

ESTIMATED AMOUNT OF LIFE INSURANCE IN FORCE AS SURVIVOR BENEFITS  
UNDER OLD-AGE AND SURVIVORS INSURANCE SYSTEM

By

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## FOREWORD

Although the old-age retirement benefit features of the Old-Age and Survivors Insurance program are predominate, nevertheless the survivor insurance elements present are of very great significance in the National economy. Shortly after the 1939 Act went into effect and provided such protection, Actuarial Study No. 16 presented an estimate of the equivalent amount of life insurance in force under these provisions, roughly \$50 billion. Subsequently, it has been known that this figure has been increasing due to the larger insured population, the higher level of wages, and the longer length of coverage, but it has not been until this time that an extensive study has been made. Actuarial Study No. 29 represents a thorough analysis of this subject, taking into account the vast amount of tabulated wage and claims data that are now available.

Although the equivalent amount of life insurance in force under the OASI program has many points of similarity with this concept under private insurance, there are certain important points of difference. Generally, the amount of insurance under a private contract is definitely known and is fixed or easily determinable. However, under the OASI program conditions for receipt of benefit are not based solely on life contingencies but rather include elements more readily under the control of the individual beneficiary, such as marriage or remarriage, employment, retirement, etc. Therefore, the insurance in force under the OASI program can be considered under several concepts and must necessarily be presented on a range basis.

The importance of the OASI system in the National economy is striking in view of the fact that the amount of life insurance in force under one concept is about \$80 billion, which is almost half as large as for all insurance companies combined and about twice as much as any single company has. It should be emphasized that this entire analysis relates to the present program. The proposals in the President's program which, on the whole, will roughly double the level of benefits and extend coverage to many categories of employment not now included quite obviously will have a very significant effect on the amount of life insurance in force under OASI. Under these proposals, it is quite likely that such insurance in force will reach the \$200 billion mark, or slightly more than the total amount of life insurance currently in force in insurance companies.

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ESTIMATED AMOUNT OF LIFE INSURANCE IN FORCE AS SURVIVOR BENEFITS  
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A. Introduction

The purpose of this study is to estimate the amount of life insurance in force under the survivor insurance provisions of the Old-Age and Survivors Insurance system of the Social Security Act.<sup>1/</sup> Such amount may then be compared with the amount of life insurance in force for private insurance companies and for soldiers and veterans in the Veterans Administration. Actuarial Study No. 16 was a similar study for 1940 on the basis of data available at that time.

The amount of life insurance in force at any time under the OASI program is the total for all insured workers of the lump-sum death payments and the present values of monthly survivor benefits available if death of such insured workers occurred at that time. Monthly benefits are payable to widows age 65 and over, to widows with children under age 18, to orphan children under age 18, and in certain cases to dependent parents age 65 and over; lump-sum death payments are available when there are no immediate monthly benefits.<sup>2/</sup> However, parent's benefits are of such minor importance relatively that they have not been considered in this study.

A specific example may serve to clarify the meaning of the amount of insurance by type of benefit. A man enters covered employment at age 22 at \$100 per month and remains so employed. Various marital and parental assumptions are made, as described hereafter. The amount of life insurance in force at different times is shown in Table 1 by type of benefit. Although the system is now only slightly more than 12 years old, the illustration covers a period of

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1/

Herein no account is taken of the 1946 amendment giving veterans survivor protection for a 3-year period after discharge, since this is of a temporary nature and since the cost is to be met from the General Treasury independent of the regular sources of income of the fund. Also ignored is the coordination of survivor benefits between this system and the Railroad Retirement program arising from the 1946 amendments to the latter; it is likely that the effect of these is largely counterbalancing.

2/

For more complete details as to beneficiary categories, amounts of benefits, etc., see Actuarial Study No. 14, "An Analysis of the Benefits and Costs under Title II of the Social Security Act Amendments of 1939," and also Murray, Angela J., "Social Security Act Amendments of 1946," Social Security Bulletin, September 1946.

Table 1

AMOUNT OF LIFE INSURANCE<sup>a/</sup> IN FORCE FOR HYPOTHETICAL FAMILY  
BY TYPE OF BENEFIT

<u>Attained Age</u>	<u>Years of Coverage</u>	<u>Lump Sum</u>	<u>Widow's Current</u>	<u>Child's</u>	<u>Widow's Old-Age</u>	<u>Total</u>
24	2	\$153	--	--	--	\$153
26	..	156	--	--	--	156
27	5	158	--	--	\$426	584
28	6	--	\$3328	\$2219	445	5992
29	7	--	3217	2144	464	5885
30	8	--	3392	4326	485	8203
32	10	--	3154	3995	528	7677
37	15	--	2430	2982	654	6066
42	20	--	1484	1669	811	3964
47	25	--	277	185	1009	1471
48	26	189	--	--	1054	1243
52	30	195	--	--	1261	1456
60	38	207	--	--	1851	2058
65 <sup>b/</sup>	43	214	--	--	2418	2632
69	43	214	--	--	3038	3252
70	43	--	--	--	3193	3193
75	43	--	--	--	2584	2584
80	43	--	--	--	2029	2029

a/ It is assumed that a man enters covered employment at \$100 per month and continues at this wage until retirement. At age 25 he marries a woman age 20 and children are born 3 and 5 years after date of marriage. Amount of life insurance is the present value at 3% interest of potential survivor benefits if wife and children survive the man. No mortality is assumed for beneficiaries, except for widow's old-age where U.S. White Female 1920-29 mortality is used. Remarriage of the widow, marriage of the children, employment of the widow or children, and the existence of dependent parents are not considered here.

b/ Assumed to retire at age 65.

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over 50 years, assuming throughout that the program remains unchanged. This artificial hypothesis is used merely to show the changing effects of varying marital and familial conditions at different stages in a typical worker's lifetime.

This typical worker becomes fully insured after  $1\frac{1}{2}$  years, but being single, the amount of insurance is only the lump-sum death payment of 6 times his primary benefit (which, under the constant wage assumption, increases each year only by the 1% increment). Beginning at age 26, 1 year after he marries, the amount of insurance is increased by the present value of the deferred widow's old-age benefit. When the man is age 28, the first child is born, and the amount of insurance increases greatly by virtue of the availability of the widow's current and child's monthly benefits, although no lump-sum is now payable because of these immediate monthly benefits.

Thereafter, as the child becomes older (and nearer age 18 so that the potential benefit period for widow's current and child's benefits becomes shorter), the total amount of insurance decreases despite the partially offsetting increase for the widow's old-age benefit on account of its shorter deferment and the increase due to the additional increments in the primary benefit. After the second child is born, when the man is age 30, the amount of insurance in force reaches a peak of over \$8,000 because of the additional child's benefit and the increase in the period for widow's current benefits.

From here on, the amount of insurance decreases until the younger child attains age 18, when the man is age 48. Thereafter, there is no further insurance risk for widow's current or child's benefits. There remains the protection for the widow's deferred benefit, and lump-sum death benefit (in greater amount than before) again becomes effective. The lump-sum benefit increases in amount until the wife is age 65, again dropping out (because the widow's old-age benefits would then be immediately payable). Each year elapsing after the wife has attained age 65 brings a decrease in the amount of insurance because of the shortening of her after-lifetime.

For persons with higher wages and more children the amount of insurance may be considerably higher than the above amounts, in some instances being as much as \$15,000.

B. Factors Involved

Since most benefits are payable in monthly instalments over long periods of time, the calculation of the equivalent amount of life insurance protection in force involves the interest rate. Just what interest rate should be assumed in discounting monthly benefits payable over periods which may extend for 50 or 60 years into the future is a difficult question.

Perhaps the most realistic answer is to use approximately the current yield rate under long-term Government bonds, or better still the approximate interest rate earned on the OASI trust fund. The latter is approximately 2-1/8% at present, so herein 2% will be adopted as one rate, while 3% is used as the basis of a second estimate to allow ready comparison with Actuarial Study No. 16. It is evident that the higher the assumed interest rate, the lower will be the discounted values and the lower the theoretical amount of insurance. Private insurance companies generally guarantee an interest rate varying from 2 to 3%, but currently the average rate earned (and payable to beneficiaries through participating provisions) is about 3%.

Calculation of the equivalent amount of insurance also involves mortality, which has been decreasing and may be expected to continue to decrease in the future. Since widow survivor benefits primarily involve white female lives, the 1939-41 U.S. White Female Life Table has been used where monthly benefits are payable to women. The potential amount of life insurance in force rises with assumed increasing longevity, since more benefit payments will be made if beneficiaries live longer. Thus, the 1939-41 mortality table will tend to understate the amount of life insurance in force since mortality has improved since then and can be expected to improve in the future; the use of mortality based on white lives will tend to correct for this to some extent.

Since the rights to widow's current and old-age benefits both terminate on remarriage, this contingency should be measured, if the results are to be meaningful. Our estimates assume remarriage rates of widows equal to 150% of those under the American Remarriage Table.<sup>3/</sup> This assumption has been made because remarriage rates have increased considerably in recent years, and recent OASI experience indicates that the aggregate remarriage rate of widows is approximately at the above level.

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<sup>3/</sup>

Roeber, Wm. F., and Marshall, Ralph M., "An American Remarriage Table," Proceedings, Casualty Actuarial Society, Vol. 19, 1932-33. The experience is based on workmen's compensation and covers the period 1921-29.



OASI benefits are payable only if the beneficiary is not earning as much as \$15 per month in covered employment. Many widow's current beneficiaries, as well as some aged widows and older orphan children engage in covered employment and thereby do not receive these benefits. In times of full employment like the present, a job with wages is usually much more attractive than the modest OASI benefits. Of those eligible to receive widow's current benefits, about 35-40% forego these benefits, mainly due to covered employment. Relatively few aged widows do not receive their benefits for this reason (about 1½%). Not many children fail to receive benefits because of employment; the proportion is very low before age 16, but reaches about 50% for age 17 and averages about 5% for all ages combined.

The effect of the work clause is variable and depends to a great degree on the business cycle. The high estimate does not take the work clause into consideration; on this basis, and in respect to this factor, the amount of life insurance is the maximum potential amount available if eligible survivor beneficiaries take full advantage of their benefit rights and do not engage in covered employment.

Female covered workers include, and in the future will include, a considerable number of widows of insured workers. Many of these widows will attain fully insured status and become entitled to primary benefits in their own right. If such primary benefit is greater than the widow's benefit, the latter is not payable; if less, only the excess widow's benefit will, in effect, be payable. Here again is an indeterminate area which does not readily yield to accurate estimation. The high estimate takes no account of such duplication, again representing for this element the maximum potential amount available.

The low estimate allows for reduction of the amount of insurance, both for the work clause and for possible "forfeiture" of widow's benefits because of primary benefits earned by widows in their own right. Reduction factors have been applied to the high estimates by type of benefit as a basis for the low estimates. These reduction factors are 15% for widow's old-age, 35% for widow's current, 5% for child's, and 1% for lump-sum benefits (to allow for the relatively few cases of payments to other than spouses where the funeral expenses reimbursable are less than 6 times the primary benefit). They are based on claim statistics for 1946, but in the case of the deferred widow's old-age benefit, an additional estimate was necessary as a measure of the proportion of widows who will have built up retirement benefits in their own right through their own covered earnings.

### C. Methodology

The amount of insurance in force on the life of an insured worker is the equivalent amount of all benefits that would be payable on account of his death. Lump-sum amounts are not discounted at interest because they are paid immediately at death. All monthly benefits are discounted at interest. This is most conveniently done by the use of annuity values (present value of \$1 per year). The aged widow's benefit annuity value, whether deferred to her age 65, of payable immediately if that age has been attained, takes into account both survivor and remarriage contingencies.

The widow's current benefit annuity value is similarly calculated but in addition terminates on attainment of age 18 of her youngest child (or death or marriage of the last child under 18). Upon death or remarriage of the widowed mother, the third eligible child may receive a full instead of half benefit, and the fourth child may be included for a full benefit (through the operation of the maximum benefit provision). The child's benefit annuity value is calculated solely in regard to termination upon attainment of age 18 and without contingency of death or marriage (both of which are relatively negligible). The years of dependency to age 18 of all families with children are based on the data of the Richmond Family Composition Study of 1935-36. In all instances, the effect of the 200% maximum provision as to number of children eligible for full benefits (i.e.,  $2\frac{1}{2}$  where the mother is a beneficiary, and 4 in other cases) was taken into account. Marital composition assumptions are derived from Census data.

One of the most difficult factors to estimate is the average primary benefit, due primarily to the unknown number of increment years. The average wage, the number of increment years, and the sex and age of the worker must be available to make the data reliable for this valuation. The Continuous Work History Sample, giving the cumulative wages by age, sex, and wage brackets has been used as a basis for estimating the average primary benefit by sex and 10-year age groups (see, for example, Table 19 of the 1946 Social Security Yearbook). From these and claims data for deceased worker awards, the average primary benefit has been estimated by 5-year age groups, sex, and marital status. Since the average primary benefit amount at this time varies little from age to age, the lack of accurate information as to the number of increment years does not entail errors of any consequence.

It should be recalled throughout that only survivor benefits are considered in determining the amount of life insurance in force; retirement benefits of workers and their wives do not belong in the category of life insurance that matures at death of a worker. However, the fully insured group includes those who are primary beneficiaries and on whose death a survivor benefit would become payable.

D. Analysis of Results

In considering this study, due allowance should be made for the limitations of the pertinent data. For instance, the assumption that family composition as to children parallels that of the Richmond Family Composition Study is subject to criticism, even though it is the best available.

Table 2 summarizes the estimated amount of life insurance in force for both low and high estimates by type of benefit on January 1, 1946 and January 1, 1947, each at 2% and 3% interest.

Using a 2% interest rate, under the high estimate the equivalent amount of insurance in force is over \$70 billion at the beginning of 1946 and almost \$75 billion a year later. The use of the 3% interest assumption decreases the amount of insurance by about 10%, more for the longer deferred widow's old-age benefits and less for the immediate child's and widow's current benefits. The low estimate is about 15% under the corresponding high estimate in all cases, with differences for type of benefit varying according to the assumptions previously made in deriving the low estimate from the high one. In all estimates using the same bases, the increase during 1946 amounts to about 5%.

The percentage distribution of insurance by type of benefit is approximately 20-25% for widow's old-age, 22-28% for widow's current, 42-50% for child's, and 6% for lump-sum death benefits.

Table 3 gives the estimated amount of life insurance in force by type of benefit, insured status, and sex for the high estimate only. Well over 90% of the total amount of insurance was for the fully insured category. The amount for men was over 95% of the total. During 1946 the aggregate amount of life insurance increased 5% under either interest rate assumption. For the fully insured the increase was about 6%, while for the currently insured only there was a decrease of about 7% due to the smaller number in this category (many of whom had passed over into fully insured status).

As would be expected, the distribution by type of benefit for the various sex and insured status groups reflects the eligibility conditions as well as familial characteristics of insured workers. For instance, widow's old-age benefits are available only in respect to fully insured men.

Tables 4a and 4b show the amount of insurance according to the high estimate by age of the worker at the beginning of 1946 and 1947, respectively. The peak occurs in the age group 35-39, indicating the highest dependency of survivors for that group of workers. This is due primarily to widow's current and child's (orphan's) benefits,

TABLE 2

SUMMARY OF ESTIMATED AMOUNT OF LIFE INSURANCE IN FORCE,  
 LOW AND HIGH ESTIMATES, 2% AND 3% INTEREST  
 (In billions of dollars)

Type of Benefit	High Estimate		Low Estimate	
	<u>2%</u>	<u>3%</u>	<u>2%</u>	<u>3%</u>
As of January 1, 1946				
Widow's Old-Age	16.8	12.9	14.3	11.0
Widow's Current	19.9	18.8	12.9	12.2
Child's	29.8	28.4	28.3	27.0
Lump-Sum	4.0	4.0	3.9	3.9
Total	70.5	64.1	59.4	54.1
As of January 1, 1947				
Widow's Old-Age	18.1	14.0	15.4	11.9
Widow's Current	20.7	19.6	13.5	12.8
Child's	31.0	29.6	29.5	28.1
Lump-Sum	4.2	4.2	4.1	4.1
Total	74.0	67.3	62.5	56.9

Note: See text for description of methodology, concepts, and assumptions.

The low estimate takes account of reductions in benefits due to the work clause and due to overlapping of survivor benefits with primary benefits; the high estimate does not consider these factors.

Table 3

ESTIMATED AMOUNT OF LIFE INSURANCE IN FORCE  
 BY INSURED STATUS AND SEX, HIGH ESTIMATE  
 (In billions of dollars)

<u>Type of Benefit</u>	<u>Fully Insured</u>			<u>Currently Insured Only</u>			<u>Grand Total</u>
	<u>Men</u>	<u>Women</u>	<u>Total</u>	<u>Men</u>	<u>Women</u>	<u>Total</u>	
As of January 1, 1946, 2% Interest							
Widow's Old-Age	16.8	--	16.8	--	--	--	16.8
Widow's Current	18.0	--	18.0	1.9	--	1.9	19.9
Child's	25.7	1.3	27.0	2.6	.2	2.8	29.8
Lump-Sum	2.2	1.3	3.5	.2	.3	.5	4.0
Total	62.8	2.6	65.4	4.7	.4	5.1	70.5
As of January 1, 1946, 3% Interest							
Widow's Old-Age	12.9	--	12.9	--	--	--	12.9
Widow's Current	17.0	--	17.0	1.8	--	1.8	18.8
Child's	24.5	1.2	25.7	2.5	.2	2.7	28.4
Lump-Sum	2.2	1.3	3.5	.2	.3	.5	4.0
Total	56.7	2.5	59.2	4.5	.4	4.9	64.1
As of January 1, 1947, 2% Interest							
Widow's Old-Age	18.1	--	18.1	--	--	--	18.1
Widow's Current	19.0	--	19.0	1.7	--	1.7	20.7
Child's	27.2	1.3	28.5	2.4	.2	2.6	31.0
Lump-Sum	2.4	1.4	3.7	.2	.2	.4	4.2
Total	66.6	2.7	69.3	4.3	.4	4.7	74.0
As of January 1, 1947, 3% Interest							
Widow's Old-Age	14.0	--	14.0	--	--	--	14.0
Widow's Current	18.0	--	18.0	1.6	--	1.6	19.6
Child's	25.9	1.2	27.1	2.3	.2	2.4	29.6
Lump-Sum	2.4	1.4	3.7	.2	.2	.4	4.2
Total	60.2	2.6	62.8	4.1	.4	4.5	67.3

Note: See text for description of methodology, concepts and assumptions.

Table 4a

ESTIMATED AMOUNT OF LIFE INSURANCE IN FORCE BY TYPE OF BENEFIT AND AGE,  
 JANUARY 1, 1946, HIGH ESTIMATE  
 (In billions of dollars)

Age of Insured Worker	Widow's Old-Age	Widow's Current	Child's Benefits			Lump-Sum		Grand Total
			Married Men	Non-Married Men	Women	Men	Women	
2% Interest								
Under 20	*	*	*	*	*	.2	.1	.4
20-24	.2	.8	1.4	*	.6	.4	.4	3.7
25-29	.5	2.2	3.9	*	.4	.3	.3	7.6
30-34	1.1	3.9	6.2	*	.2	.2	.2	11.9
35-39	1.7	4.5	6.3	.1	.2	.2	.2	13.2
40-44	2.2	3.8	5.0	.1	.1	.2	.1	11.5
45-49	2.4	2.4	2.9	.1	*	.2	.1	8.0
50-54	2.5	1.3	1.5	*	*	.2	.1	5.6
55-59	2.3	.6	.6	*	*	.2	.1	3.8
60-64	1.8	.2	.2	*	*	.2	*	2.4
65-69	1.3	.1	.1	*	*	.1	*	1.5
70-74	.7	*	*	*	*	*	*	.7
75 & Over	.2	*	*	*	*	*	*	.2
Total	16.8	19.9	28.0	.3	1.5	2.4	1.6	70.5
3% Interest								
Under 20	*	*	*	*	*	.2	.1	.4
20-24	.1	.7	1.3	*	.5	.4	.4	3.4
25-29	.3	2.1	3.6	*	.4	.3	.3	7.0
30-34	.7	3.6	5.9	*	.2	.2	.2	10.8
35-39	1.2	4.2	6.1	.1	.2	.2	.2	12.0
40-44	1.6	3.7	4.8	.1	.1	.2	.1	10.5
45-49	1.8	2.3	2.8	.1	*	.2	.1	7.3
50-54	1.9	1.3	1.4	*	*	.2	.1	5.0
55-59	1.8	.6	.6	*	*	.2	.1	3.4
60-64	1.5	.2	.2	*	*	.2	*	2.1
65-69	1.1	.1	.1	*	*	.1	*	1.4
70-74	.6	*	*	*	*	*	*	.7
75 & Over	.2	*	*	*	*	*	*	.2
Total	12.9	18.8	26.7	.3	1.4	2.4	1.6	64.1

\* Less than \$50 million.

Note: See text for description of methodology, concepts and assumptions.

Table 4b

ESTIMATED AMOUNT OF LIFE INSURANCE IN FORCE BY TYPE OF BENEFIT AND AGE,  
 JANUARY 1, 1947, HIGH ESTIMATE  
 (In billions of dollars)

Age of Insured Worker	Widow's Old-Age	Widow's Current	Child's Benefits			Lump-Sum		Grand Total
			Married Men	Non-Married Men	Women	Men	Women	
2% Interest								
Under 20	*	*	*	*	*	.2	.1	.4
20-24	.2	.9	1.5	*	.5	.4	.4	3.9
25-29	.6	2.4	4.2	*	.4	.3	.3	8.2
30-34	1.1	4.0	6.2	*	.2	.2	.2	12.0
35-39	1.8	4.6	6.6	.1	.2	.2	.2	13.7
40-44	2.3	4.0	5.1	.1	.1	.2	.2	11.9
45-49	2.5	2.5	3.0	.1	*	.2	.1	8.5
50-54	2.6	1.4	1.5	*	*	.2	.1	5.9
55-59	2.5	.7	.7	*	*	.2	.1	4.1
60-64	2.0	.2	.2	*	*	.2	*	2.6
65-69	1.4	.1	.1	*	*	.1	*	1.7
70-74	.8	*	*	*	*	*	*	.9
75 & Over	.3	*	*	*	*	*	*	.3
Total	18.1	20.7	29.2	.4	1.5	2.5	1.6	74.0
3% Interest								
Under 20	*	*	*	*	*	.2	.1	.4
20-24	.1	.8	1.4	*	.5	.4	.4	3.7
25-29	.4	2.3	3.9	*	.4	.3	.3	7.6
30-34	.7	3.7	5.9	*	.2	.2	.2	10.9
35-39	1.2	4.3	6.3	.1	.2	.2	.2	12.4
40-44	1.7	3.8	4.9	.1	.1	.2	.2	10.9
45-49	1.9	2.4	2.9	.1	*	.2	.1	7.7
50-54	2.0	1.4	1.5	*	*	.2	.1	5.2
55-59	2.0	.6	.6	*	*	.2	.1	3.6
60-64	1.7	.2	.2	*	*	.2	*	2.4
65-69	1.3	.1	.1	*	*	.1	*	1.5
70-74	.7	*	*	*	*	*	*	.8
75 & Over	.2	*	*	*	*	*	*	.3
Total	14.0	19.6	27.8	.3	1.4	2.5	1.6	67.3

\* Less than \$50 million.

Note: See text for description of methodology, concepts and assumptions.

which both attain their maximum protection at this point. The wives of these workers are largely in the 30-34 age group, and the children are young, with a substantial period of potential benefits ahead. The highest equivalent sum of insurance for widow's old-age benefits occurs in the 50-54 married male worker group, whose wives average perhaps 5 years younger. This late peak is due to the shorter benefit deferment period prior to age 65, which increases the present value of the benefit. The insurance for lump-sum death payments shows a definite dip in the middle age group, due largely to a higher proportion of fathers in ages 30-49 than in the age groups immediately preceding or following.

Table 5 brings together the amount of insurance by sex and age according to the high estimate. By statute, the bulk of insurance is in respect to men; women have only the nominal amount represented by the lump-sum, except principally for the relatively small number of widowed and divorced women with children. The peak for women comes in the age group 20-24, where also occurs the maximum number of insured female workers. Each older age group has fewer insured and correspondingly a lower amount of insurance in force. For men the peak of insurance lies in age group 35-39, while the peak in number of insured comes in the next younger age group.

Table 6 gives the average amounts of insurance for men and women by age for the high estimate. As would be anticipated, the average amount for men, which reaches \$3,500 in the 30's, is far in excess of the average for women, which generally varies between \$100 and \$300. The average amount of insurance in such heterogeneous groups as married, married with children, and non-married hides the variation in each group. For instance, the insurance may vary anywhere from \$60 to \$15,000, the latter for a high-salaried married man with middle-aged wife and 3 or more young children.

Table 7 compares the results under this study with those of Actuarial Study No. 16 for 1940. This comparison was possible only on the 3% interest rate basis. The high estimate under this study is comparable with the low estimate of the previous study, in that neither allows for the effect of the work clause or the overlapping of survivor benefits with primary benefits.

In 1940 no sample study was available as a basis for estimating insured status, so insured workers for the low estimate were determined on the basis of the amount of credited wages in 1937. The low estimate was increased by 25% to allow for a possibly much greater number of insured than were indicated by the wage credit data. However, as data available later indicated, the resulting 24 million insured individuals in the low estimate was almost identical with the actual figure of 23.8 million (Table 16, Social Security Yearbook, 1946).



Table 5

ESTIMATED AMOUNT OF LIFE INSURANCE IN FORCE BY SEX AND AGE,  
HIGH ESTIMATE  
(In billions of dollars)

Age of Insured Worker	January 1, 1946		January 1, 1947	
	Men	Women	Men	Women
2% Interest				
Under 20	.2	.1	.2	.1
20-24	2.7	1.0	3.0	.9
25-29	6.9	.7	7.5	.7
30-34	11.5	.4	11.6	.4
35-39	12.8	.4	13.3	.4
40-44	11.3	.2	11.7	.2
45-49	7.9	.1	8.3	.2
50-54	5.5	.1	5.8	.1
55-59	3.8	.1	4.1	.1
60-64	2.4	*	2.6	*
65-69	1.5	*	1.7	*
70-74	.7	*	.8	*
75 & Over	.2	*	.3	*
Total	67.4	3.1	70.9	3.1
3% Interest				
Under 20	.2	.1	.2	.1
20-24	2.5	.9	2.8	.9
24-29	6.3	.6	6.9	.7
30-34	10.5	.4	10.6	.4
35-39	11.6	.4	12.1	.3
40-44	10.3	.2	10.7	.2
45-49	7.1	.1	7.5	.2
50-54	4.9	.1	5.1	.1
55-59	3.3	.1	3.6	.1
60-64	2.1	*	2.3	*
65-69	1.4	*	1.5	*
70-74	.7	*	.8	*
75 & Over	.2	*	.3	*
Total	61.2	3.0	64.3	3.0

\* Less than \$50 million.

Note: See text for description of methodology, concepts and assumptions.

Table 6

**ESTIMATED AVERAGE AMOUNT OF LIFE INSURANCE  
PER INSURED WORKER BY SEX AND AGE,  
HIGH ESTIMATE**

Age of Insured Worker	January 1, 1946		January 1, 1947	
	Men	Women	Men	Women
2% Interest				
Under 20	\$197	\$133	\$198	\$126
20-24	970	321	979	303
25-29	2144	267	2173	278
30-34	3274	211	3331	210
35-39	3746	240	3855	236
40-44	3648	179	3735	186
45-49	3041	150	3128	161
50-54	2481	127	2574	134
55-59	2043	111	2155	117
60-64	1796	113	1903	113
65-69	1823	116	1913	115
70-74	1677	111	1724	116
75 & over	1237	143	1266	---
Total	2528	225	2571	223
3% Interest				
Under 20	193	133	194	126
20-24	895	309	903	291
25-29	1967	259	1993	270
30-34	2979	207	3030	206
35-39	3402	237	3501	232
40-44	3331	176	3409	184
45-49	2747	148	2823	160
50-54	2207	127	2287	134
55-59	1800	111	1898	117
60-64	1597	113	1690	113
65-69	1648	116	1730	115
70-74	1544	111	1586	116
75 & over	1156	143	1187	---
Total	2293	220	2330	217

Note: See text for description of methodology, concepts and assumptions. The average amount per insured worker is the average under all types of benefit for fully and currently insured combined.

Table 7

COMPARISON OF SUMMARY RESULTS OF THIS STUDY WITH  
ACTUARIAL STUDY NO. 16

<u>Source</u>	<u>Men</u>	<u>Women</u>	<u>Total</u>
Number Insured (in millions)			
Actuarial Study No. 16 for 1940	18.2	5.7	24.0
This Study for 1/1/46	26.7	13.6	40.2
This Study for 1/1/47	27.6	14.0	41.6
Total Amount of Insurance (in billions)			
Actuarial Study No. 16 for 1940	\$41.4	\$1.0	\$42.4
This Study for 1/1/46	61.2	3.0	64.1
This Study for 1/1/47	64.3	3.0	67.3
Average Amount of Insurance			
Actuarial Study No. 16 for 1940	\$2270	\$172	\$1768
This Study for 1/1/46	2293	220	1594
This Study for 1/1/47	2330	217	1621

Note: All above figures are on 3% interest basis. Also Actuarial Study No. 16 figures are low estimate, while figures of this study are high estimate (see text for explanation as to comparability).

It will be noted from Table 7 that the average amount of insurance on both men and women increased slightly from the 1940 figure, but strangely the average for men and women combined has been reduced somewhat. This is due to the increase in the relative proportion of insured women, who, however, add but little to the aggregate insurance in force and thus tend to reduce the average.

A further reconciliation of the two studies cannot well be made unless based on the same mortality and remarriage assumptions. The earlier study did not take the remarriage factor into consideration, but the tendency to increase the insurance thereby was partly offset by the lower longevity in the earlier mortality table used.

E. Comparison with Other Insurance

The amount of insurance under the Old-Age and Survivors Insurance system may be compared with the amount of insurance under the military and veterans insurance programs and in private insurance companies. For the OASI insurance the figures are those of the high estimate on the basis of 2% interest.

AMOUNT OF LIFE INSURANCE IN FORCE  
(In billions of dollars)

<u>Date</u>	<u>OASI</u>	<u>Military and Veterans<sup>a/</sup></u>	<u>Insurance Companies<sup>b/</sup></u>
January 1, 1946	\$70	\$98	\$152
January 1, 1947	74	37	170
January 1, 1948	77 <sup>c/</sup>	39	188
January 1, 1949	80 <sup>c/</sup>	44 <sup>d/</sup>	205 <sup>d/</sup>

a/ U.S. Government Life Insurance (World War 1) and National Service Life Insurance (World War 2).

b/ Ordinary, group and industrial insurance but exclusive of about \$8 billion of fraternal and assessment insurance and \$½ billion of savings bank life insurance. Does not include death benefits under annuities.

c/ Crude estimate, based on estimate of total fully insured and total currently insured only, with no breakdowns by age, sex, or benefit amounts available.

d/ Preliminary, rough estimates made in this office on basis of most recent available data.

In addition to the above amounts of insurance, there are also those arising from the survivor benefits recently added to the Civil Service Retirement system (effective in February 1948) and to the Railroad Retirement system (effective in January 1947). As of the beginning of 1949, these may be estimated crudely at about \$3-4 billion for Railroad Retirement and \$7-10 billion for Civil Service Retirement.

At the beginning of 1946 the equivalent insurance in force under the OASI program was 46% as large as the insurance in force

in insurance companies; the corresponding figures for the next three years are 44%, 41%, and 39%, respectively. Life insurance in private companies has been increasing rapidly in the postwar period, mainly as a partial counterbalancing of the depreciated purchasing power of the dollar. The OASI benefit scale has not as yet been increased to take account of this situation.