over remaining in employment could be greater than that anticipated under alternative I—even though less than during wartime—and benefit payments correspondingly lower. The total result would be an even greater growth in the trust fund than has been estimated under alternative I. On the other hand, a larger volume of unemployment and a lower level of production than assumed in alternative II would lead to smaller net increases in the fund, due both to lower contribution and interest income and to higher benefit payments resulting from increased retirement.

Furthermore, no attempt has been made to illustrate the effect on the trust fund of marked changes in prices or wage rates. Such changes would substantially affect the dollar amount of contribution income, while having relatively little effect on benefit payments, and thus could produce much larger variations from the figures shown in table 6 than the other factors cited.

ACTUARIAL STATUS OF THE TRUST FUND

The board of trustees is required by section 201 (b) of the Social Security Act to report each year on the actuarial status of the trust fund. The present section discusses that status. Under old-age and survivors insurance, benefits accrue to the aged and to orphaned children and their widowed mothers surviving deceased wage earners. Thus, certain basic cost factors must be recognized in analysis of the costs of the program. These include (a) population; (b) mortality; (c) family composition; (d) years of credited employment prior to qualification for benefits; (e) remarriage of widowed beneficiaries; (f) employment of widowed beneficiaries, older children, and aged; and (g) income in covered employment and its distribution among calendar quarters (as affected by a changing workweek, changing productivity, effectiveness of collective bargaining, long-term trends, cyclical changes, etc.).

(a) *Population.*—Population development depends upon the progress of the existing population as changed by future births, deaths, immigration, and emigration. The 1940 census showed some 600,000 more persons aged 65 and over than had been indicated as probable by the 1930 census and later deaths and migration. The underregistration of children probably continued into the 1940 census. The Bureau of the Census has made comprehensive reports on the errors and biases believed present in the latest enumeration.

Birth rates declined for a number of years, due to the increasing percentage of the population past the childbearing ages, the increasing proportion at the middle ages where childbearing is less frequent, and changed attitudes toward the size of the family. However, the long decline of birth rates lasting into the thirties has been reversed since 1937. There also appears to be a marked increase in the rate of first births and a more moderate increase in the rate of second births, tending to increase both the proportion of the insured population with dependents and the number of dependents. This increases the amount of insurance for survivors benefits under old-age and survivors insurance. The diminution in the proportion of large families has had only a limited effect upon benefits under this program, since aggregate benefits for a family are not increased for children beyond the fourth child in the absence of a mother drawing benefits, nor beyond the third child with the mother drawing benefits.

Immigration, which had been heavy up to the beginning of World War I and more moderate in the 1920's, was definitely checked in the 1930's, and most population forecasts have assumed that no return to the old immigration rates may be expected.

Another population factor to be considered is that of emigration. The war led to one type of emigration of considerable magnitude in the expeditionary forces to Africa, England, Europe, Asia, and the Pacific. After the last war, some members of our expeditionary forces did not return but continued to live as private individuals in the countries where they had been stationed during the war. The postwar foreign manpower requirements of such agencies as the Allied Military Government and United Nations Relief and Rehabilitation Administration, and the use of American technicians in many countries of the world, may be heavy. The 1943 report of the National Resources Planning Board on future population development gives certain adjustment figures to recognize the effects of the war. Extensive analysis of this and similar material will be made over the next few years. It will call for periodic adjustment in cost estimates.

The possibile future progress of the population has been indicated in two different reports: (1) The 1935 report prepared by the staff employed by the Committee on Economic Security in developing long-range cost estimates for the original program of old-age benefits; and (2) the National Resources Committee's report on future population trends issued in 1938. The actual experience from which projections were made in that report did not go beyond 1936. In the light of the as yet unpredictable population results of the war, it has seemed well to retain in the low-cost assumptions the rather cautious population forecast made by the staff of the Committee on Economic Security, as representative of one reasonable rate of growth. At the same time the National Resources Committee's medium population forecast of 1938 which has been used in other studies seems suitable as an indication of the potential increase under high-cost assumptions. Table 9 indicates the two assumptions used as to population growth for the group aged 20 to 64, inclusive, and the group aged 65 and over.

TABLE 9.— *Estimated population of United States aged 20 to 64 and 65 and over, in selected years, 1955–2000*

[In thousands]

Calendar year	Ages 20–64			Ages 65 and over		
	Total	Men	Women	Total	Men	Women
Low assumptions (Committee on Economic Security):						
1955	88, 400	44, 100	44, 300	12, 200	6, 000	6, 200
1960	89, 400	44, 600	44, 800	13, 600	6, 600	7, 000
1980	90, 600	45, 600	45, 000	17, 000	7, 900	9, 100
2000	87, 400	44, 100	43, 300	18, 200	8, 600	9, 600
High assumptions (National Resources Committee medium):						
1955	88, 200	43, 900	44, 300	12, 800	6, 200	6, 600
1960	89, 500	44, 600	44, 900	14, 800	7, 100	7, 700
1980	91, 600	46, 300	45, 300	22, 100	10, 400	11, 700
2000	90, 800	46, 300	44, 500	26, 400	12, 800	13, 600

It is not believed that future population progress is exactly represented by either of the two series used. The striking sequence of depression, recovery, recession, war, and reconversion, with tremen-

dous unsettled influences throughout the world, leave doubtful in any nation the future trends of mortality, fertility, or migration. The figures shown in table 9 represent two possible developments. Because both series have been used for some time and because the detailed 1940 census data and the National Resources Planning Board population study of 1943 [1] have not yet been adequately adapted for cost purposes, use of these older bases has been continued in this report, with both series extended from their terminal year of 1980 to the year 2000.

(b) *Mortality.*—Mortality rates, by age and sex, have been steadily improving since the turn of the century for both sexes and virtually all ages up to 60, with very little change at ages above 60. Both the National Resources Committee study of 1938 and the National Resources Planning Board study of 1943 make assumptions of a future improvement in mortality as plausibly indicated by the past history of mortality improvement. In the low-cost assumptions discussed in this section, very little improvement in mortality rates is assumed. In the high-cost assumptions, some improvement is assumed, but their assumption of improvement beyond age 65 is believed by many to be too optimistic.

Mortality is of major importance for estimates of future benefits for the aged, and of importance also in determining potential deaths among the younger fathers which will give rise to mothers' and children's, and ultimately older widows', survivor benefits. Studies are still under way, both in the Social Security Board and in the Bureau of the Census, as to what current mortality rates may be after allowing for corrections of errors and bias in the most recent census; and following these there will be further studies along the line of the recent National Resources Planning Board's mortality forecasts. Such remarkable developments as insulin, penicillin, the sulfa drugs, and other more recent discoveries carry potential mortality improvements, particularly at the middle and higher ages, which may yet justify the lighter mortality assumed in the high-cost illustrations.

(c) *Family composition.*—Births have significance for old-age and survivors insurance costs, not alone because of their importance in building up the population of the future but also because the system provides an orphaned child under the age of 18 with one-half of a primary benefit and a widowed mother with three-fourths of a primary benefit so long as she has children in her care. The maximum benefit payable to a family is twice the primary benefit. Thus the distribution of families by size is of importance in determining the extent of prospective benefits.

The early claims experience is probably not typical because of lags in getting under way and the sequence of falling and rising birth rates over the last 15 years. During the next few years, as a result of the recently increased birth rate through 1943, a smaller proportion of nonchild families and a change in the distribution of orphan children by age is expected.

It is also important to consider the trends in those deaths which terminate husband-wife families, the trends in divorce which have the same effect, and determinations as to what constitutes a separation of spouses to be recognized under the law. Important also are the age relationship between husband and wife and the differential mor-

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[1] National Resources Planning Board, Estimates of Future Population of the United States, 1940–2000. August 1943.

tality by sex and by marital condition. Experience has shown that at almost all ages women have a lighter mortality than men and that the mortality of married persons is significantly lower than that of single or ex-married persons. The large proportion of marriages in which the wife is younger than the husband results in a predominance of terminations of marriage by the husband's rather than the wife's death. Further studies concerning these various factors are planned in order to secure a more complete understanding of the relationships.

Thus, the three elements—population, mortality, and family composition—constitute the warp and woof for estimates of future potential beneficiaries, with the other influences discussed in (d) through (g) below forming the specific patterns of beneficiaries.

Old-age insurance beneficiaries are composed of several different types of recipients. Table 10 shows the various illustrative rates of growth in the number of beneficiaries, distinguishing between male primary beneficiaries, female primary beneficiaries, wives of male primary beneficiaries, children of primary beneficiaries, aged widows of male primary beneficiaries or of deceased employees, and wholly dependent aged parents of deceased covered employees without widows or children.

TABLE 10.—*Old-age insurance recipients of monthly benefits in selected years 1955–2000*

[In thousands]

Calendar year	Male primary beneficiaries	Female primary beneficiaries	Wives of primary beneficiaries	Children of primary beneficiaries	Aged widows	Dependent parents
Low assumptions:						
1955	1,300	200	400	60	450	80
1960	1,700	350	550	80	750	110
1980	3,700	1,100	1,100	160	2,300	130
2000	4,500	1,400	1,400	170	3,300	130
High assumptions:						
1955	1,800	250	600	85	450	140
1960	2,500	450	850	100	800	200
1980	5,700	1,500	2,100	250	2,600	300
2000	8,400	2,500	3,400	300	4,500	250

Whereas old-age insurance beneficiaries make up the bulk of the prospective recipients under old-age and survivors insurance, the young survivors, composed of half-orphaned and full-orphaned children and widowed mothers of the former, will be responsible for a considerable amount of benefits. Table 11 lists the two groups separately for inspection and for comparison between the high and low examples. In table 10 the high assumptions show, as expected, a larger number of beneficiaries; this is because the lighter mortality rates of the National Resources Committee population projections result in a greater number and proportion of aged persons. This lighter mortality, plus the assumed lower birth rate, has the opposite effect in table 11; here the assumed population projection results in a smaller number of child and mother beneficiaries under the high assumptions than under the low.

TABLE 11.—*Young survivor insurance recipients of monthly benefits in selected years, 1955–2000*

[In thousands]

Calendar year	Low assumptions		High assumptions	
	Orphaned children	Widowed mothers	Orphaned children	Widowed mothers
1955	1, 200	300	1, 100	250
1960	1, 400	350	1, 200	300
1980	1, 600	400	1, 200	250
2000	1, 600	400	1, 200	250

(d) *Credited employment and insured status.*—The number of persons who gain protection through becoming "insured" under old-age and survivors insurance depends upon the volume and pattern of their work in employments covered by the program and upon the amount of taxable wages earned in such work. A discussion of the latter factor is presented later under item (g). The old-age and survivors insurance program covers primarily employees in industry and commerce. Illustrations are presented in table 12 showing the percentage of the population assumed to be insured by virtue of current or previous work experience for age groups above and below 65.

TABLE 12.—*Proportion of the population insured* [1] *under old-age and survivors insurance in selected years, 1955–2000 (including primary beneficiaries)*

Calendar year	Low assumptions (percent)				High assumptions (percent)			
	Men		Women		Men		Women	
	20 to 64	65 and over	20 to 64	65 and over	20 to 64	65 and over	20 to 64	65 and over
1955	54	30	18	5	64	34	22	5
1960	56	34	19	7	66	40	24	7
1980	59	54	21	18	71	60	30	19
2000	60	60	21	21	71	71	32	32

[1] "Insured," as distinct from "covered," means sufficient participation in covered employment to have become eligible for benefits upon death or retirement; a person may be "covered" (i. e., with past or current wage credits) without having reached or maintained an "insured" status.

The percentages shown in table 12 for ages 65 and above include primary beneficiaries drawing benefits to the extent shown by table 13, which indicates the proportion under both low and high assumptions.

TABLE 13.—*Proportion of the population aged 65 and over receiving primary benefits (excludes women eligible to receive benefits as wives, widows, and parents)*

Calendar year	Low assumptions (percent)		High assumptions (percent)	
	Men	Women	Men	Women
1955	22	3. 5	29	4
1960	26	5	35	6
1980	46	13	55	13
2000	52	14	66	14

The proportions of the population shown in tables 12 and 13 are derived from application of the coverage and insured-status specifications of old-age and survivors insurance to the end results of qualification through a sufficient number of quarters with a covered wage of at least $50.

In the several tables presented above, only potential long-range trends have been set down without recognition of cyclical or periodic irregularities. Bearing this in mind, certain trends may be observed in these illustrative tables of numbers of beneficiaries:

    (1) An over-all uptrend in beneficiaries under all types of old-age benefits—save in the quantitatively unimportant case of dependent parents;

    (2) Very slight increase, if any, after 1960 in the number of children and widowed mothers who are beneficiaries;

    (3) The relatively and increasingly small proportion of survivor benefits in relation to old-age benefits;

    (4) The relatively rapid advance in the percent insured at age 65 and over (including those drawing benefits) when compared with the percent insured aged 20 to 64, inclusive; and

    (5) The rapid rise in the percent drawing primary benefits from 1955 to 1980, and the slowing down of the increase in the percent in the following 20 years.

(e) *Remarriage rates.*—Remarriage of "young widows" is a rather important cost factor. The greatest possible duration of benefits occurs among the younger widows, who, as mothers of young children, can expect to receive benefits for many years. These are also the women with the greatest chance of remarriage. Among the older mothers with fewer prospective years of benefit receipt (their children being nearer age 18), the probability of remarriage is lower. Remarriage rates are affected both by age of widow and duration of widowhood.

Use of remarriage rates results in considerable reduction in the prospective cost of benefits to young widows. It also results in considerable reduction in the deferred portion of benefits otherwise payable to widows upon reaching age 65. This serves as a tangible reduction in the volume of "life insurance" afforded by the program when such "life insurance" is interpreted as the present value, in case of the worker's death, of prospective benefit payments to his surviving dependents. It is estimated that at the present time the program is providing approximately $50,000,000,000 of "life insurance" protection for survivors.

(f) *Employment of beneficiaries.*—During the depression, it is probable that many children who should have been in school were working. Moreover, the labor market was increased by many married women seeking employment to reinforce what they hoped might be only a temporary inadequacy in their husband's income. As indicated quantitatively earlier in this report, during the war years, a very large group of elderly persons have acquired eligibility for benefits under old-age and survivors insurance. Many of these, after receiving some benefits, returned to work and suspended their benefits. There are also many instances where covered employees have announced their intention to retire but have postponed retirement. The greatest proportion of those eligible, however, have shown no evidence of intention to retire. The abnormal work opportunities during the war

were also shared by older children, by widowed mothers, and by aged wives of potential primary beneficiaries. Thus, assumptions as to the employment of beneficiaries are indissolubly interwoven with all the other cost elements entering into the number and cost of benefits.

(g) *Income in covered employment.*—One of the most striking changes in earned income on record has taken place since 1938. Whereas a considerable group of individuals in nonwar employments had little change in their wage incomes, large groups in manufacturing had marked increases both in their basic rates of pay and in the number of hours in their working week. Moreover, there was a great falling off in partial unemployment, with a greater stability of work from week to week. This change in wage-income status has given a great many more persons quarters of coverage than had been the case in prewar years. The increase in the persistency of employment, and thus in the number of quarters credited, results, at least temporarily, in an increase in the number of persons with an insured status—either fully or currently insured; it also results in a higher average wage.

A sumptions as to future covered wages are essential in developing illustrative actuarial projections. The trend of wages in the past has been unquestionably of an upward character. The level of earnings at the end of the reconversion period and their movement thereafter will, of course, affect contributions and benefits under the program, since both are geared to covered earnings. Some indirect recognition of uncertainties with respect to wages is given in the adoption of low and high sets of average wage assumptions.

The data derived from old-age and survivors insurance records are not yet fully useful for long-range cost purposes. Average reported wages were much lower in the early years of the system than they are currently. The increase which has occurred is indicated in table 14.

TABLE 14.—*Average taxable wages of workers with taxable wages under old-age and survivors insurance, by year and sex, 1937–45*

Calendar year	Average taxable wage			Calendar year	Average taxable wage		
	Total	Men	Women		Total	Men	Women
1937	$900	$1,041	$540	1942	$1,128	$1,363	$609
1938	833	960	506	1943	1,294	1,594	786
1939	881	1,016	536	1944 [1]	1,379	1,689	845
1940	932	1,076	556	1945 [1]	1,299	1,585	792
1941	1,019	1,191	578				

[1] Preliminary estimates.

The high assumptions use an average annual taxable wage of $2,000 for men working in four quarters of a year, $1,000 for men working three quarters, $400 for men working two quarters, and $200 for those working one quarter. The corresponding average wage figures used for women under the high assumptions are $1,200 for four quarters, $600 for three quarters, $240 for two quarters, and $120 for one quarter. Under the low assumptions, the four-quarter average wage assumption used for males is $1,500, with $750 used for three quarters, $300 for two quarters, and $150 for one quarter. The low four-quarter average used for women is $900, $450 being used for three quarters, $180 for two quarters, and $90 for one quarter. The ratios to the annual four-quarter averages of approximately 50 percent for

three quarters, 20 percent for two quarters, and 10 percent for one quarter parallel fairly closely the actual ratios observable in old-age and survivors insurance wage data for 1940–43.

For purposes of determining the number of employed men under the low assumption, the male labor-force percentages, by age, of the 1940 census after substraction of those seeking work were applied to the assumed future male populations; for the high assumption, corresponding percentages from the 1930 census of gainful workers were applied, they being relatively high in comparison with the subsequent years. For women, percentages of the total female population represented by the 1940 female labor force minus those seeking work were applied against the assumed future female populations for the low assumption, while the total 1940 female labor force percentages, plus small assumed future increases, were used for the high assumption, these being higher than those for 1930. It has been further assumed that the labor-force characteristics of those in covered employment will bear the same relation to those of all workers as existed in 1940 under old-age and survivors insurance.

Because the coverage of the system excludes several large categories of employment (agricultural, domestic, railroad, and public employment and the self-employed), there is a flow of workers between covered and noncovered employments as well as between covered employment and unemployment. The restricted coverage necessarily will result in large numbers of workers who have not had sufficient contact with the program to establish or maintain the insured status necessary for benefit qualification. The extent of contact is a function both of stability of covered jobs and of age; older persons are more settled in their work than younger persons. Table 15 illustrates differences in the extent of contact workers had with the program in 1943. Other data pertinent to this matter were presented by the Chairman of the Social Security Board in his testimony before the Ways and Means Committee of the House on January 13, 1944.[2]

TABLE 15.—*Percentage distribution of workers in covered employment under old-age and survivors insurance, by number of quarters with taxable wages, 1943* [1]

Number of calendar quarters with taxable wages in 1943	Amount of taxable wages in 1943			Age at end of 1943		
	Total	Under $1,000	$1,000 and over	Total	Under age 35	Age 35 and over
Total	100.0	100.0	100.0	100.0	100.0	100.0
1 quarter only	15.3	32.0	0.2	15.3	19.5	10.6
2 quarters only	13.8	25.6	3.1	13.8	17.6	9.8
3 quarters only	13.1	18.8	7.8	13.1	15.1	10.8
4 quarters	57.8	23.6	88.9	57.8	47.8	68.8

[1] Preliminary data, partly estimated and subject to revision. Includes all persons who earned any taxable wages during the calendar year.

The carrying through of the prospective progress of the program using the elements discussed above furnishes reasonable illustrations of future beneficiaries and costs, neither the lowest nor the highest conceivable, the values derived being within the outside boundaries of

Hearings on an amendment, adopted by the Senate, to the revenue bill of 1943 (H. R. 3687) freezing the social-security tax rate at 1 percent for 1944, pp. 17–18.

possibility. Experience to date is very limited, the payment of monthly benefits having begun only in 1940. As payments got under way, the limitations of coverage and the insured-status requirement excluded large numbers of potential beneficiaries. Payments were further delayed by the "lag" with which any new program commences. In recent years, as the lag has lessened, payments among the relatively small number yet eligible to receive them have been limited by delays in the claiming of benefits occasioned by the war. The long-range illustrations look beyond these various limitations and furnish some indication of the trend in the costs of the old-age and survivors insurance program.

Table 16 sums up the previous discussion in terms of illustrative numbers of beneficiaries. The category "younger survivors" comprises orphaned children and their widowed mothers. Widows aged 65 and over are included under the "old age" category.

TABLE 16.—*Old-age and survivors insurance beneficiaries in receipt of benefits in selected years, 1955–2000*

[In thousands]

Calendar year	Low assumptions			High assumptions		
	Old-age benefi-ciaries	Younger sur-vivors	Lump sum [1]	Old-age benefi-ciaries	Younger sur-vivors	Lump sum [1]
1955	2,500	1,500	270	3,300	1,300	270
1960	3,500	1,700	300	4,900	1,500	300
1980	8,500	2,000	550	12,500	1,400	550
2000	10,900	2,000	600	19,300	1,400	750

[1] Represent number of deaths during the year resulting in lump-sum benefits.

Two estimates, based on lower and higher assumptions, of the evel cost of the benefits now provided by the system are 4 percent land 7 percent of covered pay rolls. Illustrative cost estimates for quinquennial years from 1955 to 2000 have been included in previous reports. (See p. 27 of fifth annual report of board of trustees.) The most recent illustrations which have been prepared were long-run cost completed in 1943–44 and are published in detail in Issues in Social Security, a report to the Committee on Ways and Means of the House of Representatives by the committee's social security technical staff, pages 149–256 (Government Printing Office, 1946).

The various influences of the war, such as those described in an earlier part of this report, make it desirable to revise the long-run cost illustrations, but there has not been sufficient time to accomplish this task as yet. Some of the preliminary work has already been started, however, and it is expected that revised illustrations will be presented in the next report of the trustees.

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