ACTUARIAL STUDY NO. 22

Cost Study For Complete Coverage Program of
Old-Age, Survivors and Disability Insurance

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Office of the Actuary
Social Security Board

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FOREWORD

Actuarial Study No. 22, prepared by Mr. D. C. Bronson, Assistant
Actuary, represents the sixth step in a series of studies concerned with
potential costs under Title II of the Social Security Act of 1935, the
Amendments of 1939, and various possible extensions of Old-Age and Survi-
vors Insurance, both as to coverage and benefit. Mr. Harry Mehlman, of
the Office of the Actuary, rendered valuable assistance to Mr. Bronson in
many of the long-range portions of the study. Mr. Mehlman, together with
Mr. George Immerwahr, Chief of the Actuarial Section of the Analysis Divi-
sion, Bureau of Old-Age and Survivors Insurance, prepared the figures for
the "commencing" year 1947, and cooperated in the merging of the earlier
year costs into the later year costs.

This study considers the general removal of exclusions from the
coverage under OASI. The major remaining exclusion is the barring from
protection of the aged non-labor force and most of the paternal orphans
and their widowed mothers. The elimination of the other exclusions radi-
cally changes the effect of the "in-and-out" movement discussed herein
and in previous actuarial studies. This is possibly the major factor
changing the general slope of the cost curves over the next half century.

This report gives more comprehensive attention than the previous
ones to the wide potential effect of over-all changes in wage rates. It
considers different minimum retirement ages of 60 and 65 for men and women.
It brings out the difference in the sequence of changes, so that removing
excluded categories of protection first, and then changing the formula,
produces a different sequence than changing the formula first and then re-
moving the exclusions.

The maintenance of a certain comparability with previous studies
has seemed desirable. For this reason the mortality trends outlined in
the National Resources Planning Board Report of 1943 have not been used.
There has been no attempt to show the specific periods when booms or de-
pressions, or the very unusual effects of the war, would make themselves
felt. The continued use of at least two cost illustrations rather far
apart as to amount of benefits has seemed even wiser since the early re-
sults of the unusual conditions of the war years have fitted so well into
the patterns previously outlined.

Because of the war and postwar period and the potential effects
thereof upon the experience of the system over the next five or ten years,
both the short-range results and the long-range results must be recognized
as illustrations based upon two sets of underlying assumptions, in order
to form a range of results within which actual experience may likely, but
not necessarily, fall.

Actuarial Study No. 22 which follows herein, is closely allied in
usability with the already published Study No. 19 dealing with the present
Act. They are companion pieces in consideration of costs in respect to
many of the potential changes in the present Act. Also, another Actuarial
Study, No. 21, is in process of preparation. It will deal with individual
cost factors without attempting to show their specific or their aggregate
results in determining OASI costs. To some extent, Actuarial Study No. 22
has assumed the availability of Actuarial Study No. 21.

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W. R. Williamson
Actuarial Consultant
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ACTUARIAL STUDY NO. 22

Old-Age, Survivors and Disability Insurance
For Complete Coverage Program

I. INTRODUCTION

The old-age and survivors insurance program of the Social Secu-
rity Act covers only part of the employment activities of the country.
Major exclusions are the fields of agriculture, domestic service, non-
profit organizations, governmental employees, railroad employees and
the self-employed. Roughly, in normal times, almost as much employ-
ment is excluded from coverage as is included under it. The obvious
gaps, penalties and anomalies resulting from these exclusions, in
conjunction with the freedom of movement in this country interchange-
ably between types of employment, have all been treated at length in
various literature concerning the limitations, operations, and devel-
opment of the act. The purpose of this Actuarial Study is to throw
some light on what the costs of a complete coverage program might be
if such extended coverage were made effective in 1946, for example,
and if the following modifications were made at the same time: lib-
eralizations in the benefit formula, changes in the method of deter-
mining average wages, the lowering of women's eligibility to age 60,
the paying of lump-sum benefits in all cases of death, and the intro-
duction of benefits for prolonged disability. Amendments of this
nature, as well as the extended coverage, have been discussed frequently
in the last few years by persons interested in social security develop-
ment. The cost figures, however, for such extended coverage, and
illustrative of other amendments, have not been available for these
discussions. This Study seeks to fill to some extent such omissions.

The question is then as to an indication of the number of bene-
ficiaries and costs under extended coverage to 100 percent of the
workers of the country (except unpaid family workers) together with
the addition of benefits for prolonged disability and certain modifi-
cations of the present law as indicated by the formula of benefits and
conditions for receipt thereof described in the specifications below.

II. SPECIFICATIONS OF ASSUMED PLAN

The main specifications (those most important for long-range
figures) for the plan upon which study is based are as follows:

(1) The inclusion of all workers considered to fall within the
usual definition of the country's labor force.

(2) Provision for disability benefits equal to the primary benefit with the usual allowances to children, to wives 60 and over and to wives under 60 with children; disability benefit terminates at death, recovery or attainment of age 65 for men and 60 for women.

(3) Reduction in qualifying age in respect to all old-age benefits for females from 65 to 60.

(4) A lump-sum benefit payable on all insured cases of death.

(5) Benefit formulas;

    a. Basic benefit--40 percent of the first $75 of average monthly wage plus 10 percent on that part of average wages in excess of $75.

    b. Increment--1 percent of the basic benefit for each year of at least $200 wages.

    c. Minimum benefit--primary benefit $20; minimum family benefit $10.

    d. Maximum benefits--elimination of double primary as a maximum.

(6) Average monthly wage--total recorded taxable wages divided by 12 times the number of years in which at least $200 in wages were earned.

(7) Insured status (the following are bases which have been discussed; it would not make significant differences in long-range costs if similar bases for a. and b. were used, such as basing it on calendar quarters as in the present act):

    a. Fully insured--1 year of coverage (i.e., at least $200 taxable earnings) for each 2 elapsed years from 1936 (or age 21) up to death, disability or age 65 (60 for females); minimum 3 years of coverage; 10 years of coverage for permanent fully insured status-- fully insured status is sufficient condition for all benefits except disability. (It is assumed that at the inception of a complete coverage program some method of transition would be adopted to ease the fully insured requirements for both new and old entrants in respect to elapsed time from 1936 up to such inception date.)

b. Currently insured--2 years of coverage out of the last 4 calendar years including the year of claim-- current insured status is sufficient condition for mother's and children's benefits only.

c. For disability--both fully and currently insured status required for eligibility.

(8) Work clause:

Benefits not payable in month with significant taxable wages (except amount not important for long-range costs).

(9) Refiguring present benefits:

Benefits already commenced at inception of a new program would be refigured and paid thereafter on the more liberal basis.

ILLUSTRATIVE MONTHLY PRIMARY BENEFITS BY SPECIFICATIONS ABOVE

For Comparability Benefits by Present Law Are Also Shown

(These figures assume no penalty for noncoverage prior to "age at entry")

Age at Entry (Males)	Primary Insurance Benefits by Average Monthly Wage Assuming Continuous Employment					
	$50 Wage		$75 Wage		$100 Wage	
	Present	Assumed	Present	Assumed	Present	Assumed
25	$28.00	$28.00	$31.50	$42.00	$35.00	$45.50
35	26.00	26.00	29.25	·39.00	32.50	42.25
45	24.00	24.00	27.00	36.00	30.00	39.00
55	22.00	22.00	24.75	33.00	27.50	35.75
Base*	20.00	20.00	22.50	30.00	25.00	32.50

	$150 Wage		$250 Wage		Percent of Primary Benefit Payable to Dependents (Same for Present & Assumed)
	Present	Assumed	Present	Assumed	
25	$42.00	$52.50	$56.00	$66.50	100% Retired Worker
35	39.00	48.75	52.00	61.75	50% Child, Wife, Parent
45	36.00	45.00	48.00	57.00	75% Widow
55	33.00	41.25	44.00	52.25	For assumed disability plan,
Base*	30.00	37.50	40.00	47.50	percentages consistent with

*Basic benefit prior to increase for increment (1%) years.

above, but wife without child to be 60 or over.

COMPARATIVE SPECIFICATIONS

The main part of this report covers what can be called Actuarial Study No. 22 proper, the specifications of which are given in Section II. The report also contains discussion and tables relating to Actuarial Studies No. 18 and 19. In order to have a ready reference to the main specifications of these three Studies the comparative summary is given in the following table.

COMPARATIVE SPECIFICATIONS

Item	Study No. 19 - (Present Act)	Study No. 18	Study No. 22
(1) Coverage............	Excludes agriculture, domestics, non-profit, railroad, governmental, self-employed and certain others	All gainful workers	All gainful workers
(2) Retirement Ages (Minimum).........	f and m (65)	f (60) and m (65)	f (60) and m (65)
(3) Benefit formula.....	40% 1st $50 average monthly wage, 10% next $200; 1% increment; minimum $10	Same as No. 19	40% 1st $75 average monthly wage, 10% on balance; 1% increment; minimum $20
(4) Average Monthly Wage Computation.......	On total elapsed time since 1936 or age 22.	Same as No. 19 (but on "new start" basis)	Based only on periods in covered employment.
(5) Beneficiaries			
(i) Primary........	P.I.B. 1/	Same as No. 19	Same as No. 19
(ii) Wife...........	1/2 P.I.B. at 65	Same at 60	Same at 60
(iii) Aged Widow.....	3/4 P.I.B. at 65	Same at 60	Same at 60
(iv) Aged Parent 2/.	1/2 P.I.B. at 65	Same at f 60	Same at f 60
(v) Child 3/.......	1/2 P.I.B. to age 18	Same	Same
(vi) Widow Current (Mother)...	3/4 P.I.B. until child 18	Same	Same
(vii) Lump-sum.......	6 months P.I.B., limited deaths	Same, all deaths	Same, all deaths
(viii) Disability, if added.......	P.I.B.	P.I.B.	P.I.B.
Wife (mother)	1/2 P.I.B.	1/2 P.I.B.	1/2 P.I.B.
Child 3/.....	1/2 P.I.B.	1/2 P.I.B.	1/2 P.I.B.
Wife (not mother)......	1/2 P.I.B. at 65	1/2 P.I.B. at 60	1/2 P.I.B. at 60
(6) Insured Status......	Required Coverage:	Required Coverage:	Required Coverage:
(i) Fully insured..	1/2 elapsed quarters	Same	1/2 elapsed years
(ii) Currently "...	6 out of 12 running quarters	as	2 out of 4 running years
(iii) Permanently "..	40 quarters	No. 19	10 years
(iv) Disability.....	If added - fully and currently status required		Fully and currently insured status required
(7) Work Clause.........	Yes	Yes	Yes

1/ Means primary insurance benefit.
2/ If dependent and no other survivors benefit payable.
3/ For child subject to certain maximum.

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III. INTRODUCTION TO TABLES

As in earlier studies it is imperative to adopt two sets of assumptions: one to bring out low (not lowest) benefit cost illustrations, the other for high (not highest) benefit cost illustrations. In some of the component parts the "low cost" is actually higher than the "high cost," as, for example, benefits to widows with children where, for the "high cost," both the inherent assumption of fewer births and that of lighter mortality overcome the assumption of larger average benefit, to result in actually less dollar cost than the "low assumptions," and even smaller when measured as a percentage of pay roll. Another example is that of disability which is explained with more detail later.

The figures for calendar year 1947 were prepared by the acturial staff of the Bureau of Old-Age and Survivors Insurance. They reflect the actual experience of the insurance program through the year 1944 projected on the assumption of the continuation of the war through 1946 followed by the various postwar economic assumptions which are outlined in detail in the Fifth Annual Report of the Board of Trustees of the Old-Age and Survivors Insurance Trust Fund. It follows, therefore, that more than generalized illustrations, these 1947 figures are intended to be estimates reflecting the accumulation of beneficiaries already on the rolls or potential beneficiaries in insured status, together with the peculiar employment conditions which have arisen from the war. The figures for the calendar year 1950, on the other hand, and to some extent those for 1955, represent gradations between the 1947 estimates and the illustrations for later years.

IV. TABLES OF BASIC ASSUMPTIONS AND RESULTING POPULATION COMPOSITIONS

Table A

This table gives the 9 basic or major sets of assumptions underlying the computations for the long-range cost illustrations. For the early period shown the assumptions covering the short-range are somewhat different and are tempered by the more immediate war and postwar prospects involving the timing of the end of the war and the reconversion possibilities. Also, throughout the Study numerous other assumptions and adjustment factors have been necessary in the development; these are too technical and nonsusceptible to tabular display to warrant inclusion here.

The hypothesis of complete coverage for wage earners and the self-employed practically removes the so-called "in-and-out" movement which is present to a high degree in a limited coverage program such as the present act. Under such complete coverage, there is, of

TABLE A.--BASIC ASSUMPTIONS

A. MORTALITY AND NATALITY

Low: Constant mortality rates by age, at pre-war population experience; birth rates substantially constant at pre-war levels.

High: Declining mortality rates on National Resources Committee medium forecasts; birth rates at declining trend according to NRC medium assumptions.

B. MARITAL AND PARENTIAL STATUS

Derived by consideration of 1940 Census data, Richmond Family Composition Studies and Old-Age and Survivors Insurance claim statistics. Remarriage rates by Workmen's Compensation select experience.

C. WAGES (ASSUMED CONSTANT WAGES FOR A WORK-YEAR)

	MEN	WOMEN
Low	$1,500	$900
High	2,000	1,200

D. PERIODS OF NON-WAGES

In accordance with the specifications, it is assumed that average wages are not decreased by periods of non-wage earning, whether through permanent termination from the labor force, through periods of non-employment, sickness or prolonged disability, irrespective of whether such periods are compensable for Social Security benefits or not.

E. EMPLOYMENT ASSUMPTION BELOW RETIREMENT AGE

	Men (by age)	Women (by age)
Low....	1940 Labor Force (excluding those "seeking work") as percentage of total 1940 male population; applied to future populations.	1940 Labor Force (excluding those "seeking work") as percentage of total 1940 female population; applied to future populations.
High...	1930 Census "gainful workers" as percentage of total 1930 male population; applied to future populations.	Gross 1940 Labor Force percentages plus assumed secular increases in such percentages; applied to future populations.

F. RETIREMENT ASSUMPTIONS

After age 65 for men and age 60 for women, the labor force assumptions of E. above are adjusted as follows:

Low: No adjustment; 1940 Labor Force percentages of aged population used as index of retirement.

High: Accelerated retirement index assumed by arbitrary reductions in aged labor force percentages.

G. DISABILITY ELIGIBILITY

Since both "fully" and "currently" insured status is required by specifications, assumed eligibility for benefits taken as number currently employed according to assumption E. above.

H. RATES OF DISABILITY INCIDENCE AND TERMINATION

Low Disability:

For males double, and for females quadruple, Hunter's incidence table; for both sexes Hunter's Select Disability Termination rates used without adjustment.

High Disability:

Medium insurance company incidence rates, viz. 150%, class 3 (6 month's clause), double for females; 1925-30 German Social Insurance Termination Rates.

The low and high sets of disability assumptions are applied in each case to the "low" general assumptions and the "high" general assumptions to indicate the very intangible quality of disability cost estimates. Under combination of the "high" disability and the "high" general assumptions, required adjustments were made such that the high employment assumed plus the resulting disabilities did not anamolously exceed the total male population for any age group.

I. COST OF ADMINISTRATION

Throughout the Study no assumptions for cost of administration are attempted; the quality of the "range" between "low" and "high" results, carries a tolerance for refinements of this nature.

Illustrative Figures for Assumptions A, E and F

Mortality Under Assumption A – Comparative Annual Rates of Mortality
per 1,000 Lives at Ages Indicated

	Low Assumptions		High Assumptions			
	Committee on Economic Security (Constant by Age)		National Resources Committee* (Decreasing Mortality)			
AGE	For all years		1945		2000 (1980)	
	Male	Female	Male	Female	Male	Female
25	4.09	4.16	2.40	2.26	1.64	1.75
35	5.61	5.10	3.39	2.91	2.44	2.14
45	9.26	7.52	6.77	5.28	4.41	3.59
55	17.38	14.33	15.48	11.45	9.59	8.00
65	39.22	32.83	35.28	26.37	23.50	18.77
70	56.95	50.37	52.56	41.99	40.57	33.11
75	87.59	78.84	80.90	68.99	69.19	· 59.29
80	128.65	119.36	123.18	110.69	121.69	110.69
85	185.15	177.69	178.03	165.69	178.03	165.69
90	260.99	258.27	250.97	228.99	250.97	228.99

* On their medium assumptions. While shown to the second decimal place, these figures are in fact only approximate results interpolated from the Committee's 5-year time interval--5-year age interval mortality functions for the native white population.

Assumptions E and F – Employment Assumptions
Percentages of Total Population**
Assumed to be in Covered Employment Each Year

Age Group	Low Assumptions		High Assumptions		
	Males	Females	Males	Females (1950)	Females (1980)
15-19	31%	16%	48%	22%	25%
20-24	76	40	90	46	55
25-29	86	33	97	36	45
30-34	82	29	98	32	40
35-39	89	26	98	29	35
40-44	88	24	98	26	30
45-49	86	22	97	23	25
50-54	84	19	96	21	23
55-59	80	17	93	18	20
60-64	72	13	87	13	12
65-69	54	9	35	8	7
70-74	36	5	20	3	2
75+	17	2	10	1	–

** Population for future years are obtained, with early year adjustments, through the use of mortality rates (as illustrated in upper section) plus assumed birth rates; the percentages of this table are applied to the projected populations to derive the covered employment of the various future years used in the Study.

course, movement between nonemployment, unemployment and covered
employment. However, much nonemployment is due to disability and
much unemployment is within the areas of unemployment compensation.
These considerations, together with the limitation of average wage
computation to periods with covered wages (specifications No. (6),
page 2) which has the effect of not diluting the average wage for
benefit purposes by periods out of covered employment, minimize the
effect on dollar costs of such movements (particularly if for the
compensably sick or unemployed worker a method could be devised to
have his OASDI rights "frozen" at the point where they stand at the
inception of such sickness or unemployment). It is true that the
effect on costs is appreciable in the case of women who permanently
leave the labor force by reasons other than disability or unemploy-
ment, inasmuch as insured status in their own right will be lost
altogether in a significant proportion of cases, but probably not in
as large a proportion as is the case in the present limited coverage
program.

Another point which should be mentioned in respect to the
extension of coverage is the fact that it can have some effect on
the assumed constant average wages of item C of Table A. These aver-
ages have been set down to constitute a range between what might be
a "low" long-range average wage and what might be a "high" wage.
These averages roughly correspond with figures which develop for four-
quarter workers under OASI before the war and those which have devel-
oped during the high employment years of the war. Also, they corre-
spond to similar averages used as the basis for Actuarial Study No. 19,
that is, the present limited coverage program. In bringing in other
categories of workers, it must be borne in mind that they can have
some effect on the average wage developing under the program; agri-
culture and domestics probably would have a tendency to lower the
average; railroad workers, governmental workers and nonprofit employ-
ees might have a tendency to raise the average. The net effect of
the self-employed is of doubtful result. In other words, which way
the average would be influenced is not entirely clear, although some
students of the problem feel it would be, on balance, a reduced
average. In any event, the fact that the Study utilizes the tolerance
which a range of assumptions allows, should give room for some effect
on average wages from the extension of coverage without invalidating
the illustrative value of long-range cost figures.

A word is perhaps needed in respect to assumption E. of
Table A as to why the 1930 Census proportions were used for the men
under the "High." The high assumptions, generally, aim at predicating
a not unreasonable situation, such that larger dollar costs will
emerge. One of the components for this is a continued high employ-
ment condition. The 1930 Census showed much larger percentages of
the population registering themselves as gainful workers than did

the 1940 Census. Consequently, the 1930 situation was assumed to prevail for the high set of assumptions as to male lives; the reverse was true as to census dates for female lives due probably to the increasing trend in employment of women.

It is believed that the rest of the 9 assumptions should be fairly self-explanatory as they are set down in Table A.

Table B

In this table an illustrative breakdown is given of the population for future years between what are often considered to be the economically productive ages, 20 to 64 in the case of men, and 20 to 59 in the case of women. The figures given are rounded and do not always check with the more detailed figures of later tables. The figures by columns show the extent to which a complete coverage program would embrace the whole population in these age groups. It is interesting to note the stability of the total population in these age groups regardless of which assumptions as to mortality and natality (Item A of Table A) are adopted; this may be seen in columns (2) and (6) of Table B.

Another point of interest in Table B is in the column (4) where the disability cases under the lower employment conditions of the "LOW" are considerably more numerous than under the "HIGH" portion of the table. As will be explained later, disability costs can vary tremendously, one of the factors being the availability of employment.

A significant point to be gained from viewing Table B lies in columns (5) and (10). Whereas under the present act considerable proportions of the male population (see Study No. 19, page 12, Item I) are not able to secure an insured status, under the complete coverage program the proportion would be very much narrowed down and even under the low only some 5 to 10 percent would not have direct or indirect benefit rights. In the case of women the change in coverage would not be so significant percentagewise but a considerable increase in number covered would take place for them as well and, of course, a major portion of the women in column (10) (i.e., those not insured in their own right) would nevertheless be embraced by the program through the protection gained on account of the direct coverage of their husbands.

Table C

Table B covered the so-called productive age groups 20 to 64 in the case of men and 20 to 59 in the case of women. Table C displays illustrative figures of the composition with reference to benefit situation for individuals above 64 and 59, respectively. Under the "low" assumptions, in columns (2) and (7), the number of the aged population continues to grow until near the end of the period shown. The

Table B.--Composition of population under age 65 (for males) and 60 (for females)

[Thousands of persons]

Calendar year	Male population 20-64	Insured males 20-64		Noninsured males 20-64 2/	Female population 20-59	Females 20-59 insured in own right			Noninsured females 20-59 4/
		Labor force	Illustrative number disabled 1/			Labor force	Ex-labor force 3/	Illustrative number disabled 1/	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Low									
1947........	41,900	35,200	500	6,200	39,800	10,900	60	190	28,650
1950........	42,600	35,700	750	6,150	40,400	11,000	160	350	28,890
1955........	44,100	37,000	1,050	6,050	40,900	11,000	520	510	28,870
1960........	44,600	37,500	1,280	5,820	41,400	11,000	810	640	28,950
1965........	45,200	37,800	1,420	5,980	41,600	11,000	980	740	28,880
1970........	45,600	38,200	1,530	5,870	41,500	10,900	1,120	800	28,680
1975........	45,700	38,100	1,620	5,980	41,100	10,800	1,050	850	28,400
1980........	45,600	38,100	1,680	5,820	40,700	10,800	960	860	28,080
1990........	44,600	37,200	1,580	5,820	39,800	10,600	910	830	27,460
2000........	44,100	36,800	1,580	5,720	39,400	10,400	980	830	27,190
High									
1947........	41,900	39,900	290	1,710	39,800	12,100	70	200	27,430
1950........	42,500	40,500	350	1,650	40,300	12,500	170	360	27,270
1955........	43,900	41,800	470	1,630	40,800	12,900	770	530	26,600
1960........	44,600	42,600	580	1,420	41,400	13,200	1,440	660	26,100
1965........	45,600	43,400	670	1,530	42,100	13,500	1,840	760	26,000
1970........	46,400	44,100	750	1,550	41,700	13,800	2,260	840	24,800
1975........	46,300	43,800	790	1,710	41,300	13,850	2,560	890	24,000
1980........	46,300	43,500	820	1,980	40,700	13,900	2,790	910	23,100
1990........	44,600	42,300	830	1,470	38,800	13,500	2,740	860	21,700
2000........	43,400	41,200	810	1,390	37,900	12,900	2,640	860	21,500

1/ Compensable beneficiaries: taken, perforce, as middle of range between low and high disability assumptions; it should be viewed on large "plus or minus" basis.

2/ In a system covering the complete labor force, this column comprises (i) youth in their 20's not yet in labor force; (ii) indigent non-workers; (iii) financially independent nonworkers; (iv) childhood disabilities preventing work; (v) disabilities of adults prior to protection of program; (vi) uninsured fringes of the labor force.

3/ This number is illustrative of those who worked long enough in covered employment to obtain an insured status but now have withdrawn from the normal labor force; thus status would be of varying durations, among the older women it would be in many cases a permanent status.

4/ Never worked, or insured status expired; contains most of the women who are protected as survivors in case of their husbands' deaths.

Table C.--Composition of population age 65 and over for males, age 60 for females

[Thousands of persons]

	Males age 65 and over					Females age 60 and over, rough distribution of protection status						
Year	Total popula-tion	Insured still at work 1/	Number of primary benefi-ciaries	Number not pro-tected 2/	Percent not protected (5) ÷ (2)	Total popula-tion	Insured still at work 1/	Number of primary benefi-ciaries 3/	Wife, widow, parent benefici-aries 3/	Contingently protected through wage earners 4/	Number not pro-tected 5/	Percent not protected (12) ÷ (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Low assumptions												
1947....	5,100	1,900	700	2,500	49	8,000	650	300	750	1,700	4,600	58
1950....	5,400	2,050	1,200	2,150	40	8,500	700	500	1,400	1,750	4,150	49
1955....	6,000	2,300	2,100	1,600	27	9,600	800	750	2,750	1,950	3,350	35
1960....	6,600	2,500	2,900	1,200	18	10,400	850	900	4,100	2,100	2,450	24
1965....	6,800	2,550	3,350	900	13	11,100	900	1,050	5,000	2,050	2,100	19
1970....	7,100	2,600	3,650	850	12	12,000	950	1,200	5,850	2,050	1,950	16
1975....	7,400	2,800	3,900	700	10	12,800	1,000	1,300	6,550	2,150	1,800	14
1980....	7,900	2,950	4,200	750	10	13,400	1,050	1,400	7,200	2,250	1,500	11
1990....	8,800	3,300	4,750	750	9	14,100	1,050	1,550	8,100	2,250	1,150	8
2000....	8,600	3,100	4,800	700	8	13,500	1,000	1,500	8,000	2,150	850	6
High assumptions												
1947....	5,100	2,200	1,100	1,800	35	8,000	550	400	1,150	1,600	4,300	54
1950....	5,500	1,850	2,200	1,450	26	8,800	600	650	2,150	1,500	3,900	44
1955....	6,200	1,750	3,550	900	15	10,100	700	900	3,750	1,650	3,100	31
1960....	7,100	1,650	4,900	550	8	11,300	750	1,100	5,350	1,800	2,300	20
1965....	7,700	1,700	5,600	400	5	12,500	800	1,300	6,550	1,800	2,050	16
1970....	8,400	1,850	6,250	300	4	13,900	850	1,500	7,750	1,900	1,900	14
1975....	9,300	2,050	7,000	250	3	15,300	950	1,700	8,850	2,000	1,800	12
1980....	10,400	2,300	7,800	300	3	16,600	1,000	1,900	9,950	2,150	1,600	10
1990....	12,200	2,500	9,400	300	2	18,000	1,000	2,250	12,100	1,900	750	4
2000....	12,500	2,400	9,900	200	2	17,500	900	2,300	12,600	1,400	300	2

1/ For the "low assumptions," the aged labor force was taken at approximately the level given by the 1940 census; for the "high assumptions" a smaller percentage at work results because of higher rates of retirement assumed.

2/ Individuals who are not insured by program, either through prior disability, already aged, never worked, etc.

3/ Female primaries of column (9) do not include women insured in their own right but eligible to wives and widows benefits of column (10).

4/ These are women 60 and over, not insured in their own right but who have insured husbands under 65, or at work above that age; these women will become beneficiaries as wives or widows.

5/ Women, neither beneficiaries, insured nor contingently protected; because of disability, already aged, never worked, husband not insured, etc.

increase for both sexes combined from 1947 to the year 2000 is about 70 percent. The aged individuals who continue to work as shown in columns (3) and (8), remain at significant proportions of the age-group population, particularly in the case of men. The number of primary beneficiaries, columns (4) and (9), continue upward throughout the period with an increase from the year 1947 of about seven fold. It will be noted that this increase is ten times larger than was the 70 percent increase in the case of the total population. This is due to a steadily higher proportion of individuals reaching the eligibility retirement ages with acquired insured status under the program and hence who may, upon stopping work, obtain the primary benefit provided by the program. This same feature in the case of men is shown in reverse in columns (5) and (6), where the steady decline in the number not covered by the program appears; it drops from 50 percent of the male population not protected in 1947 down to only 8 percent in the year 2000. In the case of females not protected by the system (see columns (12) and (13)) it is first necessary to account for those women protected by the program other than in their own right; that is, either as wife or widow beneficiaries currently in receipt of benefit, or contingently so protected (column (11)). The resulting measure of those still unprotected, as given in column (13) drops from over 55 percent in the year 1947 to 6 percent in the year 2000.

Similar considerations can be seen in Table C under the "high" assumptions but interesting differences between these results and those of the "low" assumptions may be noted. The aged population, because of the light mortality assumed, grows faster and to a much higher total than under the "low" figures. In columns (3) and (8) those still at work are absolutely and relatively fewer than was the case in the "low"; the explanation for which, since a higher population exists, lies in Assumption F. of Table A; that is, the accelerated retirement which is possible if the old-age benefits are to be widely utilized through people dropping out of the labor force at a faster rate than has been the case in the past; such assumption, of course, helps to produce the high cost figures illustrated herein. The increase in the aged population (both sexes) between 1947 and the year 2000 is about 130 percent and the corresponding increase in the number of primary beneficiaries is about 700 percent. It is seen that the aged population increase is substantially higher than was the situation under the "low" assumptions, and the primary beneficiary increase is a little higher than for the "low." In respect to those excluded from the protection, columns (6) and (13) indicate that a significantly greater proportion of the population is embraced by the "high" assumption, under its predication of rather full employment conditions, than was the case under the "low." In fact by the year 2000 only about 2 percent of the total aged population are not covered directly or indirectly under the protection of the program.

In studying Table C, it should be constantly borne in mind that the women shown there are age 60 and over, whereas the men are age 65 and over.

Table D

Tables B. and C. furnished indications by future years, of the composition of the population according to "protection" categories for broad age groups; that is, Table B. carried totals for the so-called "productive" ages 20 to 64 (20 to 59 for women) and Table C. is similar for the older ages, 65 and over (60 and over for women). In order to give some insight, or have available for reference, a somewhat finer breakdown by age for the years 1955 and 2000 has been made, with the total figures of Table B. and C. for those years allocated into 5-year age groups; Table D.I. shows these figures for the "low" assumptions and Table D. II. for the "high" assumptions.

In examining these tables, it must be borne in mind that in addition to their illustrative character the internal figures are some-times inconsistent with each other. This is due both to the difficulty of allocation in some of the smaller categories and to the rounding of figures in the main categories. For example, the balancing items of columns (7) and (13), in Table D.I., indicate more fluctuation by age group than would likely be the case. This "forcing" of the figures to balance out, however, does not impair the character of the table in its purpose as representing an illustrative breakdown by age.

I. "Low Assumptions"

Columns (2), (3), (8), and (9) are self-explanatory. They give the total population and total labor force by age groups. Here, we have the combination of adopting the non-improving mortality assumption of A, Table A., with the less available work opportunities of Specification E, of Table A. (Cf. corresponding columns of Table D. II.)

In columns (4) and (10), the number shown above the first sub-total lines are illustrations of disability cases in force (see foot-note 1/, Table B.). The figures below the first subtotal line are primary old-age beneficiaries, so classified even though some of them were disability beneficiaries before they reached age 65 (60 for females).

For male lives (upper section of table) there are no benefits or contingent protection by virtue of someone else's wage records, except at the older ages where the asterisks give recognition to the fact that benefits or protection of relatively small degree exist for certain male parents of covered workers. For females (lower section) there are, of course, beneficiaries and those contingently protected, existing at all age groups.

Columns (7) and (13) give the balancing number in the population who would have no claim directly or indirectly on the system. They are

Table D.--Illustrative composition of population 20 and over by age, for 1955 and year 2000 [1]

[Thousands of persons]

I. Low assumptions

Age group	Population	Labor force	Primary benefits: disabled or old-age	Wife, widow, or parent benefits	Contingently protected through wage earned [2]	Nonwork, noninsured, nonbenefit	Population	Labor force	Primary benefits: disabled or old-age	Wife, widow, or parent benefits	Contingently protected through wage earned [2]	Nonwork, noninsured, nonbenefit
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Males in 1955							**Males in 2000**					
20-24..........	5,500	4,200	25	---	---	1,275	5,200	3,900	25	---	---	1,275
25-29..........	5,600	4,800	55	---	---	745	5,200	4,500	55	---	---	645
30-34..........	6,200	5,400	70	---	---	730	5,400	4,800	80	---	---	520
35-39..........	5,800	5,100	90	---	---	610	5,300	4,700	110	---	---	490
40-44..........	5,300	4,700	100	---	---	500	5,300	4,600	150	---	---	550
45-49..........	4,700	4,100	115	---	---	485	4,900	4,300	190	---	---	410
50-54..........	4,100	3,400	145	---	---	555	4,700	3,900	250	---	---	550
55-59..........	3,600	2,900	195	---	---	505	4,300	3,400	325	---	---	575
60-64..........	3,300	2,400	255	---	---	645	3,800	2,700	395	---	---	705
Subtotal...	44,100	37,000	1,050	---	---	5,050	44,100	36,800	1,580	---	---	5,720
65-69..........	2,500	1,400	800	*	*	300	3,100	1,700	1,100	*	*	300
70-74..........	1,800	600	800	*	*	400	2,500	900	1,300	*	*	300
75+............	1,700	300	500	*	*	900	3,000	500	2,400	*	*	100
Subtotal...	6,000	2,300	2,100	*	*	1,600	8,600	3,100	4,800	*	*	700
Total 20+..	50,100	39,300	3,150	*	*	7,650	52,700	39,900	6,380	*	*	6,420
Females in 1955							**Females in 2000**					
20-24..........	5,300	2,100	30	15	1,700	1,455	5,100	2,000	35	20	1,500	1,545
25-29..........	5,500	1,800	55	35	2,900	710	5,100	1,700	60	50	2,700	590
30-34..........	6,000	1,800	60	70	3,300	770	5,200	1,500	75	95	2,900	630
35-39..........	5,700	1,500	60	105	3,200	835	5,100	1,400	95	145	2,900	560
40-44..........	5,400	1,300	65	130	3,100	805	5,100	1,200	115	175	3,100	510
45-49..........	5,000	1,100	65	140	2,700	995	4,800	1,100	130	195	2,800	575
50-54..........	4,300	800	75	130	2,300	995	4,700	900	155	200	2,800	645
55-59..........	3,700	600	100	105	1,900	995	4,300	700	185	175	2,700	540
Subtotal...	40,900	11,000	510	730	21,100	7,560	39,400	10,500	850	1,055	21,400	5,595
60-64..........	3,400	450	165	800	1,100	885	3,900	500	490	1,500	1,050	360
65-69..........	2,600	230	200	950	560	660	3,300	300	340	1,900	650	110
70-74..........	1,800	90	190	600	230	690	2,700	130	300	1,800	370	100
75+............	1,800	30	195	400	60	1,115	3,600	70	370	2,800	80	280
Subtotal...	9,600	800	750	2,750	1,950	3,350	13,500	1,000	1,500	8,000	2,150	850
Total 20+..	50,500	11,800	1,260	3,480	23,050	10,910	52,900	11,500	2,350	9,055	23,550	6,445

[1] Footnotes given for tables B and C are in general pertinent to this table also.
[2] Many of the female lives in this column are also insured in their own right; throughout the study female primary beneficiaries are taken as those who are not eligible (or at least, not yet entitled) to another form of benefit.
* Pro forma indication of male parents benefit, relatively negligible in number.

Table D.—Illustrative composition of population 20 and over by age, for 1955 and year 2000 1/

[Thousands of persons]

II. High assumptions

Age group	Population	Labor force	Primary benefits: disabled or old-age	Wife, widow, or parent benefits	Contingently protected through wage earner 2/	Nonwork, noninsured, nonbenefit	Population	Labor force	Primary benefits: disabled or old-age	Wife, widow, or parent benefits	Contingently protected through wage earner 2/	Nonwork, noninsured, nonbenefit
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Males in 1955						Males in 2000					
20-24..........	5,300	4,800	5	---	---	430	4,900	4,400	5	---	---	420
25-29..........	5,800	5,700	10	---	---	150	4,900	4,700	10	---	---	130
30-34..........	6,000	5,900	10	---	---	100	4,900	4,800	10	---	---	90
35-39..........	5,700	5,500	10	---	---	100	4,900	4,800	15	---	---	90
40-44..........	5,300	5,100	15	---	---	100	4,900	4,800	20	---	---	90
45-49..........	4,700	4,600	30	---	---	150	5,000	4,900	40	---	---	130
50-54..........	4,100	3,900	50	---	---	150	4,900	4,700	90	---	---	130
55-59..........	3,600	3,400	125	---	---	200	4,700	4,300	220	---	---	150
60-64..........	3,400	2,900	215	---	---	250	4,300	3,800	400	---	---	160
Subtotal...	43,900	41,800	470	---	---	1,630	43,400	41,200	810	---	---	1,390
65-69..........	2,600	900	1,500	*	*	200	3,800	1,200	2,500	*	*	100
70-74..........	1,800	350	1,300	*	*	250	3,500	550	2,900	*	*	50
75+...........	1,800	500	750	*	*	550	5,200	650	4,500	*	*	50
Subtotal...	6,200	1,750	3,550	*	*	900	12,500	2,400	9,900	*	*	200
Total 20+..	50,100	43,550	4,020	*	*	2,530	55,900	43,600	10,710	*	*	1,590
	Females in 1955						Females in 2000					
20-24..........	5,200	2,600	40	5	1,900	655	4,700	2,500	40	5	1,500	655
25-29..........	5,700	2,200	50	10	3,100	340	4,800	2,200	60	10	2,200	330
30-34..........	5,900	2,100	60	25	3,500	215	4,700	1,900	70	20	2,500	210
35-39..........	5,600	1,700	60	40	3,400	400	4,700	1,600	90	40	2,700	200
40-44..........	5,400	1,400	65	65	3,400	470	4,800	1,400	110	70	3,100	190
45-49..........	5,000	1,200	70	90	2,900	740	4,800	1,200	135	105	3,200	160
50-54..........	4,300	1,000	80	95	2,500	625	4,800	1,100	165	130	3,200	180
55-59..........	3,800	700	105	90	2,200	705	4,600	1,000	190	135	3,100	200
Subtotal...	40,900	12,900	530	420	22,900	4,150	37,900	12,900	860	515	21,500	2,125
60-64..........	3,500	450	200	1,050	1,100	700	4,300	550	955	2,150	570	75
65-69..........	2,600	200	235	1,250	300	615	3,800	300	425	2,650	360	65
70-74..........	1,900	50	215	850	150	635	3,600	50	410	2,900	180	60
75+...........	2,100	---	250	600	100	1,150	5,800	---	510	4,900	290	100
Subtotal...	10,100	700	900	3,750	1,650	3,100	17,500	900	2,300	12,600	1,400	300
Total 20+..	51,000	13,600	1,430	4,170	24,550	7,250	55,400	13,800	3,160	13,115	22,900	2,425

1/ Footnotes given for tables B and C are in general pertinent to this table also.
2/ Many of the female lives in this column are also insured in their own right; throughout the study female primary beneficiaries are taken as those who are not eligible (or at least, not yet entitled) to another form of benefit.
3/ Column (7) by age groups is not the exact balancing item of the previous columns because, due to rounding for the population and labor force columns it would have resulted in nonillustrative irregularity.
* Pro forma indication of male parents benefit, relatively negligible in number.

nonworking individuals, and/or individuals who may once have worked but whose insured status has expired, and persons who are not eligible for benefits by virtue of the wage records of any other workers. It will be noted that between 1955 and the year 2000, a small decrease in this category takes place for the age groups below age 65 (60 for women). However, for the older age groups, whereas in 1955 a considerable number of them are still alive who never could have been under the program in their own right, by the year 2000 this characteristic has disappeared and the comparative number completely unprotected has dropped considerably. Percentagewise the resume of the nonprotected category as presented by Table D.I. would be as follows:

PERCENTAGE OF POPULATION NOT PROTECTED BY SYSTEM

Low Assumptions

Age Group	Males		Females		Total	
	1955	2000	1955	2000	1955	2000
Productive 1/	14%	13%	19%	14%	16%	14%
Old-Age 2/	27	8	35	6	32	7
Total	15	12	22	12	18	12

1/ 20-64 for men, 20-59 for women.

2/ 65 and over for men, 60 and over for women.

Thus under the "low" assumptions, the protection of a program covering all gainful workers would not change radically over the years in respect to younger individuals but the relatively large number of aged individuals unprotected in the early years of the system would gradually reduce in number and proportion to much lower figures for the future.

II. "High Assumptions"

Comments similar to those given above for Table D. I. apply in respect to Table D.II. The principle differences between the results of the low assumptions in Table D.I. and those of the high assumptions of D.II. lie in the different populations emerging and the different relationships thereto of the assumed labor force; that is, in Table D.II., columns (2) and (8), a substantially larger number of persons last through to old-age due to the assumed improving mortality, although the

number in the so-called productive ages does not vary much between the two tables because of the lower birth rate assumptions of Table D.II. (See Specification A of Table A.) As for columns (3) and (9) (under Specification E of Table A), these figures during the so-called productive ages are a considerably higher proportion of the respective age group populations than was the case under Table D.I. For the older ages, however, due to the assumed higher rate of retirement or separation from the labor force, the figures for those still working are relatively smaller in comparison with the population than was the case under Table D.I.

As is explained later on in connection with the disability tables, the number of male lives representing disabilities in force is lower under the "high assumptions," columns (4) and (10), upper section, than for the corresponding columns of Table D.I. due to the very high level of the assumed labor force under the "high assumptions"; that is, there isn't "room" for large numbers of idle "disabled" lives. For females, the disabilities of the "high assumptions" are somewhat in excess of those under the "low assumptions." However, all disability figures are subject to a very large degree of uncertainty.

It will be noted in columns (7), and in (13), that the residual balance of the population not protected in some manner by the system, is significantly smaller than under the "low assumptions" of Table D.I. In discussing this latter table in the preceding section of this report, a table of percentages of population not protected by the plan was given. The corresponding set of percentages for the "high assumptions" is outlined below:

PERCENTAGE OF POPULATION NOT PROTECTED BY SYSTEM

High Assumptions

Age Group	Males 1955	Males 2000	Females 1955	Females 2000	Total 1955	Total 2000
Productive 1/	4%	3%	10%	6%	7%	4%
Old-Age 2/	14	2	31	2	25	2
Total	5	3	14	4	10	3.5

1/
  20-64 for men, 20-69 for women.

2/
  65 and over for men, 60 and over for women.

Here we find the same characteristics as obtained under the previous table except that, as explained above, the percentages throughout are lower. Thus by the year 2000 in the enlarged type of plan under study, the productive population would be protected to the extent of some 96 percent, the aged population to the extent of some 98 percent and the total population, age 20 and over, about $96\frac{1}{2}$ percent. In other words, given an economy of high employment opportunity, all but a small fraction of the population would ultimately become protected in one way or another by a program of old age, survivors and invalidity insurance embracing those engaged in all types of gainful work.

It cannot conclusively be stated that in the ultimate situation the differential between the percentages not protected by the system which have been shown in the last two tables in the text would actually obtain. Even under less high employment conditions than are assumed to prevail for the "high" assumptions, there could be sufficient "in and out" of covered employment to bring the figures for the "low" assumption down towards those shown for the "high."

V. TABLES OF BENEFICIARIES, AVERAGE BENEFITS AND COST ILLUSTRATIONS

The preceding Section IV covered the basic assumptions and the composition of the population under such assumptions in respect to beneficiaries, insured, noninsured, etc., categories. The present Section V will deal with the breakdown of beneficiaries and benefits according to type of benefit, all shown for quinquennial or decennial years to the end of the century. The general order of the tables and discussion which follow are first, to treat the number of beneficiaries; next, the average benefits to which they are entitled; thirdly, the benefit outgo in dollars, followed by the benefit outgo expressed as a percentage of pay roll and a final table of the section, dealing with a four-point range in respect to disability benefits.

Table I--Number of Beneficiaries

This table develops illustrative numbers of beneficiaries under the various categories of benefit type for the two sets of assumptions, "low" and "high." As shown in columns (7) and (13) of Tables D.I. and D.II., a complete coverage program such as predicated herein would leave a relatively small proportion of the population not protected in one way or another by the program. Consequently, the enumerated beneficiaries, particularly with the passing of time, constitute very major proportions of the indicated type of individuals in the population. For instance, considering the high figures, the 9,900,000 male primary beneficiaries in the year 2000 constitute practically all of the aged

Table I
(f 60) O.A.S.I. Number of Beneficiaries* - Thousands of Persons

| Calendar Year | Monthly Old-Age Beneficiaries | | | | | | Monthly Survivor Beneficiaries | | | Total O.A.S.I. Monthly Beneficiaries | Lump-Sum Deaths |
| | Primary | | Wives 2/ | Widows 2/ | Parents | Total Old-Age | Childs 3/ | Widows Current 4/ | Total Survivors 3/ 4/ | | |
	Male	Female 1/									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Low											
1947....	732	282	399	279	10	1,702	588	172	760	2,462	335
1950....	1,205	545	600	760	30	3,140	1,210	275	1,485	4,625	508
1955....	2,060	740	1,015	1,675	47	5,537	1,925	390	2,315	7,852	745
1960....	2,915	915	1,425	2,595	65	7,915	2,200	470	2,670	10,585	945
1965....	3,350	1,065	1,640	3,305	68	9,428	2,350	510	2,860	12,288	1,030
1970....	3,660	1,200	1,780	3,995	70	10,705	2,400	530	2,930	13,635	1,115
1975....	3,920	1,305	1,905	4,570	70	11,770	2,435	530	2,965	14,735	1,180
1980....	4,205	1,415	2,045	5,060	70	12,795	2,445	525	2,970	15,765	1,235
1990....	4,780	1,535	2,325	5,690	70	14,400	2,450	525	2,975	17,375	1,380
2000....	4,800	1,480	2,325	5,590	70	14,265	2,455	525	2,980	17,245	1,350
High											
1947....	1,127	410	600	279	10	2,426	588	172	760	3,186	335
1950....	2,200	655	1,150	950	33	4,988	1,210	244	1,454	6,442	540
1955....	3,600	895	1,850	1,850	62	8,257	1,800	320	2,120	10,377	790
1960....	4,900	1,115	2,500	2,750	91	11,356	1,935	380	2,315	13,671	930
1965....	5,600	1,320	2,900	3,550	107	13,477	1,930	370	2,300	15,777	1,015
1970....	6,300	1,480	3,300	4,350	120	15,550	1,920	360	2,280	17,830	1,100
1975....	7,000	1,690	3,700	5,000	135	17,525	1,900	340	2,240	19,765	1,190
1980....	7,800	1,910	4,200	5,600	145	19,655	1,860	320	2,180	21,835	1,280
1990....	9,400	2,230	5,100	6,850	160	23,740	1,880	320	2,200	25,940	1,570
2000....	9,900	2,290	5,400	7,050	170	24,810	1,900	320	2,220	27,030	1,670

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 60.
* Same as for Study #18 (revised); however, due to substantially higher benefits the beneficiaries under the conditions of #22 could be significantly greater than for #18; no account has been taken in the figures for this intangible factor.

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males at that time who are not still in the labor force, and the summation of the female lives for primary, wife and widow beneficiaries, totaling 14,740,000 in the year 2000, constitute a very major percentage of the total aged females in that year.

The separation of beneficiaries by type of benefit requires choice as to alternate methods of presenting the enumeration. Inasmuch as certain aged wives and widows will have an insured status in their own right, and would consequently be eligible to file as primary beneficiaries, the practical result would be for them to choose the larger type of benefit. For example, a widow eligible to three-fourths of her deceased husband's primary benefit would compare that sum with the 100 percent benefit based on her own wage record representing earnings either before, during or following her marriage and/or widowhood. By reason of the fact that the specifications (see Section II (6)) call for the computation of average wage excluding periods of noncovered work, it is quite possible that, in a substantial number of cases, her own benefit will exceed 75 percent of her husband's benefit (under the act as at present, this would be much less frequent). A similar example could be set up in the case of a female eligible to wife's benefits through her retired husband. Another situation which would be common, where women become eligible at age 60 and men at 65, lies in the wives, aged 60 and over, of husbands who will not have yet reached age 65, or who continue to work beyond age 65; in such cases where the wife has a right to a benefit based on her own previously covered wages, she would claim such benefit as a temporary measure until the time when she would become entitled to her regular wife's benefit (if that exceeds her own) upon the retirement of her husband.

It has not been practical to make a determination in respect to the number of women and benefit which would be clearly illustrative of the above alternates in the enumeration of beneficiaries (possibly 15 to 20 percent of the wives and a like proportion of the widows would be eligible to benefits in their own right). Consequently, the method followed has been to count as female primary beneficiaries only those women who are not at the same time eligible for another type of benefit. The proportion eligible for more than one type of benefit increases over the years. This means that wives and widows even though they have a benefit right of their own are counted as wives and widows, respectively, except in respect to the wives who are not yet eligible to wife benefits as explained above; such cases are thrown temporarily in the female primary beneficiaries. Thus the composition of the female primary beneficiary category is basically that of single, divorced and separated women; although in the earlier years a substantial number of women who (i) became widows prior to 1940 or (ii) prior to their husbands' becoming insured are therefore not eligible to widow's benefits and become primary beneficiaries under the program; the number of such widows would tend to be a closed group and the

proportion thereof would decrease over the years. On the other hand, the number of temporary female primary beneficiaries increases as explained above.

The number of child beneficiaries who are either full or paternal orphans does not leave many of this type excluded from the field of monthly benefits after the complete coverage plan has run a decade or more. For widow's current beneficiaries, however, it will be noted that they appear to be relatively few in comparison with the number of children when we compare column (9) with column (8). Since it takes at least one child to qualify a widow for benefits below age 60, this comparison can well raise the question as to where are the mothers of the orphan children of column (8). Obviously the widows of column (9) cannot average the four or five children each which would result by dividing column (8) by column (9). The answer lies in two parts. First, many of the widows with children, after the death of the father, gradually enter some form of employment and hence will become wage earners in their own right and potential old-age beneficiaries in their own right; the fact that they enter employment coverage of the program does not deny to their children the childs benefit. Secondly, many of these widowed mothers will remarry, thereby forfeiting their own benefit and coming under the protection area of the benefits developing on the wage record of their new husband. Such remarriage, however, does not deny the original benefits as to the children of the deceased father. Inasmuch as both of these factors of suspension or temination of widow's current benefits have been taken into account in the computation, we find the number of such widows appearing small in comparison with the number of such children shown. There are two other smaller factors bearing on the same relationship, namely, that children of primaries are included and that the number of children shown have not been modified for the fact that in large families a maximum benefit provision of the program may cause a few children to be ineligible for benefits. The method of showing children means that in such cases, benefits would be prorated among them rather than paid in full to some and not at all to others.

Table II--Average Benefits

The figures of this table are the average annual benefits determined under the Specifications, Section II hereof, and the various basic assumptions of Table A. Account has been taken in each type of benefit of the "average wage" and "increment year" composition of each group of new entrants to the "in force" rolls over the years shown.

It will be noted that the relationship of the average male primary benefit to wife and survivor average benefits do not agree exactly with the actual percentage relationship of the plan. For example, the average wifes benefit of column (4) is not exactly 50 percent of the average primary benefit of column (2), since column (2) includes non-married primary beneficiaries among whom the average wage, and hence

Table II
(f 60) Average Annual Benefits for O.A.S.I. (See Table V for Disability)

Year	Annual Old-Age Benefits					Young Survivors		Deaths
	Primary		Wives 2/	Widows 2/	Parents	Childs 3/	Widows Current 4/	Lump-Sum
	Male	Female 1/						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low								
1947....	$408	$329	$216	$321	$205	$211	$341	$210
1950....	433	357	225	326	219	219	343	220
1955....	463	386	238	335	231	231	347	232
1960....	485	405	247	347	242	242	362	241
1965....	503	417	255	358	252	252	378	250
1970....	519	428	262	369	254	254	381	259
1975....	539	440	271	384	256	256	384	268
1980....	558	450	280	393	258	258	387	277
1990....	562	453	283	394	258	258	387	278
2000....	568	454	286	394	258	258	387	278
High								
1947....	$425	$337	$225	$321	$205	$211	$341	$210
1950....	471	330	244	344	232	232	362	232
1955....	513	420	262	371	257	257	388	254
1960....	542	441	276	388	273	273	409	270
1965....	562	453	285	400	284	284	427	281
1970....	585	468	295	413	287	287	430	291
1975....	609	482	306	430	289	289	434	300
1980....	632	493	318	440	291	291	437	310
1990....	637	496	318	441	291	291	437	309
2000....	649	496	318	441	291	291	437	308

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 60 with children.

the benefit, is somewhat lower than among the married; consequently, the average wifes benefit is a little greater than 50 percent of the average male primary benefit. Nor are average widows benefits of column (5) exactly 75 percent of male primary benefits of column (2); this reason is even more obvious than for wives since many of these widows derived their old-age benefit from wage records of husbands who died much earlier when a full span of increment increases was interrupted; thus, except in the early years, the average widow's benefit of column (5) is less than 75 percent of the male primary benefit of column (2). Similar rationalization will explain the percentage relationships of the other types of benefits.

In each type of benefit the trend of the average is upward over the period although towards the end, the benefits level off in many instances. This upward trend should be noted in comparison with the average benefits of Actuarial Study No. 19, Table II, page 13. In this comparison, there are three noteworthy points.

First, in the present study the average benefits all the way through are substantially in excess of those under the present law derived in Actuarial Study No. 19. This is because the present specifications are on both a liberalized percentage formula and a liberalized method of computing average wage. (The fact that the present study assumes complete extended coverage, while the existing law is on a limited coverage also has significant effect in this comparison.)

Secondly, the extent of the increasing trend in average benefits over the years is much greater in the present study than under the previous study. Under the latter, the male primary average benefit increased around 15 percent from 1950 to 2000, while under the present study, the increase is about 35 percent. This comparison indicates that there is more "delay" in reaching "mature" benefit averages by reason of the fact that under the assumed method of computing average wages, wherein it is an average for the years of covered employment only, the 1 percent increment is an unalloyed addition to benefits, while under the method for the previous study (as in the law at present), based on the average over the entire period (including time out of the system) from age 21 (or 1937) to age 65 (or later retirement), the effect of the 1 percent increment is being retarded by a continuous decrease in the average wage by attained age of the insured group.

A third point of interest is in respect to the female primary benefits, where a substantial increase over the years is found in contrast to the previous study based on present law of only

a small increase or an actual decrease in such average benefits. This occurs under present law because of the fact that the average covered wage over time is very much diluted in the case of female lives by reason of their much larger portion of time outside of covered employment; such "time out" would be ignored in the instant average wage specifications. Included in female primary beneficiaries is quite an assortment; we have the long-term steady workers, mainly single women, or divorced or widowed early in life. There are the older working widows whose husbands died uninsured (many prior to 1940 before benefits began), and we have those wives who have a benefit in their own right who become, at least temporarily, primary beneficiaries because their husbands either are under age 65 or are still at work.

The difference in size, generally, between average benefits under the "low" assumptions and the corresponding averages under the "high" assumptions can be expressed as about 10-15 percent and lies mainly in the different assumptions as to the average wages which will obtain in future years (see C. and D. of Table A). There is the added important reason that under the "high" assumptions a considerably larger proportion of the population is assumed to be employed, i.e., high availability of work is assumed to exist (see E. of Table A and text p. 5); hence a greater continuity of coverage also comes about such that the 1 percent benefit increment is cumulatively greater.

In Table 2, the highest average benefit among the types and over the whole period of observation, is $649 or nearly $55 per month (exclusive of any other family benefit); the highest average under the present limited coverage plan, according to Study No. 19, would be $387 ($32 a month). The lowest average benefit in Table II would be in the transitional start-off period of about $17 a month for children (or parents) as against about $13 a month under the present program. These averages for the present program would be made up from a frequency distribution of benefits by size, which distribution would include benefits for each point on the benefit range but preponderantly at the lower part of the range. Quite differently, such a frequency distribution for the current study would be spread more evenly over the range with the preponderance appearing higher up on the range than under the present plan. This will be due to the extended coverage and the changed basis for average wage computation; the effect of any increase in minimum benefit provisions also tends to a change in distribution.

Table III--Benefit Payments, by Amounts

In Table III are set forth the "illustrative amounts" of benefit payments by beneficiary type over the period of observation. These are total payments made on an "in force" basis for old-age benefits,

Table III
(f 60) O.A.S.I. Benefit Payments – Millions $

Year	Monthly Old-Age Benefits						Monthly Survivors Benefits			Other	Total
	Primary		Wives	Widows 2/	Parents	Total Old-Age	Childs 3/	Widows Current 4/	Total Survivors 3/ 4/	Lump Sum	Total Benefits
	Male	Female 1/									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
						Low					
1947......	$280	$87	$76	$79	$2	$524	$115	$54	$169	$70	$763
1950......	522	195	135	248	7	1,107	265	94	359	112	1,578
1955......	954	286	242	561	11	2,054	445	135	580	173	2,807
1960......	1,415	371	352	900	16	3,054	531	170	701	228	3,983
1965......	1,686	444	418	1,182	17	3,747	592	193	785	257	4,789
1970......	1,901	514	467	1,475	18	4,375	610	202	812	289	5,475
1975......	2,113	574	515	1,755	18	4,975	624	204	828	316	6,119
1980......	2,345	637	574	1,991	18	5,564	632	203	835	342	6,742
1990......	2,687	695	657	2,240	18	6,297	633	203	836	383	7,516
2000......	2,726	672	664	2,201	18	6,281	634	203	837	375	7,493
						High					
1947......	$446	$129	$120	$79	$2	$776	$115	$54	$169	$70	$1,015
1950......	1,036	249	281	327	8	1,901	281	88	369	125	2,395
1955......	1,847	376	485	686	16	3,410	463	124	587	201	4,198
1960......	2,656	492	690	1,067	25	4,930	527	155	682	251	5,863
1965......	3,146	598	826	1,420	30	6,020	549	158	707	285	7,012
1970......	3,686	692	975	1,797	34	7,184	550	155	705	320	8,209
1975......	4,263	814	1,131	2,148	39	8,395	549	147	696	357	9,448
1980......	4,933	941	1,336	2,466	42	9,718	542	140	682	397	10,797
1990......	5,988	1,105	1,621	3,018	47	11,779	548	140	688	485	12,952
2000......	6,429	1,135	1,717	3,106	50	12,437	554	140	694	515	13,646

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 60.

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but widow's current beneficiaries exclude certain assumed working widows; actually, of course, with a so-called "work clause" in operation, a certain number of the beneficiaries will, at any one time, have a suspension in their benefit because of engaging in covered employment beyond some minimum wage. The effect of any such suspension, however, on total benefit payment would presumably become smaller and smaller as time passes and the retirement rolls "fill out" at the higher ages where work is less frequent. In any event the tolerance provided by the range between "low" and "high" assumptions may be deemed to absorb for illustrative purposes such administrative effects on benefits.

Male primary benefits under an extended coverage program must be discussed at some length and considered in comparison with the similar illustrative benefits under the existing limited coverage program (Actuarial Study No. 19). Under the present act, a considerable area of employment is excluded from coverage. During employment of individuals in these categories of work, no taxes are payable and no benefit rights accrue. Similarly, a person who becomes entitled to benefits under the act does not forfeit in any way by reason of employment thereafter in these uncovered areas of work. Thus an individual reaching age 65 may secure a $50 a month income, say, from OASI and continue to receive it as long as he does not return to covered employment; he may have gone into agriculture, Government work, to a non-profit organization or establish a business of his own--he would still receive his $50 a month. If, however, he entered covered employment and the records show that he earns as much as $15 in a month, then, his $50 benefit is suspended for that month. It will thus be seen that there has been no reason for control, and consequently little statistical data developed, concerning the extent of time and wages earned by OASI beneficiaries, particularly male primary, in uncovered employment. During the war years, there may have been less of this benefit-plus-uncovered-wage combination than in more normal times, both because there has prevailed a higher concentration in the covered industrial employments as well as the regular older individuals deferring their retirement therefrom and thus not being so available for uncovered work; left alone, however, the potential availability of this benefit-work combination would have wide application and influence on the costs of the system.

To move over to an extended coverage program, where engaging in any gainful work would suspend benefits, creates a radically different situation. The percentage of the male lives in the population over age 65 who continue to report themselves as in the labor force has always been quite sizeable, running over 30 percent in the last census. This apparent desire to extend their productive lifetime is not seriously impaired by the present limited coverage program. In other words, the benefits are not too attractive nor is there a complete

competitive line drawn between benefits and work, as there are ways
to have both. This would not be true in a fully extended program
where benefits are higher and the competition between benefits and
work would be brought directly to the fore. There would be no way
to secure both. Just what the reaction and results of this quite
different situation facing the person becoming eligible to benefits
would be is very cloudy. It is a function of many things, including
the general level of our economy and availability of work, the atti-
tude of employers and younger labor toward older workers, the level
of wages payable, the comparable amount of benefit inducement to
stop work and the medical progress in lengthening life and/or making
the later years more active.

If the above mentioned competition between benefits and work
is quite favorable to continued employment, as well it might be,
then it is not at all inconceivable that benefit costs for male
primary beneficiaries could be significantly lower than those shown
in the upper part of Table III. In fact, it is possible for the
benefit outgo for this category at certain points in time (very
early years and probably late years) to be not much different from,
or even less than, the corresponding outgo under the present act.
This is an important consideration in viewing Table III and the
corresponding percentages in Table IV to follow. The effect of
shifting the assumptions as to retirement, from those which we will
call the "standard" of Table III, to greater and smaller numbers
retiring is given later as a separate section on page   of this
Study. The work habits of the aged can be significantly changed by
the benefits emerging for them from the operation of social insurance
programs and even wider range than is shown in Table III would not be
amiss in illustrating the possible future experience in this connection.

The persistent and continued increase in benefits for the aged
may perhaps deserve further discussion herein. Under a so-called
"stationary" population, the annual number dying equals the number
born. Assume the introduction of an old-age benefit system into such
a population with the criterion for eligibility to accrual of benefits
being that individuals over age 65 when the system commences are
excluded; then there would be no benefits paid the first year; only
persons becoming age 65 in the first year would be paid benefits in
the second year; in the third year, the system would pay two groups--
those becoming 65 in the second year and a continuation of payments to
those becoming 66 in the second year. The next year would comprise
three groups or cohorts of beneficiaries and so on. Hence, if the
oldest age is 100, say, it would be 35 years before a full list of
beneficiaries by age was reached. If, however, the amount of benefit
payable under the system increases for persons the longer they are
in the plan and still under 65, that 35 year span would not see the
pension list filled out to the full amount of benefits payable. That

would take 45 more years, namely, until the original age 20 (starting work) group had passed all the way through their productive years and up to the last survivor thereof at age 100. If, in addition, we start our hypothetical population not as a stationary one, but one which grows by an excess of births over deaths, then the stabilization of pension costs is still further delayed until at least the cohort comprising the largest number of births has passed over onto the pension rolls.

This latter premise illustrates the situation in respect to the instant plans under discussion and to the present population composition. The proportion of the male population over age 65 who might shortly be receiving benefits under an extended coverage program might run about 15 to 20 percent, whereas ultimately it might run over 70 percent; add to this the second factor, above, of the increasing benefits with time and the third factor, above, of perhaps a doubling of the aged population itself. Thus, we find the reasons for the many-fold increase in benefit payments shown by Table III as mentioned earlier, and the reasons why such increases are still continuing to take place at the end of the period of observation, the year 2000.

The common sense of running illustrative cost figures as far ahead as 50 years or more is sometimes doubted (i) on the grounds of no one being such a seer as to construct the future in that manner, and (ii) on the argument that in any event, the benefits, terms, conditions, etc., of the system would be changed by them. Both of these observations are valid but are neither weighty nor conclusive. In the first place the projections given in this study are illustrations and not estimates; also they offer a considerable range for future experience. The fact is that individuals comprising the future old-age beneficiary lists of year 2000 are now alive, and it does not appear abstract to at least measure with different scales the prospective benefits for this tangible element. On the second point, the present act, or a plan based on the instant specifications, must be dynamic in character and change with the times. This, however, is no excuse for not weighing any existing or proposed plan in terms of today's values and today's conditions. Since any consideration of a proposed change always asks for a comparison with the status quo, it would be impossible to make such a comparison properly without a long-range "feel" of both the status quo and proposed amendments; otherwise each successive set of amendments to a deferred benefit program, being built on the past, could get further and further away from the later cost potentialities which would be hidden. Consequently, the far year cost implications cannot be dismissed as pure abstractions.

Examining Table III specifically after the above general discussion, it is interesting to note the very large increase in benefits over the whole period of observation. From the assumed transition year, 1947, male primaries can increase some 10-fold under the "low assumptions" and more than that under the "high assumptions." Widows' old-

age benefits can increase, even twice as much relatively as the male primaries, that is, almost 30-fold. Survivors benefits, on the other hand, go up about 5-fold in some 20 years and then level off, reaching a so-called "mature" condition; it is interesting to note that lump-sum benefits, however, do not behave as the survivors benefits do, but continue to advance throughout the period because of the fact that they also are a function of old-age, being payable upon the death of any insured life without age limit. In summary, the total benefits of column (12) show a 10-fold increase for the "low" and about 13-fold for the "high." Even after 1980 the benefit outgo rises considerably (for the reasons discussed earlier), though not by any means as steeply as in the limited coverage program of Study No. 19 where, as the years pass, more and more normally "uncovered" persons are able to secure an insured status for a small amount, at least. These figures also bring out sharply the different conditions prevailing under the low and high sets of assumptions.

Percent Increase in Cost from 1980 to 2000

Beneficiary Type	Study No. 19		This Study No. 22	
	Low	High	Low	High
Male primaries.............	23%	52%	12%	30%
Female "	18	70	9	21
Wives	23	62	16	29
Widows.....................	43	70	11	26
Total Old-Age Benefits...	28%	62%	13%	28%

A comparison frequently requested is in respect to the cost allocation in a system, between benefits payable to the aged and to the younger surviving dependents of deceased wage earners. The present limited coverage act is frequently described as costing roughly 20 to 25 percent of the total for the widows current and childrens benefits and 75 to 80 percent for old-age. This sort of generalized percentage measurement, however, is not very accurate. Even accepting the question as stated, the relationship varies considerably by the duration of the system, since benefits for children and widows under age 65 (or 60 in the instant plan) reach their level period fairly soon and do not increase thereafter, while the benefits to the aged continue to increase over the entire period. The varying proportions by years show up in the following table:

Monthly Benefit Payments (Lump-Sums to Balance)

(Ex-Disability)

Year	Present Program (Study No. 19)		Extended Program (Study No. 22)	
	% Old-Age 1/	% Younger Survivors 2/	% Old-Age 1/	% Younger Survivors 2/
L O W A S S U M P T I O N S				
1950	62%	33%	70%	23%
1960	70	26	77	17
1980	82	15	83	12
2000	85	12	84	11
H I G H A S S U M P T I O N S				
1950	69%	26%	79%	16%
1960	78	19	84	12
1980	89	9	90	6
2000	92	6	91	5

1/ Primary, wife, widow, parent beneficiaries; over 65 for both sexes in Study No. 19, over 60 for females in Study No. 22.

2/ Widows current (below age 65 for Study No. 19 and 60 for Study No. 22) and child beneficiaries.

The question as how to treat aged widows in such a measurement is also pertinent. Their widows benefit arises through the death of a wage earner so that in adding up "survivors" benefits they would predominate. On the other hand, many of them would have secured a smaller primary benefit in their own right which could have been used in lieu of the widows benefit. The question then, may need rephrasing to read, "What proportion of benefit payments arise entirely from the death of the wage earner?" Roughly these proportions for both the present limited coverage program and the extended coverage program of this study are given in the following table:

Monthly Benefit and Lump-Sum Payments
(Ex-Disability)

Year	Low Assumptions		High Assumptions	
	% From "Living" 1/	% From "Death" 2/	% From "Living" 1/	% From "Death" 2/
1950	55%	45%	65%	35%
1960	60	40	70	30
1980	65	35	80	20
2000	70	30	85	15

1/ Primary benefits and wife benefits including, on a rough approxima-
tion, as female primaries those insured women who are counted as
widows in other tables of the study.

2/ Widows current benefits, childs benefits, parents benefits, lump-
sum benefits and benefits for aged widows not insured in their own
right.

Table IV--Benefit Payments--By Percentages of Pay Roll

For a study of Table IV, the first six paragraphs discussed
under Table III should be consulted as they are generally pertinent
to Table IV as well; also the previous discussion of benefit increase
and relationships applies equally to the percentage figures.

A pertinent question often arises as to the preferential value
of cost illustrations expressed in dollars, in comparison with cost
illustrations expressed as percentages of pay roll. Both have their
advantages and faults. The advantages of the dollar figures lie in
their being expressed in a tangible commodity--money. If we say that
the 1980 costs may lie between $7 billion and $10 billion, we can
visualize what that load means in terms of today's values of all kinds,
taxes, national income, other Government disbursements, etc. Also,
an advantage of the dollar expression lies in the fact that, once built
up, a pension roll in dollars is quite a stable element; true, it
usually increases but it is not apt to fluctuate up and down since it
will come to contain a large proportion of permanent pensioners,
advanced aged lives who could not go back to work if they wanted to;
therefore, rather independently of the ups and downs of our economy,
the dollar pension roll would be maintained in its increasing trend.

Table IV
(f 60) O.A.S.I. Benefit Payments - Pay Roll %

Year	Monthly Old-Age Benefits						Monthly Survivors Benefits			Other	Total	Pay Roll
	Primary		Wives 2/	Widows 2/	Parents	Total Old-Age	Childs 3/	Widows Current 4/	Total Survivors 3/ 4/	Lump Sum	Total Benefits	Assumed Pay Roll (billions)
	Male	Female 1/										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Low						
1947....	.40	.13	.11	.11	*	.76	.17	.08	.24	.10	1.10	$69.3
1950....	.73	.27	.19	.35	.01	1.55	.37	.13	.50	.16	2.21	71.3
1955....	1.31	.39	.33	.77	.02	2.82	.61	.19	.80	.24	3.85	72.9
1960....	1.91	.50	.48	1.22	.02	4.13	.72	.23	.95	.31	5.39	73.9
1965....	2.26	.60	.56	1.58	.02	5.02	.79	.26	1.05	.34	6.41	74.6
1970....	2.53	.68	.62	1.96	.02	5.81	.81	.27	1.08	.38	7.27	75.2
1975....	2.80	.76	.68	2.33	.02	6.59	.83	.27	1.10	.42	8.11	75.4
1980....	3.11	.84	.76	2.64	.02	7.37	.84	.27	1.11	.45	8.93	75.5
1990....	3.56	.92	.87	2.97	.02	8.34	.84	.27	1.11	.51	9.96	75.5
2000....	3.61	.89	.88	2.92	.02	8.32	.84	.27	1.11	.50	9.93	75.5
						High						
1947....	.42	.12	.11	.08	*	.74	.11	.05	.16	.07	.97	$105
1950....	.97	.23	.26	.31	.01	1.78	.26	.08	.34	.12	2.24	107
1955....	1.68	.34	.44	.62	.01	3.10	.42	.11	.53	.18	3.82	110
1960....	2.37	.44	.62	.95	.02	4.40	.47	.14	.61	.22	5.23	112
1965....	2.76	.52	.72	1.24	.03	5.27	.48	.14	.62	.25	6.14	114
1970....	3.18	.60	.84	1.55	.03	6.20	.47	.13	.60	.28	7.08	116
1975....	3.68	.70	.98	1.85	.03	7.24	.47	.13	.60	.31	8.15	116
1980....	4.25	.81	1.15	2.12	.04	8.37	.47	.12	.59	.34	9.30	116
1990....	5.16	.95	1.40	2.60	.04	10.15	.47	.12	.59	.42	11.16	116
2000....	5.54	.98	1.48	2.68	.04	10.72	.48	.12	.60	.44	11.76	116

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 60.
* Less than .005%.

The advantage of the percentage of pay-roll measurement lies in its implicit relationship to the supporting, or predominantly supporting, base for meeting the benefits and to the individual contribution rates which may be set by law. If we say that benefit outgo may rise to 10 or 12 percent of pay roll, each worker can immediately visualize the effect on his pocketbook should it all come directly from that source. This advantage of the percentage measurement is only good as a long-time average because we can assume that the long-time trend of pay rolls is a stable concept around which cycles and economic disturbances cause fluctuating pay rolls temporarily. Thus had a pension existed by virtue of a system established in the long past, the benefit outgo as a percentage of pay roll would have been very high during the depression of the 1930's and contrariwise, during the present inflated war period, the percentage would have been quite low. Consequently, the percentage measurement must be constantly viewed in relationship to a stabilized pay roll, or smooth pay roll, trend and it must be recognized that certain temporary conditions can throw the figures seriously out of line. The dollar measurement is probably a more trustworthy guide as to the future possible benefit burden on the economy--taken in conjunction with considerations as to the future of the national income-- while the percentage measurement is probably a better measurement to indicate the average charge on the individual pocketbook or pay check.

Probably the most important feature of Table IV which has not already been described in connection with Table III, lies in the difference between the percentage figures for the "low" and the percentage figures for the "high." In column (12), the total figures between the two sets of assumptions are remarkably close together up until 1980, after which they depart somewhat, reaching almost a 2-percent point difference by the year 2000. Thus, there is practically no range at all until the very late years and then not one on a very large amplitude. These results come about by reason of the fundamentals in the two sets of assumptions; the "low" set contains a relatively low labor force with relatively low average wages. The "high" set reverses this in both instances. There are, of course, other differences as may be seen by a comparison between two (upper and bottom) of such columns as (2), where even in the early years, the high rate of retirement assumed in the bottom section causes costs to be higher; again, in columns (9) and (10) the higher mortality assumed in the upper section is clearly evident when compared with the lighter mortality of the bottom section. These latter elements are somewhat compensatory.

The very similarity of the figures, for the upper and bottom sections of column (12), imply that between the two quite different sets of economic assumptions about the same percentage of pay-roll costs could emerge. This is an important point to be brought out but at the same time it disguises the other possibilities. In other words, in addition to the assumptions used herein, there are reasonably possible

economic assumptions which, taking two sets thereof, can bring out
results which vary considerably in the emerging percentage costs.
Two important elements of such changed assumptions lie in the rate
of retirement from the labor force and/or in the prevailing average
wage. In Tables VIII and IX of this Study, will be found the results
of making each of these variations in the assumptions, and in those
tables a considerably different relationship percentagewise between
the "low" and "high" sets of assumptions comes about.

Table V--Disability Benefits

In the Specifications of Section II hereof and in the basic
assumptions of Table A, items for the disability feature were covered
briefly. Summarizing, again:

The disability feature for the present Study provides a primary
disability benefit computed in the same way as the regular
primary benefit;

The conditions of both fully and currently insured status is
required for eligibility which, however, is thrown open to
the cases of disability arising since 1940, without any retro-
active payment, however;

Insured status and average wage are assumed to "freeze" at
disability so that subsequent old-age or survivors benefits
will not be "watered down" because of nonemployment due to
disability;

Dependent's benefits are payable at the usual percentages
of 50 percent of the disabled life's primary disability bene-
fit for the wife and a like sum for each child up to some
determined maximum number of children.

Certain other points which may be listed or recapitulated in
connection with the disability benefit are:

(1) Beneficiaries and costs are given the disability label only
while the individual is under age 65 (or 60 for women);
thereafter he becomes a primary old-age beneficiary.

(2) The cost of other forms of benefit which, except for the
fact of disability compensable under the program, would
have lapsed or been reduced is not shown separately but
is implicitly carried as a part of the cost of the OASI;
this "derived cost" would not be present in the extended
coverage program to anywhere near the extent that it could
exist under the limited coverage program of Actuarial Study
No. 19(b), page 38, where it amounted to over 10 percent of
disability costs in the later years.

Table V.--f (60) Disability Benefits, Beneficiaries, and Cost

Year	Low Disability							High Disability						
	Beneficiaries in Thousands			Average Annual Benefit		Disability Cost		Beneficiaries in Thousands			Average Annual Benefit		Disability Cost	
	Males	Females	Wife and/or Children	Males	Females	Dollars (millions)	Percent of Payroll	Males	Females	Wife and/or Children	Males	Females	Dollars (millions)	Percent of Payroll
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Low Assumptions														
1947......	195	85	213	430	335	139	0.27%	790	300	555	$446	$374	$570	0.82%
1950......	365	130	325	462	385	283	.40	1,130	580	,795	453	381	887	1.24
1955......	505	195	445	466	396	400	.55	1,585	830	1,115	466	392	1,286	1.76
1960......	615	250	550	479	407	510	.69	1,935	1,040	1,365	475	403	1,615	2.19
1965......	685	280	610	491	417	581	.78	2,155	1,200	1,525	488	409	1,861	2.49
1970......	735	300	650	508	428	642	.85	2,330	1,310	1,645	500	419	2,065	2.75
1975......	775	305	690	521	439	692	.92	2,465	1,390	1,740	508	430	2,228	2.95
1980;.....	805	305	720	533	451	731	.97	2,560	1,420	1,800	521	442	2,363	3.13
1990......	765	290	680	533	451	694	.92	2,400	1,360	1,715	521	437	2,226	2.95
2000......	765	290	680	533	451	694	.92	2,385	1,360	1,700	521	437	2,216	2.94
High Assumptions														
1947......	205	80	175	494	400	172	.16	305	310	205	494	400	320	.30
1950......	265	130	230	517	417	245	.23	430	585	295	507	413	528	.49
1955......	345	200	300	522	429	336	.31	600	845	410	522	425	768	.70
1960......	425	255	360	536	441	427	.38	735	1,060	500	531	437	972	.87
1965......	525	290	450	550	452	531	.47	820	1,235	560	546	443	1,133	.99
1970......	595	310	510	569	464	614	.53	895	1,365	610	559	455	1,274	1.10
1975......	640	320	550	583	476	669	.58	945	1,450	635	569	466	1,377	1.19
1980......	660	320	565	597	488	702	.61	985	1,490	660	583	478	1,459	1.26
1990......	660	305	565	597	488	695	.60	995	1,420	685	583	473	1,431	1.23
2000......	645	305	550	597	488	682	.59	965	1,420	660	583	473	1,408	1.21

(3) The "low disability" assumptions use double, quadruple for females, Hunter's incidence rates and 100 percent of Hunter's Select termination rates.

(4) The "high disability" assumptions use "medium" insurance company incidence experience, viz., 150 percent class 3 (6 mos. clause), double for females, and German social insurance 1925-30 termination rates.

(5) the "high disability" results for males under the "high" general assumptions were forced downward to be made consistent with those assumptions wherein the number employed is so near the population maximum.

(6) In Actuarial Study No. 19(b) an upward adjustment in costs was made for malingering because of the important lack of automatic "policing" of the disability benefits, since work in uncovered employment at the same time of drawing benefits was not easily discoverable. Under the extended coverage program, however, the malingerer would have considerably more difficulty in both securing wages and maintaining his benefit at the same time. Always some of this would be possible but after extended coverage, universal wage records being reported should help to minimize this factor.

(7) No assumptions for cost of administration were adopted; undoubtedly higher per $1 of benefit outgo than under the other benefit types.

(8) No special adjustments have been attempted to recognize disabilities which might not benefit under the program because of provision elsewhere, such as workmen's compensation or veterans' disability benefits.

Even with the exact terms of a disability insurance program known and with some actual administrative experience gained thereunder, cost projections are unreliable. With neither of these advantages present, cost figures are obviously even more uncertain. The illustrative results of Table V are the "low" and "high" sets of figures, respectively, as outlined in the "Table of Basic Assumptions." When "gainfully occupied" is reported by people to the extent of 98 percent of total males for younger age groups and even 87 percent for ages 60-64, there isn't "room" for much disability except of the most severe type. When less opportunity for steady work exists, the sick and handicapped are more apt to validly use the disability protection. This postulate is the cause for disability costs under the "low (general) assumptions" being greater than for disability under the "high

(general) assumptions." It will be noted that employment conditions have not been assumed to control disability claims among women to the extent that they have among men, hence there is a relatively larger "swing" between "low" and "high" disability costs for women than for men.

Table V presents four sets of illustrative costs, "low" and "high" disability applying to each set of assumptions. The extreme range which is possible in this type of provision is reflected in the figures shown. The rate of becoming disabled increases progressively with age so that even under a plan which transfers the disabled cases at age 65 (or 60 for women) over from a "disabled" category to the "old-age" category, both the number of new cases and the number in force become relatively high at the age groups nearing that transfer age. While Table V does not give any breakdown by age, this fact may be seen by references to Tables D.I. and D.II. herein from which the percentages for male lives in the year 2000, for instance, would be as follows:

Percent of Male Primary Disability Beneficiaries in Force

By Age For the Year 2000

Age Group	Medium Disability For Low Assumptions	Medium Disability For High Assumptions
20-24	1.6%	.6%
25-29	3.5	1.2
30-34	5.0	1.2
35-39	7.0	1.9
40-44	9.5	2.5
45-49	12.0	4.9
50-54	15.8	11.1
55-59	20.6	27.2
60-64	25.0	49.4
	100.0%	100.0%

In the count shown for primary disability beneficiaries, only those under 65 in the case of men and under 60 in the case of women are included. Above those ages the disabled make up part of the regular primary beneficiary roll and in the long future this part, identified as those who have drawn disability benefits prior to receiving their old-age primary benefits, might reach from 10 to 25 percent on the "low" and from 5 to 15 percent on the "high," of total primary beneficiaries, respectively.

Disability costs in columns (7) and (14) of Table V at first rise sharply and then more slowly for 25 or 30 years; further still under the population assumptions taken, the costs tend to drop off slightly. Under the "low" general assumptions the "swing" from "low disability" costs to "high disability" costs is roughly in the degree of 1 to 3, and about 1 to 2 under the "high" general assumptions.

Dependents benefits in connection with disabled lives are included on the basis of paying one-half a primary to the wife under 60 if she has a child in her care and another one-half for each of one or more children (subject to a maximum); two children, no wife, would get one-half a primary each; a wife 60 or over would get one-half a primary whether or not there were children. While only the number of dependent beneficiaries are shown separately in the table, the long-range cost for this feature runs at around 20 percent of total disability outgo. The composition of costs in what we may call the "low-low" cost results may roughly be taken to divide up as 55 percent male primary disability benefits, 25 percent female primary disability benefits and 20 percent benefits for the dependents of primary disability beneficiaries (mostly males). The corresponding figures for the "high-high" results divide up as 40%:45%:15%, respectively, so that the female cost would exceed that for male primary disability beneficiaries.

The four-point range given in Table V, and this accompanying discussion, are somewhat complex because the subject itself and the administration of this type of benefit are of the same character. Of all the demographic assumptions entering into actuarial cost work, those concerning disability are probably the most uncertain--not even excepting the rates of withdrawal from the labor force after the retirement age.

VI. SUMMARY, RESERVE PAYMENTS, AND CHARTS

In Table VI A, the preceding detailed tables are summarized. Tax rates are brought in at different percentages, and level "premiums," both with and without interest, are given. The benefit payments exceed the various tax income assumptions in the following years:

Year When Benefits Cross Taxes

Level Tax Rate	Low Assumptions		High Assumptions	
	With Disability	Without Disability	With Disability	Without Disability
2%	1948	1950	1949	1950
4	1953	1956	1955	1956
6	1958	1963	1961	1964
8	1965	1975	1971	1975

Table VI A.—Benefits, taxes and level costs* ($ millions except as indicated)

Calendar year	Covered pay roll (billions)	Tax income for rate and year shown				Benefit cost for year shown						Level cost 1947 to year shown as % of pay roll			
						Without disability		Disability alone 1/		With disability 1/		Without disability		With disability 1/	
		2% tax	4% tax	6% tax	8% tax	Amount	% pay roll	Amount	% pay roll	Amount	% pay roll	No interest	2% interest	No interest	2% interest
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Low assumptions															
1947....	$69.3	$1,386	$2,772	$4,158	$5,544	$763	1.10%	$354	0.51%	$1,117	1.61%	1.10%	1.10%	1.61%	1.61%
1950....	71.3	1,426	2,852	4,278	5,704	1,578	2.21	585	.82	2,163	3.03	1.64	1.63	2.31	2.30
1955....	72.9	1,458	2,916	4,374	5,832	2,807	3.85	843	1.16	3,650	5.01	2.52	2.48	3.40	3.35
1960....	73.9	1,478	2,956	4,434	5,912	3,983	5.39	1,062	1.44	5,045	6.83	3.35	3.25	4.39	4.27
1965....	74.6	1,492	2,984	4,476	5,968	4,789	6.41	1,221	1.64	6,010	8.06	4.07	3.89	5.25	5.03
1970....	75.2	1,504	3,008	4,512	6,016	5,475	7.27	1,354	1.80	6,829	9.08	4.68	4.43	5.98	5.68
1975....	75.4	1,508	3,016	4,524	6,032	6,119	8.11	1,460	1.94	7,579	10.05	5.23	4.89	6.63	6.23
1980....	75.5	1,510	3,020	4,530	6,040	6,742	8.93	1,547	2.05	8,289	10.98	5.74	5.31	7.23	6.72
1990....	75.5	1,510	3,020	4,530	6,040	7,516	9.96	1,460	1.93	8,976	11.89	6.64	6.00	8.25	7.51
2000....	75.5	1,510	3,020	4,530	6,040	7,493	9.93	1,455	1.93	8,948	11.85	7.27	6.46	8.94	8.02
High assumptions															
1947....	$105	$2,100	$4,200	$6,300	$8,400	$1,015	0.97%	$246	0.23%	$1,261	1.20%	0.97%	0.97%	1.20%	1.20%
1950....	107	2,140	4,280	6,420	8,560	2,395	2.24	386	.36	2,781	2.60	1.62	1.60	1.92	1.90
1955....	110	2,200	4,400	6,600	8,800	4,198	3.82	552	.50	4,750	4.32	2.52	2.46	2.90	2.84
1960....	112	2,240	4,480	6,720	8,960	5,863	5.23	700	.63	6,563	5.86	3.32	3.20	3.78	3.64
1965....	114	2,280	4,560	6,840	9,120	7,012	6.14	832	.73	7,844	6.88	3.99	3.82	4.51	4.32
1970....	116	2,320	4,640	6,960	9,280	8,209	7.08	944	.81	9,153	7.89	4.59	4.34	5.17	4.89
1975....	116	2,320	4,640	6,960	9,280	9,448	8.15	1,023	.88	10,471	9.03	5.14	4.81	5.77	5.41
1980....	116	2,320	4,640	6,960	9,280	10,797	9.30	1,080	.93	11,877	10.24	5.71	5.26	6.38	5.89
1990....	116	2,320	4,640	6,960	9,280	12,952	11.16	1,063	.92	14,015	12.08	6.81	6.09	7.54	6.77
2000....	116	2,320	4,640	6,960	9,280	13,646	11.76	1,045	.90	14,691	12.66	7.71	6.74	8.47	7.45

* Exclusive of administrative expenses.

1/ In order to include the disability figures without over-complicating the table, the costs for disability have been taken as the mean between the low and high disability results as shown on table V; hence the figures for disability above should be viewed on a large "plus or minus" basis.

Assuming reserves to be on hand, the interest income therefrom would defer for a time the actual effect of this crossing of benefits and taxes such that reserves would not immediately diminish; this may be seen by comparing the above text table with the corresponding table below.

The level "premium" figures (cols. (13) through (16)) show that for the long run, out to the year 2000, say, the low assumptions would need level contributions on a 2 percent interest and reserve basis of about 8 percent from 1947 to support the benefits including disability, and on the high assumptions would need about $7\frac{1}{2}$ percent. If we assume that the benefit load and pay roll of the year 2000 continued thereafter into perpetuity, the corresponding level "premiums" would be 9 1/3 percent and 9 1/4 percent, respectively. If a reserve earning interest is not assumed, the average income needed over the period to support the benefits would be 9 percent for the low and $8\frac{1}{2}$ percent for the high. The adjustments in these figures, on account of excluding disability, may readily be found in Table VI A.

In Table VI B, there appears the progression of reserves on a 2 percent interest assumption, separately according to assumed level rate of tax. It will be noted that in all cases except that of the highest level tax contribution rate shown, namely, 8 percent, the reserves in the Trust Fund would become negative during the period of observation. Allied to the question of where the benefit lines cross the tax lines (see table above), the points at which the respective reserves would begin to turn downward may be compared by means of the following table:

Year When Benefits Cross Taxes-Plus-Interest
(i.e., when 2% reserve turns downward)

Assumed Level Tax Rate	Low Assumptions		High Assumptions	
	With Disability	Without Disability	With Disability	Without Disability
2%	1948	1951	1950	1950
4	1954	1958	1955	1956
6	1960	1970	1966	1971
8	1973	---	1980	1988

In Table VI B, many of the reserve figures reach positive or negative magnitudes which in a practical sense might be called "absurd." They are, however, pertinent to an understanding of the forces involved since (1) they serve to show to what extent income in addition to payroll taxes might be required; (2) they serve to show the enormous aggregates over the long period ahead; (3) they serve as indexes of comparability between the different tax rates and between the program with and

Table VI B.—Progress of reserves* ($ billions)

(2% interest assumption)

Calendar year	Without disability				With disability 1/			
	Amount in trust fund at various tax rates 2/				Amount in trust fund at various tax rates 2/			
	2% tax	4% tax	6% tax	8% tax	2% tax	4% tax	6% tax	8% tax
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low assumptions								
1947....	$8.7	$10.1	$11.5	$12.9	$8.3	$9.7	$11.1	$12.5
1950....	9.6	15.5	21.4	27.3	7.6	13.5	19.4	25.3
1955....	6.0	20.1	34.2	48.3	-0.1	14.0	28.1	42.2
1960....	-4.2	19.1	42.4	65.7	-16.1	7.2	30.5	53.8
1965....	-20.2	13.3	46.8	80.3	-39.4	-5.9	27.6	61.1
1970....	-41.8	3.1	48.0	92.9	-69.8	-24.9	20.0	64.9
1975....	-69.1	-11.6	45.9	103.4	-107.5	-50.0	7.5	65.0
1980....	-102.5	-31.1	40.3	111.7	-152.8	-81.4	-10.0	61.4
1990....	-188.3	-84.6	19.1	122.8	-266.5	-162.8	-59.1	44.6
2000....	-296.5	-153.4	-10.3	132.8	-407.9	-264.8	-121.7	21.4
High assumptions								
1947....	$9.2	$11.3	$13.4	$15.5	$9.0	$11.1	$13.2	$15.3
1950....	10.3	19.1	27.9	36.7	9.0	17.8	26.6	35.4
1955....	4.3	25.4	46.5	67.6	0.3	21.4	42.5	63.6
1960....	-10.9	24.0	58.9	93.8	-18.7	16.2	51.1	86.0
1965....	-34.7	15.7	66.1	116.5	-47.4	3.0	53.4	103.8
1970....	-66.9	.8	68.5	136.2	-85.7	-18.0	49.7	117.4
1975....	-108.6	-21.6	65.4	152.4	-134.6	-47.6	39.4	126.4
1980....	-161.4	-53.2	55.0	163.2	-195.6	-87.4	20.8	129.0
1990....	-304.4	-146.8	10.8	168.4	-358.1	-200.5	-42.9	114.7
2000....	-494.2	-276.4	-58.6	159.2	-571.3	-353.5	-135.7	-82.1

* Exclusive of administrative expenses.

1/ See footnote 1 of table VI A.
2/ Assumes taxes (at 2% rate), benefits and reserves all based on present act until December 1946.

without disability; and (4) they indicate that in only a slight shift of level tax rate assumed, may be found the difference in the long run between the ability to support benefits, on the one hand, and a potentially large deficiency on the other (e.g., compare columns (8) and (9) for the year 2000).

The table then should be viewed as an academic display but one which has its practical uses. Certainly, it is not likely that a tax rate once set will continue at that rate indefinitely; nor, for that matter, is any given system of benefits apt to be static. The best that can be done is to prepare illustrations of what a system of taxes and benefits might mean in terms of today's values and in terms of where such systems might lead. This discussion is carried more fully back on pages 26 to 28, which should be reread when considering Tables VI A and VI B.

Illustrative Charts

This set of seven graphs show in the form of illustrated curves, the data contained in the preceding tables in respect to benefit costs.

Charts I and II show the result for the low assumptions against a hypothetical tax income curve based on a 4 percent rate of contributions. This tax rate was not fixed in the specifications and in Table VI of this study, three other rates have been shown for comparative purposes. The choice of 4 percent for the chart is made arbitrarily for purposes of a guide.

Charts III and IV deal with the low and high assumptions, respectively, reflecting the benefit costs as percentages of pay roll.

Chart V furnishes a comparison on three points: First, the disability range brought out by the Study, which range is considerably greater under the low assumptions than under the high for the reasons previously cited; secondly, it permits comparison on the same chart between the study's low and high results; and thirdly, it permits a comparison between the limited coverage program of the present act as reflected by (i) the Actuarial Study No. 19 curves and (ii) the extended coverage and new formula of Actuarial Study No. 22. The chart could well have shown, except for the visual complication of two more curves, the cost lines for No. 22 without disability. An indication of this, however, may be gained in the next charts.

Charts VI and VII cast the dollar costs of Chart V, just explained, and measures them against pay roll, and these charts include a line for the quantity just mentioned--namely, No. 22 benefits without disability. (However, in comparing this "no disability" line for No. 22 with a No. 19 line, it must be borne in mind that

CHART I.—ILLUSTRATIVE BENEFIT AND TAX CURVES*
LOW ASSUMPTIONS

BILLINGS OF DOLLARS

OASI + HIGH DISABILITY

OASI + LOW DISABILITY

TOTAL OASI

TOTAL OLD-AGE

4% OF PAYROLL

1940   1950   1960   1970   1980   1990   2000
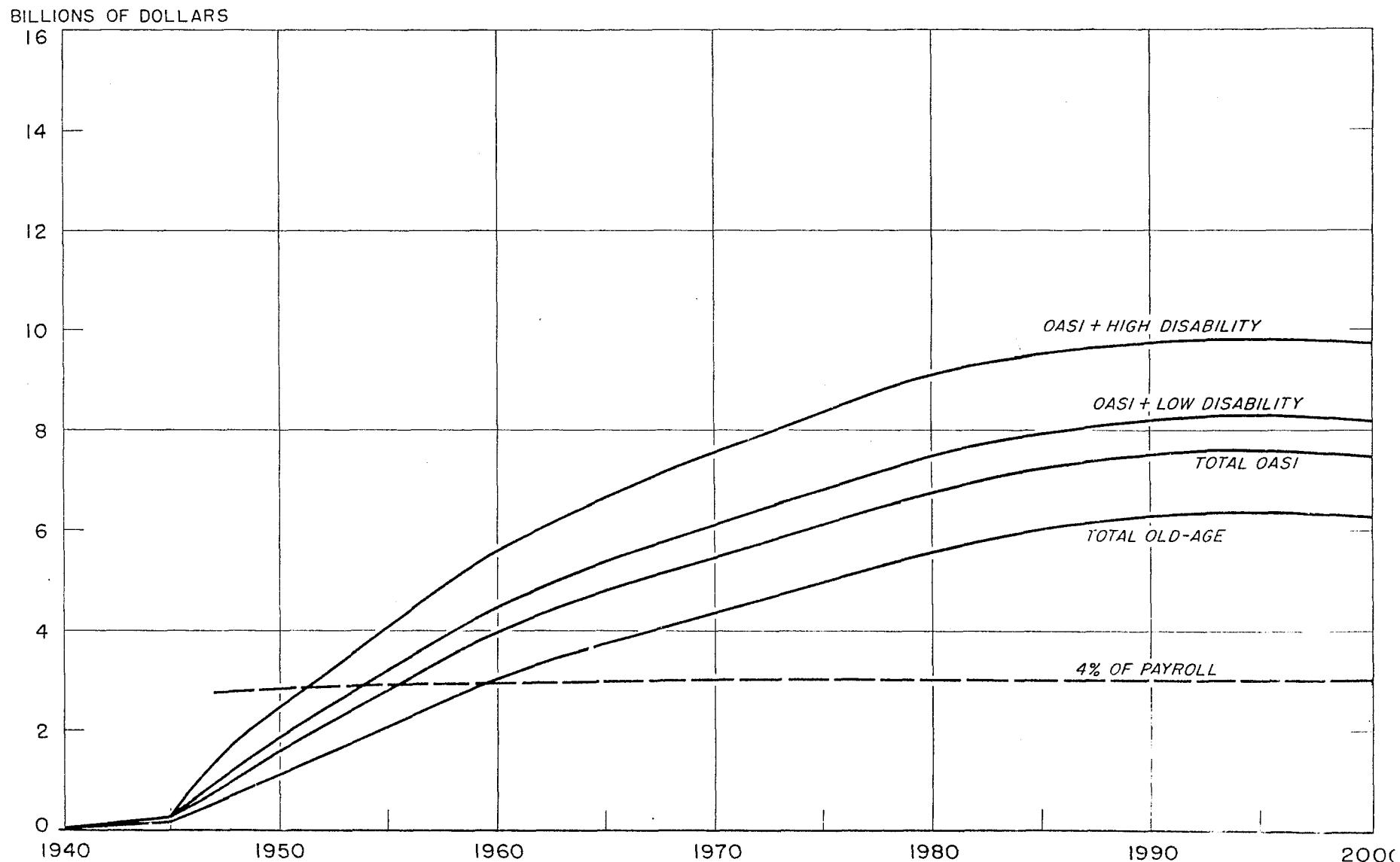
— 43 —

*SPECIFICATIONS (P.   ) DO NOT INCLUDE A FIXED TAX RATE; A 4% RATE ON COVERED PAYROLL IS USED FOR AN ILLUSTRATIVE GUIDE.

CHART II.—ILLUSTRATIVE BENEFIT AND TAX CURVES*
HIGH ASSUMPTIONS
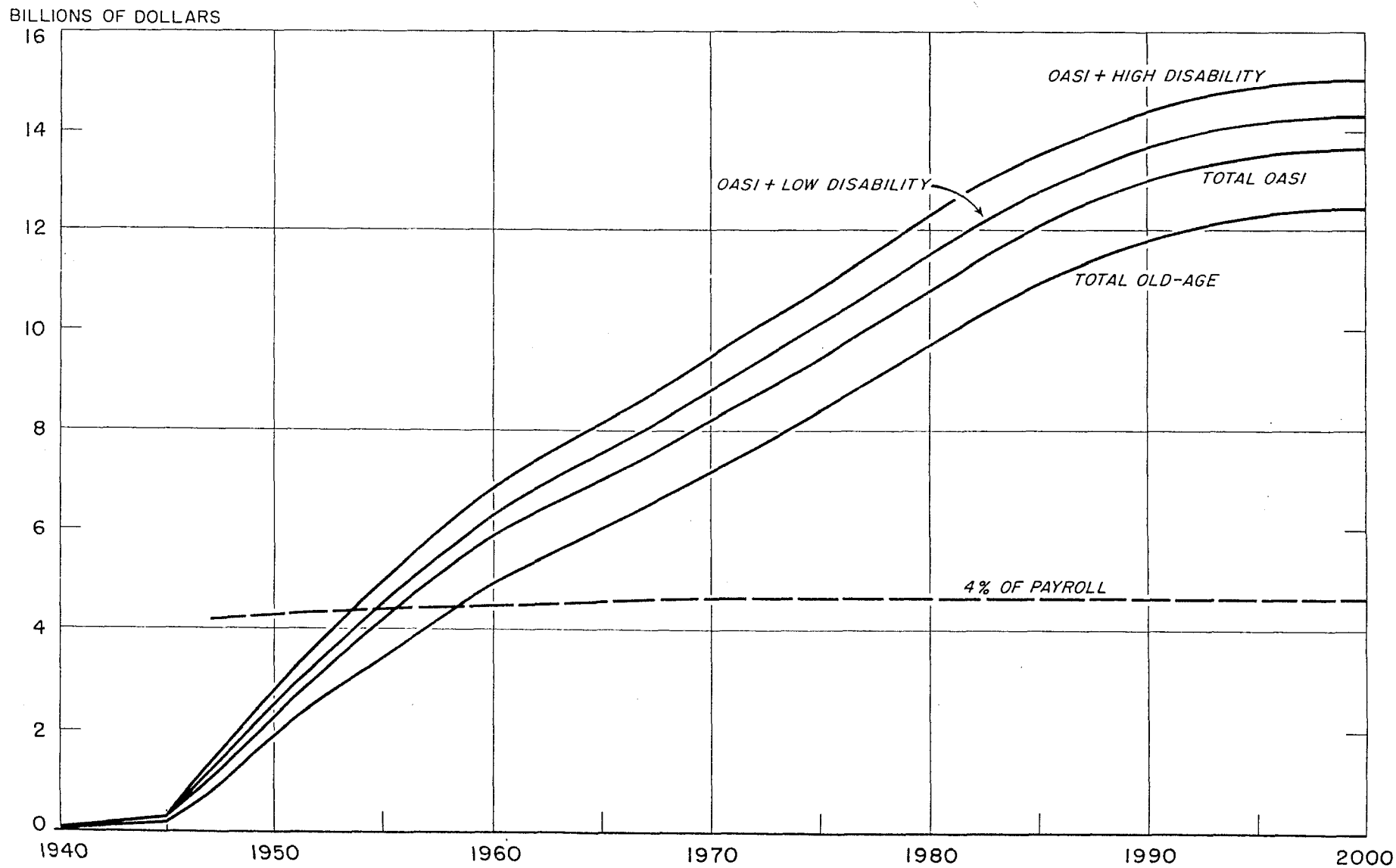
BILLIONS OF DOLLARS

*SPECIFICATIONS (P.   ) DO NOT INCLUDE A FIXED TAX RATE; A 4% RATE ON COVERED PAYROLL IS USED FOR AN ILLUSTRATIVE GUIDE.

CHART III.—ILLUSTRATIVE BENEFIT CURVES AS PERCENT OF PAYROLL
LOW ASSUMPTIONS
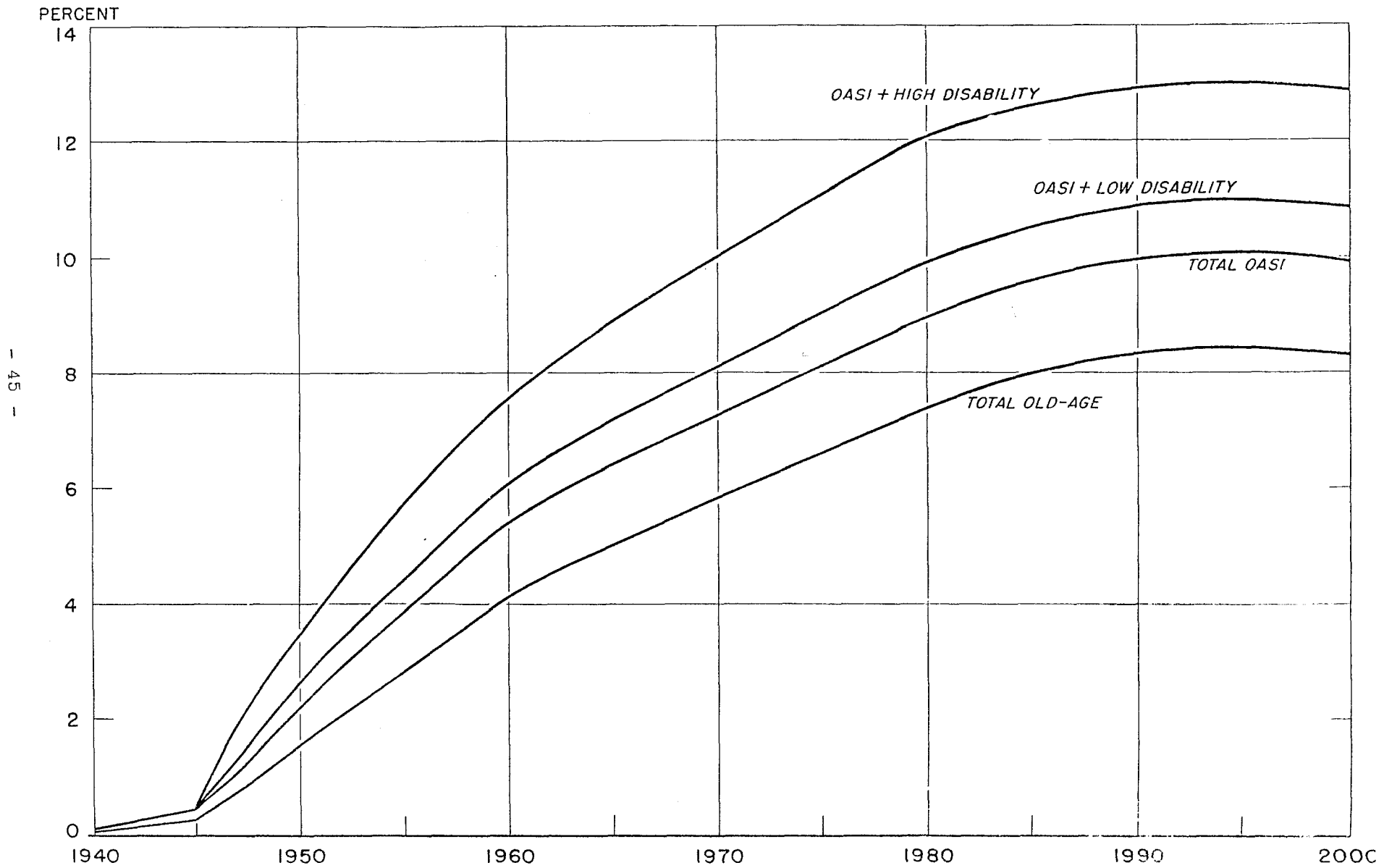
CHART IV.—ILLUSTRATIVE BENEFIT CURVES AS PERCENT OF PAYROLL
HIGH ASSUMPTIONS
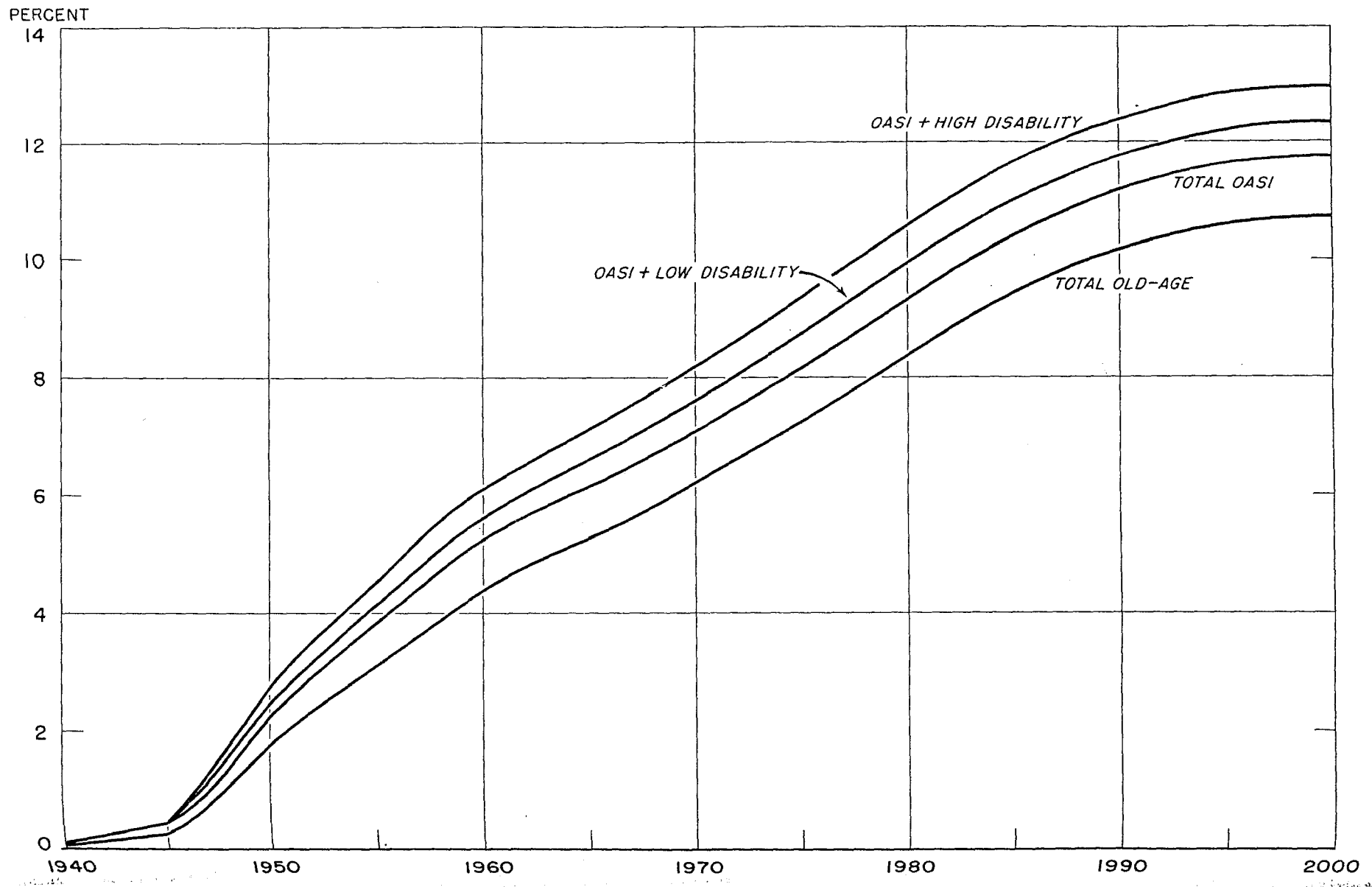
CHART V.—BENEFIT COMPARISONS

COMPLETE COVERAGE AND BENEFIT LIBERALIZATION OF STUDY NO. 22 COMPARED WITH
LIMITED COVERAGE AND BENEFITS OF PRESENT ACT (STUDY NO. 19)

BILLIONS OF DOLLARS

NO. 22 HIGH (HIGH DISABILITY)

DISABILITY RANGE

NO. 22 HIGH (LOW DISABILITY)

NO. 22 LOW (HIGH DISABILITY)

DISABILITY RANGE

NO. 22 LOW (LOW DISABILITY)

NO. 19 HIGH (NO DISABILITY)

NO. 19 LOW (NO DISABILITY)

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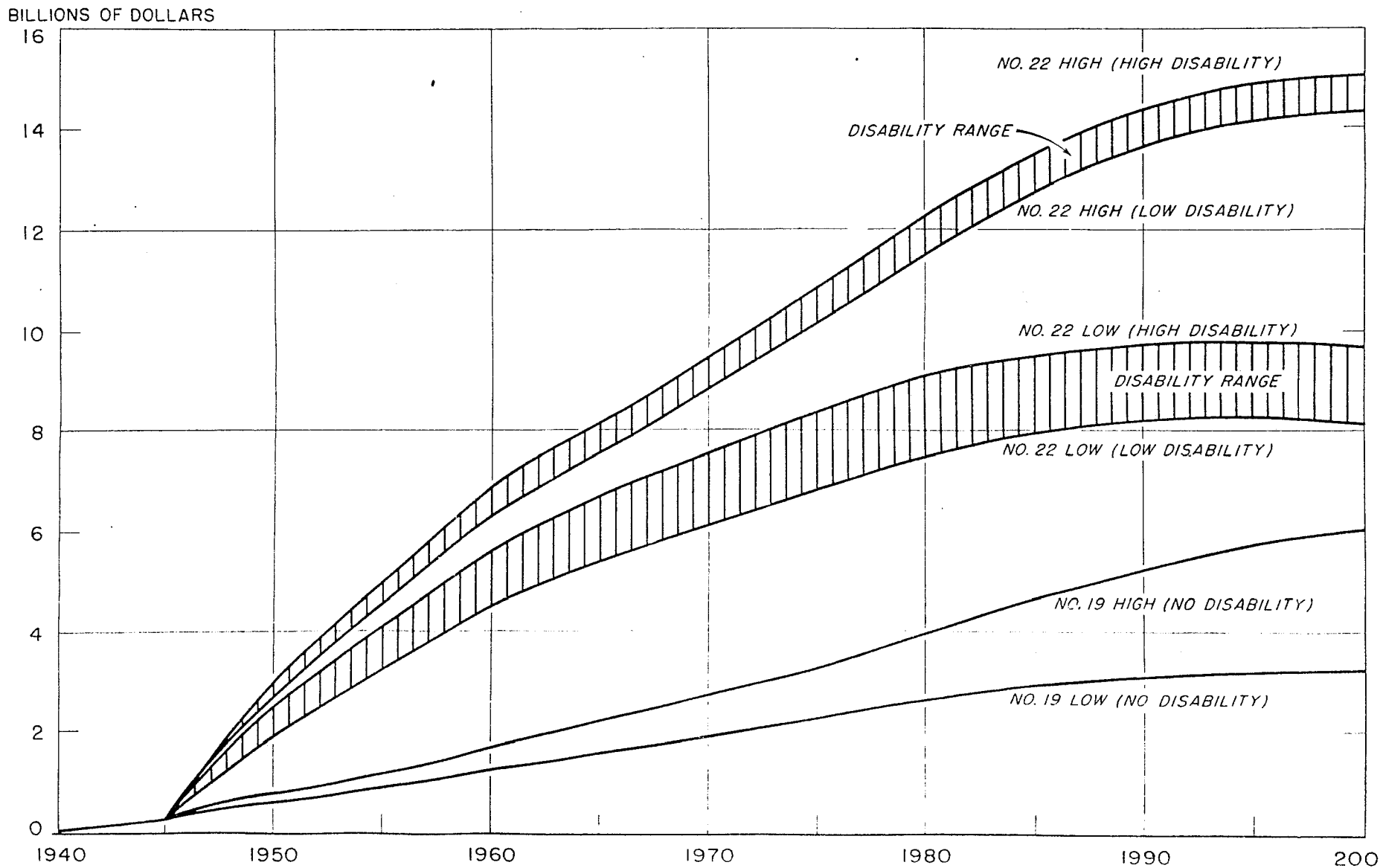
CHART VI.–BENEFIT COMPARISONS AS PERCENT OF PAYROLL
COMPLETE COVERAGE AND BENEFIT LIBERALIZATION OF STUDY NO. 22 COMPARED WITH LIMITED COVERAGE AND BENEFITS OF PRESENT ACT (STUDY NO. 19)
LOW ASSUMPTIONS

PERCENT

NO. 22 LOW (HIGH DISABILITY)

NO. 22 LOW (LOW DISABILITY)

NO. 22 LOW (NO DISABILITY)

NO. 19 LOW (NO DISABILITY)

1940   1950   1960   1970   1980   1990   2000

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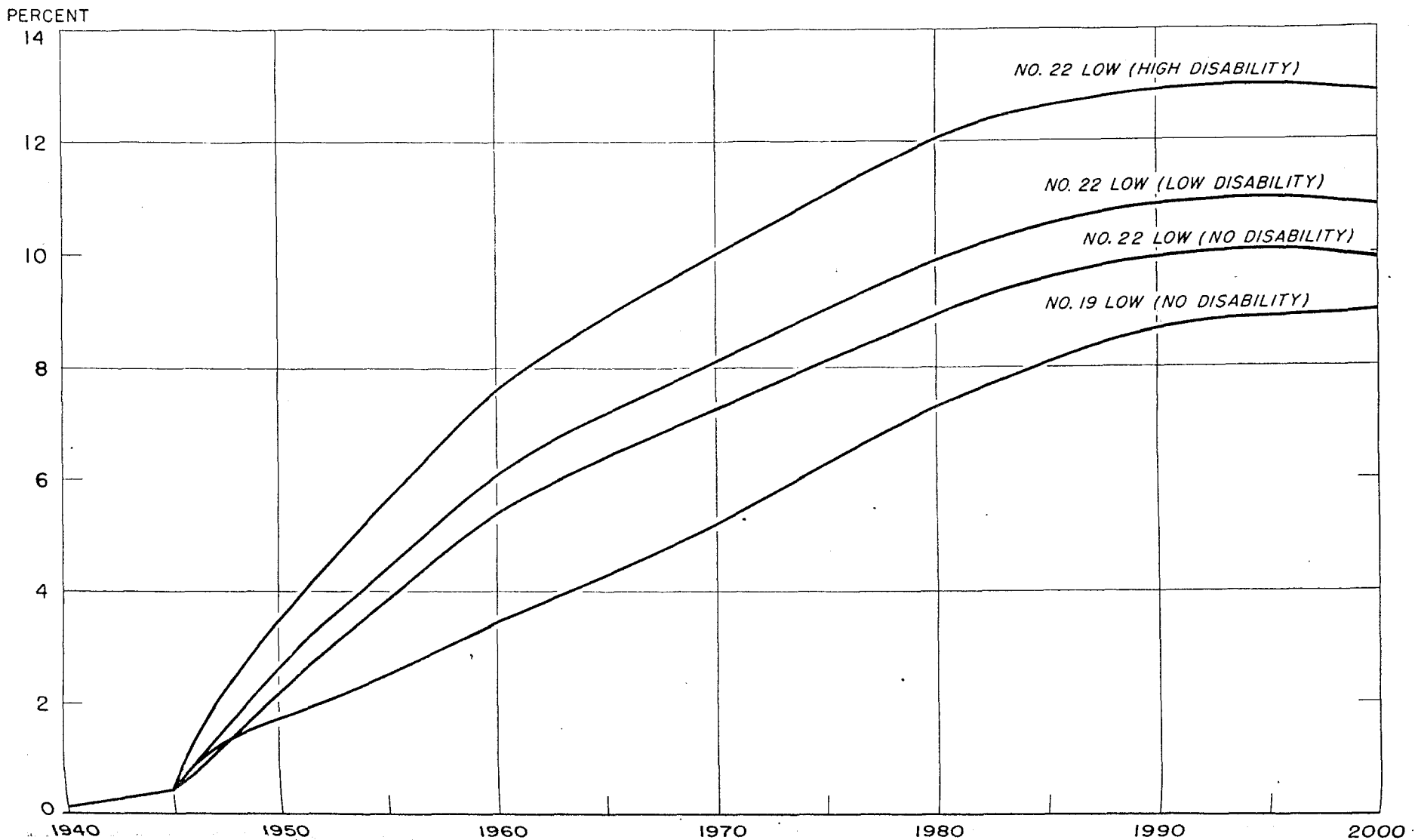
CHART VII.—BENEFIT COMPARISONS AS PERCENT OF PAYROLL
COMPLETE COVERAGE AND BENEFIT LIBERALIZATION OF STUDY NO. 22 COMPARED WITH LIMITED COVERAGE AND BENEFITS OF PRESENT ACT (STUDY NO. 19)
HIGH ASSUMPTIONS

PERCENT

NO. 22 HIGH (HIGH DISABILITY)

NO. 22 HIGH (LOW DISABILITY)

NO. 19 HIGH (NO DISABILITY)

NO. 22 HIGH (NO DISABILITY)

1940 1950 1960 1970 1980 1990 200
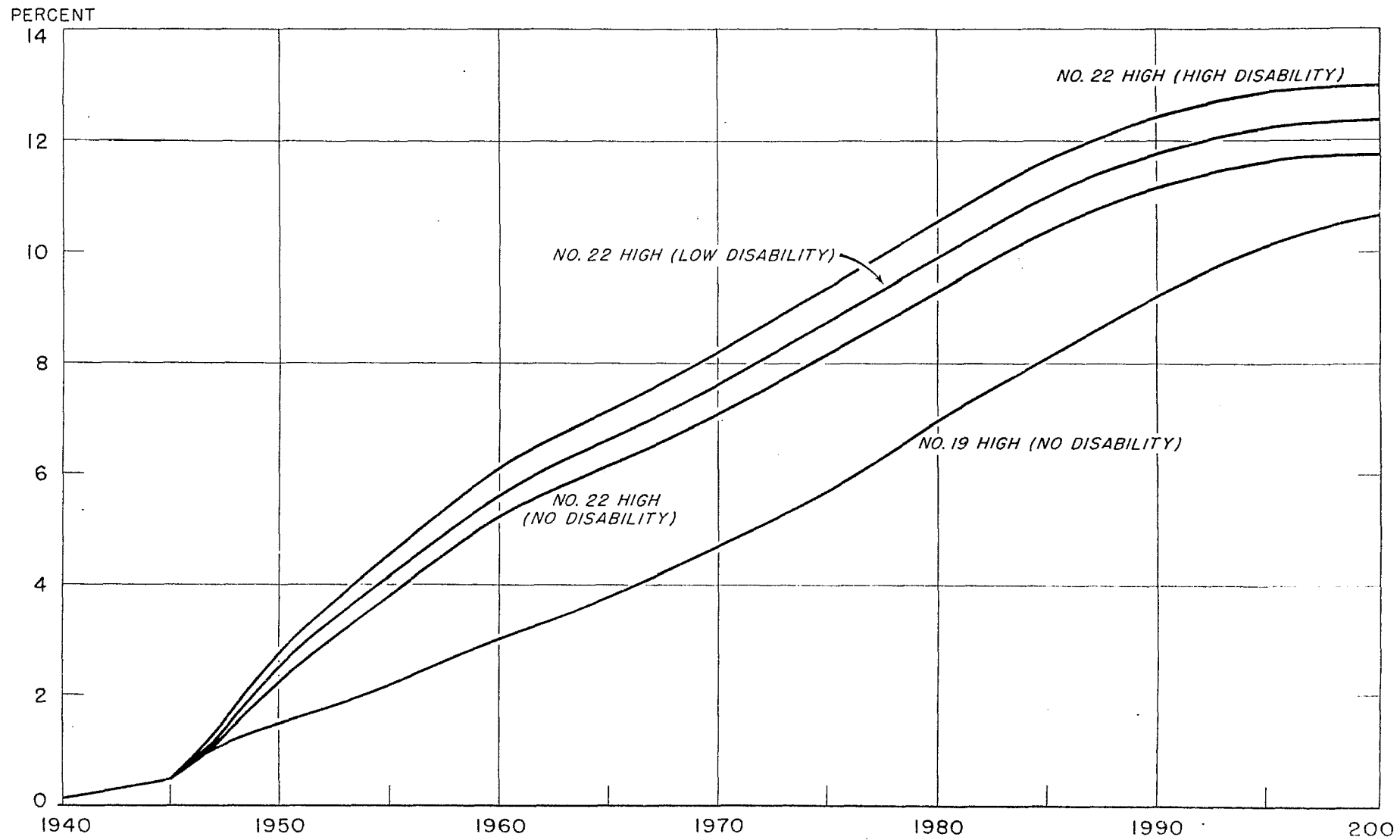
there are many other differences in formula and conditions than solely
that of disability.) For studies of the effect of some of these
other changes refer to Table VII next in this Study.

VII. COST COMPONENTS BETWEEN PRESENT ACT AND BASIS OF STUDY NO. 22

In order to give some indication of the elements responsible for
the cost increases under the new benefit formula and other changed
specifications, together with the costs of an extended coverage,
Table VII is set forth. In the upper section thereof, the numerical
transitions, first of adding the new provisions to the present cover-
age, and then of extending the coverage, is carried through as "Trans-
ition Order A."

In this upper section, the present act is given the index of 100
so that the other changes may be measured in terms of the present act.
The figures are given for the years 1960 and 2000 but, of course, all
changes are assumed to have occurred in 1947 as per the basic study.
The relationships between items as reflected by the index numbers
should not be taken as too accurate inasmuch as they are not mutually
exclusive and it has not been feasible to refine them down to any
finer order of transition. In other words, the addition of disability
to the present act would result in certain cost increases; also, the
change to women at age 60 under the present act would, as a separate
change, result in certain increases. The simultaneous inclusion of
both features would cause certain modifications in each of these com-
ponent parts from their treatment as alternate changes. It is believed
that the illustrative value of the figures given for these component
parts is not seriously affected by the above described inaccuracy.

It will be seen that of the three "formula" changes, line (d),
the new benefit formula (when applied after the disability, age 60 and
lump-sum changes), would bring by far the largest increase in costs
when compared with the present system. The disability would be next in
effect on costs for the years shown except under the "high" assumptions
for the year 2000. The reduction of women to age 60 and the payment
of lump sums throughout would cost less than the other two features,
except, again, under the assumptions of the year 2000 for the "high."
Looking at line (f) gives an indication of the extension of coverage
after the above formula changes have been accounted for; also, in line
(g), it will be seen that the resulting costs as percentages of pay roll
are lower after the extension of coverage than they were in line (e)
before extension of coverage, but that they are significantly higher
than the percentages under the present system, line (a).

In the lower section of the table under "Transition Order B,"
the extension of coverage takes place first and is shown in line (ii),

which added to the figures for the present act, gives line (iii), the dollar values of which are used as the index number 100. The changes in formulae are then given; this allows a comparison of index numbers for the effect of the "formula" components when added to an already extended coverage. Here, again, in these formulae components, line (vi) shows the effect of the new benefit formula as considerably the largest of the three changes.

Benefit Formula and Method of Computing Average Wage

In Table VII, the element called "new benefit formulae", lines (d) of upper section and (vi) of the lower section, gives the cost increments due to (1) increasing the bottom of the benefit formula from 40% on the first $50 of average monthly wage to 40% on the first $75 of average monthly wage and (2) applying this change in formula to a new method of computing average wages (viz. based on average during years of covered employment--years of $200 or more earnings--rather than over the entire elapsed period as in the present Act.) The effect of these changes (combined) are included in the figures given in the lines above referred to for Table VII. It is instructive to analyze somewhat further these features of the new formulae used for Actuarial Study No. 22. In other words, what part of the change in costs is due to the new percentage specifications in the benefit formula and what part is due to the shift in the method of computing average wage.

At best these questions can be answered only approximately because in the final results these features are not mutually exclusive. The breakdown of costs for these two elements can be seen by general reasoning to vary significantly depending upon whether a limited coverage program is being examined or a complete coverage program. In a limited coverage program, the effect of the method for computing average wage should have far more effect than in a complete coverage program. This is because if average wage is computed on total elapsed time, as under the present Act, then not only periods of unemployment and non-employment, but periods spent in non-covered employment serve to reduce the average and inasmuch as there is considerable "in-and-out" movement between covered and non-covered employment, this dilution of the average under the limited coverage program can be expected to frequently occur, whereas, under the complete coverage program, even though total elapsed time is used, the dilution would be due to periods of unemployment or non-employment only (if during compensable unemployment, the average is assumed to "freeze" there would be still less dilution possible) with years of less than a $200 earnings thrown out altogether. It will thus be seen that if a provision is introduced which determines the average wage for benefit purposes only on periods in covered employment, the result would be to bolster up, far greater relatively, the average wage in the limited coverage program, in comparison with the average derived from total elapsed time.

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Table VII.—Components of Cost Changes Between Present Act and Study #22 Basis

Line Number	Item (See Text)	Low Assumptions						High Assumptions					
		Year 1960			Year 2000			Year 1960			Year 2000		
		Dollar Costs		Per-cent Pay-Roll Costs	Dollar Costs		Per-cent Pay-Roll Costs	Dollar Costs		Per-cent Pay-Roll Costs	Dollar Costs		Per-cent Pay-Roll Costs
		Amount	In-dex		Amount	In-dex		Amount	In-dex		Amount	In-dex	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Transition Order A												
(a)	Present Act (Study #19)	$1,235	100	3.45%	$3,232	100	8.98%	$1,666	100	3.00%	$6,066	100	10.64%
(b)	Add Disability (Study #19 (b)), independent of (c)	425	34	1.18	546	17	1.52	303	18	.55	422	7	.74
(c)	Add F at 60 and L.S. to All, independent of (b)	217	18	.61	470	15	1.30	270	16	.49	716	12	1.26
(d)	Add for New Benefit Formula (Applying to (a), (b), and (c))	888	72	2.48	2,333	72	6.48	1,027	62	1.86	3,667	60	6.44
(e)	Total (New Formulae, Present Coverage)	2,765	224	7.72	6,581	204	18.28	3,266	196	5.90	10,871	179	19.08
(f)	Add Coverage Extension to (e)	2,280	184	*	2,367	74	*	3,297	198	*	3,820	63	*
(g)	Total Study #22 (New Formulae, Full Coverage)	$5,045	408	6.83%	$8,948	278	11.86%	$6,563	394	5.86%	$14,691	242	12.66%
	Transition Order B												
(i)	Present Act (Study #19)	$1,235	49	3.45%	$3,232	66	8.98%	$1,666	41	3.00%	$6,066	62	10.64%
(ii)	Add Coverage Extension to (i)	1,280	51	*	1,671	34	*	2,382	59	*	3,642	38	*
(iii)	Total (Present Formulae, Full Coverage)	2,515	100	3.40	4,903	100	6.49	4,048	100	3.61	9,708	100	8.37
(iv)	Add Disability (Study #18), independent of (v)	817	32	1.11	1,120	23	1.49	550	14	.49	822	9	.72
(v)	Add F at 60 and L.S. to All, independent of (iv)	454	18	.61	634	13	.84	615	15	.55	945	9	.80
(vi)	Add for New Benefit Formulae (Applying to (iii), (iv), and (v))	1,259	50	1.71	2,291	47	3.04	1,350	33	1.21	3,216	33	2.77
(vii)	Total Study #22 (New Formulae, Full Coverage)	$5,045	200	6.83%	$8,948	183	11.86%	$6,563	162	5.86%	$14,691	151	12.66%

* Transitional pay roll, percentages not meaningful.

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The illustrations of the results just discussed may be found
the text tables which follow. Table (i) below gives the separation
costs by the two elements under examination for the complete covera
program. The table starts in column (2) with the present formula a;
the present average wage method as contained in Actuarial Study No.
(see Addendum Table XIV). Column (3) gives the additive dollar cos·
for the new average wage method (i.e. based only on years of at lea;
$200 earnings in covered employment). Column (4) gives the corresp·
ing percentage increase and it will be seen, in the upper section o:
table that this is very small. Column (5) gives the dollar cost el·
due to the new benefit formula alone and column (6) expresses that ;
percentage of "present formulae" costs (Study No. 18). Finally in
columns (7) and (8) the dollar costs of Study No. 22 are arrived at
the corresponding percentages of the starting point, that is, perce·
of the figures for Study No. 18 of column (2).

The upper section of Table (i) deals with the aggregate cost;
that is, for all types of beneficiaries (but for purposes of manage·
excludes disability). The lower section of Table (i) gives the cor:
ing figures for a class of beneficiaries for whom it would be expec·
that, even in a complete coverage program, the effect of the new av·
method would be a much larger proportion of the total change in cos·
for the other beneficiary categories. Female primary beneficiaries
in many cases secure their insured status relatively early in life ;
then leave the labor force so that when they reappear later as a cl·
ant for primary benefits, a long gap exists between date last cover·
the then retirement date. Obviously, if average wages for them are
mined solely on the basis of their time in covered employment, it w·
a significantly different result than if their average wages were d·
mined over the entire elapsed period. Consequently, we find, as ex·
in the lower part of Table (i), a much larger proportion of the cos·
crease for female primary beneficiaries arising in columns (3) and
from the change in method of determining average wage than in the u·
section dealing with all beneficiaries. It will also be noted that
column (8) the combined change, average wage plus benefit formula, ·
a considerably and increasingly larger increase for female primary ·
ficiaries than does the combined change for the overall program (co·
with column (8) of the upper section of Table (i)).

Table (i)

(f60) Complete Coverage Program - Effect of New Benefit and Average Wage Formulae

Year	Cost at Formula and Ave. Wage of Present Act	Additive Cost for new Average Wage Method	Col. (3) as Percent of Col. (2)	Additive Cost for 40%(75) Benefit Formula	Col. (5) as Percent of Col. (2)	Cost on Basis of Study No. 22	Col. (7) as Percent of Col. (2)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Change in Total Costs (No Disability)

L O W   A S S U M P T I O N S

1950	$1,183	$48	4%	$347	29%	$1,578	133%
1960	2,969	146	5	868	29	3,983	134
1980	5,030	244	5	1,468	29	6,742	134
2000	5,537	322	6	1,634	29	7,493	135

H I G H   A S S U M P T I O N S

1950	$1,901	$25	1%	$469	25%	$2,395	126%
1960	4,663	59	1	1,141	24	5,863	125
1980	8,550	134	2	2,113	25	10,797	127
2000	10,653	333	3	2,660	25	13,646	128

Change in Costs for Female Primaries

L O W   A S S U M P T I O N S

1950	$128	$18	14%	$49	38%	$195	152%
1960	228	50	22	93	41	371	163
1980	363	115	32	159	44	637	176
2000	373	132	35	167	45	672	180

H I G H   A S S U M P T I O N S

1950	$177	$14	8%	$58	33%	$249	141%
1960	337	41	12	114	34	492	146
1980	601	122	20	218	36	941	156
2000	701	172	25	262	37	1,135	162

Turning now to the limited coverage program and examining the effects of the two influences under discussion, we find a considerably different picture. A tabular display similar to Table (i) is given for the limited coverage program in Table (ii) below:

Table (ii)

(f65) Limited Coverage Program - Effect of New Benefit and Average Wage Formulae

Year	Cost at Formula and Ave. Wage of Present Act	Additive Cost for new Average Wage Method	Col. (3) as Percent of Col. (2)	Additive Cost for 40%(75) Benefit Formula	Col. (5) as Percent of Col. (2)	Cost on Basis of Study No. 22	Col. (7) as Percent of Col. (2)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Change in Total Costs (No Disability)

L O W A S S U M P T I O N S

1950	$587	$86	15%	$188	32%	$861	147%
1960	1,235	189	15	397	32	1,821	147
1980	2,625	576	22	873	33	4,074	155
2000	3,232	700	22	1,074	33	5,006	155

H I G H A S S U M P T I O N S

1950	$774	$127	16%	$234	30%	$1,135	147%
1960	1,666	262	16	501	30	2,429	146
1980	3,958	768	19	1,240	31	5,966	151
2000	6,066	1,180	19	1,907	31	9,153	151

Change in Costs for Female Primaries

L O W A S S U M P T I O N S

1950	$34	$13	38%	$8	24%	$55	162%
1960	81	38	47	19	23	138	170
1980	246	167	68	67	27	480	195
2000	290	197	68	79	27	566	195

H I G H A S S U M P T I O N S

1950	$40	$10	25%	$16	40%	$66	165%
1960	117	33	28	48	41	198	169
1980	388	123	32	164	42	675	174
2000	661	210	32	279	42	1,150	174

The results in Table (ii) confirm, as previously mentioned, what
we would expect by general reasoning, namely, that the average wage method
has much greater significance in the limited wage program than in the com-
plete coverage program. An interesting relationship appears in comparing
the percentage increases shown in column (6) of Tables (i) and (ii). In
general, as would be expected, the increase due to the new benefit formula
is greater percentagewise for the present limited coverage plan than for
the full coverage plan, and greater for the "low" than for the "high"
assumptions; also it is greater for benefits based on wages of female
workers than on benefits based on wages of male workers. The general
rule is: the lower the average wage, the greater the percentage increase
due to the new benefit formula. However, there is an exception to this
rule, brought out strikingly in the case of female primaries under the
"low" of the limited coverage plan. For this category, the increases of
Table (ii) "low", range around 25%, whereas they are 40% or more under
both the limited coverage "high" and the complete coverage "low" for
female primaries. The explanation of this exception lies in the fact
that if the average wage is very low—as it is in the case of females under
a limited coverage program—the widening of the 40% band of the benefit
formula from the first $600 to the first $900 of average annual wage may
affect relatively fewer persons than if the average wage were higher,
and, in addition, those benefiting from the formula change would derive
relatively less advantage.

Table (iii)

Proportion of Cost Increase Due to Benefit and Average Wage Changes

Change in Total Costs (No Disability)

	(f65) Limited Coverage Program			(f60) Complete Coverage Program		
Year	Percent Increase from both Factors	Proportion Thereof Due to Average Wage Method	Proportion Thereof Due to Benefit Formula	Percent Increase from both Factors	Proportion Thereof due to Average Wage Method	Proportion Thereof Due to Benefit Formula
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	L O W A S S U M P T I O N S					
1950	47	31%	69%	33	12%	88%
1960	47	32	68	34	14	86
1980	55	40	60	34	14	86
2000	55	39	61	35	16	84
	H I G H A S S U M P T I O N S					
1950	47	35	65	26	5	95
1960	46	34	66	25	5	95
1980	51	38	62	27	6	94
2000	51	38	62	28	11	89

The different effects of the two formulae between the two types of programs can best be seen from a comparative summary of Tables (i) and (ii) to show the proportion, for each program, of the cost increase borne by each formula change. Such comparative summary is given in Table (iii) above.

As previously mentioned, where the two changes--in average wage method and in benefit formula--are made concurrently a breakdown for the singular effect of each is not clear-cut as they are not mutually exclusive. This is probably of little account for the complete coverage program where the effect of the average wage method (per Table (i) above, upper section) is so small anyway. For the limited coverage plan, however, somewhat more significant variation might result from singular treatment. Since, however, if there would be elements in the comparison working in opposite directions, it is not safe to say conclusively that the net effect of singular treatment would be more or less than the indicated component in concurrent treatment. It appears, however, that for all usual practical purposes, the figures of Tables (i), (ii) and (iii) dealing with total costs may be taken as indicative of the cost elements whether the two changes are made concurrently or independently.

It is necessary to point out, in connection with the foregoing discussion, an important effect which could significantly alter the figures of Table (ii) dealing with the limited coverage plan. The present Act calls for the average monthly wage being computed from quarterly reports of a worker's wages. In No. (6) of the Specifications, Section II of this Study, the average monthly wage for the complete coverage system was given as based on 1/12th of yearly wage records. In the examination of cost elements given above, Tables (i) and (ii) followed the "yearly" assumption. If, for Table (ii), a shift to the "quarterly" assumption had instead been followed, then the percentage increase in costs due to average wage method taken alone would have been somewhat increased. Where, now in Table (ii), column (4) shows figures of 15% and 22% under the "low", a "quarterly" reporting assumption might result in 19% and 25% respectively; under the "high", the figures of 18% and 19%, might change to 25% and 27% respectively.

The reason for this substantial difference lies in the fact that on quarterly reporting for an "average wage while working" method, a person who was in covered employment only one-quarter of a year, say, would have that year's influence on his cumulative average monthly wage

count as 1/3 of such quarter's wages, while on an annual reporting method
it would count only for 1/12th of such quarter's wages. In a limited
coverage program, with much "in and out" movement, it is obvious that the
choice of reporting period can make an important difference in the result-
ing average wage when the cumulative average is a function of the number
of such reporting periods containing covered wages, and not total elapsed
times as at present.

VIII.   SUPPLEMENTS (a), (b) AND (c)--CHANGES IN AGED LABOR FORCE

Earlier, in Assumption F. of Table A, the basis for determining
the number of primary beneficiaries has been taken for the "low" set
of assumptions as the labor force situation among the aged according
to the 1940 Census; in other words, the percentages of the population
above age 65 (age 60 for women) as shown in the 1940 Census were taken,
by age groups, to represent the corresponding percentages for the
future. The excess over such percentages of the "fully insured" per-
centages for the aged, are deemed, for any year, to have retired.
Under the "high" assumptions, however, a rather arbitrary adjustment
was made to increase the number deemed to have retired. This was on
the theory that the availability of benefits at levels produced by the
high assumptions, together with a more restrictive hiring (or continua-
tion of job) policy for the aged by employers, would cause a greater
dropping off of employment among the aged than was the case in 1940
(and consequently then is the case in the "low" set of assumptions).
In Table III, pages 24-31 of this Study was discussed what an uncertain
element this factor may be of the extent of retirement on benefit
of those eligible thereto. For this reason, it is necessary to examine
what sort of a change in the cost results might come about through sub-
stantial deviations as to retirement from the assumptions proper of
this Study. (These assumptions proper will be designated as the
"standard" assumptions.)

In this examination three deviating assumptions as to retirement
have been taken.

Table VIII(a)

The table called Supplement (a) is shown in some detail. It
allows for a dampened rate of retirement, saying, in effect, that if
the "standard" labor force among the aged were increased 50 percent,
then the resulting lower costs and their relationship to "standard"
costs would be as shown. Thus in this Table for Supplement (a), for
example, we find that if the aged labor force as a percent of the
total aged increased by 50 percent, costs for primary benefits would
reduce, under the "low," for 1980 say, by 35 percent in the case of
males and 39 percent in the case of females. The resulting reduced

Table VIII (a)
(f 60) Retirement (a), Supplement to Study #22
Results Assuming Labor Force Above 65(m), 60(f), is Increased 50% Over #22 Proper
Viz. Aged Workers Retire More Slowly Than Under Standard Assumptions

Year	% Reduction in Primary Benefits		New $ Costs Reduced			New % Costs Reduced Basis			Comparative Total Costs			
									By Amounts		By % Pay Roll	
	Males 1/	Females	Male Primaries	Female Primaries	Wife Benefits	Male Primaries	Female Primaries	Wife Benefits	Standard #22	Reduced #22	Standard #22	Reduced #22
(1)	(2a)	(2b)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Low												
1947..	100%	100%	(2)	(2)	(2)	(2)	(2)	(2)	$763	$320	1.10%	.45%
1950..	84	65	$87	$73	$22	.12%	.10%	.03%	1,578	908	2.21	1.24
1955..	56	54	426	134	108	.57	.18	.14	2,807	1,993	3.85	2.66
1960..	43	47	807	198	201	1.06	.26	.26	3,983	3,051	5.39	4.00
1965..	38	43	1,045	255	259	1.36	.33	.34	4,789	3,800	6.41	4.94
1970..	36	41	1,217	304	299	1.57	.39	.39	5,475	4,413	7.27	5.69
1975..	36	40	1,352	344	330	1.73	.44	.42	6,119	4,943	8.11	6.34
1980..	35	39	1,524	388	373	1.95	.50	.48	6,742	5,471	8.93	7.00
1990..	35	36	1,747	445	427	2.23	.57	.54	7,516	6,096	9.96	7.77
2000..	32	35	1,854	437	452	2.37	.56	.58	7,493	6,174	9.93	7.89
High												
1947..	100%	79%	(2)	$32	(2)	(2)	.03%	(2)	$1,015	$352	.97%	.33%
1950..	29	46	$786	148	$212	.72%	.14	.19%	2,395	1,975	2.24	1.81
1955..	21	38	1,481	237	390	1.32	.21	.35	4,198	3,589	3.82	3.20
1960..	17	33	2,204	331	573	1.93	.29	.50	5,863	5,133	5.23	4.50
1965..	16	31	2,643	415	694	2.28	.36	.60	7,012	6,194	6.14	5.34
1970..	15	30	3,133	487	829	2.66	.41	.70	8,209	7,305	7.08	6.19
1975..	15	28	3,624	586	961	3.05	.49	.81	9,448	8,411	8.15	7.07
1980..	15	26	4,193	693	1,136	3.52	.58	.95	10,797	9,609	9.30	8.07
1990..	14	24	5,150	837	1,394	4.33	.70	1.17	12,952	11,619	11.16	9.76
2000..	13	22	5,593	889	1,494	4.70	.75	1.26	13,646	12,341	11.76	10.37

1/ And benefits for wives.
2/ To increase the aged labor force 50% would mean, for 1947, that all primary beneficiaries would be at work and hence, cost for these benefits is zero.

costs are shown in columns (3), (4) and (5), and on a percentage-of-pay-roll basis in columns (6), (7) and (8). In columns (9) and (10), a comparison of total costs with the "standard" is given and in columns (11) and (12), the same comparison on a percentage-of-pay-roll basis. It will be noted that the relative reduction in costs due to the greater proportion of the aged remaining at work is a decreasing one over time. These figures are summarized in the Table for Supplement (c).

Table VIII(b)

While in Supplement (a), we substantially increased the number working among the aged, in Supplement (b), we go in the opposite direction and say if 50 percent of the labor force assumed to be working under the "standard" assumptions actually retired on benefit instead, what would the effect be on the "standard" costs? We see, in columns 2(a) and 2(b) of the table, the effect of this. For the "low" assumptions of 1980, say, it would be percentage increases exactly the same as the corresponding decreases under Supplement (a), namely, 35 percent for male primaries and 39 percent for female primaries. This symmetrical result is, of course, inherent in the assumed change in retirement conditions (except for the year 1947 for which see footnote 2 on the Table for Supplement (a)).

Table VIII(c)

This table summarizes the previous two; it shows in columns (1) and (2), the "standard" assumptions as to the labor force and primary beneficiaries from which the assumed deviations have been made. Column (4) recapitulates the total for Supplement (a); column (5) gives the "standard" illustrative costs; column (6) recapitulates the total for the "high" retirement of Supplement (b), and column (7) goes the whole way and reflects what the costs might be if there were 100 percent receipt of benefit among insured persons at the earliest possible age, namely, 65 for men and 60 for women. Columns (8), (9), (10), and (11) give corresponding figures as percentages of pay roll; column (12) gives the dollar cost range from the lowest retirement situation found to the 100 percent retirement situation; in other words, for 1980 under the "low"; the reduced retirement assumption results in benefit costs for the year of $5.471 billions and the 100 percent retirement costs $9.284 billions, which latter is 170 percent of the former, or a 70 percent increase over the range of retirement deviations.

It will be noted in column (12) how the relative increases go down with time. In the "high" assumptions, for instance, it ultimately gets down as low as 32 percent increase for the range of retirement situations. This, of course, is due, by that time, to the greater

Table VIII (b)
(f 60) Retirement (b), Supplement to Study #22
Results Assuming Labor Force Above 65(m), 60(f), is Decreased 50% from #22 Proper
Viz. Aged Workers Retire Much Faster Than Under Standard Assumptions

Year	% Increase in Primary Benefits		New $ Costs Increased Basis			New % Costs Increased Basis			Comparative Total Costs			
									By Amounts		By % Pay Roll	
	Males 1/	Females	Male Primaries	Female Primaries	Wife Benefits	Male Primaries	Female Primaries	Wife Benefits	Standard #22	Increased #22	Standard #22	Increased #22
(1)	(2a)	(2b)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
						Low						
1947..	164%	257%	$702	$214	$195	1.04	.32%	.29%	$763	$1,431	1.10%	2.12%
1950..	84	65	1,005	347	258	1.45	.50	.37	1,578	2,336	2.21	3.37
1955..	56	54	1,510	309	382	2.13	.44	.54	2,807	3,526	3.85	4.98
1960..	43	47	2,023	544	503	2.83	.76	.70	3,983	4,915	5.39	6.86
1965..	38	43	2,327	633	577	3.22	.88	.80	4,789	5,778	6.41	7.99
1970..	36	41	2,585	724	635	3.55	.99	.87	5,475	6,537	7.27	8.98
1975..	36	40	2,874	804	700	3.95	1.10	.96	6,119	7,295	8.11	10.02
1980..	35	39	3,166	886	775	4.35	1.22	1.06	6,742	8,013	8.93	11.01
1990..	35	36	3,627	945	887	5.00	1.30	1.22	7,516	8,936	9.96	12.33
2000..	32	35	3,598	907	876	4.95	1.25	1.20	7,493	8,812	9.93	12.12
						High						
1947..	149%	79%	$1,086	$270	$314	1.06%	.26%	.31%	$1,015	$1,990	.97%	1.95%
1950..	29	46	1,428	398	386	1.36	.38	.37	2,395	3,041	2.24	2.90
1955..	21	38	2,269	531	598	2.10	.49	.55	4,198	4,879	3.86	4.52
1960..	17	33	3,108	653	807	2.83	.59	.73	5,863	6,593	5.23	5.99
1965..	16	31	3,649	781	958	3.26	.70	.86	7,012	7,830	6.14	6.99
1970..	15	30	4,239	897	1,121	3.72	.79	.98	8,209	9,113	7.08	7.99
1975..	15	28	4,902	1,042	1,301	4.34	.92	1.15	9,448	10,485	8.15	9.28
1980..	15	26	5,673	1,189	1,536	5.02	1.05	1.36	10,797	11,985	9.30	10.61
1990..	14	24	6,826	1,373	1,848	6.04	1.22	1.64	12,952	14,285	11.16	12.64
2000..	13	22	7,265	1,381	1,940	6.43	1.22	1.72	13,646	14,951	11.76	13.23

1/ And benefits for wives.

Table VIII (c)
(f 60) Retirement (c), Supplement to Actuarial Study #22
Comparisons of Total Costs for Varying Assumptions of Old-Age Retirement from Labor Force

Number of Aged Insured Persons by #22 Standard		Year	Comparisons in Millions of Dollars				Comparisons in Percentages of Pay Roll				Increased Cost of Col. (7) as % of Reduced Cost of Col. (4)
Labor Force	Primary Benef.		Total Costs if Primaries Reduced by 50% of Std. L.F.	Total Costs With #22 Standard Primaries	Total Costs if Primaries Increased by 50% of Std. L.F.	Total Costs if Primaries Increased by 100% of Std. L.F.	Total Costs if Primaries Reduced by 50% of Std. L.F.	Total Costs With #22 Standard Primaries	Total Costs if Primaries Increased by 50% of Std. L.F.	Total Costs if Primaries Increased by 100% of Std. L.F.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Low Assumptions											
2,550	1,000	1947	$320	$763	$1,431	$2,099	.45%	1.10%	2.12%	3.19%	656%
2,750	1,750	1950	908	1,578	2,336	3,094	1.24	2.21	2.37	4.58	341
3,100	2,800	1955	1,993	2,807	3,526	4,245	2.66	3.85	4.98	6.18	212
3,350	3,830	1960	3,051	3,983	4,915	5,847	4.00	5.39	6.86	8.44	192
3,450	4,415	1965	3,800	4,789	5,778	6,767	4.94	6.41	7.99	9.67	178
3,550	4,860	1970	4,413	5,475	6,537	7,599	5.69	7.27	8.98	10.79	172
3,800	5,225	1975	4,943	6,119	7,295	8,471	6.34	8.11	10.02	12.07	171
4,000	5,620	1980	5,471	6,742	8,013	9,284	7.00	8.93	11.01	13.24	170
4,350	6,315	1990	6,096	7,516	8,936	10,356	7.77	9.96	12.33	14.90	170
4,100	6,280	2000	6,174	7,493	8,812	10,131	7.89	9.93	12.12	14.49	164
High Assumptions											
2,750	1,540	1947	$352	$1,015	$1,990	$2,965	.33%	.97%	1.95%	2.99%	842%
2,450	2,855	1950	1,975	2,395	3,041	3,687	1.81	2.24	2.90	3.58	187
2,450	4,495	1955	3,589	4,198	4,879	5,524	3.20	3.82	4.52	5.21	154
2,400	6,015	1960	5,133	5,863	6,593	7,323	4.50	5.23	5.99	6.78	143
2,500	6,920	1965	6,194	7,012	7,830	8,648	5.34	6.14	6.99	7.86	140
2,700	7,780	1970	7,305	8,209	9,113	10,017	6.19	7.08	7.99	8.94	137
3,000	8,690	1975	8,411	9,448	10,485	11,522	7.07	8.15	9.28	10.47	137
3,300	9,710	1980	9,609	10,797	11,985	13,173	8.07	9.30	10.61	11.98	137
3,750	11,630	1990	11,619	12,952	14,285	15,618	9.76	11.16	12.64	14.20	134
3,600	12,190	2000	12,341	13,646	14,951	16,256	10.37	11.76	13.23	14.78	132

number of individuals on the benefit rolls at the extreme ages where
the deviation, in any labor force assumption as to them, must be
small in relation to the number already in receipt of benefits. The
index of cost change given by column (12) derives from a comparison
of columns (4) and (7). A similar comparison of percentage costs of
columns (8) and (11) will give somewhat different results. For
example, the 1980 figure for column (11) in the "low" assumptions is
13.24 percent and in column (8) is 7.00 percent or a 90 percent
increase compared to a 70 percent increase when based on amounts as
in column (12). The reason for this greater increase by the per-
centage measurement lies in the fact that an increase or decrease in
the retirement of the aged labor force, reduces or increases the pay-
roll base by the amount of the wages for the persons affected; this
has quite a significant influence on costs as measured against the
new pay-roll base.

The possibility of variations in the retirement habits of the
future under a program of extended coverage must be recognized in any
consideration of long-range costs and is another example of the neces-
sity for stating these costs in terms of an illustrative range rather
than as any single line of projected cost estimates.

IX. SUPPLEMENTARY TABLES ON VARYING WAGE ASSUMPTIONS

In Assumption C of Table A, an average annual rate of wage
while in employment was taken at $1,500 for men and $900 for women
under the "low," and $2,000 and $1,200, respectively, under the
"high." As has been pointed out previously in this Study, the com-
bination of these wage assumptions with the other respective "low"
and "high" elements has resulted in a good illustrative range in
dollar costs but (and as previously mentioned in discussing Table IV,
perhaps, typically) in a rather narrow range of percentage costs.
In order to show how both dollar and percentage costs would behave
if wage assumptions other than those just mentioned, which we may call
the "standard," were adopted, supplementary tables containing this
wage variability have been prepared.

In Table IX A, the results of varying the wage part of the
assumptions, which otherwise remain on the basis of the present
Study No. 22, are set forth. In the upper section of the table for
the "low," columns (2) and (7) represent the "standard" results,
i.e., those which have been shown on previous tables in this study;
in the lower section for the "high," columns (4) and (9) represent
the "standard." It will be noticed that with any increase in wages,
dollar costs, as would be expected, go up but naturally percentage
costs go down. The percentage costs go down because the increase in
wages becomes a proportionately greater part of the pay-roll denomi-
nator than does the increase in the benefits entering the numerator.

TABLE IX A

Supplement to Actuarial Study #22
Cost Comparisons for Varying Assumptions of Average Wage 1/

Year	Benefit Payments in Millions of Dollars					Benefit Payments as Percentage of Pay Roll				
	$1,200m 720f	$1,500m 900f	$1,800m 1,080f	$2,000m 1,200f	$2,400m 1,440f	$1,200m 720f	$1,500m 900f	$1,800m 1,080f	$2,000m 1,200f	$2,400m 1,440f
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Low Assumptions (Other Than Wages)										
1947	695	763	815	851	919	1.25%	1.10%	0.98%	0.92%	0.83%
1950	1,438	1,578	1,686	1,758	1,901	2.52	2.21	1.97	1.85	1.67
1955	2,589	2,807	3,025	3,156	3,417	4.44	3.85	3.46	3.25	2.93
1960	3,647	3,983	4,258	4,442	4,810	6.17	5.39	4.80	4.51	4.07
1965	4,386	4,789	5,118	5,342	5,782	7.35	6.41	5.72	5.37	4.84
1970	5,013	5,475	5,852	6,106	6,611	8.33	7.27	6.49	6.09	5.50
1975	5,602	6,119	6,541	6,825	7,388	9.29	8.11	7.23	6.79	6.13
1980	6,172	6,742	7,206	7,519	8,139	10.22	8.93	7.95	7.47	6.74
1990	6,883	7,516	8,033	8,383	9,075	11.40	9.96	8.87	8.33	7.51
2000	6,865	7,493	8,009	8,358	9,049	11.37	9.93	8.84	8.31	7.49
High Assumptions (Other Than Wages)										
1947	$830	$911	$973	$1,015	$1,098	1.32%	1.16%	1.03%	0.97%	0.87%
1950	1,963	2,149	2,296	2,395	2,593	3.06	2.68	2.38	2.24	2.02
1955	3,477	3,797	4,057	4,198	4,584	5.27	4.60	4.10	3.82	3.47
1960	4,786	5,223	5,581	5,863	6,308	7.12	6.22	5.54	5.23	4.69
1965	5,722	6,246	6,674	7,012	7,543	8.37	7.31	6.50	6.14	5.51
1970	6,701	7,313	7,814	8,209	8,832	9.63	8.41	7.48	7.08	6.34
1975	7,708	8,414	8,991	9,448	10,161	11.07	9.67	8.61	8.15	7.30
1980	8,804	9,614	10,271	10,797	11,608	12.65	11.05	9.84	9.30	8.34
1990	10,556	11,524	12,314	12,952	13,917	15.17	13.25	11.80	11.16	10.00
2000	11,121	12,137	12,968	13,646	14,658	15.98	13.95	12.42	11.76	10.53

1/ Wages of $1,500 for males and $900 for women (columns (2) and (7)) are the "standard" assumptions for the "low" costs and $2,000 for males and $1,200 for women (columns (4) and (9)) are the "standard" assumptions for the "high" costs.

These changes for the varying wage illustrations are not quite uniform between the changing effect as to dollar costs and that (in the opposite direction) for percentage costs. Between the lowest wage assumption of $1,200 for males and $720 for females and the highest wage assumption of $2,400 for males and $1,440 for females, there is a 32 percent increase in the dollar costs with a 34 percent decrease in percentage costs. This again is due to the point just mentioned of the non-homogeneous effect on the numerator and denominator of the fraction making up the percentage cost measurement.

For comparative purposes in this Study, and to stand as a supplement to Actuarial Study No. 19 on the present program, Table IX B is included. This table carries through for the limited coverage program, the same sort of varying wage illustrations as had just been described for the extended coverage program. The characteristics of the changes of cost figures are substantially the same.

A summary comparison is given in the following table wherein the percentage costs are rounded approximately to the nearest 1/4 or 1/2 percent.

VARYING WAGE ASSUMPTIONS (From Tables IX A and B)
Percentage Costs For Lowest and Highest Wage Illustrations

	L O W			H I G H		
Year	1200 m / 720 f	1500 m* / 900 f	2400 m / 1440 f	1200 m / 720 f	2000 m* / 1200 f	2400 m / 1440 f
	For Study No. 22 (Expanded Program)					
1950	$2\frac{1}{2}$%	$2\frac{1}{4}$%	2%	3%	$2\frac{1}{4}$%	2%
1960	6	$5\frac{1}{2}$	4	7	5	$4\frac{1}{2}$
1980	10	9	$6\frac{1}{2}$	$12\frac{1}{2}$	$9\frac{1}{2}$	$8\frac{1}{2}$
2000	$11\frac{1}{2}$	10	$7\frac{1}{2}$	16	12	$10\frac{1}{2}$
	For Study No. 19 (Present Act)					
1950	2	1 3/4	$1\frac{1}{2}$	2	$1\frac{1}{2}$	$1\frac{1}{4}$
1960	4	$3\frac{1}{2}$	$2\frac{1}{2}$	4	3	$2\frac{1}{2}$
1980	$8\frac{1}{2}$	$7\frac{1}{2}$	$5\frac{1}{2}$	9	7	$6\frac{1}{2}$
2000	10	9	7	14	$10\frac{1}{2}$	$9\frac{1}{2}$

* "Standard" wage assumptions for comparison.

The above set of figures indicates the effect on percentage of pay-roll costs if the usual low and high wage assumptions are replaced, with other assumed conditions unchanged, by rather substantially different long-range wage trends.

TABLE IX B

Supplement to Actuarial Study #19
Cost Comparisons for Varying Assumptions of Average Wage 1/

Year	Benefit Payments in Millions of Dollars					Benefit Payments as Percentage of Payroll				
	$1,200m 720f	$1,500m 900f	$1,800m 1,080f	$2,000m 1,200f	$2,400m 1,440f	$1,200m 720f	$1,500m 900f	$1,800m 1,080f	$2,000m 1,200f	$2,400m 1,440f
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Low Assumptions (Other Than Wages)										
1945........	$213	$233	$251	$265	$290	.80	.70	.62	.60	.55
1950........	536	587	632	667	732	1.94	1.70	1.52	1.45	1.32
1955........	814	893	962	1,014	1,112	2.86	2.51	2.26	2.14	1.96
1960........	1,125	1,235	1,333	1,404	1,537	3.93	3.45	3.10	2.95	2.68
1970........	1,698	1,863	2,021	2,127	2,325	5.91	5.19	4.69	4.44	4.05
1980........	2,390	2,625	2,854	3,016	3,289	8.30	7.29	6.61	6.28	5.71
2000........	2,943	3,232	3,512	3,713	4,049	10.23	8.98	8.14	7.73	7.03
High Assumptions (Other Than Wages)										
1945........	260	286	309	325	355	.84	.74	.66	.63	.58
1950........	620	684	737	774	847	1.95	1.72	1.55	1.46	1.33
1955........	938	1,034	1,115	1,171	1,282	2.86	2.52	2.26	2.14	1.95
1960........	1,330	1,469	1,587	1,666	1,821	3.99	3.53	3.18	3.00	2.73
1970........	2,129	2,345	2,541	2,670	2,910	6.21	5.48	4.96	4.68	4.25
1980........	3,146	3,462	3,756	3,958	4,311	9.19	8.09	7.32	6.94	6.30
2000........	4,818	5,303	5,756	6,066	6,604	14.08	12.41	11.22	10.64	9.65

1/ Wages of $1,500 for males and $900 for women (columns (2) and (7) are the "standard" assumptions for the "low" costs, and $2,000 for males and $1,200 for women (columns (4) and (9) are the "standard" assumptions for the "high" costs.

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X. EFFECT OF AGE 60 ELIGIBILITY FOR MEN

The basic Study No. 22, in the figures heretofore given, has used an eligibility condition for primary benefits of age 65 for men and age 60 for women. The effect of reducing the age for women from age 65 of the present act to age 60 runs at about a 15 percent over-all increase in costs. It may be useful to give some indication of the cost effect in reducing the eligibility of male lives similarly from age 65 to age 60. This is given in Table X wherein also are given the above-mentioned figures for women. Table X contains, as the sole modification of the present program, the reduction in eligibility ages from 65 to age 60. A cost increase index is given for this in columns (8) and (9) as measured against the present act; it should not change too significantly if applied to a different coverage.[1] Column (8) gives the effect for women alone, column (9) gives the effect for both sexes; hence to get the effect for male primaries alone would mean sub-tracting column (8) from column (9) which results in the following figures for men alone (this, of course, would be anomalous as females, including wives, would have to wait until age 65):

Effect on Present Act of Age 60 Eligibility For Male Primary Benefits
Percentage Increase in Total Dollar Costs

	Low Assumptions	High Assumptions
1950	30%	43%
1960	24	30
1980	23	27
2000	17	17

The increase in costs as percentages of pay roll may be seen by the appropriate comparisons between columns (5), (6) and (7). Over time, it will be noted that the relative increase in costs is a reduc-ing one; this is due to the fact that as a fuller and fuller bene-ficiary age roll develops, the effect of changes in just one age group thereof becomes smaller.

XI. DISTRIBUTION OF CLAIMS BY TYPE OF BENEFICIARY

It frequently is useful in appraising the extent and interrela-tionships within a social insurance system to consider the composition of the payees by type, to view the change in such composition as to the

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[1] See Table VII, component Items (c) and (v) which, however, also include a modification in lump-sum payments.

TABLE X

Comparative Benefit Costs for Present Plan (Actuarial Study #19), Reduction to Age 50
for Women only, and Reduction to Age 60 for Men and Women

Calendar Year	Total Benefit Costs in Millions of Dollars			Total Benefit Costs as Percentages of Pay Roll			Ratio of Increased Costs Relative to Present Plan (#19)	
	Present Plan (Study #19)	With Age 60 for Women	With Age 60 for Men and Women	Present Plan (Study #19)	With Age 60 for Women	With Age 60 for Men and Women	With Age 60 for Women (3)÷(2)	With Age 60 for Men and Women (4)÷(2)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low								
1947....	$404	$455	$599	1.19%	1.34%	1.76%	113%	148%
1950....	587	660	831	1.70	1.91	2.41	112	142
1955....	893	1,029	1,265	2.51	2.89	3.56	115	142
1960....	1,235	1,420	1,715	3.45	3.97	4.79	115	139
1970....	1,863	2,190	2,663	5.19	6.10	7.42	118	143
1980....	2,625	3,060	3,674	7.29	8.50	10.21	117	140
2000....	3,232	3,644	4,207	8.98	10.12	11.69	113	130
High								
1947....	$515	$583	$801	0.99%	1.12%	1.55%	113%	156%
1950....	774	873	1,205	1.46	1.65	2.30	113	156
1955....	1,171	1,348	1,802	2.14	2.47	3.35	115	154
1960....	1,666	1,901	2,394	3.00	3.43	4.38	114	144
1970....	2,670	3,076	3,838	4.68	5.40	6.84	115	144
1980....	3,958	4,505	5,570	6.94	7.90	9.96	114	141
2000....	6,066	6,714	7,747	10.64	11.78	13.86	111	128

future and to compare such composition between two or more systems. The four tables numbered XI furnish percentage distributions by number of beneficiaries and by the amounts payable to such beneficiaries, all by type of beneficiary category.

The tables marked (22A) and (22B) deal with the composition under the extended coverage and specifications of Study No. 22. The tables marked (19A) and (19B) deal similarly with the present limited coverage and the existing specifications. Among the many comparisons which these tables permit, perhaps the most significant one is that for the amount of benefit payments among the aged, column (7) in Table XI (22B) and in Table XI (19B). Here we find that the effect of changes from the present act result in a significantly higher proportionate outlay going to the aged in the earlier years than under the present plan, while in the later years of the period, the proportions are very close to those of the present act. One reason for this lies in the reduction of eligibility for women from 65 to 60 in the case of Study No. 22, which has its largest effect in the earlier years after such change.

* * * * * * * * * * * *

CONCLUSION

This Study has dealt mainly with an extended coverage program based on the benefits and conditions outlined in the specifications on page 1 and developed on the assumptions of Table A. The Study has also brought in certain supplemental analyses to the limited coverage program--the main figures for which appeared in the pamphlet on Study No. 19, 19(a), and 19(b). The present Study No. 22, together with the No. 19 series, should be taken together as indicative of costs under the present act and under a plan of wide coverage extension and liberalization of benefits and other conditions; such changes are along the lines that have been discussed in various quarters and are similar or parallel in many instances to the proposals contained in the Wagner-Murray-Dingell bills.

Study No. 22 cannot be taken as a definite cost examination of the old-age, survivors and disability features of the latest Wagner-Murray-Dingell bill (S.1050 or HR.3293) since, for one thing, the proposed coverage in that bill is not as extensive as that assumed herein. However, the benefit formula is the same, the inclusion of disability is similar, the reduction of women to age 60 is the same, the payment of lump sums in all cases of insured deaths is the same and the requirements for insured status are much the same. Consequently, the cost results in this Study No. 22 should not be radically different

TABLE XI(22A)

(f 60) O.A.S.I. Percentage Distribution of Claims
A: By Number of Beneficiaries (#22, revised, Table I)

Total Beneficiaries 1/ (thousands)	Year	Male Primary	Female Primary	Wives	Widows	Parents	Total Old-Age	Childs	Widows Current	Lump-Sum 1/	Total O.A.S.I. Beneficiaries
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					Low						
3,243	1947	18.5%	9.3%	10.0%	12.3%	.6%	50.7%	27.8%	5.7%	15.8%	100.0%
5,435	1950	22.2	10.0	11.0	14.0	.6	57.8	25.6	5.1	11.5	100.0
8,597	1955	24.0	8.6	11.8	19.5	.5	64.4	22.4	4.5	8.7	100.0
11,530	1960	25.2	7.9	12.4	22.5	.6	68.6	19.1	4.1	8.2	100.0
14,750	1970	24.7	8.1	12.1	27.1	.5	72.5	16.3	3.6	7.6	100.0
17,000	1980	24.7	8.3	12.0	29.8	.4	75.2	14.4	3.1	7.3	100.0
18,595	2000	25.7	8.0	12.5	30.1	.4	- 76.7	13.2	2.8	7.3	100.0
					High						
4,119	1947	26.7	9.0	14.9	12.1	.5	63.2	22.1	2.2	12.5	100.0
7,288	1950	30.2	9.0	15.8	13.0	.5	68.5	18.9	3.0	9.6	100.0
11,167	1955	32.1	8.0	16.6	16.6	.6	73.9	16.1	2.9	7.1	100.0
14,601	1960	33.6	7.6	17.1	18.8	.6	77.7	13.3	2.6	6.4	100.0
18,930	1970	33.4	7.8	17.4	23.0	.6	82.2	10.1	1.9	5.8	100.0
23,115	1980	33.8	8.3	18.2	24.2	.6	85.1	8.0	1.4	5.5	100.0
28,700	2000	34.5	8.0	18.8	24.6	.6	86.5	6.6	1.1	5.8	100.0

1/ Lump sums are for number of deaths in year.

TABLE XI(22B)

(f 60) O.A.S.I. Percentage Distribution of Claims
B: By Amount of Benefit Payments (#22, revised, Table III)

Total Benefits (millions)	Year	Male Primary	Female Primary	Wives	Widows	Parents	Total Old-Age	Childs	Widows Current	Lump-Sum	Total O.A.S.I. Beneficiaries
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
					Low						
$763	1947	36.7%	11.4%	10.0%	10.3%	.3%	68.7%	15.0%	7.1%	9.2%	100.0%
1,578	1950	33.1	12.4	8.6	15.7	.4	70.2	16.8	5.9	7.1	100.0
2,307	1955	34.0	10.2	8.6	20.0	.4	73.2	15.8	4.8	6.2	100.0
3,983	1960	35.6	9.3	8.8	22.6	.4	76.7	13.3	4.3	5.7	100.0
5,475	1970	34.8	9.4	8.5	26.9	.3	79.9	11.1	3.7	5.3	100.0
6,742	1980	34.8	9.4	8.5	29.5	.3	82.5	9.4	3.0	5.1	100.0
7,493	2000	36.3	9.0	8.9	29.4	.2	83.8	8.5	2.7	5.0	100.0
					High						
1,015	1947	44.0%	12.7%	11.8%	7.8%	.2%	76.5%	11.3%	5.3%	6.9%	100.0%
2,395	1950	43.3	10.4	11.7	13.7	.3	79.4	11.7	3.7	5.2	100.0
4,198	1955	44.0	9.0	11.5	16.3	.4	81.2	11.0	3.0	4.8	100.0
5,863	1960	45.3	8.4	11.8	18.2	.4	84.1	9.0	2.6	4.3	100.0
8,209	1970	44.9	8.4	11.9	21.9	.4	87.5	6.7	1.9	3.9	100.0
10,797	1980	45.7	8.7	12.4	22.8	.4	90.0	5.0	1.3	3.7	100.0
13,646	2000	47.1	8.3	12.6	22.7	.4	91.1	4.1	1.0	3.8	100.0

TABLE XI(19A)

(r 65) O.A.S.I. Percentage Distribution of Claims
A: By Number of Beneficiaries (#19 Table I)

Total Benefi- ciaries 2/ (thousands)	Year	Male Primary	Female Primary	Wives	Widows	Parents	Total Old-Age	Childs	Widows Current	Lump-Sum 2/	Total O.A.S.I. Benefi- ciaries
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
						Low					
1268	1944 (Actual) 1/	31.0%	5.3%	10.7%	5.4%	.4%	52.8%	25.5%	9.7	12.0%	100.0%
3000	1950	29.9	4.9	8.8	8.2	1.7	53.5	31.8	7.4	7.3	100.0
4296	1955	30.6	5.0	9.3	10.5	2.0	57.4	29.4	6.9	6.3	100.0
5593	1960	30.7	6.3	9.5	13.5	2.0	62.0	25.9	6.3	5.8	100.0
8142	1970	31.4	9.2	9.8	17.5	1.5	69.4	20.4	4.9	5.3	100.0
11043	1980	33.1	10.4	10.3	20.9	1.2	75.9	15.6	3.6	4.9	100.0
13337	2000	33.4	10.1	10.4	24.4	1.0	79.3	13.0	3.0	4.7	100.0
						High					
1268	1944 (Actual) 1/	31.0	5.3	10.7	5.4	.4	52.8	25.5	9.7	12.0	100.0
3487	1950	34.5	4.7	11.1	9.1	2.4	61.8	26.8	4.9	6.5	100.0
4951	1955	35.9	5.5	11.9	9.6	2.9	65.8	24.0	4.8	5.4	100.0
6704	1960	36.7	7.0	12.6	12.2	3.1	71.6	19.5	4.2	4.7	100.0
10020	1970	37.5	9.1	13.7	16.1	2.7	79.1	13.6	3.0	4.3	100.0
14445	1980	39.5	10.2	14.7	18.2	2.0	84.6	9.7	1.8	3.9	100.0
21507	2000	39.2	11.7	15.6	20.7	1.3	88.5	6.7	1.2	3.6	100.0

1/ In force 12/31/44.
2/ Lump-sums are for number of deaths in year.

TABLE XI(19B)

(f 65) O.A.S.I. Percentage Distribution of Claims
B: By Amount of Benefit Payments (#19 Table III)

Total Benefits (millions)	Year	Male Primary	Female Primary	Wives	Widows	Parents	Total Old-Age	Childs	Widows Current	Lump-Sum	Total O.A.S.I. Benefits
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
						Low					
$218	1944 (Actual) 1/	40.9%	5.5%	7.3%	6.9%	.4%	61.0%	19.3%	9.6%	10.1%	100.0%
587	1950	39.4	5.8	6.1	8.9	1.4	61.6	23.9	9.2	5.3	100.0
893	1955	40.5	5.6	6.5	11.6	1.5	65.7	21.6	8.2	4.5	100.0
1,235	1960	41.1	6.6	6.4	14.7	1.5	70.3	18.5	7.2	4.0	100.0
1,863	1970	40.5	9.0	6.5	19.5	1.1	76.6	14.5	5.5	3.4	100.0
2,625	1980	42.1	9.4	6.9	22.9	.8	82.1	10.8	4.0	3.1	100.0
3,232	2000	42.2	9.0	6.8	26.6	.5	85.1	8.8	3.2	2.9	100.0
						High					
$218	1944 (Actual) 1/	40.9%	5.5%	7.3%	6.9%	.4%	61.0%	19.3%	9.6%	10.1%	100.0%
774	1950	44.5	5.2	7.5	10.1	1.8	69.1	20.0	6.1	4.8	100.0
1,171	1955	46.4	5.7	7.9	10.8	2.2	73.0	17.6	5.6	3.8	100.0
1,666	1960	47.2	7.0	8.3	13.2	2.3	78.0	14.0	4.8	3.2	100.0
2,670	1970	47.5	8.7	8.9	17.8	1.9	84.8	9.2	3.2	2.8	100.0
3,958	1980	48.9	9.8	9.3	19.6	1.4	89.0	6.5	2.0	2.5	100.0
6,066	2000	48.4	10.9	9.9	22.2	.8	92.2	4.4	1.3	2.1	100.0

1/ Amounts certified in 1944.

from a similar study carried through on the exact specifications of the above-mentioned bill. For this latter, the magnitude of the dollar costs would probably be some 10 percent to 15 percent less, but such somewhat reduced dollar costs, when expressed as percentages of pay roll, would be closer to, or about the same as, for Study No. 22 in the earlier years but, in the later years, somewhat more than in Study No. 22 since the pay roll base would take a larger relative reduction than would the benefit outgo.1/ The interrelationship by benefit categories, the high and the low, etc., would not be unduly affected.

The Study contains, as before mentioned, various side exhibits such as those wherein the standard assumptions as to wages have been varied, or where the number of aged retired from the labor force has been varied or relationships in and with the present act examined. No special study has been carried through under an assumption of a secular increase in average wages; in Study No. 19(a) this was done for the present program and the relationships given there, between the level wage assumption and the increasing wage assumption, may be referred to for indicating illustrative effects and the limitations thereof.

In the Addendum, three additional sets of tables are given. Two of these further studies apply only to the coverage of the present act and show in some detail the effect of two modifications to Study No. 19, viz., utilizing the benefit formula and average wage method of No. 22 and, secondly, the reduction in eligibility for women to age 60.

1/ For a given "bent formula," that is, where benefits are based on one percentage of pay up to a certain point (e.g., 40 % on the first $75 of monthly wage) plus a lower percentage on pay in excess of such point (e.g., 10% on the excess over $75 of monthly wage), a general increase in average pay would result in higher dollar costs but lower percentage costs. This is also the tendency when moving from a limited coverage system to a more expanded coverage, since average covered wages are apt to be maintained at a higher level. However, this is not a categorical rule since, (i) if the added coverage is granted fairly immediate benefit eligibility, the impact of those early benefits can cause a higher early percentage cost; or since, (ii) if the extension of coverage becomes fairly complete, say 80% to 90% as in the Wagner bill, there can be enough "free" (i.e., continued) insured status and claims thereunder while out of covered employment, to cause a higher percentage cost of taxable pay roll to emerge. In both cases of (i) and (ii), any higher percentage costs would tend downward with time and become "lower" percentage costs in the later years.

The third Addendum Study constitutes summary tables for Actuarial Study No. 18 (which was never duplicated for distribution). That Study dealt with a complete coverage assumption without changing the benefits or average wage formulae from those of the present act, although women were assumed to be eligible at age 60 and lump-sum death benefits were payable at all insured deaths.

The tables presented in this Study and Addendum run to considerable comprehensiveness; to some, they may seem too much a welter of figures. However, each of the tables deals with matter concerning which questions have been raised previously by students of the subject-- in fact, many where criticism has been voiced that figures and data were unavailable. Nor will these tables be sufficient. In point of benefit modification and changes in other specifications, other figures and combinations thereof will be sought and in point of time, better population, family data, experience of the program itself, etc., will become available for improvement of these results which, at best, are not forecasts but illustrations based on a wide tolerance of range in what an actual emerging experience could show.

ACTUARIAL STUDY NO. 22

ADDENDUM

XII. NEW BENEFIT FORMULA FOR PRESENT ACT

In Section II of this report, Specifications (5) and (6), set forth the assumed benefit and average wage formulae for the plan there being investigated. These differ from the present act in two major respects: first, the 40 percent rate applies up to $75 of monthly wage against the existing $50 of monthly wage and, secondly, the assumed average wage is determined as, in effect, the "average wage while working in covered employment," whereas the existing base is the true average covered wages over the entire elapsed time.

It is pertinent therefore to consider what effect such new formulae would have if the other specifications of the existing act remained unchanged. The Table XII series supplies figures in some detail for examining this question.

The arrangement of these tables parallels that of Actuarial Study No. 19 so that ready comparison at detailed points is possible. On Tables XII(5) and (6), a summary comparison of the results by the two sets of formulae is given. Column (13) of these tables shows that the increase in dollar costs runs about 50 percent higher throughout, with the increases under the "high" assumptions not quite as great as under the "low" assumptions; for the percentage costs, the increase is similarly in the magnitude of 50 percent but more of a definite trend over time occurs such that the increase runs for the "low" assumptions from about 40 percent up to about 60 percent for the year 2000, with a slightly less steep trend of increases under the "high" assumptions.

Hence it appears that the effect of the two changes mentioned, without the other modifications such as reducing women to age 60, the addition of disability, etc., would indicate some 50 percent higher dollar and percentage costs than may be considered illustrative for the existing program. (For the effect separately of the benefit formula change compared with change in average wage formula, see Section VII earlier in this Study.)

TABLE XII (1)
Application of No. 22 Formula and Average Wage to Coverage of No. 19
(f 65) O.A.S.I. Beneficiaries in Force

Calendar Year	Monthly Old-Age Beneficiaries						Monthly Survivor Beneficiaries			Total O.A.S.I. Monthly Beneficiaries	Lump-Sum Deaths
	Primary		Wives 2/	Widows 2/	Parents	Total Old-age	Childs 3/	Widows Current 3/ 4/	Total Survivors 3/ 4/		
	Male	Female 1/									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Low											
1947....	620	95	191	157	25	1,088	627	178	805	1,893	190
1950....	896	147	264	246	50	1,603	958	221	1,179	2,782	218
1955....	1,319	213	401	449	84	2,466	1,265	295	1,560	4,026	270
1960....	1,722	352	533	753	111	3,471	1,449	350	1,799	5,270	323
1970....	2,555	752	795	1,425	125	5,652	1,662	398	2,060	7,712	430
1980....	3,662	1,144	1,139	2,310	127	8,382	1,722	397	2,119	10,501	542
2000....	4,468	1,350	1,390	3,253	127	10,588	1,729	397	2,126	12,714	623
High											
1947....	806	106	256	178	47	1,393	664	116	780	2,173	199
1950....	1,201	164	387	319	82	2,153	936	171	1,107	3,260	227
1955....	1,781	271	589	473	145	3,259	1,188	236	1,424	4,683	268
1960....	2,466	472	843	818	208	4,807	1,304	279	1,583	6,390	314
1970....	3,769	908	1,369	1,621	269	7,936	1,358	298	1,656	9,592	428
1980....	5,706	1,475	2,118	2,629	292	12,220	1,394	262	1,656	13,876	569
2000....	8,438	2,513	3,355	4,450	271	19,027	1,445	262	1,707	20,734	773

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 65.

TABLE XII (2)
Application of No. 22 Formula and Average Wage of Coverage to No. 19
(f 65) Average Annual Benefits for O.A.S.I.

| Year | Annual Old-Age Benefits | | | | | Young Survivors | | Deaths |
| | Primary | | Wives 2/ | Widows 2/ | Parents | Childs 3/ | Widows Current 4/ | Lump Sum |
	Male	Female 1/						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Low			
1947....	$429	$321	$219	$352	$214	$225	$341	$195
1950....	436	327	223	361	220	230	348	206
1955....	454	337	231	372	226	236	354	215
1960....	467	346	240	380	233	243	366	223
1970....	496	363	254	402	242	254	380	230
1980....	513	370	264	413	243	257	384	232
2000....	513	370	264	413	243	257	384	231
					High			
1947....	$477	$391	$242	$392	$242	$250	$378	$231
1950....	488	400	249	400	246	255	385	238
1955....	501	412	257	411	254	264	395	243
1960....	521	419	266	425	257	270	405	252
1970....	555	443	286	453	266	279	420	266
1980....	573	458	292	467	272	285	429	267
2000....	573	458	292	467	272	285	429	262

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the children of primary beneficiaries.
4/ Widows under age 65 with children.

TABLE XII (3)
Application of No. 22 Formula and Average Wage of Coverage to No. 19
(f 65) O.A.S.I. Benefit Payments - Millions of Dollars

Year	Monthly Old-Age Benefits						Monthly Survivors Benefits			Other	Total
	Primary		Wives 2/	Widows 2/	Parents	Total Old-Age	Childs 3/	Widows Current 4/	Total Survivors 3/ 4/	Lump Sum	Total Benefits
	Male	Female 1/									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
						Low					
1947	$212	$31	$34	$48	$6	$331	$128	$48	$176	$37	$544
1950	334	48	51	77	11	521	210	77	287	45	853
1955	521	72	82	149	18	842	291	104	395	58	1,295
1960	733	122	112	261	26	1,254	349	128	477	72	1,803
1970	1,122	272	178	533	30	2,135	421	150	571	99	2,805
1980	1,672	423	268	899	30	3,292	443	152	595	126	4,013
2000	2,058	499	329	1,282	24	4,192	445	152	597	144	4,933
						High					
1947	$329	$43	$54	$62	$11	$499	$155	$43	$198	$46	$743
1950	504	66	84	112	20	786	229	66	295	54	1,135
1955	776	112	132	178	37	1,235	309	93	402	65	1,702
1960	1,124	198	196	312	54	1,884	352	114	466	79	2,429
1970	1,851	401	345	686	72	3,355	379	125	504	114	3,973
1980	2,867	675	540	1,143	79	5,304	397	113	510	152	5,966
2000	4,344	1,150	873	1,987	73	8,427	411	113	524	202	9,153

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the children of primary beneficiaries.
4/ Widows under age 65 with children.

TABLE XII (4)
Application of No. 22 Formula and Average Wage to Coverage of No. 19
(f 65) O.A.S.I. Benefit Payments - Percent of Payroll

Year	Monthly Old-Age Benefits						Monthly Survivors Benefits			Other	Total	Payroll
	Primary		Wives 2/	Widows 2/	Parents	Total Old-Age	Childs 3/	Widows Current 4/	Total Survivors 3/ 4/	Lump Sum	Total Benefits	Assumed Payroll (billions)
	Male	Female 1/										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
						Low						
1947	.61	.08	.10	.14	.01	.94	.37	.14	.51	.10	1.60	$34.0
1950	.96	.14	.14	.22	.03	1.49	.60	.23	.83	.13	2.47	34.6
1955	1.47	.20	.23	.42	.06	2.38	.82	.30	1.12	.16	3.64	35.6
1960	2.04	.34	.31	.73	.07	3.49	.98	.36	1.34	.20	5.04	35.8
1970	3.13	.76	.50	1.49	.09	5.97	1.17	.42	1.59	.28	7.79	36.0
1980	4.65	1.17	.75	2.50	.09	9.16	1.23	.42	1.65	.34	11.15	36.0
2000	5.72	1.39	.91	3.57	.07	11.66	1.23	.42	1.65	.40	13.70	36.0
						High						
1947	.62	.08	.10	.11	.01	.92	.30	.08	.38	.09	1.43	$52.1
1950	.95	.13	.16	.21	.04	1.49	.43	.13	.56	.11	2.14	53.0
1955	1.42	.20	.24	.33	.07	2.26	.57	.17	.74	.12	3.12	54.6
1960	2.03	.35	.35	.56	.10	3.39	.63	.20	.83	.15	4.38	55.5
1970	3.24	.70	.61	1.20	.13	5.88	.66	.22	.88	.20	6.97	57.0
1980	5.03	1.18	.95	2.00	.14	9.30	.69	.20	.89	.27	10.47	57.0
2000	7.62	2.02	1.53	3.49	.13	14.79	.72	.20	.92	.36	16.06	57.0

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the children of primary beneficiaries.
4/ Widows under age 65 with children.

TABLE XII (5)

Comparison of #19 and #22 Formulae
As Applied to Coverage of #19
(f 65) Average Annual Benefits by Certain Beneficiary Classes

Year	Male Primaries			Female Primaries			Aged Widows			Lump Sum		
	Average by #19 Basis	Average by #22 Basis	Ratio 1/ (3) to (2)	Average by #19 Basis	Average by #22 Basis	Ratio (6) to (5)	Average by #19 Basis	Average by #22 Basis	Ratio 2/ (9) to (8)	Average by #19 Basis	Average by #22 Basis	Ratio (12) to (11)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Low											
1947....	$295	$429	1.45	$228	$321	1.41	$235	$352	1.50	$144	$195	1.35
1950....	303	436	1.44	232	327	1.41	236	361	1.53	146	206	1.41
1955....	315	454	1.44	236	337	1.43	248	372	1.50	150	215	1.43
1960....	324	467	1.44	231	346	1.50	253	380	1.50	151	223	1.48
1970....	333	496	1.49	224	363	1.62	261	402	1.54	151	230	1.52
1980....	340	513	1.51	215	370	1.72	265	413	1.56	151	232	1.54
2000....	340	513	1.51	215	370	1.72	265	413	1.56	150	231	1.54
	High											
1947....	$322	$477	1.48	$234	$391	1.67	$265	$392	1.48	$161	$231	1.43
1950....	334	488	1.46	241	400	1.66	267	400	1.50	164	238	1.45
1955....	350	501	1.43	247	412	1.67	278	411	1.48	167	243	1.46
1960....	364	521	1.43	248	419	1.69	287	425	1.48	170	252	1.48
1970....	380	555	1.46	256	443	1.73	300	453	1.51	174	266	1.53
1980....	387	573	1.48	263	458	1.74	303	467	1.54	170	267	1.57
2000....	387	573	1.48	263	458	1.74	303	467	1.54	166	262	1.58

1/ For wife benefits these ratios would also be close.
2/ These ratios are close to those for parents, childs and widows current.

TABLE XII (6)

Comparison of #19 and #22 Formulae
As Applied to Coverage of #19
(£ 65) Dollar Costs* by Beneficiary Categories

Year	Old-Age Benefits 1/			Young Survivors Benefits 2/			Lump Sum Benefits			Total Benefits		
	Cost by #19 Basis	Cost by #22 Basis	Ratio (3) to (2)	Cost by #19 Basis	Cost by #22 Basis	Ratio (6) to (5)	Cost by #19 Basis	Cost by #22 Basis	Ratio (9) to (8)	Cost by #19 Basis	Cost by #22 Basis	Ratio (12) to (11)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Low												
1947.........	$226	$331	1.46	$121	$176	1.45	$28	$37	1.32	$375	$544	1.45
1950.........	362	521	1.44	194	287	1.48	31	45	1.45	587	853	1.45
1955.........	587	842	1.43	266	395	1.48	40	58	1.45	893	1,295	1.45
1960.........	869	1,254	1.44	317	477	1.50	49	72	1.47	1,235	1,803	1.46
1970.........	1,426	2,135	1.50	373	571	1.53	64	99	1.55	1,863	2,805	1.51
1980.........	2,156	3,292	1.53	388	595	1.53	81	126	1.56	2,625	4,013	1.53
2000.........	2,750	4,192	1.52	389	597	1.53	93	144	1.55	3,232	4,933	1.53
High												
1947.........	$336	$499	1.49	$137	$198	1.45	$32	$46	1.44	$505	$743	1.47
1950.........	535	786	1.47	202	295	1.46	37	54	1.46	774	1,135	1.47
1955.........	855	1,235	1.44	272	402	1.48	44	65	1.48	1,171	1,702	1.45
1960.........	1,300	1,884	1.45	313	466	1.49	53	79	1.49	1,666	2,429	1.46
1970.........	2,263	3,355	1.48	332	504	1.52	75	114	1.52	2,670	3,973	1.49
1980.........	3,525	5,304	1.50	336	510	1.52	97	152	1.57	3,958	5,966	1.51
2000.........	5,593	8,427	1.51	345	524	1.52	128	202	1.58	6,066	9,153	1.51

1/ Primaries, wives, widows and parents.
2/ Childs and widows current.

XIII. AGE 60 FOR WOMEN UNDER THE PRESENT ACT

Section XII, above, gave the effect of two formulae changes on the present act. A change in the benefit conditions such that women could retire at age 60 as primary, wife, widow or parent beneficiaries would also have an increasing effect on costs under the existing act. An examination of this last change, without any other modification in the present act, is given in some detail in the Table XIII series. Table XIII(7) summarizes the results of this age 60 modification alone by giving percentage changes in cost from those of the present act. As would be expected the greatest effect is on female primary beneficiaries, with next, the increase in wife's benefits and, thirdly, except in the early years, in widow benefits. Payments for widow's current benefits, naturally, decline slightly since more of them would be receiving the benefits as aged widows. Also, the payment of lump-sum benefits has a significant reduction because monthly benefits would be payable to a larger number of surviving women, which would thereby preclude the payment of the lump sum.

In summary, column (12) of Table XIII(7) indicates that the effect of this change in eligibility for women would constitute approximately a 15 percent increase in both dollar and percentage of pay-roll costs. If this change in eligibility age were combined with the formula changes of Section XII, above, the increase would take a compound characteristic, so that combined, we might roughly say, it would be 115 percent of 150 percent, or a total of 70 to 75 percent increase as a cost index of the changes. In addition, if lump sums become payable to all, as prescribed in the Specifications for Study No. 22, there would be a further small increase over the present act. Therefore, it could be said that, without contemplating disability, the application to the present act of the specifications given in Section II, would result roughly in cost increases of some 75 percent over those of the present act as given in Actuarial Study No. 19.

Table XIII(1)

Reduction to Age 60 for Women as it Affects Actuarial Study #19
Number of Beneficiaries (thousands)

Calendar Year	Monthly Old-Age Beneficiaries							Monthly Young Survivors Beneficiaries			Total	
	Male Primary 1/	Female Primary 2/	Wife's 1/	Children of Primaries	Widow's	Parent's	Total Old-Age	Child's	Widow's Current	Total Young Survivors	O.A.S.I. Monthly Beneficiaries	Lump-Sum Deaths 3/
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Low												
1945....	436	105	237	22	174	10	984	383	146	529	1,513	151
1950....	896	233	416	46	407	63	2,061	912	217	1,129	3,190	196
1955....	1,319	404	611	61	718	105	3,218	1,204	288	1,492	4,710	242
1960....	1,722	632	794	77	1,090	131	4,446	1,372	341	1,713	6,159	290
1970....	2,555	1,257	1,172	110	2,005	145	7,244	1,552	383	1,935	9,179	385
1980....	3,662	1,774	1,682	159	3,065	143	10,485	1,563	377	1,940	12,425	483
2000....	4,468	1,894	1,950	165	3,981	112	12,570	1,564	377	1,941	14,511	560
High												
1945....	544	118	271	28	148	32	1,141	454	77	531	1,672	161
1950....	1,201	281	602	60	472	98	2,714	876	169	1,045	3,759	203
1955....	1,781	498	903	86	728	171	4,167	1,102	232	1,334	5,501	237
1960....	2,466	797	1,264	112	1,122	239	6,000	1,192	274	1,466	7,466	279
1970....	3,769	1,506	1,977	158	2,109	301	9,820	1,200	291	1,491	11,311	384
1980....	5,706	2,252	3,062	239	3,230	321	14,810	1,155	255	1,410	16,220	510
2000....	8,438	3,511	4,563	291	5,045	285	22,133	1,154	255	1,409	23,542	705

1/ Unadjusted for suspensions; for all other categories of monthly beneficiaries, figures represent number actually receiving benefits at end of year.

2/ Includes only those not entitled to wife's or widow's benefits.

3/ Represents number of deaths resulting in lump-sum awards during year.

Addendum to Study No. 22

Table XIII(2)

Reduction to Age 60 for Women as it Affects Actuarial Study #19
Estimated Average Benefit,1/ by Type 2/

Calendar year	Primary		Wife's	Widow's 3/	Parent's	Child's 4/	Widow's Current	Lump-Sum
	Male	Female 3/						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low								
1945.....	$291	$227	$152	$234	$154	$150	$240	$143
1950.....	303	232	158	237	157	153	245	146
1955.....	315	238	164	250	160	156	249	150
1960.....	324	235	169	255	164	159	254	151
1970.....	333	237	174	261	167	163	260	151
1980.....	340	230	177	266	169	165	263	151
2000.....	340	230	177	266	169	165	263	150
High								
1945.....	314	239	162	263	171	167	267	159
1950.....	334	253	173	267	176	172	275	164
1955.....	350	256	181	278	180	176	280	167
1960.....	364	254	189	287	182	179	285	170
1970.....	380	262	197	300	185	181	290	174
1980.....	387	264	200	303	189	185	296	170
2000.....	387	264	200	303	189	185	296	166

1/ For monthly benefits, average represents annual amount per beneficiary in force at end of year; for lump-sums, average
   represents amount per death claim on which award is made during year.
2/ Averages do not differ from those of Actuarial Study No. 19, except as indicated.
3/ Averages differ from those of Actuarial Study No. 19.
4/ Includes the relatively few children of primary beneficiaries.

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Table XIII(3)
Reduction to Age 60 for Women as it Affects Actuarial Study #19
Benefit Payments: Amounts (in millions)

Calendar Year	Monthly Old-Age Benefits						Monthly Young Survivors Benefits			Lump-Sum Deaths	Total O.A.S.I. Benefits
	Primary		Wife's	Widow's	Parent's	Total Old-Age	Child's 2/	Widow's Current	Total Young Survivors		
	Male	Female 1/									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Low											
1945........	$88	$20	$26	$36	$1	$171	$50	$21	$71	$22	$264
1950........	232	54	57	86	10	439	140	53	193	28	660
1955........	362	96	88	167	16	729	193	71	264	36	1,029
1960........	509	148	118	265	21	1,061	228	87	315	44	1,420
1970........	753	298	180	509	24	1,764	270	99	369	57	2,190
1980........	1,107	408	266	801	24	2,606	284	99	383	71	3,060
2000........	1,363	435	310	1,051	19	3,178	285	99	384	82	3,644
High											
1945........	140	29	37	37	5	248	72	21	93	25	366
1950........	345	72	90	115	17	639	155	46	201	33	873
1955........	543	128	143	194	31	1,039	206	65	271	38	1,348
1960........	786	202	208	302	44	1,542	233	79	312	47	1,901
1970........	1,268	394	344	618	56	2,680	246	84	330	66	3,076
1980........	1,937	594	535	959	60	4,085	258	76	334	86	4,505
2000........	2,935	925	813	1,529	54	6,256	267	76	343	115	6,714

1/ Includes only those not entitled to wife's or widow's benefits.
2/ Includes the relatively few children of primary beneficiaries.

Reduction to Age 60 for Women as it Affects Actuarial Study #19
Benefit Payments: Percent of Payroll

Calendar Year	Monthly Old-Age Benefits						Monthly Young Survivors Benefits			Lump-Sum Deaths	Total O.A.S.I. Benefits	Payroll (billions)
	Primary		Wife's	Widow's	Parent's	Total Old-Age	Child's 2/	Widow's Current	Total Young Survivors			
	Male	Female 1/										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Low												
1945......	0.26	0.06	0.08	0.11	---	0.51	0.15	0.06	0.21	0.07	0.79	$33.4
1950......	.67	.16	.16	.25	.03	1.27	.40	.15	.56	.08	1.91	34.6
1955......	1.02	.27	.25	.47	.04	2.05	.54	.20	.74	.10	2.89	35.6
1960......	1.42	.41	.33	.74	.06	2.96	.64	.24	.88	.12	3.97	35.8
1970......	2.10	.83	.50	1.42	.07	4.91	.75	.28	1.03	.16	6.10	35.9
1980......	3.07	1.13	.74	2.22	.07	7.24	.79	.27	1.06	.20	8.50	36.0
2000......	3.79	1.21	.86	2.92	.05	8.83	.79	.27	1.07	.23	10.12	36.0
High												
1945......	.27	.06	.07	.07	.01	.48	.14	.04	.18	.05	.71	51.5
1950......	.65	.14	.17	.22	.03	1.21	.29	.09	.38	.06	1.65	53.0
1955......	.99	.23	.26	.36	.06	1.90	.38	.12	.50	.07	2.47	54.6
1960......	1.42	.36	.37	.54	.08	2.78	.42	.14	.56	.09	3.43	55.5
1970......	2.22	.69	.60	1.08	.10	4.70	.43	.15	.58	.12	5.40	57.0
1980......	3.40	1.04	.94	1.68	.11	7.17	.45	.13	.59	.15	7.90	57.0
2000......	5.15	1.62	1.43	2.68	.09	10.98	.47	.13	.60	.20	11.78	57.0

1/ Includes only those not entitled to wife's or widow's benefits.
2/ Includes the relatively few children of primary beneficiaries.

Addendum to Study No. 22

Table XIII(5)

Reduction to Age 60 for Women as it Affects Actuarial Study #19
- Summary: Benefits Taxes, Progress of Reserve 1/

Calendar Year	Covered Pay-Roll (billions)	Tax Income for Year Shown (millions)	O.A.S.I. Benefit Payments for Year Shown (millions)	Benefit Cost for Year Shown as Percent of Payroll	Level cost of benefits, 1945 to year shown as percent of payroll		Amount of Trust Fund End of Year (billions)
					No Interest	2 Percent Interest	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Low							
1945........	$33.4	$1,336	$264	0.79%	0.79%	0.79%	$8.2
1950........	34.6	2,076	660	1.91	1.39	1.38	16.1
1955........	35.6	2,136	1,029	2.89	1.91	1.87	24.2
1960........	35.8	2,148	1,420	3.97	2.44	2.35	31.3
1970........	35.9	2,154	2,190	6.10	3.50	3.27	41.6
1980........	36.0	2,160	3,060	8.50	4.60	4.15	45.3
2000........	36.0	2,160	3,644	10.12	6.43	5.47	35.3
High							
1945........	51.5	2,060	366	0.71	0.71	0.71	8.9
1950........	53.0	3,180	873	1.65	1.21	1.20	21.0
1955........	54.6	3,276	1,348	2.47	1.65	1.61	34.2
1960........	55.5	3,330	1,901	3.43	2.10	2.02	46.2
1970........	57.0	3,420	3,076	5.40	3.04	2.84	66.2
1980........	57.0	3,420	4,505	7.90	4.11	3.69	75.9
2000........	57.0	3,420	6,714	11.78	6.35	5.27	55.1

1/ No allowance made for administrative expenses, or for "tax freeze" in calendar years 1944 and 1945, in order to be on comparable basis to study #19.

Table XIII(6)

Reduction to Age 60 for Women as it Affects Actuarial Study #19

Number of Beneficiaries, as Percentages of Corresponding Figures under Actuarial Study #19

Calendar Year	Monthly Old-Age Beneficiaries							Monthly Survivors Beneficiaries			Total	
	Male Primary	Female Primary	Wife's	Children of Primaries	Widow's	Parent's	Total Old-Age	Child's	Widow's Current	Total Survivors	O.A.S.I. Monthly Beneficiaries	Lump-Sum Deaths
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Low												
1945....	100%	178%	166%	100%	180%	140%	129%	100%	99%	100%	117%	89%
1950....	100	158	158	100	165	125	125	100	98	100	115	90
1955....	100	190	152	100	160	125	127	100	98	100	117	90
1960....	100	180	149	100	145	118	125	100	97	100	117	90
1970....	100	167	147	100	141	116	126	100	96	99	119	90
1980....	100	155	148	100	133	113	123	100	95	99	118	89
2000....	100	140	140	100	122	110	117	100	95	99	114	90
High												
1945....	100	173	159	100	176	130	124	100	99	100	115	90
1950....	100	171	156	100	148	120	123	100	99	100	115	89
1955....	100	184	153	100	154	118	125	100	98	100	118	88
1960....	100	169	150	100	137	115	122	100	98	100	117	89
1970....	100	166	144	100	130	112	121	100	98	100	118	90
1980....	100	153	145	100	124	110	119	100	97	99	117	90
2000....	100	140	136	100	113	105	115	100	97	99	114	91

XIV. REVISION AND SUMMARY OF ACTUARIAL STUDY NO. 18

Heretofore in this report, examinations have been conducted as to illustrative changes in costs involving changes in benefit formula or eligibility conditions. Actuarial Study No. 18, prepared in 1943, did not assume any change in benefit formula. Since it was never duplicated for distribution, slight revisions in that Study have been made and the summary tables are given herein as the Table XIV series.

Briefly, the specifications entering Study No. 18 are: a complete extension of coverage identical to that of Study No. 22 proper, a continuation of the same benefit formula as in the present act, eligibility of benefits among women at age 60 instead of 65, and the payment of lump-sum benefits in the case of all insured deaths.

Since the main difference (excluding the question of disability) between Actuarial Study No. 18 and Actuarial Study No. 22 proper, lies in the benefit formula and the method of determining average wage, and since both are on a complete coverage assumption, it is instructive to compare the resulting cost illustrations between the two Studies. A comparison of this nature is given below:

Year	Low Assumptions				High Assumptions			
	Costs $ Millions		% Cost		Costs $ Millions		% Cost	
	No. 18	No. 22	No. 18	No. 22	No. 18	No. 22	No. 18	No. 22
1950	$1,183	$1,578	1.66%	2.21%	$1,901	$2,395	1.77%	2.24%
1960	2,969	3,983	4.02	5.39	4,663	5,863	4.17	5.23
1980	5,030	6,742	6.67	8.93	8,550	10,797	7.38	9.30
2000	5,537	7,493	7.32	9.93	10,653	13,646	9.18	11.76

It is interesting to compare the increases between the No. 22 costs and the No. 18 costs in the above table in relation to the increases in No. 19 costs given in Section XII, above. Both sets of increases are due to the application of a liberalized benefit formula. In the case of this application to the limited coverage program of Study No. 19, cost increases, due to the new formula, come to about 50 percent. For the extended coverage situation, however, as given in the above table, the increase in costs, due to the new formula, only amount to about one-third increase in the case of the "low" assumptions and one-fourth increase in the case of the "high" assumptions.

This comparison shows that the effect of a method of computing average wage taking into account only the time during which such covered wages were being earned, results in a substantially higher cost increase when applied under a limited coverage program than the same change in average wage computation when applied to a complete coverage program. The reason is obvious, that in the limited coverage program the present average wage method dilutes the average for periods of both unemployment and noncovered employment, whereas in the full coverage program only unemployment would dilute such average wage. Thus, when we move to an average based on covered work time only, the largest increase is in respect to the system with the most diluted average wages.

Table **XIV**(1)
(f 60) C.A.S.I. Number of Beneficiaries – Thousands of Persons

Calendar Year	Monthly Old-Age Beneficiaries						Monthly Survivor Beneficiaries			Total	
	Primary		Wives 2/	Widows 2/	Parents	Total Old-Age	Childs 3/	Widows Current 3/ 4/	Total Survivors 3/ 4/	O.A.S.I. Monthly Beneficiaries	Lump-Sum Deaths
	Male	Female 1/									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
					Low						
1947....	732	282	399	279	10	1,702	588	172	760	2,462	335
1950....	1,205	545	600	760	30	3,140	1,210	275	1,485	4,625	508
1955....	2,060	740	1,015	1,675	47	5,537	1,925	390	2,315	7,852	745
1960....	2,915	915	1,425	2,595	65	7,915	2,200	470	2,670	10,585	945
1965....	3,350	1,065	1,640	3,305	68	9,428	2,350	510	2,860	12,288	1,030
1970....	3,660	1,200	1,780	3,995	70	10,705	2,400	530	2,930	13,635	1,115
1975....	3,920	1,305	1,905	4,570	70	11,770	2,435	530	2,965	14,735	1,180
1980....	4,205	1,415	2,045	5,060	70	12,795	2,445	525	2,970	15,765	1,235
1990....	4,780	1,535	2,325	5,690	70	14,400	2,450	525	2,975	17,375	1,380
2000....	4,800	1,480	2,325	5,590	70	14,265	2,455	525	2,980	17,245	1,350
					High						
1947....	1,127	410	600	279	10	2,426	588	172	760	3,186	335
1950....	2,200	655	1,150	950	33	4,988	1,210	244	1,454	6,442	540
1955....	3,600	895	1,850	1,850	62	8,257	1,800	320	2,120	10,377	790
1960....	4,900	1,115	2,500	2,750	91	11,356	1,935	380	2,315	13,671	930
1965....	5,600	1,320	2,900	3,550	107	13,477	1,930	370	2,300	15,777	1,015
1970....	6,300	1,480	3,300	4,350	120	15,550	1,920	360	2,280	17,830	1,100
1975....	7,000	1,690	3,700	5,000	135	17,525	1,900	340	2,240	19,765	1,190
1980....	7,800	1,910	4,200	5,600	145	19,655	1,860	320	2,180	21,835	1,280
1990....	9,400	2,230	5,100	6,850	160	23,740	1,880	320	2,200	25,940	1,570
2000....	9,900	2,290	5,400	7,050	170	24,810	1,900	320	2,220	27,030	1,670

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 60.

Table XIV(2)
(f 60) Average Annual Benefits for O.A.S.I.

| Year | Annual Old-Age Benefits | | | | | Young Survivors | | Deaths |
| | Primary | | Wives 2/ | Widows 2/ | Parents | Childs 3/ | Widows Current 4/ | Lump Sum |
	Male	Female 1/						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Low			
1947....	$315	$218	$167	$251	$160	$155	$266	.$159
1950....	334	235	173	253	170	160	267	167
1955....	354	249	182	256	180	169	270	177
1960....	371	249	189	265	188	177	282	179
1965....	383	249	194	272	196	184	294	184
1970....	396	251	200	281	198	186	297	191
1975....	412	254	207	293	199	187	299	198
1980....	429	257	216	303	201	189	302	205
1990....	429	253	218	303	201	189	302	205
2000....	429	252	216	303	201	189	302	206
					High			
1947....	$341	$242	$181	$259	$167	$163	$277	$158
1950....	381	270	197	279	188	181	293	182
1955....	415	296	212	300	207	201	312	198
1960....	438	302	223	314	219	214	328	214
1965....	454	305	230	323	228	226	342	222
1970....	473	308	239	334	230	228	345	229
1975....	492	311	247	347	232	230	348	237
1980....	511	315	257	356	234	232	351	244
1990....	511	308	257	356	234	232	351	242
2000....	511	306	257	356	234	232	351	241

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 60.
5/ Approximate.

Addendum to Study No. 22

Table XIV(3)
(f 60) O.A.S.I. Benefit Payments - Millions $

Year	Monthly Old-Age Benefits						Monthly Survivors Benefits			Other	Total
	Primary		Wives	Widows 2/	Parents	Total Old-Age	Childs 3/	Widows Current 4/	Total Survivors	Lump Sum	Total Benefits
	Male	Female 1/									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
						Low					
1947....	$231	$61	$67	$70	$2	$431	$91	$46	$137	$53	$621
1950....	402	128	104	192	5	831	194	73	267	85	1,183
1955....	729	184	185	429	8	1,535	325	105	430	132	2,097
1960....	1,081	228	269	688	12	2,278	389	133	522	169	2,969
1965....	1,283	265	318	899	13	2,778	432	150	582	190	3,550
1970....	1,449	301	356	1,123	14	3,243	446	157	603	213	4,059
1975....	1,615	331	394	1,339	14	3,693	455	158	613	234	4,540
1980....	1,804	363	442	1,533	14	4,156	462	159	621	253	5,030
1990....	2,051	388	502	1,724	14	4,679	463	159	622	283	5,584
2000....	2,059	373	502	1,694	14	4,642	464	153	617	278	5,537
						High					
1947....	$384	$99	$109	$72	$2	$666	$96	$48	$144	$53	$863
1950....	838	177	227	265	- 6	1,513	219	71	290	98	1,901
1955....	1,494	265	392	555	13	2,719	362	100	462	156	3,337
1960....	2,146	337	558	864	20	3,925	414	125	539	199	4,663
1965....	2,542	402	667	1,147	24	4,782	436	127	563	225	5,570
1970....	2,980	456	789	1,453	28	5,706	438	124	562	252	6,520
1975....	3,444	526	914	1,735	31	6,650	437	118	555	282	7,487
1980....	3,986	601	1,079	1,994	34	7,694	432	112	544	312	8,550
1990....	4,803	687	1,311	2,439	37	9,277	436	112	548	380	10,205
2000....	5,059	701	1,388	2,510	40	9,698	441	112	553	402	10,653

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 60.

Table XIV(4)
(f 60) O.A.S.I. Benefit Payments - Payroll %

Year	Monthly Old-Age Benefits						Monthly Survivors Benefits			Other	Total	Payroll
	Primary		Wives 2/	Widows 2/	Parents	Total Old-Age	Childs 3/	Widows Current 4/	Total Survivors 3/ 4/	Lump Sum	Total Benefits	Assumed Payroll (billions)
	Male	Female 1/										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Low												
1947.....	.33	.09	.10	.10	*	.62	.13	.07	.20	.08	.90	$69.3
1950.....	.56	.18	.15	.27	.01	1.17	.27	.10	.37	.12	1.66	71.3
1955.....	1.00	.25	.25	.59	.01	2.10	.44	.14	.58	.18	2.86	72.9
1960.....	1.46	.31	.36	.93	.02	3.08	.53	.18	.71	.23	4.02	73.9
1965.....	1.72	.36	.43	1.21	.02	3.74	.58	.20	.78	.25	4.77	74.6
1970.....	1.93	.40	.47	1.49	.02	4.31	.59	.21	.80	.28	5.39	75.2
1975.....	2.14	.44	.52	1.78	.02	4.90	.60	.21	.81	.31	6.02	75.4
1980.....	2.39	.48	.59	2.03	.02	5.51	.61	.21	.82	.34	6.67	75.5
1990.....	2.72	.51	.66	2.28	.02	6.19	.61	.21	.82	.37	7.38	75.5
2000.....	2.73	.49	.66	2.24	.02	6.14	.61	.20	.81	.37	7.32	75.5
High												
1947.....	.36	.09	.10	.07	*	.62	.09	.04	.13	.05	.80	$105
1950.....	.78	.16	.21	.25	.01	1.41	.20	.07	.27	.09	1.77	107
1955.....	1.36	.24	.36	.50	.01	2.47	.33	.09	.42	.14	3.03	110
1960.....	1.92	.30	.50	.77	.02	3.51	.37	.11	.48	.18	4.17	112
1965.....	2.23	.35	.59	1.01	.02	4.20	.38	.11	.49	.20	4.89	114
1970.....	2.57	.39	.68	1.25	.02	4.91	.38	.11	.49	.22	5.62	116
1975.....	2.97	.45	.79	1.50	.03	5.74	.38	.10	.48	.24	6.46	116
1980.....	3.44	.52	.93	1.72	.03	6.64	.37	.10	.47	.27	7.38	116
1990.....	4.14	.59	1.13	2.10	.03	7.99	.38	.10	.48	.33	8.80	116
2000.....	4.36	.60	1.20	2.16	.03	8.35	.38	.10	.48	.35	9.18	116

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 60.
* Less than .005%.