition of minimum retirement age. Does not include wives under age 62 of old-age beneficiaries; includes disability beneficiaries aged 62–64, and spouses aged 62 and over of disability beneficiaries. For actual data, as of December (except for 1958—November); for estimated future data, as of middle of year. Excluding effect of railroad financial interchange provisions.
[2] Children of retired and deceased workers.
[3] Spouses of disabled workers, including some such spouses aged 62 and over.
[4] Children of disabled workers.
[5] January through November 1958.
[6] December 1958 through December 1959.

Average Benefits and Total Benefit Payments

Average benefits in the various benefit categories were interpolated between the sizes of current benefit awards, estimated from recent claims data, and the sizes of the ultimate benefits computed.   The latter were determined as though the 1963 earnings level were in effect throughout the entire working life of all workers with respect to whom benefits are being paid.   Total benefit payments are shown in dollar amounts, in tables 21 and 22, and as a percentage of payroll, in table 20.

The combined cost of old-age, survivors, and disability benefits (expressed as a percentage of taxable payroll) in 1965 as shown in tables 16 and 19 is projected to increase by about 40 percent in the low-cost estimate and by about 115 percent in the high-cost estimate, according to table 20. The significant upward cost trend is temporarily reversed around the year 2000, at which time a significant part of the aged population consists of survivors of persons born in the 1930's, when birth rates were low.

Administrative Expenses

Assumed administrative expenses for old-age, survivors, and disability insurance are based on two factors—the number of persons having any covered employment in the given year and the number of monthly beneficiaries.

Railroad Retirement Financial Interchange

A financial interchange between the old-age, survivors, and disability insurance system and the railroad retirement system is provided, as explained in Appendix II. The purpose of this interchange is to place the old-age and survivors insurance and the disability insurance trust funds in the same position they would have been in if railroad employment were, and always had been, covered employment.

Because of the relatively older age distribution of railroad workers, the transfer is currently in favor of the railroad retirement system. But it is estimated that eventually the low-cost factors in respect to railroad employment—higher average wage, lower percentage of females, and more wives and widows of railroad workers receiving old-age, survivors, and disability insurance benefits on their own earnings records, rather than on the record of the railroad worker—will shift the transfer the other way. The long-range effect is relatively insignificant insofar as old-age, survivors, and disability insurance costs are concerned, but the current estimates indicate a small "net gain" to the railroad retirement system over the entire period of these estimates.

Interest Rate

The 1960 amendments revised the basis for determining the interest rate on public-debt obligations issued for purchase by the trust funds (special issues), which constitute a major portion of the investments of the trust funds. Under previous law, the interest rate on special obligations was related to the average coupon rate on all outstanding marketable obligations of the United States not due or callable for at least 5 years from the original issue date. Under present law, this interest rate is based on the average market yield of all such marketable obligations not due or callable for 4 more years from the time of the issuance of the special obligations.

This change will have the immediate effect of gradually increasing the interest income of the trust funds as compared with the previous basis. The ultimate effect is expected to be only a slight increase in the interest income of the system since, over the long run, coupon rates on new long-term Government obligations tend to follow (both up and down) the average market yield on all outstanding long-term issues.

For the intermediate-cost estimate a level interest rate of 3.50 percent was assumed. This is somewhat above the average yield of the total investments of both trust funds as of January 1, 1966 (3.29 percent), but is below the rate applicable for new investments in January 1966 (4.625 percent). The interest rate for the low-cost and high-cost estimates was assumed at 3.75 percent and 3.25 percent, respectively.

APPENDIX II. LEGISLATIVE HISTORY AFFECTING THE TRUST FUNDS [1]

Board of Trustees.—From January 1, 1940, when the Federal old-age and survivors insurance trust fund was established, through July 15, 1946, the three members of the Board of Trustees, who served in an ex officio capacity, were the Secretary of the Treasury, the Secretary of Labor, and the Chairman of the Social Security Board. On July 16, 1946, under Reorganization Plan No. 2 of 1946, the

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[1] Amendments to the Social Security Act and to related sections of the Internal Revenue Code were made during the period 1939–65. The more important changes made in 1950–58 that are significant from an actuarial standpoint are described in appendix II of the 21st Annual Report of the Board of Trustees. The more important changes contained in the 1960 and 1961 amendments are described in the main body of the 23d Annual Report, and the changes made in 1964 are described in the 25th Annual Report. The more important changes contained in the 1965 amendments are described in the main body of the present report.