



ong-Range Cost
Estimates for Old-Age
and Survivors Insurance

1 9 5 3

by Robert J. Myers
and Eugene A. Rasor

•

U.S. Department of Health, Education, and Welfare

Social Security Administration Division of the Actuary

ACTUARIAL STUDY NO.36

JUNE 1953

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
A. Introduction.....	1
B. Basic Assumptions.....	3
C. Results of Cost Estimates under Level Wage Assumption...	12
D. Accrued Liability under OASI.....	19
E. The Effect of an Increasing Wage Assumption.....	20
F. Comparison with Previous Estimates.....	22
Tables.....	24
Actuarial Studies Issued by the Division of the Actuary	55

LIST OF CHARTS

<u>Chart</u>	<u>Page</u>
1. Benefit Costs as Percent of Payroll, High-Employment...	14
2. Benefit Costs as Percent of Payroll, Low-Employment....	15

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Estimated U.S. population in future years.....	24
2a. Assumed ratios of persons under age 65 with wage credits in year to total population in age group.....	25
2b. Assumed ratios of aged persons with wage credits in year to total population in age group.....	26
3. Assumed percentage distributions of persons with wages in year by quarters with wages.....	27

LIST OF TABLES -- Continued

<u>Table</u>	<u>Page</u>
4. Assumed ratios of insured persons to total population...	28
5. Estimated persons with wage credits, total credited wages, and average creditable wages.....	29
6. Estimated insured population as of beginning of year....	30
7. Estimated monthly beneficiaries age 65 and over in current payment status.....	31
8. Estimated monthly beneficiaries age 65 and over in current payment status as percent of total aged population.....	32
9. Estimated old-age beneficiaries in current payment status as percent of insured population age 65 and over.....	33
10. Estimated monthly beneficiaries under age 65 in current payment status and lump-sum death payments in year.....	34
11. Estimated female beneficiaries qualified for both old-age benefits and wife's or widow's benefits, in current payment status.....	35
12. Estimated average annual benefits for old-age beneficiaries and their dependents in current payment status	36
13. Estimated average annual survivor benefits in current payment status and lump-sum death payments.....	37
14. Estimated benefit payments.....	38
15a. Estimated benefit payments as percent of taxable payroll, low-employment assumption.....	39
15b. Estimated benefit payments as percent of taxable payroll, high-employment assumption.....	40
16. Estimated level-premium contribution rate in perpetuity for benefit payments and administrative expenses, taking into account accumulated funds as of end of 1952.....	41
17a. Estimated progress of OASI trust fund under contribution schedule in 1952 amendments, 2 $\frac{1}{4}$ % interest, low-employment assumptions.....	42

LIST OF TABLES -- Continued

<u>Table</u>	<u>Page</u>
17b. Estimated progress of OASI trust fund under contribution schedule in 1952 amendments, 2 $\frac{1}{2}$ % interest, high-employment assumptions.....	43
17c. Estimated progress of OASI trust fund under contribution schedule in 1952 amendments, 2 $\frac{3}{4}$ % interest, low-employment assumptions.....	44
17d. Estimated progress of OASI trust fund under contribution schedule in 1952 amendments, 2 $\frac{3}{4}$ % interest, high-employment assumptions.....	45
18a. Estimated progress of OASI trust fund under 3% level contribution rate, 1952 until exhaustion of fund, 2 $\frac{1}{2}$ % interest.....	46
18b. Estimated progress of OASI trust fund under 3% level contribution rate, 1952 until exhaustion of fund, 2 $\frac{3}{4}$ % interest.....	47
19a. Estimated progress of OASI trust fund under a level theoretical contribution rate, 2 $\frac{1}{4}$ % interest, low-employment assumptions.....	48
19b. Estimated progress of OASI trust fund under a level theoretical contribution rate, 2 $\frac{1}{4}$ % interest, high-employment assumptions.....	49
20. Comparison of trust fund with present value of benefits in current payment status, 2 $\frac{1}{2}$ % interest.....	50
21a. Estimated accrued liability of OASI as of January 1, 1953, 2 $\frac{1}{4}$ % interest.....	51
21b. Estimated accrued liability of OASI as of January 1, 1953, 2 $\frac{3}{4}$ % interest.....	52
22. Estimated cost of benefit payments as percent of payroll in selected years and on level-premium basis, previous estimate and this estimate.....	53
23. Comparison of estimates of long-range costs as percent of payroll for various acts and amendments.....	54

This study has been prepared for the use of the staff of the Social Security Administration and for limited circulation to other administrative, insurance, and research persons concerned with the subject treated. It has not been submitted to the Commissioner of Social Security for official approval.

LONG-RANGE COST ESTIMATES FOR OLD-AGE AND SURVIVORS INSURANCE, 1953

A. Introduction

This report is the fifth in a series of Actuarial Studies in regard to the actuarial costs of the old-age and survivors insurance program. The first cost estimates for the old-age and survivors insurance program were developed at the same time the legislation was enacted (1939) and were subsequently presented in Actuarial Study No. 14. In the second in this series (developed in 1942 and presented in Actuarial Study No. 17), estimates were made on the basis of a certain amount of actual operations data, as well as of more complete demographic data such as the 1940 census and the 1935 Family Composition Study.

The third in this series of cost estimates was developed in 1943-44, and published as Actuarial Study No. 19. This differed from the previous study in that not only was there available more experience data, but also a differential average wage between the low-cost and high-cost illustrations was introduced. Because Actuarial Study No. 19 considered the terms "low-cost" and "high-cost" as indicating absolute dollar costs rather than percentage costs relative to payroll, certain difficulties of interpretation and analysis arose. Thus, for both estimates the average cost of the benefits from 1945 to 2000 without interest was 5.6% of payroll which lead some to believe erroneously that, although the dollar costs might have a range, the relative costs were fairly closely predictable, a matter of importance in estimating the necessary contribution rates.

The fourth in this series of estimates, Actuarial Study No. 23, was published in 1947 and used more current data on population, wage levels, etc.

Two other studies were prepared for and printed by the Committee on Ways and Means, dated July 27, 1950 and July 21, 1952 in respect to the 1950 Amendments and 1952 Amendments, respectively.

The cost estimates presented in this study relate to the 1952 Amendments and correspond to those in the Committee Print of July 21, 1952 but differ considerably because of the use of the new population projections (Actuarial Study No. 33) and revised cost factors.

In order to have appropriate ranges in benefit costs, both as to dollar amounts and relative to payroll, there were developed, in effect, four separate cost illustrations. On the one hand, the low-employment assumptions basis used was somewhat lower than full

employment and corresponded roughly on the average to 1940-41 conditions as to proportion of population in covered employment, combined with wage rates prevailing in the same period. On the other hand, the high-employment assumptions basis is near-full employment (corresponding closely to current conditions).

Within both the low-employment and high-employment assumptions there are two separate estimates: (1) using "low-cost" factors (i.e. low cost relative to payroll) as to fertility, mortality, retirement rates, remarriage rates, etc.; and (2) using "high-cost" factors. As in the previous studies, the terms "low-cost" and "high-cost" apply in the aggregate since in some of the component parts (e.g. child's and mother's benefits) the costs are shown to be higher for "low-cost" than for the "high-cost" factors.

An important element affecting old-age and survivors insurance costs arose through amendments made to the Railroad Retirement Act in 1951. These extend the 1946 amendments and provide for a coordination of railroad retirement compensation and old-age and survivors insurance covered earnings in determining not only survivor benefits but also retirement benefits for those with less than 10 years of railroad service. In fact, all future survivor and retirement cases involving less than 10 years of railroad service are to be paid by the old-age and survivors insurance system.

Financial interchange provisions are established such that the old-age and survivors insurance trust fund is to be placed in the same financial position as if there never had been a separate railroad retirement program. It is estimated that the net effect of these provisions will be a relatively small net gain to the old-age and survivors insurance system since the reimbursements from the railroad retirement system will be somewhat larger than the net additional benefits paid on the basis of railroad earnings. The long-range costs developed here are for the operation of the trust fund on the basis, as provided in current law, that all railroad employment will be (and beginning with 1937 has been) covered employment. The balance in the fund thus corresponds exactly to the actual situation arising. But the contribution income and benefit disbursement figures shown (as well as the numbers of beneficiaries) are slightly higher (by less than 5 percent) than the payments which will actually be made directly to the trust fund from contributors and the payments which will actually be made from the trust fund to the individual beneficiaries. This is the case because the figures here include both the additional contributions which would have been collected if railroad employment had always been covered and the additional benefits that would have been paid under such circumstances. The balance for these two elements is to be accounted for in actual practice by the operation of the financial interchange provisions.

B. Basic Assumptions

Throughout the cost estimates the various assumptions have been selected so as to be consistent with the actual operating data and with the other assumptions, and at the same time so as to represent a reasonable range for the element under consideration. As in previous studies, the figures developed do not represent the widest possible range that could reasonably be anticipated, but rather our studied opinions as to a plausible range. For more detailed analysis of items (1), (2), (3) and (4) below see Actuarial Study No. 33. The various basic assumptions are:

(1) Mortality.

The low-cost and high-cost estimates are both based on decreasing rates of mortality to the year 2000 and level thereafter. The decrease for the low-cost estimates was assumed as one-half of that for high-cost. Previously no decrease in mortality had been assumed for the low-cost estimates.

(2) Birth Rates.

The low-cost estimates assume for 1965 and after, age-specific birth rates which are the mean of the age-specific 1940 and 1948 rates, while for the high-cost estimates the age-specific birth rates assumed for 1965 and after were the 1940 rates. For the period prior to 1965, the present fertility rates were graded down into the ultimate rates.

(3) Immigration.

For both the low-cost and high-cost estimates, a net immigration of 500,000 persons during each 5-year period in the future was assumed.

(4) Population.

The above assumptions as to fertility, mortality, and immigration when applied to the existing population result in the basic population projections. At the time this study was begun, there was available an official count of the U.S. population as of April 1950 subdivided by age and sex. The availability of these data, which took account of most of the war deaths as well as the actual high fertility and low civilian mortality experience of the war years, along with the assumed modifications made in the future fertility and mortality rates, made it desirable to develop the new population projections mentioned.

Table 1 summarizes the two new population projections. It will be observed that the population for all ages combined does not show a very wide range as between the low-cost and high-cost assumptions in the early years, but ultimately the low-cost population is 55% greater than the high cost. In the high-cost projection there are nearly the same number of aged persons as in the low-cost projection and considerably fewer in the productive ages because of the lower mortality and lower fertility assumed in the former. For the year 2050 those age 65 and over represent 11.4% of the total population for the low-cost projection as contrasted with 16.1% for the high-cost assumptions. Thus in contrast with 1950, when the corresponding figure was 8.0%, there is a relative increase in the proportion of the aged of about 42% for the low-cost projection and 100% for the high-cost one. In the 100-year period preceding 1950 the actual relative increase was about 225%.

(5) Employment.

In developing bases for estimating both payrolls and insured populations, it is necessary to have the proportion of the total population who are in covered employment in a given year by age and sex (differentiation by race does not seem necessary). Valuable guides toward developing assumed ratios exist in the form of the actual wage data for 1951, along with the available total population data from the 1950 census. As mentioned previously, the low-employment assumptions are intended to correspond roughly to the level of 1940-41, while the high-employment assumptions are supposed to correspond to virtually full employment. In addition it is hypothesized that in the future the past trend of an increasing proportion of the labor force being in covered employment (as a result of the movement from agriculture to industry) will continue, and that correspondingly women will continue to occupy a greater place in the covered labor force.

Table 2a shows the assumed ratios of persons with wage credits in the year to total population for quinquennial age groups from 15 to 65 for three illustrative years for the two employment assumptions. Table 2b shows corresponding figures for persons age 65 and over. For the latter group, within each employment assumption, there are given low-cost and high-cost figures as representing the range due to possible variations in retirement rates. Under low-employment assumptions, aged workers might endeavor to continue working as long as possible; on the other hand, there may be great pressure for them to retire since benefits are available. Under high-employment assumptions the favorable opportunities combined with good health and a philosophy of desiring to continue at work might result in a considerable postponement; conversely, eligible aged individuals might "retire" under the OASI program, yet continue working in non-covered employment and draw benefits, or else the increasing availability of supplementary old-age benefits from private pension plans might hasten retirement even under high-employment conditions.

Likewise, in developing estimates of covered payroll and insured populations, it is necessary to have a distribution of persons with wages in a year according to the number of quarters with wages. The actual operating data furnish certain information as to such distributions for the current time. The assumed percentages are shown in Table 3, where it will be noted a distinction is made for males as between low-employment and high-employment assumptions, but no such differentiation seems plausible for females.

From the assumptions as to the proportions of the population in covered employment and the proportions of workers by quarters, there may be developed by diagonal projection and general reasoning the assumed proportions of the total population who are insured. As used hereafter the term "insured" includes both "fully insured" and "currently insured only". Below age 65 currently insured status gives eligibility for most of the benefits that fully insured status does. Moreover, at age 65 and over the category "currently insured only" is and will be relatively non-existent.

Although a single set of assumptions as to covered employment was set forth for each economic assumption, when there are developed therefrom the proportions insured representing the cumulative effect of employment, a range is necessary because of the uncertainty involved in the extent of year by year progression of covered employment as between individuals. Table 4 shows for three selected years the resulting ratios of insured persons to total population obtained from a consideration of the assumptions as to extent of covered employment. The lower figure of the range in each case applies to the low-cost estimate, while the higher figure is used in the high-cost estimate.

(6) Credited Wages for 4-Quarter Workers

Under both employment assumptions, 4-quarter male employees are assumed to have annual credited wages of \$2,980, while for women the corresponding figure is \$2,030. If there were no maximum on credited wages (i.e. the \$3600 limit), the corresponding figures would be \$3975 for men and \$2130 for women. As in previous studies, no age differential in wage for 4-quarter workers is used because the relatively small variations existing for the vast bulk of employees (those between ages 25 and 65) do not warrant the additional computational difficulties that would arise.

The above wages are assumed to be level into the future. In a subsequent section, discussion will be given as to the use of an increasing wage assumption.

(7) Credited Wage for Other than 4-Quarter Workers.

The annual credited wages of workers employed in less than 4 quarters of a year are shown in the table below as a percentage of

the assumed annual earnings of 4-quarter employees (without regard to the \$3600 limit), with the same proportions holding for both the low-employment and high-employment assumptions:

<u>Quarters</u>	<u>Males</u>	<u>Females</u>
1	7%	12%
2	18	21
3	36	44
4	100	100

These figures are based on the actual operating experience. As was the case with 4-quarter employees, it does not seem necessary to have any differential by age.

(8) Credited Payroll.

By applying the previous assumptions as to covered employment and wages to the population estimates, there are obtained the total persons with credited wages in various years and the aggregate amount of such wages. The resulting data for selected years are shown in Table 5 along with the developed average wage credits for persons with any wages in the year. The number of persons with wages in the year for a particular employment assumption is somewhat lower for the high-cost assumptions than for the low-cost ones. This results from the fact mentioned previously, namely that under the low-cost assumptions there is assumed higher fertility which produces eventually a greater number of persons in the productive ages. The resulting average wage credits for those with wages in the year are about \$2000 for both the low-employment and high-employment assumptions.

(9) Insured Population.

By applying the assumed proportions insured to the total population projections, there are obtained the estimated insured populations shown in Table 6. Although the insured population for all ages combined roughly doubles in the next half century, the insured population age 65 and over rises almost tenfold, with the increase being greater for females than for males.

(10) Marital and Parental Status.

Assumptions as to marital status are necessary in estimating the costs of the various supplementary and survivor benefits. The various assumptions both for men and women are based on general population census data, the effects of the OASI definitions, and the differential marital proportions of the gainfully occupied. Also considered in adjustment of the census data is the material from the 1940-51 claims and from the Family Composition Study. In the high-cost estimates the proportion married in the future is adjusted upward at the older ages to allow for the effect of assumed

improved mortality (resulting in fewer early broken marriages). Assumptions as to relative ages of husband and wife are based on Family Composition Study data, census data, and claims data.

Assumptions as to the proportion of persons with children and the average number of such children in these cases are developed from the census data, the claims data, and the Family Composition Study data. The age distribution of such children was based on claims data. In the high-cost estimates (where lower fertility is assumed), allowance is made for the reduced average number of children per family in future years.

(11) Differential Mortality by Marital Status.

New studies by the National Office of Vital Statistics have confirmed many earlier limited studies as to the lower mortality of married persons and the higher mortality of widowed persons. It is therefore assumed that the married males in the insured population have lower mortality than all insured males, with the differential ranging from 20% at the younger ages to 10% at the older ages. Correspondingly, it is assumed that widows of insured males have higher mortality than all women (with the excess being over 100% at the young ages, decreasing to about 10% at age 65, and declining slowly thereafter). Both of these marital mortality assumptions result in lower benefit costs since with married males having lower mortality, fewer widows and orphans are created, whereas with widows having higher mortality, fewer survive to age 65 than if mortality did not differ by marital status.

(12) Remarriage Rates.

Both widow's and mother's benefits are terminated upon remarriage. The use of remarriage rates takes account of the saving in cost arising therefrom. The limited experience to date indicates that the actual remarriage rates may be somewhat higher than those in the American Remarriage Table. Therefore, the remarriage rates used in the low-cost estimates are 150% of such tabular rates, while in the high-cost estimates the tabular rates are used without modification.

(13) Marriage and Mortality of Child Beneficiaries.

Although the primary cause of termination of child's benefits is attainment of age 18, death or marriage of child beneficiaries is of some cost significance. A subsidiary study was made using mortality and marriage rates based on actual recent experience. Since the effect of both of these factors was found to be relatively small, the same adjustment is made for each of the estimates, namely, a 1% reduction in the number of beneficiaries based on all surviving to age 18 unmarried.

(14) Parent's Benefits.

This relatively minor category is difficult to estimate. Considerable variation can arise as to the number of parents considered to be "chiefly dependent." As more and more of the aged become eligible for old-age, wife's or widow's benefits, the number eligible for parent's benefits will be relatively less. Because of the relative unimportance of this category, no new estimates as to the number of beneficiaries have been made, but rather those of Actuarial Study No. 23 have been used again. However, the benefit payments have been recomputed, based on the new benefit formula and the somewhat higher wage assumptions in the current estimates.

(15) Proportion of Beneficiaries at Work.

Among the various survivor beneficiary categories, there is a considerable saving in disbursements because individuals otherwise eligible are at work in covered employment. In some instances benefits are withheld, while in other cases the beneficiary never files (notably in the case of mother's benefits for families where there are sufficient children to obtain the maximum or near-maximum benefit anyhow). In developing the cost estimates, there have been estimated the total number of beneficiaries eligible to file. Then reduction factors are applied to allow both for those whose benefits are withheld because of work and for those who do not file for benefits because of the maximum provisions or because they intend to work continuously and thus can not draw benefits anyhow. The table below indicates for the ultimate situation (several decades hence) the percentages of the potential beneficiaries who are assumed to be actually in current payment status for the three important categories of survivor beneficiaries:

<u>Beneficiary Category</u>	<u>Low-Employment</u>		<u>High-Employment</u>	
	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
Mother's	79%	87%	72%	82%
Child's	95	98	93	97
Widow's	99	98	99	98

(16) Alternative Receipt of Benefits.

An important cost element several decades hence, although not very important currently, is the provision that women may not receive full old-age benefits in their own right and full wife's or widow's benefits. In effect, in such cases the larger of the two benefits is payable. As a practical matter, it is to the advantage of the woman to claim the full primary benefit and to obtain any additional wife's or widow's benefit as a supplement since the latter may be

suspended for a number of reasons not applicable to the former (namely, employment of the husband, divorce, remarriage, etc.). For this reason it has been assumed in these cost estimates, that all women eligible for old-age benefits file therefor, even though qualified for a larger wife's or widow's benefit. It is assumed they receive the excess of such benefits over their old-age benefits as a supplement.

Based on claims data with certain modifications to allow for changes in future distributions, estimates have been made as to the proportions of the cases in which the female old-age benefit would be smaller than the widow's benefit or the wife's benefit, and for such cases what the average excess over the primary benefit would be. The number of women qualified for both old-age benefits and wife's or widow's benefits has been estimated from the number of female old-age beneficiaries distributed by marital status, using the assumption that the probability of being eligible for benefits on the basis of the woman's own earnings and on the basis of her husband's earnings was the same as the probability of a woman of that same marital status in the total population being an old-age beneficiary. For instance, for a certain year if the married female old-age beneficiaries represent 25% of the married aged female population, then it is assumed that 25% of the aged wives of male old-age beneficiaries (in current payment status) are old-age beneficiaries, or in other words that 75% of such wives are not old-age beneficiaries in their own right but solely wife beneficiaries.

Combining the various above assumptions, it is then possible to obtain the number of women who are solely wife or widow beneficiaries and the number of women who are eligible for both old-age benefits and wife's or widow's benefits. The latter category is further subdivided into those with larger wife's or widow's benefits and thus eligible to receive supplementary payments over their old-age benefits.

(17) Adjustment Factors for Average Benefits.

In computing average benefits on the basis of the assumed average wages, proportions of quarters covered, and proportions of years employed, it is necessary to make an adjustment in the resulting figures because of the weighted nature of the benefit formula. Thus, for a given wage distribution the true average benefit will generally be smaller than the benefit based on the average wage. The amount of the differential depends on a number of factors such as the distribution of the wages, the varying lengths of time in covered employment, and the minimum and maximum benefit provisions.

Another element necessitating modification of average benefits is the differential in wages by marital status. Thus, married men on the average have higher wages than other men so that the average primary insurance amount used for monthly survivor benefits should be adjusted upward. Also adjustments are necessary in the various supplementary and survivor benefits to allow for the effect of the minimum and maximum provisions. The lump-sum death payment, when received by other than the spouse, will sometimes be less than three times the primary insurance amount since such payment cannot be more than actual burial expenses, and thus an adjustment factor should be introduced. Still another modification which should be brought in is to allow for the lower average wages of those dying, in part possibly because of lower economic status on the average and in part because of the effect of the last illness in reducing the average wage; such modification is of significance chiefly only in the early years of operation although it may have some sizable effect even in later years for deaths of young fathers.

The necessary modification factors for the elements discussed in the previous paragraph have all been developed on the basis of actual past claims experience, with an informed guess as to the future trend of such elements.

(18) Administrative Expenses.

In carrying forward the progress of the trust fund, it is essential to take account of the relatively small item of administrative cost since such outgo in the long run has a significant cumulative effect. After study of the various elements involved, it is believed desirable to base the assumed administrative cost on two factors--payroll and total monthly benefit payments. The estimated administrative expenses for a given year were obtained from the following relationships:

Low-cost estimate--\$5 per monthly beneficiary plus .40% of taxable payroll;

High-cost estimate--\$7 per monthly beneficiary plus .45% of taxable payroll.

The application of these assumptions produces estimated annual administrative expenses of \$75-101 million for the present time (as compared with actual expenses of \$92 million in 1953) and of \$172-268 million half a century hence when benefit rolls will have expanded greatly. On this basis, ultimately the estimated administrative costs represent about 1½% of benefit disbursements.

(19) Taxable Payroll versus Creditable Payroll.

The previous discussion as to wages and payroll dealt solely with credited wages which are used in determining benefits. However,

the effective payroll on which contributions are based is slightly higher because of the provision that wages earned in a year in excess of \$3600 when from several employers (with no more than \$3600 from any one employer) are subject to contributions but are not credited toward benefits. In such cases the employee contributions for wages in excess of \$3600 are refundable, but those from the employers are not. Study of the actual data for 1940-50 indicates that under both the low-employment and high-employment assumptions the effective taxable payroll taking into account refunds is about 1.2% higher than the credited payroll. These factors have been applied to the credited payroll to yield the taxable payroll.

(20) Trust Fund.

In the progress of the trust fund the contributions were obtained by multiplying the effective taxable payrolls by the combined employer-employee contribution rate and then reducing this amount by 2.3% to allow for loss of income due to the self-employed paying only $\frac{3}{4}$ of this rate. In effect, it was assumed that 9.3% of the total covered payroll is in respect to the self-employed.

The trust fund at the end of 1952 was \$18,192 million which includes an estimated \$750 million the Railroad Retirement Account "owes" the trust fund.

C. Results of Cost Estimates under Level Wage Assumption

Table 7 shows the estimated monthly beneficiaries age 65 and over in current payment status for the four series of estimates, and also the actual data for 1950-52 (without any allowance for the effect of the railroad retirement coverage, see page 2). Fifty years hence such beneficiaries are shown to increase from the present level of nearly 4 million to a range of from 18 to 24 million. At that time male old-age beneficiaries (retired workers) are shown to make up about 40% of the total, female old-age beneficiaries about 30-35%, wife beneficiaries not eligible for old-age benefits about 10%, widow beneficiaries not eligible for old-age benefits about 15-20%, and parent beneficiaries about 1%.

Table 8 relates the estimated total monthly beneficiaries age 65 and over as shown in Table 7 to the total aged population by sex. Whereas at the present time close to 40% of all aged men and 30% of all aged women are actually drawing benefits, eventually this proportion will range from 65 to 80% for men and 70 to 90% for women.

Table 9 relates the estimated old-age beneficiaries in current payment status to the aged insured population. At the present time, over 60% of the male insured and 75% of the female insured are on the benefit rolls as old-age beneficiaries. Ultimately it is estimated that from 80 to 90% of the male insured and 90 to 97% of the female insured will be on the rolls as old-age beneficiaries.

Table 10 shows for various years in the future the estimated monthly beneficiaries under age 65 in current payment status for the four estimates, as well as the actual data for 1950-52 (again without allowance for the railroad retirement coverage). All categories show a decided increase in future years except child survivor beneficiaries under the high-cost assumptions; this category remains relatively level after 1955 due to the lower mortality assumption, which means fewer survivor children created. Table 10 also gives the estimated lump-sum death payments, which for all four estimates increase steadily as the insured population grows and becomes older on the average.

Table 11 shows the estimated possible amount of overlapping for female beneficiaries as between old-age benefits and wife's or widow's benefits. In the early years there are not many cases of overlapping since relatively few of the current married, older women work sufficiently in covered employment to become insured for old-age benefits. However, in later years many married women age 65 and over will possess insured status for old-age benefits on account of employment at the younger ages, either before or shortly after marriage. Likewise, eventually many widows will qualify for old-age benefits by reason of employment while single or after the death of their husbands.

Ultimately about 20 to 25% of the female old-age beneficiaries (as in Table 7) are estimated to be also qualified for wife's benefits. However, since the wife's benefit is only 50% of the husband's old-age

benefit, in only about $\frac{1}{4}$ of such cases is the wife's benefit larger than the old-age benefit in her own right.

Ultimately about 40 to 55% of the female old-age beneficiaries are estimated as also qualified for widow's benefits. Since the widow's benefit is 75% of the husband's old-age benefit, a relatively large proportion of such women (about $\frac{1}{2}$) have a larger widow's benefit than old-age benefit in own right. It should be emphasized again that these figures are particularly subject to fluctuations and uncertainty.

Table 12 indicates the estimated average annual benefits in current payment status for old-age beneficiaries and their dependents. Also shown are the additional wife's average benefits payable for those women who receive a full old-age benefit which is smaller than the full wife's benefit otherwise payable. In all instances for men the average benefit payment shows a gradual rise. Because of the assumptions of more steady employment under the high-employment estimates, the eventual average benefits are somewhat higher than for the low-employment assumption estimates. For a particular employment assumption the averages tend to be slightly higher under the low-cost assumptions than under the high-cost assumptions; in general, this occurs because the high-cost assumptions assume a greater proportion insured, and thus spreading the total covered wages among more persons results in lower average benefits.

Table 13 shows estimated average benefits in regard to survivors and lump-sum death payments. The same general differences as between the various estimates hold true here as in Table 12.

Table 14 summarizes the estimated benefit payments, along with the actual data for the years 1950-52. The benefit payments increase from the level of about \$2.3 billion in 1952 to \$12 to \$16 billion in the year 2000. Old-age benefits constitute from 65 to 75% of the total benefit payments in the year 2000, with the other benefits for those age 65 and over making up all but about 8% of the total. This contrasts with the actual 1952 data in which old-age benefits were 61%, other benefits for those age 65 and over were 18%, and younger survivor and lump-sum death benefits were 21%.

Charts 1 and 2 present graphically for the high-employment and low-employment assumptions respectively the trend of the actual and estimated benefit costs from 1937 on, along with the contribution rates specified in the law. Under the low-cost examples, benefit costs are roughly the same as the contribution rate in all years although under high-employment assumptions benefits are below contributions for the first 30 years. On the other hand, under the high-cost examples, the benefit costs exceed the contribution rate after 1970 for the low-employment assumptions and 1975 for the high-employment assumptions.

CHART I.

BENEFIT COSTS AS PERCENT OF PAYROLL HIGH-EMPLOYMENT ASSUMPTIONS

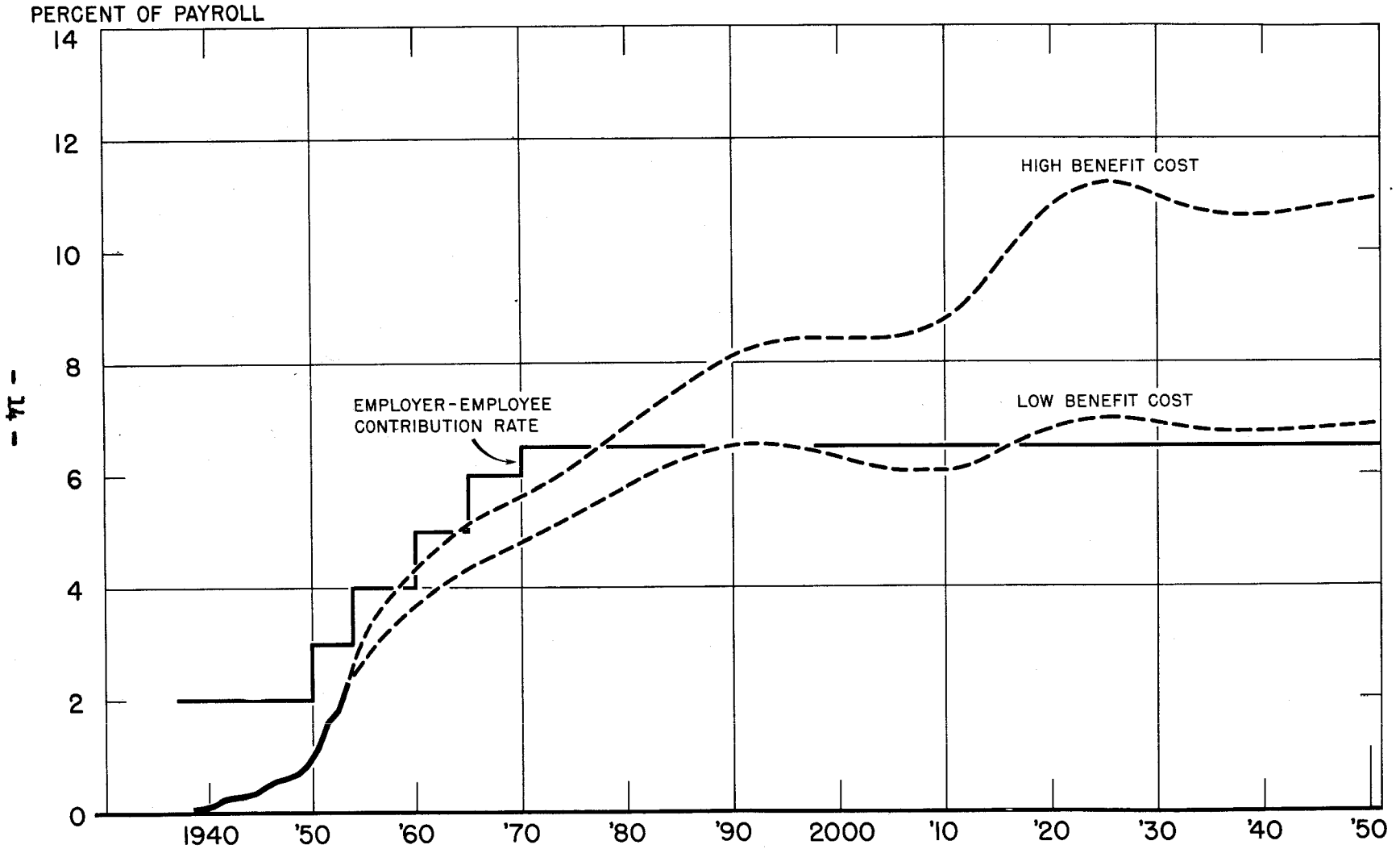
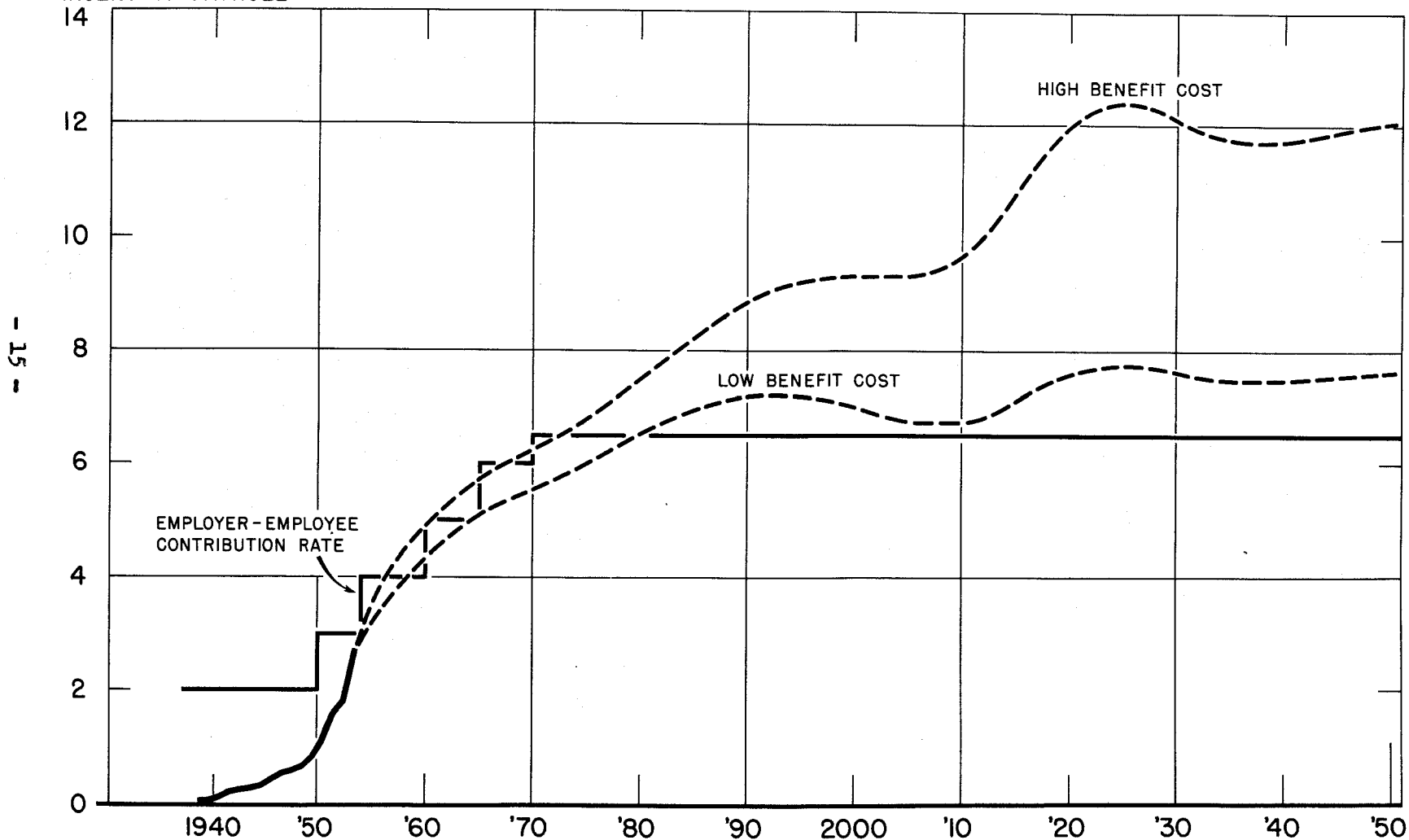


CHART 2.

BENEFIT COSTS AS PERCENT OF PAYROLL

LOW-EMPLOYMENT ASSUMPTIONS

PERCENT OF PAYROLL



Tables 15a and 15b relate the estimated benefits to taxable payroll for the low-employment and high-employment assumptions respectively. The total cost for the ultimate condition (from the year 2020 on) ranges from 7.6 to 12.1% of payroll for the low-employment assumption and from 6.9 to 10.9% for the high-employment assumptions.

In addition to the figures for the low-cost and high-cost estimates, there have been developed intermediate cost estimates which are merely an average of the low-cost and high-cost estimates and are not intended to represent "most probable" figures. Rather, they have been set down as a convenient and readily available single set of figures to be used for comparative purposes.

Furthermore, since the Congress has adopted the principle of establishing in the law a contribution schedule designed to make the system self-supporting, it was necessary at the time the legislation was enacted to select a single set of estimates as the basis for the contribution schedule. The intermediate estimate was used for this purpose. Quite obviously any specific schedule may require modification in the light of experience, but the establishment of the schedule in the law does make clear the congressional intent that the system be self-supporting. Further, exact self-support cannot be obtained from a specific set of integral or rounded fractional rates, but rather this principle of self-support was aimed at as closely as possible by the Congress in 1950 when it developed the tax schedule in the law, and again in 1952 when further amendments were made.

The low-cost and high-cost estimates result from two carefully considered series of assumptions. The intermediate-cost estimate represents an average of the low-cost and high-cost estimates of beneficiaries, benefit disbursements, and total taxable payroll. The corresponding estimates of benefits relative to payroll are developed from these dollar figures.

Another concept of long-range cost is the level-premium contribution rate required to support the system into perpetuity based on discounting at interest and assuming that benefit payments and taxable payrolls remain level after the year 2050 (actually the relationship between benefits and payroll is virtually constant after about 2020). If such a level rate were adopted, relatively large accumulations in the trust fund would result, and in consequence also sizable eventual income from interest. Even though such a method of financing is not followed, this concept may nevertheless be used as a convenient measure of long-range costs. In one respect this is a better cost concept since it takes into account the heavy deferred load although, on the other hand, some may feel it unrealistic because it deals with periods beyond the year 2050, and also it is dubious to assume a leveling off or stabilization at any time.

Table 16 deals with level-premium costs of the benefits in perpetuity by further taking into account administrative expenses and the accumulated fund on hand at the end of 1952. The resulting "net cost" level-premium would, if actual experience is the same as the particular estimate, be the level contribution rate payable both by the self-employed and by the employer and employee combined, which if in effect hereafter would result in an exactly self-supporting system; then funds accumulating at interest would supply income eventually sufficient to offset the excess of benefit payments over contributions. The "adjusted net cost" level-premium shown is the corresponding figure for the level contribution rate payable by the employer and employee combined, with the self-employed paying only $\frac{3}{4}$ of this rate. The resulting figures are shown for four interest rates--2% (the rate used in the previous cost estimates of Actuarial Study No. 23), $2\frac{1}{4}$ % (close to the rate of 2.3% on investments in the trust fund as of June 30, 1953 and also the rate used in the cost estimates made for the 1952 Amendments when they were being considered by Congress), $2\frac{1}{2}$ %, and $2\frac{3}{4}$ %. The current rate on new investments in special issues is $2\text{-}3\frac{3}{8}$ %, and in fact in July 1953 all investments in the trust fund will carry at least this rate (after the funds from special certificates of indebtedness falling due June 30 are re-invested in new special certificates).

At $2\frac{1}{4}$ % interest the "adjusted new cost" level-premium ranges from 6.5 to 8.6% of payroll for the low-employment assumptions and from 5.8 to 7.8% for the high-employment assumptions. In other words, for the present system a level employer-employee contribution rate (self-employed paying $\frac{3}{4}$) of as little as $5\frac{3}{4}$ % might be sufficient or, on the other hand, a rate of $8\frac{1}{2}$ % might be necessary under adverse circumstances. Using a higher interest rate naturally results in somewhat lower costs and vice versa. A differential of $\frac{1}{2}$ % in the interest rate has a net effect on the level-premium of about $\frac{1}{3}$ % of payroll under the low-cost assumptions and of about $\frac{1}{2}$ % of payroll under the high-cost assumptions.

Table 16 also shows the level-premium equivalents of the present contributions based on the graded schedule now in the law (as established by the 1950 Amendments). These figures are on a comparable basis with the "adjusted net cost" level-premium figures for benefits and show the relative sufficiency (or insufficiency) of the contribution schedule.

Tables 17a and 17b present the estimated progress of the trust fund at $2\frac{1}{4}$ % interest under the contribution schedule in present law. Under the high-employment, low-cost estimate the fund continues to grow in the future reaching \$315 billion in the year 2050. However, under the other estimates the fund grows for a time and then declines until it is eventually exhausted. Under the high-employment, high-cost estimate the fund reaches a peak in 1978 of \$41 billion and is exhausted in 1997. Under the low-employment, low-cost assumptions the fund reaches a peak of \$45 billion in 1985 and is exhausted in 2028. Under the

low-employment, high-cost assumptions the fund reaches a peak of \$20 billion in 1957, remains slightly below this level for the next 15 years, and is exhausted in 1986.

Tables 17c and 17d give the estimated progress of the trust fund under the contribution schedule in present law but using $2\frac{3}{4}\%$ interest. As would be anticipated, the fund grows to a larger size than under the $2\frac{1}{4}\%$ interest assumption, and any exhaustion date comes later.

The level rate equivalent to the graded contribution schedule shown in Table 16 is greater than the net cost only for the high-employment, low-cost assumption. Thus it would be anticipated that the trust fund would continue to grow only under this assumption and would be ultimately exhausted under the other assumptions.

Tables 18a and 18b show the progress of the trust fund, based on $2\frac{1}{4}\%$ and $2\frac{3}{4}\%$ interest, under a 3% level employer-employee contribution rate (in contrast with Tables 17 which were on the basis of the present contribution schedule). In between these two contribution schedules there are numerous alternatives.

Tables 19a and 19b show for low and high employment assumptions respectively the progress of the trust fund, based on $2\frac{1}{4}\%$ interest and a level contribution rate that would be just sufficient to pay the benefits and administrative expenses in the future. It was assumed in the cost estimates that benefit disbursements and contributions would be the same after the year 2050 as in the year 2050. It was also assumed for the purpose of these tables that the contribution rate would be just sufficient to pay benefits in the future (after 1952). Such rate is, of course, the appropriate "adjusted net cost" figure from Table 16. Thus, it follows that the fund will reach its peak in the year 2050 and that the fund then will be of such size that the interest earnings plus the contributions will equal the benefit payments plus administrative expenses in the year 2050 (i.e. the interest earnings will equal the negative net income) and thereafter.

B. Accrued Liability Under OASI

Accrued liability is the dollar amount necessary as of a given date to pay in the future all accrued benefits if the system should then terminate. Thus the value of this accrued liability will vary, depending on the intent as to what benefit rights will be recognized if the system should terminate. When a system is set up specifying a contribution rate which, in the early years, is more than necessary to pay the benefits, then a trust fund is developed from this excess, which represents the funded portion of the accrued liability.

If the "intent" under the system were only to continue payments to all on the beneficiary rolls (see Actuarial Study No. 35 which presents actuarial analysis under this concept), then the accrued liability (present value of benefits on the rolls) at the end of 1953 is \$23 billion, of which \$19 billion is funded (the then trust fund). Table 20 shows for a 2½% interest rate a comparison of the estimated trust fund in future years with the estimated present value of benefits in current payment status; these present values are based on 1939-41 mortality rather than the improving, generation mortality used in the cost estimates and are thus definitely understatements. For the next 50 years, by coincidence, in the low-cost estimate the present value of the benefits on the roll is roughly the same as the balance in the fund. For the other two estimates, such present values always exceed the trust fund. By the year 2050 the present value of benefits on the rolls will be about \$180 billion, while the trust fund at that time will be exhausted on the intermediate-cost basis.

If the "intent" were not only to pay all beneficiaries in current payment status but also to make proportional payments to all others who have contributed, then the accrued liability at the present time is about \$200 billion, of which \$18 billion is funded.

Under this latter concept, accrued liability may be expressed as the excess of the present value of all future benefit payments over the normal cost of those benefits, where the normal cost is the average cost for new entrants. For the high-employment intermediate cost estimate, Table 21a shows this normal cost (using 2½% interest) to be 4.42%, while the total cost is 6.80% of which .22% is payable from interest on the funded portion of this accrued liability (present trust fund), leaving a net cost of 6.58% of payroll (see Table 16). Corresponding figures are shown in Table 21b for 2½% interest.

E. The Effect of an Increasing Wage Assumption

A factor mentioned earlier, but not used in the actuarial projections, is the trend, exhibited in the past, of an irregular but upward movement in earnings, both on a dollar basis and in the form of real wages. If this secular trend continues, then--other things being equal--the curves of benefits and contributions would both be more steeply ascending than shown. The upward changes in the contribution curves, however, would be far more accentuated than would be such changes in the benefit curves. There are several reasons for this, the important one being that the benefit increase would be dampened because--

(1) The benefits are determined by the average monthly wage up to the maximum of \$300; 55% is applied to the first \$100 thereof and 15% to that part above \$100. As average earnings increase and as more persons approach or reach the \$300 maximum, a larger portion of such earnings falls in that bracket of the benefit formula to which the 15% rather than the 55% rate applies. Thus benefits are smaller in relation to earnings, and consequently in relation to contributions.

(2) Any year's contributions are substantially based on the covered earnings of that year, while any year's benefits in force are based on weighted composite earnings of all previous years in which the insured persons on whose account the benefits are paid worked in covered employment, thus including--in far distant future years--earnings of as much as 60 years previously.

The assumption of steadily rising earnings in conjunction with an unamended benefit formula would have an important bearing in considering the long-range cost of the program. With such an assumption, the future rise in earnings would seem to offer significant financial help in the financing of benefits because contributions at a fixed percentage rate would increase steadily relative to benefit disbursements; but the benefits paid to beneficiaries would steadily diminish in relation to current earnings levels. In such a case, offsetting this apparent savings in cost, it is likely that from the long-range point of view the present benefit formula would not be maintained. Rather, revisions would probably be made by the Congress (perhaps with some delay) which would make average benefits as adequate relative to the then-existing earnings level as average benefits under the present formula are in relation to the level prevailing when the 1952 Amendments were enacted.

In revising the benefit schedule to conform with the altered earnings level, the changed cost and contribution picture would have to be considered. This is especially so as to changes resulting from the fact that benefits would be based on earnings prevailing at the time of such change and thereafter, while the accumulated trust fund at

that time would have developed from contributions on the lower earnings prevailing during the past. The fund thus would not play as important a role in financing the program as would have been the case if the earnings level had not changed. Accordingly, because of the diminution of the value of the existing fund toward financing of the program, the level-premium cost of the program would be increased if the benefit level were adjusted in exact proportion with the increase in the earnings level. For small rates of increase in the earnings level the increase in cost may be partially counterbalanced by the time lag which would undoubtedly occur between the rise in earnings level and the amendment of the benefit provisions. However, for large rates of increase in earnings levels (i.e., for rates equal to or in excess of the assumed valuation interest rate), the level-premium cost would be the ultimate cost, since the fund would ultimately not play any role in the financing of the benefits.

In addition to excluding the assumption of increasing wages in the future, the detailed cost estimates given have avoided dealing with various other important secular trends. These have diverse effects on costs which cannot now be adequately extrapolated into the future. One illustration is the lengthening of the period of childhood or preparation for work. Another possibility is a drastic change in the average age of retirement, either to a considerably lower effective age so that practically all persons would retire at the minimum age of 65, or conversely to a higher effective age under circumstances of greatly improved health conditions combined with good employment opportunities, such that few would retire before age 70 or even 75.

F. Comparison with Previous Estimates

The cost estimates used as the basis for the 1950 and 1952 Amendments were, in effect, based on the assumptions developed for Actuarial Study No. 23 in 1946 with three exceptions; first, the cost estimates based on the low-employment assumptions were discontinued because by 1948 these assumptions seemed unrealistic; second, modifications in the earnings assumptions were made from time to time; and, third, the interest assumptions were changed in the estimate for the 1952 Amendments.

In the previous cost estimates (prepared from 1939 on) it had always been assumed that the system would mature in the year 2000 or, in other words, that benefit payments and contributions would be level thereafter. In the new cost estimates, an alternative assumption is made by maturing any trends, such as mortality, in the year 2000 but going on with the estimates for another 50 years. In one sense, this seems necessary because we know that the aged population itself cannot mature by the year 2000. The reason for this is that the number of births in the 1930's was very low as compared with those since then, and, as a result, there is a dip in the relative proportion of the aged from 1995 to about 2010, which, in itself, would be reflected in OASI benefit costs for that period. Accordingly, the year 2000 is by no means a typical "ultimate year."

Table 22 compares benefit costs related to payroll for the previous estimate and for current estimate. One important point to observe is that in the next 10 to 20 years the current estimate shows considerably higher cost than the previous one; in large part, this arises because the previous estimates did not take sufficient account of the very sizable effect of the "new start" insured-status provision in the 1950 amendments, especially as it would affect persons in their fifties (although the estimate of the number of new eligibles age 65 and over was reasonably close).

Considering the year-by-year figures, those for the low-cost estimate under the current estimate are higher than in the previous estimate by close to 1% of payroll up to 1990 and by somewhat more than $\frac{1}{2}$ % of payroll in the year 2000. Under the high-cost estimate, the current estimate is somewhat higher through 1970 but lower thereafter. As a result, the intermediate-cost estimate under the current estimate is somewhat higher than the previous estimate up through 1990 but for the year 2000 is almost $\frac{1}{2}$ % of payroll lower.

The "ultimate" cost for the new cost estimates is reached in about the year 2025 at roughly 7% of payroll for the low-cost estimate, 11% for the high-cost estimate, and $8\frac{1}{2}$ % for the intermediate-cost

estimate. Each of these figures is about 1% of payroll higher than the corresponding figure for the year 2000 in the previous estimates, which assumed level conditions after 2000.

Next, considering level-premium costs, if it is assumed that benefits and contributions are level after the year 2000, as assumed previously, the intermediate figure is 6.09%, or about $\frac{1}{4}$ % of payroll higher than in the previous estimate. This figure, however, is increased by about $\frac{1}{2}$ % of payroll, if the increasing trend likely beyond the year 2000 is taken into account.

Table 23 compares benefit costs related to payroll for various years for all of the major long-range cost estimates that have been made in regard to the program, beginning with the 1935 Act and for each of the major Amendments thereto. It is not appropriate to compare level-premium costs because of several factors, such as different interest rates, different assumptions as to when "maturity" would occur, and the different time elements involved. In regard to the latter point, the level-premium cost in a given estimate for a particular plan will shift over the course of time if a graded contribution schedule is involved. Thus, for instance, consider a plan beginning in 1937 and remaining unchanged thereafter, with the experience exactly following the cost assumptions originally used. Under such circumstances, if the level-premium cost were 5% at the inception of the plan, and if a graded contribution schedule beginning at 2% and running up to 6% over a period of years were established such as to be equivalent to the level rate of 5%, then the level-premium cost determined in later years would be higher than 5% because this amount had not been collected in the early years of operation. In fact, ultimately the level-premium cost would be 6% of payroll (by the time the contribution schedule reached 6%).

In Table 23 no figures are shown after 1980 for the earliest estimates, and after 2000 for all but the most recent estimates. In those instances, the cost was assumed to level off after that point.

In 1955, the current estimates indicate a cost of roughly 3 to $3\frac{1}{2}$ % of payroll. By coincidence this is approximately the same range as was indicated in the original cost estimates for the 1935 Act and well below the $4\frac{1}{2}$ to $5\frac{1}{2}$ % range shown for the 1939 Amendments in the estimates made at the time of their enactment. Subsequent 1955 estimates made for the 1939 Act show lower costs than these, as do also the corresponding estimates for the 1950 and 1952 Amendments made at the time of their enactment.

As to ultimate costs, the current estimates for the present Act indicate a range from about 7% for the low-cost estimate to 11-12% for the high-cost estimate. This is well below the range shown in the original estimates for the 1935 Act, namely somewhat over 9% to somewhat over 13%. These ultimate costs for the present system according to the current estimates are, however, at roughly the same level as most of the other cost estimates made at various times.

Table 1
ESTIMATED U. S. POPULATION IN FUTURE YEARS^{a/}
(Figures in millions of persons)

Calendar Year	Aged 20-64			Aged 65 and Over			All Ages		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Actual Census Data ^{a/}									
1950	44	45	89	6	7	12	77	78	155
Projection for Low-Cost Assumptions									
1960	46	48	95	7	8	15	86	88	174
1970	52	54	106	8	10	18	94	96	190
1980	58	59	117	9	13	22	103	106	209
1990	62	62	125	11	15	25	113	115	228
2000	70	69	139	11	15	26	123	125	248
2025	85	84	169	16	20	36	153	153	306
2050	104	102	206	19	23	42	186	185	371
Projection for High-Cost Assumptions									
1960	47	48	95	7	8	15	86	87	173
1970	53	54	107	8	10	19	91	93	184
1980	58	59	116	10	13	23	97	100	197
1990	60	59	119	12	15	27	103	105	207
2000	64	63	128	12	16	28	108	108	216
2025	66	64	130	18	21	39	116	116	232
2050	69	67	136	18	21	38	120	119	239

^{a/} These data relate to the total United States and not merely to the Continental United States.

Table 2a

ASSUMED RATIOS OF PERSONS UNDER AGE 65 WITH WAGE CREDITS IN YEAR TO TOTAL POPULATION IN AGE GROUP

Age Group	Low-Employment			High-Employment		
	1955	1975	2000	1955	1975	2000
Males						
15-19	45%	45%	45%	60%	60%	60%
20-24	80	80	80	80	80	80
25-29	85	85	85	89	89	89
30-34	85	85	85	91	91	91
35-39	82	82	82	89	89	89
40-44	81	81	81	88	88	88
45-49	77	77	77	85	85	85
50-54	71	71	71	78	78	78
55-59	69	69	69	77	77	77
60-64	59	59	59	68	70	70
Females						
15-19	30%	30%	30%	42%	48%	55%
20-24	48	48	48	56	60	65
25-29	36	36	36	42	44	47
30-34	35	35	35	40	42	45
35-39	33	33	33	40	42	45
40-44	31	31	31	39	40	42
45-49	29	29	29	38	40	41
50-54	25	25	25	33	34	36
55-59	20	20	20	26	28	29
60-64	15	15	15	20	22	23

Table 2b

ASSUMED RATIOS OF AGED PERSONS WITH WAGE CREDITS
IN YEAR TO TOTAL POPULATION IN AGE GROUP

Age Group	Low-Employment			High-Employment		
	1955	1975	2000	1955	1975	2000
Males, Low-Cost Estimate						
65-69	43%	43%	43%	52%	57%	57%
70-74	23	23	23	29	32	32
75-79	7	7	7	12	13	13
Males, High-Cost Estimate						
65-69	31%	31%	31%	46%	42%	42%
70-74	15	15	15	26	23	23
75-79	5	5	5	10	9	9
Females, Low-Cost Estimate						
65-69	12%	12%	12%	15%	16%	18%
70-74	5	5	5	7	8	9
75-79	2	2	2	2	2	3
Females, High-Cost Estimate						
65-69	8%	8%	8%	11%	12%	14%
70-74	3	3	3	4	5	6
75-79	1	1	1	1	2	2

Table 3

ASSUMED PERCENTAGE DISTRIBUTIONS OF PERSONS WITH WAGES IN
YEAR BY QUARTERS WITH WAGES

Age Group	<u>1 Quarter</u>	<u>2 Quarters</u>	<u>3 Quarters</u>	<u>4 Quarters</u>	<u>Total</u>
Males, Low-Employment					
15-19	25%	25%	20%	30%	100%
20-24	15	15	14	56	100
25-29	10	10	10	70	100
30-34	8	10	9	73	100
35-39	8	9	9	74	100
40-44	8	9	9	74	100
45-49	8	9	9	74	100
50-54	8	9	10	73	100
55-59	8	9	10	73	100
60-64	8	10	11	71	100
65-69	10	11	14	65	100
70+	12	13	15	60	100
Males, High-Employment					
15-19	25%	25%	20%	30%	100%
20-24	13	12	10	65	100
25-29	9	8	8	75	100
30-34	7	8	7	78	100
35-39	6	7	7	80	100
40-44	6	7	7	80	100
45-49	6	7	7	80	100
50-54	6	7	7	80	100
55-59	6	7	8	79	100
60-64	7	8	10	75	100
65-69	10	10	12	68	100
70+	12	12	14	62	100
Females					
15-19	24%	24%	19%	33%	100%
20-24	16	16	15	53	100
25-29	18	15	15	52	100
30-34	16	14	14	56	100
35-39	15	13	13	59	100
40-44	13	11	13	63	100
45-49	12	11	12	65	100
50-54	12	11	11	66	100
55-59	12	10	12	66	100
60-64	12	11	12	65	100
65-69	14	12	12	62	100
70-74	14	10	11	65	100
75+	19	13	14	54	100

Table 4

ASSUMED RATIOS OF INSURED^{a/} PERSONS TO TOTAL POPULATION

Age Group	Low-Employment			High-Employment		
	1955	1975	2000	1955	1975	2000
Males						
15-19	10-10%	10-10%	10-10%	13-13%	13-13%	13-13%
20-24	60-65	60-65	60-65	70-70	70-70	70-70
25-29	70-82	70-80	70-80	85-89	85-89	85-89
30-34	80-86	75-83	75-83	85-90	82-90	82-90
35-39	83-88	75-83	75-83	86-90	80-90	80-90
40-44	82-84	75-83	75-83	85-88	80-90	80-90
45-49	80-82	76-84	76-84	83-85	81-90	81-90
50-54	77-78	77-85	76-85	80-80	83-90	82-91
55-59	73-75	78-85	77-86	74-76	84-88	83-93
60-64	70-73	78-82	78-87	72-75	83-87	84-95
65-69	70-73	74-77	78-87	72-75	78-82	85-95
70-74	63-65	70-73	78-87	65-68	74-77	85-95
75-79	48-50	69-72	78-87	50-55	72-76	86-95
80-84	37-38	70-73	79-85	38-42	72-77	86-91
85+	29-29	68-71	77-81	28-30	70-75	82-86
Females						
15-19	7- 7%	7- 7%	7- 7%	9- 9%	10-10%	11-11%
20-24	50-50	50-50	50-50	56-56	57-57	59-59
25-29	43-48	40-45	40-45	50-53	50-53	51-54
30-34	55-58	35-40	35-40	58-56	46-49	47-51
35-39	52-55	33-38	33-38	54-54	40-47	41-49
40-44	45-48	34-40	34-40	44-47	40-49	41-51
45-49	40-42	35-43	35-43	40-42	41-52	43-54
50-54	37-39	37-48	36-46	36-39	43-55	44-56
55-59	31-33	37-48	37-48	31-32	43-55	43-57
60-64	25-26	37-44	37-50	26-30	40-48	44-58
65-69	20-23	32-38	37-52	23-24	35-42	44-59
70-74	15-16	27-34	37-52	15-17	30-36	43-59
75-79	8- 8	25-30	37-53	8- 9	28-32	43-58
80-84	5- 5	23-27	37-52	5- 5	26-30	43-58
85+	2- 2	19-21	36-44	2- 2	21-23	39-48

a/ Includes both those fully insured and those currently insured only. At older ages and in future years latter category is relatively negligible.

Note: Range shown is for low-cost and high-cost estimates, respectively.

Table 5

ESTIMATED PERSONS WITH WAGE CREDITS, TOTAL CREDITED WAGES,
AND AVERAGE CREDITABLE WAGES

Calendar Year	Persons with Wage Credits in Year (in millions)			Total Credited Wages in Year (in billions)	Average Wage
	Males	Females	Total		
Actual Data					
1951 ^{a/}	b/	b/	58.0	\$117.0	\$2017
Low-Employment, Low-Cost Assumptions					
1955	39.6	16.9	56.5	113.5	2008
1960	41.1	17.6	58.7	117.3	2000
1980	51.2	21.6	72.8	145.7	2000
2000	61.7	25.7	87.4	174.9	2001
2050	92.1	37.7	129.8	260.3	2005
Low-Employment, High-Cost Assumptions					
1955	39.1	16.7	55.8	112.2	2009
1960	40.6	17.4	58.0	116.0	2001
1980	49.8	20.7	70.6	142.2	2015
2000	55.3	22.4	77.6	156.9	2020
2050	59.8	23.6	83.4	169.0	2026
High-Employment, Low-Cost Assumptions					
1955	43.6	20.9	64.6	132.6	2079
1960	45.5	22.4	67.9	138.6	2064
1980	56.7	29.0	85.8	173.9	2052
2000	68.4	36.6	105.0	211.5	2038
2050	102.4	53.8	156.2	315.2	2042
High-Employment, High-Cost Assumptions					
1955	43.4	20.7	64.1	131.8	2080
1960	45.1	22.2	67.2	137.2	2065
1980	55.0	27.8	82.8	169.2	2069
2000	61.2	31.9	93.2	189.7	2061
2050	66.5	33.8	100.3	204.8	2067

a/ Preliminary.

b/ Not available.

Table 6

ESTIMATED INSURED^{a/} POPULATIONS AS OF BEGINNING OF YEAR
(Figures in millions of persons)

Calendar Year	All Ages			Aged 65 and Over		
	Males	Females	Total	Males	Females	Total
Actual Data (as of January 1)						
1951	37.9	21.9	59.8	1.5	.3	1.8
1952	39.3	23.0	62.4	1.8	.5	2.3
1953	41.6	25.0	66.5	2.1	.6	2.6
Low-Employment, Low-Cost Assumptions						
1955	38.5	21.8	60.3	3.8	1.0	4.9
1960	39.7	21.4	61.0	4.6	1.5	6.1
1980	50.0	26.7	76.7	7.0	3.9	10.9
2000	60.5	32.4	92.9	8.6	5.5	14.0
2050	91.9	48.1	140.0	14.8	8.7	23.4
Low-Employment, High-Cost Assumptions						
1955	40.7	23.0	63.7	4.0	1.1	5.1
1960	42.2	23.5	65.7	4.8	1.7	6.5
1980	55.1	31.3	86.5	7.7	4.9	12.6
2000	63.6	36.7	100.3	10.5	8.1	18.6
2050	72.4	40.9	113.3	15.5	10.7	26.2
High-Employment, Low-Cost Assumptions						
1955	41.2	22.9	64.2	3.9	1.1	5.1
1960	42.7	23.6	66.2	4.7	1.7	6.4
1980	55.2	31.9	87.0	7.4	4.3	11.7
2000	66.9	39.6	106.5	9.3	6.4	15.7
2050	101.5	60.5	162.0	16.1	10.6	26.7
High-Employment, High-Cost Assumptions						
1955	42.7	23.7	66.4	4.2	1.2	5.4
1960	44.8	25.0	69.8	5.0	1.9	6.9
1980	59.6	37.0	96.5	8.2	5.4	13.5
2000	69.2	44.2	113.4	11.5	9.1	20.5
2050	78.9	50.2	129.1	16.9	12.4	29.3

^{a/} Includes both fully insured and currently insured only. In future years, relatively few of those aged 65 and over will be currently insured only.

Table 7

ESTIMATED MONTHLY BENEFICIARIES AGE 65 AND OVER IN CURRENT PAYMENT STATUS^{a/}
(Figures in thousands of persons)

Calendar Year	Old-Age ^{b/}		Wife's ^{c/}	Survivors		Total Aged ^{e/}
	Males	Females		Widow's ^{d/}	Parents	
f/ Actual Data (as of December)						
1950	1,469	302	499	314	15	2,599
1951	1,819	459	618	384	19	3,299
1952	2,052	592	704	455	21	3,824
Low-Employment, Low-Cost Assumptions						
1955	2,923	785	958	768	25	5,459
1960	3,603	1,231	1,174	1,341	27	7,376
1970	4,485	2,142	1,371	2,445	31	10,474
1980	5,706	3,544	1,546	3,104	35	13,935
2000	7,213	5,089	1,851	3,747	43	17,943
2050	12,323	7,999	3,182	5,670	43	29,217
Low-Employment, High-Cost Assumptions						
1955	3,342	975	1,077	777	27	6,198
1960	4,102	1,540	1,301	1,348	31	8,322
1970	5,186	2,806	1,520	2,457	39	12,008
1980	6,739	4,672	1,689	3,105	47	16,252
2000	9,530	7,836	2,016	3,464	63	22,909
2050	13,997	10,368	3,113	4,538	63	32,079
High-Employment, Low-Cost Assumptions						
1955	2,795	796	920	761	25	5,297
1960	3,417	1,298	1,114	1,328	27	7,184
1970	4,306	2,300	1,304	2,413	31	10,354
1980	5,600	3,738	1,488	3,082	35	13,943
2000	7,461	5,750	1,778	3,644	43	18,676
2050	12,694	9,478	2,989	5,354	43	30,558
High-Employment, High-Cost Assumptions						
1955	3,148	979	1,029	779	27	5,962
1960	4,004	1,621	1,268	1,353	31	8,277
1970	5,137	2,912	1,496	2,470	39	12,054
1980	6,818	4,933	1,649	3,076	47	16,523
2000	9,989	8,581	1,894	3,266	63	23,793
2050	14,737	11,699	2,908	4,107	63	33,514

a/ For estimated data, this corresponds to average monthly number in current payment status.

b/ I.e., retired workers. Persons qualified both for old-age benefits and for other benefits are shown as old-age beneficiaries.

c/ Including husband's benefits.

d/ Including widower's benefits.

e/ Excludes the relatively negligible number of mother's beneficiaries over 65 but not eligible for widow's benefits.

f/ Excluding effect of railroad coverage under financial interchange provisions.

Table 8

ESTIMATED MONTHLY BENEFICIARIES AGE 65 AND OVER IN CURRENT PAYMENT
STATUS AS PERCENT OF TOTAL AGED POPULATION

Calendar Year	Low-Cost Assumptions			High-Cost Assumptions		
	Males	Females	Total	Males	Females	Total
Actual Data ^{a/} (as of December)						
1950	25%	17%	21%	25%	17%	21%
1951	31	22	26	31	22	26
1952	34	26	29	34	26	29
Low-Employment Assumptions						
1955	45%	34%	39%	52%	38%	45%
1960	51	45	48	58	50	54
1980	61	65	63	68	74	71
2000	66	72	69	78	85	82
2050	65	72	69	79	87	83
High-Employment Assumptions						
1955	43%	34%	38%	49%	38%	43%
1960	49	45	47	57	51	53
1980	59	66	63	69	75	72
2000	68	75	72	82	88	85
2050	67	76	72	83	91	87

^{a/} Excluding effect of railroad coverage under financial interchange provisions.

Table 9

ESTIMATED OLD-AGE BENEFICIARIES^{a/} IN CURRENT PAYMENT STATUS
AS PERCENT OF INSURED POPULATION AGE 65 AND OVER

Calendar Year	Low-Cost Assumptions			High-Cost Assumptions		
	Males	Females	Total	Males	Females	Total
Actual Data ^{b/} (as of December)						
1950	50%	50%	50%	50%	50%	50%
1951	59	66	60	59	66	60
1952	62	76	65	62	76	65
Low-Employment Assumptions						
1955	76%	76%	76%	84%	86%	84%
1960	79	82	80	86	90	87
1980	82	90	85	88	95	90
2000	84	93	88	90	97	93
2050	83	92	87	90	97	93
High-Employment Assumptions						
1955	71%	72%	71%	75%	82%	77%
1960	73	78	74	79	86	81
1980	76	87	80	83	92	87
2000	80	90	84	87	95	90
2050	79	90	83	87	95	90

a/ I.e., retired workers.

b/ Excluding effect of railroad coverage under financial interchange provisions.

Table 10

ESTIMATED MONTHLY BENEFICIARIES UNDER AGE 65 IN CURRENT
PAYMENT STATUS^{a/} AND LUMP-SUM DEATH PAYMENTS IN YEAR
(Figures in thousands of persons)

Calendar Year	Supplementary Benefits ^{b/}		Survivor Benefits		Lump-Sum Payments ^{d/}
	Wife's ^{c/}	Child's	Mother's	Child's	
Actual Data ^{e/}					
1950	9	46	169	653	200
1951	29	68	204	770	414
1952	34	75	228	864	438
Low-Employment, Low-Cost Assumptions					
1955	67	101	305	1,097	630
1960	76	114	380	1,252	727
1970	85	128	418	1,306	913
1980	113	170	428	1,322	1,094
2000	126	189	480	1,502	1,404
2050	226	339	712	2,200	2,229
Low-Employment, High-Cost Assumptions					
1955	81	122	356	1,137	646
1960	87	131	455	1,301	744
1970	93	140	498	1,329	949
1980	118	177	493	1,272	1,156
2000	125	188	470	1,182	1,550
2050	185	277	491	1,207	2,087
High-Employment, Low-Cost Assumptions					
1955	61	91	284	1,100	651
1960	66	99	359	1,282	758
1970	75	113	404	1,374	974
1980	104	156	421	1,413	1,184
2000	121	181	473	1,614	1,557
2050	215	323	701	2,366	2,514
High-Employment, High-Cost Assumptions					
1955	71	107	340	1,149	673
1960	80	120	442	1,341	784
1970	88	132	494	1,407	1,012
1980	115	172	496	1,366	1,245
2000	127	190	478	1,289	1,701
2050	188	282	500	1,317	2,325

a/For estimated data, this corresponds to average monthly number in current payment status.

b/Payable to dependents of old-age beneficiaries (retired workers).

c/Wife is under age 65, with dependent child under 18 in her care.

d/Number of decedents on whose account payments are made.

e/For monthly benefits, as of December. Excluding effect of railroad coverage under financial interchange provisions.

Table 11

ESTIMATED FEMALE BENEFICIARIES QUALIFIED FOR BOTH OLD-AGE BENEFITS^{a/}
AND WIFE'S OR WIDOW'S BENEFITS^{b/}, IN CURRENT PAYMENT STATUS^{c/}
(Figures in thousands of persons)

Calendar Year	Qualified for Old-Age and Wife's		Qualified for Old-Age and Widow's	
	Total Eligible	With Smaller Old-Age Benefit	Total Eligible	With Smaller Old-Age Benefit
Low-Employment, Low-Cost Assumptions				
1960	129	32	282	141
1980	499	125	1,308	654
2000	868	217	2,132	1,066
2050	1,420	355	3,354	1,677
Low-Employment, High-Cost Assumptions				
1960	177	53	329	181
1980	779	234	1,712	942
2000	1,747	524	3,433	1,888
2050	2,385	716	5,051	2,778
High-Employment, Low-Cost Assumptions				
1960	140	35	317	158
1980	539	135	1,485	742
2000	1,063	266	2,654	1,327
2050	1,795	449	4,425	2,212
High-Employment, High-Cost Assumptions				
1960	193	58	372	205
1980	862	259	1,940	1,067
2000	2,073	622	4,090	2,250
2050	2,913	874	6,338	3,486

a/ I.e., retired workers.

b/ Number eligible for both old-age and parent's benefits is relatively negligible.

c/ This corresponds to average monthly number in current payment status.

Table 12

**ESTIMATED AVERAGE ANNUAL BENEFITS FOR OLD-AGE BENEFICIARIES AND THEIR DEPENDENTS
IN CURRENT PAYMENT STATUS**

Calendar Year	Old-Age ^{a/}		Supplementary		Child's
	Males	Females	With No Old-Age Benefit	Wife's ^{b/} With Smaller Old-Age Benefit	
Actual Data ^{d/} (based on December)					
1952	\$626	\$470	\$312	c/	\$176
Low-Employment, Low Cost Assumptions					
1960	\$729	\$522	\$375	\$94	\$228
1980	769	511	394	98	235
2000	772	500	395	99	236
2050	771	501	395	99	236
Low-Employment, High-Cost Assumptions					
1960	\$723	\$500	\$374	\$112	\$221
1980	756	470	386	116	234
2000	757	434	387	116	235
2050	757	434	386	116	232
High-Employment, Low-Cost Assumptions					
1960	\$738	\$596	\$379	\$95	\$234
1980	788	623	404	101	242
2000	790	557	404	101	244
2050	789	558	404	101	243
High-Employment, High-Cost Assumptions					
1960	\$753	\$593	\$390	\$117	\$225
1980	773	586	395	118	237
2000	774	488	395	118	238
2050	774	488	395	118	239

a/ I.e., benefit for retired worker.

b/ Including husband's benefits.

c/ Subdivision not available.

d/ Excluding effect of railroad coverage under financial interchange provisions.

Note: Persons qualified both for old-age benefits and for other benefits are shown as old-age beneficiaries.

Table 13

ESTIMATED AVERAGE ANNUAL SURVIVOR BENEFITS IN CURRENT PAYMENT STATUS AND LUMP-SUM DEATH PAYMENTS

Calendar Year	Survivor					
	Widow's ^{a/}		Mother's	Child's	Parent's	Lump-sum ^{b/} Payments
	With No Old-Age Benefit	With Smaller Old-age Benefit				
Actual Data ^{d/} (based on December)						
1952	\$488	c/	\$435	\$375	\$496	\$165
Low-Employment, Low-Cost Estimate						
1960	\$507	\$127	\$507	\$369	\$593	\$171
1980	578	144	518	369	597	175
2000	590	148	519	372	597	170
2050	590	148	518	371	597	170
Low-Employment, High-Cost Estimate						
1960	\$513	\$154	\$500	\$361	\$578	\$171
1980	576	173	510	360	580	167
2000	582	175	511	361	580	159
2050	581	174	509	361	580	160
High-Employment, Low-Cost Estimate						
1960	\$512	\$128	\$517	\$378	\$593	\$175
1980	591	148	528	377	597	182
2000	604	151	529	378	597	176
2050	604	151	529	378	597	177
High-Employment, High-Cost Estimate						
1960	\$544	\$163	\$512	\$371	\$578	\$179
1980	592	178	520	367	580	177
2000	594	178	521	367	580	165
2050	593	178	520	368	580	166

a/ Including widower's benefits.

b/ Based on number of decedents on whose account payments are made.

c/ Subdivision not available.

d/ Excluding effect of railroad coverage under financial interchange provisions.

Table 14
ESTIMATED BENEFIT PAYMENTS
(Figures in millions of dollars)

Calendar Year	Monthly Benefits						Lump-Sum Death Payments	Total Benefits
	Old-Age ^{a/}	Wife's ^{b/}	Widow's ^{c/}	Parent's	Child's	Mother's		
Actual Data ^{d/} (Certifications)								
1950	\$615	\$97	\$95	\$4	\$155	\$53	\$33	\$1,051
1951	1,169	181	160	9	281	86	57	1,942
1952	1,392	209	197	10	324	97	63	2,292
Low-Employment, Low Cost Assumptions								
1955	2,381	350	370	14	430	149	104	3,798
1960	3,269	459	695	15	488	191	124	5,241
1970	4,583	561	1,402	17	512	216	161	7,452
1980	6,200	646	1,879	20	528	222	191	9,686
2000	8,113	780	2,360	24	603	250	239	12,369
2050	13,506	1,341	3,577	26	897	369	380	20,096
Low-Employment, High-Cost Assumptions								
1955	2,747	398	382	16	444	172	108	4,267
1960	3,737	511	717	18	499	226	127	5,835
1970	5,298	618	1,443	23	511	254	163	8,310
1980	7,286	704	1,943	27	499	251	193	10,903
2000	10,613	867	2,337	37	471	240	246	14,811
2050	15,091	1,324	3,107	37	500	250	333	20,642
High-Employment, Low-Cost Assumptions								
1955	2,349	337	370	14	438	141	112	3,761
1960	3,294	439	695	15	507	184	133	5,267
1970	4,811	546	1,410	17	546	214	179	7,723
1980	6,739	638	1,915	20	571	222	216	10,321
2000	9,101	772	2,379	24	654	251	274	13,455
2050	15,305	1,302	3,530	26	972	372	444	21,951
High-Employment, High-Cost Assumptions								
1955	2,820	405	410	16	454	167	118	4,390
1960	3,976	519	764	18	524	225	140	6,166
1970	5,766	623	1,511	23	550	257	183	8,913
1980	8,161	707	1,994	27	543	257	220	11,909
2000	11,918	851	2,315	37	518	249	281	16,169
2050	17,110	1,294	3,017	37	551	260	385	22,654

a/ I.e., for retired workers.

b/ Including husband's benefits.

c/ Including widower's benefits.

d/ Excluding effect of railroad coverage under financial interchange provisions.

Note: Where persons are qualified both for old-age benefits and for other benefits, the full old-age benefit is assumed to be paid with supplementary payment of the excess of the other benefit if larger. Benefit payments to children of old-age beneficiaries are combined with child's survivor benefits.

Table 15a

ESTIMATED BENEFIT PAYMENTS AS PERCENT OF TAXABLE PAYROLL
LOW-EMPLOYMENT ASSUMPTIONS

Calendar Year	Monthly Old-Age Benefits					Monthly Younger	Lump-Sum	Total	
	Primary	Wife's	Widow's	Parents	Total	Survivor Mother's	Benefits Child's		Death Benefits
Actual Data ^{b/}									
1950	.70%	.11%	.11%	.01%	.93%	.06%	.18%	.04%	1.20%
1951	1.00	.15	.14	.01	1.30	.07	.24	.05	1.66
1952	1.11	.17	.16	.01	1.45	.08	.26	.05	1.83
Low-Cost Assumptions									
1955	2.07%	.30%	.32%	.01%	2.70%	.13%	.37%	.09%	3.31%
1960	2.75	.39	.59	.01	3.74	.16	.41	.10	4.41
1970	3.43	.42	1.05	.01	4.91	.16	.38	.12	5.57
1980	4.21	.44	1.27	.01	5.93	.15	.36	.13	6.57
1990	4.71	.46	1.38	.01	6.56	.14	.35	.13	7.20
2000	4.58	.44	1.33	.01	6.36	.14	.34	.14	6.99
2050	5.13	.51	1.36	.01	7.01	.14	.34	.14	7.63
Level-Premium ^{a/}									
2½% interest	4.24	.45	1.15	.01	5.85	.15	.36	.13	6.49
2¾% interest	4.08	.44	1.11	.01	5.63	.15	.36	.13	6.27
High-Cost Assumptions									
1955	2.42%	.35%	.34%	.01%	3.12%	.15%	.39%	.10%	3.76%
1960	3.18	.44	.61	.02	4.25	.19	.43	.11	4.97
1970	3.99	.47	1.09	.02	5.57	.19	.39	.12	6.27
1980	5.06	.49	1.35	.02	6.92	.17	.35	.13	7.58
1990	6.28	.52	1.46	.02	8.28	.16	.33	.15	8.92
2000	6.69	.55	1.47	.02	8.73	.15	.30	.15	9.33
2050	8.83	.77	1.82	.02	11.44	.15	.29	.19	12.07
Level-Premium ^{a/}									
2½% interest	5.97	.56	1.30	.02	7.85	.16	.34	.15	8.50
2¾% interest	5.58	.54	1.23	.02	7.36	.17	.35	.14	8.02
Intermediate-Cost Assumptions									
1955	2.25%	.33%	.33%	.01%	2.92%	.14%	.38%	.09%	3.53%
1960	2.97	.41	.60	.01	3.99	.18	.42	.11	4.69
1970	3.71	.44	1.07	.02	5.24	.18	.38	.12	5.92
1980	4.63	.46	1.31	.02	6.42	.16	.35	.13	7.07
1990	5.47	.49	1.42	.02	7.39	.15	.34	.14	8.03
2000	5.58	.49	1.40	.02	7.49	.15	.32	.14	8.09
2050	6.58	.61	1.54	.01	8.75	.14	.32	.16	9.38
Level-Premium ^{a/}									
2½% interest	5.04	.50	1.22	.02	6.78	.15	.35	.14	7.42
2¾% interest	4.78	.48	1.17	.02	6.45	.16	.36	.13	7.09

a/ Level-premium contribution rate for benefit payments after 1952 and in perpetuity, not taking into account accumulated funds through 1952 or administrative expenses (see also Table 16). These level-premium rates assume benefits and payrolls remain level after the year 2050.

b/ Excluding effect of railroad coverage under financial interchange provisions.

Table 15b

ESTIMATED BENEFIT PAYMENTS AS PERCENT OF TAXABLE PAYROLL
HIGH-EMPLOYMENT ASSUMPTIONS

Calendar Year	Monthly Old-Age Benefits					Monthly Younger Survivor Benefits		Lump-Sum Death	Total Benefits
	Primary	Wife's	Widow's	Parent's	Total	Mother's	Child's	Benefits	
Actual Data ^{b/}									
1950	.70%	.11%	.11%	.01%	.93%	.06%	.18%	.04%	1.20%
1951	1.00	.15	.14	.01	1.30	.07	.24	.05	1.66
1952	1.11	.17	.16	.01	1.45	.08	.26	.05	1.83
Low-Cost Assumptions									
1955	1.75%	.25%	.28%	.01%	2.29%	.11%	.33%	.08%	2.80%
1960	2.35	.31	.50	.01	3.17	.13	.36	.09	3.76
1970	3.02	.34	.89	.01	4.26	.13	.34	.11	4.85
1980	3.83	.36	1.09	.01	5.29	.13	.32	.12	5.86
1990	4.42	.38	1.17	.01	5.98	.12	.32	.13	6.54
2000	4.25	.36	1.11	.01	5.73	.12	.31	.13	6.29
2050	4.80	.41	1.11	.01	6.33	.12	.30	.14	6.88
Level-Premium ^{a/}									
2 $\frac{1}{4}$ % interest	3.91	.36	.96	.01	5.24	.12	.32	.12	5.80
2 $\frac{3}{4}$ % interest	3.74	.35	.93	.01	5.03	.12	.32	.12	5.59
High-Cost Assumptions									
1955	2.11%	.30%	.31%	.01%	2.73%	.13%	.34%	.09%	3.29%
1960	2.86	.37	.55	.01	3.79	.16	.38	.10	4.44
1970	3.66	.40	.96	.01	5.03	.16	.35	.12	5.66
1980	4.77	.41	1.16	.02	6.36	.15	.32	.13	6.95
1990	5.92	.43	1.22	.02	7.59	.14	.30	.14	8.18
2000	6.21	.44	1.21	.02	7.88	.13	.27	.15	8.42
2050	8.25	.62	1.46	.02	10.35	.13	.27	.19	10.93
Level-Premium ^{a/}									
2 $\frac{1}{4}$ % interest	5.58	.46	1.09	.02	7.15	.14	.30	.14	7.73
2 $\frac{3}{4}$ % interest	5.21	.45	1.03	.02	6.70	.14	.31	.14	7.29
Intermediate-Cost Assumptions									
1955	1.93%	.28%	.29%	.01%	2.51%	.12%	.33%	.09%	3.05%
1960	2.61	.34	.52	.01	3.48	.15	.37	.10	4.10
1970	3.34	.37	.92	.01	4.64	.15	.35	.11	5.26
1980	4.29	.39	1.13	.01	5.82	.14	.32	.13	6.40
1990	5.15	.40	1.19	.01	6.75	.13	.31	.14	7.33
2000	5.18	.40	1.16	.01	6.75	.12	.29	.14	7.30
2050	6.16	.49	1.24	.01	7.91	.12	.29	.16	8.48
Level-Premium ^{a/}									
2 $\frac{1}{4}$ % interest	4.68	.41	1.02	.01	6.12	.13	.31	.13	6.69
2 $\frac{3}{4}$ % interest	4.43	.40	.98	.01	5.82	.13	.32	.13	6.39

a/ Level-premium contribution rate for benefit payments after 1952 and in perpetuity, not taking into account accumulated funds through 1952 or administrative expenses (see Table 16). These level-premium rates assume benefits and payrolls remain level after the year 2050.

b/ Excluding effect of railroad coverage under financial interchange provisions.

Table 16

ESTIMATED LEVEL-PREMIUM CONTRIBUTION RATE IN PERPETUITY^{a/}
FOR BENEFIT PAYMENTS AND ADMINISTRATIVE EXPENSES, TAKING
INTO ACCOUNT ACCUMULATED FUNDS AS OF END OF 1952

Level-Premium Equivalent to	Low-Employment Assumptions			High-Employment Assumptions		
	Low Cost	High Cost	Intermediate Cost	Low Cost	High Cost	Intermediate Cost
Interest at 2%						
Benefit Payments	6.60%	8.78%	7.60%	5.91%	7.98%	6.86%
Administrative Expenses	.10	.15	.12	.09	.13	.11
Interest on 1952 Fund ^{b/}	.21	.25	.23	.17	.21	.19
Net Cost ^{c/}	6.49	8.68	7.49	5.83	7.91	6.78
Adjusted Net Cost ^{d/}	6.64	8.88	7.67	5.96	8.10	6.94
Present Contributions ^{e/}	6.15	6.09	6.12	6.16	6.10	6.13
Interest at 2¼%						
Benefit Payments	6.49%	8.50%	7.42%	5.80%	7.73%	6.69%
Administrative Expenses	.09	.15	.12	.09	.13	.11
Interest on 1952 Fund ^{b/}	.24	.28	.26	.20	.23	.22
Net Cost ^{c/}	6.34	8.37	7.28	5.69	7.63	6.58
Adjusted Net Cost ^{d/}	6.49	8.57	7.45	5.82	7.81	6.74
Present Contributions ^{e/}	6.10	6.04	6.07	6.10	6.05	6.08
Interest at 2½%						
Benefit Payments	6.38%	8.25%	7.25%	5.70%	7.50%	6.54%
Administrative Expenses	.09	.14	.12	.09	.13	.11
Interest on 1952 Fund ^{b/}	.27	.31	.29	.23	.26	.24
Net Cost ^{c/}	6.19	8.08	7.07	5.55	7.37	6.40
Adjusted Net Cost ^{d/}	6.34	8.27	7.24	5.68	7.54	6.55
Present Contributions ^{e/}	6.05	5.99	6.02	6.06	6.00	6.03
Interest on 2¾%						
Benefit Payments	6.27%	8.02%	7.09%	5.59%	7.29%	6.39%
Administrative Expenses	.09	.14	.12	.08	.13	.10
Interest on 1952 Fund ^{b/}	.31	.35	.33	.26	.29	.27
Net Cost ^{c/}	6.05	7.81	6.88	5.42	7.12	6.22
Adjusted Net Cost ^{d/}	6.20	7.99	7.04	5.55	7.29	6.37
Present Contributions ^{e/}	6.00	5.94	5.98	6.01	5.95	5.98

- a/ Level-premium contribution rate (based on discounting at interest) for payments after 1952 and in perpetuity, as percent of payroll.
- b/ Interest on trust fund existing at end of 1952 as earned in future years expressed as a level-premium (in percent of taxable payroll).
- c/ Level-premium for benefit payments plus level-premium for administrative expenses minus level-premium equivalent to interest on accumulated fund at end of 1952.
- d/ Level contribution rate for employer and employee combined required to meet the "net cost" allowing for the self-employed paying only $\frac{3}{4}$ of such rate.
- e/ Level contribution rate for employer and employee combined equivalent to the graded rates specified in the law; as to both such level and graded rates the self-employed pay only $\frac{3}{4}$.

Table 17a

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER CONTRIBUTION SCHEDULE
 IN 1952 AMENDMENTS^{a/} 2½% INTEREST, LOW-EMPLOYMENT ASSUMPTIONS
 (In millions)

<u>Calendar Year</u>	<u>Contributions</u>	<u>Benefit Payments</u>	<u>Administrative Expenses</u>	<u>Net Income</u>	<u>Interest on Fund^{b/}</u>	<u>Fund at End of Year</u>
Low-Cost Assumptions						
1955	\$4,488	\$3,798	\$94	\$596	\$457	\$21,068
1960	5,627	5,241	98	288	517	23,651
1970	8,397	7,452	116	829	727	33,432
1980	9,361	9,686	139	-464	979	44,260
1990	10,164	11,517	160	-1,513	968	43,228
2000	11,238	12,369	172	-1,303	839	37,468
2025	13,744	16,799	223	-3,278	231	8,842
2050	16,728	20,096	269	-3,637		(Fund exhausted in 2028)
High-Cost Assumptions						
1955	\$4,436	\$4,267	\$106	\$63	\$444	\$20,189
1960	5,563	5,835	125	-397	431	19,397
1970	8,324	8,310	158	-144	416	18,847
1980	9,138	10,903	193	-1,958	298	12,557
1990	9,519	13,373	227	-4,081		(Fund exhausted in 1986)
Intermediate-Cost Assumptions						
1955	\$4,462	\$4,032	\$100	\$330	\$450	\$20,628
1960	5,595	5,537	112	-55	474	21,524
1970	8,361	7,881	137	343	572	26,140
1980	9,250	10,294	166	-1,210	638	28,408
1990	9,842	12,443	194	-2,796	298	12,124
2000	10,660	13,588	209	-3,139		(Fund exhausted in 1995)

a/ Combined rate of 3% in 1953, 4% in 1954-59, 5% in 1960-64, 6% in 1965-69, and 6½% thereafter. In each instance, fund at end of 1952 is taken to be the actual figure of \$18,192 million (including an estimated \$750 million "owed" by Railroad Retirement account).

b/ Interest taken at 2½% on fund at end of previous year plus ½ of the net income of the current year.

Table 17b

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER CONTRIBUTION SCHEDULE
 IN 1952 AMENDMENTS^{a/} 2½% INTEREST, HIGH-EMPLOYMENT ASSUMPTIONS
 (In millions)

Calendar Year	Contributions	Benefit Payments	Administrative Expenses	Net Income	Interest on Fund ^{b/}	Fund at End of Year
Low-Cost Assumptions						
1955	\$5,245	\$3,761	\$95	\$1,389	\$496	\$23,215
1960	6,646	5,267	101	1,278	657	30,482
1970	9,985	7,723	125	2,137	1,186	54,982
1980	11,176	10,321	151	704	1,868	85,263
1990	12,224	12,584	175	-535	2,345	106,282
2000	13,591	13,455	191	-55	2,830	128,585
2025	16,646	18,381	248	-1,983	4,700	212,594
2050	20,259	21,951	298	-1,990	6,952	314,928
High-Cost Assumptions						
1955	\$5,213	\$4,390	\$113	\$710	\$479	\$22,106
1960	6,578	6,166	134	278	540	24,673
1970	9,878	8,913	170	795	741	34,084
1980	10,874	11,909	208	-1,243	915	40,941
1990	11,435	14,725	246	-3,536	557	23,547
2000	12,191	16,169	268	-4,246		(Fund exhausted in 1997)
Intermediate-Cost Assumptions						
1955	\$5,229	\$4,075	\$104	\$1,049	\$488	\$22,660
1960	6,612	5,716	118	778	598	27,578
1970	9,932	8,318	148	1,466	964	44,533
1980	11,025	11,116	180	-269	1,392	63,102
1990	11,830	13,656	210	-2,035	1,451	64,914
2000	12,891	14,812	230	-2,151	1,265	56,412
2025	14,674	20,433	294	-6,053		(Fund exhausted in 2023)

a/ Combined rate of 3% in 1953, 4% in 1954-59, 5% in 1960-64, 6% in 1965-69, and 6½% thereafter. In each instance, fund at end of 1952 is taken to be the actual figure of \$18,192 million (including an estimated \$750 million "owed" by Railroad Retirement account).

b/ Interest taken at 2½% on fund at end of previous year plus ½ of the net income of the current year.

Table 17c

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER CONTRIBUTION SCHEDULE
 IN 1952 AMENDMENTS^{a/} 2 $\frac{3}{4}$ % INTEREST, LOW-EMPLOYMENT ASSUMPTIONS
 (In millions)

Calendar Year	Contributions	Benefit Payments	Administrative Expenses	Net Income	Interest on Fund ^{b/}	Fund at End of Year
Low-Cost Assumptions						
1955	\$4,488	\$3,798	\$94	\$596	\$564	\$21,364
1960	5,627	5,241	98	288	654	24,576
1970	8,397	7,452	116	829	957	36,189
1980	9,361	9,686	139	-464	1,347	50,092
1990	10,164	11,517	160	-1,513	1,449	53,376
2000	11,238	12,369	172	-1,303	1,437	53,040
2025	13,744	16,799	223	-3,278	1,249	45,015
2050	16,728	20,096	269	-3,637		(Fund exhausted in 2044)
High-Cost Assumptions						
1955	\$4,436	\$4,267	\$106	\$63	\$547	\$20,480
1960	5,563	5,835	125	-397	547	20,252
1970	8,324	8,310	158	-144	565	21,023
1980	9,138	10,903	193	-1,958	465	16,395
1990	9,519	13,373	227	-4,081		(Fund exhausted in 1987)
Intermediate-Cost Assumptions						
1955	\$4,462	\$4,032	\$100	\$330	\$555	\$20,922
1960	5,595	5,537	112	-55	601	22,414
1970	8,361	7,881	137	343	761	28,606
1980	9,250	10,294	166	-1,210	905	33,243
1990	9,842	12,443	194	-2,796	564	19,710
2000	10,660	13,588	209	-3,139		(Fund exhausted in 1998)

a/ Combined rate of 3% in 1953, 4% in 1954-59, 5% in 1960-64, 6% in 1965-69, and 6 $\frac{1}{2}$ % thereafter. In each instance, fund at end of 1952 is taken to be the actual figure of \$18,192 million (including an estimated \$750 million "owed" by Railroad Retirement account).

b/ Interest taken at 2 $\frac{3}{4}$ % interest on fund at end of previous year plus $\frac{1}{2}$ of the net income of the current year.

Table 17d

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER CONTRIBUTION SCHEDULE
 IN 1952 AMENDMENTS^{a/} 2 $\frac{3}{4}$ % INTEREST, HIGH-EMPLOYMENT ASSUMPTIONS
 (In millions)

<u>Calendar Year</u>	<u>Contributions</u>	<u>Benefit Payments</u>	<u>Administrative Expenses</u>	<u>Net Income</u>	<u>Interest on Fund^{b/}</u>	<u>Fund at End of Year</u>
Low-Cost Assumptions						
1955	\$5,245	\$3,761	\$95	\$1,389	\$611	\$23,526
1960	6,646	5,267	101	1,278	827	31,538
1970	9,985	7,723	125	2,137	1,541	58,657
1980	11,176	10,321	151	704	2,507	94,017
1990	12,224	12,584	175	-535	3,303	123,136
2000	13,591	13,455	191	-55	4,208	157,198
2025	16,646	18,381	248	-1,983	8,007	298,169
2050	20,259	21,951	298	-1,990	14,151	527,746
High-Cost Assumptions						
1955	\$5,213	\$4,390	\$113	\$710	\$590	\$22,412
1960	6,578	6,166	134	278	682	25,638
1970	9,878	8,913	170	795	978	36,940
1980	10,874	11,909	208	-1,243	1,271	46,875
1990	11,435	14,725	246	-3,536	938	33,284
2000	12,191	16,169	268	-4,246		(Fund exhausted in 2000)
Intermediate-Cost Assumptions						
1955	\$5,229	\$4,075	\$104	\$1,049	\$601	\$22,969
1960	6,612	5,716	118	778	754	28,588
1970	9,932	8,318	148	1,466	1,259	47,798
1980	11,025	11,116	180	-269	1,889	70,446
1990	11,830	13,656	210	-2,035	2,120	78,210
2000	12,891	14,812	230	-2,151	2,097	77,274
2025	14,674	20,433	294	-6,053	934	31,826
2050	16,711	22,302	321	-5,912		(Fund exhausted in 2031)

a/ Combined rate of 3% in 1953, 4% in 1954-59, 5% in 1960-64, 6% in 1965-69, and 6 $\frac{1}{2}$ % thereafter. In each instance, fund at end of 1952 is taken to be the actual figure of \$18,192 million (including an estimated \$750 million "owed" by Railroad Retirement account).

b/ Interest taken at 2 $\frac{3}{4}$ % on fund at end of previous year plus $\frac{1}{2}$ of the net income of the current year.

Table 18a

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER 3% LEVEL CONTRIBUTION
RATE, 1952 UNTIL EXHAUSTION OF FUND^a, 2½% INTEREST
(In millions)

<u>Calendar Year</u>	<u>Contributions</u>	<u>Benefit Payments</u>	<u>Administrative Expenses</u>	<u>Net Income</u>	<u>Interest on Fund^b</u>	<u>Fund at End of Year</u>
Low-Employment, Low-Cost Assumptions						
1955	\$3,366	\$3,798	\$94	-\$526	\$423	\$18,953
1960	3,481	5,241	98	-1,858	334	14,237
1965	3,671	6,451	105	-2,885	95	2,874
1970	3,921	7,452	116	-3,647		(Fund exhausted in 1966)
Low-Employment, High-Cost Assumptions						
1955	\$3,327	\$4,267	\$106	-\$1,046	\$410	\$18,098
1960	3,441	5,835	125	-2,519	250	10,089
1965	3,633	7,152	142	-3,661		(Fund exhausted in 1964)
Low-Employment, Intermediate-Cost Assumptions						
1955	\$3,347	\$4,032	\$100	-\$785	\$416	\$18,526
1960	3,460	5,537	112	-2,189	292	12,163
1965	3,653	6,802	124	-3,273		(Fund exhausted in 1965)
High-Employment, Low-Cost Assumptions						
1955	\$3,934	\$3,761	\$95	\$78	\$456	\$20,744
1960	4,111	5,267	101	-1,257	441	19,423
1965	4,368	6,551	113	-2,296	285	11,813
1970	4,663	7,723	125	-3,185		(Fund exhausted in 1970)
High-Employment, High-Cost Assumptions						
1955	\$3,910	\$4,390	\$113	-\$593	\$439	\$19,653
1960	4,069	6,166	134	-2,231	326	13,707
1965	4,314	7,655	153	-3,494		(Fund exhausted in 1965)
High-Employment, Intermediate-Cost Assumptions						
1955	\$3,921	\$4,075	\$104	-\$258	\$448	\$20,198
1960	4,090	5,716	118	-1,744	384	16,565
1965	4,340	7,102	133	-2,895	157	5,692
1970	4,638	8,318	148	-3,828		(Fund exhausted in 1967)

a/ In each instance, fund at end of 1952 is taken to be the actual figure of \$18,192 million (including an estimated \$750 million "owed" by Railroad Retirement account).

b/ Interest taken at 2½% on fund at end of previous year plus ½ of the net income of the current year.

Table 18b

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER 3% LEVEL CONTRIBUTION
RATE, 1952 UNTIL EXHAUSTION OF FUND^{a/}, 2 $\frac{3}{4}$ % INTEREST
(In millions)

Calendar Year	Contributions	Benefit Payments	Administrative Expenses	Net Income	Interest on Fund ^{b/}	Fund at End of Year
Low-Employment, Low-Cost Assumptions						
1955	\$3,366	\$3,798	\$94	-\$526	\$522	\$19,239
1960	3,481	5,241	98	-1,858	427	15,014
1965	3,671	6,451	105	-2,885	146	4,006
1970	3,921	7,452	116	-3,647		(Fund exhausted in 1967)
Low-Employment, High-Cost Assumptions						
1955	\$3,327	\$4,267	\$106	-\$1,046	\$506	\$18,380
1960	3,441	5,835	125	-2,519	323	10,800
1965	3,633	7,152	142	-3,661		(Fund exhausted in 1964)
Low-Employment, Intermediate-Cost Assumptions						
1955	\$3,347	\$4,032	\$100	-\$785	\$514	\$18,810
1960	3,460	5,537	112	-2,189	376	12,907
1965	3,653	6,802	124	-3,273		(Fund exhausted in 1965)
High-Employment, Low-Cost Assumptions						
1955	\$3,934	\$3,761	\$95	\$78	\$562	\$21,044
1960	4,111	5,267	101	-1,257	560	20,305
1965	4,368	6,551	113	-2,296	385	13,245
1970	4,663	7,723	125	-3,185	44	68
1975	4,933	8,971	138	-4,176		(Fund exhausted in 1971)
High-Employment, High-Cost Assumptions						
1955	\$3,910	\$4,390	\$113	-\$593	\$542	\$19,949
1960	4,069	6,166	134	-2,231	418	14,502
1965	4,314	7,655	153	-3,494	65	677
1970	4,613	8,913	170	-4,470		(Fund exhausted in 1966)
High-Employment, Intermediate-Cost Assumptions						
1955	\$3,921	\$4,075	\$104	-\$258	\$552	\$20,496
1960	4,090	5,716	118	-1,744	490	17,404
1965	4,340	7,102	133	-2,895	225	6,961
1970	4,638	8,318	148	-3,828		(Fund exhausted in 1968)

a/ In each instance, fund at end of 1952 is taken to be the actual figure of \$18,192 million (including an estimated \$750 million "owed" by Railroad Retirement account).

b/ Interest taken at 2 $\frac{3}{4}$ % on fund at end of previous year plus $\frac{1}{2}$ of the net income of the current year.

Table 19a

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER A LEVEL THEORETICAL
 CONTRIBUTION RATE^{a/}, 2½% INTEREST, LOW-EMPLOYMENT ASSUMPTIONS
 (In millions)

<u>Calendar Year</u>	<u>Contributions</u>	<u>Benefit Payments</u>	<u>Administrative Expenses</u>	<u>Net Income</u>	<u>Interest on Fund^{b/}</u>	<u>Fund at End of Year</u>
Low-Cost Assumptions, Contribution Rate of 6.49%						
1955	\$7,282	\$3,798	\$94	\$3,390	\$646	\$31,031
1960	7,530	5,241	98	2,191	1,051	48,864
1970	8,483	7,452	116	915	1,685	77,037
1980	9,347	9,686	139	-478	2,174	98,575
2000	11,221	12,369	172	-1,320	2,695	121,820
2050	16,702	20,096	269	-3,663	3,663	164,587
High-Cost Assumptions, Contribution Rate of 8.57%						
1955	\$9,498	\$4,267	\$106	\$5,125	\$761	\$37,133
1960	9,824	5,835	125	3,864	1,380	64,666
1970	11,098	8,310	158	2,630	2,518	115,757
1980	12,041	10,903	193	945	3,623	165,122
2000	13,285	14,811	246	-1,772	5,273	238,738
2050	14,308	20,642	317	-6,651	6,651	298,955
Intermediate-Cost Assumptions, Contribution Rate of 7.45%						
1955	\$8,309	\$4,032	\$100	\$4,177	\$698	\$33,830
1960	8,592	5,537	112	2,943	1,201	56,042
1970	9,694	7,881	137	1,676	2,061	94,477
1980	10,599	10,294	166	139	2,823	128,355
2000	12,215	13,588	209	-1,582	3,827	173,104
2050	15,806	20,368	293	-4,855	4,855	218,205

a/ The level-premium contribution rate as percent of payroll such that the system will be in balance under the particular assumptions.

b/ Interest taken at 2½% on fund at end of previous year plus ½ of the net income of the current year.

Table 19b

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER A LEVEL THEORETICAL
CONTRIBUTION RATE^{a/}, 2½% INTEREST, HIGH-EMPLOYMENT ASSUMPTIONS
(In millions)

<u>Calendar Year</u>	<u>Contributions</u>	<u>Benefit Payments</u>	<u>Administrative Expenses</u>	<u>Net Income</u>	<u>Interest^{b/} on Fund</u>	<u>Fund at End of Year</u>
Low-Cost Assumptions, Contribution Rate of 5.82%						
1955	\$7,635	\$3,761	\$95	\$3,779	\$666	\$32,147
1960	7,979	5,267	101	2,611	1,121	52,266
1970	9,051	7,723	125	1,203	1,871	85,629
1980	10,012	10,321	151	-460	2,449	111,069
2000	12,176	13,455	191	-1,470	3,024	136,686
2050	18,149	21,951	298	-4,100	4,100	184,261
High-Cost Assumptions, Contribution Rate of 7.81%						
1955	\$10,178	\$4,390	\$113	\$5,675	\$794	\$38,916
1960	10,592	6,166	134	4,292	1,475	69,184
1970	12,009	8,913	170	2,926	2,725	125,302
1980	13,065	11,909	208	948	3,920	178,621
2000	14,647	16,169	268	-1,790	5,681	257,266
2050	15,815	22,654	344	-7,183	7,183	322,846
Intermediate-Cost Assumptions, Contribution Rate of 6.74%						
1955	\$8,811	\$4,075	\$104	\$4,632	\$725	\$35,244
1960	9,188	5,716	118	3,354	1,281	59,897
1970	10,420	8,318	148	1,954	2,251	103,286
1980	11,432	11,116	180	136	3,098	140,872
2000	13,367	14,812	230	-1,675	4,173	188,800
2050	17,328	22,302	321	-5,295	5,295	237,959

a/ The level-premium contribution rate as percent of payroll such that the system will be in balance under the particular assumptions.

b/ Interest taken at 2½% on fund at end of previous year plus ½ of the net income of the current year.

Table 20

COMPARISON OF TRUST FUND WITH PRESENT VALUE OF BENEFITS
 IN CURRENT PAYMENT STATUS, 2 $\frac{1}{4}$ % INTEREST
 (In billions)

Calendar Year	Trust Fund at End of Year ^{a/}			Present Value of Benefits in Current Payment Status at End of Year ^{a/}		
	Low Cost	High Cost	Intermediate Cost	Low Cost	High Cost	Intermediate Cost
1953	\$19	\$19	\$19	\$23	\$23	\$23
1955	23	22	23	29	34	31
1960	30	25	28	41	48	45
1970	55	34	45	61	71	66
1980	85	41	63	83	96	89
1990	106	24	65	101	119	110
2000	129	b/	56	108	130	119
2025	213		c/	148	182	165
2050	315			176	183	180

a/ Based on high-employment assumptions.

b/ Fund exhausted in 1997.

c/ Fund exhausted in 2023.

Table 21a

ESTIMATED ACCRUED LIABILITY OF OASI AS OF JANUARY 1, 1953, 2½% INTEREST

Item	Assumption		
	Low Cost	High Cost	Intermediate Cost
Present Value of Benefits and Expenses (in billions)			
All persons	\$535	\$612	\$573
Those now age 20 and over	281	332	306
New entrants	254	280	267
Present Value of Payrolls (in billions)			
All persons	\$9,077	\$7,782	\$8,430
Those now age 20 and over	2,423	2,371	2,397
New entrants	6,654	5,412	6,033
Equivalent level payroll	204	175	190
Accrued Liability (in billions)			
Total	\$189	\$209	\$200
Unfunded	170	191	182
Funded (Trust fund)	18	18	18
Level-Premium Cost as Percent of Payroll			
Normal (new entrant) cost	3.81%	5.18%	4.42%
Interest on			
Unfunded accrued liability	1.88	2.45	2.16
Funded accrued liability	.20	.23	.22
Total cost	5.89	7.86	6.80
Net cost (less interest on fund)	5.69	7.63	6.58

Table 21b

ESTIMATED ACCRUED LIABILITY OF OASI AS OF JANUARY 1, 1953, 2 $\frac{3}{4}$ % INTEREST

Item	Assumption		
	Low Cost	High Cost	Intermediate Cost
Present Value of Benefits and Expenses (in billions)			
All persons	\$400	\$462	\$431
Those now age 20 and over	244	288	266
New entrants	156	174	165
Present Value of Payrolls (in billions)			
All persons	\$7,044	\$6,226	\$6,635
Those now age 20 and over	2,267	2,220	2,243
New entrants	4,778	4,007	4,392
Equivalent level of payroll	194	171	182
Accrued Liability (in billions)			
Total	\$170	\$191	\$182
Unfunded	152	173	163
Funded (Trust fund)	18	18	18
Level-Premium Cost as Percent of Payroll			
Normal (new entrant) cost	3.27%	4.34%	3.76%
Interest on			
Unfunded accrued liability	2.16	2.78	2.46
Funded accrued liability	.26	.29	.27
Total cost	5.68	7.42	6.49
Net cost (less interest on fund)	5.42	7.12	6.22

Table 22

ESTIMATED COST OF BENEFIT PAYMENTS AS PERCENT OF PAYROLL
 IN SELECTED YEARS AND ON LEVEL-PREMIUM BASIS, PREVIOUS
 ESTIMATE^{a/} AND THIS ESTIMATE
 (In percent)

Calendar Year	Low-Cost Estimate		High-Cost Estimate		Intermediate-Cost Estimate	
	Previous Estimate	This Estimate	Previous Estimate	This Estimate	Previous Estimate	This Estimate
Cost in Year						
1960	2.87	3.76	3.74	4.44	3.31	4.10
1970	4.03	4.85	5.33	5.66	4.68	5.26
1980	4.93	5.86	7.08	6.95	5.99	6.40
1990	5.68	6.54	8.94	8.18	7.26	7.33
2000	5.77	6.29	10.08	8.42	7.79	7.30
2050	5.77	6.88	10.08	10.93	7.79	8.48
Level-Premium Cost ^{b/}						
Basis A	4.63 ^{c/}	5.39	7.31 ^{c/}	6.83	5.93 ^{c/}	6.09
Basis B	d/	5.69	d/	7.63	d/	6.58

- ^{a/} Source: "Actuarial Cost Estimates for the Old-Age and Survivors Insurance System as Modified by the Social Security Act Amendments of 1952," prepared for the use of the Committee on Ways and Means by Robert J. Myers, Actuary to the Committee, dated July 21, 1952.
- ^{b/} Level-premium contribution rate (based on 2½% interest) for benefit payments after 1952 taking into account the accumulated funds at the beginning of the period and future administrative expenses. Under Basis A it is assumed that after the year 2000, benefit payments and taxable payroll are level, while under Basis B this is not assumed to occur until after the year 2050.
- ^{c/} These figures are slightly higher than those previously presented which were on the basis of benefit payments after 1950 instead of 1952 as here (e.g., the intermediate-cost figures on the 1950 basis was 5.85%).
- ^{d/} Not available since under this estimate, benefit payments and taxable payroll were assumed to be level after the year 2000.

Note: The figures in this table are based on the cost estimates involving high-employment assumptions.

Table 23

COMPARISON OF ESTIMATES OF LONG-RANGE COSTS AS PERCENT OF
PAYROLL FOR VARIOUS ACTS AND AMENDMENTS

Act	Actuarial Study No.	Employment Assumption	Benefit Cost in Year					
			1955	1960	1970	1980	2000	2050
Low-Cost Assumptions								
1935	12	a/	2.81%	4.18%	6.38%	9.35%		
1939	14	a/	4.46	5.36 ^{c/}	6.33 ^{c/}	7.22 ^{c/}		
1939	17	a/	2.58 ^{c/}	3.35	4.71	6.13	7.55%	
1939	19	a/	2.51	3.45	5.19	7.29	8.98	
1939	23	Low	2.54	3.20	4.14	5.13	5.87	
1939	23	High	1.36	1.81	2.63	3.41	4.28	
1950	b/	a/	2.21	2.83	4.00	4.93	5.80	
1952	b/	a/	2.14	2.87	4.03	4.93	5.77	
1952	36	Low	3.31	4.41	5.57	6.57	6.99	7.63%
1952	36	High	2.80	3.76	4.85	5.86	6.29	6.88
High-Cost Assumptions								
1935	12	a/	3.46%	5.13%	8.41%	13.36%		
1939	14	a/	5.45	6.72 ^{c/}	8.54 ^{c/}	10.60 ^{c/}		
1939	17	a/	3.70 ^{c/}	4.75	6.77	9.55	12.66%	
1939	19	a/	2.14	3.00	4.68	6.94	10.64	
1939	23	Low	3.12	3.85	5.35	7.37	10.76	
1939	23	High	1.95	2.55	3.77	5.32	8.31	
1950	b/	a/	2.69	3.74	5.34	7.14	10.20	
1952	b/	a/	2.45	3.74	5.33	7.08	10.08	
1952	36	Low	3.76	4.97	6.27	7.58	9.33	12.07%
1952	36	High	3.29	4.44	5.66	6.95	8.42	10.93

a/ Only one employment assumption was made.

b/ Prepared at time of enactment.

c/ Not shown in Actuarial Study, taken from worksheets.

Actuarial Studies Issued by The Division of the Actuary

- * 1. Cost Estimates for Various Proposed Modifications of the Old-Age Benefits Under Title II -- November 1937.
- * 2. A Comparison of Dependent and Productive Groups in Various Populations -- January 1938.
- * 3. Comparison of a Proposed Revision of the Federal Old-Age Insurance Plan With the Present Plan -- February 1938.
- * 4. Comparison of the Present Federal Old-Age Insurance Plan With Proposed Plan AC-1 -- April 1938.
- * 5. Cost Estimates for Alternative Old-Age Insurance Plans AC-2 to AC-9 as Suggested by the Advisory Council -- April 1938.
- * 6. Comparison of Proposed Plans AC-10 and AC-11 With the Present Federal Old-Age Insurance Plan and Plan AC-1 -- April 1938.
- 7. Estimated Composition of Beneficiaries Under Modified Title II Coverage as Set Forth in Various AC Plans -- May 1938.
- * 8. An Analysis of Benefits and the Progress of the Old-Age Reserve Account Under Title II of the Social Security Act -- June 1938.
- 9. An Analysis of the Costs of Duplicating the Benefits Under Title II by the Use of Insurance Company Contracts -- July 1938.
- 9a. Insurance Company Costs for Duplicating Title II Benefits -- July 1938.
- 10. Various Methods of Financing Old-Age Pension Plans -- September 1938.
- * 11. Cost Estimates for Proposed Plan AC-13 -- October 1938.
- * 11a. Revised Cost Estimates for Proposed Plan AC-13 -- December 1938.
- 12. Revised Cost Estimates for Present Title II -- October 1938.
- * 13. Actuarial Cost Estimates for Suggested Plan -- April 1939.
- 14. An Analysis of the Benefits and Costs Under Title II of the Social Security Act Amendments of 1939 -- December 1941.
- 15. Comparison of Cost Estimates of the Committee on Economic Security With Actual Experience Data -- July 1940.
- 16. Estimated Amount of Life Insurance Value in Force Under Survivors Benefits of the Old-Age and Survivors Insurance System -- January 1941.
- 17. New Cost Estimates for the Old-Age and Survivors Insurance System, With the Assumption of a Static Future Wage Level -- December 1942.

18. Not Printed.
19. Old-Age and Survivors Insurance 1943-44 Cost Studies -- May 1944.
20. Not Printed.
21. Analysis of Long-Range Cost Factors -- September 1946.
22. Cost Study for Complete Coverage Program of Old-Age, Survivors and Disability Insurance -- August 1945.
23. Long-Range Cost Estimates for Old-Age and Survivors Insurance, 1946 -- April 1947.
24. Illustrative U.S. Population Projection, 1946 -- January 1948.
- * 25. Analysis of Recent Group Annuities Supplementing Retirement Benefits Under Old-Age and Survivors Insurance -- February 1948.
26. Present Values of OASI Benefits Awarded and In Current Payment Status, 1940-46 -- May 1948.
27. Long-Range Cost Estimates for Old-Age and Survivors Insurance Under Universal Coverage and Present Benefit Provisions -- August 1948.
28. Long-Range Cost Estimates for Expanded Coverage and Liberalized Benefits Proposed to the Old-Age and Survivors Insurance System by H.R. 2893 -- February 1949.
29. Estimated Amount of Life Insurance in Force as Survivor Benefits Under Old-Age and Survivors Insurance System -- April 1949.
30. Analysis of the Benefits Under Title II of the Social Security Act Amendments of 1950 -- February 1951.
31. Estimated Amount of Life Insurance in Force as Survivor Benefits Under Social Security Act Amendments of 1950 -- September 1951.
32. Analysis of 346 Group Annuities Underwritten in 1946-50 -- October 1952.
33. Illustrative U.S. Population Projections, 1952 -- November 1952.
34. Analysis of the Benefits Under the Old-Age and Survivors Insurance Program as Amended in 1952 -- December 1952.
35. Present Values of OASI Benefits in Current Payment Status 1940-52 -- May 1953.
36. Long-Range Cost Estimates for Old-Age and Survivors Insurance, 1953 -- June 1953.
- * Out of Print.