



PRESENT VALUES OF
OASI BENEFITS IN
CURRENT PAYMENT
STATUS 1940-1956

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FOREWORD

This study makes an actuarial appraisal of the old-age and survivors insurance benefits in current payment status on December 31 of each year from 1940 through 1956. It brings up to date Actuarial Study No. 42, which presented comparable data for 1940-54. The method of analysis used is quite similar to valuations of private insurance and retirement plans. There are, however, significant differences; for example, OASI benefits cease or are suspended for reasons which would not usually apply in private plans, notably where the beneficiary becomes eligible for another type of benefit or is in substantial employment.

The change in the minimum eligibility age for old-age benefits for women and for wife's and widow's benefits effected by the 1956 Amendments (namely, a reduction from 65 to 62) is considered in the 1956 figures since it went into effect for benefits for November 1956. The monthly disability benefits for insured workers aged 50-64 and for children of retired or deceased workers continuously disabled since age 18 are not considered since they do not go into effect until July 1957 and January 1957, respectively.

The present value of benefits in current payment status has no direct relationship to the actuarial soundness of a compulsory social insurance plan like the OASI program, which can be assumed to be perpetual in nature. It may be said that such a program is actuarially sound if it is in actuarial balance by reason of the fact that future income from contributions and interest earnings on the accumulated Trust Fund will, over the long run, support the disbursements for benefits and administrative expenses. At the time of the 1950 Amendments to the Social Security Act, the Congress believed that the system should be in actuarial balance, and therefore completely self-supporting from contributions of covered individuals and employers, and accordingly repealed the provision permitting appropriations to the system from general revenues of the Treasury. In the subsequent amendments of 1952, 1954, and 1956, the policy of maintaining the actuarial balance of the system on the basis of intermediate-cost estimates was continued.

Though not directly related to the actuarial soundness of the system, calculations based on reserve financing provide a summary measure of the obligations incurred, and facilitate comparison with other systems. This applies particularly to valuations of the benefits currently in force, which may be thought to have the greatest priority as financial commitments.

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

PRESENT VALUES OF OASI BENEFITS IN CURRENT PAYMENT STATUS, 1940-56

A. Introduction

This study presents the present value^{1/}, or actuarial reserve liability, in regard to benefits in current payment status under the old-age and survivors insurance system. It brings up to date Actuarial Study No. 42, which covered the period 1940-54.

This actuarial study confines itself to an analysis of the present value of benefits in current payment status. Like Actuarial Study No. 42, it includes the potential widow's benefits for those currently receiving wife's benefits, and likewise potential widower's benefits. It also considers the present value of the lump-sum death payment for current old-age beneficiaries.

For 1950 and after, included in the valuation were the new benefits added by the 1950 Amendments, notably husband's benefits, widower's benefits, and wife's benefits for the wife under age 65 with minor children (whose husband is an old-age beneficiary). In the 1950 Amendments the lump-sum death payment was changed in amount and as to conditions of payment and is so valued for 1950 and after.

As before, the present values of deferred wife's and widow's benefits^{2/} have been excluded throughout, since such benefits are not in current payment status (further there is the difficulty of estimating this group in the interval during which no benefits are payable). Both a 2% and a 2½% interest basis for present values are used in this study, as in Actuarial Study No. 42.

^{1/} The actuarial term "present value" is the lump-sum amount at a designated time equivalent to specified future installments and is determined by discounting such future installments by a theoretical or assumed rate of interest and probabilities of mortality, remarriage, or other contingencies.

^{2/} Deferred widow's benefits can be classified as either actual (where husband has died, but woman is now under age 65) or potential (where husband is over age 65 and in current payment status but wife is under age 65). However, for the years 1952-56 the full benefit (for the entire life of the wife) has been valued for wives under age 65 now in current payment status because of minor children in their care, when the wife will attain age 65 before the youngest child reaches age 18.

There are further extensions of the concept of actuarial liability which are not considered in this study because of their more or less indefinite and intangible nature. The total accrued liability of a benefit system (sometimes referred to as the "actuarial reserve") represents the present value of all future benefits that have been "earned" to date. Any fund or reserves on hand are merely the funded portion of this accrued liability.

The present value of OASI benefits in current payment status, shown here, represents a portion of this accrued liability. The remainder of such liability is that for benefit payments in the future, based on cumulative wage credits of active insured workers who have not yet become eligible, filed claims, received awards, or become entitled to benefits, less the present value of their contributions in the future. The OASI system does not have the definite contractual liability aspects of private insurance, nor, on account of its compulsory nature and assumed permanency, the need for immediate funding of such liability. For this reason there is not the necessity for a meticulous valuation of all liabilities which may exist, even if this were possible.

The present value of benefits in current payment status is compared with the Trust Fund at the same date. Such analysis does not imply that the Trust Fund should be this amount, or that full (or partial) actuarial funding is necessary (or even desirable) for this social insurance plan.

B. Methodology and Assumptions

The first monthly benefit awards were made in January 1940 so that the first valuation of benefits in current payment status is as of December 31, 1940. Detailed data on benefits in current payment status are available as of December 31 of each year through 1955. The data were not available by age and sex for 1956, so the valuation for that year was made on an approximate basis, using the trend in the previous years' average valuation factors (see Tables 1, 5, and 6).

From these data the valuation of claims liabilities was made by group methods. In other words, all annuity benefits of the same type and duration payable to a beneficiary of the same sex and age were valued as a group by multiplying the total amount of monthly benefits in such group by the appropriate annuity factor (present value of \$1 per month discounted at interest, with life contingencies and, for widows, remarriage probabilities). For instance, a life annuity of \$1 per month to a man age 66 last birthday (i.e., exact age $66\frac{1}{2}$ on the average) is worth \$122.41 according to the 1949-51 United States White Male Life Table at 2% interest. This factor, when applied to the rate of monthly benefits for those males age 66 receiving old-age benefits on December 31, 1955 (239,372 men at an average monthly benefit of \$72.06) yields a present value of \$2,111 million for this group. On the above assumptions, this would be the amount necessary at that date to meet all direct annuity payments for this group (i.e., excluding the lump-sum death payments and supplementary and survivor monthly benefits). Similarly, lump-sum payments were valued by multiplying the total amount of monthly benefits payable to beneficiaries of a given sex and age by a factor representing the present value of a payment on death equal to the amount of lump-sum per \$1 of monthly benefit.

Present values for the years 1940-51 are based on the 1939-41 United States White Life Tables at both 2% and $2\frac{1}{2}$ % interest. Those for 1953-56 are based on the 1949-51 United States White Life Tables, and in computing the present values on this basis some minor changes in methodology, or in approximations and adjustments, have been introduced. The present values of benefits in current payment status on December 31, 1952 are given on both bases, in order to show the effect of the change in mortality basis. In practice, neither mortality rates nor interest rates remain constant; furthermore, their future trends cannot be accurately determined. Herein no account is taken of improving mortality in the future. The mortality rates are based on white lives and tend to overstate the liability somewhat on this account because survival rates of white lives are higher than those of nonwhite lives (except beyond age 65 where the reported rates are about the same); this is offset by the improvement in mortality since 1949-51, already indicated by mortality rates in the U.S. Abridged Life Tables for more recent years.

Table 1

MONTHLY AMOUNT OF OASI BENEFITS IN CURRENT PAYMENT STATUS, DECEMBER 31
(in thousands)

Year	Old-Age ^{1/}		Wife's ^{2/}	Widow's ^{3/}	Mother's ^{4/}	Child's	Parent's	Total
	Male	Female						
1940	\$2,293	\$246	\$361	\$90	\$402	\$668	\$11	\$4,070
1941	4,069	470	691	302	826	1,432	26	7,815
1942	5,313	676	941	577	1,124	2,112	39	10,782
1943	6,313	858	1,151	930	1,384	2,822	52	13,510
1944	7,909	1,071	1,460	1,367	1,781	3,691	65	17,344
1945	11,153	1,385	2,040	1,893	2,391	4,858	81	23,801
1946	15,420	1,810	2,805	2,568	2,577	5,804	97	31,081
1947	19,415	2,364	3,545	3,352	2,764	6,702	135	38,277
1948	23,582	2,982	4,307	4,331	2,959	7,549	162	45,872
1949	29,614	3,823	5,376	5,442	3,207	8,427	185	56,074
1950	67,091	10,587	11,995	11,481	5,801	19,366	535	126,857
1951	80,837	15,171	14,710	13,849	6,776	22,739	709	154,791
1952	107,032	23,185	19,178	18,482	8,273	28,141	887	205,179
1953	132,767	31,892	24,017	22,096	9,517	32,517	986	253,792
1954	177,541	45,731	32,271	29,526	12,089	40,996	1,189	339,343
1955	215,919	61,027	39,414	34,151	13,404	46,443	1,257	411,615
1956	240,295 ^{5/}	82,248 ^{5/}	48,324	45,781	14,264	50,329	1,365	482,606

1/ Before the 1950 Amendments, the designation was "primary benefits."

2/ Includes a small amount of husband's benefits for 1950-56; on December 31, 1955, the monthly amount was about \$274,000.

3/ Includes a small amount of widower's benefits for 1950-56; on December 31, 1955, the monthly amount was about \$34,000.

4/ Before the 1950 Amendments, the designation was "widow's current benefits."

5/ Distribution by sex estimated.

Note: The figures in this table reflect only the direct operations of the OASI system and not the indirect effects due to the coordinating and financial interchange provisions of the Railroad Retirement Act (based on the 1951 Amendments thereto). The financial interchange provisions provide, in effect, that the OASI Trust Fund shall, on and after June 30, 1952, be maintained in the same position as if railroad employment had always been covered under OASI.

All benefits in current payment status are assumed to remain in force in such status until death or prior termination (such as marriage of the beneficiary and attainment of age 18 of child for child's and mother's benefits). The termination of mother's benefits by remarriage is also taken into consideration by utilizing remarriage rates of 150% of those in the American Remarriage Table. The 150% remarriage rate basis has been adopted because it compares closely with experience of recent years^{3/}. The effect of considering remarriage for a woman widowed at a young age is to reduce the present value of her annuity payable to age 18 of her youngest child by at least one-half.

The general assumption has been made initially that the size of the monthly benefit remains constant throughout and is not adjusted upward by recomputation or by subsequent legislation. However, there is a significant increase in the child's benefit if a child in the family attains age 18 or dies, since then 25% of the primary insurance amount is redistributed among the remaining children. There is also a redistribution on termination of any benefit while the family is receiving the maximum benefit. For child's benefits, an adjustment of 3% of the present value of benefits in current payment status has been made before 1950 and 7% for 1950 and thereafter to reflect these factors. There may also be an increase in the mother's benefit on termination of a child's benefit, if the maximum benefit provisions had been applicable. Furthermore, mother's benefits, even though not tabulated in select form (by duration of widowhood), were valued by select annuities at widowhood at the attained age on the date of valuation. To allow for both of these factors, an upward adjustment of 3% was made in the present value of mother's benefits in current payment status before 1950, 4% for 1950-53 and 7% thereafter. These various small adjustments have been made on the basis of actual operating data, along with necessarily somewhat arbitrary estimating techniques when the data were not available in proper or sufficient form.

More important, it is assumed that benefits are not suspended because of subsequent employment of the beneficiary and that benefits are not reduced or eliminated because the surviving beneficiary earns old-age benefits in her own right. On the other hand, no allowance is made for persons on the roll but not receiving benefits because they are in substantial employment in the month of valuation (such persons are "eligible" and "entitled" but not "in current payment status"). These "ins" and "outs" counteract each other and tend to balance at any time.

^{3/} "Further Remarriage Experience," Robert J. Myers, Proceedings, Casualty Actuarial Society, Vol. XXXVI, p. 73.

C. Present Value of Benefits in Current Payment Status

The liability for claims in current payment status is evaluated as of December 31 of each year. Any subsequent net increase or net decrease in claims is taken into account in future valuations. The benefit roll on December 31 is the basis of the liability on account of claims of all previous years in current payment status at that date at the then attained age of the recipient. This liability would be the correct figure for use in a balance sheet, but as stated it would not include the liability on account of (a) insured workers who are not yet eligible for benefit; (b) those who have made claim and have not yet received awards; (c) those who have received awards but are not receiving benefits currently; or (d) those with deferred benefits based on wage records of deceased or retired fully insured wage earners.

The liability on this basis is shown in Table 2 at 2% interest and in Table 3 at 2½% interest. There is a difference of only about 3% relatively in the figures on the two interest bases. Since the benefit roll is not matured, there is an increase in the liability each year, a trend which may be expected to persist for many years until the system does mature. Survivor benefits to mothers and children are a more current risk, and will therefore mature earlier than benefits to aged recipients.

Based on 2½% interest, the present value of benefits in current payment status rose steadily from about \$400 million at the end of 1940 to about \$5.2 billion at the end of 1949. The figure for the end of 1950, \$11.7 billion, is significantly higher as a result of the benefit increases in the 1950 Amendments. There was a further rise in the 1951 figure to about \$14.2 billion, and then again for 1952 to \$18.8 billion (in part due to the benefit increases in the 1952 Amendments).

The preceding figures are based on 1939-41 general population mortality. If the 1949-51 population mortality is used for the benefits in current payment status at the end of 1952, the present value is increased by about 6½% or to \$20.1 billion. If the Annuity Table for 1949 (ultimate, without projection)^{4/} had been used, the increase would have been about 21½%, yielding a present value of about \$23 billion; this valuation standard, however, is overconservative when used for OASI beneficiaries, whose mortality closely follows that of the general population^{2/}.

Based on 1949-51 population mortality and 2½% interest, the present value of benefits in current payment status increased about 25% during 1953 to \$25.0 billion, and again by 34% to \$33.4 billion in 1954. The latter increase was due in part to the natural growth of the system, and in part to the effect of the benefit increases in the 1954 Amendments. In 1955 there was a 21% increase to \$40.6 billion, and it is estimated that there was a 20% increase to \$48.6 billion in 1956.

^{4/} This table represents approximately the mortality experienced under individual annuities and life income settlements of United States and Canadian life insurance companies in 1949 (but with some small safety margin--i.e. lower mortality rates).

^{5/} "Mortality Experience Under the Old-Age and Survivors Insurance System," Louis O. Shudde, Transactions, Society of Actuaries, Vol. III, p. 201.

Table 2

PRESENT VALUE OF OASI BENEFITS IN CURRENT PAYMENT STATUS, DECEMBER 31, 2% INTEREST
(in millions)

Year	Old-Age ^{1/}		Wife's ^{2/}	Widow's ^{3/}	Mother's ^{4/}	Child's	Parent's	Lump-Sum ^{5/}	Total
	Male	Female							
Based on 1939-41 U.S. White Life Tables									
1940	\$241	\$30	\$50	\$10	\$26	\$54	\$1	\$10	\$422
1941	411	54	94	34	54	117	2	18	784
1942	521	76	126	64	71	175	4	24	1,061
1943	604	95	152	101	88	237	5	29	1,311
1944	744	116	191	147	113	311	6	36	1,664
1945	1,044	148	266	202	156	421	7	51	2,295
1946	1,435	191	366	272	166	487	9	69	2,995
1947	1,799	248	463	355	175	548	12	88	3,688
1948	2,172	310	561	455	186	608	13	108	4,413
1949	2,727	396	699	567	200	658	16	136	5,399
1950	6,132	1,116	1,533	1,180	364	1,498	45	197	12,065
1951	7,315	1,607	1,842	1,409	430	1,760	61	244	14,668
1952	9,620	2,448	2,384	1,857	525	2,145	75	331	19,385
Based on 1949-51 U.S. White Life Tables									
1952	10,245	2,690	2,640	2,046	524	2,145	83	327	20,700
1953	12,753	3,702	3,305	2,426	604	2,452	91	413	25,746
1954	17,108	5,299	4,433	3,211	788	3,015	108	546	34,508
1955 ^{6/}	20,765	7,069	5,412	3,672	870	3,346	112	672	41,918
1956 ^{6/}	23,064	9,796	6,823	5,157	923	3,551	122	782	50,218

1/ Before the 1950 Amendments, the designation was "primary benefits."

2/ Includes husband's benefits; also potential widow's and potential widower's benefits.

3/ Includes widower's benefits.

4/ Before the 1950 Amendments, the designation was "widow's current benefits."

5/ Payable on death of old-age beneficiary.

6/ Estimated by projecting average valuation factors of previous years.

Note: The figures in this table reflect only the direct operations of the OASI system and not the indirect effects due to the coordinating and financial interchange provisions of the Railroad Retirement Act (based on the 1951 Amendments thereto). The financial interchange provisions provide, in effect, that the OASI Trust Fund shall, on and after June 30, 1952, be maintained in the same position as if railroad employment had always been covered under OASI.

Table 3

PRESENT VALUE OF OASI BENEFITS IN CURRENT PAYMENT STATUS, DECEMBER 31, 2½% INTEREST
(in millions)

Year	Old-Age ^{1/}		Wife's ^{2/}	Widow's ^{3/}	Mother's ^{4/}	Child's	Parent's	Lump-Sum ^{5/}	Total
	Male	Female							
Based on 1939-41 U.S. White Life Tables									
1940	\$233	\$29	\$48	\$10	\$26	\$53	\$1	\$10	\$410
1941	398	52	91	33	52	114	2	17	759
1942	505	73	122	62	70	171	4	23	1,030
1943	586	92	146	98	85	232	5	28	1,272
1944	722	112	184	142	111	304	6	35	1,616
1945	1,014	143	256	195	153	412	7	49	2,229
1946	1,394	185	353	263	162	476	8	67	2,908
1947	1,748	240	447	344	172	536	12	84	3,583
1948	2,109	301	541	441	182	593	13	103	4,283
1949	2,649	384	675	549	196	644	15	130	5,242
1950	5,957	1,081	1,481	1,143	357	1,466	44	189	11,718
1951	7,107	1,556	1,778	1,366	422	1,723	59	235	14,246
1952	9,348	2,368	2,304	1,800	515	2,100	73	318	18,826
Based on 1949-51 U.S. White Life Tables									
1952	9,938	2,598	2,543	1,978	516	2,100	80	313	20,066
1953	12,370	3,575	3,183	2,346	594	2,400	88	395	24,951
1954	16,593	5,118	4,270	3,106	776	2,953	105	523	33,444
1955 ^{6/}	20,141	6,827	5,212	3,553	857	3,278	109	644	40,621
1956 ^{6/}	22,371	9,458	6,562	4,986	909	3,479	118	749	48,632

^{1/} Before the 1950 Amendments, the designation was "primary benefits."

^{2/} Includes husband's benefits; also potential widow's and potential widower's benefits.

^{3/} Includes widower's benefits.

^{4/} Before the 1950 Amendments, the designation was "widow's current benefits."

^{5/} Payable on death of old-age beneficiary.

^{6/} Estimated by projecting average valuation factors of previous years.

Note: The figures in this table reflect only the direct operations of the OASI system and not the indirect effects due to the coordinating and financial interchange provisions of the Railroad Retirement Act (based on the 1951 Amendments thereto). The financial interchange provisions provide, in effect, that the OASI Trust Fund shall, on and after June 30, 1952, be maintained in the same position as if railroad employment had always been covered under OASI.

Table 4 gives the percentage distribution of the present values of the various types of benefits in current payment status for the various years on the $2\frac{1}{2}\%$ interest basis. Using the 2% interest basis would produce only slightly different results. The liability for male old-age beneficiaries (i.e. retired workers) represented 57% of all liabilities for benefits in current payment status in 1940, decreased to a low of less than 45% in 1944, then rose to about 51% in 1950, and decreased to about 46% in 1956. Female old-age beneficiaries show a similar trend through 1950, but have continued to rise in recent years. A noticeable increase occurred in 1956 as a result of the reduction in the eligibility age for women under the 1956 Amendments (from 65 to 62). There is a great relative increase for widow's benefits through 1949, but they declined somewhat in subsequent years, showing a significant increase in 1956 when the eligibility age was reduced to 62. Wife's benefits have shown relative stability over the 17-year period. The mother's, child's, and lump-sum benefits have lost ground at the expense of the benefits for the aged. Lump-sum death payments have been very stable, except that the 1950 Amendments lowered the level of stability. The trend in these percentages indicates that survivor benefits assumed a significant place in the liability of early years; the liability for old-age benefits is becoming relatively more and more important with time.

It is instructive to compute also the present value of benefits in current payment status if interest is not taken into account, or in other words, if the interest rate is taken as 0%. This ignores the fact that interest is earned on the Trust Fund, and is available to increase the fund or to pay benefits. On this basis, the present values of benefits in current payment status on December 31, 1956 are as follows:

<u>Type of Benefit</u>	<u>Present Value (in millions)</u>
Old-Age	
Male	\$26,264
Female	11,423
Wife's and Husband's	8,046
Widow's and Widower's	5,990
Mother's	983
Child's	3,868
Parent's	139
Lump-Sum	938
Total	\$57,651

Table 4

PERCENTAGE DISTRIBUTION OF PRESENT VALUE OF OASI BENEFITS IN CURRENT PAYMENT STATUS, BY TYPE OF BENEFIT,
DECEMBER 31, 2½% INTEREST

Year	Old-Age ^{1/}		Wife's ^{2/}	Widow's ^{3/}	Mother's ^{4/}	Child's	Parent's	Lump-Sum ^{5/}	Total
	Male	Female							
1940	57.0%	7.1%	11.7%	2.4%	6.3%	12.9%	.2%	2.4%	100%
1941	52.4	6.9	12.0	4.3	6.9	15.0	.3	2.2	100
1942	49.1	7.1	11.8	6.0	6.8	16.6	.4	2.2	100
1943	46.1	7.2	11.5	7.7	6.7	18.2	.4	2.2	100
1944	44.6	6.9	11.4	8.8	6.9	18.8	.4	2.2	100
1945	45.5	6.4	11.5	8.7	6.9	18.5	.3	2.2	100
1946	47.9	6.4	12.1	9.0	5.6	16.4	.3	2.3	100
1947	48.8	6.7	12.5	9.6	4.8	15.0	.3	2.3	100
1948	49.4	7.0	12.6	10.3	4.2	13.8	.3	2.4	100
1949	50.5	7.3	12.9	10.5	3.7	12.3	.3	2.5	100
1950	50.9	9.2	12.6	9.8	3.0	12.5	.4	1.6	100
1951	49.9	10.9	12.5	9.6	3.0	12.1	.4	1.6	100
1952 ^{6/}	49.4	12.9	12.7	9.9	2.6	10.5	.4	1.6	100
1953	49.5	14.3	12.8	9.4	2.4	9.6	.4	1.6	100
1954	49.6	15.3	12.8	9.3	2.3	8.8	.3	1.6	100
1955	49.6	16.8	12.8	8.7	2.1	8.1	.3	1.6	100
1956 ^{7/}	46.0	19.4	13.5	10.3	1.9	7.2	.2	1.5	100

1/ Before the 1950 Amendments the designation was "primary benefits."

2/ Includes husband's benefits; also potential widow's and potential widower's benefits.

3/ Includes widower's benefits.

4/ Before the 1950 Amendments the designation was "widow's current benefits."

5/ Payable on death of old-age beneficiary.

6/ Based on 1949-51 U.S. White Life Tables.

7/ Estimated by projecting average valuation factors of previous years.

Note: The figures in the table reflect only the direct operations of the OASI system and not the indirect effects due to the coordinating and financial interchange provisions of the Railroad Retirement Act (based on the 1951 Amendments thereto). The financial interchange provisions provide, in effect, that the OASI Trust Fund shall, on and after June 30, 1952, be maintained in the same position as if railroad employment had always been covered under OASI.

D. Average Valuation Factors

Tables 5 and 6 show average valuation factors as determined from the present values of benefits in current payment status on each December 31. In the case of annuity benefits, these factors represent the lump-sum present value of \$1 per month payable until termination of benefit (by death, remarriage, attainment of age 18, etc.). The factors, though shown to the nearest cent, are not necessarily that accurate, due to rounding of the figures for present values.

In general, the average age of recipients in current payment status is increasing each year, leaving a shorter time on the average for which benefits are receivable, and thereby decreasing the annuity value of future benefits slightly. Thus, as the system ages, the valuation factor for those in current payment status tends to decrease for every type of benefit, with few exceptions. This long-term trend may be expected to continue until an ultimate condition has been reached. It is partially offset, however, by decreasing mortality rates. Thus, it will be noted that valuation factors based on 1949-51 mortality are greater than those based on 1939-41 mortality for all types of benefits except child's benefits (with respect to which mortality is not taken into account). Moreover, in the case of wife's, widow's and female old-age benefits, the average age of recipients was lowered in 1956 by the addition to the roll of a substantial number of women aged 62-64.

The first two columns of factors include adjustments for the present value of lump-sum payments payable on death of old-age beneficiaries. The wife's (or husband's) benefit factors include the present value of the potential widow's (and widower's) benefits, at an increased rate (i.e. a widow gets 75% of the primary insurance amount, while a wife gets 50%, a relative increase of 50%). The mother's benefit factors were determined after adjustment of the present value for increased mother's benefits on termination of a child's benefit in those cases where both are payable under the maximum family benefit. The child's benefit factors take into account the increased child's benefit (while under the maximum family benefit) on termination of the mother's benefit by death or remarriage and in all cases on termination of an older child's benefit. The child's benefit was valued on an annuity-certain basis (i.e., deaths were disregarded, as were also the continuation of benefits beyond age 18 in the relatively few cases of permanently and totally disabled children--on the basis of the provisions in the 1956 Amendments).

Table 5

AVERAGE VALUATION FACTORS^{1/} DETERMINED FROM PRESENT VALUES OF OASI BENEFITS
IN CURRENT PAYMENT STATUS, DECEMBER 31, 2% INTEREST

Year	Old-Age ^{2/}		Wife's ^{3/}	Widow's ^{4/}	Mother's	Child's	Parent's
	Male	Female					
Based on 1939-41 U.S. White Life Tables							
1940	\$109.20	\$124.79	\$137.86	\$114.10	\$64.98	\$80.84	\$92.04
1941	104.99	120.62	135.73	111.74	64.29	81.76	91.46
1942	101.96	117.73	133.59	110.32	63.38	82.86	90.65
1943	99.53	114.97	131.97	109.15	62.97	83.98	89.57
1944	97.96	113.00	130.87	107.80	63.59	84.26	88.87
1945	97.53	111.66	130.56	106.62	65.17	86.66	88.63
1946	97.01	110.52	130.32	105.90	65.11	83.91	88.32
1947	96.61	109.95	130.73	105.88	63.40	81.76	87.54
1948	96.02	109.05	130.17	105.03	62.81	80.47	86.78
1949	96.03	108.70	129.97	104.17	62.46	78.05	85.66
1950	93.96	107.90	128.01	102.80	62.74	77.34	84.24
1951	93.04	108.38	125.15	101.75	63.46	77.41	85.94
1952	92.44	108.07	124.31	100.49	63.49	76.24	84.79
Based on 1949-51 U.S. White Life Tables							
1952	98.24	118.44	137.66	110.69	63.34	76.24	93.26
1953	98.58	118.51	137.59	109.79	63.41	75.40	92.41
1954	98.83	118.24	137.38	108.76	65.15 ^{5/}	73.55	91.02
1955 ^{6/}	98.62	118.18	137.31	107.53	64.93	72.05	90.42
1956 ^{6/}	98.43	121.45	141.19	112.64	64.71	70.56	89.38

1/ The present value of future benefits per \$1 of present monthly benefits, until death or termination of benefit in current payment status on the assumption of 1939-41 and 1949-51 U.S. White Mortality and 150% American Remarriage Table rates for young widows.

2/ Includes present value of lump-sum payable on death of old-age beneficiary.

3/ Includes present value of wife's potential widow's benefit, also present value of husband's benefit and husband's potential widower's benefit.

4/ Includes present value of widower's benefit.

5/ Redistribution adjustment of 7% used in 1954 and thereafter.

6/ Factors are based on estimated projection of previous years' data rather than on detailed age data. See text, p. 5.

Table 6

AVERAGE VALUATION FACTORS^{1/} DETERMINED FROM PRESENT VALUE OF OASI BENEFITS
IN CURRENT PAYMENT STATUS, DECEMBER 31, 2 $\frac{1}{2}$ % INTEREST

Year	Old-Age ^{2/}		Wife's ^{3/}	Widow's ^{4/}	Mother's	Child's	Parent's
	Male	Female					
Based on 1939-41 U.S. White Life Tables							
1940	\$105.92	\$120.40	\$132.90	\$110.14	\$63.70	\$78.98	\$89.37
1941	101.84	116.48	130.84	107.94	63.05	79.88	88.81
1942	98.91	113.79	128.78	106.64	62.15	80.95	88.02
1943	96.56	111.18	127.22	105.56	61.75	82.05	86.97
1944	95.05	109.32	126.16	104.30	62.34	82.32	86.29
1945	94.64	108.05	125.86	103.19	63.86	84.67	86.06
1946	94.15	106.97	125.80	102.51	62.95	81.98	85.76
1947	93.77	106.44	126.15	102.51	62.17	79.94	85.06
1948	93.21	105.58	125.67	101.81	61.59	78.65	84.34
1949	93.22	105.25	125.47	100.86	61.26	76.33	83.27
1950	91.25	104.45	123.46	99.60	61.55	75.69	81.92
1951	90.37	104.90	120.89	98.60	62.25	75.75	83.53
1952	89.80	104.49	120.12	97.40	62.27	74.63	82.44
Based on 1949-51 U.S. White Life Tables							
1952	95.28	114.36	132.58	107.03	62.37	74.63	90.47
1953	95.59	114.41	132.51	106.17	62.43	73.82	89.66
1954	95.82	114.16	132.30	105.19	64.15 ^{5/}	72.02	88.35
1955	95.63	114.11	132.24	104.03	63.94	70.57	86.82
1956 ^{6/}	95.45	117.23	135.79	108.91	63.73	69.13	86.45

- 1/ The present value of future benefits per \$1 of present monthly benefits, until death or termination of benefit in current payment status on the assumption of 1939-41 and 1949-51 U.S. White Mortality and 150% American Remarriage Table rates for young widows.
- 2/ Includes present value of lump-sum payable on death of old-age beneficiary.
- 3/ Includes present value of wife's potential widow's benefits, also present value of husband's benefit and husband's potential widower's benefit.
- 4/ Includes present value of widower's benefit.
- 5/ Redistribution adjustment of 7% used in 1954 and thereafter.
- 6/ Factors are based on estimated projection of previous years' data rather than on detailed age data. See text, p. 5.

E. Comparison of Present Values of Benefits in Current Payment
Status with Trust Fund

Table 7 compares the amount of the OASI Trust Fund with the actuarial liability for benefits in current payment status. Column 4 shows that in 1941-44, the balance in the trust fund was somewhat more than $3\frac{1}{2}$ times the present value of benefits in current payment status, on a $2\frac{1}{2}\%$ interest basis. On a 2% basis, the ratio was slightly lower. Under either interest assumption there was a gradual decrease in the ratio until the 1950 Amendments were enacted. The increased benefits which then became effective resulted in a substantial decline in the ratio. There was a further decline when the 1952 Amendments were enacted, and a greater one following the 1954 Amendments. The present value is further increased (and the ratio reduced) by using more recent mortality data in the assumptions for the computations, since this results in a longer average period of benefit receipt. On December 31, 1956, the trust fund was about 46% of the liability for benefits in current payment status, on a $2\frac{1}{2}\%$ interest basis.

This does not indicate that the system is insolvent, as would be the case in a private insurance system, but shows that at present the financing of the system is much closer to a pay-as-you-go basis than to a fully funded basis (for discussion of the financing basis of the OASI system, and of the concept of actuarial soundness as applied to a long-range social insurance plan, in contradistinction to a private insurance plan, see Actuarial Study No. 40).

Table 7

COMPARISON OF TRUST FUND WITH PRESENT VALUE OF BENEFITS
 IN CURRENT PAYMENT STATUS, DECEMBER 31
 (in millions of dollars)

Year	Trust Fund	Present Value of Benefits in Current Payment Status ^{1/}		Trust Fund as Percent of Present Value	
		2%	2½%	2%	2½%
		Present Values Based on 1939-41 Mortality			
1940	\$2,031	\$422	\$410	481%	495%
1941	2,762	784	759	352	364
1942	3,688	1,061	1,030	348	358
1943	4,820	1,311	1,272	368	379
1944	6,005	1,664	1,616	361	372
1945	7,121	2,295	2,229	310	319
1946	8,150	2,995	2,908	272	280
1947	9,360	3,688	3,583	254	261
1948	10,722	4,413	4,283	243	250
1949	11,816	5,399	5,242	219	225
1950	13,721	12,065	11,718	114	117
1951	15,540	14,668	14,246	106	109
1952	17,442	19,385	18,826	90	93

Present Values Based on 1949-51 Mortality

1952	17,442	20,700	20,066	84	87
1953	18,707	25,746	24,951	73	75
1954	20,576	34,580	33,507	60	61
1955	21,663	41,918	40,621	52	53
1956	22,519	50,218	48,632	45	46

^{1/} Liability in respect to benefits in current payment status at end of year. Includes present value of potential widow's benefits (based on wife's benefits); present value of potential widower's benefits (based on husband's benefits); also present value of lump-sum payments on death of old-age beneficiaries. Does not include liability for widow's or widower's benefits.

Note: The figures in this table reflect only the direct operations of the OASI system and not the indirect effects due to the coordinating and financial interchange provisions of the Railroad Retirement Act (based on the 1951 Amendments thereto). The financial interchange provisions provide, in effect, that the OASI Trust Fund, shall, on and after June 30, 1952, be maintained in the same position as if railroad employment had always been covered under OASI.

Actuarial Studies Available from the Division of the Actuary*

10. Various Methods of Financing Old-Age Pension Plans -- September 1938.
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.
19. OASI 1943-44 Cost Studies -- May 1944.
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.
26. Present Values of OASI Benefits Awarded and in Current Payment Status, 1940-46 -- May 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.

* Numbers not listed are out of print.

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.
39. Long-Range Cost Estimates for OASI 1954 -- December 1954.
40. The Financial Principle of Self-Support in the OASI System -- April 1955.
41. Analysis of Benefits, OASI Program, 1954 Amendments -- May 1955.
42. Present Values of OASI Benefits in Current Payment Status 1940-54 -- July 1955.
43. Estimated Amount of Life Insurance in Force as Survivor Benefits Under OASI-1955 -- September 1955.
44. Analysis of 157 Group Annuity Plans Amended in 1950-54 -- July 1956.
45. Present Values of OASI Benefits in Current Payment Status 1940-56 -- May 1957.