SUMMARY OF COSTS, BENEFITS AND BENEFICIARIES
PART I

Actuarial Study No. 18

Social Security Board
Office of the Actuary

May, 1943

May 19, 1943

Mr. W. R. Williamson

D. C. Bronson

Actuarial Study No. 18

      Herewith is Actuarial Study No. 18, Part I. Part II would be detail and methodology and may not be formally prepared unless time permits and general interest dictates.

      In places, the early figures are not bona-fide Bureau of OASI computations. Their female primary benefits were not available in the required categories for the tables. I have used my own estimates where theirs were lacking. The year 1955 was used as the year of junction of the short and long-range results and certain adjustments were necessary in both sets at that year.

      Because treatment of disability followed a"double-range" development in my approach, it was not feasible to use Mr. Mehlman's disability figures in the tables except for the initial year 1945; his figures for other years were within the range produced under our assumptions.

      Six copies of this study have been prepared but only four sets of charts. I suggest the distribution of these as indicated below. The completed typed sets will be ready during my absence and I told Mr. Cohen they would be released without awaiting my return.

                                        D. C. Bronson

Attachment
Original with Charts - Mr. Cohen
Copy without Charts - Mr. Cohen
Copy with Charts - Messrs. Corson-Pogge
Copy without Charts - Messrs. Murray-St. John
Copy with Charts - Mr. Falk

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Actuarial Study No. 18

Part I

Summary of Costs, Benefits and Beneficiaries

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Old-Age, Survivors and Disability Insurance
Full Extension of Coverage and Added Disability

Summary of Costs, Benefits and Beneficiaries

Given an expanded coverage for old-age and survivors insurance to include all gainfully occupied persons, except unpaid family workers, the question is as to indications of cost.

Certain other changes in the plan are also postulated: (1) reducing eligibility age for women from 65 to 60, (2) adding a benefit in event of prolonged total disability, (3) paying the lump-sum benefit in all cases of the insured earner's death, (4) changing contributions from the present graduated scale to a level 2% from each, employee and employer, with Government contributions when needed, (5) insured status and average wage determined as at present but if a "new start" from January 1, 1944 yields more protection such "new start" basis is used. These changes are to become effective January 1, 1944.

In the new feature of disability benefit, a requirement is for the person to be fully and currently insured at time of disability, hence in general persons must have been employed within less than two years of time of claiming disability onset. The disability benefit proper is equal to a primary benefit; wife and child supplementary benefits are payable on same condition as if the disabled were age 65 and retired for age.

As in earlier studies it has seemed imperative to adopt two sets of assumptions: one to bring out low (not lowest) cost illustrations, the other for high (not highest) 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 an assumption of fewer births and one 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 payroll. Another example is that of disability which is explained on the preface sheet to the disability table.

The short-range portion of the tables was prepared by the actuaries of the Bureau of Old-Age and Survivors Insurance and merged into the longer-range figures by 1960. The short-range assumptions include no specific hypothesis as to the timing of the war end, nor do they include the extreme employment (long hours and overtime) conditions now prevailing and which have been considered as a temporary situation. This condition as well as the immediate post-war developments are more or less generalized and approximated by the range obtained through the high and low sets of figures furnished by the Bureau of Old-Age and Survivors Insurance, which are included, with occasional adjustments for consistency, in the tables which follow. It is possible the Bureau of Old-Age and Survivors Insurance will furnish a more extended discussion of their short-range figures and assumptions.

The short and long-range results of this study are now presented in tabular form with a prefatory sheet of brief discussion as a companion to each of the tables. Part II of the study may follow if time and interest appear to warrant it; the second part would contain more detail, analysis and comparisons than are possible to outline at this time.

Table of Basic Assumptions

The hypothesis of complete coverage to earners practically removes the "in and out" movement, particularly on the "high" set of figures. Insured status and average wages are assumed to "freeze" during prolonged disability and during the short term periods of compensable unemployment and temporary sickness. However, some reduction in average wage has been allowed for---particularly as to men in the low figures, and of course for women it is substantial in both sets---on account of dropping out of the labor force for causes other than compensable claims.

The table which follows gives the basic assumptions entering the computations of the long-range figures. Somewhat different basic assumptions were used for the early years in the development of the short-range figures.

The 1940 census populations were used, merging in with the C.O.E.S. projections in 1950 for the "low" and with the N.R.C. "medium" in 1950 for the "high."

For men "at work" under the "low" the 1940 Census "labor force" percentages were used after deducting the percent "seeking work;" similarly for females under the "low." For the "high," men "at work" were taken at the relatively high percentages reported as "gainfully occupied" by the 1930 Census; for women the 1940 labor force percentages including "seeking work" were adopted for the early years, with a progressive increase in the employment of women assumed such that the percentages shown for 1980 are reached at that time. The percentages "at work" are also taken to be a reasonable approximation to those who are both currently and fully insured, conditions which must be satisfied for eligibility to disability benefits.

The columns showing "fully insured" percentages indicate the progressive growth over the years in the proportion of the population which is insured in event of death or retirement. The excess in the "fully insured" percentages above the "at work" percentages represents those who have quit the labor force voluntarily or on account of disability. The term "at work" is sort of an annual rate to represent sufficient wages and period thereof to earn the increment and secure two or more quarters of coverage.

The "at work" percentages at age 65 and over in the case of men and at age 60 and over in the case of women give an indication of the rates at which retirement has been assumed. For the "low" the rates are constant for all calendar years while for the "high," a substantially larger volume of retirements is reached by 1950 and thereafter. This higher rate of retirement, however, is not reflected fully in the cost figures of the other tables until about 1960 since the short-range assumptions did not include such relatively high rates of retirement

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Table of Basic Assumptions

Mortality

Low: Constant rates
High: Declining rates (N.R.C. medium)

Disability

See preface to Table VI

Wage Assumptions

	Men	Women
Low	1,500	900
High	2,000	1,200

Work Assumptions

	Men	Women
Low	1940 L.F. minus S.W.	1940 L.F. minus S.W.
High	1930% Gainful Workers	1940% L.F. plus assumed future increases

Payrolls (Millions)

	Low				High		
Men	Women	Total	Year	Men	Women	Total
57.1	10.9	68.0	1945	87.4	16.1	103.5
60.0	11.3	71.3	1950	89.6	17.2	106.8
61.5	11.4	72.9	1955	91.8	17.8	109.6
62.5	11.4	73.9	1960	93.8	18.2	112.0
63.1	11.5	74.6	1965	95.5	18.7	114.2
63.7	11.5	75.2	1970	97.2	19.1	116.3
63.9	11.5	75.4	1975	96.8	19.2	116.0
64.1	11.4	75.5	1980+	96.5	19.3	115.8

Insured Assumptions

	Low Assumptions								High Assumptions							
	Males			Females					Males					Females		
	1945-'80 "At Work" 1/	Fully Insured		1945-'80 "At Work" 1/	Fully Insured			"At Work" 1/		Fully Insured		"At Work" 1/		Fully Insured	
		By 1950	By 1980		By 1950	By 1980		In 1945	By 1950 & after	By 1950	By 1980	In 1945	By 1980	In 1945	By 1980
15-19	31%	31%	31%	16%	16%	16%	48%	48%	48%	48%	22%	25%	22%	25%
20-24	76	76	76	40	40	40	90	90	90	90	46	55	46	55
25-29	86	86	86	33	33	33	97	97	97	97	36	45	36	45
30-34	88	88	88	29	29	29	98	98	98	98	32	40	32	44
35-39	89	89	89	26	29	29	98	98	98	98	29	35	29	43
40-44	88	89	89	24	26	29	98	98	98	98	26	30	26	42
45-49	86	88	89	22	24	29	97	97	98	98	23	25	23	41
50-54	84	86	89	19	22	29	96	96	97	98	21	23	21	39
55-59	80	84	89	17	19	29	93	93	96	98	18	20	18	38
60-64	72	80	89	13	18	29	87	87	93	98	13	12	17	36
65-69	54	76	89	9	16	29	55	35	90	98	8	7	14	32
70-74	36	68	89	5	13	26	39	20	84	98	3	2	9	29
75+	17	40	85	2	11	21	21	10	60	97	1	-	3	22

1/ Also assumed to be the percent both fully and currently insured for disability insured status.

Table 1 -- Number of Beneficiaries

In this table the number of beneficiaries in future calendar years is given for the greatly extended coverage and the other changes postulated (exclusive of disability, for which see Table VI). The aged beneficiaries in the left hand portion of the table are further analyzed in Table II, with comparisons to the total aged population.

The differences in the composition of the future population under the "low" and "high" assumptions show up in this table. In Column (7) the lighter mortality of the "high" results in a much larger number of recipients of old-age benefits, while in Column (10), the opposite effect is registered among the "young" survivor beneficiaries, owing both to the light mortality and the smaller birth rate of the "high" assumptions.

It might be expected that the lighter mortality of the "high" assumptions would produce a fewer number of deaths for lump-sum benefit. This, however, is not the case. Since this benefit is proposed to be payable to all insured deaths, the number qualifying is a function both in the number of lives with insured status and the rate of mortality. Under the "high" a larger proportion of the population is insured so that even with lighter mortality the "high" figures for lump-sum deaths in the main keep ahead of those for the "low." In the later years they are considerably ahead because of the large relative aged population developed by the light mortality; since this large group of aged are perforce dying rapidly, the total number of insured deaths is then substantially greater than in the younger population even though in the latter population, age-specific death rates are higher.

Considering the total monthly beneficiaries of Table I, Column (11) shows totals, for 1980 say, of 15,177,000 on the "low" and 21,274,000 on the "high." If to these are added for illustration the "high" disability beneficiaries of Table VI, it would show, for the "low" some 21,000,000 persons or 14% of the total 1980 population to be in receipt of benefit and, for the "high," some 24,000,000 or 15% of the total 1980 population. Most of the balance of the population, particularly under the high employment conditions postulated in the "high" assumptions, would be protected by the program in one way or another.

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Table I

(f 60) OASI* Number of Beneficiaries – Thousands of Persons

Cal. Year	Monthly Old-Age Beneficiaries						Monthly Survivor Beneficiaries			Total OASI 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)
					L O W						
1940											
1945	409	125	235	188	10	967	432	143	575	1,542	318
1950	1,205	525	602	761	30	3,123	1,008	299	1,307	4,430	534
1955	2,060	756	1,013	1,677	47	5,553	1,486	370	1,856	7,409	739
1960	2,915	914	1,425	2,593	65	7,912	1,964	441	2,405	10,317	944
1965	3,351	1,068	1,639	3,306	68	9,432	1,975	444	2,419	11,851	1,030
1970	3,662	1,197	1,779	3,997	70	10,705	1,983	446	2,429	13,134	1,113
1975	3,916	1,306	1,903	4,572	70	11,767	1,966	440	2,406	14,173	1,176
1980	4,205	1,413	2,046	5,059	70	12,793	1,950	434	2,384	15,177	1,238
1990	4,780	1,536	2,325	5,690	70	14,401	1,950	434	2,384	16,785	1,384
2000	4,800	1,475	2,326	5,591	70	14,262	1,950	434	2,384	16,646	1,349
					H I G H						
1940											
1945	439	125	258	197	10	1,029	436	145	581	1,610	360
1950	2,193	696	1,151	958	33	5,031	1,095	323	1,418	6,449	664
1955	3,553	904	1,840	1,850	62	8,209	1,473	326	1,799	10,008	797
1960	4,914	1,119	2,528	2,743	91	11,395	1,852	329	2,181	13,576	929
1965	5,612	1,317	2,929	3,559	107	13,524	1,720	304	2,024	15,548	1,014
1970	6,265	1,478	3,322	4,348	121	15,534	1,585	278	1,863	17,397	1,099
1975	6,997	1,697	3,732	5,013	134	17,573	1,467	247	1,714	19,287	1,188
1980	7,817	1,910	4,223	5,615	146	19,711	1,347	216	1,563	21,274	1,281
1990	9,416	2,224	5,101	6,842	158	23,741	1,283	206	1,489	25,230	1,569
2000	9,915	2,294	5,375	7,030	171	24,785	1,220	197	1,417	26,202	1,638

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired; figures for 1945-55 preliminary.
2/ Includes women who are also insured in their own right.
3/ Includes the few children of primary beneficiaries.
4/ Widows under age 60.

<u>Table II - Composition of Aged</u>

Table II is supplementary to Table I and again deals with numbers of persons. Here the aged—men 65 and over, women 60 and over—are broken down by work, beneficiary, or potential beneficiary status.

In the left-hand portion of the table males are set forth. We find for the "low" that the program builds up protection from less than 50% of the aged male population in the early years to over 90% later on, while for the "high," the later years show 98%, in fact virtually all the male population who were ever during their lives, well enough and so inclined to work for 10 years of earnings. The number of primary beneficiaries in force exceeds the number of persons remaining at work by 1960 in the "low," while for the "high" the much greater rate of retirement assumed shows up in both the earlier date at which beneficiaries exceed workers and in the relative preponderance of the former.

Considering women, it must be borne in mind that those included as primary beneficiaries are not entitled to any other type of benefit, while those in the categories of wives and widows are, many of them—perhaps in later years, 15-20% of the wives and 15-20% of the widows—eligible to benefits in their own right. The classification adopted here assumes they would always claim as a wife or widow which, in a substantial number of cases, would not be the case. Among those listed as primary beneficiaries are wives who are only temporarily in that beneficiary status; their husbands have not yet retired but the wives are able to claim in their own right pending being entitled to a wife's benefit upon his retirement. The women of Columns (14) and (15) are those whose husbands have not retired but the wives do not enjoy a benefit in their own right. Another special group included among the female primary beneficiaries is that of widows who were widowed prior to 1940 or prior to the application of the program to their deceased husbands' employment. Such widows constitute practically a closed group and gradually the proportion of them among the primary beneficiaries declines to a negligible figure. Single, divorced, and separated women make up the balance of the female primary category.

The percentages of aged females protected by the expanded coverage, in their own right or through their husbands, fairly well parallels the percentages for men though not rising quite as rapidly. Combining the sexes it can be said that such a program would in later years leave unprotected only a small percentage of the aged—in the early years, however, roughly 50% of the aged would not be cared for here.

Table II

(f 60) OASI, Aged Population -- Composition of Workers and Beneficiaries
(thousands of persons)

| | M a l e s | | | | | | F e m a l e s | | | | | | Non-Work, Non-Benefit wives 60+ | | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) |
Year	Male Pop. 65+	At Work 65+	Prim. Ben. 65+	Parents 65+	Total Protected by Program	As % Pop.	Female Pop. 60+	Females at work 60+	Prim. Ben. 60+	Wives Ben. 60+	Widow Ben. 60+	Parents 60+	Of insured working husbands 65+	Of insured husbands under 65	Total Protected by Program	As % Pop.
							L O W									
1940																
1945	4,903	1,848	409	1	2,258	46	7,706	639	125	235	188	9	924	702	2,822	37
1950	5,397	2,036	1,205	3	3,244	60	8,464	709	525	602	761	27	994	771	4,389	52
1955	5,989	2,296	2,060	5	4,361	73	9,602	802	756	905	1,677	42	1,080	864	6,126	64
1960	6,592	2,510	2,915	6	5,431	82	10,387	845	914	1,425	2,593	59	1,152	945	7,933	76
1965	6,837	2,540	3,351	5	5,896	86	11,142	894	1,068	1,639	3,306	63	1,120	941	9,031	81
1970	7,064	2,610	3,662	4	6,276	89	11,989	965	1,197	1,779	3,997	66	1,099	945	10,048	84
1975	7,420	2,777	3,916	4	6,697	90	12,753	1,024	1,306	1,903	4,572	66	1,138	1,001	11,010	86
1980	7,877	2,970	4,205	4	7,179	91	13,408	1,069	1,413	2,046	5,059	66	1,190	1,072	11,915	89
1990	8,846	3,321	4,780	4	8,105	92	14,071	1,053	1,536	2,325	5,690	66	1,230	1,022	12,922	92
2000	8,592	3,089	4,800	4	7,893	92	13,519	985	1,475	2,326	5,591	66	1,211	937	12,591	93
							H I G H									
1940																
1945	4,937	2,588	439	1	3,028	61	7,853	581	125	258	197	9	981	800	2,951	38
1950	5,468	1,835	2,193	2	4,030	74	8,762	596	696	1,151	958	31	617	883	4,927	56
1955	6,214	1,735	3,553	3	5,291	85	10,127	689	904	1,551	1,850	59	687	969	6,709	66
1960	7,103	1,636	4,914	5	6,555	92	11,255	720	1,119	2,528	2,743	86	762	1,052	9,010	80
1965	7,744	1,722	5,612	5	7,339	95	12,473	786	1,317	2,929	3,559	102	774	1,053	10,520	84
1970	8,447	1,856	6,265	4	8,125	96	13,912	863	1,478	3,322	4,348	117	805	1,079	12,012	88
1975	9,349	2,071	6,997	3	9,071	97	15,305	934	1,697	3,732	5,013	131	860	1,132	13,499	88
1980	10,389	2,309	7,817	2	10,128	98	16,559	994	1,910	4,223	5,615	144	930	1,213	15,029	91
1990	12,445	2,720	9,416	2	12,138	98	18,364	1,036	2,224	5,101	6,842	156	1,024	1,079	17,462	95
2000	12,830	2,638	9,915	2	12,555	98	18,074	945	2,294	5,375	7,030	169	948	893	17,654	98

Table III - Average Monthly Benefits

The figures of this table are the average monthly benefits determined from the various basic assumptions with account being taken in each type of benefit of the average wage and increment year composition of the future year new entrants to the "in force" rolls. While these benefits have been determined by individual processes they result, in comparison with the average male primary benefits in force, in reasonably close relationship to the formula percentages of 50% and 75% of the primary. They do not, of course, coincide exactly since they are functions of different primary benefits than the average primary benefits in force as such.

The incorrectness of determining average benefits from mean average-wage was tested. Because of the completeness of coverage and freezing of status during sickness and compensable unemployment, the effect of the "in and out" movement is minimized for male lives, particularly on the "high" assumptions. It was found unnecessary to make any adjustment for men. For female primary beneficiaries tests showed the advisability of using a reduction factor of 10% on the "low" and 5% on the "high" to allow for the greater dropping out of employment among females.

In Table III the reason for the almost level trend of average female primary benefits is because of the various kinds of women included as primary beneficiaries. There are the more long-term steady workers, mainly the single and early divorced, separated and widowed, among whom the average benefit would have an increasing trend; but as counter-balance there are the older widows whose husbands died uninsured (mainly prior to 1940) and who cannot build up much average wage or increment, and also wives, with small benefits in their own right who are temporarily primary beneficiaries because their husbands either are under 65 or are still at work.

When the disability figures of Table VI come to the reader's attention, it will be seen that for women the average primary disability benefit is substantially greater than the average old-age primary benefit. This again is caused by the fact that the old-age benefit can be obtained after long periods out of employment which reduce average wages and increment, while for disability current and fully insured status is required which keeps the average wage for benefit purposes at a higher level than the corresponding average wage for the old-age benefit. To some extent this is also true for men on the "low" assumptions.

TABLE III

(f 60) Average Monthly Benefits for OASI (See Table VI for disability)

| | | Monthly Old-Age Benefits | | | | Young Survivors | | Deaths |
| | | Primary | | | | | | Widows | |
Year (1)	Male (2)	Female 1/ (3)	Wives 2/ (4)	Widows 2/ (5)	Parents (6)	Childs 3/ (7)	Current 4/ (8)	Lump-Sum (9)
				L O W				
(Actual 5/) 1940	23	18	12	20	13	12	20	140
1945	24	21	12	20	13	13	20	160
1950	26	19	13	21	14	14	22	170
1955	29	20	15	22	15	15	23	177
1960	31	21	16	22	15	15	24	179
1965	32	21	16	23	16	15	24	184
1970	33	21	17	23	16	16	25	191
1975	34	21	17	24	17	16	25	198
1980	36	21	18	25	17	16	25	205
1990	36	21	18	25	17	16	25	205
2000	36	21	18	25	17	16	25	206
				H I G H				
(Actual 5/) 1940	23	18	12	20	13	12	20	140
1945	24	25	13	20	13	14	21	175
1950	30	23	16	24	15	16	25	196
1955	33	24	17	25	16	17	26	203
1960	36	25	19	26	18	18	27	214
1965	38	25	19	27	19	19	28	222
1970	39	26	20	28	19	19	29	229
1975	41	26	21	29	19	19	29	237
1980	43	26	21	30	20	19	29	244
1990	43	26	21	30	20	19	29	242
2000	43	26	21	30	20	19	29	241

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired; figures for 1945-55 preliminary.
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.

Table IV - Amount of Benefit Payments (Exclusive of Disability)

The costs as annual disbursements for benefits are shown in this table. The categories are the usual ones and correspond homogeneously to those for which beneficiaries and average benefits have been shown in the preceding tables.

The total benefits, Column (12), progressively increase with the "low," leveling off after 1990 and the "high" at that time slowing down perceptibly in its increase. These later increases are due to the long-term growth in the retired rolls since the "young" survivors rolls have stabilized by 1970 in the case of the "low" assumptions and have steadily decreased from the 1960 peak in the case of the "high" with its improving mortality and lower births. Lump-sum payments increase all the way (except year 2000 for the "low") under both sets of assumptions; this, as explained with Table L, is because of the general aging of the population and the payment of lump-sum benefits for all insured deaths. Considering all monthly payments to men 65 and over and women 60 and over as making up the "old-age" section of benefits, all other monthly benefits (childs, widows—under 60—current) as "young survivors," and lump-sum payments as a third section, it is seen that the total benefits are apportioned among these sections in the following proportions:

Benefit Payments 1/

| | LOW | | | HIGH | | |
| | Monthly Benefits | | Lump | Monthly Benefits | | Lump |
Year	% Old-Age	% Young Survivors	Sum	% Old-Age	% Young Survivors	Sum
1950	69%	25%	6%	79%	16%	5%
1960	78	16	6	85	11	4
1970	82	13	5	89	7	4
1980	85	10	5	92	4	4
1990	86	9	5	93	3	4
2000	86	9	5	93	3	4

The relative growth of the old-age rolls under both sets of assumptions shows clearly in the above figures as well as the effect of the lighter and improving mortality, and lower birth rates, in the "high" assumptions.

The above figures do not represent the split between benefits arising from the earner's death and those payable because he lives. Such a breakdown would require dividing the aged widows, figures of Column (5), between those who could have primary benefits in their own right and those whose sole benefit derives from the deceased husband; also some adjustments in amounts would follow since on the average the widows benefit would be larger than the alternate primary benefit. Likewise in Column (8), a small portion, perhaps 5%, of the childs benefits would need to be allocated to primary beneficiaries (i.e. to "living"). Divisions of the kind just mentioned are made quite roughly in the table below to indicate benefits arising from "deaths" and those arising from "living":

Benefit Payments 1/

| | LOW | | HIGH | |
| | % From | % From | % From | % From |
Year	"Living" 1/	"Death"	"Living" 1/	"Death"
1950	70%	30%	79%	21%
1960	78	22	84	16
1970	80	20	87	13
1980	81	19	88	12
1990	82	18	88	12
2000	82	18	88	12

1/ Exclusive of Disability

Table IV

(f 60) OASI Benefit Payments - Millions $

Year (1)	Monthly Old-Age Benefits Primary Male (2)	Female 1/ (3)	Wives (4)	Widows 2/ (5)	Parents (6)	Total Old-Age (7)	Monthly Survivors Benefits Childs 3/ (8)	Widows Current 4/ (9)	Survivors 3/4/ (10)	Other Lump-Sum (11)	Total Total Benefits (12)
						L O W					
1940											
1945	118	31	35	45	2	231	68	35	103	51	385
1950	377	121	96	195	5	794	176	80	256	91	1,141
1955	729	172	182	441	9	1,533	262	102	364	130	2,027
1960	1,081	227	269	687	12	2,276	348	124	472	169	2,917
1965	1,283	266	318	899	13	2,779	363	131	494	190	3,463
1970	1,450	301	356	1,123	14	3,244	369	132	501	213	3,958
1975	1,613	331	394	1,340	14	3,692	368	132	500	233	4,425
1980	1,804	363	442	1,533	14	4,156	369	131	500	254	4,910
1990	2,051	388	502	1,724	14	4,679	369	131	500	284	5,463
2000	2,059	372	502	1,694	14	4,641	369	131	500	278	5,419
						H I G H					
1940											
1945	128	37	39	48	2	254	71	36	107	63	424
1950	781	191	224	275	6	1,477	216	98	314	130	1,921
1955	1,466	247	394	568	13	2,688	306	103	409	164	3,261
1960	2,152	338	564	861	20	3,935	396	108	504	199	4,638
1965	2,548	401	674	1,150	24	4,797	389	104	493	225	5,515
1970	2,963	455	794	1,452	28	5,692	361	96	457	252	6,401
1975	3,443	528	922	1,740	31	6,664	337	86	423	281	7,368
1980	3,994	600	1,085	1,999	34	7,712	313	76	389	312	8,413
1990	4,812	686	1,311	2,436	37	9,282	298	72	370	379	10,031
2000	5,067	702	1,381	2,503	40	9,693	283	69	352	394	10,439

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired; figures for 1945-55 preliminary.
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 V - Benefit Payments (Exclusive of Disability) as
Percentage of Payroll

The discussion covering Table IV is applicable to
this table and is therefore not repeated; the supple-
mentary breakdowns shown there are valid as well for
the divisions of payroll percentages. Also see dis-
cussion for Table VII.

An interesting point to note is that under the
proposal to pay lump-sums for all deaths of insured
earners, the cost thereof is relatively high compared
with that for "young survivors." For the "low" this
relationship runs to over 50%, while under the "high"
the lump-sum cost actually exceeds the "young survivors"
benefits in the late years.

Table V

(f 60) OASI Benefit Payments - Payroll %

Year (1)	Monthly Old-Age Benefits						Monthly Survivors Benefits			Other	Total	Payroll Assumed
	Primary		Wives 2/ (4)	Widows 2/ (5)	Parents (6)	Total Old-Age (7)	Childs 3/ (8)	Widows Current 4/ (9)	Total Survivors 3/4/ (10)	Lump-Sum (11)	Total Benefits (12)	Payroll (billion) (13)
	Male (2)	Female 1/ (3)										

L O W

1940												
1945	.17	.05	.05	.07	*	.34	.10	.05	.15	.07	.57	
1950	.52	.17	.13	.27	.01	1.11	.25	.11	.36	.12	1.60	
1955	.99	.24	.25	.60	.01	2.10	.36	.14	.50	.18	2.78	
1960	1.46	.30	.36	.93	.02	3.08	.47	.17	.64	.23	3.95	73.9
1965	1.72	.36	.43	1.21	.02	3.73	.49	.18	.66	.25	4.64	74.6
1970	1.93	.40	.47	1.49	.02	4.31	.49	.18	.67	.28	5.26	75.2
1975	2.14	.44	.52	1.76	.02	4.90	.49	.18	.66	.31	5.87	75.4
1980	2.39	.48	.59	2.03	.02	5.50	.49	.17	.66	.34	6.50	75.5
1990	2.72	.51	.66	2.28	.02	6.20	.49	.17	.66	.36	7.24	75.5
2000	2.73	.49	.66	2.24	.02	6.15	.49	.17	.66	.37	7.18	75.5

H I G H

1940												
1945	.12	.04	.04	.06	*	.25	.07	.03	.10	.06	.41	
1950	.73	.18	.21	.26	.01	1.38	.20	.09	.29	.12	1.80	
1955	1.34	.23	.36	.52	.01	2.45	.28	.09	.37	.15	2.98	
1960	1.92	.30	.50	.77	.02	3.51	.35	.10	.45	.18	4.14	112.0
1965	2.23	.35	.59	1.01	.02	4.20	.34	.09	.43	.20	4.83	114.2
1970	2.55	.39	.68	1.25	.02	4.89	.31	.08	.39	.22	5.50	116.3
1975	2.97	.45	.79	1.50	.03	5.74	.29	.07	.36	.24	6.35	116.0
1980	3.45	.52	.94	1.73	.03	6.66	.27	.07	.34	.27	7.27	115.8
1990	4.17	.60	1.14	2.11	.03	8.04	.26	.06	.32	.33	8.69	115.4
2000	4.41	.61	1.20	2.18	.03	8.43	.25	.06	.31	.34	9.08	115.0

1/ Those entitled to primary benefits only; includes wives whose husbands have not yet retired; figures for 1945-55 preliminary.
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%.

Table VI - Disability Benefits, Beneficiaries and Cost

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 VI are
largely conditioned on the assumptions of available employment going into
the "low" and "high" sets of figures respectively as outlined in the "Table
of Basic Assumptions." When employment is available to the extent of 98%
of total males for younger age groups and even 87% 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
of the substantially greater number of beneficiaries and larger cost figures
for disability under the "low (general) assumptions" 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. 1/

It will be noted that four sets of figures are shown in order to
provide a range within the "low (general) results" and again for the "high."
The range under the "low (general) assumptions" is wider than under the "high"
being in the relationship of 3 to 1 as compared to 2 to 1 for the latter.

Dependents benefits are included on the basis of paying $\frac{1}{2}$ a primary
to the wife under 60 if she has a child in her care and another $\frac{1}{2}$ for one
or more children; two children, no wife, would get $\frac{1}{2}$ a primary each; a
wife 60 or over would get $\frac{1}{2}$ a primary whether or not there were children.
While only the number of dependents benefits are shown in the table, the
long-range cost for this feature runs at about 25% of total disability
outgo. 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 regular primary benefits, might reach from
8.5% to 23% on the "low" and from 6% to 16% on the "high," of total primary
beneficiaries respectively.

The disability experience not only determines disability costs but
also affects the costs of other benefits. For instance with a disability
feature, insured status for retirement or survivors benefits would not be
lost nor would average eages decrease during period of disability. This
"reinsurance" of other benefits by the disability feature obviously increases
the cost of those benefits; this element of increase has been implicitly
approximated in the computation for those other benefits.

1/ The actual disability computations prior to adjustment for employment
conditions were based on the "low disability" on 200% Hunters incidence rates
combined with Hunters select termination rates, and for the "high disability"
on 150% Class 3 (6months) rates combined with German 1925-30 termination
rates. Double rates for females. Admittedly these assumptions are synthetic,
as are any others.

Table VI

(f 60) Disability Benefits, Beneficiaries and Cost

	Low Disability								High Disability					
	No. of Beneficiaries (000)			Average Monthly Benefit		Total Disability Cost			No. of Beneficiaries (000)			Average Monthly Benefit		Total Disability Cost	
	Female Primary Dis. Ben.	Male Primary Dis. Ben.	Wife & Child Dependent Benef.	Female Primary	Male Primary	Dollars (millions)	As % of Payroll	Year	Female Primary Dis. Ben.	Male Primary Dis. Ben.	Wife & Child Dependent Benef.	Female Primary	Male Primary	Dollars (millions)	As % of Payroll
Low Assumptions														**Low Assumptions**	
	–	–	–	–	–	–	–	1940	–	–	–	–	–	–	–
	38	120	70	$22	$26	59	.09%	1945	38	120	70	$22	$26	59	.09%
	129	364	259	24	30	216	.30	1950	581	1,130	638	24	30	684	.96
	197	506	359	25	30	310	.42	1955	835	1,587	895	25	30	993	1.36
	248	615	438	25	31	389	.52	1960	1,042	1,939	1,094	25	31	1,245	1.68
	280	682	488	26	32	448	.60	1965	1,200	2,154	1,215	26	32	1,434	1.92
	301	736	525	27	33	496	.66	1970	1,316	2,330	1,315	27	33	1,596	2.12
	305	776	554	27	34	530	.70	1975	1,389	2,467	1,391	27	33	1,719	2.28
	306	802	571	28	35	559	.74	1980	1,420	2,565	1,446	28	34	1,825	2.42
	291	763	541	28	35	531	.70	1990	1,367	2,402	1,368	28	34	1,724	2.28
	290	757	537	28	35	528	.70	2000	1,361	2,382	1,357	28	34	1,712	2.27
High Assumptions														**High Assumptions**	
	–	–	–	–	–	–	–	1940	–	–	–	–	–	–	–
	38	120	70	$22	$26	59	.06%	1945	38	120	70	$22	$26	59	.06%
	129	261	186	27	35	186	.18	1950	585	431	244	27	34	415	.39
	199	346	246	28	35	264	.24	1955	845	599	339	28	35	604	.55
	253	429	306	28	36	338	.30	1960	1,062	732	413	28	36	763	.68
	288	523	373	29	37	416	.37	1965	1,215	822	464	29	37	895	.79
	311	593	423	30	38	481	.42	1970	1,364	894	505	30	38	1,005	.87
	320	638	454	30	39	524	.45	1975	1,449	949	535	30	38	1,090	.94
	321	658	469	31	40	551	.47	1980	1,490	987	556	31	39	1,155	.99
	303	657	467	31	40	544	.47	1990	1,420	994	566	31	39	1,134	.98
	304	640	455	31	40	533	.46	2000	1,413	965	549	31	39	1,114	.97

Table VII - Summary Cost Figures

In this table the amount and percentage-payroll costs are summarized and the two disability illustrations for each set of general assumptions are displayed without presuming to combine either disability result with the old-age and survivors insurance cost totals.

Total old-age and survivors insurance costs run to over 7% of payroll for the far years of the table under the "low" and to over 9% under the "high." Looking at disability, the "swing" illustrated for the far years is from ½% to 2¼% when distinction is ignored between the two sets of general assumptions.

A column is also included to indicate tax income on the 2 and 2 basis postulated. Later tables develop the cumulative results of operation, reserve and government contribution.

It must be borne in mind that no expenses of administration for either old-age and survivors insurance or disability are included in this or the other tables. In relation to benefits, expenses for disability are apt to be considerably higher than the corresponding relationship under old-age and survivors insurance. Also, it is not certain whether disability expenses by amount would be less for "low" disability benefit cost or for "high."

Table VII

Summary Cost Final

Year	Old-Age $ Millions	Old-Age % Payroll	Young Survivors and Lump Sum $ Millions	% Payroll	Total O. A. S. I. $ Millions	% Payroll	Disability Low $ Millions	% Payroll	Disability High $ Millions	% Payroll	Tax Income % of Payroll
L o w A s s u m p t i o n s											
1940											
1945	231	.34	154	.23	385	.57	59	.09	59	.09	2,720
1950	794	1.11	347	.49	1,141	1.60	216	.30	684	.96	2,852
1955	1,533	2.10	494	.68	2,027	2.78	310	.42	993	1.36	2,916
1960	2,276	3.08	641	.87	2,917	3.95	389	.52	1,245	1.68	2,956
1965	2,779	3.73	684	.91	3,463	4.64	445	.60	1,434	1.92	2,984
1970	3,244	4.31	714	.95	3,958	5.26	496	.66	1,596	2.12	3,008
1975	3,692	4.90	733	.97	4,425	5.87	530	.70	1,719	2.28	3,016
1980	4,156	5.50	754	1.00	4,910	6.50	559	.74	1,825	2.42	3,020
1990	4,679	6.20	784	1.04	5,463	7.24	531	.70	1,724	2.28	3,020
2000	4,641	6.15	778	1.03	5,419	7.18	528	.70	1,712	2.27	3,020
H i g h A s s u m p t i o n s											
1940											
1945	254	.25	170	.16	424	.41	59	.06	59	.19	4,140
1950	1,477	1.38	444	.41	1,921	1.80	186	.18	415	.39	4,272
1955	2,688	2.45	573	.52	3,261	2.98	264	.24	604	.55	4,384
1960	3,935	3.51	703	.63	4,638	4.14	338	.30	763	.68	4,480
1965	4,797	4.20	718	.63	5,515	4.83	416	.37	895	.79	4,568
1970	5,692	4.89	709	.61	6,401	5.50	461	.42	1,005	.87	4,652
1975	6,664	5.75	704	.60	7,368	6.35	524	.45	1,090	.94	4,640
1980	7,712	6.66	701	.61	8,413	7.27	551	.47	1,155	.99	4,632
1990	9,282	8.04	749	.65	10,031	8.69	544	.47	1,134	.98	4,616
2000	9,693	8.43	746	.65	10,439	9.08	533	.46	1,114	.97	4,600

Table VIII - Progress of Income, Outgo and Reserves

In the first section of this table the algebraic progress of the reserves is shown if there were no other source of income other than the 4% tax and 2% interest on any funds in hand. The table shows approximately in what years the reserves become exhausted. The table also gives some indication, by the downward turn in reserve trend, to when benefits begin to exceed contributions but this is obscured by the part of the income that is interest. The following supplementary table shows more specifically when this deficiency of tax occurs.

Approximate Year in Which Benefits 1/
Exceed 4% Rate of Contributions 2/

	Low Assumptions	High Assumptions
OASI, ex disability	1961	1960
OASDI, low disability	1959	1950
OASDI, high disability	1955	1957

1/ Exclusive of administration expenses
2/ Not the year in which Government contributions commence

The middle section of Table VIII assumes the operation of the rule that reserves should not be less than three times the highest expected benefits of any of the next five years. The figures shown are three times the benefits so determined and come into play when the reserves in the upper section have dropped below the amount required by this criterion.

In order to meet this minimum test additional income is needed by the system and in the lowest section of the table figures are given on the assumption that the Government pays in to the fund sufficient to meet the required reserves. The Government contributions shown are assumed to be payable on a level basis over the ten years following the appearance of the figures. That is, under the "low" assumptions with "high" disability the Government would contribute 3.4 billion per year from 1980 through 1989; this would meet the 1990 reserve criterion and would roughly meet the similar criterion for the intervening years, although because of not having the development by single calendar years exact incidence of Government contributions is not possible to determine.

The amounts are also expressed as approximate percentages of payrolls; these show that under some conditions the amount needed through Government support exceeds the combined employee-employer contributions.

Table VIII

(Progress of Reserves 1/)
(billions of dollars)

Balance in Fund 4/ Without Government Contributions

Low Assumptions			Calendar	High Assumptions		
OASI	With Low Dis.	With High Dis.	Year 2/	OASI	With Low Dis.	With High Dis.
7.0	7.0	7.0	3/ 1945	6.9	6.9	6.9
18.6	18.1	17.2	1950	24.3	23.7	23.3
28.0	25.9	21.9	1955	36.8	35.0	33.0
33.8	29.8	21.4	1960	43.8	40.3	36.1
36.2	26.4	5.6	1970	43.1	34.4	24.7
28.8	10.9	-27.7	1980	22.5	6.6	-7.0
10.9	-17.1	-78.2	1990	-23.6	-49.2	-72.5
-14.0	-53.7	-141.1	2000	-92.0	-129.0	-163.9

Reserve By "3 - Times" Rule

OASI	With Low Dis.	With High Dis.	Year	OASI	With Low Dis.	With High Dis.
*	*	*	1960	*	*	*
*	*	18.4	1970	*	*	25.4
*	17.4	21.3	1980	27.9	29.7	31.5
16.5	18.1	21.6	1990	31.1	32.7	34.5
16.3	17.8	21.4	2000	31.3	32.9	34.7

* "3-times" rule not applicable, reserves as per upper table

Government Contributions 5/ in Billions Needed to Maintain "3 - Times" Rule and as % of Pay Roll

OASI		With Low Dis.		With High Dis.		Year	OASI		With Low Dis.		With High Dis.	
$	%	$	%	$	%		$	%	$	%	$	%
**		**		**		1955	**		**		**	
**		**		1.0	1.4	1960	**		**		.1	.1
**		.5	.7	2.8	3.7	1970	.3	.3	2.0	1.7	3.6	3.1
.4	.5	2.4	3.2	3.4	4.5	1980	4.2	3.6	4.8	4.1	5.3	4.6
2.1	2.8	2.6	3.4	3.7	4.9	1990	5.0	4.3	5.5	4.8	6.1	5.3
2.1	2.8	2.5	3.3	3.6	4.8	2000	5.2	4.5	5.6	4.9	6.2	5.4

** Government Contribution not needed

1/ Ignoring expenses of administration from 1945.
2/ Beginning of each year.
3/ Using Third Trustees' Report; mean of Alternate III for low and of Alternate I for high.
4/ A 2% rate of interest is used.
5/ Level for next decennium.

Table IX - Level Percentage Costs

In this table the benefit disbursements, exclusive of administrative expenses, are expressed as level percentages of payroll for the various periods of time indicated. Thus taking the "low" assumptions with "high" disability it would require 5.63% of each year's payroll over the period 1945 to 1980 to meet the benefits (all without interest), while raising the sights a little to 1990, the level percent for each year beginning in 1945 would require 6.47%. Taking interest into consideration and assuming a 2% rate the right hand portion of the table shows corresponding figures of 5.17% to 1980 and 5.82% to 1990. If each current year's disbursements as a % of current payroll levels off after year 2000 (as Table VII begins to indicate), the percentage figures here shown would approach, asymptotically, such level perpetuity figures (somewhat less under "with interest").

An interesting result appears in a comparison of the OASI with "high" disability percentages between the "low" and "high" general assumptions. Table VII showed that, for year 2000 say, the percentages of payroll cost was about ½ a percentage point greater for the "high" than for the "low," whereas in this level cost table the "low" percentage is the greater. The reason must lie in the different incidence of income and outgo which permits relatively more fund to accumulate in the early years under the "high" than is the case under the "low."

Care should be taken that the percentages of this table are not confused with the percentage cost of a current year's benefits at any point in time. For such figures reference should be made to Table VII.

Table IX

Level Percentage of Pay Roll Cost of Benefits 1/ for Periods Shown, Without Interest and With 2% Interest

Without Interest			Period	With Interest		
OASI Alone	With Low Disability	With High Disability		OASI Alone	With Low Disability	With High Disability
L O W						
1.24%	1.38%	1.67%	1945 – '49	1.21%	1.40%	1.64%
1.65	1.92	2.45	1945 – '54	1.63	1.90	2.41
2.21	2.53	3.23	1945 – '59	2.13	2.45	3.12
3.20	3.64	4.58	1945 – '69	3.00	3.42	4.31
3.98	4.49	5.63	1945 – '79	3.64	4.13	5.17
4.64	5.21	6.47	1945 – '89	4.15	4.68	5.82
5.13	5.72	7.03	1945 – '99	4.51	5.05	6.24
H I G H						
1.15%	1.26%	1.34%	1945 – '49	1.14%	1.25%	1.32%
1.72	1.87	2.05	1945 – '54	1.68	1.83	2.00
2.31	2.50	2.73	1945 – '59	2.23	2.41	2.64
3.36	3.62	3.76	1945 – '69	3.15	3.39	3.56
4.25	4.55	4.80	1945 – '79	3.88	4.16	4.40
5.11	5.45	5.77	1945 – '89	4.52	4.84	5.13
5.82	6.19	6.54	1945 – '99	5.03	5.36	5.67

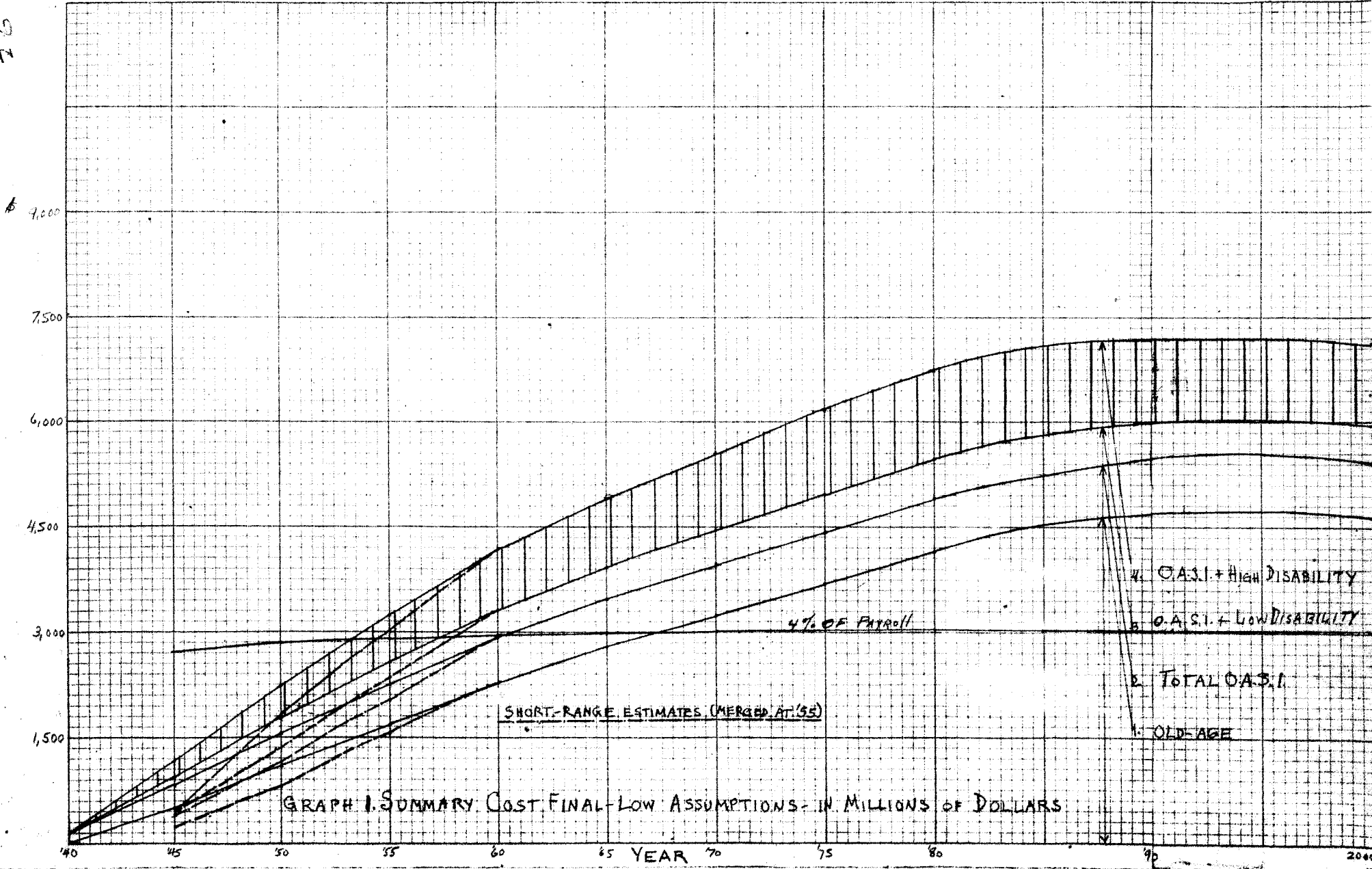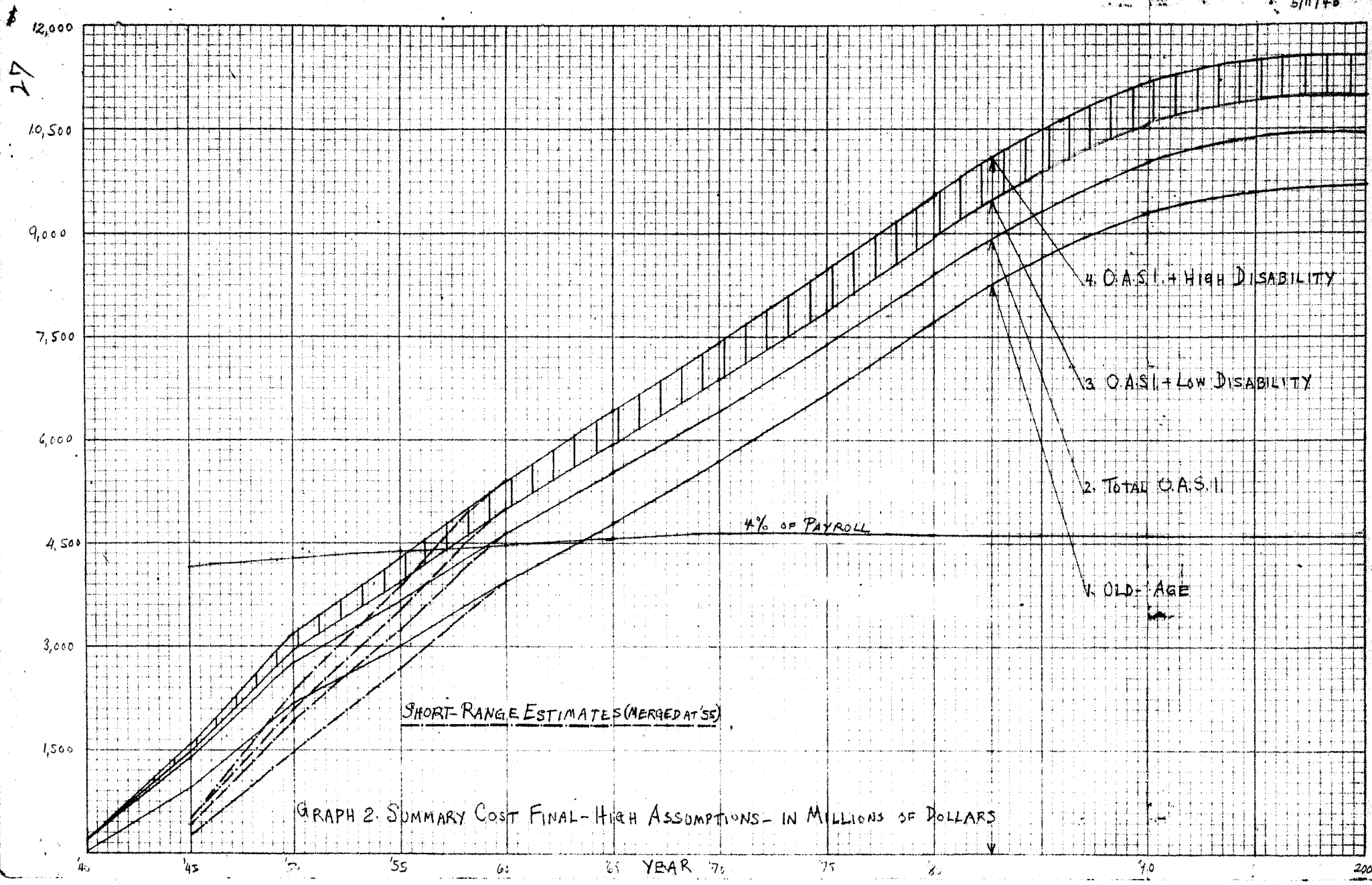1/ Ignoring expenses of administration.

CHARTS

Four charts have been drawn to supplement the tables. These graphs show benefit outgo, exclusive of expenses, both by amount and by percentage of payroll. They give a breakdown which permits comparison between old-age alone, "young survivors" alone, and the two sets of disability assumptions. The appropriate 4% tax rate is shown by line on the "amount" charts and on the percentage charts the tax is, of course, horizontal at the 4% altitude of the left-hand scale.

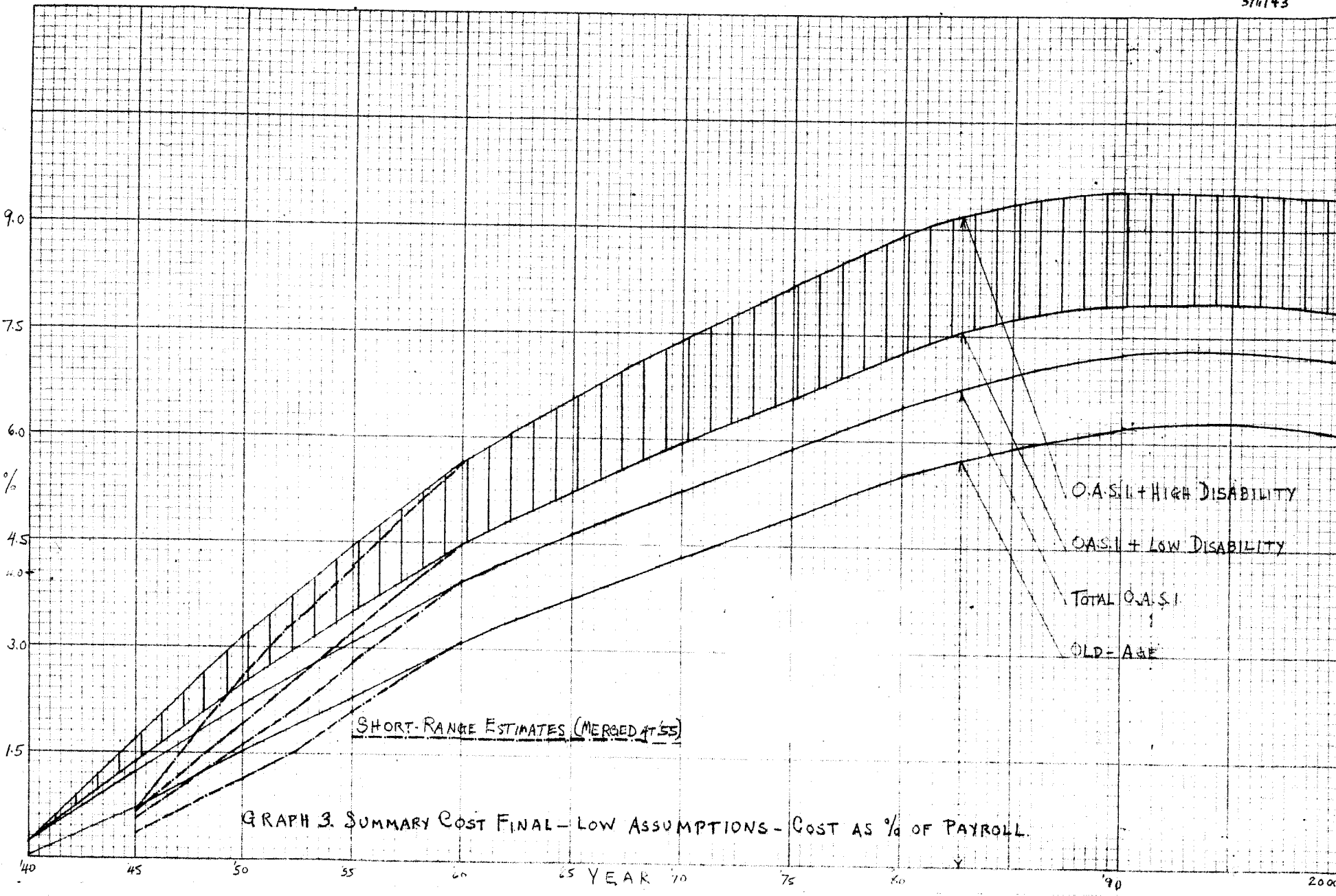For additional discussion refer back to the tables which give the data for preparing these illustrative charts.

GRAPH 1. SUMMARY COST FINAL-LOW ASSUMPTIONS-IN MILLIONS OF DOLLARS

4% OF PAYROLL

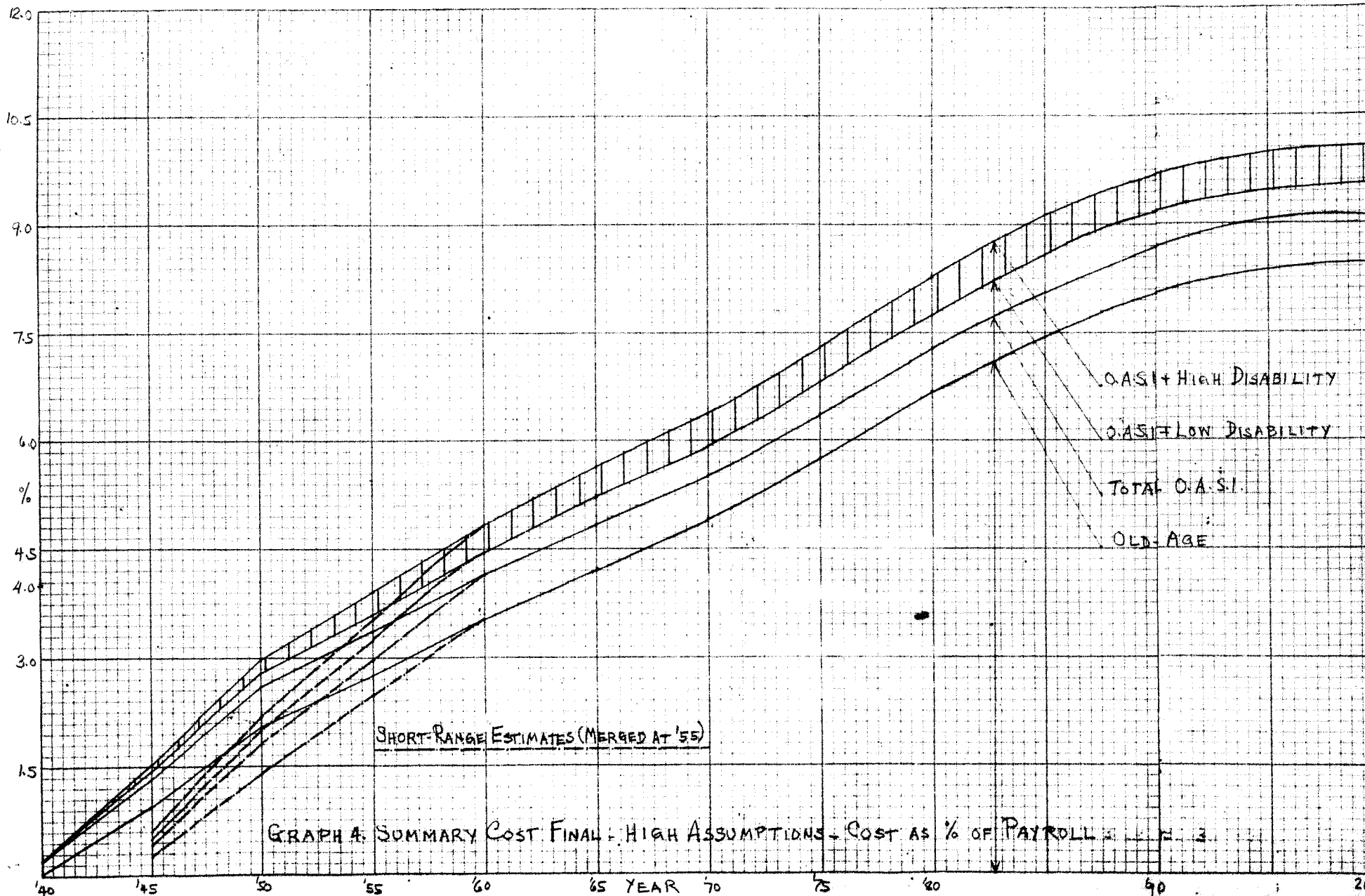SHORT-RANGE ESTIMATES (MERGED AT '55)

4. O.A.S.I + HIGH DISABILITY

3. O.A.S.I + LOW DISABILITY

2. TOTAL O.A.S.I.

1. OLD-AGE

9,000

7,500

6,000

4,500

3,000

1,500

'40   '45   '50   '55   '60   '65 YEAR '70   '75   '80   '90   2000

5/11/43

GRAPH 2. SUMMARY COST FINAL-HIGH ASSUMPTIONS - IN MILLIONS OF DOLLARS

4. O.A.S.I. + HIGH DISABILITY

3. O.A.S.I. + LOW DISABILITY

2. TOTAL O.A.S.I.

1. OLD-AGE

4% OF PAYROLL

SHORT-RANGE ESTIMATES (MERGED AT '55)

GRAPH 3. SUMMARY COST FINAL — LOW ASSUMPTIONS — COST AS % OF PAYROLL.

SHORT-RANGE ESTIMATES (MERGED AT '55)

O.A.S.I. + HIGH DISABILITY

OASI + LOW DISABILITY

TOTAL O.A.S.I

OLD-AGE

GRAPH A. SUMMARY COST FINAL - HIGH ASSUMPTIONS - COST AS % OF PAYROLL

SHORT-RANGE ESTIMATES (MERGED AT '55)

O.A.S.I + HIGH DISABILITY

O.A.S.I + LOW DISABILITY

TOTAL O.A.S.I.

OLD-AGE