TERMINATION EXPERIENCE OF DISABLED-CHILD BENEFITS UNDER THE OLD-AGE, SURVIVORS, AND DISABILITY INSURANCE (OASDI) PROGRAM

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The 1956 Social Security Amendments provided for the payment of monthly benefits to the disabled children of retired worker beneficiaries and deceased insured workers. The 1958 Amendments extended this coverage to the disabled children of disabled worker beneficiaries. These benefits are currently payable to children age 18 or over who became disabled before age 22, but not necessarily after passage of the applicable Amendments. Actuarial Note No. 46 (September 1968) presented a study of disabled-child benefit termination rates based on experience in calendar years 1962-65. This note presents data on similar experience in calendar years 1975-76 and includes comparisons of the termination rates experienced in the two periods. Also presented is a table of annuity rates, which should assist interested persons in valuing the benefits payable to disabled children.

Table 1 displays the numbers of disabled-child benefits awarded in calendar years 1975 and 1976 and the numbers of disabled children receiving benefits at the end of each year. In the two-year observation period, more than 67,000 disabled children were awarded benefits. At the end of 1976, about 381,000 disabled children were receiving benefits.

Table 1

Number of Disabled-Child Beneficiaries, 1975-76

Calendar Year	Number of Benefits	
	Awarded in Year	In Current Pay at End of Year
Male		
1975	29,019	194,929
1976	28,207	210,937
Female		
1975	7,688	167,334
1976	6,310	170,570

This note does not analyze the rate at which children became disabled and qualify for the disabled-child benefit—a rate which would be generally referred to as the "incidence rate." Practical problems arise in an analysis of such incidence rates. One is the lack of accurate disability Onset dates on many beneficiary records. Another problem is that eligibility for disabled-child benefits is dependent not only upon the disability-onset date, but also upon the date of retirement, death, or disability of the insured parent.

The disabled-child benefit program has certain criteria for termination of benefits which have little significance outside of the OASDI system. For example, disabled-child benefits may be terminated because of a change in the status of the parent beneficiary or because the disabled child became entitled to an equal or larger benefit under other provisions of the social security laws. This note will analyze only the termination rates resulting from the three reasons which have the greatest significance outside of the OASDI system—(1) death of the beneficiary, (2) marriage of the beneficiary to a person who is not a Social Security recipient, and (3) recovery from disability. Table 2 summarizes the experience in 1975 and 1976 separately by cause of termination and by sex of the disabled-child beneficiary.

Table 2

Number of Terminations and Gross Termination Rates for
Disabled-Child Beneficiaries, 1975-76

Calendar Year	Number of Terminations				Gross Termination Rate		
	Death	Marriage	Recovery 1/		Death	Marriage	Recovery 1/
			Male				
1975	3,603	875	974		.0191	.0047	.0052
1976	3,934	991	1,111		.0193	.0049	.0055
			Female				
1975	2,615	1,068	412		.0157	.0064	.0025
1976	2,774	994	530		.0162	.0058	.0031

1/ Due to defective methods of tabulating recoveries during the observation period, the number of recoveries was estimated by age and sex from historical trends.

Termination experience for different types of disabled beneficiaries has been found to be dependent on age, sex, and duration of disability. Undoubtedly, other factors also affect the termination rates, e.g., type and severity of disability, type of previous employment, if any, etc., but it is often impractical to combine disability beneficiaries into the homogeneous groups required for such an analysis. In this Note, termination rates are analyzed only by age and sex. Because of the lack of complete and accurate data on dates of onset of disability, no study of rates by duration was done. Earlier studies have indicated that the majority of the OASDI disabled-child beneficiaries have impairments which have been present since birth, e.g., mental retardation. Therefore, a grouping by attained age provides sufficient homogeneity for the intended analysis.

Mortality Rates

Table 3 shows the observed number of deaths and the observed and graduated death rates by age and sex. The study includes 7,476 male and 5,323 female deaths. All cases were tabulated by calendar age; therefore, the deaths and death rates relate generally to the one year period surrounding the date of birth. For example, the death rate at age 25 generally relates to the one year period occurring between exact ages 24½ and 25½. The observed rates for ages 19-75 (the data for other ages were insufficient to analyze) were graduated using a Whittaker-Henderson Type B formula. These graduated rates produced ratios of observed to expected deaths of 1.0004 for males and .9997 for females.

Table 3

Number of Deaths and Mortality Rates for Disabled-Child Beneficiaries,
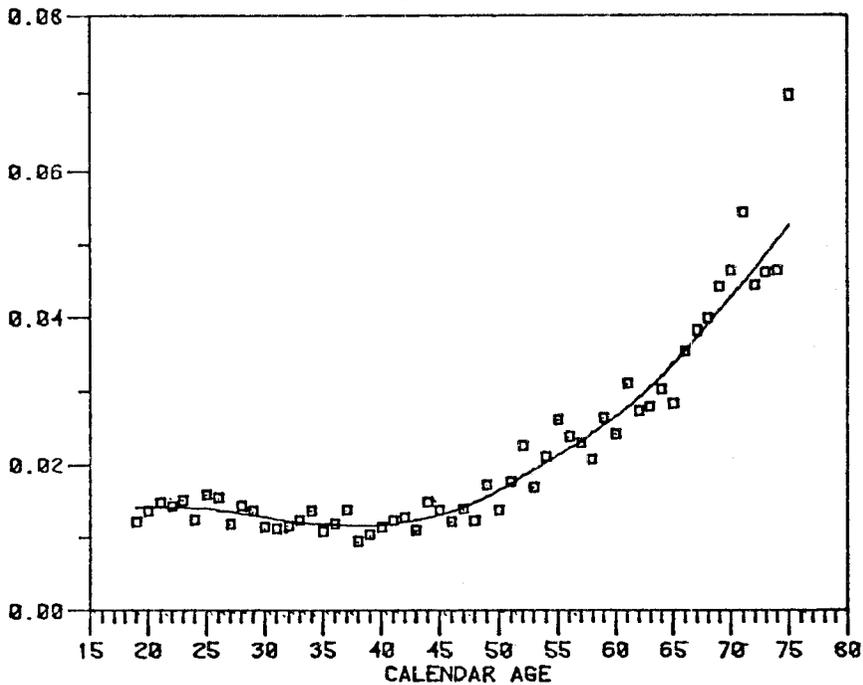1975-76

	Male			Female		
Calendar Age	Number of Deaths	Death Rates Observed	Death Rates Graduated	Number of Deaths	Death Rates Observed	Death Rates Graduated
19	168	.0248	.0236	71	.0121	.0140
20	210	.0222	.0225	96	.0136	.0140
21	231	.0226	.0215	113	.0147	.0140
22	239	.0209	.0204	115	.0141	.0140
23	225	.0193	.0194	128	.0150	.0140
24	201	.0173	.0184	103	.0123	.0139
25	208	.0185	.0175	132	.0158	.0138
26	165	.0150	.0167	129	.0153	.0136
27	187	.0163	.0160	100	.0117	.0134
28	178	.0150	.0154	127	.0143	.0131
29	176	.0147	.0149	124	.0136	.0129
30	158	.0138	.0145	99	.0113	.0126
31	154	.0137	.0141	96	.0111	.0123
32	163	.0144	.0139	100	.0114	.0121
33	148	.0131	.0138	107	.0122	.0119
34	164	.0148	.0137	116	.0136	.0118
35	148	.0138	.0136	88	.0107	.0117
36	152	.0148	.0136	95	.0117	.0116
37	131	.0130	.0137	109	.0137	.0115
38	122	.0123	.0137	75	.0094	.0114
39	152	.0157	.0138	81	.0103	.0115
40	151	.0154	.0140	89	.0113	.0116
41	143	.0149	.0141	98	.0122	.0117
42	134	.0149	.0143	100	.0127	.0120
43	114	.0130	.0146	84	.0109	.0123
44	125	.0142	.0150	114	.0147	.0126
45	133	.0149	.0155	107	.0137	.0131
46	140	.0162	.0161	94	.0121	.0136
47	134	.0162	.0168	106	.0139	.0142
48	140	.0173	.0177	94	.0122	.0149
49	148	.0197	.0187	129	.0171	.0156
50	133	.0191	.0198	98	.0137	.0165
51	137	.0199	.0211	124	.0176	.0174
52	155	.0236	.0225	152	.0227	.0184
53	132	.0217	.0240	105	.0169	.0194
54	136	.0235	.0257	130	.0211	.0204
55	179	.0322	.0274	157	.0260	.0214
56	140	.0278	.0292	130	.0239	.0223
57	156	.0335	.0311	119	.0229	.0233
58	150	.0360	.0331	100	.0207	.0244
59	114	.0318	.0351	109	.0264	.0255
60	114	.0344	.0372	90	.0241	.0266
61	131	.0420	.0394	109	.0310	.0278
62	116	.0428	.0416	87	.0272	.0292
63	105	.0466	.0439	77	.0279	.0306
64	84	.0441	.0463	72	.0302	.0321
65	78	.0479	.0488	58	.0283	.0337
66	60	.0430	.0514	62	.0353	.0354
67	74	.0584	.0541	58	.0381	.0372
68	48	.0485	.0569	54	.0398	.0390
69	41	.0552	.0598	50	.0441	.0409
70	27	.0436	.0627	42	.0463	.0428
71	43	.0893	.0657	40	.0542	.0447
72	28	.0773	.0688	26	.0443	.0466
73	17	.0739	.0719	21	.0461	.0485
74	20	.1064	.0750	16	.0464	.0505
75	16	.1107	.0781	18	.0695	.0524

Graphs 1 and 2 show the observed and graduated death rates for males and females respectively. The male graduated death rate at age 19 is about 24 per thousand. The rates decrease to about 14 per thousand in the mid-30's, then rise steadily to 78 per thousand at age 75. The female graduated death rates are about 14 per thousand at the early ages, decrease to around 11 per thousand at age 38, then rise to 52 per thousand at age 75.

GRAPH 1
MALE DISABLED CHILD MORTALITY RATES, 1975-76 EXPERIENCE
OBSERVED AND GRADUATED
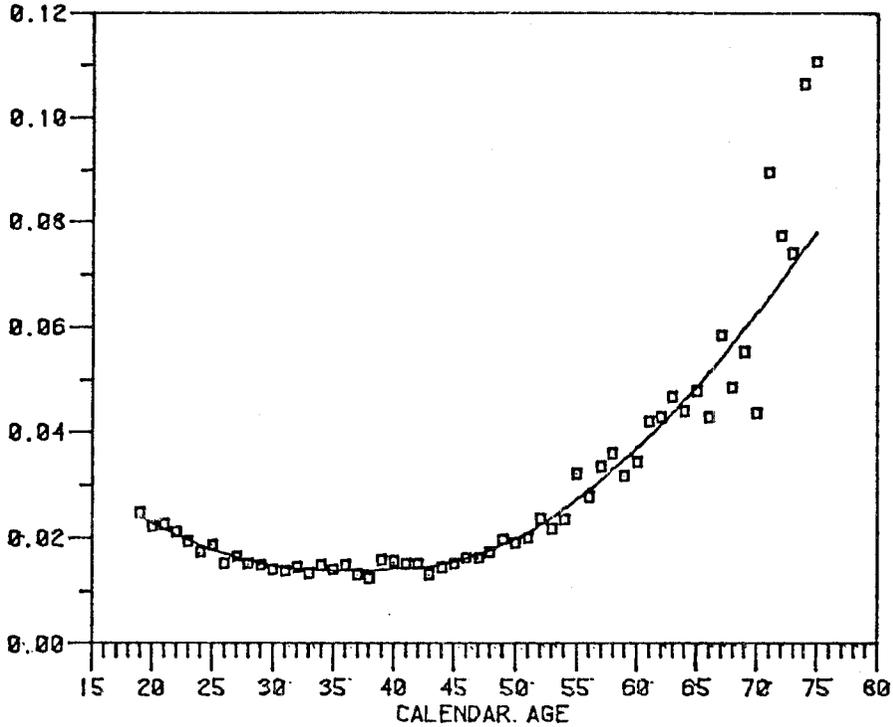
GRAPH 2
FEMALE DISABLED CHILD MORTALITY RATES, 1975-76 EXPERIENCE
OBSERVED AND GRADUATED

Actuarial Note 46 presented graduated disabled-child mortality rates by age for both sexes combined based on 1962-65 experience. Corresponding rates were prepared based on 1975-76 experience. The two sets of mortality rates are displayed in Graph 3. The 1975-76 rates are higher than the 1962-65 rates until age 40, then slightly lower through age 58, which was the highest age included in the earlier study.

GRAPH 3
COMPARISON OF DISABLED CHILD MORTALITY RATES

- - - - - - - 1962-65 EXPERIENCE
———————— 1975-76 EXPERIENCE

CALENDAR AGE
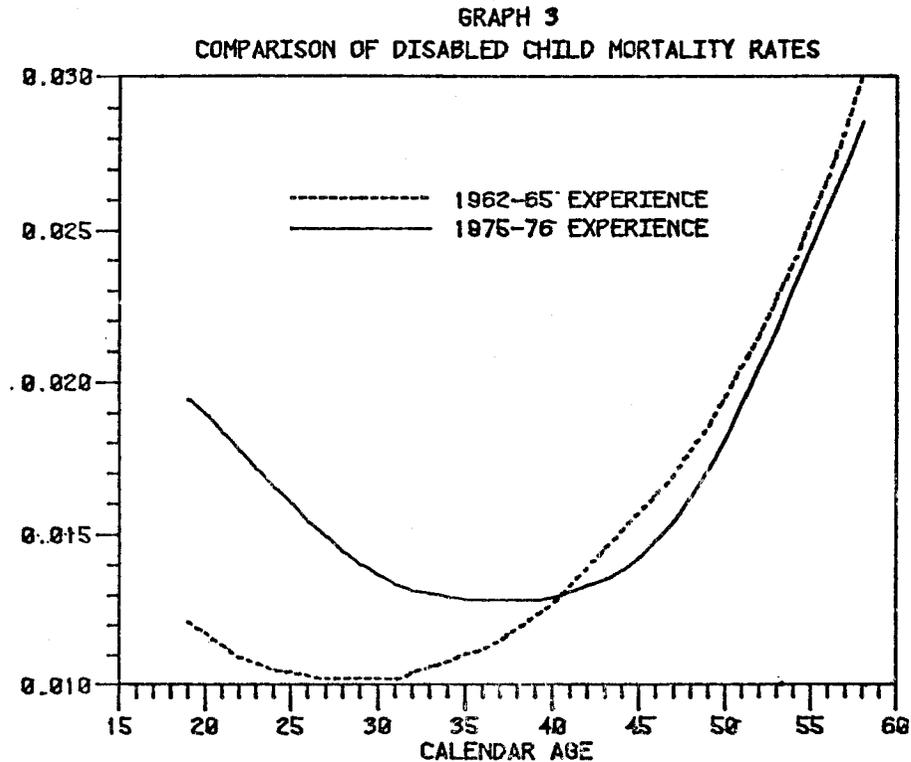
In analyzing why the more recent mortality rates are higher at ages below 40, it was found that the basis of entitlement of the parent beneficiaries was the major factor. Disabled children of disabled workers experienced mortality rates 5 to 6 times higher than disabled children of retired or deceased workers. No explanation is available for this phenomenon. Since the proportion of all disabled-child beneficiaries who were disabled children of disabled workers was higher during 1975-76 than in 1962-65, the overall mortality rates tended to be higher during the more recent period. The rates for disabled children of retired and deceased workers (excluding children of disabled workers) were found to be lower in 1975-76 than in 1962-65.

For disabled children age 40 and over, the basis of entitlement of the parent is less significant. At these ages, there are few disabled-child beneficiaries with parents who are disabled worker beneficiaries, since only persons under age 65 are eligible for disabled-worker benefits. For ages 40 and over, the mortality rates in the 1975-76 period are somewhat lower than in the 1962-65 period.

Table 4 compares the 1975-76 disabled-child graduated mortality rates by age and sex with the 1972-76 disabled worker mortality rates under OASDI and with the U.S. population mortality during 1969-71. The death rates for disabled children are higher than the rates for disabled workers at the early ages; however, by age 35, disabled-child mortality rates fall below those for disabled workers, with the ratios stabilizing around .6 for males and .75 for females. Disabled-child mortality rates tend to decline relative to disabled-worker mortality rates because of the differences in impairments found in the two groups of beneficiaries. At the older ages, nearly half the workers who become entitled to disability benefits have impairments, e.g., heart disease and cancer, for which the additional mortality risk is large. The majority of disabled-child beneficiaries have impairments, e.g., mental retardation, for which the additional mortality risk is much less. Thus, with advancing age, the total mortality rate for disabled-child beneficiaries tends to be lower than that of disabled-worker beneficiaries.

Table 4

Comparison of Disabled-Child Mortality with Disabled Worker
Mortality and Total U.S. Population Mortality

alendar Age	Mortality Rates			Ratios	
	(1) 1975-76 Disabled Children	(2) 1972-76 Disabled Workers 1/	(3) 1969-71 U.S. Life 2/	(4) Col. 1 to Col. 2	(5) Col. 1 to Col. 3
			Male		
20	.0225	N/A	.0021	----	11.0
25	.0175	.0088	.0022	2.0	7.9
30	.0145	.0115	.0021	1.3	7.0
35	.0136	.0143	.0026	1.0	5.2
40	.0140	.0194	.0039	.7	3.6
45	.0155	.0259	.0060	.6	2.6
50	.0198	.0345	.0093	.6	2.1
55	.0274	.0463	.0147	.6	1.9
60	.0372	.0593	.0225	.6	1.7
65	.0488	N/A	.0333	----	1.5
70	.0627	N/A	.0483	----	1.3
75	.0781	N/A	.0698	----	1.1
			Female		
20	.0140	N/A	.0007	----	20.0
25	.0138	.0112	.0008	1.2	17.3
30	.0126	.0124	.0010	1.0	12.6
35	.0117	.0134	.0015	.9	8.0
40	.0116	.0151	.0022	.8	5.2
45	.0131	.0179	.0034	.7	3.9
50	.0165	.0227	.0050	.7	3.3
55	.0214	.0278	.0074	.8	2.9
60	.0266	.0234	.0107	.8	2.5
65	.0337	N/A	.0161	----	2.1
70	.0428	N/A	.0252	----	1.7
75	.0524	N/A	.0410	----	1.3

1/ From actuarial study No. 75, for duration 5 and higher (ultimate).

2/ From official 1969-71 U.S. Life Tables with rates interpolated to
half exact age.

The death rates for disabled children are higher than for the U.S. population. The ratio for males is almost 11 to 1 at age 20; it decreases steadily with age and by age 75 the mortality rates are about equal. for females, the ratio is about 20 to 1 at age 20 and decreases to 1.3 at age 75.

Termination Rates

Table 5 shows the observed number of terminations resulting from the three causes (deaths, marriages, and recoveries) combined. The corresponding observed and graduated termination rates by age and sex are also shown. The study includes 11,395 male and 8,304 female terminations. The observed rates for ages 19-75 were graduated using a Whittaker-Henderson Type B formula. These graduated rates produced ratios of observed to expected terminations of .9996 for males and .9994 for females.

Table 5
Number of Terminations and Termination Rates 1/
for Disabled-Child Beneficiaries, 1975-76

| Calendar Age	Male			Female		
	Number of Terminations	Observed	Graduated	Number of Terminations	Observed	Graduated
19	293	.0428	.0478	190	.0321	.0448
20	402	.0421	.0464	308	.0430	.0436
21	495	.0479	.0449	380	.0488	.0423
22	537	.0463	.0434	360	.0434	.0408
23	528	.0448	.0417	380	.0439	.0392
24	494	.0421	.0398	316	.0372	.0374
25	463	.0408	.0378	327	.0386	.0354
26	360	.0323	.0357	315	.0368	.0333
27	399	.0346	.0336	235	.0274	.0311
28	366	.0306	.0316	256	.0286	.0290
29	326	.0270	.0279	231	.0252	.0270
30	309	.0267	.0279	201	.0228	.0250
31	285	.0252	.0263	188	.0217	.0233
32	290	.0255	.0250	179	.0203	.0217
33	261	.0230	.0238	172	.0196	.0203
34	257	.0231	.0227	171	.0201	.0192
35	223	.0208	.0218	141	.0170	.0181
36	228	.0221	.0211	148	.0182	.0173
37	212	.0209	.0205	146	.0183	.0166
38	188	.0189	.0200	116	.0145	.0160
39	194	.0201	.0196	116	.0148	.0156
40	208	.0211	.0192	122	.0155	.0153
41	189	.0195	.0190	126	.0156	.0151
42	184	.0203	.0189	120	.0152	.0150
43	155	.0177	.0188	107	.0139	.0151
44	153	.0173	.0189	137	.0177	.0153
45	170	.0191	.0192	132	.0169	.0155
46	170	.0196	.0195	112	.0143	.0158
47	159	.0192	.0201	119	.0156	.0163
48	166	.0205	.0207	105	.0136	.0169
49	169	.0224	.0215	144	.0191	.0175
50	156	.0223	.0225	120	.0168	.0183
51	156	.0227	.0236	132	.0187	.0191
52	172	.0262	.0248	159	.0238	.0200
53	142	.0233	.0262	119	.0191	.0208
54	149	.0258	.0276	141	.0229	.0217
55	191	.0343	.0292	165	.0274	.0226
56	147	.0292	.0308	134	.0247	.0235
57	161	.0346	.0326	125	.0240	.0244
58	157	.0375	.0343	101	.0209	.0253
59	117	.0327	.0362	115	.0278	.0263
60	114	.0344	.0382	93	.0249	.0274
61	134	.0430	.0403	109	.0310	.0285
62	118	.0435	.0424	90	.0282	.0298
63	105	.0466	.0446	79	.0286	.0311
64	87	.0457	.0469	73	.0307	.0326
65	80	.0491	.0493	59	.0299	.0342
66	60	.0430	.0519	63	.0359	.0358
67	75	.0591	.0545	58	.0381	.0375
68	48	.0485	.0572	54	.0398	.0393
69	42	.0565	.0600	50	.0441	.0412
70	27	.0436	.0628	42	.0463	.0431
71	43	.0893	.0658	40	.0542	.0450
72	28	.0773	.0688	26	.0443	.0469
73	17	.0739	.0718	22	.0483	.0488
74	20	.1064	.0748	17	.0492	.0508
75	16	.1107	.0778	18	.0695	.0527

1/ Include termination due to death, marriage, and recovery.

Graphs 4 and 5 show the observed and graduated termination rates by sex. The male graduated termination rate is about 48 per thousand at age 19. The rates decrease to about 19 per thousand around age 40, then rise steadily to 78 per thousand at age 75. The female graduated termination rate is about 45 per thousand at age 19. The rates decrease to around 15 per thousand around age 40, then rise to 53 per thousand at age 75.

GRAPH 4
MALE DISABLED CHILD TOTAL TERMINATION RATES, 1975-76
OBSERVED AND GRADUATED
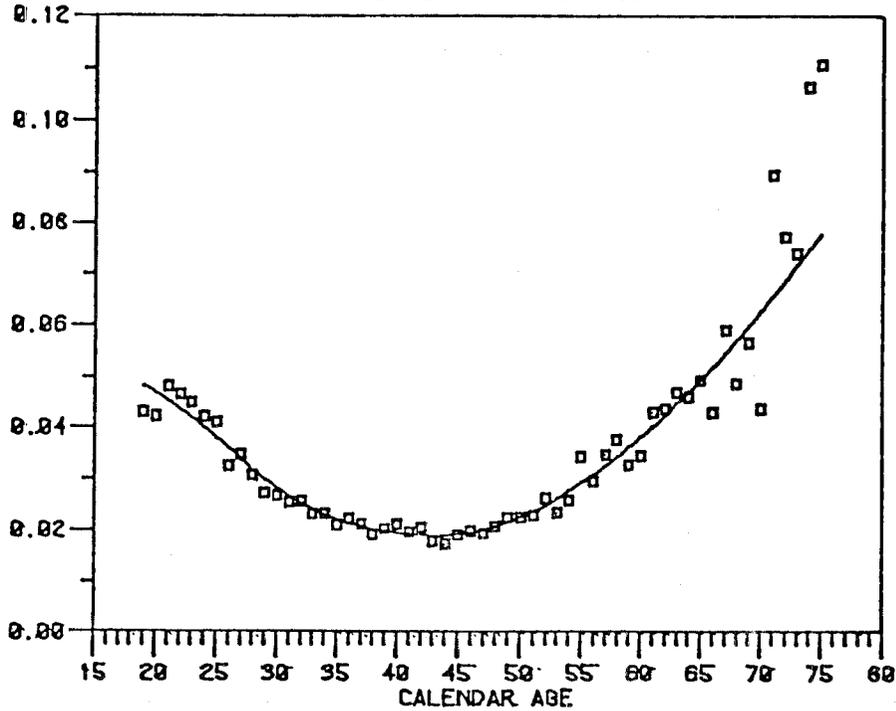
GRAPH 5
FEMALE DISABLED CHILD TOTAL TERMINATION RATES, 1975-76
OBSERVED AND GRADUATED
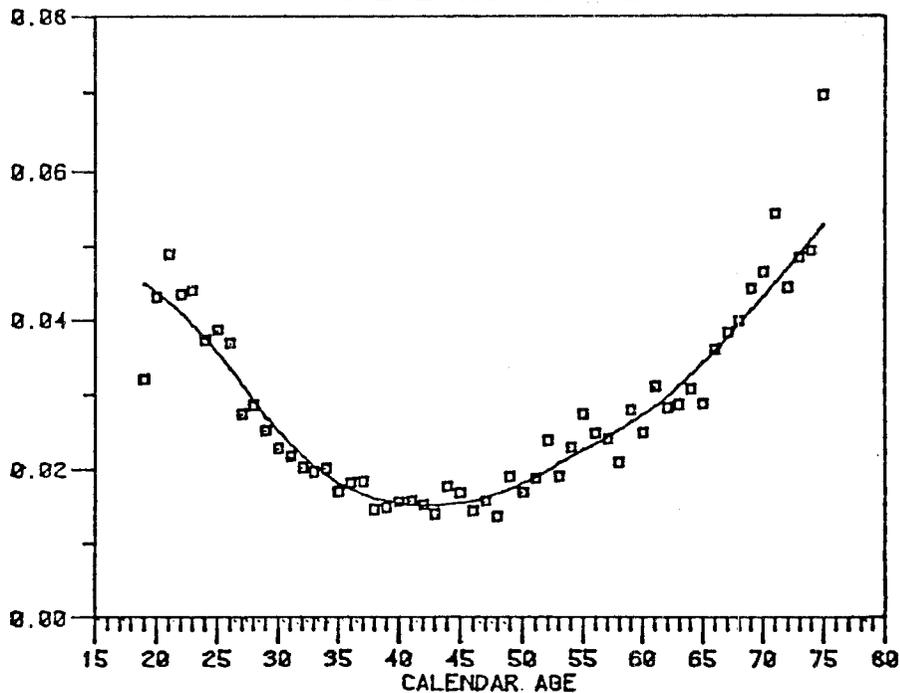
The relatively high termination rates at the younger ages result primarily from marriages and recoveries. Both the marriage and recovery rates decline with advancing age; however, the decline observed in the 1975-76 experience was less steep than the decline observed in the 1962-65 experience. For female beneficiaries, the marriage rate is generally higher than the recovery rate. For male beneficiaries, the marriage and recovery rates differ insignificantly. Although the marriage and recovery rates decline with advancing age the mortality rates rise more rapidly and cause the total termination rate to steadily rise for both sexes after age 42.

Actuarial Note 46 presented 1962-65 graduated termination rates resulting from combining deaths, marriages, and recoveries, by age, for both sexes combined. Corresponding rates were prepared based on 1975-76 experience. The two sets of rates are displayed in Graph 6. The 1975-76 rates are higher than the 1962-65 rates until age 45. Beyond age 45 the 1975-76 rates are slightly lower.

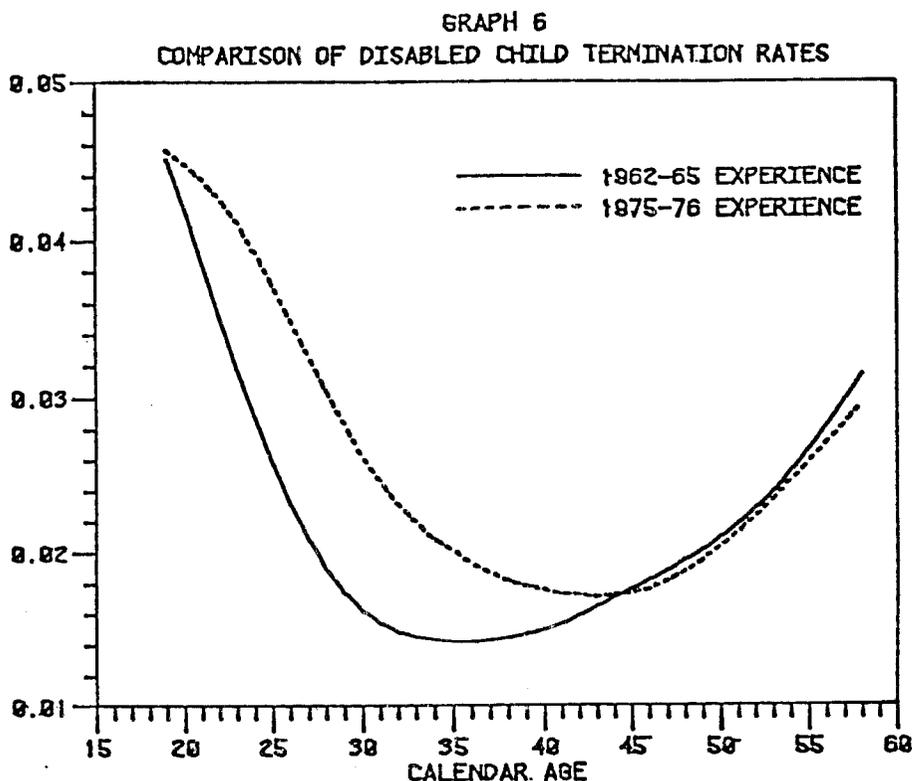GRAPH 6
COMPARISON OF DISABLED CHILD TERMINATION RATES

Table 6 presents values of an annuity of one unit per year payable at the beginning of each month by sex at interest rates 0%, 3%, 4%, and 5%. These values are based on the termination rates in Table 5 and on an extrapolation made of these values at the older ages. The extrapolation of male rates was prepared by grading into the 1969-71 U.S. male population mortality rates at age 85. The female rates were graded into the 1969-71 U.S. female population mortality rates at age 90.

Table 6

Present Value of An Annuity of One Unit Per Month Payable at the Beginning
of Each Month to Disabled-Child Beneficiaries, 1975-76
Termination Experience

Calendar Age	Male				Female			
	0%	3%	4%	5%	0%	3%	4%	5%
19	214.2	175.4	150.7	131.5	343.0	181.6	154.4	133.6
20	318.3	178.2	153.1	133.6	359.4	191.0	162.3	140.5
21	322.0	180.9	155.5	135.7	364.1	194.1	165.0	142.8
22	325.4	183.6	157.8	137.7	368.4	197.2	167.7	145.1
23	328.5	186.1	160.0	139.7	372.3	200.1	170.3	147.4
24	331.0	188.4	162.1	141.6	375.7	202.9	172.7	149.5
25	332.9	190.5	164.1	143.3	378.5	205.5	175.1	151.6
26	334.2	192.3	165.8	144.9	380.6	207.8	177.2	153.5
27	334.8	193.8	167.2	146.3	381.9	209.8	179.0	155.2
28	334.6	194.9	168.4	147.4	382.4	211.4	180.6	156.7
29	333.7	195.6	169.2	148.3	382.0	212.6	181.8	157.9
30	332.1	196.0	169.8	140.0	380.7	213.4	182.7	158.8
31	329.8	196.0	170.0	149.3	378.6	213.7	183.3	159.5
32	326.9	195.7	170.0	149.5	375.8	213.7	183.5	159.8
33	323.4	195.0	169.7	149.4	372.2	213.2	183.4	160.0
34	319.4	194.1	169.1	149.1	368.1	212.5	183.0	159.8
35	315.0	192.8	168.3	148.6	363.4	211.4	182.4	159.5
40	287.6	183.2	161.4	143.5	333.8	202.2	176.0	155.0
45	254.7	168.9	150.2	134.8	298.9	188.6	165.7	147.1
50	220.0	151.9	136.4	123.4	263.0	172.9	153.4	137.3
55	187.1	134.1	121.7	111.0	228.9	156.7	140.5	126.8
60	157.4	117.0	107.2	98.6	196.6	140.1	126.9	115.5