



PRESENT VALUES OF
OASI BENEFITS IN
CURRENT PAYMENT
STATUS 1960

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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.

FOREWORD

This study presents a valuation of old-age and survivors insurance benefits in current payment status in various years through 1959, with a preliminary estimate for 1960. It is a sequel to Actuarial Study No. 45, which presented similar data through 1956. The analysis parallels valuations of private retirement plans. It should be noted, however, that OASI benefits are suspended when the beneficiary is in substantial employment. The valuation annuities have not been modified to allow for such benefit suspensions; rather, it has been assumed that benefits in current payment status will be constant by amount and type, except when diminished by natural termination such as death or re-marriage. Valuation of disability benefits in current payment status will be made in a separate Actuarial Study. It is estimated that the present value of disability benefits (including dependents benefits) in current payment status at the end of 1960 was roughly \$6 billion.

The Congress has consistently maintained the position that the OASI system should be "actuarially sound" (in approximate actuarial balance, on the basis of intermediate-cost estimates). Actuarial balance is attained when the present Trust Fund plus the present value of future contributions (i.e., considering future interest earnings on these income sources) equals the present value of future disbursements for benefits and administrative expenses. Although this definition of actuarial soundness is appropriate for OASI, a compulsory social insurance system which can be assumed perpetual in nature, it does not pertain to private retirement plans, where future contributions of new entrants are not considered, and where termination of the plan is more likely. The analysis of incurred obligations under OASI is not, therefore, as critical to actuarial soundness as it is to a private plan. However, the calculation of reserves necessary to "fund" OASI benefits currently being paid, which have the greatest priority as financial commitments, provides an excellent base for comparison of similar incurred obligations under other systems.

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A. Introduction

This study gives the present value^{1/} for benefits in current payment status under the old-age and survivors insurance system. It is a sequel to Actuarial Study No. 45 covering 1940-56.

Present values considered in this study are limited to accrued benefits currently being paid and potential benefits for current beneficiaries, such as potential widow's or widower's benefits for those now receiving spouse's benefits and such as lump-sum death payments for current old-age beneficiaries. Deferred wife's and widow's benefits in respect to persons for whom benefits are not in current payment status have not been valued. Actuarial Study No. 45 used 0%, 2%, and 2½% interest bases. Calculations in this Study for the years 1957-60 have been based on 0% and 3% interest.

The total accrued liability of a benefit system can be defined as the present value of all future benefits which have been "earned" to date. Reserves on hand are the funded portion of the accrued liability.

The present value of OASI benefits in current payment status represents a part of this total accrued liability. The remainder of such liability is that for future benefit payments to active insured workers not presently entitled to benefits based on their current cumulative wage credits, less the present value of their future contributions. This liability, because of its indefinite nature, is very difficult to calculate for the OASI system. Nor does a national permanent, compulsory OASI system require meticulous valuation of all liabilities and immediate funding of such liabilities. The present value of benefits in current payment status is compared with the Trust Fund at the same date. Any deficiency in the Trust Fund to meet the amount of present value does not necessarily imply that the system is not in "actuarial balance".

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

B. Methodology and Assumptions

The first monthly benefit awards under the OASI system were made in January 1940, so that the first valuation of benefits in current payment status is as of December 31, 1940. Detailed data in regard to benefits in current payment status are available for the end of each year through 1959, and summary information by benefit type is available for the end of 1960.

All benefits of the same type, sex, and attained 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 aged 66 last birthday (i.e., average age $66\frac{1}{2}$) is worth \$113.97 on the basis of the United States White Male Life Table for 1949-51 at 3% interest. This factor, applied to the rate of monthly benefits for those males aged 66 receiving old-age benefits at the end of 1958 (334,109 men at an average monthly benefit of \$82.34), yields a present value of \$3,135 million for this group. This would be the amount necessary at that date to meet all direct benefit payments to this group on the assumptions stated; lump-sum, survivor, and supplementary benefits for this group are valued separately. Lump-sum payments are valued by multiplying the total amount of monthly benefits payable for a given sex and age group by a factor representing the present value of a payment on death equal to the average amount of lump-sum per \$1 of monthly benefit.

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, or attainment of age 18 of child, in respect to child's and mother's benefits). The termination of mother's benefits by remarriage is also taken into consideration by utilizing remarriage rates (150% of those in the American Remarriage Table). The effect of considering remarriage for a woman widowed at a young age is to reduce the present value of the benefits payable to age 18 of her youngest child by at least one-half.

It has generally been assumed that the size of the monthly benefit remains constant throughout. There can, however, be a significant increase in the child's benefits in a family when one child in a survivor family attains age 18 or dies, since then his share of 25% of the primary insurance amount is redistributed among the remaining children^{1/}. 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

^{1/} The 1960 Amendments provided that all survivor children would receive 75% of the PIA, subject to the family maximum.

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 previously 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, and similarly 4% for 1950-53, and 7% thereafter.

More important, it has been 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. No allowance, however, has been made for persons on the roll but not receiving benefits because they are in substantial employment in the month of valuation (such persons are "entitled" but not "in current payment status"). It has been assumed that these "ins" and "outs" balance at any time.

C. Present Value of Benefits in Current Payment Status

The liability for claims in current payment status is valued as of December 31 of each year (November 30 for 1958 because detailed data were not obtained for December in that year). Any subsequent change in liability will be taken into account in future valuations. Claims in current payment status would be correct for use in a balance sheet, except that they do not include the liability for (a) insured workers who are not yet eligible for benefits; (b) those whose claims are pending; (c) those who have received awards but are not currently receiving benefits; and (d) those with deferred benefits based on wage records of deceased or retired fully insured workers.

Monthly amounts in current payment status are shown, by type, in Table 1. Since the benefit roll has not matured, there has been an increase in the aggregate benefit amounts for each year. Survivor benefits to mothers and children, a relatively current risk, will mature earlier than benefits to aged recipients. Table 2 shows present values through 1956 at $2\frac{1}{2}\%$ interest (3% for 1957-60); mortality through 1952 is based on the U.S. White Life Tables for 1939-41, while after 1952 it is based on the U.S. White Life Tables for 1949-51. Table 3 shows the percentage distribution of the present values of the various types of benefits in current payment status. The trend in these percentages indicates that survivor benefits were significant in the early years, whereas the liability for old-age benefits is becoming relatively more important with time.

It is also instructive to value the benefits if interest is ignored, i.e., the valuation interest rate equals 0% . This assumes that no interest earnings would be credited to the Trust Fund for purposes of paying benefits or increasing the fund. The present values of benefits in current payment status at 0% interest on December 31, 1959, are as follows:

<u>Type of Benefit</u>	<u>Present Value (millions)</u>
Old-Age	
Male	\$43,023
Female	21,093
Wife's and Husband's	15,881
Widow's and Widower's	10,490
Mother's	1,451
Child's	5,401
Parent's	203
Lump-Sum	1,171
Total	98,713

Table 1

MONTHLY AMOUNT OF OASI BENEFITS IN CURRENT
PAYMENT STATUS, DECEMBER 31^{1/}

(In thousands)

Year	Old-Age ^{2/}		Wife's ^{3/}	Widow's ^{4/}	Mother's ^{5/}	Child's ^{6/}	Parent's	Total
	Male	Female						
1940	\$ 2,293	\$ 246	\$ 361	\$ 90	\$ 402	\$ 668	\$ 11	\$ 4,070
1945	11,153	1,385	2,040	1,893	2,391	4,858	81	23,801
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	82,248	48,324	45,781	14,264	50,329	1,365	482,606
1957	295,820	104,430	62,803	55,945	16,101	56,836	1,499	593,434
1958	335,850	123,348	70,815	63,975	17,885	61,500	1,587	674,960
1959	395,511	152,237	82,523	79,047	21,579	74,830	2,033	807,760
1960 ^{7/}	427,409	172,885	88,656	88,441	23,300	84,290	2,217	887,198

- ^{1/} November 30 for 1958.
^{2/} Before the 1950 Amendments, the designation was "primary benefits".
^{3/} Includes a small amount of husband's benefits for 1950-60; on December 31, 1959, the monthly amount was about \$502,000.
^{4/} Includes a small amount of widower's benefits for 1950-60; on December 31, 1959, the monthly amount was about \$101,000.
^{5/} Before the 1950 Amendments, the designation was "widow's current benefits".
^{6/} Disabled children aged 18 and over are excluded.
^{7/} Preliminary estimate.

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 2

PRESENT VALUES OF OASI BENEFITS IN CURRENT
PAYMENT STATUS, DECEMBER, 31^{1/}

(In millions)

Year	Old-Age ^{2/}		Wife's ^{3/}	Widow's ^{4/}	Mother's ^{5/}	Child's ^{6/}	Parent's	Lump Sum ^{7/}	Total
	Male	Female							
Based on U.S. White Life Tables for 1939-41 and 2½% Interest									
1940	\$ 233	\$ 29	\$ 48	\$ 10	\$ 26	\$ 53	\$ 1	\$ 10	\$ 410
1945	1,014	143	256	195	153	412	7	49	2,229
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 U.S. White Life Tables for 1949-51 and 2½% Interest

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	20,141	6,827	5,212	3,553	857	3,278	109	644	40,621
1956	22,371	9,458	6,562	4,986	909	3,479	118	749	48,632

Based on U.S. White Life Tables for 1949-51 and 3% Interest

1957	26,678	11,699	9,103	6,016	1,002	3,765	129	873	59,265
1958	30,192	13,718	10,466	6,825	1,106	3,967	135	994	67,403
1959	35,579	16,850	12,476	8,407	1,326	4,772	169	1,139	80,718
1960 ^{8/}	38,475	19,042	13,703	9,377	1,423	5,311	180	1,193	88,704

^{1/} November 30 for 1958.^{2/} Before the 1950 Amendments, the designation was "primary benefits".^{3/} Includes husband's benefits; also potential widow's and potential widower's benefits.^{4/} Includes widower's benefits.^{5/} Before the 1950 Amendments, the designation was "widow's current benefits".^{6/} Disabled children aged 18 and over are excluded.^{7/} Payable on death of old-age beneficiary.^{8/} Preliminary estimate.

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

PERCENTAGE DISTRIBUTION OF PRESENT VALUES OF OASI BENEFITS IN CURRENT
PAYMENT STATUS, BY TYPE OF BENEFIT, DECEMBER 31^{1/}

Year	Old-Age ^{2/}		Wife's ^{3/}	Widow's ^{4/}	Mother's ^{5/}	Child's ^{6/}	Parent's	Lump	Total
	Male	Female						Sum ^{7/}	
Based on U.S. White Life Tables for 1939-41 and 2½% Interest									
1940	57.0	7.1	11.7	2.4	6.3	12.9	.2	2.4	100
1945	45.5	6.4	11.5	8.7	6.9	18.5	.3	2.2	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

Based on U.S. White Life Tables for 1949-51 and 2½% Interest									
1952	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	46.0	19.4	13.5	10.3	1.9	7.2	.2	1.5	100

Based on U.S. White Life Tables for 1949-51 and 3% Interest									
1957	45.0	19.7	15.4	10.2	1.7	6.4	.2	1.5	100
1958	44.8	20.4	15.5	10.1	1.6	5.9	.2	1.5	100
1959	44.1	20.9	15.5	10.4	1.6	5.9	.2	1.4	100
1960 ^{8/}	43.4	21.5	15.4	10.6	1.6	6.0	.2	1.3	100

^{1/} November 30 for 1958.

^{2/} Before the 1950 Amendments, the designation was "primary benefits".

^{3/} Includes husband's benefits; also potential widow's and potential widower's benefits.

^{4/} Includes widower's benefits.

^{5/} Before the 1950 Amendments, the designation was "widow's current benefits".

^{6/} Disabled children age 18 and over are excluded.

^{7/} Payable on death of old-age beneficiary.

^{8/} Preliminary estimates.

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.

D. Average Valuation Factors

Table 4 shows average valuation factors, determined from the present values of benefits in current payment status. For monthly 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.). Due to rounding the factors may not be accurate to the nearest cent, as shown.

Generally, the average age of recipients in current payment status is increasing each year, leaving a shorter time on the average for which benefits are payable, and thereby decreasing the present value of future benefits somewhat (and thus the valuation factors). Thus, as the system matures, 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 age-specific death rates as general mortality improves. 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 allowances for the present value of the lump-sum payments made when old-age beneficiaries die. Spouse's benefits include the present value of the potential survivors benefits at an increased rate; i.e., a wife with eligible child or claiming benefits at age 65 or over gets 50% of the primary insurance amount, while a widow gets 75%, a relative increase of 50%. The relative increase is greater for those wives with no eligible child and claiming benefits before age 65 since the wife's benefit in such case is less than 50% of the primary insurance amount (as small as 37½% if wife's benefit is claimed at age 62). In the case of child's benefits, only annuities certain (until age 18) were used; deaths and possible continuation of benefits beyond age 18 were disregarded.

Table 4

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

Year	Old-Age ^{3/}		Wife's ^{4/}	Widow's ^{5/}	Mother's	Child's	Parent's
	Male	Female					
Based on U.S. White Life Tables for 1939-41 and 2½% Interest							
1940	\$105.92	\$120.40	\$132.90	\$110.14	\$63.70	\$78.98	\$89.37
1945	94.64	108.05	125.86	103.19	63.86	84.67	86.06
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 U.S. White Life Tables for 1949-51 and 2½% Interest

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	72.02	88.35
1955	95.63	114.11	132.24	104.03	63.94	70.57	86.82
1956	95.45	117.23	135.79	108.91	63.73	69.13	86.45

Based on U.S. White Life Tables for 1949-51 and 3% Interest

1957	92.40	114.09	144.95	107.53	62.22	66.24	86.29
1958	92.10	113.27	147.80	106.68	61.82	64.51	84.84
1959	92.07	112.66	151.18	106.35	61.44	63.76	82.96
1960 ^{6/}	92.04	112.05	154.56	106.03	61.07	63.01	81.19

^{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/} November 30 for 1958.

^{3/} Includes present value of lump-sum payable on death of old-age beneficiary.

^{4/} Includes present value of wife's potential widow's benefits; also present value of husband's benefit and husband's potential widower's benefit.

^{5/} Includes present value of widower's benefit.

^{6/} Preliminary estimate.

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

Table 5 compares the OASI Trust Fund with the present value of benefits in current payment status for various years. In 1941-44, the 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. There was a gradual decrease in the ratio until the 1950 Amendments were enacted, when there was a substantial decline, due to significantly increased benefits then. There was a further decline in the ratio when the 1952 Amendments were enacted, and a greater one following the 1954 Amendments. The present value of the benefits is further increased (and the ratio reduced) by using factors based on more recent mortality, which results in a longer average benefit period. On December 31, 1959, the Trust Fund was about 25% as large as the liability for benefits in current payment status on a 3% interest basis (and 20% as large on a 0% interest basis).

This indicates that the funding of the system is very close to "pay-as-you-go" financing. Although some private pension plans are funded on such a basis, most have a higher degree of advance funding than OASI. Pension plans are almost always fully funded at least for those currently on the benefit rolls. Actuarial Study No. 40 discusses in detail the financing basis of the OASI system and its concept of actuarial soundness as they are different from those applied to a private plan.

Table 5

COMPARISON OF OASI TRUST FUND WITH PRESENT VALUES OF BENEFITS
IN CURRENT PAYMENT STATUS, DECEMBER 31

(In millions)

<u>Year</u>	<u>Trust Fund</u>	<u>Present Value of Benefits in Current Payment Status^{1/}</u>	<u>Trust Fund as Percent of Present Value</u>
Present Values Based on U.S. White Lives Mortality for 1939-41 and 2 $\frac{1}{2}$ % Interest			
1940	\$ 2,031	\$ 410	495%
1945	7,121	2,229	319
1950	13,721	11,718	117
1951	15,540	14,246	109
1952	17,442	18,826	93
Present Values Based on U.S. White Lives Mortality for 1949-51 and 2 $\frac{1}{2}$ % Interest			
1952	17,442	20,066	87
1953	18,707	24,951	75
1954	20,576	33,507	61
1955	21,663	40,621	53
1956	22,519	48,632	46
Present Values Based on U.S. White Lives Mortality for 1949-51 and 3% Interest			
1957	22,393	59,265	38
1958	21,864	67,403 ^{2/}	32
1959	20,141	80,718	25
1960 ^{3/}	20,325	88,704	23

^{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); and present value of lump-sum payments on death of old-age beneficiaries. Does not include liability for deferred widow's or widower's benefits.

^{2/} Present value on November 30, 1958.

^{3/} Preliminary estimate.

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.
19. OASI 1943-44 Cost Studies--May 1944.
21. Analysis of Long-Range Cost Factors--September 1946.
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.
40. The Financial Principle of Self-Support in the OASI System--April 1955.
41. Analysis of Benefits, OASI Program, 1954 Amendments--May 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.
46. Illustrative United States Population Projections--May 1957.

* Numbers not listed are out of print.

47. Estimated Amount of Life Insurance in Force as Survivor Benefits under OASI--1957--July 1958.
48. Long-Range Cost Estimates for Old-Age, Survivors, and Disability Insurance under 1956 Amendments--August 1958.
49. Methodology Involved in Developing Long-Range Cost Estimates for the Old-Age, Survivors, and Disability Insurance System--May 1959.
50. Analysis of Benefits, OASDI Program, 1950 Amendments--December 1960.
51. Present Values of OASI Benefits in Current Payment Status, 1960 --February 1961.