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

1 9 5 4

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. 39

DECEMBER 1954

TABLE OF CONTENTS

Section		Page
A.	Introduction	1
B.	Basic Assumptions	4
C.	Results of Cost Estimates under Level Wage Assumption	13
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	45

LIST OF CHARTS

Chart		Page
1.	Benefit Costs as Percent of Payroll	16

LIST OF TABLES

Table		Page
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	25
3.	Assumed percentage distributions of persons with wages in year by quarters with wages	26

LIST OF TABLES -- Continued

Table		Page
4.	Assumed ratios of insured persons to total population....	27
5.	Estimated persons with wage credits, total credited wages, and average creditable wages.....	28
6.	Estimated insured population as of beginning of year.....	29
7.	Estimated monthly beneficiaries age 65 and over in current payment status.....	30
8.	Estimated monthly beneficiaries age 65 and over in current payment status as percent of total aged population.....	31
9.	Estimated old-age beneficiaries in current payment status as percent of insured population age 65 and over.....	32
10.	Estimated monthly beneficiaries under age 65 in current payment status and lump-sum death payments in year.....	33
11.	Estimated female beneficiaries qualified for both old-age benefits and wife's or widow's benefits, in current payment status.....	34
12.	Estimated average annual benefits for old-age beneficiaries and their dependents in current payment status.....	35
13.	Estimated average annual survivor benefits in current payment status and lump-sum death payments.....	36
14.	Estimated benefit payments.....	37
15.	Estimated benefit payments as percent of taxable payroll	38
16.	Estimated level-premium contribution rate in perpetuity for benefit payments and administrative expenses, taking into account accumulated funds as of end of 1954.....	39
17.	Estimated progress of OASI trust fund under contribution schedule in 1954 Amendments, 2.4% interest.....	40
18.	Estimated progress of OASI trust fund under a theoretical contribution schedule unchanged from present schedule except that ultimate rate is such that system will be in balance, 2.4% interest.....	41

LIST OF TABLES -- Continued

Table		Page
19.	Estimated progress of OASI trust fund under a level theoretical contribution rate, 2.4% interest.....	42
20.	Estimated accrued liability of OASI for 1952 and 1954 Acts, 2½% interest.....	43
21.	Comparison of estimates of long-range costs as percent of payroll for various acts.....	44

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, 1954

A. Introduction

This report is the sixth 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.

Next, 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 Actuarial Study No. 36 related 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).

When cost estimates were made for the 1954 legislation as it was being considered by the Congress, only the high-employment assumptions were used because the low-employment assumptions were so much below actual experience. The following discussion will relate only to cost estimates based on high-employment assumptions, but the reader may consult Actuarial Study No. 36 to see the cost effect of somewhat lower employment assumptions.

Following the conference committee agreement on the 1954 Amendments, cost estimates were developed in the short time available and were published as a committee print of the Committee on Ways and Means ("Actuarial Cost Estimates for the Old-Age and Survivors Insurance System as Modified By the Social Security Amendments of 1954", Robert J. Myers, August 20, 1954). Subsequently, these cost estimates were carried out on a more complete basis, rather than using certain approximations and short cuts necessary in the rapid development of the original cost estimates. The figures presented here are from this more complete cost estimate, but naturally differ only slightly from the original estimate.

Within the 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. Previous to Actuarial Study No. 36, 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 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%.

The actual experience since 1950 has not been in line with the estimates. In large part, this is the result of the continuing high level of fertility, but also the aged population is increasing somewhat more rapidly than estimated. These short-term differences will have to be considered quite thoroughly in the preparation of the next long-range cost estimates, which should be developed in the next year or two.

(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 high-employment assumptions are supposed to correspond to virtually full employment. In addition it is hypothesized that in the future 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. Table 2b shows corresponding figures for persons age 65 and over. For the latter group, there are given low-cost and high-cost figures as representing the range due to possible variations in retirement rates. Under high-employment assumptions the favorable employment opportunities, combined with good health and a philosophy of desiring to continue at work, might result in a considerable postponement; conversely, 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.

From the assumptions as to the proportions of the populatuon 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 only a single set of assumptions was made as to covered employment, a range is necessary in developing therefrom the proportions insured representing the cumulative effect of employment, 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.

Four-quarter male employees are assumed to have annual credited wages of $3,190 while for women the corresponding figure is $2,050. If there were no maximum on credited wages (i.e. the $4,200 limit), the corresponding figures would be $3,975 for men and $2,130 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, the use of an increasing wage assumption will be discussed.

(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 $4,200 limit):

Quarters	Males	Females
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 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.

(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.

For the various survivor beneficiary categories a considerable saving in disbursements occurs because individuals otherwise eligible are engaged in substantial employment. In some instances benefits are withheld, while in other cases the potential 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, the total number of beneficiaries eligible to file have been estimated. 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:

Beneficiary Category	Low	High
Mother's	80%	90%
Child's	96	99
Widow's	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, widow's, or parent's benefits (also applicable to men in respect to the corresponding 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 individual to claim the full primary benefit and to obtain the other benefit as a supplement since the latter may be suspended for a number of reasons not applicable to the former (namely, employment of the spouse, 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 another and larger 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 as well as 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 aged 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 all the 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 character 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 which necessitates 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 preceding 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) "Disability Freeze" Provision.

Based on fairly extensive previous studies of the cost of disability benefits, it had been determined that the cost of the "disability freeze" provision (both as to maintaining insured status and as to increasing benefit amounts--the latter being by far the more important cost element) amounted to approximately 1% of the total cost of the program. Accordingly, this approximation was used for both the low-cost and the high-cost estimates, with certain appropriate adjustments being made for the early years of operation to reflect the particular conditions prevailing when the provision is first instituted. Actually, it would have been better to have had some range in the cost of this provision, but extensive studies which were well under way were not sufficiently advanced to yield any appropriate basis. In any event, the indicated cost of this provision is relatively small and cannot affect the financial results appreciably.

(19) 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 $101-117 million for 1955 (as compared with actual expenses of about $95 million in 1954) and of $217-289 million half a century hence when benefit rolls will have expanded greatly. On this basis, ultimately the estimated administrative costs represent about 1¼% of benefit disbursements.

(20) 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 $4200 when from several employers (with no more than $4200 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 $4200 are refundable, but those from the employers are not. Study of the actual data for 1940-53 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.

(21) Trust Fund.

In computing the progress of the trust fund, the contributions were obtained by multiplying the effective taxable payroll by the combined employer-employee contribution rate and then reducing this amount by 3.8% 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 11.2% of the total covered payroll is in respect to the self-employed.

The trust fund at the end of 1954 was $20,936 million, which includes an estimated $360 million that 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 and also the actual data for 1950-54 (without any allowance for the effect of the railroad retirement "coverage"--see page 2). During the next 45 years such beneficiaries are shown to increase from the present level of nearly 5½ million to a range of from 20 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 ¼%.

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 slightly over 40% of all aged men and 30% of all aged women are actually drawing benefits, eventually this proportion is shown to range from 75 to 85% for men and 80 to 90% for women. The proportion is higher for men than for women now, and lower ultimately, for the following reasons:

(a) Since many women do not work during the entire period from the younger ages to age 65, but rather often only at the younger ages, currently relatively few women qualify on the basis of their own earnings.

(b) Currently many widows are not receiving benefits because their husbands died some years ago before the OASI system was inaugurated (or before most types of employment were covered).

(c) In the ultimate condition, the lower retirement rates of men workers as contrasted with female workers and widow beneficiaries will be controlling.

Table 9 relates the estimated old-age beneficiaries in current payment status to the aged insured population. At the end of 1953, over 65% of the male insured and 75% of the female insured were on the benefit rolls as old-age beneficiaries. Ultimately, it is estimated that from 80 to 87% of the male insured and 90 to 94% of the female insured will be on the rolls as old-age beneficiaries. These proportions rise over the years as more and more insured workers are aged 72 and over and thus receive benefits regardless of their being employed.

Table 10 shows for various future years the estimated monthly beneficiaries under age 65 in current payment status, as well as the actual data for 1950-54 (again without allowance for the railroad retirement "coverage"). All categories show a decided increase in future years except mother and child survivor beneficiaries under the high-cost assumptions; these categories remain relatively level after 1960

due to the lower mortality assumption, which means fewer survivor children created. Table 10 also gives the estimated number of lump-sum death payments, which for both 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 estimated to be 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 gives the estimated average annual benefits in current payment status for old-age beneficiaries and their dependents. Also shown are the average additional wife's 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 gradually rises. The averages tend to be slightly higher under the low-cost assumptions than under the high-cost assumptions because the latter assume a greater proportion insured; 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 between the estimates hold true here as in Table 12.

Table 14 summarizes the estimated benefit payments, along with the actual data for the years 1950-54. The benefit payments increase from the level of about $\$3\frac{1}{2}$ billion in 1954 to \$18 to \$21 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 1954 data in which old-age benefits were 63%, other benefits for those age 65 and over were 18%, and younger survivor and lump-sum death benefits were 19%.

Chart 1 presents graphically 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 example, benefit costs are somewhat below contributions for the entire period. On the other hand, under the high-cost example, the benefit cost exceeds the contribution rate at intervals during the next 25 years and continuously thereafter.

Table 15 relates the estimated benefits to taxable payroll. The total cost for the ultimate condition (from the year 2020 on) ranges from 7.9 to 11.9% of payroll.

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. In the 1954 legislative consideration, the House version of the bill followed this principle, but the Senate version did not (the increased benefit cost being met by added financing provisions, but not the existing estimated "deficiency" in the previous plan); the final legislation was a compromise between these two principles.

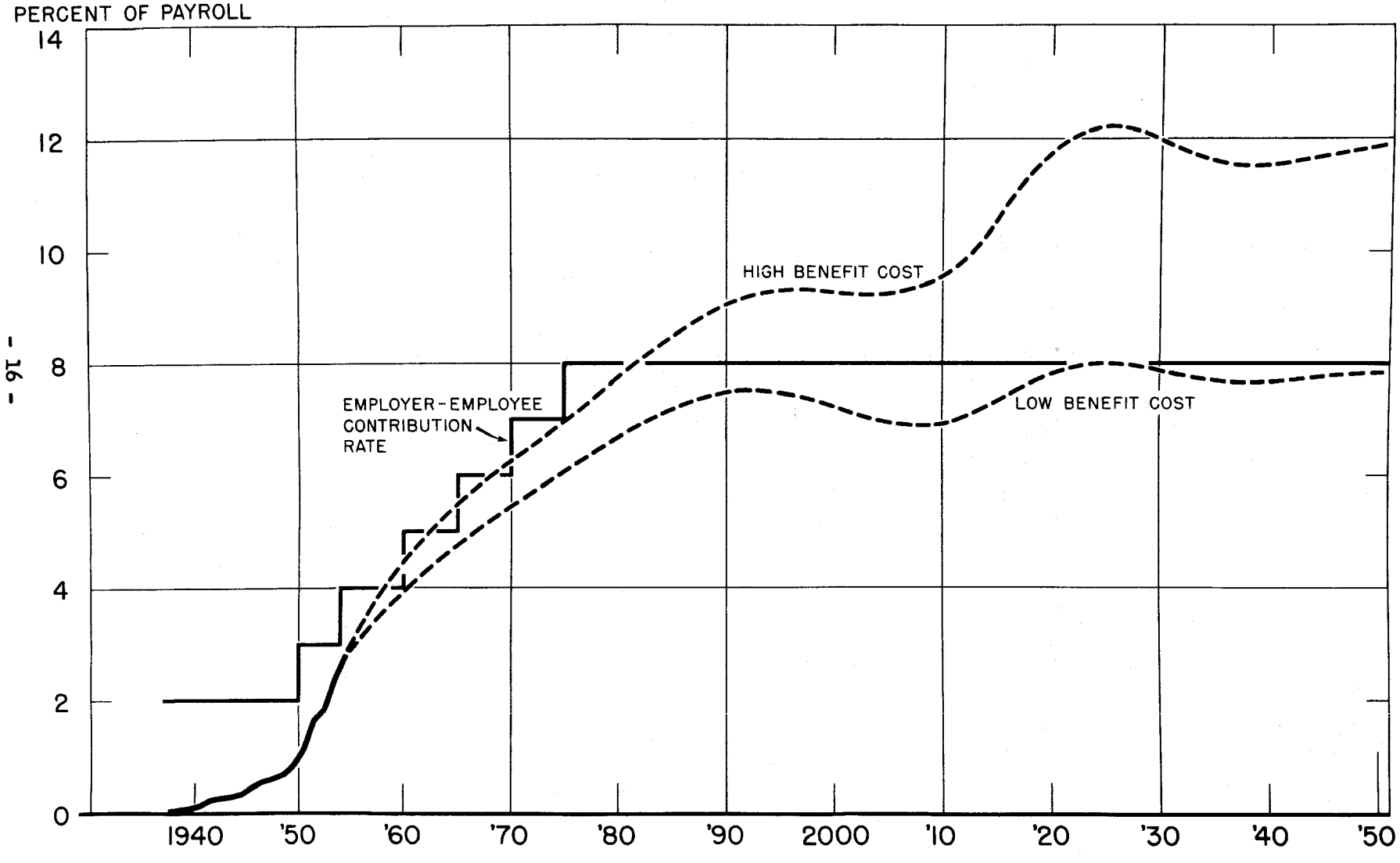
The low-cost and high-cost estimates result from two carefully considered series of assumptions. The intermediate-cost estimate represents an average of the low-cost and high-cost estimates of beneficiaries, benefit disbursements, and total taxable payroll. The corresponding estimates of benefits relative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

CHART I.

BENEFIT COSTS AS PERCENT OF PAYROLL

HIGH-EMPLOYMENT ASSUMPTIONS



DEPT. OF HEALTH, EDUCATION, AND WELFARE
SOCIAL SECURITY ADMINISTRATION

DIVISION OF THE ACTUARY
DECEMBER 1954 C-69

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. This cost concept takes into account the heavy deferred load; on the other hand, some may consider it unrealistic because it deals with periods beyond the year 2050, and also because 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 1954. 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 three interest rates--2½% (close to the rate of 2.3% on investments in the trust fund as of December 31, 1954, and also the rate used in the cost estimates made for the 1952 Amendments when they were being considered by Congress), 2.4% (the rate used in the cost estimates made for the 1954 Amendments when they were being considered by Congress), and 2½%.

At 2½% interest the "adjusted net cost" level-premium ranges from 6.9 to 8.9% of payroll. In other words, for the present system a level employer-employee contribution rate (self-employed paying $\frac{3}{4}$) of as little as 7% might be sufficient or, on the other hand, a rate of 9% might be necessary under adverse circumstances. Using a higher interest rate naturally results in somewhat lower costs and vice versa. A differential of ¼% in the interest rate has a net effect on the level-premium of about .2% of payroll.

Table 16 also shows the level-premium equivalents of the present contributions based on the graded schedule now in the law. 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. The 2.4% interest figures in Table 16 are not completely comparable with the corresponding figures in the cost estimates made at the time the 1954 legislation was enacted because the latter were as of the end of 1952, and these are as of the end of 1954 (and thus are slightly higher as to both benefit costs and contributions). In both instances, however, the "insufficiency" in the intermediate-cost estimate is about .4% of payroll.

Table 17 presents the estimated progress of the trust fund at 2.4% interest under the contribution schedule in present law. The figures shown for the actual operation of the trust fund in the past are on two bases--excluding and including the effect of the railroad retirement financial interchange provisions. It will be observed that on the latter basis the fund at the end of 1954 apparently was about $20,936 million (when final estimates for the financial interchange have been made). Under the low-cost estimate the fund continues to grow in the future reaching $146 billion in the year 2000. However, under the other estimates the fund grows for a time and then declines until it is eventually exhausted. Under the high-cost estimate the fund reaches a peak in 1980 of $30 billion and is exhausted in 1995. Under the intermediate-cost assumptions, the fund reaches $60 billion in 1983, remains at about this level for the next 30 years, and is exhausted in 2027. 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.

Table 18 shows the progress of the trust fund, based on 2.4% interest, under the intermediate-cost estimate for a contribution schedule the same as in present law except that the ultimate rate (1975 and after) is such that the system is exactly self-supporting (under these cost assumptions). Such ultimate combined employer-employee rate is 8.68%(vs. the 8% actually in the law).

Table 19 shows the progress of the trust fund, based on 2.4% 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 also 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 level contribution rate would be just sufficient to pay benefits in the future (after 1954). Such rate is, of course, the appropriate "adjusted net cost" figure from Table 16. Thus, it follows that under each cost estimate the fund will reach its peak in the year 2050 and will then be of such size that each year thereafter the interest earnings plus the contributions will equal the benefit payments plus administrative expenses (i.e. the interest earnings will equal the net outgo).

D. Accrued Liability Under OASI

Accrued liability is the dollar amount necessary as of a given date to pay in the future all benefits already accrued on that date 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 OASI system were only to continue payments to all on the beneficiary rolls (see Actuarial Study No. 35 which presents actuarial analysis under this concept for the 1952 Act), then the accrued liability (present value of benefits on the rolls) at the end of 1953 was $23 billion, of which $19 billion was funded (the trust fund at that time). At the end of 1954, the trust fund was about $21 billion and the present value of benefits then in current payment status was about $34 billion.

If the "intent" were not only to establish a "full" fund for all beneficiaries in current payment status but also to have a fund representing proportional payments to all others who have contributed, then the accrued liability at the present time is about $280 billion on the basis of the intermediate-cost estimate at 2¼% interest (Table 20), of which $21 billion is funded. The corresponding figures for the accrued liability at 2.4% and 2½% interest are $272 billion and $267 billion, respectively. Under this latter concept, accrued liability is 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 intermediate-cost estimate, Table 20 shows this normal cost for the 1954 Act (using 2¼% interest) to be 5.00%, while the total cost is 7.73% of which .20% is payable from interest on the funded portion of this accrued liability (present trust fund), leaving a net cost of 7.53% of payroll (see Table 16). The normal cost according to the intermediate-cost estimate at 2.4% interest is 4.77%, and at 2½% interest it is 4.62%.

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. Several reasons for this tendency exist, 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 $350; 55% is applied to the first $110 thereof and 20% to that part above $110. As average earnings increase and as more persons approach or reach the $350 maximum, a larger portion of such earnings falls in that bracket of the benefit formula to which the 20% 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 1954 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 72.

F. Comparison with Previous Estimates

The cost estimates prepared from 1939 until 1953 had always contained the assumption that the system would mature in the year 2000 or, in other words, that benefit payments and contributions would be level thereafter. In the cost estimates of 1953, a different assumption was 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 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 subsequently. As a result, a dip in the relative proportion of the aged occurs 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 21 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. 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.

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 1955, the current estimates indicate a cost of roughly 3% of payroll. By coincidence this is within the range of 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 this, as do also the corresponding estimates for the 1950 and 1952 Amendments made at the time of their enactment.

As to ultimate costs, the estimates for the present Act indicate a range from about 8% for the low-cost estimate to 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, somewhat above the level of most of the other cost estimates made at various times, but so too is the ultimate contribution rate.

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 Data[a]									
1950[b]	44.1	44.9	89.0	5.9	6.5	12.4	77.2	77.7	154.9
1954[c]	45.4	46.5	92.0	6.5	7.4	13.8	82.2	83.1	165.4
Projection for Low-Cost Assumptions									
1960	46	48	95	7.0	8.4	15.4	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	7.1	8.4	15.5	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.
b/ From 1950 Census (as of April 1).
c/ As of July 1, estimated.

Table 2a

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

Age Group	Males			Females		
	1955	1975	2000	1955	1975	2000
15-19	66%	66%	66%	47%	52%	58%
20-24	86	86	86	59	62	67
25-29	94	94	94	47	50	53
30-34	94	94	94	46	48	51
35-39	94	94	94	46	48	50
40-44	93%	93%	93%	45%	47%	48%
45-49	92	92	92	45	47	48
50-54	87	87	87	40	41	43
55-59	85	85	85	33	35	36
60-64	75	76	76	26	28	29

Table 2b

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

Age Group	Males			Females		
	1955	1975	2000	1955	1975	2000
			Low-Cost Estimate			
65-69	60%	65%	65%	18%	21%	23%
70-74	35	41	41	9	11	12
75-79	14	15	15	3	3	4
			High-Cost Estimate			
65-69	55%	51%	51%	16%	16%	18%
70-74	31	25	25	7	7	8
75-79	12	11	11	2	2	3

Table 3

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

Age Group	1 Quarter	2 Quarters	3 Quarters	4 Quarters	Total
			Males		
15-19	25%	22%	17%	36%	100%
20-24	9	10	10	71	100
25-29	5	5	6	84	100
30-34	4	5	6	85	100
35-39	3	5	6	86	100
40-44	3	5	6	86	100
45-49	3	4	6	87	100
50-54	3	4	6	87	100
55-59	4	5	7	84	100
60-64	4	7	9	80	100
65-69	7	10	14	69	100
70-74	10	12	17	61	100
75+	11	13	21	55	100
			Females		
15-19	30%	22%	15%	33%	100%
20-24	17	16	13	54	100
25-29	17	15	14	54	100
30-34	17	15	13	55	100
35-39	15	14	13	58	100
40-44	12	12	13	63	100
45-49	10	11	12	67	100
50-54	10	11	12	67	100
55-59	10	11	13	66	100
60-64	11	12	13	64	100
65-69	14	13	12	61	100
70-74	17	12	11	60	100
75+	22	15	12	51	100

Table 4

ASSUMED RATIOS OF INSURED[a/] PERSONS TO TOTAL POPULATION

Age Group	Males			Females		
	1955	1975	2000	1955	1975	2000
15-19	13-14%	14-14%	14-14%	10-10%	14-14%	16-16%
20-24	70-72	73-76	76-76	57-57	60-60	62-62
25-29	86-90	88-92	88-92	53-55	56-57	56-58
30-34	87-90	88-93	88-93	55-57	51-55	52-56
35-39	87-91	88-93	88-93	55-55	46-55	48-55
40-44	87-89	88-94	88-94	45-48	45-55	47-56
45-49	85-86	89-94	89-94	41-43	46-56	48-58
50-54	82-82	90-94	90-94	37-40	48-56	49-58
55-59	76-78	91-93	91-96	33-33	47-55	49-59
60-64	73-76	91-93	91-97	27-31	44-50	50-59
65-69	73-76	87-90	91-97	24-26	40-46	50-60
70-74	66-69	83-87	91-97	16-18	36-40	49-60
75-79	50-56	78-84	92-97	8-10	33-36	49-59
80-84	38-43	76-80	92-95	5- 6	31-34	49-59
85+	28-30	71-75	90-93	2- 2	24-28	47-55

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 Credited Wage
	Males	Females	Total		
			Actual Data		
1951	38.4	19.6	58.0	$118.0	$2034
1952	39.5	20.5	60.0	125.5	2092
1953[a]	[b]	[b]	61.0	132.7	2175
			Low-Cost Assumptions		
1955	47.0	24.1	71.1	$159.9	$2248
1960	49.1	25.8	74.9	167.1	2230
1980	61.1	33.0	94.1	209.0	2219
2000	73.8	41.2	115.0	253.9	2206
2050	110.5	60.7	171.2	378.4	2210
			High-Cost Assumptions		
1955	46.8	24.0	70.8	$159.1	$2249
1960	48.6	25.6	74.2	165.5	2232
1980	59.2	31.7	90.9	203.5	2240
2000	66.2	36.2	102.4	228.3	2232
2050	71.9	38.3	110.2	246.6	2236

[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	2.6	.5	3.1
1952	39.4	23.2	62.6	2.8	.7	3.5
1953	41.4	25.2	66.6	3.3	.9	4.2
1954	42.6	26.6	69.2	3.6	1.0	4.6
	Low-Cost Assumptions					
1955	41.9	23.7	65.6	4.0	1.2	5.2
1960	44.2	25.1	69.3	4.8	1.8	6.6
1980	59.4	35.8	95.2	8.1	4.9	13.0
2000	72.3	44.8	117.1	10.0	7.3	17.3
2050	109.7	67.3	177.0	17.3	11.8	29.1
	High-Cost Assumptions					
1955	43.4	24.4	67.8	4.2	1.3	5.5
1960	46.3	26.6	72.9	5.2	2.1	7.3
1980	62.5	39.9	102.4	8.9	5.8	14.7
2000	71.8	47.2	119.0	11.8	9.3	21.1
2050	81.6	52.7	134.3	17.3	12.4	29.7

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] Males	Old-Age[b] Females	Wife's[c]	Survivors Widow's[d]	Survivors Parents	Total Aged[e]
			Actual Data[f] (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
1953	2,438	784	846	541	24	4,633
1954	2,800[g]	975[g]	966	638	25	5,404
			Low-Cost Assumptions			
1955	2,831	829	942	829	25	5,456
1960	3,503	1,431	1,138	1,338	27	7,437
1970	4,790	2,743	1,398	2,354	31	11,316
1980	6,344	4,254	1,626	3,072	35	15,331
2000	8,172	6,600	1,793	3,533	43	20,141
2050	13,932	10,534	3,072	5,260	43	32,841
			High-Cost Assumptions			
1955	3,159	974	1,045	845	27	6,050
1960	4,050	1,735	1,284	1,362	31	8,462
1970	5,648	3,290	1,597	2,427	39	13,001
1980	7,434	5,302	1,772	3,109	47	17,664
2000	10,228	8,750	1,926	3,303	63	24,270
2050	14,962	11,620	2,982	4,187	63	33,814

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, except in actual data.

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. Those receiving both old-age benefits and wife's, widow's, or parent's benefits are shown under both categories (as of December 1953, about 24,000, 30,000, and 1,000 respectively), so total is overstated because of these dual beneficiaries (about 55,000 in December 1953).

g/ Subdivision by sex estimated.

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	30	21	25	30	21	25
1952	33	25	29	33	25	29
1953	38	30	34	38	30	34
1954	43	35	39	43	35	39
	Estimated Data					
1955	44%	35%	39%	49%	39%	43%
1960	50	47	48	57	52	55
1980	67	72	70	75	79	77
2000	75	81	78	84	89	87
2050	74	81	77	84	91	88

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	57%	54%	56%	57%	54%	56%
1951	64	70	65	64	70	65
1952	62	66	62	62	66	62
1953	68	76	70	68	76	70
	Estimated Data					
1955	71%	70%	71%	75%	76%	75%
1960	73	78	74	79	84	80
1980	78	87	81	84	92	87
2000	82	90	85	87	94	90
2050	80	90	84	87	94	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	778	414
1952	34	75	228	864	438
1953	41	90	254	963	512
1954	50	107	272	1,054	516
			Low-Cost Assumptions		
1955	59	88	350	1,125	665
1960	66	99	420	1,339	791
1970	85	128	478	1,504	1,068
1980	117	175	507	1,575	1,309
2000	130	195	572	1,805	1,718
2050	233	349	848	2,646	2,740
			High-Cost Assumptions		
1955	68	102	422	1,164	690
1960	78	117	510	1,383	819
1970	97	145	567	1,494	1,096
1980	120	180	570	1,457	1,342
2000	125	187	543	1,361	1,770
2050	184	276	567	1,389	2,364

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: Total Eligible	Qualified for Old-Age and Wife's: With Smaller Old-Age Benefit	Qualified for Old-Age and Widow's: Total Eligible	Qualified for Old-Age and Widow's: With Smaller Old-Age Benefit
		Low-Cost Assumptions		
1960	160	40	361	180
1980	692	173	1,814	907
2000	1,332	333	3,294	1,647
2050	2,210	552	5,313	2,656
		High-Cost Assumptions		
1960	216	65	422	232
1980	1,014	304	2,251	1,238
2000	2,176	653	4,432	2,438
2050	2,989	897	6,489	3,569

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		
				Wife's[b]		
	Males	Females	Total	With No Old-Age Benefit	With Smaller Old-Age Benefit	Child's
	Actual Data[d] (based on December)					
1952	$626	$470	$591	$312[c]	[c]	$176
1953	654	488	613	331	$99	189
1954	[c]	[c]	710	381[c]	[c]	223
	Low-Cost Estimate					
1960	$912	$679	$845	$466	$116	$300
1980	996	704	879	510	128	309
2000	998	672	852	511	128	309
2050	998	672	857	511	128	307
	High-Cost Estimate					
1960	$915	$674	$843	$467	$140	$293
1980	986	688	862	504	151	302
2000	987	626	820	504	151	305
2050	987	626	829	504	151	302

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 provisons.

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] With No Old-Age Benefit	Survivor: Widow's[a] With Smaller Old-Age Benefit	Survivor: Mother's	Survivor: Child's	Survivor: Parent's	Lump-Sum[b] Payments
		Actual Data[d] (based on December)				
1952	$488[c]	[c]	$435	$375	$496	$165
1953	509	$179	450	387	504	173
1954	555[c]	[c]	534	444	569	179
		Low-Cost Estimate				
1960	$640	$160	$626	$512	$751	$197
1980	756	189	664	537	734	200
2000	770	192	664	536	734	196
2050	769	192	664	537	734	197
		High-Cost Estimate				
1960	$645	$194	$622	$508	$736	$195
1980	759	228	659	536	717	197
2000	765	230	660	538	717	189
2050	763	229	659	540	717	190

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[d]
	Old-Age[a]	Wife's[b]	Widow's[c]	Parent's	Child's	Mother's		
Actual Data[e]								
1950	$557	$88	$89	$4	$142	$49	$33	$961
1951	1,135	175	156	9	271	82	57	1,885
1952	1,328	200	191	10	310	92	63	2,194
1953	1,884	275	248	12	385	114	88	3,006
1954	2,340	338	304	13	451	133	92	3,670
Low-Cost Estimate								
1955	$2,891	$426	$410	$17	$461	$167	$118	$4,495
1960	4,167	554	879	20	715	263	156	6,822
1980	9,313	883	2,472	26	900	337	262	14,335
2000	12,594	993	3,012	32	1,027	380	337	18,559
2050	20,978	1,701	4,512	32	1,527	563	539	30,151
High-Cost Estimate								
1955	$3,278	$476	$424	$18	$463	$197	$123	$4,984
1960	4,876	630	916	23	737	317	160	7,736
1980	10,975	970	2,620	34	835	375	265	16,235
2000	15,569	1,099	3,062	45	789	358	335	21,470
2050	22,038	1,681	3,973	45	833	374	450	29,688

a/ I.e., for retired workers.
b/ Including husband's benefits.
c/ Including widower's benefits.
d/ For 1955 and after, includes estimated payments due to disability freeze which are not included in the payments by benefit category.
e/ 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 15

ESTIMATED BENEFIT PAYMENTS AS PERCENT OF TAXABLE PAYROLL

Calendar Year	Monthly Old-Age Benefits				Monthly Younger Survivor Benefits		Lump-Sum Death Benefits	Disability Freeze	Total Benefits
	Primary	Wife's	Widow's	Parent's	Mother's	Child's			
Actual Data[b]									
1950	.65%	.10%	.10%	*	.06%	.17%	.04%	—	1.13%
1951	.96	.15	.13	.01%	.07	.23	.05	—	1.60
1952	1.06	.16	.15	.01	.07	.25	.05	—	1.75
1953	1.42	.21	.19	.01	.09	.29	.07	—	2.27
1954	1.73	.25	.23	.01	.10	.33	.07	—	2.72
Low-Cost Assumptions									
1955	1.79%	.26%	.25%	.01%	.10%	.29%	.07%	*	2.78%
1960	2.47	.33	.52	.01	.16	.42	.09	.04%	4.04
1970	3.47	.38	.93	.01	.17	.44	.11	.05	5.57
1980	4.41	.42	1.17	.01	.16	.43	.12	.07	6.79
1990	5.08	.41	1.27	.01	.15	.42	.13	.07	7.55
2000	4.91	.39	1.17	.01	.15	.40	.13	.07	7.24
2050	5.49	.45	1.18	.01	.15	.40	.14	.08	7.89
Level-Premium[a]									
2¼% interest	4.53	.40	1.05	.01	.15	.41	.13	.07	6.73
2½% interest	4.43	.40	1.03	.01	.15	.41	.12	.06	6.62
High-Cost Assumptions									
1955	2.04%	.29%	.26%	.01%	.12%	.29%	.08%	*	3.10%
1960	2.92	.37	.55	.01	.19	.44	.10	.05%	4.63
1970	4.11	.45	1.00	.01	.20	.45	.11	.06	6.39
1980	5.34	.47	1.27	.02	.18	.41	.13	.08	7.90
1990	6.48	.48	1.40	.02	.17	.38	.14	.09	9.15
2000	6.75	.48	1.33	.02	.16	.34	.15	.09	9.31
2050	8.85	.67	1.60	.02	.15	.33	.18	.12	11.92
Level-Premium[a]									
2¼% interest	6.16	.52	1.22	.02	.17	.38	.14	.08	8.68
2½% interest	5.97	.51	1.19	.02	.17	.38	.14	.08	8.44
Intermediate-Cost Assumptions									
1955	1.91%	.28%	.26%	.01%	.11%	.29%	.07%	*	2.94%
1960	2.69	.35	.53	.01	.17	.43	.09	.04%	4.33
1970	3.79	.41	.96	.01	.18	.45	.11	.06	5.98
1980	4.87	.45	1.22	.01	.17	.41	.13	.07	7.34
1990	5.75	.45	1.33	.02	.16	.40	.14	.08	8.32
2000	5.78	.43	1.25	.02	.15	.37	.14	.08	8.22
2050	6.82	.54	1.34	.01	.15	.37	.16	.09	9.48
Level-Premium[a]									
2¼% interest	5.28	.46	1.12	.01	.16	.39	.13	.07	7.63
2½% interest	5.15	.45	1.10	.01	.16	.39	.13	.07	7.47

* Less than .005%.

a/ Level-premium contribution rate for benefit payments after 1954 and in perpetuity, not taking into account accumulated funds through 1954 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 1954

Level-Premium Equivalent to	Low Cost	High Cost	Intermediate Cost
	Interest at 2¼%		
Benefit Payments	6.73%	8.68%	7.63%
Administrative Expenses	.08	.12	.10
Interest on 1954 Fund[b]	.19	.22	.20
Net Cost[c]	6.62	8.58	7.53
Adjusted Net Cost[d]	6.89	8.91	7.82
Present Contributions[e]	7.32	7.22	7.28
	Interest at 2.4%		
Benefit Payments	6.67%	8.53%	7.53%
Administrative Expenses	.08	.12	.10
Interest on 1954 Fund[b]	.21	.24	.22
Net Cost[c]	6.54	8.41	7.41
Adjusted Net Cost[d]	6.80	8.75	7.70
Present Contributions[e]	7.28	7.17	7.23
	Interest at 2½%		
Benefit Payments	6.62%	8.44%	7.47%
Administrative Expenses	.08	.12	.10
Interest on 1954 Fund[b]	.22	.25	.23
Net Cost[c]	6.48	8.31	7.34
Adjusted Net Cost[d]	6.74	8.64	7.62
Present Contributions[e]	7.24	7.14	7.19

a/ Level-premium contribution rate (based on discounting at interest) for payments after 1954 and in perpetuity, as percent of payroll.

b/ Interest on trust fund existing at end of 1954 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 1954.

d/ Level contribution rate for employer and employee combined required to meet the "net cost" allowing for the self-employed paying only ¾ 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 ¾.

Table 17

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER CONTRIBUTION SCHEDULE IN 1954 AMENDMENTS[a], 2.4% INTEREST
(In millions)

Calendar Year	Contributions	Benefit Payments	Administrative Expenses	Net Income	Interest on Fund[b]	Fund at End of Year
Actual Data Excluding Effect of Railroad Financial Interchange						
1949	$1,070	$667	$54	$949	$146	$11,816
1950	2,071	961	61	1,649	257	13,721
1951	3,367	1,885	81	1,401	417	15,540
1952	3,819	2,194	88	1,537	365	17,442
1953	3,945	3,006	88	851	414	18,707
1954	5,163	3,670	92	1,401	468	20,576
Actual Data Including Effect of Railroad Financial Interchange[c]						
1952	$3,974	$2,395	$92	$1,487	$376	$17,900
1953[d]	4,105	3,236	92	777	424	19,102
1954[d]	5,373	3,920	96	1,357	477	20,936
Low-Cost Assumptions						
1955	$5,939	$4,495	$101	$1,343	$519	$22,798
1960	7,807	6,822	117	868	672	29,126
1970	12,526	10,654	145	1,727	1,061	46,115
1980	16,245	14,335	173	1,737	1,870	80,649
1990	17,734	17,398	199	137	2,607	111,309
2000	19,740	18,559	217	964	3,413	146,087
2025	24,175	25,272	280	-1,377	6,801	289,476
2050	29,418	30,151	337	-1,070	11,062	497,053
High-Cost Assumptions						
1955	$5,906	$4,984	$127	$795	$512	$22,243
1960	7,736	7,736	153	- 153	568	24,139
1970	12,393	12,097	193	103	564	24,112
1980	15,819	16,235	232	- 648	722	30,497
1990	16,615	19,752	268	-3,405	380	14,510
2000	17,753	21,470	289	-4,006	(Fund exhausted in 1995)	
Intermediate-Cost Assumptions						
1955	$5,922	$4,740	$114	$1,068	$516	$22,520
1960	7,772	7,279	135	358	620	26,632
1970	12,460	11,377	169	915	812	35,114
1980	16,032	15,285	202	544	1,296	55,573
1990	17,174	18,574	234	-1,634	1,494	62,910
2000	18,747	20,014	253	-1,521	1,436	60,494
2025	21,336	27,391	320	-6,378	294	9,354
2050	24,293	29,918	352	-5,978	(Fund exhausted in 2027)	

a/ Combined rate of 4% in 1955-59, 5% in 1960-64, 6% in 1965-69, 7% in 1970-74, and 8% thereafter.

b/ Interest taken at 2.4% on fund at end of previous year plus ½ of the net income of the current year.

c/ For data before 1952, see Robert J. Myers and John A. MacDougall, "Amendments to the Railroad Retirement Act in 1954," Social Security Bulletin, February 1955 (Table 4).

d/ Preliminary estimate.

Table 18

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER A THEORETICAL CONTRIBUTION SCHEDULE UNCHANGED FROM PRESENT SCHEDULE EXCEPT THAT ULTIMATE RATE IS SUCH THAT SYSTEM WILL BE IN BALANCE[a] INTERMEDIATE-COST ESTIMATE, 2.4% INTEREST
(In millions)

Calendar Year	Contributions	Benefit Payments	Administrative Expenses	Net Income	Interest on Fund[b]	Fund at End of Year
1955	$5,922	$4,740	$114	$1,068	$515	$22,519
1960	7,772	7,279	135	358	620	26,630
1970	12,460	11,377	169	914	812	35,110
1980	17,398	15,285	202	1,911	1,476	63,926
2000	20,343	20,014	253	76	2,612	111,481
2050	26,373	29,918	352	-3,898	3,898	163,937

a/ Combined rate of 8.68% in 1975 and thereafter.
b/ Interest taken at 2.4% on fund at end of previous year plus ½ of the net income of the current year.

Table 19

ESTIMATED PROGRESS OF OASI TRUST FUND UNDER A LEVEL THEORETICAL CONTRIBUTION RATE[a], 2.4% INTEREST
(In millions)

Calendar Year	Contributions	Benefit Payments	Administrative Expenses	Net Income	Interest on Fund[b]	Fund at End of Year
			Low-Cost Assumptions, Contribution Rate of 6.80%			
1955	$10,567	$4,495	$101	$5,971	$574	$27,481
1960	11,040	6,822	117	4,101	1,283	56,779
1970	12,509	10,654	145	1,710	2,412	103,784
1980	13,808	14,335	173	- 700	3,218	136,964
2000	16,778	18,559	217	-1,998	3,967	168,267
2050	25,004	30,151	337	-5,484	5,484	231,198
			High-Cost Assumptions, Contribution Rate of 8.75%			
1955	$13,525	$4,984	$127	$8,414	$603	$29,953
1960	14,071	7,736	153	6,182	1,601	71,397
1970	15,920	12,097	193	3,630	3,334	144,056
1980	17,294	16,235	232	827	4,868	208,125
2000	19,408	21,470	289	-2,351	7,062	300,117
2050	20,956	29,688	366	-9,098	9,098	383,624
			Intermediate-Cost Assumptions, Contribution Rate 7.70%			
1955	$11,940	$4,740	$114	$7,086	$587	$28,609
1960	12,448	7,279	135	5,034	1,427	63,394
1970	14,094	11,375	169	2,550	2,824	121,762
1980	15,434	15,286	202	- 54	3,948	168,434
2000	18,047	20,014	253	-2,221	5,309	225,414
2050	23,387	29,918	352	-6,884	6,884	290,260

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 2.4% on fund at end of previous year plus $\frac{1}{2}$ of the net income of the current year.

Table 20

ESTIMATED ACCRUED LIABILITY OF OASI FOR 1952 AND 1954 ACTS, 2½% INTEREST

Item	1952 Act (as of end of 1952) Low Cost	1952 Act (as of end of 1952) High Cost	1952 Act (as of end of 1952) Intermediate Cost	1954 Act (as of end of 1954) Low Cost	1954 Act (as of end of 1954) High Cost	1954 Act (as of end of 1954) Intermediate Cost
Present Value of Benefits and Expenses (in billions)						
All persons	$535	$612	$573	$754	$832	$793
Those now age 20 and over	281	332	306	410	475	443
New entrants	254	280	267	344	357	350
Present Value of Payrolls (in billions)						
All persons	$9,077	$7,782	$8,430	$11,055	$9,453	$10,254
Those now age 20 and over	2,423	2,371	2,397	3,288	3,224	3,256
New entrants	6,654	5,412	6,033	7,768	6,229	6,998
Equivalent level payroll	204	175	190	249	213	231
Accrued Liability (in billions)						
Total	$189	$209	$200	$265	$291	$280
Unfunded	170	191	182	244	270	259
Funded (Trust Fund)	18	18	18	21	21	21
Level-Premium Cost as Percent of Payroll						
Normal (new entrant)	3.81%	5.18%	4.42%	4.42%	5.72%	5.00%
Interest on						
Unfunded accrued liability	1.88	2.45	2.16	2.21	2.86	2.53
Funded accrued liability	.20	.23	.22	.19	.22	.20
Total cost	5.89	7.86	6.80	6.82	8.80	7.73
Net cost[a]	5.69	7.63	6.58	6.63	8.58	7.53
Net cost for those 20+[a]	10.84	13.23	12.02	11.84	14.09	12.95

a/ Interest on existing trust fund deducted.

Table 21

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

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	5.36c/	6.33c/	7.22c/		
1939	17	a/	2.58c/	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
1954	39	High	2.78	4.04	5.57	6.79	7.24	7.89
			High-Cost Assumptions					
1935	12	a/	3.46%	5.13%	8.41%	13.36%		
1939	14	a/	5.45	6.72c/	8.54c/	10.60c/		
1939	17	a/	3.70c/	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
1954	39	High	3.10	4.63	6.39	7.90	9.31	11.92

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 OASI System, With the Assumption of a Static Future Wage Level -- December 1942.

18. Not Printed.

19. OASI 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 OASI, 1946 — April 1947.

24. Illustrative U.S. Population Projections, 1946 — January 1948.

*25. Analysis of Recent Group Annuities Supplementing Retirement Benefits Under OASI — February 1948.

26. Present Values of OASI Benefits Awarded and In Current Payment Status, 1940-46 — May 1948.

27. Long-Range Cost Estimates for OASI Under Universal Coverage and Present Benefit Provisions — August 1948.

28. Long-Range Cost Estimates for Expanded Coverage and Liberalized Benefits Proposed to the OASI System by H.R. 2893 — February 1949.

29. Estimated Amount of Life Insurance in Force as Survivor Benefits Under OASI 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 OASI 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 OASI 1953 — June 1953.

37. Estimated Amount of Life Insurance in Force as Survivor Benefits Under Social Security Act Amendments of 1952 — August 1953.

38. Long-Range Cost Estimates for Changes Proposed in the OASI System By H.R. 7199, With Supplementary Estimates for Universal Coverage — March 1954.

* Out of Print.

GPO 888016