Analysis of Benefits

OASI Program

1954 Amendments

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FOREWORD

The 1954 Amendments to the Old-Age and Survivors Insurance system extended coverage of the program so that it applies to virtually all substantial employment in the United States that is not under another governmental system. At the same time, other changes were made such as increasing benefit amounts by changing the benefit formula, the maximum earnings creditable, and the method of computing the average wage on which benefits are based.

The thorough analysis of the benefit relationships under these amendments made in this study is primarily quantitative and mathematical, showing the various benefit relationships developing. The tables of illustrative benefits for the new formula should prove very useful. Some of the mathematical analyses, particularly those concerned with the conversion of benefits under the previous law to increase the benefit amounts, would appear to show peculiarities and inconsistencies in some instances. However, these are only of minor importance since the number of such cases and the amounts involved will be relatively small, but they should be carefully noted and recognized as being present. In a broad social insurance program it is both undesirable and virtually impossible to obtain exact individual equity. However, it can be fairly stated that a very high degree of consistency has on the whole been obtained in these amendments, considering the complexity involved in converting the benefits and bringing under coverage new employment categories.

This actuarial study is the fifth of a series. Actuarial Study No. 8 made a somewhat similar analysis for the 1935 Act, Actuarial Study No. 14 dealt similarly with the 1939 Amendments, Actuarial Study No. 30 related to the 1950 Amendments, and Actuarial Study No. 34 related to the 1952 Amendments. The present actuarial study does not set forth the estimated costs of the 1954 Amendments; these are available in "Actuarial Cost Estimates for the Old-Age and Survivors Insurance System as Modified by the Social Security Amendments of 1954," August 20, 1954, Committee on Ways and Means, House of Representatives, and in Actuarial Study No. 39.

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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 sub-
mitted to the Commissioner of Social Security for
official approval.

ANALYSIS OF THE BENEFITS UNDER THE OLD-AGE AND SURVIVORS INSURANCE PROGRAM AS AMENDED IN 1954

A. Introduction

A substantial increase in the level of benefits was one of the major changes which the Social Security Amendments of 1954[1] produced in the Old-Age and Survivors Insurance (OASI) system. For most beneficiaries on the roll in September 1954, this increase is effected by means of a "conversion table" appearing in the Amendments, which increased benefits for a retired worker by at least $5, with corresponding increases generally for other beneficiaries. For most beneficiaries becoming eligible later, the increase is attributable to a change in the benefit formula. The monthly primary insurance amount is now 55% of the first $110 of average monthly wage (determined from covered earnings after 1950) plus 20% of the next $240, as contrasted with the formula in the 1952 law which used 55% of the first $100 plus 15% of the next $200. Regardless of the method of computing benefits, the minimum primary insurance amount now is $30, while maximum family benefits are $200, or 80% of average wage if less (but not to be reduced below the greater of $50—as contrasted with $45 in the 1952 law—or 1½ times the primary insurance amount).

A number of other important changes were made. The amount of earnings permitted without suspension of benefits (the so-called "work clause") is raised from $75 per month to $1200 per year. Coverage is extended to approximately 10 million additional persons. Up to five years of lowest earnings are dropped in computing benefits, and the insured status requirements are liberalized. The total annual earnings on which benefits and contributions are based is raised from $3600 to $4200. Provisions are introduced to "freeze" the insured status and benefit amounts of persons who become permanently and totally disabled prior to retirement age.

This study is concerned primarily with the mathematical relationships existing between individual and family benefits, and between benefits and the average wages used in determining them. In discussing these, it has sometimes been considered advisable to deal with topics which are not strictly within the scope of this study, in order to avoid excessive use of references to the Act.

Although the interpretations included herein are thought to be accurate, this study is not to be taken as final authority, which of necessity, lies in the law itself and in the official regulations and rulings already existing or to be made hereafter.

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[1] Public Law 761 (83rd Congress, Second Session).

B. Insured Status

While this study is concerned primarily with the relationships between earnings and benefits, it will be appropriate to include a brief summary of the requirements regarding duration and recency of covered employment, or insured status, for those individuals with earnings records.

An individual dying before September 1, 1950 is considered to have been "fully insured" if he had not less than 6 quarters of coverage.2/ This is applicable only for monthly benefits for September 1954 and later since a more restrictive provision applied before the enactment of the 1954 Amendments.

For deaths after August 1950, an individual is fully insured if he has not less than

(a) 1 quarter of coverage, regardless of when acquired, for each 2 of the quarters elapsing after 1950, or after the quarter in which he attained age 21, whichever is later, and up to but excluding the quarter in which he attained age 65 or died, whichever first occurred, with a minimum of 6 quarters of coverage required; or,

(b) 40 quarters of coverage.

2/ In general, a quarter of coverage means a calendar quarter in which an individual has been paid $50 or more in covered wages, or for which, after 1950, he has been credited with $100 or more of self-employment income (a somewhat similar provision applies to wages for agricultural employment after 1954). Exceptions to this general rule are:

(1) For years prior to 1951, in the case of an individual who was paid wages of $3000 or more in any year, each quarter of that year following his first quarter of coverage is deemed to be a quarter of coverage, except the quarter of death or entitlement to a primary insurance benefit, and subsequent quarters.

(2) For years after 1950, (a) if the wages paid to an individual in each of the calendar years 1951-54 equal or exceed $3600, or if the wages in each of the calendar years after 1954 equal or exceed $4200, each quarter of such year is a quarter of coverage (subject to Clause (c)); (b) if an individual has self-employment income and if his wages plus self-employment income for a taxable year after 1950 and prior to 1955 equal or exceed $3600, or after 1954 equal or exceed $4200, each quarter, any part of which falls in such taxable year is a quarter of coverage (subject to Clause (c)); and (c) no quarter is counted as a quarter of coverage before the beginning of such quarter, and no quarter after the quarter of death is a quarter of coverage.

The 1954 Amendments to the Social Security Act introduced two special provisions in the determination of fully insured status in the future. The first of these states that an individual shall be deemed to be fully insured if he has quarters of coverage in all quarters after 1954 and before July 1956 or, if later the quarter of death or attainment of age 65, whichever occurs first. This is a temporary modification and will not apply after September 30, 1958 since persons who die or attain age 65 after this date, fulfilling this condition, will automatically acquire fully insured status under the definition as set forth in item (a) above. The second modification states that periods of disability, as defined in Section 216(i), will not be considered in determining insured status.

When the number of elapsed quarters is odd, such number is reduced by one before calculating the number of quarters of coverage required. It should be emphasized that the required quarters of coverage can be obtained at any time and need not be obtained during the period used for determining the required number. For instance, a person attaining age 21 in 1952 has his requirement measured from then but can obtain the needed quarters of coverage at any time—before 1952 (back to 1937), between ages 21 and 65, and after age 65.

A currently insured individual is one who has not less than six quarters of coverage during the 13-quarter period ending with (1) the quarter in which he died or (2) the quarter in which he became entitled to old-age insurance benefits, which, before the Amendments, were known as primary insurance benefits.

Chart I indicates the insured status required of an individual in order for benefits to be paid, on the basis of his coverage, to the various categories of beneficiaries.

In recognition of the fact that there are individuals who will have a loss of insured status or a reduction in the amount of their benefits due to extended periods of disability, the 1954 Amendments introduced the "disability freeze" provision. This provision had previously been contained in the 1952 Amendments on an inoperative basis. Under the operation of this provision, an individual who establishes a period of disability, as set forth in Section 216(i), may disregard this period (or periods) of disability in determining his insured status and in computing any benefits due him or his family.

In general terms, the chief eligibility requirements other than those dealing with insured status, for the categories of beneficiaries referred to in Chart I are as follows:

Old-Age insurance benefits are payable to a worker who has reached age 65.

Chart 1

INSURED STATUS OF WAGE EARNERS REQUIRED FOR BENEFITS IN VARIOUS BENEFICIARY CATEGORIES

	Fully Insured	Fully or Currently Insured	Fully and Currently Insured	Entitled to Old-Age Insurance Benefits	Entitled to Old-Age Insurance Benefits and Currently Insured
Old-Age Insurance Benefits	*****				
Wife's Insurance Benefits				*****	
Husband's Insurance Benefits					*****
Child's Insurance Benefits					
(1) Supplementary				*****	
(2) Survivor		*****a/			
Widow's Insurance Benefits	*****a/				
Widower's Insurance Benefits			*****b/		
Mother's Insurance Benefits		*****a/			
Parent's Insurance Benefits	*****a/				
Lump-Sum Death Payments		*****b/			

a/ This benefit available for insured deaths occurring after 1939.
b/ This benefit available for all insured deaths occurring after August 1950. For insured deaths occurring after 1939 and before September 1950, lump-sum death payments are available only if there is no survivor who is eligible for monthly benefits for the month in which death occurs.

Wife's insurance benefits are payable to the wife of a worker entitled to old-age benefits if she has reached age 65, or if she has in her care a child entitled to a child's insurance benefit based on her husband's wage record.

Husband's insurance benefits are payable to the husband of a worker entitled to old-age benefits if he reached age 65 and was receiving at least half of his support from the worker at the time she became entitled to old-age insurance benefits.

Child's insurance benefits are payable to the child of a deceased worker or of a worker entitled to old-age insurance benefits, if the child is unmarried and under age 18, and if the child was dependent on the worker at the time the worker died or became entitled to old-age insurance benefits, as the case may be (such dependency is presumed to exist for virtually all male workers and for all currently insured women).

Widow's or widower's insurance benefits are payable when such surviving spouse has reached age 65 and has not remarried. Further, for widower's benefits to be payable, the individual must have been either receiving husband's insurance benefits or receiving at least half of his support from his wife at the time of her death.

Mother's insurance benefits are payable to a worker's widow if she has not remarried and has in her care a child of such worker entitled to a child's insurance benefit.

Parent's insurance benefits are payable to the parent of a deceased worker who did not leave an eligible widow, widower, or child, and if the parent has reached age 65, was receiving at least half of his support from the worker at the time of his death, and has not remarried since such worker's death.

All types of beneficiary payments are expressed in terms of the primary insurance amount. Thus, a retired worker's monthly benefit is equal to his primary insurance amount, the monthly benefit of the eligible wife of a retired worker is equal to one-half of her husband's primary insurance amount, and so forth. A restriction on the amount of monthly benefits payable under a specific beneficiary category arises in cases of simultaneous entitlement to benefits. For example, an individual entitled to an old-age insurance benefit and to a larger widow's insurance benefit would, in effect, receive the larger widow's benefit (actually, the full old-age benefit would be paid plus a widow's benefit equal to the excess).

Chart II illustrates how various combinations of beneficiaries build up various multiples of an individual's primary insurance amount. There are certain limits on the total amount of monthly benefits which may be paid out on the basis of a single wage record, and for individuals affected by these limits Chart II will not be applicable. This is discussed more fully hereafter in the section dealing with maximum benefits.

Chart II

BENEFICIARY CATEGORIES ACCORDING TO TOTAL AMOUNT OF BENEFITS PAYABLE

Total Benefits as % of Primary Insurance Amount	Beneficiary Category [a]
75%	1 survivor child; widow; dependent widower or parent
100	old-age beneficiary
125	2 survivor children
150	old-age beneficiary and wife; old-age beneficiary and 1 child; old-age beneficiary and dependent husband
	1 survivor child and mother; 1 survivor child and widow; 1 survivor child and dependent widower; 2 dependent parents
175	3 survivor children
200	old-age beneficiary, wife, and 1 child; old-age beneficiary and 2 children; old-age beneficiary and 1 child and dependent husband
	2 survivor children and mother; 2 survivor children and widow; 2 survivor children and dependent widower
225	4 survivor children; widow, mother, and 1 child (where mother is a former wife divorced)
300	lump-sum death payment

[a] All monthly beneficiaries except mother and child (under 18) must be age 65 or over.

Note: Because of maximum provisions, 226% of the primary insurance amount is the largest family benefit payable.

In addition to the monthly benefit payments referred to above, a lump-sum death payment is available when a fully or currently insured individual dies. This is payable to the surviving widow or widower if such surviving spouse was living with such individual at the time of his death. If there is no such widow or widower, payment is made to the person paying the burial expenses, but not to exceed such expenses.

C. Method of Determining Primary Insurance Amount

An individual's primary insurance amount is determined by one of three methods. These methods are (1) the use of the 1954 benefit formula, (2) the use of the 1952 benefit formula with the resulting benefit being increased by entering the conversion table as set forth in the 1954 Amendments, and (3) the use of the 1939 benefit formula with the resulting benefit being increased by entering the conversion table set forth in the 1954 Amendments. The 1952 and 1954 formulas are used for determining the primary insurance amount of those individuals who would attain age 22 after 1950 (i.e. born after 1928) and who have at least 6 quarters of coverage after 1950.

For retired workers entitled to a monthly benefit for any month before September 1950 or for beneficiaries of a worker dying before that time the primary insurance amount is determined by entering the conversion table with the primary insurance benefit calculated by the 1939 formula. For other individuals who do not have 6 quarters of coverage after 1950 the primary insurance benefit used for entering the conversion table is based on a modification of the 1939 formula (without the 1% increment for years after 1950). This increment is referred to below in connection with the calculation of the primary insurance amount by the 1939 formula in conjunction with the conversion table.

Finally there is another group of individuals, those who attained age 22 before 1951 and who have at least 6 quarters of coverage after 1950. For these individuals the primary insurance amount is calculated by that formula, of the three formulas referred to above, which produces the largest primary insurance amount.

The three benefit formulas are expressed in terms of the average monthly wage. Determination of this average monthly wage is therefore necessary before the primary insurance amount can be calculated.

D. Calculation of Average Monthly Wage

The average monthly wage is found by dividing (a) the total of all creditable earnings after an individual's starting date and before his closing date by (b) the number of months after his starting date .and before his wage closing date, excluding the months in any quarter which was prior to the year in which he attained age 22 and which was not a quarter of coverage, and excluding also the months in a period of disability as defined in Section 216(i). If the computed number of elapsed months in (b) is less than 18, such number if increased to 18.

For the years before 1951, creditable earnings are wages up to a maximum of $3000 in any one year (with special provisions applying for the years 1937-39). Creditable earnings for 1951-54 are the total of wages and self-employment income up to a maximum of $3600 in any one year, and for years after 1954 the total of wages and self-employment income up to a maximum of $4200 in any one year.

There is a maximum average monthly wage associated with each of the benefit formulas. They are: 1939 formula--$250, 1952 formula--$300, and 1954 formula--$350.

If the average monthly wage is being determined for use with either the 1952 or 1954 formulas, the "starting date" is defined as being either December 31, 1950 or, if later, the last day of the year in which the individual attained the age of 21. If the average monthly wage is being determined for use with the 1939 formula, the "starting date" is defined as being either December 31, 1936 or, if later, the last day of the year in which the individual attained the age of 21.

The wage closing date is defined as being the most advantageous of the following three: (a) the first day of the year in which the wage earner died or became entitled to an old-age insurance benefit, (b) the first day of the year in which he was fully insured and had attained retirement age, or (c) the first day of the year following the year of entitlement or death. This last closing date can be used only if evidence of the creditable income in that year is readily available.

A special provision applies if an individual dies in 1956, or becomes entitled to an old-age insurance benefit in 1956 (without benefit of the twelve month retroactive provision) and if he has at least 6 quarters of coverage in the period beginning after 1954 and running through the quarter of death or entitlement. He can have a "starting date" of December 31, 1954 with a closing

date of July 1, 1956 if it gives him a higher PIA. If the July 1, 1956 closing date is used total creditable earnings for the first half of 1956 cannot exceed $2100.

In computing an individual's average monthly wage for use with the 1939, or the 1954 formula, up to 5 years (only 4 years if the individual has less than 20 quarters of coverage) is dropped from the computation if it gives the individual a higher PIA. If any years are omitted from the computation, in applying the drop-out provision, the total creditable earnings, if any, for those years are omitted from the dividend and the months of those years are omitted from the divisor. However, the minimum divisor of 18 applies in any case. The drop-out can be used only if the individual meets any of the following conditions: (a) has 6 quarters of coverage acquired after June 1953; (b) not eligible for an old-age insurance benefit until after August 1954; (c) died after August 1954 without becoming eligible in August or before and several special circumstances. It should be noted that in no case may the drop-out be used in computing benefits under the 1952 formula.

After an individual's average monthly wage has been determined, if it is not an even multiple of $1.00 it is reduced to the next lower multiple of $1.00 before being used in the calculation of the primary insurance amount (or benefit).

E. Calculation of Primary Insurance Amount

As stated previously the primary insurance amount may be determined by application of one of three formulas; namely the 1954, 1952, or 1939 formulas. The following shows the operation of each of the formulas:

I. 1954 Formula

The primary insurance amount is determined by taking 55% of the first $110 of average monthly wage plus 20% of any balance not exceeding $240. If the average monthly wage is less than $55, the primary insurance amount is $30.

If the average monthly wage is denoted by AMW and the primary insurance amount by PIA, an algebraic expression for the above is:

$$PIA = \$30 \qquad\qquad \text{for } AMW < \$55$$

$$PIA = .55 \times AMW \qquad\qquad \text{for } 55 < AMW \leq 110$$

$$PIA = \$38.50 + .20 \times AMW \qquad\qquad \text{for } 110 < AMW < 350$$

II. 1952 Formula

The 1952 primary insurance amount is determined by taking 55% of the first $100 of average monthly wage plus 15% of any balance not exceeding $200. If the average monthly wage is less than $35, the primary insurance amount is $25. If the average monthly wage is greater than $34 but less than $48, the primary insurance amount is $26.

The primary insurance amount under the 1954 Amendments based on the 1952 primary insurance amount is the 1952 primary insurance amount increased by $5.00.

III. 1939 Formula

The primary insurance benefit is composed of two parts: (a) 40% of the first $50 of average monthly wage plus 10% of any balance not exceeding $200, and (b) 1% of the amount computed in (a) multiplied by the number of years before 1951 in which $200 or more of wages were credited. The number of years (usually referred to as increment years) in (b) cannot be greater than 14. If the primary insurance benefit as calculated is less than $10, it is raised to $10.

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If the average monthly wage is denoted by AMW, primary insurance benefit by PIB, and number of years prior to 1951 in which $200 or more of wages were credited by n, then an algebraic expression for the above is:

PIB = the greater of $10 or   for AMW $\leq$ $50
$$.40 \text{ AMW} \times (1 + .01n)$$

PIB = $(15 + .10 \text{ AMW})(1 + .01n)$ for $50 \leq \text{AMW} \leq 250$

Once the primary insurance benefit is obtained, the corresponding 1954 primary insurance amount is obtained by entering the conversion table in the 1954 amendments. The 1954 conversion table is reproduced in Table 1. If the value of the primary insurance benefit falls between those given in the conversion table in the 1954 amendments then recourse must be had to the 1952 conversion table which is reproduced in Table 2. The primary insurance amount associated with the primary insurance benefit under the 1952 conversion table is determined by straight line interpolation, with the result rounded to the next highest ten cents. Then the 1954 formula is applied to the average monthly wage associated with the primary insurance amount obtained from the 1952 conversion table. If the resulting figure is not $5.00 higher than the 1952 primary insurance amount, then it is increased so that it will be at least $5.00 greater. The result will be the primary insurance amount associated with the given primary insurance benefit under the 1954 amendments.

Table 1

CONVERSION TABLE IN 1954 AMENDMENTS

Primary Insurance Benefit	1952 Primary Insurance Amount	1954 Primary Insurance Amount	Average Monthly Wage for Computing Maximum Benefits
$10	$25.00	$30.00	$55.00
11	27.00	32.00	58.00
12	29.00	34.00	62.00
13	31.00	36.00	65.00
14	33.00	38.00	69.00
15	35.00	40.00	73.00
16	36.70	41.70	76.00
17	38.20	43.20	79.00
18	39.50	44.50	81.00
19	40.70	45.70	83.00
20	42.00	47.00	85.00
21	43.50	48.50	88.00
22	45.30	50.30	91.00
23	47.50	52.50	95.00
24	50.10	55.10	100.00
25	52.40	57.40	104.00
26	54.40	59.40	108.00
27	56.30	61.30	114.00
28	58.00	63.00	123.00
29	59.40	64.40	130.00
30	60.80	66.30	139.00
31	62.00	67.90	147.00
32	63.30	69.50	155.00
33	64.40	71.10	163.00
34	65.50	72.50	170.00
35	66.60	73.90	177.00
36	67.80	75.50	185.00
37	68.90	77.10	193.00
38	70.00	78.50	200.00
39	71.00	79.90	207.00
40	72.00	81.10	213.00
41	73.10	82.70	221.00
42	74.10	83.90	227.00
43	75.10	85.30	234.00
44	76.10	86.70	241.00
45	77.10	88.50	250.00
46	77.10	88.50	250.00
	77.20	88.50	250.00
	77.30	88.50	250.00
	77.40	88.50	250.00
	77.50	88.50	250.00
	78.00	89.10	253.00
	79.00	90.50	260.00
	80.10	91.90	267.00
	81.00	93.10	273.00
	82.00	94.50	280.00
	83.10	95.90	287.00
	84.00	97.10	293.00
	85.00	98.50	300.00

Table 2

CONVERSION TABLE IN 1952 AMENDMENTS

Primary Insurance Benefit	Primary Insurance Amount	Average Monthly Wage for Computing Maximum Benefits
$10	$25.00	$45.00
11	27.00	49.00
12	29.00	53.00
13	31.00	56.00
14	33.00	60.00
15	35.00	64.00
16	36.70	67.00
17	38.20	69.00
18	39.50	72.00
19	40.70	74.00
20	42.00	76.00
21	43.50	79.00
22	45.30	82.00
23	47.50	86.00
24	50.10	91.00
25	52.40	95.00
26	54.40	99.00
27	56.30	109.00
28	58.00	120.00
29	59.40	129.00
30	60.80	139.00
31	62.00	147.00
32	63.30	155.00
33	64.40	163.00
34	65.50	170.00
35	66.60	177.00
36	67.80	185.00
37	68.90	193.00
38	70.00	200.00
39	71.00	207.00
40	72.00	213.00
41	73.10	221.00
42	74.10	227.00
43	75.10	234.00
44	76.10	241.00
45	77.10	250.00
46	77.10	250.00

F. Illustrative Benefits Under the Two Methods

When the calculated primary insurance amount is not a multiple of ten cents, it is raised to the next higher multiple of ten cents. Similarly, monthly benefits for categories of beneficiaries other than retired wage earners are also raised to the next higher multiple of ten cents when the calculated amount is not such a multiple. If total monthly benefits exceed the maximum amount permissible (referred to hereafter), this rounding to the next higher multiple of ten cents is done after benefits have been reduced so as to conform to the maximum limits. Some results produced by rounding of benefits are discussed later in this study.

As mentioned earlier, primary insurance amounts based on creditable earnings since 1950 may be computed on the basis of the 1952 formula with the addition of $5, or by use of the 1954 formula, the higher value being used in either case. If the average monthly wage with drop-out is $130 or more, then the 1954 formula is always used. If the average monthly wage with drop-out is less than $130, the primary insurance amount is computed by the use of both formulas and the higher amount used. Table 3 gives the range of average monthly wage without drop-out which, when used with the 1952 formula and the addition of $5 will produce a higher primary insurance amount than a given average monthly wage with drop-out used with the 1954 formula. If the average monthly wage with and without drop-out are equal and less than $130 (in the case of continuous level earnings), the 1952 formula and the addition of $5 will always be used. When the average monthly wage without drop-out is less than the average monthly wage with drop-out and less than $130, Table 3 indicates which of the formulas would be more advantageous. In the remainder of this section, the 1952 and 1954 formulas will be referred to as "new start" formulas, with the assumption that the formula producing the higher benefit is always used.

Table 4 indicates for specimen average wages, the primary insurance amounts produced by the new start formulas and the 1939 formula with the conversion table. In this table it has been assumed that the individual was steadily in covered employment since 1936 with the primary benefit used in the conversion table based on 14 increment years.

It is apparent that both methods of calculating primary insurance amounts are of the "bent" type. That is, relatively larger benefits are paid for the lower average monthly wages.

Table 3

RANGE OF AVERAGE WAGES FOR WHICH 1952 FORMULA AND ADDITION OF $5 GIVES HIGHER
PRIMARY INSURANCE AMOUNT THAN 1954 FORMULA

Average Monthly Wage with Drop-out after 1950	Range of Average Monthly Wage without Drop-out after 1950	Average Monthly Wage with Drop-out after 1950	Range of Average Monthly Wage without Drop-out after 1950
$0-54 a/	$0-54 a/		
55	47-55	90	81- 90
56	47-56	91	83- 91
57	49-57	92	83- 92
58	49-58	93	85- 93
59	51-59	94	85- 94
60	51-60	95	87- 95
61	53-61	96	87- 96
62	53-62	97	89- 97
63	55-63	98	89- 98
64	55-64	99	91- 99
65	57-65	100	91-100
66	57-66	101	93-101
67	59-67	102	93-102
68	59-68	103	95-103
69	61-69	104	95-104
70	61-70	105	97-105
71	63-71	106	97-106
72	63-72	107	99-107
73	65-73	108	99-108
74	65-74	109	101-109
75	67-75	110	104-110
76	67-76	111	105-111
77	69-77	112	107-112
78	69-78	113	108-113
79	71-79	114	109-114
80	71-80	115	111-115
81	73-81	116	112-116
82	73-82	117	113-117
83	75-83	118	115-118
84	75-84	119	116-119
85	77-85	120	117-120
86	77-86	121	119-121
87	79-87	122	120-122
88	79-88	123	121-123
89	81-89	124	123-124
		125	124-125
		126	125-126
		127	127
		128	128
		129	129

a/ In this range the primary insurance amount will be $30.

Table 4a

COMPARISON OF PRIMARY INSURANCE AMOUNTS UNDER 1939 FORMULA WITH CONVERSION TABLE
AND UNDER NEW START FORMULAS FOR INDIVIDUALS STEADILY COVERED
SINCE 1936 DYING OR RETIRING AT BEGINNING OF 1955

Assumed Level Monthly Wage		Computed Average Monthly Wage	Primary Insurance Amount		Ratio of Conversion Table to New Formula
1937-50	After 1950	For 1937 on	1939 Formula with Conversion Table	New Start Formulas	
$25	$25	$25	32.80	$30.00	109%
25	50	32	39.20	32.50	121
25	100	48	50.20	60.00	84
25	200	78	59.40	78.50	76
25	300	109	65.50	98.50	66
$50	$25	$50	52.10	$30.00	174%
50	50	50	52.10	32.50	160
50	100	65	56.30	60.00	94
50	200	96	63.10	78.50	80
50	300	126	68.70	98.50	70
$100	$25	$100	63.80	$30.00	213%
100	50	100	63.80	32.50	196
100	100	100	63.80	60.00	106
100	200	130	69.50	78.50	88
100	300	161	74.70	98.50	76
$150	$25	$150	72.70	$30.00	242%
150	50	150	72.70	32.50	224
150	100	150	72.70	60.00	121
150	150	150	72.70	68.50	106
150	200	165	75.50	78.50	96
150	300	196	80.50	98.50	82
$250	$25	$250	88.50	$30.00	295%
250	50	250	88.50	32.50	272
250	100	250	88.50	60.00	148
250	200	250	88.50	78.50	113
250	250	250	88.50	88.50	100
250	300	265	88.50	98.50	90

Table 4b

COMPARISON OF PRIMARY INSURANCE AMOUNTS UNDER 1939 FORMULA WITH CONVERSION TABLE
AND UNDER NEW START FORMULAS FOR INDIVIDUALS STEADILY COVERED
SINCE 1936 DYING OR RETIRING AT BEGINNING OF 1980

Assumed Level Monthly Wage		Computed Average Monthly Wage for 1937 on	Primary Insurance Amount		Ratio of Conversion Table to New Formula
1937-50	After 1950		1939 Formula with Conversion Table	New Start Formulas	
$25	$25	$25	$32.80	$30.00	109%
25	50	44	47.10	32.50	145
25	100	82	60.30	60.00	100
25	200	158	74.30	78.50	95
25	300	234	86.50	98.50	88
$50	$25	$34	$40.90	$30.00	136%
50	50	50	52.10	32.50	160
50	100	88	61.60	60.00	103
50	200	164	75.10	78.50	96
50	300	240	87.50	98.50	89
$100	$25	$52	$52.60	$30.00	175%
100	50	68	57.10	32.50	176
100	100	100	63.80	60.00	106
100	200	176	77.30	78.50	98
100	300	252	88.50	98.50	90
$150	$25	$71	$57.80	$30.00	193%
150	50	86	61.20	32.50	188
150	100	118	67.30	60.00	112
150	150	150	72.70	68.50	106
150	200	188	79.30	78.50	101
150	300	264	88.50	98.50	90
$250	$25	$107	$65.10	$30.00	217%
250	50	123	68.30	32.50	210
250	100	155	73.70	60.00	123
250	200	218	83.90	78.50	107
250	250	250	88.50	88.50	100
250	300	288	88.50	98.50	90

The comparisons in Table 4 indicate the extent to which the 1939 formula with conversion table will be applicable in future years. Obviously, for any newly covered individuals the new start formulas will almost always be applicable as discussed later. These comparisons show that the 1939 formula is advantageous not only for the relatively few workers whose average wage after 1950 was lower than for 1937-50, but also, surprisingly, for some individuals in the reverse situation whose aggregate covered earnings have been very low, because of intermittent coverage, or for other reasons.

The illustrative figures shown in Table 4a are based on assumed average monthly wages for the two periods 1937-50 and after 1950 for an individual dying or retiring at the beginning of 1955. As indicated above individuals with a small amount of covered employment in the past may have a very low average wage for 1937-50. It should be noted that not all of the various combinations of assumed wages shown in the tables are equally likely. Thus, the more likely situation because of extension of coverage and even more so because of rising wage trends is where there is a relatively low wage for 1937-50, with a higher wage after 1950. For example, in a typical case, the 1937-50 average monthly wage might be $100, with the average wage after 1950 being $200. Table 4b deals with death and retirement at the beginning of 1980.

In all of these tables there are instances where the 1939 formula with conversion table is more favorable, but these are generally cases where the future average wage is lower than (or the same as) the past wage, which will be an unusual situation. For more normal cases, where there is a substantial rise in the average monthly wage, the new start formulas are more favorable than the 1939 formula with conversion table.

There will be some cases where, for newly covered individuals, the 1939 formula with conversion table will produce a larger primary insurance amount than the new start formulas. This results from the fact that, for some of the smaller average monthly wages, the primary insurance amount corresponding to a given wage, obtained by entering the conversion table with the 1939 formula, exceeds the primary insurance amount obtained by application of the new start formulas to a somewhat greater wage. For example, an individual dying in January 1955 with total wages of $50 credited in each month after 1950 and before January 1955 (and therefore an average monthly wage after 1950 of $50) would have a primary insurance amount of $32.50 according to the new start formulas. If this individual had attained age 22 in 1947 with no covered employment before 1951), his average monthly wage over the period starting with the year in which he attained age 22 would be $50 since he

could use a 4-year drop-out. With no increment years, this would yield a primary insurance benefit of $20 and a primary insurance amount using the conversion table of $47.

Table 5 compares the primary insurance amount at retirement age under the two computation methods for new entrants at various ages on January 1, 1951. Those who are close to age 65 on that date will in all cases use the new start formulas. For those with very low wages who are relatively young at the present time, the 1939 formula with conversion table will be used since it produces a somewhat higher benefit. For instance, for a person age 25 at the beginning of 1951 the formula with conversion table produces a $14.50 larger benefit for a level monthly wage since 1950 of $50, but for average wages of $92 or more, the new start formulas will be more favorable. It will be noted that for this latter case there is no reduction in the average wage, due to the application of the drop-out.

Table 6 indicates, for individuals with 2, 10, and 14 increment years, the lowest average wage after 1950, which using the 1954 formula will produce a larger primary insurance amount than will the specimen average wage used with the 1939 formula and the conversion table. For example, an individual with 14 increment years and an average wage since 1936 of $100 would have a larger primary insurance amount using the conversion table than he would using the 1954 formula unless his average wage since 1950 was $127 or more.

Table 7 indicates the total monthly benefits based on the 1954 formula which will be payable to family groups of various sizes when expressed as percentages of the primary insurance amount. For the larger family groups, the total benefits are limited in some cases by the maximum provisions--discussed in the next section. The composition of these groups has been set forth previously in Chart II.

Chart III is a nomograph, or computing chart, for determining the primary insurance amount.

Table 5

COMPARISON OF PRIMARY INSURANCE AMOUNTS UNDER TWO COMPUTATION METHODS FOR PERSONS HAVING NO WAGE CREDITS BEFORE 1951

Assumed Monthly Wage Since 1950	1939 Formula, Average Wage	Primary Insurance Amount		Ratio
		"New Start" Formulas	1939 Formula with Conversion Table	

For Person Attaining Age 65 and Retiring on January 1, 1961

$50	$26	$32.50	$30.80	106%
100	52	60.00	47.30	127
150	78	68.50	52.10	131
200	105	78.50	58.50	134
250	131	88.50	63.20	140
300	157	98.50	67.50	146

For Person Attaining Age 65 and Retiring on January 1, 1971

$50	$34	$32.50	$37.20	87%
100	68	60.00	49.90	120
150	103	68.50	58.00	118
200	137	78.50	64.10	122
250	172	88.50	69.90	127
300	206	98.50	74.90	132

For Person Attaining Age 65 and Retiring on January 1, 1981

$50	$39	$32.50	$41.00	79%
100	78	60.00	52.10	115
150	118	68.50	61.00	112
200	157	78.50	67.50	116
250	197	88.50	73.70	120
300	236	98.50	79.50	124

For Person Attaining Age 65 and Retiring on January 1, 1991

$50	$50	$32.50	$47.00	69%
100	100	60.00	57.40	105
150	150	68.50	66.30	103
200	200	78.50	73.90	106
250	250	88.50	81.10	109
300	300a/	98.50	88.50	111

a/ $250 used.

Table 6

LOWEST AVERAGE MONTHLY WAGE FOR USE WITH 1954 FORMULA WHICH
PROVIDES LARGER PRIMARY INSURANCE AMOUNT THAN WAGE SHOWN
FOR USE WITH 1939 FORMULA AND CONVERSION TABLE

Wage Used with Conversion Table	Lowest Wage Used with 1954 Formula which Yields Larger PIA than under 1939 Formula with Conversion Table with Increments for		
	2 Years	10 Years	14 Years
$25	$56	$59	$60
50	87	92	95
75	96	104	107
100	107	119	127
125	124	142	151
150	145	164	172
175	165	184	194
200	184	205	214
225	204	224	234
250	220	242	251

Table 7

MONTHLY BENEFITS PAYABLE UNDER 1954 FORMULA FOR VARIOUS
BENEFICIARY CATEGORIES

Average Monthly Wage	Beneficiary Category[a]							
	75%	100%	125%	150%	175%	200%	225%	250%[b]

Total Benefits

Average Monthly Wage	75%	100%	125%	150%	175%	200%	225%	250%[b]
$25	$30.00	$30.00	$37.50	$45.00	$50.00	$50.00	$50.00	$50.00
50	30.00	30.00	37.50	45.00	50.00	50.00	50.00	50.00
75	31.00	41.30	51.70	62.00	62.00	62.00	62.00	62.00
100	41.30	55.00	68.80	82.50	82.50	82.50	82.50	82.50
125	47.70	63.50	79.40	95.30	100.00	100.00	100.00	100.00
150	51.40	68.50	85.70	102.80	119.90	120.00	120.00	120.00
175	55.20	73.50	91.90	110.30	128.70	140.00	140.00	140.00
200	58.90	78.50	98.20	117.80	137.40	157.00	160.00	160.00
225	62.70	83.50	104.40	125.30	146.20	167.00	180.00	180.00
250	66.40	88.50	110.70	132.80	154.90	177.00	199.20	200.00
275	70.20	93.50	116.90	140.30	163.70	187.00	200.00	200.00
300	73.90	98.50	123.20	147.80	172.40	197.00	200.00	200.00
325	77.70	103.50	129.40	155.30	181.20	200.00	200.00	200.00
350	81.40	108.50	135.70	162.80	189.90	200.00	200.00	200.00

Total Benefits as Percentage of Average Monthly Wage

Average Monthly Wage	75%	100%	125%	150%	175%	200%	225%	250%[b]
$25	120%	120%	150%	180%	200%	200%	200%	200%
50	60	60	75	90	100	100	100	100
75	41	55	69	83	83	83	83	83
100	41	55	69	82	82	82	82	82
125	38	51	64	76	80	80	80	80
150	34	46	57	69	80	80	80	80
175	32	42	53	63	74	80	80	80
200	29	39	49	59	69	78	80	80
225	28	37	46	56	65	74	80	80
250	27	35	44	53	62	71	80	80
275	26	34	43	51	60	68	73	73
300	25	33	41	49	57	66	67	67
325	24	32	40	48	56	62	62	62
350	23	31	39	47	54	57	57	57

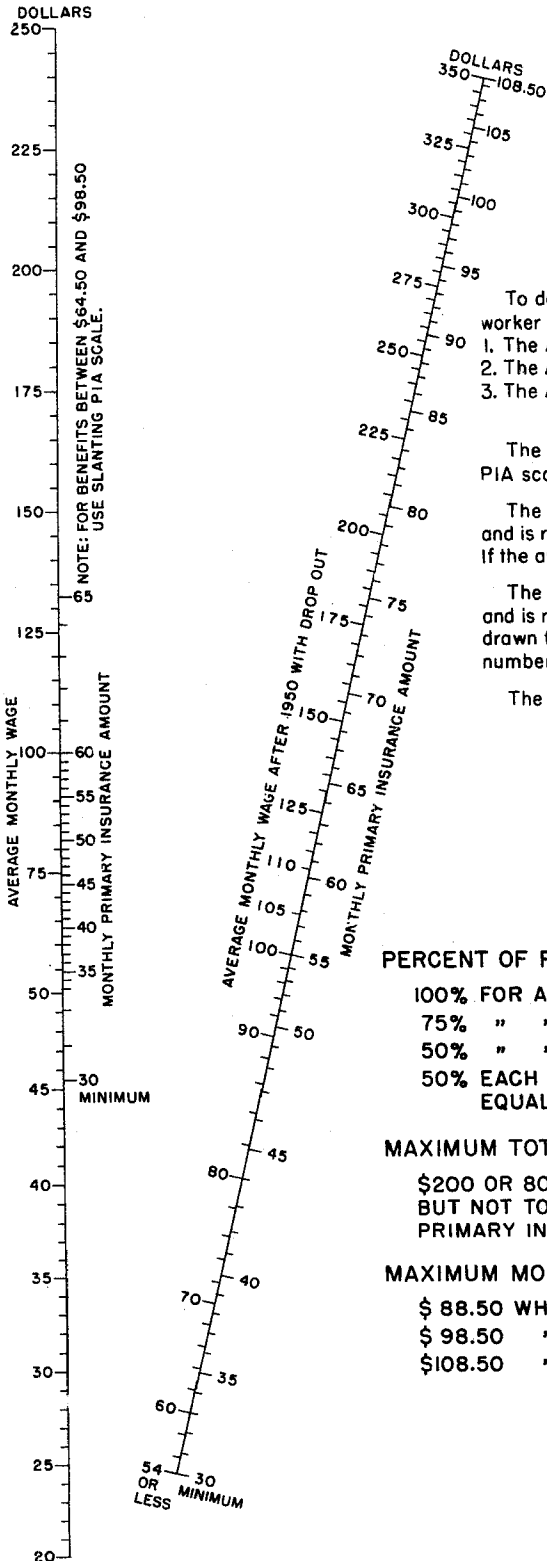a/ See Chart II. for beneficiaries included in each group.
b/ Including all categories in excess of 250%.

Note: Total benefits may vary slightly with composition of beneficiary groups
due to rounding of benefits.

Chart III.

OLD-AGE AND SURVIVORS INSURANCE BENEFIT CHART
1954 AMENDMENTS

(BY EUGENE A. RASOR)

To determine the monthly Primary Insurance Amount (PIA) for an eligible worker it is necessary to compute three Average Monthly Wages (AMW):
1. The AMW after 1950 with a drop out of up to 5 lowest years
2. The AMW after 1950 without a drop out of lowest years
3. The AMW after 1936 with a drop out of up to 5 lowest years

The PIA for (1) is based on the 1954 formula and is read on the slanting PIA scale opposite the slanting AMW scale.

The PIA for (2) is based on the 1952 formula run through a conversion table and is read on the vertical PIA scale opposite the vertical AMW scale. If the average monthly wage is over $130 use slanting AMW and PIA scales.

The PIA for (3) is based on the 1939 formula run through a conversion table and is read on the slanting PIA scale at this scales intersection with a line drawn from the average monthly wage point on the vertical AMW scale to the number of years point on the Years of Coverage scale.

The PIA payable is the largest of the three computations.

PERCENT OF PRIMARY INSURANCE AMOUNT PAYABLE:

100% FOR AN ELIGIBLE RETIRED WORKER
75% " " " WIDOW OR PARENT
50% " " " WIFE
50% EACH FOR ALL ELIGIBLE CHILDREN PLUS 25% DIVIDED EQUALLY AMONG THE ELIGIBLE SURVIVOR CHILDREN

MAXIMUM TOTAL MONTHLY BENEFIT PAYABLE:

$200 OR 80% OF AVERAGE WAGE, WHICHEVER IS SMALLER, BUT NOT TO BE REDUCED BELOW $50 OR 1.5 TIMES THE PRIMARY INSURANCE AMOUNT

MAXIMUM MONTHLY PRIMARY INSURANCE AMOUNT:

$ 88.50 WHEN USING WAGES AFTER 1936
$ 98.50 " " " " 1950 WITHOUT THE DROP OUT
$108.50 " " " " 1950 WITH THE DROP OUT

NOTE: FOR BENEFITS BETWEEN $64.50 AND $98.50 USE SLANTING PIA SCALE.

AVERAGE MONTHLY WAGE

MONTHLY PRIMARY INSURANCE AMOUNT

AVERAGE MONTHLY WAGE AFTER 1950 WITH DROP OUT

MONTHLY PRIMARY INSURANCE AMOUNT

YEARS OF COVERAGE BEFORE 1951

Gregory M. Smith
Delineator

G. Maximum Benefits under the New Start Formula
and the Conversion Table

As mentioned previously, there are certain limits on the amount of monthly benefits which may be paid on the basis of an individual's wage record. The maximum total monthly benefit which may be so paid is as follows:

Average Monthly Wage	Maximum Benefit
$60 and under	$50
$61 - $115	150% of primary insurance amount
$116 - $250	80% of average wage
$250 and over	$200

The upper limit of $200 represents an increase of 19% over the 1952 Act's maximum of $168.75. Likewise, the $45 maximum for the lower benefits was increased by 11% to $50.

Since the enactment of the 1950 Amendments, the maximum benefit limits have been and are now applicable only to those benefits actually being paid for a particular month. Thus if a mother and four children were receiving the maximum benefit of, let us say, $200 per month based on a primary insurance amount of $100 and if the mother were to enter into an employment status, causing suspension of the mother's benefit, then the four children would continue to receive a maximum benefit of $200.

The limits referred to above apply in the case of all benefits whether calculated by the new formula or by the conversion table. In the conversion table, there is a column which indicates the average monthly wage, corresponding to each primary insurance benefit, which is to be used for the purpose of fixing the maximum benefits. This average monthly wage was determined in the development of the 1952 conversion table. The procedure was as follows: within the range where the maximum total benefits depend on the average monthly wage, the average monthly wage was such that application of the 1952 formula thereto will produce the particular primary insurance amount, and this wage was then rounded to the nearest dollar. This same procedure was followed for PIA's (interpolated linearly) between "even dollar" PIB's so that where the 80% maximum was effective, the same maximum applied for several different PIA's (e.g. the maximum for 1952 PIA's of $53.70 to $54.00 inclusive was $78.40, which is 80% of the rounded average monthly wage used for determining maximum benefits of $98). In

developing the 1954 conversion table these average monthly wages
were retained, and the 1954 formula was applied to them in de-
veloping the PIA's for the new conversion table. In summary it
may be said that the average monthly wage associated with the 1954
PIA in the 1954 conversion table is that average monthly wage which,
upon application of the 1954 formula, would produce the given PIA,
except that in some cases the average monthly wage has been rounded
to the nearest dollar as may be noted in the lower end of the table.

Maximum family benefits under the 1954 formula, expressed as
a percent of average monthly wage, start off at a maximum of 200%
for an average wage of $25 and decrease thereafter to 80% for aver-
age wages of $116 to $250 and then to a low of 57% for an average
wage of $350. Values of these percentages (as well as for maximum
benefits expressed as percentages of primary insurance amounts)
are shown for specimen values of average wage in Table 8.

The ratios of maximum family benefits based on the new start
formula to primary insurance amounts start off at 167% for an aver-
age wage of $54 or less and drop to a level of 150% which continues
for average wages of $61 through $115. As the average wage exceeds
$115, the percentages make a sharp and steady rise to 226%, corres-
ponding to an average wage of $250, after which point there is a
steady drop to 184% at the maximum creditable average monthly wage
of $350. In terms of number of beneficiaries, the 226% figure in-
dicates that for a typical survivor family composed of a widowed
mother and children, the largest possible number of eligible children
all able to draw full benefit is 2, while if there is a third child,
the additional amount payable is 26%. For average monthly wages
of $193 through $307, maximum family benefits exceed twice the primary
insurance amount.

Table 9 compares the new primary insurance amounts under the
conversion table with the corresponding benefits under the 1952,
1950, and 1939 Amendments. It also indicates the relationship be-
tween the new maximums on family benefits and the maximums in force
under the 1952, 1950, and 1939 Amendments.

The change in the benefits for a retired worker under the
1954 Amendments from the 1952 Amendments was an increase of at
least $5.00. This resulted in an increase of 20% for primary
insurance benefits (under the law prior to the 1950 Amendments)
of $10, decreasing to 8½ to 9% for primary insurance benefits be-
tween $25 and $30, then increasing to 15% for a primary insurance
benefit of $45.

For primary insurance benefits of $10, the increase over the
1939 Amendments is 200%. Thereafter, the relative increase steadily
decreases to a minimum of 97% for a primary insurance benefit of

Table 8

COMPARISON OF MAXIMUM FAMILY BENEFITS WITH PRIMARY INSURANCE AMOUNTS
AND AVERAGE MONTHLY WAGES ACCORDING TO 1954 FORMULA

Average Monthly Wage	Primary Insurance Amount	Maximum Family Benefits	Maximum Benefits as Percent of	
			Primary Insurance Amount	Average Monthly Wage
$25	$30.00	$50.00	167%	200%
50	30.00	50.00	167	100
75	41.30	61.95	150	83
100	55.00	82.50	150	82
125	63.50	100.00	157	80
150	68.50	120.00	175	80
175	73.50	140.00	190	80
200	78.50	160.00	204	80
225	83.50	180.00	216	80
250	88.50	200.00	226	80
275	93.50	200.00	214	73
300	98.50	200.00	203	67
325	103.50	200.00	193	62
350	108.50	200.00	184	57

Table 9a

COMPARISON OF PRIMARY BENEFITS UNDER CONVERSION TABLE

Primary Insurance Benefit	Primary Insurance Amount Under Amendments of			Percent Increase in Primary Benefits Under 1954 Amendments Over Amendments of		
	1950	1952	1954	1939	1950	1952
$10	$20.00	$25.00	$30.00	200%	50%	20%
15	30.00	35.00	40.00	167	33	14
20	37.00	42.00	47.00	135	27	11
25	46.50	52.40	57.40	130	23	10
30	54.00	60.80	66.30	121	23	9
35	59.20	66.60	73.90	111	25	11
40	64.00	72.00	81.10	103	27	13
45	68.50	77.10	88.50	97	29	15

Table 9b

COMPARISON OF MAXIMUM FAMILY BENEFITS UNDER CONVERSION TABLE

Primary Insurance Benefit	Maximum Benefit Under Amendments of				Percent Increase in Maximum Family Benefit Under 1954 Amendments Over Amendments of		
	1939a/	1950	1952	1954	1939	1950	1952
$10	$20.00	$40.00	$45.00	$50.00	150%	25%	11%
15	29.41	48.00	51.20	60.00	104	25	17
20	39.22	59.20	60.80	70.50	80	19	16
25	50.00	74.40	76.00	86.10	72	16	13
30	60.00	101.28	111.20	111.20	94	15	4
35	70.00	129.04	141.60	141.60	113	15	5
40	80.00	150.00	168.75	170.40	122	19	5
45	85.00	150.00	168.75	200.00	135	33	19

a/ Assuming, where necessary, that the primary insurance benefit is based on only 2 increment years.

$45.60, which is the largest possible primary insurance benefit (based on an average monthly wage of $250 and 14 increment years). The overall increase in existing benefits produced by the conversion table when the 1954 Amendments became effective was a rise of approximately 13% in the average benefit for retired workers (the corresponding figure for the 1952 Amendments as compared with the previous law was 14%).

For a $10 primary insurance benefit the maximum family benefit arising under the 1954 conversion table is 150% higher than the maximum under the 1939 Act. As the primary insurance benefit becomes larger, the percentage increase drops off reaching a trough at 71% for a primary insurance benefit of $23. Following this, there is a gradual rise until for a primary insurance benefit of $45, the increase in the maximum benefit is 135%.

There are cases, as may be noted in Table 9, in which the maximum benefits under the 1954 conversion table will be the same as under the 1952 table, even though there is an increase in the primary insurance amount, resulting in no increase in total benefits for those affected by application of the maximum. To provide an increase for all those on the benefit rolls at the time the 1954 Amendments were enacted, a "savings clause" is applicable. Thus the law provides that, in the case of a primary beneficiary and one or more dependents upon whom the maximum will apply, the primary beneficiary will receive the conversion table increase in his primary insurance amount and the benefits of the dependents will not be reduced. In the case of two or more people receiving survivors benefits on the same earnings record and whose benefits would be reduced for the maximum (80% of average monthly wage or 1½ times the PIA), the average monthly wage will be the larger of these two sums: the actual average monthly wage as determined under the 1954 Amendments or the average monthly wage as determined under the law in effect before the 1954 Amendments plus $7. This will permit total survivor benefits in reduction cases to be raised about $5.

H. Rounding of Benefits

In order to facilitate administration, the Social Security Act provides for a considerable amount of rounding in the benefit computations. These rounding conditions which have been referred to above are quite thoroughly spelled out in the law, and it is of interest to see how they work out in particular cases. The following discussion relates to the 1954 formula, although it is applicable to individuals whose primary insurance amounts are determined by use of the other formulas.

As a specific example, we may consider an individual who has an average monthly wage falling between $109.00 and $109.99 as initially calculated. It is first provided that this amount shall be rounded down to the next lower multiple of a dollar, that is, to $109. According to the benefit formula, the primary insurance amount is computed to be $59.95, which in turn, is rounded to the next higher multiple of ten cents, or $60.00. In the case of average wages of at least $110, the formula produces a PIA which is always an exact multiple of 10 cents.

It may be noted that for the 1954 benefit provisions, because of the rounding of the average wage, there will not be a primary insurance amount corresponding to each multiple of ten cents; in other words, there will be some "impossible" values. For instance, there can never be primary insurance amounts of $60.60 or $60.80 as indicated in the following table:

Average Monthly Wage	Primary Insurance Amount
$110	$60.50
111	60.70
112	60.90

In fact, every other multiple of 10 cents thereafter is an impossible value, since an increase of $1 in the average wage produces an increase of 20 cents in the PIA.

Considering an individual with a $111 average monthly wage, a $60.70 primary insurance amount, and a $91.05 family benefit maximum, let us see how survivor benefits are calculated if he leaves a widow and children. First, as indicated in the first three columns of Table 10, the benefits for each beneficiary are obtained by applying to the primary insurance amount the appropriate benefit proportion, that is, 75% for the widow and 50% for each child plus an extra percentage for each child equal to 25% divided equally among the child beneficiaries (the exact fraction is used). Amounts are rounded to the nearest cent (if exactly $\frac{1}{2}$ cent, it is rounded up).

If the resulting total family benefits are less than the maximum, as is the case only for the first group shown in Table 10, then each of the individual benefits is rounded up to the next dime. However, where the total is greater than the maximum, each benefit is reduced proportionately in the ratio of the maximum benefit to the preliminary total family benefits (the exact fraction is used). If there is a benefit payable to a retired worker, his amount is not reduced, but rather all others are reduced sufficiently to bring the total down to the maximum total benefit. The second group of three columns show these proportionately reduced figures. It may be noted that in all instances the total differs slightly from the maximum of $91.05 because of the necessity of rounding each benefit to the nearest cent.

Finally, as shown in the last three columns, each of the resulting reduced benefits obtained previously which is not a multiple of ten cents is rounded up to the next higher ten cents. It will be observed that the total family benefits will frequently exceed, by small amounts, the actual calculated maximum. Thus, in this particular case, such excess ranges from 15 cents to as much as 65 cents for a very large family.

This results in a minor peculiarity, namely, that in certain instances, smaller families will get slightly larger benefits than some larger families. For instance, in one case considered in Table 10 the benefit for a 9-child family is 30 cents larger than for a 10-child family.

Also there might be a slight question concerning that section of the law3/ which provides that if the maximum is applicable, and the work clause is operating against one or more of the family group, the payments (either reduced or unchanged, as required) shall be continued to those who work rather than be suspended with a corresponding increase to the other beneficiaries. This, of course, is desirable for administrative simplicity. It would therefore seem both against the purpose of the law and against reasonable administrative procedure in such cases, for the benefits to be varied to reflect the small differences indicated in the last column of Table 10 for families of different size. In other words, specifically for the case indicated in a 7-child family the total family benefits of $91.50 would be payable so long as the widow and at least 2 children were not affected by the work clause.

3/ Sec. 203(h) provides that deductions because of the work clause shall be made from the benefits to which an individual is entitled only to the extent that they reduce the total amount which would otherwise be paid, on the basis of the same wages and self-employment income, to him and the other individuals living in the same household.

Table 10

ILLUSTRATIONS OF CALCULATION OF SURVIVOR BENEFITS FOR AVERAGE MONTHLY WAGE OF $111 BY 1954 FORMULA

Beneficiary Group	Prior to Maximum or Rounding			After Maximum but Prior to Rounding[a]			After Maximum and Rounding		
	Widow	Each Child	Total Family	Widow	Each Child	Total Family	Widow	Each Child	Total Family
Widow and 1 child	$45.53	$45.53	$91.06	*	*	*	$45.60	$45.60	$91.20
Widow and 2 children	45.53	37.94	121.41	$34.14	$28.45	$91.04	34.20	28.50	91.20
Widow and 3 children	45.53	35.41	151.76	27.32	21.24	91.04	27.40	21.30	91.30
Widow and 4 children	45.53	34.14	182.09	22.77	17.07	91.05	22.80	17.10	91.20
Widow and 5 children	45.53	33.39	212.48	19.51	14.31	91.06	19.60	14.40	91.60
Widow and 6 children	45.53	32.88	242.81	17.07	12.33	91.05	17.10	12.40	91.50
Widow and 7 children	45.53	32.52	273.17	15.18	10.84	91.06	15.20	10.90	91.50
Widow and 8 children	45.83	32.25	303.53	13.66	9.67	91.02	13.70	9.70	91.30
Widow and 9 children	45.53	32.04	333.89	12.42	8.74	91.08	12.50	8.80	91.70
Widow and 10 children	45.53	31.87	364.23	11.38	7.97	91.08	11.40	8.00	91.40

* Maximum not applicable.

a/ Differences between total family benefit indicated and maximum of $91.05 are due to taking each individual benefit to nearest whole cent.

One further point of interest which may be noted in this connection is that for different groups of beneficiaries that each add up to the same total percentage of primary insurance amount, the total monthly benefits may differ by small amounts due to the effects of rounding individual benefits. For example, in Chart I, it is shown that a retired worker and eligible wife will draw a total benefit of 150% of the primary insurance amount, while a surviving widow and child will be entitled to the same percentage. For an average monthly wage of $145 used with the 1954 formula, the retired worker and wife will receive a total monthly benefit of $101.30, while the widow and child, entitled to the same total percentage of primary insurance amount, will receive $101.40, the difference in the total amount resulting from rounding of the individual benefits.

Further, it may be of interest to consider the actual exact maximum family benefit when the $50 maximum is applicable (for average wages of $60 and less) and when the $200 maximum is applicable (for average wages of $250 or more). In each of these two groups, there is the same maximum family benefit--regardless of the average wage or the primary insurance amount. The following table indicates the particular maximums for a widow and various numbers of children:

Beneficiary Group	Family Benefit Where $50 Maximum is Applicable	Family Benefit Where $200 Maximum is Applicable
Widow and 2 Children	$50.20	$200.00
Widow and 3 Children	50.10	200.10
Widow and 4 Children	50.10	200.00
Widow and 5 Children	50.30	200.40
Widow and 6 Children	50.20	200.10
Widow and 7 Children	50.40	200.70
Widow and 8 Children	50.70	200.40
Widow and 9 Children	50.10	200.10
Widow and 10 Children	50.30	200.00

It will be observed that as in the previous specific case, the total family benefit will exceed the particular exact maximum by small amounts which, of course, are never greater than 10 cents per beneficiary.

I. Level Premium Costs of Individual Benefits

Table 11 shows the level-premium cost as percent of assumed level monthly wage for various earnings and retirement ages. The assumptions underlying these figures are as follows:

(1) Level monthly earnings from age at entry to retirement age.

(2) For the married cases, the man is married at age 24 to a woman age 19.

(3) For the cases involving children, they are born at the man's age 25, 30, and 35 (when applicable).

(4) No mortality for the children.

(5) Remarriage rates, based on 150% of the American Remarriage Table, for termination of mother's and widow's benefits.

(6) The wife not an old-age beneficiary in her own right.

(7) Benefit provisions, mortality rates, and interest rates for the several "Valuation Bases" are indicated in the table.

Tables 11a, 11b, 11c, and 11d show the cost for retirement age 65. Tables 11e, 11f, 11g, and 11h show the cost for retirement age 68. Tables 11a and 11e are for level earnings of $100. Tables 11b and 11f are for level earnings of $200. Tables 11c and 11g are for level earnings of $300, and tables 11d and 11h are for level earnings of $350.

Valuation bases A, B, and C compare costs for the given cases for the 1950, 1952, and 1954 amendments. As would be expected, the level-premium cost in each case increases from the 1950, to the 1952 and 1954 amendments; also within each case and each base, the cost increases as the level monthly earnings decreases, reflecting the nature of the benefit formula. Thus, these examples show that an increase in the earnings level will bring about a relative decrease in the cost of the system.

Valuation bases D and E show the effect on costs of an assumed improvement in mortality and also of a difference in interest base. A comparison of basis D with basis C shows the relative increase in

Table 11a

LEVEL PREMIUM COSTS OF BENEFITS AS PERCENT OF ASSUMED LEVEL MONTHLY EARNINGS OF $100 AND RETIREMENT AGE 65

Valuation Basis	Single Male	Single Female	Married Male			
			No Children	1 Child	2 Children	3 Children

Age 20 at Entry

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
A	3.84%	5.05%	6.49%	7.06%	7.47%	7.82%
B	4.22	5.56	7.14	7.75	8.17	8.70
C	4.60	6.07	7.78	8.41	8.83	9.38
D	5.64	6.75	9.15	9.73	10.16	10.66
E	7.31	8.79	12.06	12.61	12.98	13.48
F	11.77	14.71	19.04	19.88	20.53	21.44

Age 30 at Entry in 1955

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
A	6.05	7.89	10.21	10.67	11.29	12.28
B	6.66	8.68	11.29	11.79	12.41	13.26
C	7.27	9.47	12.32	12.83	13.45	14.33
F	15.61	19.32	25.30	25.88	26.67	27.89

Age 40 at Entry in 1955

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
A	10.52	13.45	17.31	17.34	17.62	18.89
B	11.56	14.79	19.60	19.64	20.10	21.18
C	12.61	16.13	21.38	21.42	21.91	22.97
F	22.84	27.88	37.06	37.08	37.55	38.80

Age 50 at Entry in 1955

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
A	22.11	27.42	35.95	35.95	35.95	36.08
B	24.32	30.16	40.82	40.82	40.82	40.96
C	26.53	32.90	44.53	44.53	44.53	44.67
F	40.80	48.63	65.68	65.68	65.68	65.77

Age 60 at Entry in 1955

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
B	95.05	112.38	153.40	153.40	153.40	153.40
C	103.69	122.60	167.34	167.34	167.34	167.34
F	136.69	157.00	214.15	214.15	214.15	214.15

Description of Valuation Bases:

A 1950 Amendments, 1948 U.S. White Mortality, 3% interest.
B 1952 Amendments, 1948 U.S. White Mortality, 3% interest.
C 1954 Amendments, 1948 U.S. White Mortality, 3% interest.
D 1954 Amendments, 1948 Generation Mortality, 3% interest.
E 1954 Amendments, 1948 Generation Mortality, 2¼% interest.
F 1954 Amendments, 1939-41 U.S. White Mortality, 0% interest.

Note: Cost of survivor benefits based on death of wage earner before retirement is included where applicable. See text for demographic assumptions.

Table 11b

LEVEL PREMIUM COSTS OF BENEFITS AS PERCENT OF ASSUMED LEVEL MONTHLY EARNINGS OF $200 AND RETIREMENT AGE 65

Valuation Basis	Single Male	Single Female	Married Male			
			No Children	1 Child	2 Children	3 Children
Age 20 at Entry						
A	2.49%	3.29%	4.21%	4.58%	4.91%	5.09%
B	2.69	3.54	4.55	4.95	5.29	5.73
C	3.01	3.97	5.09	5.54	5.92	6.39
D	3.69	4.42	5.98	6.39	6.70	7.19
E	4.78	5.75	7.89	8.28	8.62	9.04
F	7.70	9.62	12.46	13.07	13.65	14.42
Age 30 at Entry in 1955						
A	3.94	5.13	6.64	6.93	7.40	7.96
B	4.24	5.52	7.19	7.52	8.02	8.72
C	4.76	6.20	8.07	8.44	9.00	9.74
F	9.82	12.64	16.16	16.58	17.29	18.31
Age 40 at Entry in 1955						
A	6.83	8.73	11.25	11.27	11.42	12.30
B	7.36	9.41	12.47	12.50	12.80	13.61
C	8.25	10.55	13.99	14.02	14.36	15.27
F	14.94	18.24	24.24	24.26	24.60	25.63
Age 50 at Entry in 1955						
A	14.38	17.82	23.38	23.38	23.38	23.45
B	15.48	19.19	25.98	25.98	25.98	26.07
C	17.36	21.52	29.13	29.13	29.13	29.23
F	26.69	31.81	42.96	42.96	42.96	43.02
Age 60 at Entry in 1955						
B	60.49	71.51	97.62	97.62	97.62	97.62
C	67.83	80.20	109.47	109.47	109.47	109.47
F	89.42	102.70	140.09	140.09	140.09	140.09

Description of Valuation Bases:

A 1950 Amendments, 1948 U.S. White Mortality, 3% interest.
B 1952 Amendments, 1948 U.S. White Mortality, 3% interest.
C 1954 Amendments, 1948 U.S. White Mortality, 3% interest.
D 1954 Amendments, 1948 Generation Mortality, 3% interest.
E 1954 Amendments, 1948 Generation Mortality, $2\frac{1}{4}$% interest.
F 1954 Amendments, 1939-41 U.S. White Mortality, 0% interest.

Note: Cost of survivor benefits based on death of wage earner before retirement is included where applicable. See text for demographic assumptions.

Table 11c

LEVEL PREMIUM COSTS OF BENEFITS AS PERCENT OF ASSUMED
LEVEL MONTHLY EARNINGS OF $300 and RETIREMENT AGE 65

Valuation Basis	Single Male	Single Female	Married Male			
			No Children	1 Child	2 Children	3 Children

Age 20 at Entry

A	2.04%	2.69%	3.45%	3.76%	3.99%	4.16%
B	2.17	2.86	3.67	3.99	4.27	4.60
C	2.51	3.31	4.25	4.63	4.95	5.33
D	3.07	3.68	4.99	5.33	5.64	6.00
E	3.99	4.60	6.59	6.92	7.20	7.55
F	6.41	8.02	10.39	10.90	11.38	12.03

Age 30 at Entry in 1955

A	3.23	4.21	5.45	5.70	6.05	6.55
B	3.43	4.47	5.82	6.09	6.49	7.02
C	3.96	5.17	6.72	7.03	7.50	8.12
F	8.50	10.54	13.80	14.15	14.74	15.60

Age 40 at Entry in 1955

A	5.61	7.18	9.23	9.25	9.39	10.08
B	5.95	7.62	10.09	10.11	10.36	11.01
C	6.87	8.80	11.67	11.69	11.98	12.74
F	12.45	15.20	20.23	20.24	20.53	21.39

Age 50 at Entry in 1955

A	11.79	14.63	19.18	19.18	19.18	19.24
B	12.53	15.54	21.03	21.03	21.03	21.10
C	14.46	17.96	24.31	24.31	24.31	24.40
F	22.24	26.53	35.85	35.85	35.85	35.90

Age 60 at Entry in 1955

B	48.96	57.89	79.01	79.01	79.01	79.01
C	56.53	66.94	91.41	91.41	91.41	91.41
F	74.56	85.67	116.94	116.94	116.94	116.94

Description of Valuation Bases:

A 1950 Amendments, 1948 U.S. White Mortality, 3% interest.
B 1952 Amendments, 1948 U.S. White Mortality, 3% interest.
C 1954 Amendments, 1948 U.S. White Mortality, 3% interest.
D 1954 Amendments, 1948 Generation Mortality, 3% interest.
E 1954 Amendments, 1948 Generation Mortality, 2¼% interest.
F 1954 Amendments, 1939-41 U.S. White Mortality, 0% interest.

Note: Cost of survivor benefits based on death of wage earner before re-
      tirement is included where applicable. See text for demographic
      assumptions.

Table 11d

LEVEL PREMIUM COSTS OF BENEFITS AS PERCENT OF ASSUMED
LEVEL MONTHLY EARNINGS OF $350 AND RETIREMENT AGE 65

Valuation. Basis	Single Male	Single Female	Married Male			
			No Children	1 Child	2 Children	3 Children

Age 20 at Entry

A	2.04%	2.69%	3.45%	3.76%	3.99%	4.16%
B	2.17	2.86	3.67	3.99	4.27	4.60
C	2.36	3.12	4.00	4.36	4.64	4.99
D	2.90	3.47	4.71	5.03	5.30	5.64
E	3.76	4.52	6.21	6.52	6.77	7.09
F	4.84	6.09	8.60	9.08	9.51	9.65

Age 30 at Entry in 1955

A	3.23	4.21	5.45	5.70	6.05	6.55
B	3.43	4.47	5.82	6.09	6.49	7.02
C	3.73	4.87	6.34	6.63	7.07	7.62
F	8.01	9.93	13.02	13.35	13.88	14.65

Age 40 at Entry in 1955

A	5.61	7.18	9.23	9.25	9.39	10.08
B	5.95	7.62	10.09	10.11	10.36	11.01
C	6.47	8.30	11.00	11.02	11.30	11.98
F	11.73	14.33	19.08	19.09	19.37	20.15

Age 50 at Entry in 1955

A	11.79	14.63	19.18	19.18	19.18	19.24
B	12.53	15.54	21.03	21.03	21.03	21.10
C	13.63	16.93	22.93	22.93	22.93	23.01
F	20.95	25.01	33.80	33.80	33.80	33.85

Age 60 at Entry in 1955

B	48.96	57.89	79.01	79.01	79.01	79.01
C	53.34	63.12	86.23	86.23	86.23	86.23
F	70.29	80.77	110.31	110.31	110.31	110.31

Description of Valuation Bases:

A 1950 Amendments, 1948 U.S. White Mortality, 3% interest.
B 1952 Amendments, 1948 U.S. White Mortality, 3% interest.
C 1954 Amendments, 1948 U.S. White Mortality, 3% interest.
D 1954 Amendments, 1948 Generation Mortality, 3% interest.
E 1954 Amendments, 1948 Generation Mortality, 2¼% interest.
F 1954 Amendments, 1939-41 U.S. White Mortality, 0% interest.

Note: Cost of survivor benefits based on death of wage earner before re-
tirement is included where applicable. See text for demographic
assumptions.

Table 11e

LEVEL PREMIUM COSTS OF BENEFITS AS PERCENT OF ASSUMED LEVEL MONTHLY EARNINGS OF $100 AND RETIREMENT AGE 68

Valuation Basis	Single Male	Single Female	Married Male			
			No Children	1 Child	2 Children	3 Children

Age 20 at Entry

A	2.76%	3.75%	5.36%	5.91%	6.33%	6.67%
B	3.04	4.13	5.90	6.50	6.91	7.43
C	3.32	4.51	6.44	7.05	7.47	8.01
D	4.18	5.11	7.69	8.25	8.68	9.17
E	5.48	6.72	10.10	10.63	11.00	11.49
F	8.71	11.10	15.67	16.48	17.09	17.97

Age 30 at Entry in 1955

A	4.31	5.79	8.32	8.78	9.39	10.34
B	4.74	6.37	9.23	9.72	10.31	11.14
C	5.17	6.95	10.07	10.56	11.17	12.02
F	11.39	14.37	20.54	21.09	21.84	22.99

Age 40 at Entry in 1955

A	7.29	9.61	13.73	13.76	14.00	15.23
B	8.03	10.57	15.64	15.68	16.11	17.14
C	8.76	11.53	17.06	17.10	17.56	18.57
F	16.23	20.16	29.31	29.33	29.76	30.91

Age 50 at Entry in 1955

A	14.48	18.43	26.84	26.84	26.84	26.95
B	15.93	20.27	30.68	30.68	30.68	30.80
C	17.38	22.11	33.47	33.47	33.47	33.60
F	27.26	33.00	48.80	48.80	48.80	48.87

Age 60 at Entry in 1955

B	47.40	57.26	87.22	87.22	87.22	87.22
C	51.72	62.46	95.15	95.15	95.15	95.15
F	69.22	80.53	120.11	120.11	120.11	120.11

Description of Valuation Bases:

A   1950 Amendments, 1948 U.S. White Mortality, 3% interest.
B   1952 Amendments, 1948 U.S. White Mortality, 3% interest.
C   1954 Amendments, 1948 U.S. White Mortality, 3% interest.
D   1954 Amendments, 1948 Generation Mortality, 3% interest.
E   1954 Amendments, 1948 Generation Mortality, $2\frac{1}{4}$% interest.
F   1954 Amendments, 1939-41 U.S. White Mortality, 0% interest.

Note: Cost of survivor benefits based on death of wage earner before retirement is included where applicable. See text for demographic assumptions.

LEVEL PREMIUM COSTS OF BENEFITS AS PERCENT OF ASSUMED
LEVEL MONTHLY EARNINGS OF $200 AND RETIREMENT AGE 68

Valuation Basis	Single Male	Single Female	Married Male			
			No Children	1 Child	2 Children	3 Children

Age 20 at Entry

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
A	1.79%	2.45%	3.47%	3.83%	4.16%	4.34%
B	1.93	2.63	3.75	4.14	4.48	4.91
C	2.17	2.95	4.21	4.65	5.02	5.48
D	2.74	3.35	5.03	5.43	5.78	6.22
E	3.59	4.40	6.61	6.99	7.32	7.73
F	5.70	7.26	10.25	10.83	11.39	12.12

Age 30 at Entry in 1955

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
A	2.81	3.75	5.43	5.72	6.17	6.71
B	3.02	4.05	5.88	6.20	6.68	7.36
C	3.39	4.55	6.59	6.95	7.49	8.21
F	7.45	9.40	13.44	13.84	14.50	15.47

Age 40 at Entry in 1955

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
A	4.74	6.26	8.92	8.94	9.11	9.93
B	5.11	6.73	9.95	9.97	10.27	11.03
C	5.73	7.54	11.16	11.19	11.51	12.37
F	10.62	13.19	19.18	19.20	19.51	20.46

Age 50 at Entry in 1955

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
A	9.41	11.98	17.45	17.45	17.45	17.52
B	10.14	12.90	19.53	19.53	19.53	19.61
C	11.37	14.47	21.90	21.90	21.90	21.99
F	17.83	21.59	31.92	31.92	31.92	31.97

Age 60 at Entry in 1955

Valuation Basis	Single Male	Single Female	No Children	1 Child	2 Children	3 Children
B	30.16	36.44	55.50	55.50	55.50	55.50
C	33.83	40.86	62.25	62.25	62.25	62.25
F	45.28	52.68	78.57	78.57	78.57	78.57

Description of Valuation Bases:

    A 1950 Amendments, 1948 U.S. White Mortality, 3% interest.
    B 1952 Amendments, 1948 U.S. White Mortality, 3% interest.
    C 1954 Amendments, 1948 U.S. White Mortality, 3% interest.
    D 1954 Amendments, 1948 Generation Mortality, 3% interest.
    E 1954 Amendments, 1948 Generation Mortality, 2¼% interest.
    F 1954 Amendments, 1939-41 U.S. White Mortality, 0% interest.

Note: Cost of survivor benefits based on death of wage earner before re-
      tirement is included where applicable. See text for demographic
      assumptions.

LEVEL PREMIUM COSTS OF BENEFITS AS PERCENT OF ASSUMED
LEVEL MONTHLY EARNINGS OF $300 AND RETIREMENT AGE 68

Valuation Basis	Single Male	Single Female	Married Male			
			No Children	1 Child	2 Children	3 Children

Age 20 at Entry

A	1.48%	2.00%	2.85%	3.15%	3.39%	3.56%
B	1.57	2.13	3.04	3.36	3.63	3.95
C	1.80	2.46	3.51	3.88	4.19	4.57
D	2.28	2.79	4.20	4.53	4.83	5.19
E	2.99	3.67	5.52	5.84	6.12	6.46
F	4.74	6.05	8.55	9.04	9.50	10.12

Age 30 at Entry in 1955

A	2.29	3.09	4.44	4.68	5.03	5.50
B	2.44	3.28	4.75	5.01	5.40	5.91
C	2.81	3.79	5.49	5.79	6.24	6.84
F	6.20	7.83	11.21	11.54	12.10	12.91

Age 40 at Entry in 1955

A	3.90	5.11	7.33	7.33	7.48	8.13
B	4.14	5.44	8.06	8.08	8.32	8.93
C	4.77	6.29	9.31	9.33	9.61	10.32
F	8.84	10.99	16.00	16.01	16.28	17.07

Age 50 at Entry in 1955

A	7.73	9.82	14.32	14.32	14.32	14.39
B	8.21	10.44	15.81	15.81	15.81	15.88
C	9.46	12.06	18.27	18.27	18.27	18.35
F	14.84	17.99	26.62	26.62	26.62	26.67

Age 60 at Entry in 1955

B	24.42	29.49	44.93	44.93	44.93	44.93
C	28.19	34.08	51.96	51.96	51.96	51.96
F	37.72	43.92	65.56	65.56	65.56	65.56

Description of Valuation Bases:

A 1950 Amendments, 1948 U.S. White Mortality, 3% interest.
B 1952 Amendments, 1948 U.S. White Mortality, 3% interest.
C 1954 Amendments, 1948 U.S. White Mortality, 3% interest.
D 1954 Amendments, 1948 Generation Mortality, 3% interest.
E 1954 Amendments, 1948 Generation Mortality, $2\frac{1}{4}$% interest.
F 1954 Amendments, 1939-41 U.S. White Mortality, 0% interest.

Note: Cost of survivor benefits based on death of wage earner before re-
tirement is included where applicable. See text for demographic
assumptions.

Table 11h

LEVEL PREMIUM COSTS OF BENEFITS AS PERCENT OF ASSUMED
LEVEL MONTHLY EARNINGS OF $350 AND RETIREMENT AGE 68

Valuation Basis	Single Male	Single Female	Married Male			
			No Children	1 Child	2 Children	3 Children

Age 20 at Entry

A	1.48%	2.00%	2.85%	3.15%	3.39%	3.56%
B	1.57	2.13	3.04	3.36	3.63	3.95
C	1.70	2.31	3.31	3.66	3.93	4.28
D	2.15	2.63	3.96	4.28	4.54	4.89
E	2.81	3.46	5.20	5.50	5.74	6.05
F	4.46	5.70	8.06	8.52	8.93	9.07

Age 30 at Entry in 1955

A	2.29	3.09	4.44	4.68	5.03	5.50
B	2.44	3.28	4.75	5.01	5.40	5.91
C	2.65	3.57	5.18	5.46	5.86	6.40
F	5.83	7.37	10.56	10.87	11.37	12.10

Age 40 at Entry in 1955

A	3.90	5.11	7.33	7.33	7.48	8.13
B	4.14	5.44	8.06	8.08	8.32	8.93
C	4.49	5.92	8.78	8.80	9.06	9.71
F	8.32	10.35	15.08	15.09	15.34	16.06

Age 50 at Entry in 1955

A	7.73	9.82	14.32	14.32	14.32	14.39
B	8.21	10.44	15.81	15.81	15.81	15.88
C	8.91	11.36	17.22	17.22	17.22	17.29
F	13.98	16.95	25.11	25.11	25.11	25.15

Age 60 at Entry in 1955

B	24.42	29.49	44.93	44.93	44.93	44.93
C	26.56	32.13	49.00	49.00	49.00	49.00
F	35.54	41.39	61.83	61.83	61.83	61.83

Description of Valuation Bases:

    A   1950 Amendments, 1948 U.S. White Mortality, 3% interest.
    B   1952 Amendments, 1948 U.S. White Mortality, 3% interest.
    C   1954 Amendments, 1948 U.S. White Mortality, 3% interest.
    D   1954 Amendments, 1948 Generation Mortality, 3% interest.
    E   1954 Amendments, 1948 Generation Mortality, 2½% interest.
    F   1954 Amendments, 1939-41 U.S. White Mortality, 0% interest.

Note: Cost of survivor benefits based on death of wage earner before re-
      tirement is included where applicable. See text for demographic
      assumptions.

cost due to the assumption of improving mortality in the future. A comparison of bases E and D shows the relative increase in cost in assuming a lower interest rate in the future. In general, a decrease in mortality and a decrease in interest, either together or separately, will increase the cost. Valuation basis F shows the relative cost if no interest assumed.

Table 12 shows the level-premium cost as percent of payroll for an individual entering covered employment at age 20 and terminating covered employment at various ages. Separate figures are shown for a single male and for a married male with no children. As before, level earnings during the period of coverage is assumed. The valuation basis here is 1939-41 U.S. White mortality and 3% interest. Other valuation bases were not included since these costs are shown only to clarify the relative effect on costs if individuals are in covered employment for only a portion of the possible years between ages 20 and 65.

In general, the figures for continuous coverage from age 20 (indicated by the figures for withdrawal at 65) fall in between those for partial coverage. The reason for the relatively high cost for the short coverage cases is due to the effect of both the $30 minimum benefit and the bent formula applying. For instance, considering the single man with $100 earnings the level-premium decreases from almost 6% of payroll for withdrawal at age 30 (after the minimum period of 10 years required for permanent fully insured status) to less than 3½% for withdrawal at ages 40 and 45, then increases to about 4⅓% for withdrawal at age 65. For withdrawal ages 30, 35, and 40 the primary insurance amount available at age 65 is the $30 minimum. Since as the age at withdrawal increases there is a longer contribution period, but in these cases the PIA remains the same, the level-premium cost decreases. For withdrawal ages 50 and above the PIA increases proportionately (since for this earnings level all computations are in the first step of the benefit formula), and therefore the level-premium cost rises for higher withdrawal ages since the additional benefit amounts accruing have a higher cost due to the effect of interest and mortality (the man is nearer age 65 and so more likely to reach that age, while there is a shorter period for interest accumulation on the contributions).

In the cases of the single man with $200, $300 and $350 earnings the level-premium cost increases slightly from age 30 at withdrawal to a peak and then decreases until age 55 where there is then a slight increase in cost at age 60 which again decreases slightly at age 65. The initial increase in the level-premium reaches a peak at age 40 for the $200 case, and as the level earnings increases, the peak is reached earlier until in the $350 case the peak occurs at age 30, the initial withdrawal age. The decrease in cost from age 60

Table 12

LEVEL PREMIUM COST OF BENEFITS AS PERCENT OF ASSUMED LEVEL MONTHLY EARNINGS
FOR INDIVIDUAL ENTERING AT AGE 20 AND WITHDRAWING AT VARIOUS AGES,
ASSUMING RETIREMENT AT AGE 65

Age at Withdrawal From Covered Employment	Cost for Single Male, with Level Earnings of				Cost for Married Male with No Childr with Level Earnings of			
	$100	$200	$300	$350	$100	$200	$300	$350
30	5.90%	2.97%	2.72%	2.70%	10.59%	5.40%	4.63%	4.58%
35	4.25	2.93	2.87	2.61	7.65	4.98	4.78	4.36
40	3.44	3.14	2.60	2.39	6.23	5.25	4.34	4.00
45	3.48	3.11	2.48	2.29	6.03	5.16	4.13	3.83
50	3.64	3.00	2.44	2.27	6.13	4.97	4.05	3.78
55	3.88	2.97	2.44	2.28	6.48	4.89	4.03	3.78
60	4.18	2.98	2.48	2.33	6.90	4.87	4.06	3.83
65	4.36	2.85	2.37	2.23	7.13	4.66	3.89	3.66

Description of Valuation Bases:

1954 Amendments, 1939-41 U. S. White Mortality, 3% interest.

Note: Cost of survivor benefits based on death of wage earner before retiremer
is included where applicable. See text for demographic assumptions.

to 65 in these cases reflects the operation of the drop-out provision. By the operation of this drop-out a man who withdraws from covered employment at age 60 will be entitled to the same benefits as the man who withdraws at age 65; consequently there will be a slight decrease in the cost of benefits due to the fact that additional contribution income is available, with no corresponding increase in benefits.

Actuarial Studies Issued by The Division of the Actuary

* 1. Cost Estimates for Various Proposed Modifications of the Old-Age Benefits Under Title II -- November 1937.

* 2. A Comparison of Dependent and Productive Groups in Various Populations -- January 1938.

* 3. Comparison of a Proposed Revision of the Federal Old-Age Insurance Plan With the Present Plan -- February 1938.

* 4. Comparison of the Present Federal Old-Age Insurance Plan With Proposed Plan AC-1 -- April 1938.

* 5. Cost Estimates for Alternative Old-Age Insurance Plans AC-2 to AC-9 as Suggested by the Advisory Council -- April 1938.

* 6. Comparison of Proposed Plans AC-10 and AC-11 With the Present Federal Old-Age Insurance Plan and Plan AC-1 -- April 1938.

* 7. Estimated Composition of Beneficiaries Under Modified Title II Coverage as Set Forth in Various AC Plans -- May 1938.

* 8. An Analysis of Benefits and the Progress of the Old-Age Reserve Account Under Title II of the Social Security Act -- June 1938.

   9. An Analysis of the Costs of Duplicating the Benefits under Title II by the Use of Insurance Company Contracts -- July 1938.

* 9a. Insurance Company Costs for Duplicating Title II Benefits -- July 1938.

   10. Various Methods of Financing Old-Age Pension Plans -- September 1938.

*11. Cost Estimates for Porposed Plan AC-13 -- October 1938.

*11a. Revised Cost Estimates for Proposed Plan AC-13 -- December 1938.

*12. Revised Cost Estimates for Present Title II -- October 1938.

*13. Actuarial Cost Estimates for Suggested Plan -- April 1939.

   14. An Analysis of the Benefits and Costs Under Title II of the Social Security Act Amendments of 1939 -- December 1941.

   15. Comparison of Cost Estimates of the Committee on Economic Security With Actual Experience Data -- July 1940.

   16. Estimated Amount of Life Insurance Value in Force Under Survivors Benefits of the Old-Age and Survivors Insurance System -- January 1941.

17. New Cost Estimates for the OASI System, With the Assumption of a Static Future Wage Level -- December 1942.

18. Not Printed.

19. OASI 1943-44 Cost Studies -- May 1944.

20. Not Printed.

21. Analysis of Long-Range Cost Factors -- September 1946.

22. Cost Study for Complete Coverage Program of Old-Age, Survivors and Disability Insurance -- August 1945.

23. Long-Range Cost Estimates for OASI, 1946 -- April 1947.

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

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

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

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

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

29. Estimated Amount of Life Insurance in Force as Survivor Benefits Under OASI System -- April 1949.

30. Analysis of the Benefits Under Title II of the Social Security Act Amendments of 1950 -- February 1951.

31. Estimated Amount of Life Insurance in Force as Survivor Benefits Under Social Security Act Amendments of 1950 -- September 1951.

32. Analysis of 346 Group Annuities Underwritten in 1946-50 -- October 1952.

33. Illustrative U.S. Population Projections, 1952 -- November 1952.

34. Analysis of the Benefits Under the OASI Program as Amended in 1952--December 1952.

35. Present Values of OASI Benefits in Current Payment Status 1940-52 -- May 1953.

36. Long-Range Cost Estimates for OASI 1953 -- June 1953.

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

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

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.

* Out of Print.