LIFE TABLES FOR

1949-51

U. S. DEPARTMENT OF

HEALTH, EDUCATION, AND WELFARE

Public Health Service

National Office of Vital Statistics

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Arthur S. Flemming, Secretary

Public Health Service
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LIFE TABLES FOR 1949-51

VITAL STATISTICS-SPECIAL REPORTS

Volume 41, Numbers 1 through 5

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VITAL STATISTICS-SPECIAL REPORTS

LIFE TABLES FOR 1949-51

United States Life Tables 1949-51

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Office of Vital Statistics

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United States Life Tables: 1949-51

By Monroe G. Sirken, Chief, Actuarial Analysis Section and Gustav A. Carlson, Health Program Representative

Detailed life tables, 1949-51

This report contains detailed life tables for the United States, 1949-51. They are the most recent in a series of life tables that have been prepared at 10-year intervals for the death-registration States, which originated with those for 1900-1902. Each of the tables in the series is based on a census of population and deaths in a 3-year period containing the census year. The life tables in this report are based on the 1950 census of population and deaths of the 3-year period 1949-51 for the entire continental United States. In deriving life table values at ages under 5, use was made, also, of reported births for each of the 8 years 1944 to 1951, and of deaths for the same years. Nine detailed life tables are contained in this report. Life tables are given for whites and nonwhites, separately by sex, and for both sexes combined, and also for the total population and for total males and total females.

The accuracy of the life table values for 1949-51 probably compares favorably with the accuracy of the statistics on which they are based. However, it is well known that the basic statistics are subject to various errors, the magnitude of which is usually difficult to estimate precisely. Prior to the calculation of the values of the life tables, the more serious errors were examined carefully, and the basic data were adjusted to remove errors when corrections were available or could be derived. It should be noted that the population and mortality statistics at the oldest ages were least trustworthy. Special methods were devised to determine the proportions dying at ages over 87 for nonwhites and at ages over 92 for whites. Therefore, the life table values at the oldest ages are more likely to contain errors than those at other ages, and, in fact, they may not necessarily represent actual conditions.

A later publication will contain a complete statement of the adjustments made in the basic data and of the methods and formulas by which the life tables were prepared.

Life table values, 1949-51

The rates of mortality during a specific period may be summarized by the life table method to obtain measures of comparative longevity. The basis of these measures is a closed cohort for each of the population groups under examination which is assumed to be subject throughout life to the mortality rates of that period. For example, table 1 presents a life table for the total population showing the progress of a cohort starting with 100,000 live births and subject throughout life to the average mortality rates for the 3-year period 1949-51.

The customary measure of the comparative longevity of different populations is the average duration of life, also called the expectation of life at birth. This is the average number of years lived by the members of the life table cohort. In each of the tables, the average duration of life appears opposite age 0 in the column which gives the average remaining lifetime. These values indicate that females, on the average, live longer than males, and white persons longer than nonwhite. The expectation of life at birth is 66.31 years for white males, 72.03 years for white females, 58.91 years for nonwhite males, and 62.70 years for nonwhite females.

There is, however, some objection to the use of the average duration of life as a standard of comparison because the method of calculating it gives great weight to the relatively large number of deaths occurring in the first year of life. This influence may be entirely eliminated by considering instead the average lifetime remaining to those members of the cohort surviving to age 1, or, in other words, the expectation of life at age 1. As a result of this change, the differences between these various groups are somewhat reduced. Nevertheless, during 1949-51 white females still live, on the average, 5.36 years longer than white males, and 8.40 years longer than nonwhite females, while white males live 6.35 years longer than nonwhite males.

Another possible standard for comparing the longevity of different populations is provided by the median length of life, or "probable lifetime," which is the age at which half of the original members of the cohort have died. When the life table cohort starts with 100,000 births, this would be the age at which there are just 50,000 survivors. In other words, it is the age to which an infant born alive has just an even chance of surviving. In computing this median length of life, the deaths in the age groups in which the median age lies are assumed to be evenly distributed. Thus, the median length of life on the basis of 1949-51

mortality rates for white males is determined to be 70.67 years; for white females, 76.41 years; for nonwhite males, 62.69 years; and for nonwhite females, 66.21 years. It is evident that the median length of life is longer than the average duration of life for all groups.

Still another measure of comparative longevity is the number of persons surviving to stated ages in a cohort, of, say, 100,000 live births. For example, it is of some interest to examine the proportions of survivors to ages 21 and 65, since these ages may be taken as representing, respectively, the attainment of manhood or womanhood, and the retirement age prescribed by the Social Security Act. At age 21, the ratio of nonwhite to white survivors in the 1949-51 life tables is 97 percent, and at age 65 the ratio is 70 percent. This marked difference indicates the cumulative effect of higher mortality among nonwhites in the intervening ages. The corresponding ratios of males to females are 98 percent and 83 percent.

Trend of life table values for 1900-1951

Selected life table values for five decennial life tables covering the period 1900 to 1951 are given in tables 10-12, by race and sex. In using these tables it must be remembered that values for earlier periods are not strictly comparable with those for later periods. The area covered at each period was limited by the number of death-registration States, and values for periods prior to 1929-31 do not cover the entire continental United States. Neither do the values for periods prior to 1949-51 cover all nonwhites, but are limited to Negroes only. It should be remembered, also, that there has been progressive improvement in the completeness of death reporting during this period.

It seems unlikely that variations in the scope of the life tables from period to period would seriously bias the major trends in the values for 1900-1951. However, it is believed that the fluctuations shown at certain ages in the values for Negroes during the first 30 years of the century may be attributable, in part, to the expanding character of the death-registration area, and, in part, to progressive improvement in the completeness of death reporting.

During the first half of this century, there was a spectacular improvement in the expectation of life for all four subdivisions of the population by race and sex. The improvement in longevity has been appreciably greater for females than for males, and for nonwhites than for whites. The relative improvement in the longevity of females is particularly striking because it has increased the disparity in the expectation of life between the sexes. The average duration of life (table 12) has increased by 18.08 years for white males, 20.95 years for white females, 26.37 years for nonwhite males, and 27.66 years for nonwhite females. The proportion dying during the first year of life (table 10) has decreased by 77 percent for white males, 79 percent for white females, 80 percent for nonwhite males, and 81 percent for nonwhite females. The number attaining age 65 in a life table cohort of 100,000 live births (table 11) has increased by 24,296 for white males, by 32,967 for white females, by 26,183 for nonwhite males, and by 30,363 for nonwhite females. For all four subdivisions of the population, the improvement in the average remaining lifetime becomes progressively less at older ages, but recent values even at relatively old ages are substantially higher than in 1900-1902.

EXPLANATION OF THE COLUMNS OF THE LIFE TABLE

Both the descriptive titles and the conventional actuarial symbols appear at the head of the columns in each of the tables. The description which follows gives a more detailed explanation of the seven columns of the life table.

Column 1—Year of age (x to $x + 1$).—The year of age, shown in column 1, is the interval between the two exact ages indicated. For instance, "21-22" indicates the interval between the twenty-first birthday and the twenty-second, in other words, the twenty-second year of life.

Column 2—Proportion dying (q_x).—This column shows the proportion dying within 1 year after the birthday indicated among those alive on that birthday. For example, the proportion dying in the age interval 21-22 for white males is .00169. In other words, during 1949-51, out of every 1,000 white males alive and exactly 21 years old, 1.69 would die before reaching their twenty-second birthday. The "proportion dying" column forms the basis of the life table, all the other columns being derived from it.

Column 3—Number living (l_x).—This column shows the number of persons who survive to each age out of a cohort of 100,000 live births, among whom the proportions dying in each age throughout their lives are exactly those shown in column 2. Thus, out of 100,000 white male babies born alive, 96,931 will complete the first year of life and enter the second; 96,726 will begin the third year; 94,950 will reach age 21; and 38,104 will live to age 75.

Column 4—Number dying (d_x).—This column shows the number dying in each successive year of age out of 100,000 live births. Out of 100,000 white males born alive, 3,069 die in the first year of life, 205 in the second year, 161 in the twenty-second year, and 2,858 in the seventy-sixth year. Each figure in column 4 is the difference between two successive figures in column 3.

Columns 5 and 6—Stationary population (L_x and T_x).—Suppose that a group of 100,000 individuals like that assumed in columns 3 and 4 is born every year, and that the proportions dying in each such group in each year of life throughout the lives of the members are exactly those shown in column 2. If there were no migration and if the births were evenly distributed over the calendar year, the survivors of these births would make up what is called a stationary population—stationary because in such a population the number of persons living in any given year of age would never change. When an individual left an age, either by death or by growing older and entering the next higher age, his place would immediately be taken by some one entering from the next lower age. Thus, a census taken at any time in such a stationary community would always show the same total population and the same numerical distribution of that population among the various ages. In such a stationary population supported by 100,000 annual births, column 3 shows the number of persons who, each year, reach the birthday indicated in column 1, while column 4 shows the number of persons who die each year in the indicated age interval.

Column 5, L_x, shows the number of persons in the stationary population in the indicated age interval. For example, the figure given for white males in the year of life 21-22 is 94,869. This means that in a stationary population of white males supported by 100,000 annual births and with proportions dying in each age group always in accordance with column 2, a census taken on any date would show 94,869 persons between 21 and 22 years old.

Column 6, T_x, shows the total number of persons in the stationary population (column 5) in the indicated age interval and all subsequent age intervals. For example, in the stationary population of white males referred to in the last illustration, column 6 shows that there would be at any given moment a total of 4,614,719 persons who have passed their twenty-first birthday. The population at all ages 0 and above (in other words, the white male population of the stationary community) would be 6,631,405.

Column 7—Average remaining lifetime ($\mathring{e}_x$).—The average remaining lifetime (also called the complete expectation of life) at any age is the average number of years remaining to be lived by those surviving to that age, on the basis of a given set of age-specific rates of dying. In order to arrive at this value, it is first necessary to observe that the figures in column 5 of the life tables can also be interpreted in terms of a single life table cohort, without introducing the concept of the stationary population. From this point of view, each figure in column 5 represents the total time (in years) lived between the two indicated birthdays by all those reaching the earlier birthday among the survivors of a cohort of 100,000 live births. Thus, the figure 94,869 for white males in the year of life 21-22 is the total number of years lived between the twenty-first and twenty-second birthdays by the 94,950 (column 3) who reach the twenty-first birthday out of 100,000 white males born alive. The corresponding figure in column 6 (4,614,719) is the total number of years lived after attaining age 21 by the 94,950 reaching that age. This number of years divided by the number of persons (4,614,719 divided by 94,950) gives 48.60 years as the average remaining lifetime of white males at age 21.

Care should be exercised in drawing conclusions from the figures in column 7. Thus, observing that the average lifetime of white persons is greater than that of nonwhite, one should not conclude that the oldest ages reached by white persons necessarily exceed those attained by the most long-lived nonwhite. The difference in the average length of life is due to the fact that a greater proportion of nonwhites die before reaching old age. For example, the number surviving to age 65 out of 100,000 born alive is far greater among white persons than among nonwhite; yet the average length of life remaining at age 65 is about the same for both groups.

TABLE 1. LIFE TABLE FOR THE TOTAL POPULATION: UNITED STATES, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02976	100,000	2,976	97,429	6,807,222	68.07
1-2	.00230	97,024	223	96,913	6,709,793	69.16
2-3	.00139	96,801	134	96,734	6,612,880	68.31
3-4	.00105	96,667	102	96,616	6,516,146	67.41
4-5	.00086	96,565	83	96,523	6,419,530	66.48
5-6	.00076	96,482	74	96,445	6,323,007	65.54
6-7	.00068	96,408	66	96,375	6,226,562	64.59
7-8	.00061	96,342	59	96,313	6,130,187	63.63
8-9	.00056	96;283	54	96,256	6,033,874	62.67
9-10	.00054	96,229	52	96,203	5,937,618	61.70
10-11	.00053	96,177	50	96,152	5,841,415	60.74
11-12	.00054	96,127	52	96,100	5,745,263	59.77
12-13	.00058	96,075	56	96,047	5,649,163	58.80
13-14	.00065	96,019	62	95,989	5,553,116	57.83
14-15	.00075	95,957	72	95,921	5,457,127	56.87
15-16	.00087	95,885	84	95,843	5,361,206	55.91
16-17	.00100	95,801	95	95,754	5,265,363	54.96
17-18	.00110	95,706	105	95,653	5,169,609	54.02
18-19	.00119	95,601	114	95,544	5,073,956	53.07
19-20	.00127	95,487	121	95,427	4,978,412	52.14
20-21	.00135	95,366	128	95,302	4,882,985	51.20
21-22	.00141	95,238	135	95,170	4,787,683	50.27
22-23	.00147	95,103	140	95,033	4,692,513	49.34
23-24	.00150	94,963	143	94,892	4,597,480	48.41
24-25	.00152	94,820	144	94,748	4,502,588	47.49
25-26	.00153	94,676	145	94,603	4,407,840	46.56
26-27	.00155	94,531	147	94,458	4,313,237	45.63
27-28	.00159	94,384	150	94,309	4,218,779	44.70
28-29	.00164	94,234	155	94,157	4,124,470	43.77
29-30	.00171	94,079	160	93,999	4,030,313	42.84
30-31	.00179	93,919	168	93,835	3,936,314	41.91
31-32	.00188	93,751	177	93,662	3,842,479	40.99
32-33	.00200	93,574	187	93,480	3,748,817	40.06
33-34	.00213	93,387	199	93,288	3,655,337	39.14
34-35	.00227	93,188	212	93,082	3,562,049	38.22
35-36	.00243	92,976	226	92,863	3,468,967	37.31
36-37	.00262	92,750	243	92,629	3,376,104	36.40
37-38	.00284	92,507	263	92,375	3,283,475	35.49
38-39	.00309	92,244	286	92,101	3,191,100	34.59
39-40	.00337	91,958	310	91,803	3,098,999	33.70
40-41	.00368	91,648	337	91,480	3,007,196	32.81
41-42	.00402	91,311	367	91,128	2,915,716	31.93
42-43	.00440	90,944	400	90,744	2,824,588	31.06
43-44	.00481	90,544	436	90,326	2,733,844	30.19
44-45	.00527	90,108	474	89,871	2,643,518	29.34
45-46	.00575	89,634	516	89,377	2,553,647	28.49
46-47	.00628	89,118	559	88,838	2,464,270	27.65
47-48	.00685	88,559	607	88,255	2,375,432	26.82
48-49	.00745	87,952	656	87,624	2,287,177	26.00
49-50	.00808	87,296	705	86,944	2,199,553	25.20
50-51	.00876	86,591	759	86,212	2,112,609	24.40
51-52	.00950	85,832	815	85,424	2,026,397	23.61
52-53	.01033	85,017	878	84,578	1,940,973	22.83
53-54	.01124	84,139	946	83,666	1,856,395	22.06
54-55	.01222	83,193	1,017	82,684	1,772,729	21.31

TABLE 1. LIFE TABLE FOR THE TOTAL POPULATION: UNITED STATES, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	0.01327	82,176	1,090	81,631	1,690,045	20.57
56-57	.01441	81,086	1,168	80,502	1,608,414	19.84
57-58	.01563	79,918	1,249	79,293	1,527,912	19.12
58-59	.01693	78,669	1,332	78,003	1,448,619	18.41
59-60	.01830	77,337	1,416	76,629	1,370,616	17.72
60-61	.01977	75,921	1,500	75,171	1,293,987	17.04
61-62	.02133	74,421	1,588	73,627	1,218,816	16.38
62-63	.02302	72,833	1,676	71,995	1,145,189	15.72
63-64	.02475	71,157	1,761	70,276	1,073,194	15.08
64-65	.02652	69,396	1,841	68,476	1,002,918	14.45
65-66	.02843	67,555	1,921	66,595	934,442	13.83
66-67	.03060	65,634	2,008	64,630	867,847	13.22
67-68	.03313	63,626	2,108	62,572	803,217	12.62
68-69	.03598	61,518	2,213	60,411	740,645	12.04
69-70	.03908	59,305	2,318	58,146	680,234	11.47
70-71	.04249	56,987	2,422	55,777	622,088	10.92
71-72	.04626	54,565	2,524	53,303	566,311	10.38
72-73	.05044	52,041	2,625	50,729	513,008	9.86
73-74	.05499	49,416	2,717	48,057	462,279	9.35
74-75	.05988	46,699	2,796	45,301	414,222	8.87
75-76	.06516	43,903	2,861	42,472	368,921	8.40
76-77	.07089	41,042	2,909	39,588	326,449	7.95
77-78	.07713	38,133	2,942	36,661	286,861	7.52
78-79	.08380	35,191	2,949	33,717	250,200	7.11
79-80	.09085	32,242	2,929	30,778	216,483	6.71
80-81	.09841	29,313	2,884	27,871	185,705	6.34
81-82	.10661	26,429	2,818	25,020	157,834	5.97
82-83	.11558	23,611	2,729	22,246	132,814	5.63
83-84	.12533	20,882	2,617	19,574	110,568	5.29
84-85	.13576	18,265	2,480	17,025	90,994	4.98
85-86	.14688	15,785	2,318	14,626	73,969	4.69
86-87	.15867	13,467	2,137	12,398	59,343	4.41
87-88	.17112	11,330	1,939	10,361	46,945	4.14
88-89	.18424	9,391	1,730	8,526	36,584	3.90
89-90	.19803	7,661	1,517	6,902	28,058	3.66
90-91	.21249	6,144	1,306	5,491	21,156	3.44
91-92	.22762	4,838	1,101	4,288	15,665	3.24
92-93	.24343	3,737	910	3,282	11,377	3.04
93-94	.26012	2,827	735	2,459	8,095	2.86
94-95	.27768	2,092	581	1,802	5,636	2.69
95-96	.29582	1,511	447	1,287	3,834	2.54
96-97	.31423	1,064	334	897	2,547	2.39
97-98	.33260	730	243	608	1,650	2.26
98-99	.35115	487	171	402	1,042	2.14
99-100	.37006	316	117	257	640	2.03
100-101	.38904	199	77	161	383	1.92
101-102	.40779	122	50	97	222	1.83
102-103	.42600	72	31	56	125	1.74
103-104	.44354	41	18	32	69	1.66
104-105	.46060	23	11	18	37	1.59
105-106	.47740	12	6	10	19	1.53
106-107	.49413	6	3	4	9	1.46
107-108	.51100	3	1	3	5	1.40
108-109	.52810	2	1	1	2	1.34
109-110	.54529	1	1	1	1	1.29

NOTE.—Proportions dying at ages above 87 are not based on actual statistics at these ages. Therefore, proportions dying and other life table functions based on them at these ages may not necessarily represent actual conditions.

TABLE 2. LIFE TABLE FOR TOTAL MALES: UNITED STATES, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03339	100,000	3,339	97,095	6,547,143	65.47
1-2	.00244	96,661	236	96,543	6,450,048	66.73
2-3	.00152	96,425	146	96,352	6,353,505	65.89
3-4	.00114	96,279	110	96,224	6,257,153	64.99
4-5	.00096	96,169	92	96,123	6,160,929	64.06
5-6	.00087	96,077	83	96,035	6,064,806	63.12
6-7	.00078	95,994	75	95,956	5,968,771	62.18
7-8	.00071	95,919	69	95,884	5,872,815	61.23
8-9	.00066	95,850	63	95,819	5,776,931	60.27
9-10	.00063	95,787	61	95,756	5,681,112	59.31
10-11	.00063	95,726	61	95,696	5,585,356	58.35
11-12	.00066	95,665	62	95,634	5,489,660	57.38
12-13	.00071	95,603	68	95,568	5,394,026	56.42
13-14	.00081	95,535	78	95,497	5,298,458	55.46
14-15	.00095	95,457	91	95,411	5,202,961	54.51
15-16	.00112	95,366	107	95,313	5,107,550	53.56
16-17	.00129	95,259	122	95,198	5,012,237	52.62
17-18	.00143	95,137	136	95,069	4,917,039	51.68
18-19	.00155	95,001	147	94,928	4,821,970	50.76
19-20	.00168	94,854	159	94,774	4,727,042	49.84
20-21	.00179	94,695	170	94,610	4,632,268	48.92
21-22	.00188	94,525	178	94,436	4,537,658	48.00
22-23	.00195	94,347	184	94,255	4,443,222	47.09
23-24	.00198	94,163	186	94,070	4,348,967	46.19
24-25	.00198	93,977	186	93,884	4,254,897	45.28
25-26	.00196	93,791	184	93,699	4,161,013	44.36
26-27	.00195	93,607	182	93,516	4,067,314	43.45
27-28	.00197	93,425	184	93,332	3,973,798	42.53
28-29	.00201	93,241	188	93,148	3,880,466	41.62
29-30	.00207	93,053	192	92,957	3,787,318	40.70
30-31	.00214	92,861	199	92,762	3,694,361	39.78
31-32	.00224	92,662	207	92,558	3,601,599	38.87
32-33	.00236	92,455	218	92,347	3,509,041	37.95
33-34	.00251	92,237	231	92,121	3,416,694	37.04
34-35	.00267	92,006	246	91,883	3,324,573	36.13
35-36	.00287	91,760	264	91,628	3,232,690	35.23
36-37	.00310	91,496	283	91,355	3,141,062	34.33
37-38	.00337	91,213	308	91,059	3,049,707	33.44
38-39	.00368	90,905	334	90,738	2,958,648	32.55
39-40	.00402	90,571	364	90,389	2,867,910	31.66
40-41	.00440	90,207	397	90,009	2,777,521	30.79
41-42	.00482	89,810	433	89,593	2,687,512	29.92
42-43	.00530	89,377	474	89,140	2,597,919	29.07
43-44	.00583	88,903	518	88,644	2,508,779	28.22
44-45	.00640	88,385	566	88,102	2,420,135	27.38
45-46	.00702	87,819	616	87,511	2,332,033	26.55
46-47	.00769	87,203	671	86,868	2,244,522	25.74
47-48	.00843	86,532	729	86,167	2,157,654	24.93
48-49	.00922	85,803	791	85,408	2,071,487	24.14
49-50	.01005	85,012	854	84,585	1,986,079	23.36
50-51	.01095	84,158	922	83,697	1,901,494	22.59
51-52	.01193	83,236	993	82,739	1,817,797	21.84
52-53	.01301	82,243	1,070	81,708	1,735,058	21.10
53-54	.01420	81,173	1,153	80,596	1,653,350	20.37
54-55	.01549	80,020	1,239	79,400	1,572,754	19.65

TABLE 2. LIFE TABLE FOR TOTAL MALES: UNITED STATES, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	0.01686	78,781	1,328	78,117	1,493,354	18.96
56-57	.01831	77,453	1,418	76,744	1,415,237	18.27
57-58	.01984	76,035	1,509	75,280	1,338,493	17.60
58-59	.02143	74,526	1,597	73,728	1,263,213	16.95
59-60	.02308	72,929	1,683	72,087	1,189,485	16.31
60-61	.02482	71,246	1,768	70,363	1,117,398	15.68
61-62	.02668	69,478	1,853	68,551	1,047,035	15.07
62-63	.02868	67,625	1,940	66,655	978,484	14.47
63-64	.03078	65,685	2,021	64,674	911,829	13.88
64-65	.03295	63,664	2,098	62,615	847,155	13.31
65-66	.03528	61,566	2,173	60,479	784,540	12.74
66-67	.03784	59,393	2,247	58,270	724,061	12.19
67-68	.04070	57,146	2,326	55,984	665,791	11.65
68-69	.04380	54,820	2,401	53,619	609,807	11.12
69-70	.04711	52,419	2,469	51,185	556,188	10.61
70-71	.05069	49,950	2,532	48,683	505,003	10.11
71-72	.05464	47,418	2,592	46,122	456,320	9.62
72-73	.05905	44,826	2,646	43,503	410,198	9.15
73-74	.06389	42,180	2,695	40,832	366,695	8.69
74-75	.06910	39,485	2,729	38,121	325,863	8.25
75-76	.07472	36,756	2,746	35,383	287,742	7.83
76-77	.08077	34,010	2,747	32,637	252,359	7.42
77-78	.08726	31,263	2,728	29,899	219,722	7.03
78-79	.09406	28,535	2,684	27,193	189,823	6.65
79-80	.10113	25,851	2,614	24,544	162,630	6.29
80-81	.10872	23,237	2,527	21,974	138,086	5.94
81-82	.11704	20,710	2,424	19,498	116,112	5.61
82-83	.12632	18,286	2,310	17,132	96,614	5.28
83-84	.13672	15,976	2,184	14,884	79,482	4.97
84-85	.14809	13,792	2,042	12,771	64,598	4.68
85-86	.16018	11,750	1,882	10,808	51,827	4.41
86-87	.17277	9,868	1,705	9,016	41,019	4.16
87-88	.18562	8,163	1,515	7,405	32,003	3.92
88-89	.19867	6,648	1,321	5,987	24,598	3.70
89-90	.21209	5,327	1,130	4,762	18,611	3.49
90-91	.22595	4,197	948	3,723	13,849	3.30
91-92	.24032	3,249	781	2,858	10,126	3.12
92-93	.25525	2,468	630	2,154	7,268	2.94
93-94	.27089	1,838	498	1,589	5,114	2.78
94-95	.28718	1,340	385	1,147	3,525	2.63
95-96	.30394	955	290	816	2,378	2.49
96-97	.32097	665	213	559	1,568	2.36
97-98	.33807	452	153	375	1,009	2.24
98-99	.35537	299	106	246	634	2.12
99-100	.37301	193	72	156	388	2.02
100-101	.39079	121	47	98	232	1.92
101-102	.40852	74	30	58	134	1.83
102-103	.42600	44	19	34	76	1.74
103-104	.44319	25	11	20	42	1.67
104-105	.46021	14	6	11	22	1.59
105-106	.47714	8	4	5	11	1.53
106-107	.49405	4	2	3	6	1.46
107-108	.51100	2	1	2	3	1.40
108-109	.52810	1	1	1	1	1.34

NOTE.—Proportions dying at ages above 87 are not based on actual statistics at these ages. Therefore, proportions dying and other life table functions based on them at these ages may not necessarily represent actual conditions.

TABLE 3. LIFE TABLE FOR TOTAL FEMALES: UNITED STATES, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02594	100,000	2,594	97,782	7,095,845	70.96
1-2	.00215	97,406	209	97,301	6,998,063	71.84
2-3	.00125	97,197	121	97,137	6,900,762	71.00
3-4	.00096	97,076	94	97,029	6,803,625	70.09
4-5	.00076	96,982	74	96,945	6,706,596	69.15
5-6	.00066	96,908	64	96,876	6,609,651	68.21
6-7	.00058	96,844	56	96,817	6,512,775	67.25
7-8	.00051	96,788	49	96,764	6,415,958	66.29
8-9	.00046	96,739	45	96,716	6,319,194	65.32
9-10	.00043	96,694	42	96,673	6,222,478	64.35
10-11	.00042	96,652	40	96,633	6,125,805	63.38
11-12	.00042	96,612	40	96,592	6,029,172	62.41
12-13	.00044	96,572	42	96,550	5,932,580	61.43
13-14	.00048	96,530	47	96,507	5,836,030	60.46
14-15	.00054	96,483	52	96,457	5,739,523	59.49
15-16	.00062	96,431	60	96,401	5,643,066	58.52
16-17	.00070	96,371	68	96,337	5,546,665	57.56
17-18	.00077	96,303	74	96,266	5,450,328	56.60
18-19	.00082	96,229	79	96,189	5,354,062	55.64
19-20	.00087	96,150	84	96,108	5,257,873	54.68
20-21	.00092	96,066	89	96,021	5,161,765	53.73
21-22	.00097	95,977	92	95,931	5,065,744	52.78
22-23	.00101	95,885	97	95,837	4,969,813	51.83
23-24	.00105	95,788	101	95,737	4,873,976	50.88
24-25	.00109	95,687	104	95,635	4,778,239	49.94
25-26	.00113	95,583	108	95,529	4,682,604	48.99
26-27	.00117	95,475	112	95,419	4,587,075	48.04
27-28	.00123	95,363	117	95,305	4,491,656	47.10
28-29	.00130	95,246	123	95,185	4,396,351	46.16
29-30	.00137	95,123	130	95,058	4,301,166	45.22
30-31	.00145	94,993	139	94,923	4,206,108	44.28
31-32	.00155	94,854	146	94,781	4,111,185	43.34
32-33	.00165	94,708	157	94,630	4,016,404	42.41
33-34	.00177	94,551	167	94,467	3,921,774	41.48
34-35	.00188	94,384	178	94,295	3,827,307	40.55
35-36	.00202	94,206	190	94,111	3,733,012	39.63
36-37	.00216	94,016	203	93,915	3,638,901	38.71
37-38	.00234	93,813	219	93,703	3,544,986	37.79
38-39	.00253	93,594	237	93,475	3,451,283	36.88
39-40	.00274	93,357	256	93,229	3,357,808	35.97
40-41	.00297	93,101	276	92,963	3,264,579	35.06
41-42	.00323	92,825	300	92,675	3,171,616	34.17
42-43	.00351	92,525	324	92,363	3,078,941	33.28
43-44	.00381	92,201	352	92,025	2,986,578	32.39
44-45	.00414	91,849	380	91,659	2,894,553	31.51
45-46	.00449	91,469	411	91,264	2,802,894	30.64
46-47	.00487	91,058	444	90,836	2,711,630	29.78
47-48	.00527	90,614	477	90,376	2,620,794	28.92
48-49	.00569	90,137	513	89,880	2,530,418	28.07
49-50	.00612	89,624	549	89,349	2,440,538	27.23
50-51	.00658	89,075	586	88,783	2,351,189	26.40
51-52	.00708	88,489	626	88,176	2,262,406	25.57
52-53	.00766	87,863	673	87,526	2,174,230	24.75
53-54	.00828	87,190	722	86,829	2,086,704	23.93
54-55	.00895	86,468	774	86,081	1,999,875	23.13

TABLE 3. LIFE TABLE FOR TOTAL FEMALES: UNITED STATES, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	0.00967	85,694	828	85,280	1,913,794	22.33
56-57	.01048	84,866	889	84,421	1,828,514	21.55
57-58	.01138	83,977	956	83,498	1,744,093	20.77
58-59	.01238	83,021	1,028	82,507	1,660,595	20.00
59-60	.01345	81,993	1,103	81,442	1,578,088	19.25
60-61	.01462	80,890	1,183	80,298	1,496,646	18.50
61-62	.01589	79,707	1,266	79,074	1,416,348	17.77
62-63	.01728	78,441	1,356	77,763	1,337,274	17.05
63-64	.01871	77,085	1,442	76,365	1,259,511	16.34
64-65	.02016	75,643	1,524	74,880	1,183,146	15.64
65-66	.02176	74,119	1,613	73,313	1,108,266	14.95
66-67	.02364	72,506	1,714	71,648	1,034,953	14.27
67-68	.02592	70,792	1,835	69,875	963,305	13.61
68-69	.02858	68,957	1,971	67,972	893,430	12.96
69-70	.03155	66,986	2,113	65,929	825,458	12.32
70-71	.03484	64,873	2,260	63,743	759,529	11.71
71-72	.03848	62,613	2,409	61,409	695,786	11.11
72-73	.04251	60,204	2,560	58,924	634,377	10.54
73-74	.04687	57,644	2,702	56,293	575,453	9.98
74-75	.05153	54,942	2,831	53,527	519,160	9.45
75-76	.05659	52,111	2,949	50,636	465,633	8.94
76-77	.06213	49,162	3,054	47,635	414,997	8.44
77-78	.06824	46,108	3,147	44,535	367,362	7.97
78-79	.07488	42,961	3,217	41,353	322,827	7.51
79-80	.08200	39,744	3,258	38,115	281,474	7.08
80-81	.08964	36,486	3,271	34,850	243,359	6.67
81-82	.09788	33,215	3,251	31,590	208,509	6.28
82-83	.10678	29,964	3,200	28,364	176,919	5.90
83-84	.11624	26,764	3,111	25,208	148,555	5.55
84-85	.12621	23,653	2,985	22,161	123,347	5.21
85-86	.13685	20,668	2,829	19,253	101,186	4.90
86-87	.14830	17,839	2,645	16,517	81,933	4.59
87-88	.16069	15,194	2,442	13,973	65,416	4.31
88-89	.17409	12,752	2,220	11,642	51,443	4.03
89-90	.18839	10,532	1,984	9,540	39,801	3.78
90-91	.20352	8,548	1,740	7,679	30,261	3.54
91-92	.21940	6,808	1,413	6,061	22,582	3.32
92-93	.23595	5,315	1,254	4,688	16,521	3.11
93-94	.25342	4,061	1,029	3,546	11,833	2.91
94-95	.27185	3,032	825	2,620	8,287	2.73
95-96	.29089	2,207	642	1,886	5,667	2.57
96-97	.31017	1,565	485	1,323	3,781	2.42
97-98	.32935	1,080	356	902	2,458	2.28
98-99	.34866	724	252	598	1,556	2.15
99-100	.36834	472	174	384	958	2.03
100-101	.38802	298	116	241	574	1.93
101-102	.40736	182	74	145	333	1.83
102-103	.42600	108	46	85	188	1.74
103-104	.44375	62	27	48	103	1.66
104-105	.46084	35	16	27	55	1.59
105-106	.47756	19	9	14	28	1.53
106-107	.49419	10	5	7	14	1.46
107-108	.51100	5	3	4	7	1.40
108-109	.52810	2	1	2	3	1.34
109-110	.54529	1	0	1	1	1.29
110-111	.56243	1	1	1	1	1.24

NOTE.—Proportions dying at ages above 87 are not based on actual statistics at these ages. Therefore, proportions dying and other life table functions based on them at these ages may not necessarily represent actual conditions.

TABLE 4. LIFE TABLE FOR TOTAL WHITES: UNITED STATES, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02722	100,000	2,722	97,623	6,902,096	69.02
1-2	.00201	97,278	196	97,180	6,804,473	69.95
2-3	.00125	97,082	121	97,022	6,707,293	69.09
3-4	.00097	96,961	94	96,914	6,610,271	68.17
4-5	.00080	96,867	77	96,828	6,513,357	67.24
5-6	.00071	96,790	69	96,756	6,416,529	66.29
6-7	.00064	96,721	62	96,689	6,319,773	65.34
7-8	.00058	96,659	56	96,631	6,223,084	64.38
8-9	.00054	96,603	52	96,577	6,126,453	63.42
9-10	.00051	96,551	49	96,526	6,029,876	62.45
10-11	.00050	96,502	49	96,478	5,933,350	61.48
11-12	.00051	96,453	49	96,429	5,836,872	60.51
12-13	.00054	96,404	52	96,378	5,740,443	59.55
13-14	.00060	96,352	58	96,323	5,644,065	58.58
14-15	.00069	96,294	66	96,261	5,547,742	57.61
15-16	.00079	96,228	77	96,189	5,451,481	56.65
16-17	.00090	96,151	86	96,109	5,355,292	55.70
17-18	.00098	96,065	94	96,018	5,259,183	54.75
18-19	.00105	95,971	101	95,921	5,163,165	53.80
19-20	.00111	95,870	107	95,817	5,067,244	52.86
20-21	.00117	95,763	112	95,707	4,971,427	51.91
21-22	.00122	95,651	117	95,593	4,875,720	50.97
22-23	.00126	95,534	120	95,474	4,780,127	50.04
23-24	.00128	95,414	122	95,353	4,684,653	49.10
24-25	.00129	95,292	123	95,231	4,589,300	48.16
25-26	.00129	95,169	122	95,108	4,494,069	47.22
26-27	.00129	95,047	123	94,985	4,398,961	46.28
27-28	.00132	94,924	125	94,862	4,303,976	45.34
28-29	.00136	94,799	129	94,734	4,209,114	44.40
29-30	.00141	94,670	134	94,603	4,114,380	43.46
30-31	.00148	94,536	140	94,466	4,019,777	42.52
31-32	.00156	94,396	147	94,322	3,925,311	41.58
32-33	.00165	94,249	156	94,172	3,830,989	40.65
33-34	.00177	94,093	166	94,010	3,736,817	39.71
34-35	.00189	93,927	177	93,839	3,642,807	38.78
35-36	.00204	93,750	191	93,654	3,548,968	37.86
36-37	.00220	93,559	206	93,456	3,455,314	36.93
37-38	.00240	93,353	225	93,240	3,361,858	36.01
38-39	.00263	93,128	245	93,006	3,268,618	35.10
39-40	.00288	92,883	267	92,750	3,175,612	34.19
40-41	.00316	92,616	293	92,469	3,082,862	33.29
41-42	.00347	92,323	320	92,164	2,990,393	32.39
42-43	.00382	92,003	351	91,827	2,898,229	31.50
43-44	.00420	91,652	384	91,460	2,806,402	30.62
44-45	.00460	91,268	421	91,058	2,714,942	29.75
45-46	.00505	90,847	458	90,617	2,623,884	28.88
46-47	.00553	90,389	501	90,139	2,533,267	28.03
47-48	.00606	89,888	545	89,616	2,443,128	27.18
48-49	.00663	89,343	592	89,047	2,353,512	26.34
49-50	.00722	88,751	641	88,431	2,264,465	25.51
50-51	.00786	88,110	692	87,764	2,176,034	24.70
51-52	.00857	87,418	749	87,043	2,088,270	23.89
52-53	.00937	86,669	812	86,262	2,001,227	23.09
53-54	.01024	85,857	879	85,418	1,914,965	22.30
54-55	.01119	84,978	951	84,502	1,829,547	21.53

TABLE 4. LIFE TABLE FOR TOTAL WHITES: UNITED STATES, 1949-51--Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	0.01221	84,027	1,026	83,514	1,745,045	20.77
56-57	.01332	83,001	1,105	82,449	1,661,531	20.02
57-58	.01452	81,896	1,189	81,301	1,579,082	19.28
58-59	.01581	80,707	1,276	80,069	1,497,781	18.56
59-60	.01718	79,431	1,365	78,748	1,417,712	17.85
60-61	.01865	78,066	1,456	77,338	1,338,964	17.15
61-62	.02022	76,610	1,549	75,835	1,261,626	16.47
62-63	.02193	75,061	1,646	74,238	1,185,791	15.80
63-64	.02368	73,415	1,739	72,545	1,111,553	15.14
64-65	.02548	71,676	1,826	70,763	1,039,008	14.50
65-66	.02743	69,850	1,917	68,891	968,245	13.86
66-67	.02965	67,933	2,014	66,927	899,354	13.24
67-68	.03224	65,919	2,125	64,856	832,427	12.63
68-69	.03517	63,794	2,243	62,673	767,571	12.03
69-70	.03836	61,551	2,362	60,370	704,898	11.45
70-71	.04188	59,189	2,478	57,950	644,528	10.89
71-72	.04576	56,711	2,596	55,413	586,578	10.34
72-73	.05006	54,115	2,709	52,760	531,165	9.82
73-74	.05474	51,406	2,814	50,000	478,405	9.31
74-75	.05977	48,592	2,904	47,140	428,405	8.82
75-76	.06520	45,688	2,979	44,198	381,265	8.34
76-77	.07109	42,709	3,036	41,191	337,067	7.89
77-78	.07752	39,673	3,076	38,135	295,876	7.46
78-79	.08438	36,597	3,088	35,054	257,741	7.04
79-80	.09165	33,509	3,071	31,974	222,687	6.65
80-81	.09944	30,438	3,026	28,925	190,713	6.27
81-82	.10790	27,412	2,958	25,932	161,788	5.90
82-83	.11715	24,454	2,865	23,022	135,856	5.56
83-84	.12725	21,589	2,747	20,215	112,834	5.23
84-85	.13812	18,842	2,603	17,541	92,619	4.92
85-86	.14967	16,239	2,430	15,024	75,078	4.62
86-87	.16181	13,809	2,234	12,692	60,054	4.35
87-88	.17446	11,575	2,020	10,565	47,362	4.09
88-89	.18758	9,555	1,792	8,659	36,797	3.85
89-90	.20124	7,763	1,562	6,981	28,138	3.62
90-91	.21548	6,201	1,336	5,533	21,157	3.41
91-92	.23036	4,865	1,121	4,304	15,624	3.21
92-93	.24592	3,744	921	3,284	11,320	3.02
93-94	.26236	2,823	740	2,453	8,036	2.85
94-95	.27964	2,083	583	1,791	5,583	2.68
95-96	.29748	1,500	446	1,277	3,792	2.53
96-97	.31560	1,054	333	888	2,515	2.39
97-98	.33371	721	240	601	1,627	2.26
98-99	.35199	481	170	396	1,026	2.14
99-100	.37065	311	115	253	630	2.02
100-101	.38939	196	76	158	377	1.92
101-102	.40794	120	49	96	219	1.83
102-103	.42600	71	30	55	123	1.74
103-104	.44347	41	18	32	68	1.66
104-105	.46053	23	11	17	36	1.59
105-106	.47735	12	6	10	19	1.53
106-107	.49412	6	3	4	9	1.46
107-108	.51100	3	1	3	5	1.40
108-109	.52810	2	1	1	2	1.34
109-110	.54529	1	1	1	1	1.29

NOTE.—Proportions dying at ages above 92 are not based on actual statistics at these ages. Therefore, proportions dying and other life table functions based on them at these ages may not necessarily represent actual conditions.

TABLE 5. LIFE TABLE FOR WHITE MALES: UNITED STATES, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03069	100,000	3,069	97,301	6,631,405	66.31
1-2	.00212	96,931	205	96,828	6,534,104	67.41
2-3	.00138	96,726	134	96,659	6,437,276	66.55
3-4	.00106	96,592	102	96,541	6,340,617	65.64
4-5	.00090	96,490	87	96,447	6,244,076	64.71
5-6	.00082	96,403	78	96,364	6,147,629	63.77
6-7	.00074	96,325	72	96,289	6,051,265	62.82
7-8	.00068	96,253	65	96,220	5,954,976	61.87
8-9	.00063	96,188	61	96,157	5,858,756	60.91
9-10	.00061	96,127	58	96,098	5,762,599	59.95
10-11	.00060	96,069	58	96,040	5,666,501	58.98
11-12	.00062	96,011	60	95,981	5,570,461	58.02
12-13	.00067	95,951	64	95,919	5,474,480	57.05
13-14	.00076	95,887	73	95,850	5,378,561	56.09
14-15	.00090	95,814	86	95,771	5,282,711	55.14
15-16	.00105	95,728	100	95,678	5,186,940	54.18
16-17	.00120	95,628	115	95,570	5,091,262	53.24
17-18	.00133	95,513	126	95,450	4,995,692	52.30
18-19	.00143	95,387	137	95,319	4,900,242	51.37
19-20	.00153	95,250	146	95,177	4,804,923	50.45
20-21	.00162	95,104	154	95,027	4,709,746	49.52
21-22	.00169	94,950	161	94,869	4,614,719	48.60
22-23	.00174	94,789	165	94,707	4,519,850	47.68
23-24	.00176	94,624	166	94,541	4,425,143	46.77
24-25	.00174	94,458	164	94,376	4,330,602	45.85
25-26	.00171	94,294	161	94,214	4,236,226	44.93
26-27	.00168	94,133	158	94,054	4,142,012	44.00
27-28	.00169	93,975	159	93,895	4,047,958	43.08
28-29	.00172	93,816	162	93,735	3,954,063	42.15
29-30	.00176	93,654	165	93,572	3,860,328	41.22
30-31	.00182	93,489	170	93,404	3,766,756	40.29
31-32	.00190	93,319	177	93,231	3,673,352	39.36
32-33	.00201	93,142	187	93,048	3,580,121	38.44
33-34	.00214	92,955	200	92,855	3,487,073	37.51
34-35	.00230	92,755	212	92,649	3,394,218	36.59
35-36	.00248	92,543	230	92,428	3,301,569	35.68
36-37	.00269	92,313	248	92,190	3,209,141	34.76
37-38	.00294	92,065	271	91,929	3,116,951	33.86
38-39	.00323	91,794	296	91,646	3,025,022	32.95
39-40	.00355	91,498	325	91,336	2,933,376	32.06
40-41	.00391	91,173	357	90,994	2,842,040	31.17
41-42	.00431	90,816	392	90,620	2,751,046	30.29
42-43	.00477	90,424	431	90,209	2,660,426	29.42
43-44	.00526	89,993	473	89,757	2,570,217	28.56
44-45	.00579	89,520	518	89,260	2,480,460	27.71
45-46	.00637	89,002	568	88,718	2,391,200	26.87
46-47	.00701	88,434	619	88,125	2,302,482	26.04
47-48	.00771	87,815	677	87,476	2,214,357	25.22
48-49	.00846	87,138	738	86,769	2,126,881	24.41
49-50	.00926	86,400	799	86,001	2,040,112	23.61
50-51	.01012	85,601	866	85,167	1,954,111	22.83
51-52	.01106	84,735	938	84,266	1,868,944	22.06
52-53	.01212	83,797	1,015	83,289	1,784,678	21.30
53-54	.01328	82,782	1,099	82,233	1,701,389	20.55
54-55	.01453	81,683	1,187	81,089	1,619,156	19.82

TABLE 5. LIFE TABLE FOR WHITE MALES: UNITED STATES, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	0.01587	80,496	1,278	79,857	1,538,067	19.11
56-57	.01731	79,218	1,371	78,533	1,458,210	18.41
57-58	.01882	77,847	1,465	77,114	1,379,677	17.72
58-59	.02041	76,382	1,559	75,603	1,302,563	17.05
59-60	.02206	74,823	1,651	73,997	1,226,960	16.40
60-61	.02381	73,172	1,742	72,301	1,152,963	15.76
61-62	.02569	71,430	1,835	70,513	1,080,662	15.13
62-63	.02772	69,595	1,929	68,630	1,010,149	14.51
63-64	.02985	67,666	2,020	66,657	941,519	13.91
64-65	.03207	65,646	2,105	64,593	874,862	13.33
65-66	.03445	63,541	2,189	62,447	810,269	12.75
66-67	.03707	61,352	2,274	60,214	747,822	12.19
67-68	.04000	59,078	2,363	57,897	687,608	11.64
68-69	.04319	56,715	2,450	55,490	629,711	11.10
69-70	.04664	54,265	2,530	53,000	574,221	10.58
70-71	.05027	51,735	2,601	50,434	521,221	10.07
71-72	.05434	49,134	2,670	47,799	470,787	9.58
72-73	.05887	46,464	2,735	45,097	422,988	9.10
73-74	.06384	43,729	2,792	42,333	377,891	8.64
74-75	.06921	40,937	2,833	39,521	335,558	8.20
75-76	.07499	38,104	2,858	36,675	296,037	7.77
76-77	.08121	35,246	2,862	33,815	259,362	7.36
77-78	.08789	32,384	2,846	30,960	225,547	6.96
78-79	.09487	29,538	2,803	28,137	194,587	6.59
79-80	.10214	26,735	2,730	25,370	166,450	6.23
80-81	.10993	24,005	2,639	22,685	141,080	5.88
81-82	.11848	21,366	2,532	20,100	118,395	5.54
82-83	.12802	18,834	2,411	17,629	98,295	5.22
83-84	.13875	16,423	2,279	15,283	80,666	4.91
84-85	.15053	14,144	2,129	13,080	65,383	4.62
85-86	.16304	12,015	1,959	11,036	52,303	4.35
86-87	.17596	10,056	1,769	9,172	41,267	4.10
87-88	.18898	8,287	1,566	7,503	32,095	3.87
88-89	.20202	6,721	1,358	6,042	24,592	3.66
89-90	.21528	5,363	1,154	4,786	18,550	3.46
90-91	.22890	4,209	964	3,727	13,764	3.27
91-92	.24299	3,245	788	2,851	10,037	3.09
92-93	.25766	2,457	633	2,140	7,186	2.93
93-94	.27305	1,824	498	1,575	5,046	2.77
94-95	.28906	1,326	384	1,134	3,471	2.62
95-96	.30553	942	287	798	2,337	2.48
96-97	.32227	655	211	550	1,539	2.35
97-98	.33911	444	151	368	989	2.23
98-99	.35617	293	104	241	621	2.12
99-100	.37357	189	71	153	380	2.01
100-101	.39112	118	46	96	227	1.92
101-102	.40866	72	29	57	131	1.83
102-103	.42600	43	19	33	74	1.74
103-104	.44312	24	10	19	41	1.67
104-105	.46014	14	7	11	22	1.59
105-106	.47709	7	3	5	11	1.53
106-107	.49403	4	2	3	6	1.46
107-108	.51100	2	1	2	3	1.40
108-109	.52810	1	1	1	1	1.34

NOTE.—Proportions dying at ages above 92 are not based on actual statistics at these ages. Therefore, proportions dying and other life table functions based on them at these ages may not necessarily represent actual conditions.

TABLE 6. LIFE TABLE FOR WHITE FEMALES: UNITED STATES, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02355	100,000	2,355	97,965	7,203,179	72.03
1-2	.00189	97,645	185	97,552	7,105,214	72.77
2-3	.00112	97,460	109	97,406	7,007,662	71.90
3-4	.00087	97,351	85	97,308	6,910,256	70.98
4-5	.00069	97,266	67	97,233	6,812,948	70.04
5-6	.00060	97,199	59	97,169	6,715,715	69.09
6-7	.00053	97,140	52	97,114	6,618,546	68.13
7-8	.00048	97,088	46	97,065	6,521,432	67.17
8-9	.00044	97,042	43	97,020	6,424,367	66.20
9-10	.00041	96,999	39	96,980	6,327,347	65.23
10-11	.00040	96,960	39	96,940	6,230,367	64.26
11-12	.00039	96,921	38	96,903	6,133,427	63.28
12-13	.00041	96,883	39	96,863	6,036,524	62.31
13-14	.00043	96,844	42	96,823	5,939,661	61.33
14-15	.00048	96,802	46	96,779	5,842,838	60.36
15-16	.00053	96,756	52	96,730	5,746,059	59.39
16-17	.00059	96,704	57	96,676	5,649,329	58.42
17-18	.00063	96,647	61	96,617	5,552,653	57.45
18-19	.00067	96,586	65	96,553	5,456,036	56.49
19-20	.00070	96,521	67	96,488	5,359,483	55.53
20-21	.00073	96,454	71	96,418	5,262,995	54.56
21-22	.00076	96,383	73	96,347	5,166,577	53.60
22-23	.00079	96,310	77	96,271	5,070,230	52.65
23-24	.00082	96,233	79	96,193	4,973,959	51.69
24-25	.00085	96,154	82	96,113	4,877,766	50.73
25-26	.00088	96,072	85	96,029	4,781,653	49.77
26-27	.00092	95,987	88	95,943	4,685,624	48.82
27-28	.00096	95,899	93	95,853	4,589,681	47.86
28-29	.00102	95,806	97	95,757	4,493,828	46.91
29-30	.00108	95,709	104	95,657	4,398,071	45.95
30-31	.00115	95,605	109	95,551	4,302,414	45.00
31-32	.00122	95,496	117	95,437	4,206,863	44.05
32-33	.00131	95,379	125	95,316	4,111,426	43.11
33-34	.00140	95,254	134	95,187	4,016,110	42.16
34-35	.00150	95,120	143	95,049	3,920,923	41.22
35-36	.00161	94,977	153	94,901	3,825,874	40.28
36-37	.00173	94,824	164	94,742	3,730,973	39.35
37-38	.00188	94,660	178	94,571	3,636,231	38.41
38-39	.00204	94,482	193	94,386	3,541,660	37.48
39-40	.00222	94,289	209	94,184	3,447,274	36.56
40-41	.00242	94,080	227	93,967	3,353,090	35.64
41-42	.00263	93,853	248	93,729	3,259,123	34.73
42-43	.00287	93,605	269	93,471	3,165,394	33.82
43-44	.00314	93,336	292	93,190	3,071,923	32.91
44-45	.00342	93,044	319	92,884	2,978,733	32.01
45-46	.00373	92,725	345	92,553	2,885,849	31.12
46-47	.00406	92,380	376	92,192	2,793,296	30.24
47-48	.00442	92,004	406	91,801	2,701,104	29.36
48-49	.00480	91,598	440	91,378	2,609,303	28.49
49-50	.00519	91,158	473	90,922	2,517,925	27.62
50-51	.00561	90,685	509	90,430	2,427,003	26.76
51-52	.00609	90,176	548	89,902	2,336,573	25.91
52-53	.00662	89,628	594	89,331	2,246,671	25.07
53-54	.00721	89,034	642	88,713	2,157,340	24.23
54-55	.00784	88,392	693	88,045	2,068,627	23.40

TABLE 6. LIFE TABLE FOR WHITE FEMALES: UNITED STATES, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	0.00853	87,699	749	87,324	1,980,582	22.58
56-57	.00931	86,950	809	86,546	1,893,258	21.77
57-58	.01019	86,141	878	85,702	1,806,712	20.97
58-59	.01117	85,263	952	84,787	1,721,010	20.18
59-60	.01224	84,311	1,032	83,795	1,636,223	19.41
60-61	.01340	83,279	1,116	82,721	1,552,428	18.64
61-62	.01468	82,163	1,206	81,560	1,469,707	17.89
62-63	.01608	80,957	1,302	80,307	1,388,147	17.15
63-64	.01752	79,655	1,395	78,957	1,307,840	16.42
64-65	.01900	78,260	1,487	77,517	1,228,883	15.70
65-66	.02063	76,773	1,584	75,981	1,151,366	15.00
66-67	.02255	75,189	1,695	74,341	1,075,385	14.30
67-68	.02489	73,494	1,830	72,579	1,001,044	13.62
68-69	.02764	71,664	1,981	70,674	928,465	12.96
69-70	.03069	69,683	2,138	68,614	857,791	12.31
70-71	.03409	67,545	2,303	66,393	789,177	11.68
71-72	.03786	65,242	2,470	64,007	722,784	11.08
72-73	.04201	62,772	2,638	61,453	658,777	10.49
73-74	.04650	60,134	2,796	58,736	597,324	9.93
74-75	.05130	57,338	2,941	55,868	538,588	9.39
75-76	.05650	54,397	3,074	52,860	482,720	8.87
76-77	.06221	51,323	3,193	49,726	429,860	8.38
77-78	.06851	48,130	3,297	46,482	380,134	7.90
78-79	.07536	44,833	3,379	43,144	333,652	7.44
79-80	.08271	41,454	3,428	39,740	290,508	7.01
80-81	.09060	38,026	3,446	36,303	250,768	6.59
81-82	.09912	34,580	3,427	32,866	214,465	6.20
82-83	.10831	31,153	3,374	29,466	181,599	5.83
83-84	.11814	27,779	3,282	26,138	152,133	5.48
84-85	.12857	24,497	3,149	22,923	125,995	5.14
85-86	.13965	21,348	2,982	19,857	103,072	4.83
86-87	.15146	18,366	2,781	16,975	83,215	4.53
87-88	.16407	15,585	2,557	14,306	66,240	4.25
88-89	.17748	13,028	2,312	11,872	51,934	3.99
89-90	.19166	10,716	2,054	9,688	40,062	3.74
90-91	.20657	8,662	1,789	7,767	30,374	3.51
91-92	.22220	6,873	1,528	6,109	22,607	3.29
92-93	.23851	5,345	1,274	4,708	16,498	3.09
93-94	.25573	4,071	1,041	3,551	11,790	2.90
94-95	.27387	3,030	830	2,614	8,239	2.72
95-96	.29261	2,200	644	1,878	5,625	2.56
96-97	.31159	1,556	485	1,314	3,747	2.41
97-98	.33050	1,071	354	894	2,433	2.27
98-99	.34954	717	250	592	1,539	2.15
99-100	.36895	467	173	381	947	2.03
100-101	.38839	294	114	237	566	1.92
101-102	.40752	180	73	143	329	1.83
102-103	.42600	107	46	84	186	1.74
103-104	.44367	61	27	48	102	1.66
104-105	.46076	34	16	26	54	1.59
105-106	.47750	18	8	14	28	1.53
106-107	.49417	10	5	7	14	1.46
107-108	.51100	5	3	4	7	1.40
108-109	.52810	2	1	2	3	1.34
109-110	.54529	1	0	0	1	1.29
110-111	.56243	1	1	1	1	1.24

NOTE.—Proportions dying at ages above 92 are not based on actual statistics at these ages. Therefore, proportions dying and other life table functions based on them at these ages may not necessarily represent actual conditions.

TABLE 7. LIFE TABLE FOR TOTAL NONWHITES: UNITED STATES, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04593	100,000	4,593	96,189	6,073,315	60.73
1-2	.00427	95,407	408	95,203	5,977,126	62.65
2-3	.00238	94,999	226	94,886	5,881,923	61.92
3-4	.00171	94,773	163	94,691	5,787,037	61.06
4-5	.00136	94,610	128	94,547	5,692,346	60.17
5-6	.00116	94,482	110	94,427	5,597,799	59.25
6-7	.00099	94,372	93	94,325	5,503,372	58.32
7-8	.00086	94,279	81	94,239	5,409,047	57.37
8-9	.00076	94,198	72	94,162	5,314,808	56.42
9-10	.00071	94,126	66	94,093	5,220,646	55.46
10-11	.00070	94,060	66	94,027	5,126,553	54.50
11-12	.00073	93,994	69	93,960	5,032,526	53.54
12-13	.00082	93,925	76	93,886	4,938,566	52.58
13-14	.00097	93,849	91	93,803	4,844,680	51.62
14-15	.00119	93,758	112	93,702	4,750,877	50.67
15-16	.00144	93,646	135	93,579	4,657,175	49.73
16-17	.00171	93,511	159	93,432	4,563,596	48.80
17-18	.00196	93,352	183	93,260	4,470,164	47.89
18-19	.00219	93,169	204	93,067	4,376,904	46.98
19-20	.00244	92,965	227	92,852	4,283,837	46.08
20-21	.00268	92,738	248	92,614	4,190,985	45.19
21-22	.00291	92,490	269	92,355	4,098,371	44.31
22-23	.00311	92,221	287	92,078	4,006,016	43.44
23-24	.00327	91,934	301	91,783	3,913,938	42.57
24-25	.00341	91,633	312	91,478	3,822,155	41.71
25-26	.00353	91,321	322	91,160	3,730,677	40.85
26-27	.00366	90,999	333	90,832	3,639,517	40.00
27-28	.00382	90,666	346	90,493	3,548,685	39.14
28-29	.00399	90,320	361	90,140	3,458,192	38.29
29-30	.00418	89,959	375	89,771	3,368,052	37.44
30-31	.00438	89,584	393	89,388	3,278,281	36.59
31-32	.00461	89,191	411	88,986	3,188,893	35.75
32-33	.00488	88,780	433	88,563	3,099,907	34.92
33-34	.00519	88,347	459	88,118	3,011,344	34.09
34-35	.00553	87,888	486	87,645	2,923,226	33.26
35-36	.00591	87,402	516	87,144	2,835,581	32.44
36-37	.00632	86,886	549	86,611	2,748,437	31.63
37-38	.00676	86,337	584	86,045	2,661,826	30.83
38-39	.00722	85,753	619	85,443	2,575,781	30.04
39-40	.00770	85,134	656	84,806	2,490,338	29.25
40-41	.00822	84,478	695	84,131	2,405,532	28.48
41-42	.00881	83,783	738	83,414	2,321,401	27.71
42-43	.00949	83,045	788	82,651	2,237,987	26.95
43-44	.01026	82,257	844	81,835	2,155,336	26.20
44-45	.01112	81,413	906	80,960	2,073,501	25.47
45-46	.01205	80,507	970	80,023	1,992,541	24.75
46-47	.01304	79,537	1,037	79,019	1,912,518	24.05
47-48	.01409	78,500	1,105	77,947	1,833,499	23.36
48-49	.01518	77,395	1,175	76,807	1,755,552	22.68
49-50	.01632	76,220	1,244	75,598	1,678,745	22.03
50-51	.01753	74,976	1,315	74,319	1,603,147	21.38
51-52	.01882	73,661	1,386	72,968	1,528,828	20.75
52-53	.02020	72,275	1,461	71,544	1,455,860	20.14
53-54	.02171	70,814	1,537	70,046	1,384,316	19.55
54-55	.02334	69,277	1,617	68,468	1,314,270	18.97

TABLE 7. LIFE TABLE FOR TOTAL NONWHITES: UNITED STATES, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	0.02503	67,660	1,694	66,813	1,245,802	18.41
56-57	.02674	65,966	1,763	65,085	1,178,989	17.87
57-58	.02840	64,203	1,824	63,291	1,113,904	17.35
58-59	.03002	62,379	1,873	61,443	1,050,613	16.84
59-60	.03163	60,506	1,913	59,549	989,170	16.35
60-61	.03323	58,593	1,948	57,619	929,621	15.87
61-62	.03485	56,645	1,974	55,659	872,002	15.39
62-63	.03650	54,671	1,996	53,673	816,343	14.93
63-64	.03816	52,675	2,010	51,670	762,670	14.48
64-65	.03981	50,665	2,016	49,657	711,000	14.03
65-66	.04149	48,649	2,019	47,640	661,343	13.59
66-67	.04324	46,630	2,016	45,622	613,703	13.16
67-68	.04509	44,614	2,012	43,608	568,081	12.73
68-69	.04698	42,602	2,001	41,601	524,473	12.31
69-70	.04890	40,601	1,985	39,609	482,872	11.89
70-71	.05092	38,616	1,967	37,632	443,263	11.48
71-72	.05312	36,649	1,947	35,676	405,631	11.07
72-73	.05559	34,702	1,929	33,738	369,955	10.66
73-74	.05835	32,773	1,912	31,817	336,217	10.26
74-75	.06134	30,861	1,893	29,915	304,400	9.86
75-76	.06453	28,968	1,869	28,033	274,485	9.48
76-77	.06788	27,099	1,840	26,179	246,452	9.09
77-78	.07135	25,259	1,802	24,358	220,273	8.72
78-79	.07480	23,457	1,755	22,579	195,915	8.35
79-80	.07828	21,702	1,699	20,853	173,336	7.99
80-81	.08196	20,003	1,639	19,184	152,483	7.62
81-82	.08603	18,364	1,580	17,574	133,299	7.26
82-83	.09068	16,784	1,522	16,023	115,725	6.89
83-84	.09525	15,262	1,454	14,536	99,702	6.53
84-85	.09962	13,808	1,375	13,120	85,166	6.17
85-86	.10476	12,433	1,303	11,782	72,046	5.79
86-87	.11170	11,130	1,243	10,508	60,264	5.41
87-88	.12141	9,887	1,200	9,287	49,756	5.03
88-89	.13431	8,687	1,167	8,104	40,469	4.66
89-90	.14976	7,520	1,126	6,957	32,365	4.30
90-91	.16710	6,394	1,069	5,859	25,408	3.97
91-92	.18573	5,325	989	4,831	19,549	3.67
92-93	.20500	4,336	889	3,892	14,718	3.39
93-94	.22534	3,447	776	3,059	10,826	3.14
94-95	.24716	2,671	661	2,340	7,767	2.91
95-96	.26985	2,010	542	1,740	5,427	2.70
96-97	.29276	1,468	430	1,253	3,687	2.51
97-98	.31527	1,038	327	874	2,434	2.34
98-99	.33779	711	240	591	1,560	2.19
99-100	.36076	471	170	386	969	2.06
100-101	.38354	301	115	243	583	1.94
101-102	.40549	186	76	148	340	1.83
102-103	.42600	110	47	87	192	1.74
103-104	.44465	63	28	49	105	1.66
104-105	.46185	35	16	27	56	1.59
105-106	.47824	19	9	15	29	1.52
106-107	.49441	10	5	7	14	1.46
107-108	.51100	5	3	4	7	1.40
108-109	.52810	2	1	2	3	1.34
109-110	.54529	1	0	0	1	1.29
110-111	.56243	1	1	1	1	1.24

NOTE.—Proportions dying at ages above 87 are not based on actual statistics at these ages. Therefore, proportions dying and other life table functions based on them at these ages may not necessarily represent actual conditions.

TABLE 8. LIFE TABLE FOR NONWHITE MALES: UNITED STATES, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.05089	100,000	5,089	95,759	5,890,791	58.91
1-2	.00466	94,911	442	94,690	5,795,032	61.06
2-3	.00260	94,469	246	94,346	5,700,342	60.34
3-4	.00176	94,223	166	94,140	5,605,996	59.50
4-5	.00144	94,057	136	93,989	5,511,856	58.60
5-6	.00124	93,921	117	93,862	5,417,867	57.69
6-7	.00108	93,804	101	93,754	5,324,005	56.76
7-8	.00096	93,703	90	93,658	5,230,251	55.82
8-9	.00087	93,613	82	93,572	5,136,593	54.87
9-10	.00083	93,531	78	93,492	5,043,021	53.92
10-11	.00084	93,453	78	93,414	4,949,529	52.96
11-12	.00089	93,375	83	93,333	4,856,115	52.01
12-13	.00099	93,292	92	93,246	4,762,782	51.05
13-14	.00115	93,200	107	93,146	4,669,536	50.10
14-15	.00137	93,093	128	93,029	4,576,390	49.16
15-16	.00164	92,965	152	92,889	4,483,361	48.23
16-17	.00192	92,813	178	92,724	4,390,472	47.30
17-18	.00220	92,635	204	92,532	4,297,748	46.39
18-19	.00249	92,431	230	92,316	4,205,216	45.50
19-20	.00282	92,201	260	92,071	4,112,900	44.61
20-21	.00314	91,941	289	91,796	4,020,829	43.73
21-22	.00344	91,652	316	91,495	3,929,033	42.87
22-23	.00369	91,336	337	91,168	3,837,538	42.02
23-24	.00387	90,999	352	90,823	3,746,370	41.17
24-25	.00399	90,647	362	90,465	3,655,547	40.33
25-26	.00409	90,285	370	90,100	3,565,082	39.49
26-27	.00420	89,915	378	89,727	3,474,982	38.65
27-28	.00435	89,537	389	89,343	3,385,255	37.81
28-29	.00452	89,148	403	88,946	3,295,912	36.97
29-30	.00471	88,745	418	88,536	3,206,966	36.14
30-31	.00492	88,327	434	88,110	3,118,430	35.31
31-32	.00515	87,893	453	87,666	3,030,320	34.48
32-33	.00543	87,440	475	87,203	2,942,654	33.65
33-34	.00574	86,965	499	86,715	2,855,451	32.83
34-35	.00608	86,466	526	86,202	2,768,736	32.02
35-36	.00646	85,940	555	85,663	2,682,534	31.21
36-37	.00687	85,385	587	85,091	2,596,871	30.41
37-38	.00732	84,798	620	84,488	2,511,780	29.62
38-39	.00778	84,178	656	83,850	2,427,292	28.84
39-40	.00826	83,522	690	83,177	2,343,442	28.06
40-41	.00879	82,832	728	82,468	2,260,265	27.29
41-42	.00940	82,104	771	81,719	2,177,797	26.52
42-43	.01011	81,333	823	80,921	2,096,078	25.77
43-44	.01093	80,510	880	80,071	2,015,157	25.03
44-45	.01185	79,630	944	79,158	1,935,086	24.30
45-46	.01285	78,686	1,011	78,181	1,855,928	23.59
46-47	.01394	77,675	1,082	77,134	1,777,747	22.89
47-48	.01510	76,593	1,157	76,014	1,700,613	22.20
48-49	.01635	75,436	1,233	74,819	1,624,599	21.54
49-50	.01768	74,203	1,312	73,547	1,549,780	20.89
50-51	.01909	72,891	1,391	72,195	1,476,233	20.25
51-52	.02058	71,500	1,472	70,765	1,404,038	19.64
52-53	.02217	70,028	1,552	69,252	1,333,273	19.04
53-54	.02388	68,476	1,635	67,658	1,264,021	18.46
54-55	.02571	66,841	1,719	65,982	1,196,363	17.90

TABLE 8. LIFE TABLE FOR NONWHITE MALES: UNITED STATES, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	0.02762	65,122	1,798	64,223	1,130,381	17.36
56-57	.02953	63,324	1,870	62,389	1,066,158	16.84
57-58	.03139	61,454	1,929	60,489	1,003,769	16.33
58-59	.03320	59,525	1,976	58,537	943,280	15.85
59-60	.03498	57,549	2,014	56,542	884,743	15.37
60-61	.03676	55,535	2,041	54,515	828,201	14.91
61-62	.03855	53,494	2,062	52,463	773,686	14.46
62-63	.04036	51,432	2,076	50,394	721,223	14.02
63-64	.04216	49,356	2,081	48,316	670,829	13.59
64-65	.04394	47,275	2,077	46,237	622,513	13.17
65-66	.04576	45,198	2,068	44,164	576,276	12.75
66-67	.04765	43,130	2,055	42,102	532,112	12.34
67-68	.04967	41,075	2,040	40,055	490,010	11.93
68-69	.05178	39,035	2,021	38,024	449,955	11.53
69-70	.05393	37,014	1,996	36,015	411,931	11.13
70-71	.05620	35 018	1,968	34,034	375,916	10.74
71-72	.05867	33,050	1,939	32,080	341,882	10.34
72-73	.06140	31,111	1,911	30,156	309,802	9.96
73-74	.06441	29,200	1,880	28,260	279,646	9.58
74-75	.06764	27,320	1,848	26,396	251,386	9.20
75-76	.07108	25,472	1,811	24,566	224,990	8.83
76-77	.07474	23,661	1,768	22,777	200,424	8.47
77-78	.07862	21,893	1,721	21,032	177,647	8.11
78-79	.08256	20,172	1,666	19,339	156,615	7.76
79-80	.08657	18,506	1,602	17,706	137,276	7.42
80-81	.09086	16,904	1,536	16,136	119,570	7.07
81-82	.09566	15,368	1,470	14,633	103,434	6.73
82-83	.10117	13,898	1,406	13,195	88,801	6.39
83-84	.10692	12,492	1,335	11,825	75,606	6.05
84-85	.11278	11,157	1,259	10,527	63,781	5.72
85-86	.11944	9,898	1,182	9,308	53,254	5.38
86-87	.12761	8,716	1,112	8,160	43,946	5.04
87-88	.13800	7,604	1,049	7,079	35,786	4.71
88-89	.15093	6,555	990	6,060	28,707	4.38
89-90	.16595	5,565	923	5,103	22,647	4.07
90-91	.18255	4,642	848	4,218	17,544	3.78
91-92	.20022	3,794	759	3,415	13,326	3.51
92-93	.21845	3,035	663	2,703	9,911	3.27
93-94	.23758	2,372	564	2,090	7,208	3.04
94-95	.25796	1,808	466	1,575	5,118	2.83
95-96	.27907	1,342	375	1,155	3,543	2.64
96-97	.30040	967	290	822	2,388	2.47
97-98	.32147	677	218	568	1,566	2.31
98-99	.34259	459	157	380	998	2.17
99-100	.36411	302	110	247	618	2.05
100-101	.38552	192	74	155	371	1.93
101-102	.40632	118	48	94	216	1.83
102-103	.42600	70	30	55	122	1.74
103-104	.44425	40	18	31	67	1.66
104-105	.46141	22	10	18	36	1.59
105-106	.47794	12	6	9	18	1.52
106-107	.49431	6	3	5	9	1.46
107-108	.51100	3	1	2	4	1.40
108-109	.52810	2	1	1	2	1.34
109-110	.54529	1	1	1	1	1.29

NOTE.—Proportions dying at ages above 87 are not based on actual statistics at these ages. Therefore, proportions dying and other life table functions based on them at these ages may not necessarily represent actual conditions.

TABLE 9. LIFE TABLE FOR NONWHITE FEMALES: UNITED STATES, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04087	100,000	4,087	96,629	6,270,260	62.70
1-2	.00388	95,913	372	95,727	6,173,631	64.37
2-3	.00215	95,541	206	95,438	6,077,904	63.62
3-4	.00166	95,335	159	95,255	5,982,466	62.75
4-5	.00127	95,176	121	95,116	5,887,211	61.86
5-6	.00107	95,055	102	95,004	5,792,095	60.93
6-7	.00090	94,953	85	94,911	5,697,091	60.00
7-8	.00076	94,868	72	94,832	5,602,180	59.05
8-9	.00065	94,796	62	94,765	5,507,348	58.10
9-10	.00058	94,734	55	94,706	5,412,583	57.13
10-11	.00055	94,679	52	94,653	5,317,877	56.17
11-12	.00057	94,627	55	94,600	5,223,224	55.20
12-13	.00064	94,572	61	94,542	5,128,624	54.23
13-14	.00079	94,511	74	94,474	5,034,082	53.26
14-15	.00100	94,437	94	94,390	4,939,608	52.31
15-16	.00125	94,343	118	94,284	4,845,218	51.36
16-17	.00150	94,225	142	94,154	4,750,934	50.42
17-18	.00173	94,083	162	94,002	4,656,780	49.50
18-19	.00192	93,921	180	93,831	4,562,778	48.58
19-20	.00210	93,741	197	93,642	4,468,947	47.67
20-21	.00227	93,544	213	93,438	4,375,305	46.77
21-22	.00244	93,331	228	93,217	4,281,867	45.88
22-23	.00261	93,103	242	92,982	4,188,650	44.99
23-24	.00276	92,861	257	92,733	4,095,668	44.11
24-25	.00290	92,604	268	92,470	4,002,935	43.23
25-26	.00303	92,336	280	92,196	3,910,465	42.35
26-27	.00318	92,056	292	91,911	3,818,269	41.48
27-28	.00334	91,764	306	91,611	3,726,358	40.61
28-29	.00352	91,458	322	91,296	3,634,747	39.74
29-30	.00370	91,136	337	90,968	3,543,451	38.88
30-31	.00390	90,799	354	90,622	3,452,483	38.02
31-32	.00413	90,445	373	90,258	3,361,861	37.17
32-33	.00439	90,072	396	89,875	3,271,603	36.32
33-34	.00470	89,676	421	89,465	3,181,728	35.48
34-35	.00504	89,255	450	89,030	3,092,263	34.65
35-36	.00542	88,805	481	88,564	3,003,233	33.82
36-37	.00582	88,324	515	88,066	2,914,669	33.00
37-38	.00626	87,809	549	87,535	2,826,603	32.19
38-39	.00671	87,260	586	86,967	2,739,068	31.39
39-40	.00719	86,674	622	86,363	2,652,101	30.60
40-41	.00770	86,052	663	85,721	2,565,738	29.82
41-42	.00826	85,389	705	85,036	2,480,017	29.04
42-43	.00890	84,684	754	84,307	2,394,981	28.28
43-44	.00962	83,930	808	83,527	2,310,674	27.53
44-45	.01042	83,122	865	82,689	2,227,147	26.79
45-46	.01127	82,257	927	81,793	2,144,458	26.07
46-47	.01216	81,330	989	80,836	2,062,665	25.36
47-48	.01308	80,341	1,051	79,816	1,981,829	24.67
48-49	.01402	79,290	1,111	78,734	1,902,013	23.99
49-50	.01498	78,179	1,172	77,593	1,823,279	23.32
50-51	.01599	77,007	1,231	76,392	1,745,686	22.67
51-52	.01707	75,776	1,293	75,129	1,669,294	22.03
52-53	.01824	74,483	1,359	73,803	1,594,165	21.40
53-54	.01953	73,124	1,428	72,410	1,520,362	20.79
54-55	.02093	71,696	1,500	70,946	1,447,952	20.20

TABLE 9. LIFE TABLE FOR NONWHITE FEMALES: UNITED STATES, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	0.02239	70,196	1,572	69,410	1,377,006	19.62
56-57	.02387	68,624	1,638	67,806	1,307,596	19.05
57-58	.02532	66,986	1,695	66,138	1,239,790	18.51
58-59	.02673	65,291	1,745	64,418	1,173,652	17.98
59-60	.02813	63,546	1,788	62,652	1,109,234	17.46
60-61	.02954	61,758	1,825	60,846	1,046,582	16.95
61-62	.03098	59,933	1,856	59,005	985,736	16.45
62-63	.03245	58,077	1,885	57,134	926,731	15.96
63-64	.03396	56,192	1,908	55,238	869,597	15.48
64-65	.03548	54,284	1,926	53,321	814,359	15.00
65-66	.03704	52,358	1,939	51,388	761,038	14.54
66-67	.03865	50,419	1,949	49,445	709,650	14.08
67-68	.04033	48,470	1,955	47,493	660,205	13.62
68-69	.04203	46,515	1,955	45,538	612,712	13.17
69-70	.04373	44,560	1,948	43,586	567,174	12.73
70-71	.04553	42,612	1,940	41,641	523,588	12.29
71-72	.04748	40,672	1,932	39,706	481,947	11.85
72-73	.04969	38,740	1,924	37,778	442,241	11.42
73-74	.05216	36,816	1,921	35,855	404,463	10.99
74-75	.05486	34,895	1,914	33,938	368,608	10.56
75-76	.05773	32,981	1,904	32,029	334,670	10.15
76-77	.06074	31,077	1,888	30,133	302,641	9.74
77-78	.06385	29,189	1,864	28,257	272,508	9.34
78-79	.06692	27,325	1,828	26,411	244,251	8.94
79-80	.07001	25,497	1,785	24,604	217,840	8.54
80-81	.07327	23,712	1,738	22,843	193,236	8.15
81-82	.07689	21,974	1,689	21,130	170,393	7.75
82-83	.08102	20,285	1,644	19,463	149,263	7.36
83-84	.08490	18,641	1,583	17,850	129,800	6.96
84-85	.08840	17,058	1,508	16,304	111,950	6.56
85-86	.09270	15,550	1,441	14,830	95,646	6.15
86-87	.09898	14,109	1,397	13,410	80,816	5.73
87-88	.10840	12,712	1,378	12,024	67,406	5.30
88-89	.12145	11,334	1,376	10,646	55,382	4.89
89-90	.13734	9,958	1,368	9,274	44,736	4.49
90-91	.15535	8,590	1,334	7,923	35,462	4.13
91-92	.17477	7,256	1,268	6,621	27,539	3.80
92-93	.19489	5,988	1,167	5,405	20,918	3.49
93-94	.21619	4,821	1,042	4,299	15,513	3.22
94-95	.23913	3,779	904	3,327	11,214	2.97
95-96	.26300	2,875	756	2,497	7,887	2.74
96-97	.28710	2,119	608	1,814	5,390	2.54
97-98	.31070	1,511	470	1,276	3,576	2.37
98-99	.33427	1,041	348	868	2,300	2.21
99-100	.35831	693	248	568	1,432	2.07
100-101	.38208	445	170	360	864	1.94
101-102	.40489	275	111	220	504	1.83
102-103	.42600	164	70	128	284	1.74
103-104	.44494	94	42	73	156	1.66
104-105	.46218	52	24	40	83	1.59
105-106	.47845	28	13	22	43	1.52
106-107	.49448	15	8	11	21	1.46
107-108	.51100	7	3	5	10	1.40
108-109	.52810	4	2	3	5	1.35
109-110	.54529	2	1	1	2	1.29
110-111	.56243	1	1	1	1	1.24

NOTE.—Proportions dying at ages above 87 are not based on actual statistics at these ages. Therefore, proportions dying and other life table functions based on them at these ages may not necessarily represent actual conditions.

TABLE 10. PROPORTION OF PERSONS DYING DURING YEAR AT SPECIFIED AGES, WHO WERE ALIVE AT BEGINNING OF YEAR OF AGE, BY RACE AND SEX: DEATH-REGISTRATION STATES, AT 10-YEAR INTERVALS, 1900-1902 TO 1949-51

RACE, SEX, AND AGE	1949-51	1939-41	1929-31	1919-21	1909-11	1900-1902
WHITE MALE						
0	0.03069	0.04812	0.06232	0.08025	0.12326	0.13345
1	.00212	.00487	.00993	.01619	.02821	.03447
5	.00082	.00138	.00266	.00395	.00471	.00606
10	.00060	.00100	.00147	.00211	.00238	.00274
15	.00105	.00143	.00213	.00291	.00283	.00334
20	.00162	.00212	.00318	.00427	.00489	.00594
25	.00171	.00243	.00371	.00504	.00554	.00704
30	.00182	.00279	.00413	.00573	.00660	.00799
35	.00248	.00363	.00510	.00669	.00852	.00932
40	.00391	.00513	.00679	.00750	.01022	.01060
45	.00637	.00766	.00929	.00926	.01264	.01263
50	.01012	.01155	.01278	.01174	.01553	.01537
55	.01587	.01737	.01819	.01653	.02150	.02118
60	.02381	.02548	.02644	.02462	.03075	.02859
65	.03445	.03685	.03865	.03499	.04379	.04166
70	.05027	.05454	.05796	.05463	.06214	.05894
75	.07499	.08313	.08526	.08191	.09253	.08843
80	.10993	.12471	.12997	.11973	.13575	.13353
85	.16304	.18104	.18468	.18232	.19111	.19176
90	.22890	.24894	.24550	.23819	.25517	.26278
WHITE FEMALE						
0	.02355	.03789	.04963	.06392	.10226	.11061
1	.00189	.00432	.00879	.01459	.02583	.03115
5	.00060	.00110	.00220	.00349	.00447	.00589
10	.00040	.00070	.00113	.00179	.00206	.00246
15	.00053	.00096	.00164	.00249	.00265	.00339
20	.00073	.00145	.00277	.00433	.00420	.00554
25	.00088	.00182	.00339	.00552	.00522	.00679
30	.00115	.00220	.00374	.00603	.00603	.00772
35	.00161	.00278	.00433	.00642	.00713	.00839
40	.00242	.00368	.00532	.00676	.00803	.00931
45	.00373	.00523	.00702	.00814	.00991	.01063
50	.00561	.00762	.00959	.01087	.01259	.01337
55	.00853	.01128	.01375	.01463	.01793	.01869
60	.01340	.01714	.02063	.02173	.02583	.02506
65	.02063	.02643	.03125	.03168	.03786	.03641
70	.03409	.04233	.04866	.05023	.05663	.05369
75	.05650	.06889	.07460	.07597	.08252	.08039
80	.09060	.10819	.11742	.11341	.12579	.12115
85	.13965	.16294	.17086	.17044	.17832	.17460
90	.20657	.23141	.23151	.23061	.24759	.24532

TABLE 10. PROPORTION OF PERSONS DYING DURING YEAR AT SPECIFIED AGES, WHO WERE ALIVE AT BEGINNING OF YEAR OF AGE, BY RACE AND SEX: DEATH-REGISTRATION STATES, AT 10-YEAR INTERVALS, 1900-1902 TO 1949-51—Continued

RACE, SEX, AND AGE	1949-51	1939-41[1]	1929-31[1]	1919-21[1]	1909-11[1]	1900-1902[1]
NONWHITE MALE						
0	0.05089	0.08228	0.08732	0.10501	0.21935	0.25326
1	.00466	.00937	.01657	.02549	.06682	.07731
5	.00124	.00186	.00295	.00425	.00856	.01087
10	.00084	.00138	.00211	.00269	.00502	.00628
15	.00164	.00274	.00433	.00577	.00787	.00851
20	.00314	.00544	.00858	.01085	.01196	.01189
25	.00409	.00733	.01096	.01174	.01228	.01307
30	.00492	.00872	.01275	.01204	.01496	.01317
35	.00646	.01071	.01484	.01416	.01728	.01505
40	.00879	.01362	.01813	.01459	.02103	.01658
45	.01285	.01859	.02240	.01713	.02399	.02185
50	.01909	.02536	.02750	.01915	.03142	.02553
55	.02762	.03248	.03392	.02484	.03950	.03818
60	.03676	.03910	.04140	.03[illegible]	.05079	.04398
65	.04576	.04685	.05072	.03893	.06433	.05418
70	.05620	.05799	.07018	.05911	.08398	.07532
75	.07108	.07803	.09282	.08197	.11277	.09951
80	.09086	.10730	.12991	.11368	.13127	.14053
85	.11944	.13783	.17761	.16685	.17982	.18743
90	.18255	.17417	.22032	.20724	.20101	.23916
NONWHITE FEMALE						
0	.04087	.06584	.07204	.08749	.18507	.21475
1	.00388	.00796	.01437	.02304	.05884	.07024
5	.00107	.00175	.00284	.00456	.00847	.01054
10	.00055	.00104	.00161	.00286	.00518	.00772
15	.00125	.00307	.00512	.00681	.00949	.01026
20	.00227	.00532	.00882	.01159	.01074	.01139
25	.00303	.00627	.01034	.01275	.00999	.01092
30	.00390	.00733	.01159	.01330	.01202	.01180
35	.00542	.00924	.01322	.01461	.01405	.01338
40	.00770	.01181	.01625	.01537	.01750	.01556
45	.01127	.01602	.02018	.01867	.02125	.02130
50	.01599	.02187	.02665	.02279	.02552	.02318
55	.02239	.02858	.03499	.02878	.03485	.03225
60	.02954	.03472	.04220	.03739	.04558	.03951
65	.03704	.04090	.04935	.04336	.06037	.05407
70	.04553	.04912	.06174	.05957	.07127	.06600
75	.05773	.06294	.07341	.07322	.08747	.08686
80	.07327	.08127	.09784	.10317	.11968	.10704
85	.09270	.10529	.12834	.13687	.16105	.14135
90	.15535	.14132	.17203	.18586	.17234	.18780

[1]Figures for the nonwhite groups cover only Negroes. However, in no case did the Negro population comprise less than 95 percent of the corresponding nonwhite population.

NOTE.—For 1900-1902 and 1909-11, data are for the death-registration States of 1900, which consisted of 10 States and the District of Columbia; for 1919-21, for the death-registration States of 1920, which consisted of 34 States and the District of Columbia; for 1929-31, 1939-41, and 1949-51, for the entire continental United States.

TABLE 11. NUMBER SURVIVING TO SPECIFIED AGES OUT OF 100,000 BORN ALIVE, BY RACE AND SEX: DEATH-REGISTRATION STATES, AT 10-YEAR INTERVALS, 1900-1902 TO 1949-51

RACE, SEX, AND AGE	1949-51	1939-41	1929-31	1919-21	1909-11	1900-1902
WHITE MALE						
0	100,000	100,000	100,000	100,000	100,000	100,000
1	96,931	95,188	93,768	91,975	87,674	86,655
5	96,403	94,150	91,738	88,842	82,972	80,864
10	96,069	93,601	90,810	87,530	81,519	79,109
15	95,728	93,089	90,074	86,546	80,549	78,037
20	95,104	92,293	88,904	84,997	79,116	76,376
25	94,294	91,241	87,371	83,061	77,047	73,907
30	93,489	90,092	85,707	80,888	74,810	71,219
35	92,543	88,713	83,812	78,441	72,108	68,245
40	91,173	86,880	81,457	75,733	68,848	64,954
45	89,002	84,285	78,345	72,696	65,115	61,369
50	85,601	80,521	74,288	69,107	60,741	57,274
55	80,496	75,156	68,981	64,574	55,622	52,491
60	73,172	67,787	61,933	58,498	48,987	46,452
65	63,541	58,305	52,964	50,663	40,862	39,245
70	51,735	46,739	41,880	40,873	31,527	30,640
75	38,104	33,404	29,471	29,205	21,585	21,387
80	24,005	19,860	17,221	17,655	12,160	12,266
85	12,015	9,013	7,572	8,154	5,145	5,252
90	4,209	2,812	2,356	2,568	1,523	1,523
WHITE FEMALE						
0	100,000	100,000	100,000	100,000	100,000	100,000
1	97,645	96,211	95,037	93,608	89,774	88,939
5	97,199	95,309	93,216	90,721	85,349	83,426
10	96,960	94,890	92,466	89,564	83,979	81,723
15	96,756	94,534	91,894	88,712	83,093	80,680
20	96,454	93,984	90,939	87,281	81,750	78,978
25	96,072	93,228	89,524	85,163	79,865	76,588
30	95,605	92,320	87,972	82,740	77,676	73,887
35	94,977	91,211	86,248	80,206	75,200	70,971
40	94,080	89,805	84,256	77,624	72,425	67,935
45	92,725	87,920	81,780	74,871	69,341	64,677
50	90,685	85,267	78,572	71,547	65,629	61,005
55	87,699	81,520	74,321	67,323	61,053	56,509
60	83,279	76,200	68,462	61,704	54,900	50,752
65	76,773	68,701	60,499	54,299	47,086	43,806
70	67,545	58,363	49,932	44,638	37,482	35,206
75	54,397	44,685	37,024	32,777	26,569	25,362
80	38,026	28,882	23,053	20,492	15,929	15,349
85	21,348	14,487	10,937	9,909	7,152	7,149
90	8,662	5,061	3,719	3,372	2,291	2,322

TABLE 11. NUMBER SURVIVING TO SPECIFIED AGES OUT OF 100,000 BORN ALIVE, BY RACE AND SEX: DEATH-REGISTRATION STATES, AT 10-YEAR INTERVALS, 1900-1902 TO 1949-51—Continued

RACE, SEX, AND AGE	1949-51	1939-41[1]	1929-31[1]	1919-21[1]	1909-11[1]	1900-1902[1]
NONWHITE MALE						
0	100,000	100,000	100,000	100,000	100,000	100,000
1	94,911	91,772	91,268	89,499	78,065	74,674
5	93,921	90,082	88,412	85,195	68,589	64,385
10	93,453	89,393	87,311	83,768	66,377	61,730
15	92,965	88,610	86,152	82,332	64,478	59,667
20	91,941	86,968	83,621	79,057	61,426	56,733
25	90,285	84,227	79,516	74,540	57,736	53,285
30	88,327	80,979	75,083	70,344	54,073	49,867
35	85,940	77,221	70,049	65,873	49,865	46,541
40	82,832	72,780	64,710	61,353	45,414	42,989
45	78,686	67,346	58,432	56,589	40,563	39,230
50	72,891	60,495	51,748	51,880	35,427	34,766
55	65,122	52,426	44,436	46,581	29,754	29,987
60	55,535	43,833	36,790	40,506	23,750	24,194
65	45,198	35,371	29,314	34,042	17,806	19,015
70	35,018	27,236	21,741	26,923	12,295	13,829
75	25,472	19,456	14,419	18,854	7,494	8,892
80	16,904	12,186	8,239	11,615	3,894	4,831
85	9,898	6,444	3,660	5,605	1,747	2,030
90	4,642	2,836	1,246	2,040	595	634
NONWHITE FEMALE						
0	100,000	100,000	100,000	100,000	100,000	100,000
1	95,913	93,416	92,796	91,251	81,493	78,525
5	95,055	91,906	90,185	87,149	72,768	68,056
10	94,679	91,308	89,201	85,607	70,508	65,111
15	94,343	90,594	88,088	83,954	68,218	62,384
20	93,544	88,736	85,078	80,154	64,764	59,053
25	92,336	86,198	81,067	75,359	61,430	55,795
30	90,799	83,384	76,816	70,633	58,281	52,773
35	88,805	80,092	72,192	65,857	54,595	49,567
40	86,052	76,084	67,271	61,130	50,568	46,146
45	82,257	71,157	61,365	56,230	45,947	42,279
50	77,007	64,885	54,920	50,780	40,886	37,681
55	70,196	57,314	47,074	44,742	35,415	33,124
60	61,758	48,928	38,761	37,954	28,908	27,524
65	52,358	40,504	30,852	31,044	22,302	21,995
70	42,612	32,354	23,341	24,107	15,871	16,140
75	32,981	24,502	16,576	17,216	10,657	11,066
80	23,712	17,039	10,822	11,151	6,324	6,708
85	15,550	10,622	6,033	5,972	3,029	3,567
90	8,590	5,652	2,774	2,579	1,206	1,492

[1]Figures for the nonwhite groups cover only Negroes. However, in no case did the Negro population comprise less than 95 percent of the corresponding nonwhite population.

NOTE.—For 1900-1902 and 1909-11, data are for the death-registration States of 1900, which consisted of 10 States and the District of Columbia; for 1919-21, for the death-registration States of 1920, which consisted of 34 States and the District of Columbia; for 1929-31, 1939-41, and 1949-51, for the entire continental United States.

TABLE 12. AVERAGE REMAINING LIFETIME IN YEARS AT SPECIFIED AGES, BY RACE AND SEX: DEATH-REGISTRATION STATES, AT 10-YEAR INTERVALS, 1900-1902 TO 1949-51

RACE, SEX, AND AGE	1949-51	1939-41	1929-31	1919-21	1909-11	1900-1902
WHITE MALE						
0	66.31	62.81	59.12	56.34	50.23	48.23
1	67.41	64.98	62.04	60.24	56.26	54.61
5	63.77	61.68	59.38	58.31	55.37	54.43
10	58.98	57.03	54.96	54.15	51.32	50.59
15	54.18	52.33	50.39	49.74	46.91	46.25
20	49.52	47.76	46.02	45.60	42.71	42.19
25	44.93	43.28	41.78	41.60	38.79	38.52
30	40.29	38.80	37.54	37.65	34.87	34.88
35	35.68	34.36	33.33	33.74	31.08	31.29
40	31.17	30.03	29.22	29.86	27.43	27.74
45	26.87	25.87	25.28	26.00	23.86	24.21
50	22.83	21.96	21.51	22.22	20.39	20.76
55	19.11	18.34	17.97	18.59	17.03	17.42
60	15.76	15.05	14.72	15.25	13.98	14.35
65	12.75	12.07	11.77	12.21	11.25	11.51
70	10.07	9.42	9.20	9.51	8.83	9.03
75	7.77	7.17	7.02	7.30	6.75	6.84
80	5.88	5.38	5.26	5.47	5.09	5.10
85	4.35	4.02	3.99	4.06	3.88	3.81
90	3.27	3.06	3.03	3.18	2.99	2.85
WHITE FEMALE						
0	72.03	67.29	62.67	58.53	53.62	51.08
1	72.77	68.93	64.93	61.51	58.69	56.39
5	69.09	65.57	62.17	59.43	57.67	56.03
10	64.26	60.85	57.65	55.17	53.57	52.15
15	59.39	56.07	53.00	50.67	49.12	47.79
20	54.56	51.38	48.52	46.46	44.88	43.77
25	49.77	46.78	44.25	42.55	40.88	40.05
30	45.00	42.21	39.99	38.72	36.96	36.42
35	40.28	37.70	35.73	34.86	33.09	32.82
40	35.64	33.25	31.52	30.94	29.26	29.17
45	31.12	28.90	27.39	26.98	25.45	25.51
50	26.76	24.72	23.41	23.12	21.74	21.89
55	22.58	20.73	19.60	19.40	18.18	18.43
60	18.64	17.00	16.05	15.93	14.92	15.23
65	15.00	13.56	12.81	12.75	11.97	12.23
70	11.68	10.50	9.98	9.94	9.38	9.59
75	8.87	7.92	7.56	7.62	7.20	7.33
80	6.59	5.88	5.63	5.70	5.35	5.50
85	4.83	4.34	4.24	4.24	4.06	4.10
90	3.51	3.24	3.17	3.16	3.00	3.02

TABLE 12. AVERAGE REMAINING LIFETIME IN YEARS AT SPECIFIED AGES, BY RACE AND SEX: DEATH-REGISTRATION STATES, AT 10-YEAR INTERVALS, 1900-1902 TO 1949-51—Continued

RACE, SEX, AND AGE	1949-51	1939-41[1]	1929-31[1]	1919-21[1]	1909-11[1]	1900-1902[1]
NONWHITE MALE						
0	58.91	52.26	47.55	47.14	34.05	32.54
1	61.06	55.93	51.08	51.63	42.53	42.46
5	57.69	52.95	48.69	50.18	44.25	45.06
10	52.96	48.34	44.27	45.99	40.65	41.90
15	48.23	43.74	39.83	41.75	36.77	38.26
20	43.73	39.52	35.95	38.36	33.46	35.11
25	39.49	35.72	32.67	35.54	30.44	32.21
30	35.31	32.05	29.45	32.51	27.33	29.25
35	31.21	28.48	26.39	29.54	24.42	26.16
40	27.29	25.06	23.36	26.53	21.57	23.12
45	23.59	21.88	20.59	23.55	18.85	20.09
50	20.25	19.06	17.92	20.47	16.21	17.34
55	17.36	16.60	15.46	17.50	13.82	14.69
60	14.91	14.37	13.15	14.74	11.67	12.62
65	12.75	12.21	10.87	12.07	9.74	10.38
70	10.74	10.11	8.78	9.58	8.00	8.33
75	8.83	8.17	6.99	7.61	6.58	6.60
80	7.07	6.58	5.42	5.83	5.53	5.12
85	5.38	5.34	4.30	4.53	4.48	4.04
90	3.78	4.23	3.42	3.60	4.01	3.21
NONWHITE FEMALE						
0	62.70	55.56	49.51	46.92	37.67	35.04
1	64.37	58.46	52.33	50.39	45.15	43.54
5	60.93	55.40	49.81	48.70	46.42	46.04
10	56.17	50.75	45.33	44.54	42.84	43.02
15	51.36	46.13	40.87	40.36	39.18	39.79
20	46.77	42.04	37.22	37.15	36.14	36.89
25	42.35	38.20	33.93	34.35	32.97	33.90
30	38.02	34.40	30.67	31.48	29.61	30.70
35	33.82	30.71	27.47	28.58	26.44	27.52
40	29.82	27.19	24.30	25.60	23.34	24.37
45	26.07	23.89	21.39	22.61	20.43	21.36
50	22.67	20.95	18.60	19.76	17.65	18.67
55	19.62	18.38	16.27	17.09	14.98	15.88
60	16.95	16.10	14.22	14.69	12.78	13.60
65	14.54	13.93	12.24	12.41	10.82	11.38
70	12.29	11.82	10.38	10.25	9.22	9.62
75	10.15	9.81	8.62	8.37	7.55	7.90
80	8.15	8.02	6.90	6.58	6.05	6.48
85	6.15	6.41	5.48	5.22	5.09	5.10
90	4.13	4.96	4.20	4.07	4.50	4.01

[1]Figures for the nonwhite groups cover only Negroes. However, in no case did the Negro population comprise less than 95 percent of the corresponding nonwhite population.

NOTE.—For 1900-1902 and 1909-11, data are for the death-registration States of 1900, which consisted of 10 States and the District of Columbia; for 1919-21, for the death-registration States of 1920, which consisted of 34 States and the District of Columbia; for 1929-31, 1939-41, and 1949-51, for the entire continental United States.

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VITAL STATISTICS-SPECIAL REPORTS

LIFE TABLES FOR 1949-51

Actuarial Tables Based on United States Life Tables: 1949-51

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Office of Vital Statistics

Actuarial Tables

Based on United States Life Tables: 1949-51

This report contains certain tables used by actuaries in computing the present values of life annuities and survivor benefits payable on the death of an insured individual.[1]

The actuarial functions included are based on the 1949-51 life tables for white males, white females, nonwhite males, nonwhite females, total males, and total females in the United States. The functions tabulated are the commutation columns *D*, *N*, and *M* and the whole life immediate annuity values (first payment payable after 1 year from the commencement of the annuity). For white males and white females, these are given at five interest rates: 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$, and 4 percent. Values for nonwhite males, nonwhite females, total males, and total females are given only for a 3 percent interest rate. In addition, the corresponding values for white males and white females on a continuous basis are given at 3 percent interest.

These tables have been computed in the Division of the Actuary, Social Security Administration.

[1] For explanation of the uses of these tables, either of the following books may be consulted: Greville, Thomas N. E., ''United States Life Tables and Actuarial Tables, 1939-1941,'' U. S. Government Printing Office, Washington, D. C., 1946; Jordan, C. W., ''Life Contingencies,'' The Society of Actuaries, Chicago, Ill., 1952.

Tables of actuarial functions: United States, 1949-51

Table No.	Race and sex	Interest rate (percent)	Page
1	Total males	3	36
2	Total females	3	37
3	White males	2	38
4	White males	$2\frac{1}{2}$	39
5	White males	3	40
6	White males	$3\frac{1}{2}$	41
7	White males	4	42
8	White females	2	43
9	White females	$2\frac{1}{2}$	44
10	White females	3	45
11	White females	$3\frac{1}{2}$	46
12	White females	4	47
13	Nonwhite males	3	48
14	Nonwhite females	3	49

Tables of actuarial functions on a continuous basis: United States, 1949-51

	Race and sex	Interest rate (percent)	
15	White males	3	50
16	White females	3	51

TABLE 1. UNITED STATES TOTAL MALES: 1949-51—ACTUARIAL FUNCTIONS AT 3 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,806,991	18,243.222	27.0699	55	15,502	219,657	9,103.923	13.1696
1	93,846	2,706,991	15,001.474	27.8450	56	14,796	204,155	8,850.036	12.7980
2	90,890	2,613,145	14,779.021	27.7506	57	14,102	189,359	8,587.037	12.4278
3	88,109	2,522,255	14,645.410	27.6265	58	13,420	175,257	8,315.311	12.0594
4	85,445	2,434,146	14,547.676	27.4879	59	12,750	161,837	8,036.115	11.6931
5	82,877	2,348,701	14,468.316	27.3396	60	12,093	149,087	7,750.454	11.3284
6	80,393	2,265,824	14,398.805	27.1843	61	11,449	136,994	7,459.107	10.9656
7	77,991	2,185,431	14,337.823	27.0216	62	10,819	125,545	7,162.646	10.6041
8	75,665	2,107,440	14,283.354	26.8522	63	10,203	114,726	6,861.306	10.2443
9	73,413	2,031,775	14,235.070	26.6760	64	9,600.9	104,523	6,556.527	9.8868
10	71,229	1,958,362	14,189.680	26.4939	65	9,014.1	94,922.1	6,249.353	9.5304
11	69,110	1,887,133	14,145.612	26.3062	66	8,442.7	85,908.0	5,940.463	9.1754
12	67,054	1,818,023	14,102.126	26.1128	67	7,886.7	77,465.3	5,630.357	8.8223
13	65,055	1,750,969	14,055.821	25.9152	68	7,345.3	69,578.6	5,318.699	8.4725
14	63,108	1,685,914	14,004.254	25.7147	69	6,819.0	62,233.3	5,006.363	8.1265
15	61,212	1,622,806	13,945.845	25.5112	70	6,308.5	55,414.3	4,694.536	7.7841
16	59,362	1,561,594	13,879.166	25.3063	71	5,814.3	49,105.8	4,384.065	7.4457
17	57,559	1,502,232	13,805.354	25.0990	72	5,336.4	43,291.5	4,075.495	7.1125
18	55,803	1,444,673	13,725.468	24.8888	73	4,875.2	37,955.1	3,769.670	6.7853
19	54,094	1,388,870	13,641.636	24.6751	74	4,430.8	33,079.9	3,467.253	6.4659
20	52,430	1,334,776	13,553.602	24.4582	75	4,004.4	28,649.1	3,169.942	6.1544
21	50,812	1,282,346	13,462.219	24.2371	76	3,597.3	24,644.7	2,879.492	5.8509
22	49,239	1,231,534	13,369.322	24.0114	77	3,210.4	21,047.4	2,597.400	5.5560
23	47,712	1,182,295	13,276.091	23.7798	78	2,844.9	17,837.0	2,325.418	5.2698
24	46,230	1,134,583	13,184.591	23.5421	79	2,502.3	14,992.1	2,065.618	4.9913
25	44,795	1,088,353	13,095.756	23.2963	80	2,183.7	12,489.8	1,819.962	4.7196
26	43,405	1,043,558	13,010.436	23.0423	81	1,889.6	10,306.1	1,589.399	4.4541
27	42,059	1,000,153	12,928.502	22.7798	82	1,619.8	8,416.49	1,374.676	4.1960
28	40,753	958,094	12,848.080	22.5098	83	1,374.0	6,796.69	1,176.011	3.9466
29	39,487	917,341	12,768.303	22.2315	84	1,151.6	5,422.69	993.654	3.7088
30	38,258	877,854	12,689.201	21.9456	85	952.51	4,271.09	828.119	3.4840
31	37,064	839,596	12,609.604	21.6526	86	776.64	3,318.58	679.998	3.2730
32	35,904	802,532	12,529.218	21.3522	87	623.75	2,541.94	549.716	3.0753
33	34,776	766,628	12,447.026	21.0447	88	493.17	1,918.19	437.324	2.8895
34	33,678	731,852	12,362.470	20.7309	89	383.69	1,425.02	342.178	2.7140
35	32,610	698,174	12,275.046	20.4098	90	293.51	1,041.33	263.159	2.5479
36	31,569	665,564	12,183.958	20.0828	91	220.57	747.82	198.771	2.3904
37	30,555	633,995	12,089.158	19.7493	92	162.68	527.25	147.305	2.2410
38	29,565	603,440	11,988.988	19.4106	93	117.63	364.56	106.989	2.0992
39	28,598	573,875	11,883.526	19.0670	94	83.267	246.94	76.054	1.9656
40	27,654	545,277	11,771.939	18.7178	95	57.625	163.67	52.837	1.8403
41	26,730	517,623	11,653.781	18.3649	96	38.942	106.04	35.830	1.7230
42	25,826	490,893	11,528.662	18.0077	97	25.673	67.101	23.697	1.6137
43	24,941	465,067	11,395.685	17.6467	98	16.499	41.428	15.273	1.5109
44	24,074	440,126	11,254.596	17.2822	99	10.326	24.929	9.5811	1.4142
45	23,223	416,052	11,104.924	16.9155	100	6.2856	14.603	5.8415	1.3232
46	22,388	392,829	10,946.774	16.5464	101	3.7177	8.3177	3.4566	1.2373
47	21,569	370,441	10,779.521	16.1747	102	2.1349	4.6000	1.9823	1.1547
48	20,764	348,872	10,603.104	15.8018	103	1.1898	2.4651	1.0995	1.0719
49	19,974	328,108	10,417.259	15.4268	104	.64317	1.2753	.58772	.9828
50	19,197	308,134	10,222.456	15.0512	105	.33706	.63212	.30037	.8754
51	18,434	288,937	10,018.267	14.6741	106	.17111	.29506	.14423	.7244
52	17,683	270,503	9,804.759	14.2973	107	.08405	.12395	.06215	.4747
53	16,945	252,820	9,581.396	13.9200	108	.03990	.03990	.02046	-
54	16,218	235,875	9,347.717	13.5440					

TABLE 2. UNITED STATES TOTAL FEMALES: 1949-51—ACTUARIAL FUNCTIONS AT 3 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,904,336	15,407.718	28.0434	55	16,862	270,801	8,974.381	15.0598
1	94,569	2,804,336	12,889.271	28.6539	56	16,212	253,939	8,816.203	14.6636
2	91,618	2,709,767	12,692.268	28.5768	57	15,575	237,727	8,651.318	14.2634
3	88,838	2,618,149	12,581.536	28.4710	58	14,950	222,152	8,479.171	13.8597
4	86,167	2,529,311	12,498.018	28.3536	59	14,334	207,202	8,299.451	13.4553
5	83,594	2,443,144	12,434.185	28.2263	60	13,730	192,868	8,112.236	13.0472
6	81,105	2,359,550	12,380.586	28.0925	61	13,135	179,138	7,917.291	12.6382
7	78,698	2,278,445	12,335.053	27.9518	62	12,550	166,003	7,714.744	12.2273
8	76,367	2,199,747	12,296.372	27.8049	63	11,974	153,453	7,504.117	11.8155
9	74,108	2,123,380	12,261.883	27.6525	64	11,407	141,479	7,286.655	11.4028
10	71,918	2,049,272	12,230.631	27.4946	65	10,852	130,072	7,063.522	10.9860
11	69,795	1,977,354	12,201.734	27.3309	66	10,307	119,220	6,834.236	10.5669
12	67,734	1,907,559	12,173.679	27.1625	67	9,770.0	108,913	6,597.689	10.1477
13	65,732	1,839,825	12,145.079	26.9898	68	9,239.5	99,143.1	6,351.819	9.7304
14	63,787	1,774,093	12,114.006	26.8128	69	8,713.9	89,903.6	6,095.419	9.3173
15	61,895	1,710,306	12,080.629	26.6324	70	8,193.3	81,189.7	5,828.553	8.9093
16	60,055	1,648,411	12,043.239	26.4484	71	7,677.5	72,996.4	5,551.434	8.5078
17	58,265	1,588,356	12,002.098	26.2609	72	7,167.1	65,318.9	5,264.650	8.1137
18	56,524	1,530,091	11,958.631	26.0698	73	6,662.5	58,151.8	4,968.765	7.7282
19	54,833	1,473,567	11,913.578	25.8737	74	6,165.3	51,489.3	4,665.563	7.3515
20	53,189	1,418,734	11,867.069	25.6734	75	5,677.2	45,324.0	4,357.140	6.9835
21	51,592	1,365,545	11,819.227	25.4682	76	5,200.0	39,646.8	4,045.218	6.6244
22	50,042	1,313,953	11,771.213	25.2570	77	4,734.9	34,446.8	3,731.600	6.2751
23	48,535	1,263,911	11,722.064	25.0412	78	4,283.2	29,711.9	3,417.844	5.9368
24	47,072	1,215,376	11,672.379	24.8195	79	3,847.1	25,428.7	3,106.451	5.6098
25	45,651	1,168,304	11,622.708	24.5921	80	3,428.8	21,581.6	2,800.274	5.2942
26	44,271	1,122,653	11,572.629	24.3587	81	3,030.5	18,152.8	2,501.828	4.9900
27	42,931	1,078,382	11,522.208	24.1190	82	2,654.3	15,122.3	2,213.848	4.6973
28	41,630	1,035,451	11,471.070	23.8727	83	2,301.8	12,468.0	1,938.642	4.4166
29	40,365	993,821	11,418.875	23.6209	84	1,975.0	10,166.2	1,678.883	4.1474
30	39,136	953,456	11,365.317	23.3626	85	1,675.5	8,191.22	1,436.904	3.8888
31	37,940	914,320	11,309.719	23.0991	86	1,404.0	6,515.72	1,214.250	3.6408
32	36,779	876,380	11,253.022	22.8283	87	1,161.0	5,111.72	1,012.140	3.4029
33	35,648	839,601	11,193.829	22.5525	88	946.02	3,950.72	830.978	3.1761
34	34,549	803,953	11,132.699	22.2699	89	758.58	3,004.70	671.080	2.9610
35	33,479	769,404	11,069.441	21.9817	90	597.74	2,246.12	523.343	2.7577
36	32,439	735,925	11,003.885	21.6864	91	462.22	1,648.38	414.213	2.5662
37	31,426	703,486	10,935.883	21.3855	92	350.30	1,186.16	315.737	2.3861
38	30,439	672,060	10,864.659	21.0789	93	259.85	835.86	235.489	2.2167
39	29,478	641,621	10,789.825	20.7661	94	188.35	576.01	171.557	2.0582
40	28,541	612,143	10,711.346	20.4478	95	133.15	387.66	121.847	1.9115
41	27,627	583,602	10,629.201	20.1243	96	91.669	254.51	84.244	1.7764
42	26,736	555,975	10,542.513	19.7950	97	61.395	162.84	56.639	1.6523
43	25,866	529,239	10,451.617	19.4608	98	39.976	101.45	37.009	1.5378
44	25,017	503,373	10,355.742	19.1212	99	25.279	61.472	23.477	1.4317
45	24,188	478,356	10,255.255	18.7766	100	15.503	36.193	14.439	1.3346
46	23,378	454,168	10,149.736	18.4272	101	9.2108	20.690	8.5993	1.2463
47	22,586	430,790	10,039.065	18.0733	102	5.2999	11.479	4.9567	1.1659
48	21,813	408,204	9,923.631	17.7138	103	2.9535	6.1790	2.7649	1.0921
49	21,057	386,391	9,803.102	17.3498	104	1.5951	3.2255	1.4926	1.0221
					105	.83493	1.6304	.77898	.9527
50	20,319	365,334	9,677.871	16.9799	106	.42350	.79542	.39184	.8782
51	19,597	345,015	9,548.094	16.6055	107	.20797	.37192	.18864	.7883
52	18,892	325,418	9,413.496	16.2252	108	.09874	.16395	.08546	.6604
53	18,201	306,526	9,273.007	15.8412	109	.04524	.06521	.03485	.4414
54	17,524	288,325	9,126.679	15.4531	110	.01997	.01997	.01090	-

TABLE 3. UNITED STATES WHITE MALES: 1949-51—ACTUARIAL FUNCTIONS AT 2 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	3,603,625	29,340.468	35.0363	55	27,087	426,525	18,723.812	14.7465
1	95,030	3,503,625	26,331.645	35.8686	56	26,134	399,438	18,302.192	14.2842
2	92,970	3,408,595	26,134.605	35.6634	57	25,179	373,304	17,858.760	13.8260
3	91,021	3,315,625	26,008.334	35.4270	58	24,220	348,125	17,394.216	13.3735
4	89,142	3,224,604	25,914.102	35.1738	59	23,261	323,905	16,909.557	12.9248
5	87,315	3,135,462	25,835.303	34.9098	60	22,302	300,644	16,406.362	12.4806
6	85,534	3,048,147	25,766.041	34.6367	61	21,344	278,342	15,885.842	12.0408
7	83,794	2,962,613	25,703.361	34.3559	62	20,388	256,998	15,348.284	11.6054
8	82,095	2,878,819	25,647.884	34.0669	63	19,434	236,610	14,794.269	11.1751
9	80,435	2,796,724	25,596.842	33.7700	64	18,484	217,176	14,225.494	10.7494
10	78,810	2,716,289	25,549.262	33.4663	65	17,541	198,692	13,644.407	10.3273
11	77,218	2,637,479	25,502.615	33.1563	66	16,604	181,151	13,051.980	9.9101
12	75,657	2,560,261	25,455.305	32.8404	67	15,675	164,547	12,448.617	9.4974
13	74,124	2,484,604	25,405.831	32.5196	68	14,753	148,872	11,833.932	9.0910
14	72,615	2,410,480	25,350.506	32.1953	69	13,839	134,119	11,209.113	8.6914
15	71,127	2,337,865	25,286.607	31.8689	70	12,935	120,280	10,576.542	8.2988
16	69,660	2,266,738	25,213.762	31.5400	71	12,044	107,345	9,938.972	7.9127
17	68,212	2,197,078	25,131.633	31.2096	72	11,166	95,301.3	9,297.320	7.5350
18	66,786	2,128,866	25,043.413	30.8759	73	10,303	84,135.3	8,652.935	7.1661
19	65,383	2,062,080	24,949.372	30.5385	74	9,455.9	73,832.3	8,008.019	6.8081
20	64,002	1,996,697	24,851.118	30.1974	75	8,629.0	64,376.4	7,366.463	6.4605
21	62,646	1,932,695	24,749.512	29.8511	76	7,825.2	55,747.4	6,731.938	6.1241
22	61,313	1,870,049	24,645.371	29.5000	77	7,048.8	47,922.2	6,108.984	5.7986
23	60,006	1,808,736	24,540.735	29.1426	78	6,303.3	40,873.4	5,501.659	5.4844
24	58,727	1,748,730	24,437.529	28.7773	79	5,593.3	34,570.1	4,915.238	5.1806
25	57,475	1,690,003	24,337.566	28.4041	80	4,923.7	28,976.8	4,355.288	4.8852
26	56,252	1,632,528	24,241.356	28.0217	81	4,296.4	24,053.1	3,824.617	4.5984
27	55,056	1,576,276	24,148.790	27.6304	82	3,713.0	19,756.7	3,325.446	4.3210
28	53,886	1,521,220	24,057.464	27.2303	83	3,174.2	16,043.7	2,859.450	4.0544
29	52,738	1,467,334	23,966.240	26.8231	84	2,680.1	12,869.5	2,427.602	3.8019
30	51,613	1,414,596	23,875.148	26.4077	85	2,323.1	10,189.4	2,032.089	3.5649
31	50,509	1,362,983	23,783.136	25.9850	86	1,831.5	7,957.33	1,675.292	3.3447
32	49,424	1,312,474	23,689.214	25.5554	87	1,479.6	6,125.83	1,359.419	3.1402
33	48,358	1,263,050	23,591.931	25.1187	88	1,176.5	4,646.23	1,085.277	2.9492
34	47,308	1,214,692	23,489.925	24.6762	89	920.40	3,469.73	852.208	2.7698
35	46,274	1,167,384	23,383.919	24.2276	90	708.09	2,549.33	658.035	2.6003
36	45,254	1,121,110	23,271.168	23.7737	91	535.30	1,841.24	499,127	2.4396
37	44,247	1,075,856	23,151.976	23.3148	92	397.28	1,305.94	371.604	2.2872
38	43,252	1,031,609	23,024.284	22.8511	93	289.14	908.66	271.254	2.1426
39	42,267	988,357	22,887.547	22.3836	94	206.08	619.52	193.856	2.0062
40	41,291	946,090	22,740.358	21.9127	95	143.64	413.44	135.472	1.8783
41	40,323	904,799	22,581.846	21.4388	96	97.794	269.80	92.442	1.7589
42	39,362	864,476	22,411.207	20.9622	97	64.978	172.01	61.549	1.6472
43	38,406	825,114	22,227.270	20.4840	98	42.101	107.03	39.950	1.5422
44	37,455	786,708	22,029.366	20.0041	99	26.575	64.930	25.251	1.4433
45	36,508	749,253	21,816.884	19.5230	100	16.321	38.355	15.518	1.3500
46	35,564	712,745	21,588.461	19.0412	101	9.7427	22.034	9.2593	1.2616
47	34,623	677,181	21,344.409	18.5587	102	5.6422	12.291	5.3561	1.1784
48	33,682	642,558	21,082.723	18.0772	103	3.1786	6.6487	2.9966	1.0917
49	32,742	608,876	20,803.052	17.5962	104	1.7353	3.4701	1.6155	.9997
50	31,803	576,134	20,506.201	17.1157	105	.91845	1.7348	.83266	.8888
51	30,864	544,331	20,190.767	16.6364	106	.47085	.81639	.40306	.7339
52	29,924	513,467	19,855.806	16.1590	107	.23357	.34554	.17498	.4794
53	28,982	483,543	19,500.456	15.6843	108	.11197	.11197	.05797	-
54	28,036	454,561	19,123.242	15.2135					

TABLE 4. UNITED STATES WHITE MALES: 1949-51—ACTUARIAL FUNCTIONS AT $2\frac{1}{2}$ PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	3,176,962	22,512.987	30.7696	55	20,700	310,052	13,137.240	13.9784
1	94,567	3,076,962	19,518.840	31.5374	56	19,874	289,352	12,816.617	13.5593
2	92,065	2,982,395	19,323.718	31.3944	57	19,054	269,478	12,481.051	13.1429
3	89,695	2,890,330	19,199.286	31.2240	58	18,239	250,424	12,131.224	12.7301
4	87,415	2,800,635	19,106.879	31.0384	59	17,431	232,185	11,768.030	12.3202
5	85,206	2,713,220	19,029.984	30.8431	60	16,631	214,754	11,392.784	11.9129
6	83,061	2,628,014	18,962.725	30.6396	61	15,839	198,123	11,006.513	11.5086
7	80,974	2,544,953	18,902.154	30.4293	62	15,056	182,284	10,609.544	11.1071
8	78,946	2,463,979	18,848.805	30.2109	63	14,281	167,228	10,202.419	10.7098
9	76,972	2,385,033	18,799.961	29.9857	64	13,517	152,947	9,786.485	10.3152
10	75,049	2,308,061	18,754.652	29.7541	65	12,764	139,430	9,363.620	9.9237
11	73,174	2,233,012	18,710.448	29.5165	66	12,024	126,666	8,934.607	9.5344
12	71,345	2,159,838	18,665.835	29.2732	67	11,296	114,642	8,499.805	9.1489
13	69,558	2,088,493	18,619.408	29.0252	68	10,580	103,346	8,059.006	8.7681
14	67,810	2,018,935	18,567.744	28.7734	69	9,875.8	92,765.5	7,613.126	8.3932
15	66,097	1,951,125	18,508.364	28.5191	70	9,185.8	82,889.7	7,163.914	8.0237
16	64,417	1,885,028	18,441.001	28.2629	71	8,511.1	73,703.9	6,713.361	7.6597
17	62,771	1,820,611	18,365.424	28.0040	72	7,852.3	65,192.8	6,262.136	7.3024
18	61,159	1,757,840	18,284.637	27.7421	73	7,209.9	57,340.5	5,811.200	6.9530
19	59,582	1,696,681	18,198.940	27.4764	74	6,584.9	50,130.6	5,362.093	6.6130
20	58,039	1,637,099	18,109.840	27.2069	75	5,979.7	43,545.7	4,917.507	6.2823
21	56,532	1,579,060	18,018.151	26.9321	76	5,396.3	37,566.0	4,479.936	5.9614
22	55,060	1,522,528	17,924.632	26.6522	77	4,837.2	32,169.7	4,052.439	5.6505
23	53,623	1,467,468	17,831.127	26.3664	78	4,304.5	27,332.5	3,637.703	5.3498
24	52,223	1,413,845	17,739.350	26.0732	79	3,801.0	23,028.0	3,239.195	5.0584
25	50,861	1,361,622	17,650.890	25.7714	80	3,329.6	19,227.0	2,860.530	4.7746
26	49,536	1,310,761	17,566.166	25.4608	81	2,891.3	15,897.4	2,503.415	4.4984
27	48,247	1,261,225	17,485.049	25.1410	82	2,486.5	13,006.1	2,169.138	4.2307
28	46,990	1,212,978	17,405.409	24.8135	83	2,115.3	10,519.6	1,858.599	3.9731
29	45,765	1,165,988	17,326.246	24.4777	84	1,777.3	8,404.31	1,572.222	3.7287
30	44,570	1,120,223	17,247.583	24.1340	85	1,473.0	6,627.01	1,311.217	3.4990
31	43,404	1,075,653	17,168.513	23.7823	86	1,202.7	5,154.01	1,076.911	3.2854
32	42,265	1,032,249	17,088.196	23.4233	87	966.93	3,951.31	870.492	3.0864
33	41,151	989,984	17,005.411	23.0573	88	765.07	2,984.38	692.217	2.9008
34	40,061	948,833	16,919.030	22.6847	89	595.62	2,219.31	541.391	2.7260
35	38,995	908,772	16,829.699	22.3048	90	455.99	1,623.69	416.348	2.5608
36	37,949	869,777	16,735.147	21.9196	91	343.04	1,167.70	314.515	2.4040
37	36,924	831,828	16,635.682	21.5281	92	253.35	824.66	233.193	2.2550
38	35,918	794,904	16,529.644	21.1311	93	183.49	571.31	169.511	2.1136
39	34,929	758,986	16,416.649	20.7294	94	130.14	387.82	120.635	1.9800
40	33,956	724,057	16,295.609	20.3234	95	90.263	257.68	83.945	1.8548
41	32,998	690,101	16,165.894	19.9134	96	61.156	167.42	57.036	1.7376
42	32,054	657,103	16,026.936	19.4999	97	40.436	106.26	37.811	1.6279
43	31,123	625,049	15,877.879	19.0832	98	26.072	65.829	24.435	1.5249
44	30,204	593,926	15,718.287	18.6638	99	16.377	39.757	15.377	1.4276
45	29,297	563,722	15,547.775	18.2416	100	10.009	23.380	9.4087	1.3359
46	28,400	534,425	15,365.364	17.8178	101	5.9455	13.371	5.5892	1.2489
47	27,514	506,025	15,171.423	17.3915	102	3.4264	7.4252	3.2189	1.1671
48	26,636	478,511	14,964.484	16.9648	103	1.9208	3.9988	1.7930	1.0818
49	25,766	451,875	14,744.401	16.5376	104	1.0435	2.0780	.96251	.9914
50	24,905	426,109	14,511.938	16.1094	105	.54963	1.0345	.49401	.8822
51	24,052	401,204	14,266.127	15.6807	106	.28039	.48483	.23818	.7291
52	23,205	377,152	14,006.373	15.2530	107	.13841	.20444	.10302	.4771
53	22,365	353,947	13,732.151	14.8259	108	.06603	.06603	.03402	-
54	21,530	331,582	13,442.478	14.4009					

TABLE 5. UNITED STATES WHITE MALES: 1949-51—ACTUARIAL FUNCTIONS AT 3 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,828,188	17,625.505	27.2819	55	15,839	226,080	9,254.024	13.2736
1	94,108	2,728,188	14,645.893	27.9900	56	15,133	210,241	9,009.880	12.8929
2	91,174	2,634,080	14,452.661	27.8907	57	14,438	195,108	8,755.598	12.5135
3	88,395	2,542,906	14,330.032	27.7675	58	13,754	180,670	8,491.795	12.1358
4	85,730	2,454,511	14,239.406	27.6307	59	13,081	166,916	8,219.243	11.7602
5	83,158	2,368,781	14,164.359	27.4853	60	12,420	153,835	7,939.014	11.3861
6	80,671	2,285,623	14,099.035	27.3326	61	11,771	141,415	7,651.952	11.0138
7	78,263	2,204,952	14,040.492	27.1736	62	11,135	129,644	7,358.370	10.6429
8	75,932	2,126,689	13,989.180	27.0078	63	10,511	118,509	7,058.738	10.2748
9	73,673	2,050,757	13,942.429	26.8359	64	9,899.8	107,998	6,754.110	9.9091
10	71,484	1,977,084	13,899.272	26.6577	65	9,303.2	98,098.5	6,445.911	9.5446
11	69,360	1,905,600	13,857.372	26.4740	66	8,721.1	88,795.3	6,134.747	9.1817
12	67,298	1,836,240	13,815.289	26.2852	67	8,153.3	80,074.2	5,820.915	8.8211
13	65,294	1,768,942	13,771.708	26.0920	68	7,599.2	71,920.9	5,504.299	8.4643
14	63,344	1,703,648	13,723.446	25.8952	69	7,059.1	64,321.7	5,185.588	8.1119
15	61,444	1,640,304	13,668.246	25.6959	70	6,534.0	57,262.6	4,866.057	7.7638
16	59,592	1,578,860	13,605.929	25.4945	71	6,024.8	50,728.6	4,547.125	7.4200
17	57,787	1,519,268	13,536.352	25.2908	72	5,531.4	44,703.8	4,229.270	7.0818
18	56,030	1,461,481	13,462.340	25.0839	73	5,054.2	39,172.4	3,913.159	6.7505
19	54,320	1,405,751	13,384.211	24.8791	74	4,593.7	34,118.2	3,599.858	6.4272
20	52,657	1,351,131	13,303.374	24.6591	75	4,151.2	29,524.5	3,291.217	6.1123
21	51,040	1,298,474	13,220.591	24.4403	76	3,728.0	25,373.3	2,988.921	5.8061
22	49,470	1,247,434	13,136.566	24.2160	77	3,325.5	21,645.3	2,695.019	5.5089
23	47,945	1,197,964	13,052.962	23.9862	78	2,944.9	18,319.8	2,411.273	5.2209
24	46,467	1,150,019	12,971.301	23.7492	79	2,587.8	15,374.9	2,139.954	4.9413
25	45,035	1,103,552	12,892.974	23.5043	80	2,255.9	12,787.1	1,883.397	4.6683
26	43,649	1,058,517	12,818.319	23.2506	81	1,949.4	10,531.2	1,642.615	4.4023
27	42,307	1,014,868	12,747.189	22.9882	82	1,668.4	8,581.84	1,418.325	4.1438
28	41,005	972,561	12,677.694	22.7181	83	1,412.4	6,913.44	1,210.974	3.8948
29	39,742	931,556	12,608.950	22.4401	84	1,181.0	5,501.04	1,020.684	3.6580
30	38,516	891,814	12,540.972	22.1544	85	974.00	4,320.04	848.097	3.4354
31	37,326	853,298	12,472.974	21.8607	86	791.45	3,346.04	693.916	3.2277
32	36,170	815,972	12,404.238	21.5594	87	633.19	2,554.59	558.743	3.0345
33	35,046	779,802	12,333.734	21.2508	88	498.57	1,921.40	442.568	2.8538
34	33,953	744,756	12,260.525	20.9349	89	386.26	1,422.83	344.757	2.6836
35	32,888	710,803	12,185.184	20.6128	90	294.28	1,036.57	264.060	2.5224
36	31,851	677,915	12,105.827	20.2839	91	220.31	742.29	198.661	2.3693
37	30,840	646,064	12,022.751	19.9489	92	161.92	521.98	146.688	2.2237
38	29,854	615,224	11,934.615	19.6078	93	116.70	360.06	106.186	2.0853
39	28,891	585,370	11,841.152	19.2613	94	82.366	243.36	75.251	1.9546
40	27,950	556,479	11,741.521	18.9098	95	56.851	160.99	52.142	1.8318
41	27,029	528,529	11,635.268	18.5541	96	38.331	104.14	35.276	1.7169
42	26,129	501,500	11,521.996	18.1932	97	25.222	65.807	23.285	1.6091
43	25,247	475,371	11,401.082	17.8288	98	16.183	40.585	14.983	1.5079
44	24,383	450,124	11,272.250	17.4606	99	10.116	24.402	9.3875	1.4122
45	23,536	425,741	11,135.271	17.0889	100	6.1524	14.286	5.7187	1.3220
46	22,704	402,205	10,989.444	16.7152	101	3.6369	8.1338	3.3823	1.2365
47	21,889	379,501	10,835.153	16.3375	102	2.0858	4.4969	1.9394	1.1560
48	21,087	357,612	10,671.320	15.9589	103	1.1636	2.4111	1.0756	1.0721
49	20,300	336,525	10,497.927	15.5776	104	.62911	1.2475	.57492	.9830
50	19,526	316,225	10,315.670	15.1951	105	.32974	.61841	.29386	.8754
51	18,766	296,699	10,123.883	14.8105	106	.16740	.28867	.14112	.7244
52	18,017	277,933	9,922.201	14.4262	107	.08223	.12127	.06082	.4748
53	17,281	259,916	9,710.320	14.0406	108	.03904	.03904	.02002	-
54	16,555	242,635	9,487.586	13.6563					

TABLE 6. UNITED STATES WHITE MALES: 1949-51—ACTUARIAL FUNCTIONS AT $3\frac{1}{2}$ PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,540,219	14,098.770	24.4022	55	12,135	165,346	6,543.975	12.6255
1	93,653	2,440,219	11,133.551	25.0560	56	11,539	153,211	6,357.822	12.2777
2	90,295	2,346,566	10,942.181	24.9878	57	10,956	141,672	6,164.876	11.9310
3	87,120	2,256,271	10,821.321	24.8984	58	10,386	130,716	5,965.673	11.5858
4	84,085	2,169,151	10,732.434	24.7971	59	9,830.0	120,330	5,760.856	11.2411
5	81,169	2,085,066	10,659.182	24.6880	60	9,288.0	110,500	5,551.288	10.8971
6	78,360	2,003,897	10,595.729	24.5730	61	8,760.3	101,212	5,337.646	10.5535
7	75,654	1,925,537	10,539.138	24,4519	62	8,246.7	92,451.2	5,120.208	10.2107
8	73,046	1,849,883	10,489.776	24.3249	63	7,746.9	84,204.5	4,899.363	9.8694
9	70,531	1,776,837	10,445.018	24.1923	64	7,261.5	76,457.6	4,675.919	9.5292
10	68,105	1,706,306	10,403.901	24.0540	65	6,790.9	69,196.1	4,450.947	9.1895
11	65,762	1,638,201	10,364.174	23.9111	66	6,335.3	62,405.2	4,224.909	8.8504
12	63,499	1,572,439	10,324.467	23.7632	67	5,894.2	56,069.9	3,998.034	8.5129
13	61,311	1,508,940	10,283.545	23.6112	68	5,467.0	50,175.7	3,770.253	8.1779
14	59,192	1,447,629	10,238.447	23.4565	69	5,054.0	44,708.7	3,542.070	7.8462
15	57,139	1,388,437	10,187.114	23.2993	70	4,655.4	39,654.7	3,314.405	7.5180
16	55,149	1,331,298	10,129.443	23.1400	71	4,271.9	34,999.3	3,088.266	7.1927
17	53,220	1,276,149	10,065.365	22.9787	72	3,903.1	30,727.4	2,863.978	6.8726
18	51,353	1,222,929	9,997.532	22.8142	73	3,549.1	26,824.3	2,642.000	6.5581
19	49,545	1,171,576	9,926.271	22.6467	74	3,210.2	23,275.2	2,423.057	6.2504
20	47,796	1,122,031	9,852.896	22.4754	75	2,887.0	20,065.0	2,208.412	5.9501
21	46,105	1,074,235	9,778.118	22.2998	76	2,580.1	17,178.0	1,999.195	5.6579
22	44,470	1,028,130	9,702.585	22.1196	77	2,290.5	14,597.9	1,796.771	5.3732
23	42,892	983,660	9,627.793	21.9334	78	2,018.5	12,307.4	1,602.287	5.0973
24	41,369	940,768	9,555.092	21.7409	79	1,765.2	10,288.9	1,417.216	4.8287
25	39,900	899,399	9,485.696	21.5413	80	1,531.4	8,523.71	1,243.061	4.5660
26	38,485	859,499	9,419.873	21.3334	81	1,316.9	6,992.31	1,080.404	4.3097
27	37,121	821,014	9,357.461	21.1172	82	1,121.6	5,675.41	929.621	4.0601
28	35,805	783,893	9,296.778	20.8934	83	944.95	4,553.81	790.897	3.8191
29	34,535	748,088	9,237.041	20.6617	84	786.29	3,608.86	664.203	3.5897
30	33,308	713,553	9,178.255	20.4229	85	645.35	2,822.57	549.850	3.3737
31	32,123	680,245	9,119.736	20.1763	86	521.87	2,177.22	448.186	3.1720
32	30,978	648,122	9,060.868	19.9220	87	415.49	1,655.35	359.487	2.9841
33	29,870	617,144	9,000.777	19.6610	88	325.57	1,239.86	283.622	2.8083
34	28,798	587,274	8,938.682	19.3929	89	251.02	914.29	220.058	2.6423
35	27,761	558,476	8,875.087	19.1173	90	190.32	663.27	167.870	2.4850
36	26,755	530,715	8,808.425	18.8361	91	141.79	472.95	125.779	2.3356
37	25,781	503,960	8,738.977	18.5477	92	103.71	331.16	92.491	2.1931
38	24,836	478,179	8,665.655	18.2535	93	74.383	227.45	66.676	2.0578
39	23,919	453,343	8,588.277	17.9533	94	52.246	153.06	47.054	1.9296
40	23,028	429,424	8,506.191	17.6479	95	35.887	100.82	32.467	1.8094
41	22,162	406,396	8,419.072	17.3375	96	24.080	64.930	21.871	1.6964
42	21,320	384,234	8,326.647	17.0222	97	15.768	40.850	14.375	1.5907
43	20,501	362,914	8,228.463	16.7023	98	10.068	25.082	9.2093	1.4913
44	19,704	342,413	8,124.355	16.3778	99	6.2631	15.014	5.7451	1.3972
45	18,927	322,709	8,014.198	16.0502	100	3.7908	8.7510	3.4845	1.3085
46	18,170	303,782	7,897.492	15.7189	101	2.2301	4.9602	2.0519	1.2242
47	17,433	285,612	7,774.608	15.3834	102	1.2727	2.7301	1.1714	1.1451
48	16,714	268,179	7,644.755	15.0452	103	.70662	1.4574	.64685	1.0625
49	16,012	251,465	7,507.989	14.7048	104	.38019	.75081	.34427	.9748
50	15,327	235,453	7,364,926	14.3620	105	.19831	.37062	.17523	.8689
51	14,659	220,126	7,215.110	14.0164	106	.10019	.17231	.08382	.7198
52	14,007	205,467	7,058.325	13.6689	107	.04898	.07212	.03599	.4724
53	13,369	191,460	6,894.407	13.3212	108	.02314	.02314	.01181	-
54	12,745	178,091	6,722.925	12.9734					

TABLE 7. UNITED STATES WHITE MALES: 1949-51—ACTUARIAL FUNCTIONS AT 4 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,300,155	11,532.458	22.0016	55	9,309.8	121,280	4,645.175	12.0271
1	93,203	2,200,155	8,581.498	22.6061	56	8,809.6	111,970	4,503.052	11.7100
2	89,429	2,106,952	8,391.964	22.5601	57	8,324.2	103,160	4,356.451	11.3928
3	85,870	2,017,523	8,272.839	22.4951	58	7,853.4	94,836.0	4,205.824	11.0758
4	82,480	1,931,653	8,185.649	22.4197	59	7,397.2	86,982.6	4,051.697	10.7589
5	79,236	1,849,173	8,114.141	22.3375	60	6,955.7	79,585.4	3,894.753	10.4418
6	76,127	1,769,937	8,052.496	22.2498	61	6,529.0	72,629.7	3,735.527	10.1242
7	73,144	1,693,810	7,997.782	22.1572	62	6,116.6	66,100.7	3,574.251	9.8068
8	70,284	1,620,666	7,950.287	22.0588	63	5,718.3	59,984.1	3,411.235	9.4898
9	67,538	1,550,382	7,907.429	21.9557	64	5,334.3	54,265.8	3,247.094	9.1730
10	64,901	1,482,844	7,868.246	21.8478	65	4,964.6	48,931.5	3,082.624	8.8561
11	62,367	1,417,943	7,830.570	21.7355	66	4,609.3	43,966.9	2,918.169	8.5387
12	59,931	1,355,576	7,793.094	21.6189	67	4,267.7	39,357.6	2,753.900	8.2222
13	57,587	1,295,645	7,754.657	21.4989	68	3,939.4	35,089.9	2,589.766	7.9074
14	55,330	1,238,058	7,712.501	21.3759	69	3,624.3	31,150.5	2,426.135	7.5949
15	53,154	1,182,728	7,664.748	21.2510	70	3,322.4	27,526.2	2,263.661	7.2850
16	51,057	1,129,574	7,611.357	21.1238	71	3,034.0	24,203.8	2,103.052	6.9775
17	49,034	1,078,517	7,552.319	20.9953	72	2,758.8	21,169.8	1,944.523	6.6736
18	47,086	1,029,483	7,490.122	20.8639	73	2,496.5	18,411.0	1,788.379	6.3747
19	45,210	982,397	7,425.096	20.7296	74	2,247.2	15,914.5	1,635.112	6.0819
20	43,404	937,187	7,358.463	20.5922	75	2,011.3	13,667.3	1,485.575	5.7953
21	41,667	893,783	7,290.883	20.4506	76	1,788.9	11,656.0	1,340.520	5.5157
22	39,997	852,116	7,222.948	20.3045	77	1,580.4	9,867.11	1,200.852	5.2434
23	38,391	812,119	7,156.003	20.1539	78	1,386.0	8,286.71	1,067.306	4.9789
24	36,850	773,728	7,091.243	19.9967	79	1,206.3	6,900.71	940.835	4.7206
25	35,371	736,878	7,029.724	19.8328	80	1,041.4	5,694.41	822.397	4.4680
26	33,953	701,507	6,971.653	19.6611	81	891.30	4,653.01	712.308	4.2205
27	32,592	667,554	6,916.856	19.4821	82	755.45	3,761.71	610.747	3.9794
28	31,285	634,962	6,863.833	19.2961	83	633.42	3,006.26	517.757	3.7461
29	30,030	603,677	6,811.888	19.1025	84	524.53	2,372.84	433.240	3.5237
30	28,824	573,647	6,761.015	18.9017	85	428.44	1,848.31	357.322	3.3140
31	27,665	544,823	6,710.617	18.6936	86	344.79	1,419.87	290.154	3.1181
32	26,551	517,158	6,660.162	18.4779	87	273.20	1,075.08	231.832	2.9351
33	25,478	490,607	6,608.906	18.2561	88	213.05	801.88	182.188	2.7638
34	24,446	465,129	6,556.196	18.0268	89	163.46	588.83	140.795	2.6023
35	23,452	440,683	6,502.472	17.7908	90	123.34	425.37	106.972	2.4488
36	22,494	417,231	6,446.428	17.5485	91	91.451	302.03	79.824	2.3026
37	21,571	394,737	6,388.322	17.2994	92	66.566	210.58	58.457	2.1635
38	20,680	373,166	6,327.270	17.0448	93	47.516	144.01	41.966	2.0308
39	19,820	352,486	6,263.150	16.7844	94	33.213	96.497	29.492	1.9054
40	18,990	332,666	6,195.456	16.5180	95	22.705	63.284	20.263	1.7872
41	18,188	313,676	6,123.957	16.2463	96	15.161	40.579	13.592	1.6765
42	17,413	295,488	6,048.468	15.9694	97	9.8796	25.418	8.8953	1.5728
43	16,664	278,075	5,968.661	15.6872	98	6.2783	15.539	5.6743	1.4750
44	15,939	261,411	5,884.445	15.4007	99	3.8867	9.2602	3.5245	1.3825
45	15,237	245,472	5,795.764	15.1103	100	2.3412	5.3735	2.1284	1.2952
46	14,557	230,235	5,702.263	14.8161	101	1.3707	3.0323	1.2478	1.2122
47	13,900	215,678	5,604.286	14.5164	102	.77850	1.6616	.70927	1.1344
48	13,262	201,778	5,501.250	14.2147	103	.43014	.88312	.38997	1.0531
49	12,644	188,516	5,393.250	13.9095	104	.23032	.45298	.20667	.9667
50	12,045	175,872	5,280.820	13.6012	105	.11956	.22266	.10476	.8623
51	11,465	163,827	5,163.649	13.2893	106	.06011	.10310	.04991	.7152
52	10,902	152,362	5,041.618	12.9756	107	.02924	.04299	.02135	.4702
53	10,355	141,460	4,914.649	12.6610	108	.01375	.01375	.00698	-
54	9,825.0	131,105	4,782.459	12.3440					

TABLE 8. UNITED STATES WHITE FEMALES: 1949-51—ACTUARIAL FUNCTIONS AT 2 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	3,773,545	26,008.914	36.7354	55	29,511	533,808	19,044.138	17.0884
1	95,730	3,673,545	23,700.091	37.3740	56	28,685	504,297	18,797.038	16.5805
2	93,676	3,577,815	23,522.275	37.1935	57	27,861	475,612	18,535.377	16.0709
3	91,736	3,484,139	23,419.562	36.9801	58	27,036	447,751	18,256.968	15.5613
4	89,859	3,392,403	23,341.035	36.7525	59	26,210	420,715	17,961.012	15.0517
5	88,036	3,302,544	23,280.351	36.5136	60	25,382	394,505	17,646.477	14.5427
6	86,258	3,214,508	23,227.961	36.2662	61	24,551	369,123	17,313.010	14.0349
7	84,521	3,128,250	23,182.692	36.0115	62	23,716	344,572	16,959.716	13.5291
8	82,824	3,043,729	23,143.431	35.7494	63	22,877	320,856	16,585.778	13.0253
9	81,164	2,960,905	23,107.451	35.4805	64	22,036	297,979	16,192.985	12.5224
10	79,541	2,879,741	23,075.457	35.2045	65	21,193	275,943	15,782.497	12.0205
11	77,950	2,800,200	23,044.091	34.9230	66	20,349	254,750	15,353.806	11.5190
12	76,392	2,722,250	23,014.128	34.6353	67	19,500	234,401	14,904.070	11.0206
13	74,864	2,645,858	22,983.980	34.3422	68	18,642	214,901	14,428.034	10.5278
14	73,364	2,570,994	22,952.149	34.0444	69	17,771	196,259	13,922.824	10.0438
15	71,891	2,497,630	22,917.970	33.7419	70	16,888	178,488	13,388.264	9.5689
16	70,444	2,425,739	22,880.091	33.4350	71	15,992	161,600	12,823.741	9.1051
17	69,022	2,355,295	22,839.384	33.1238	72	15,085	145,608	12,230.153	8.6525
18	67,626	2,286,273	22,796.674	32.8076	73	14,168	130,523	11,608.622	8.2125
19	66,255	2,218,647	22,752.056	32.4865	74	13,244	116,355	10,962.782	7.7855
20	64,911	2,152,392	22,706.967	32.1591	75	12,319	103,111	10,296.769	7.3701
21	63,591	2,087,481	22,660.123	31.8267	76	11,395	90,792.1	9,614.289	6.9677
22	62,297	2,023,890	22,612.904	31.4878	77	10,476	79,397.1	8,919.288	6.5790
23	61,027	1,961,593	22,564.074	31.1430	78	9,567.2	68,921.1	8,215.721	6.2039
24	59,781	1,900,566	22,514.958	30.7921	79	8,672.7	59,353.9	7,508.794	5.8438
25	58,559	1,840,785	22,464.976	30.4347	80	7,799.5	50,681.2	6,805.677	5.4980
26	57,360	1,782,226	22,414.182	30.0709	81	6,953.6	42,881.7	6,112.728	5.1668
27	56,184	1,724,866	22,362.626	29.7003	82	6,141.7	35,928.1	5,437.112	4.8499
28	55,029	1,668,682	22,309.209	29.3237	83	5,369.1	29,786.4	4,784.989	4.5477
29	53,895	1,613,653	22,254.587	28.9407	84	4,641.9	24,417.3	4,163.083	4.2602
30	52,781	1,559,758	22,197.172	28.5515	85	3,965.9	19,775.4	3,578.081	3.9864
31	51,687	1,506,977	22,138.176	28.1558	86	3,345.0	15,809.5	3,034.963	3.7263
32	50,611	1,455,290	22,076.092	27.7544	87	2,782.9	12,464.5	2,538.388	3.4790
33	49,554	1,404,679	22,011.063	27.3464	88	2,280.7	9,681.59	2,090.762	3.2450
34	48,514	1,355,125	21,942.719	26.9326	89	1,839.2	7,400.89	1,693.960	3.0240
35	47,491	1,306,611	21,871.215	26.5128	90	1,457.5	5,561.69	1,348.352	2.8159
36	46,485	1,259,120	21,796.211	26.0866	91	1,133.8	4,104.19	1,053.235	2.6199
37	45,495	1,212,635	21,717.391	25.6542	92	864.55	2,970.39	806.276	2.4358
38	44,519	1,167,140	21,633.520	25.2167	93	645.43	2,105.84	604.117	2.2627
39	43,557	1,122,621	21,544.364	24.7736	94	470.96	1,460.41	442.296	2.1009
40	42,608	1,079,064	21,449.710	24.3254	95	335.28	989.45	315.850	1.9511
41	41,672	1,036,456	21,348.920	23.8718	96	232.53	654.17	219.674	1.8133
42	40,747	994,784	21,240.965	23.4137	97	156.94	421.64	148.645	1.6866
43	39,833	954,037	21,126.164	22.9509	98	103.01	264.70	97.793	1.5697
44	38,930	914,204	21,003.991	22.4833	99	65.690	161.69	62.496	1.4614
45	38,036	875,274	20,873.138	22.0117	100	40.641	96.000	38.741	1.3621
46	37,151	837,238	20,734.395	21.5361	101	24.370	55.359	23.260	1.2716
47	36,274	800,087	20,586.150	21.0568	102	14.155	30.989	13.523	1.1893
48	35,406	763,813	20,429.216	20.5730	103	7.9656	16.834	7.6110	1.1133
49	34,545	728,407	20,262.474	20.0857	104	4.3446	8.8683	4.1463	1.0412
					105	2.2969	4.5238	2.1835	.9695
50	33,692	693,862	20,086.741	19.5943	106	1.1766	2.2269	1.1082	.8927
51	32,846	660,170	19,901.341	19.0989	107	.58349	1.0503	.53814	.8000
52	32,006	627,324	19,705.650	18.6002	108	.27973	.46684	.24585	.6689
53	31,171	595,318	19,497.691	18.0985	109	.12942	.18711	.10101	.4458
54	30,339	564,147	19,277.335	17.5948	110	.05769	.05769	.03182	-

TABLE 9. UNITED STATES WHITE FEMALES: 1949-51—ACTUARIAL FUNCTIONS AT $2\frac{1}{2}$ PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	3,306,329	19,357.840	32.0633	55	22,552	385,919	13,139.170	16.1124
1	95,263	3,206,329	17,060.278	32.6577	56	21,814	363,367	12,951.262	15.6575
2	92,764	3,111,066	16,884.192	32.5374	57	21,084	341,553	12,753.251	15.1996
3	90,400	3,018,302	16,782.975	32.3883	58	20,360	320,469	12,543.593	14.7401
4	88,118	2,927,902	16,705.969	32.2271	59	19,642	300,109	12,321.809	14.2789
5	85,910	2,839,784	16,646.751	32.0553	60	18,928	280,467	12,087.252	13.8176
6	83,764	2,753,874	16,595.875	31.8766	61	18,219	261,539	11,839.790	13.3553
7	81,677	2,670,110	16,552.129	31.6911	62	17,514	243,320	11,578.894	12.8929
8	79,647	2,588,433	16,514.375	31.4988	63	16,812	225,806	11,304.100	12.4312
9	77,670	2,508,786	16,479.944	31.3006	64	16,114	208,994	11,016.858	11.9697
10	75,745	2,431,116	16,449.477	31.0961	65	15,423	192,880	10,718.141	11.5060
11	73,868	2,355,371	16,419.753	30.8862	66	14,736	177,457	10,407.699	11.0424
12	72,038	2,281,503	16,391.498	30.6708	67	14,052	162,721	10,083.605	10.5799
13	70,253	2,209,465	16,363.207	30.4501	68	13,368	148,669	9,742.233	10.1213
14	68,509	2,139,212	16,333.482	30.2253	69	12,682	135,301	9,381.707	9.6687
15	66,807	2,070,703	16,301.721	29.9953	70	11,993	122,619	9,002.097	9.2242
16	65,142	2,003,896	16,266.693	29.7620	71	11,301	110,626	8,603.164	8.7890
17	63,516	1,938,754	16,229.233	29.5239	72	10,608	99,325.1	8,185.739	8.3632
18	61,928	1,875,238	16,190.122	29.2809	73	9,914.7	88,717.1	7,750.796	7.9480
19	60,377	1,813,310	16,149.463	29.0331	74	9,223.1	78,802.4	7,301.045	7.5440
20	58,863	1,752,933	16,108.575	28.7799	75	8,536.6	69,579.3	6,839.511	7.1507
21	57,385	1,694,070	16,066.303	28.5211	76	7,857.8	61,042.7	6,368.869	6.7684
22	55,943	1,636,685	16,023.900	28.2563	77	7,189.2	53,184.9	5,891.931	6.3979
23	54,535	1,580,742	15,980.264	27.9858	78	6,533.3	45,995.7	5,411.472	6.0402
24	53,161	1,526,207	15,936.587	27.7091	79	5,893.6	39,462.4	4,931.073	5.6958
25	51,820	1,473,046	15,892.357	27.4262	80	5,274.4	33,568.8	4,455.592	5.3645
26	50,512	1,421,226	15,847.627	27.1364	81	4,679.4	28,294.4	3,989.272	5.0466
27	49,235	1,370,714	15,802.448	26.8402	82	4,112.9	23,615.0	3,536.836	4.7417
28	47,987	1,321,479	15,755.866	26.5383	83	3,578.0	19,502.1	3,102.261	4.4506
29	46,769	1,273,492	15,708.466	26.2294	84	3,078.3	15,924.1	2,689.848	4.1730
30	45,579	1,226,723	15,658.885	25.9142	85	2,617.2	12,845.8	2,303.796	3.9082
31	44,417	1,181,144	15,608.187	25.5922	86	2,196.7	10,228.6	1,947.134	3.6563
32	43,280	1,136,727	15,555.096	25.2645	87	1,818.6	8,031.93	1,622.627	3.4165
33	42,169	1,093,447	15,499.758	24.9301	88	1,483.1	6,213.33	1,331.536	3.1894
34	41,083	1,051,278	15,441.883	24.5891	89	1,190.2	4,730.23	1,074.754	2.9743
35	40,021	1,010,195	15,381.627	24.2416	90	938.60	3,540.03	852.191	2.7716
36	38,982	970,174	15,318.730	23.8877	91	726.54	2,601.43	663.070	2.5806
37	37,965	931,192	15,252.955	23.5276	92	551.33	1,874.89	505.583	2.4007
38	36,969	893,227	15,183.306	23.1615	93	409.59	1,323.56	377.294	2.2314
39	35,994	856,258	15,109.630	22.7889	94	297.41	913.97	275.104	2.0731
40	35,038	820,264	15,031.792	22.4107	95	210.70	616.56	195.643	1.9262
41	34,101	785,226	14,949.312	22.0265	96	145.41	405.86	135.499	1.7911
42	33,182	751,125	14,861.400	21.6365	97	97.665	260.45	91.297	1.6668
43	32,279	717,943	14,768.369	21.2418	98	63.792	162.79	59.806	1.5519
44	31,393	685,664	14,669.847	20.8413	99	40.481	98.994	38.054	1.4454
45	30,523	654,271	14,564.840	20.4353	100	24.923	58.513	23.486	1.3478
46	29,667	623,748	14,454.045	20.0250	101	14.872	33.590	14.038	1.2586
47	28,826	594,081	14,336.239	19.6092	102	8.5959	18.718	8.1251	1.1775
48	27,999	565,255	14,212.137	19.1884	103	4.8136	10.122	4.5526	1.1028
49	27,185	537,256	14,080.922	18.7630	104	2.6127	5.3083	2.4690	1.0317
					105	1.3745	2.6956	1.2944	.9611
50	26,384	510,071	13,943.306	18.3326	106	.70067	1.3211	.65407	.8855
51	25,596	483,687	13,798.828	17.8970	107	.34578	.62038	.31625	.7941
52	24,820	458,091	13,647.074	17.4565	108	.16496	.27460	.14389	.6646
53	24,054	433,271	13,486.594	17.0124	109	.07595	.10964	.05889	.4436
54	23,298	409,217	13,317.376	16.5645	110	.03369	.03369	.01849	-

TABLE 10. UNITED STATES WHITE FEMALES: 1949-51—ACTUARIAL FUNCTIONS AT 3 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,927,037	14,717.386	28.2704	55	17,256	279,932	9,102.910	15.2223
1	94,801	2,827,037	12,430.978	28.8208	56	16,611	262,676	8,959.824	14.8134
2	91,865	2,732,236	12,256.598	28.7419	57	15,977	246,065	8,809.777	14.4012
3	89,090	2,640,371	12,156.848	28.6371	58	15,353	230,088	8,651.676	13.9865
4	86,420	2,551,281	12,081.327	28.5219	59	14,740	214,735	8,485.243	13.5682
5	83,845	2,464,861	12,023.532	28.3978	60	14,135	199,995	8,310.079	13.1489
6	81,353	2,381,016	11,974.120	28.2677	61	13,540	185,860	8,126.174	12.7267
7	78,941	2,299,663	11,931.839	28.1314	62	12,952	172,320	7,933.226	12.3045
8	76,606	2,220,722	11,895.526	27.9889	63	12,373	159,368	7,730.986	11.8803
9	74,342	2,144,116	11,862.570	27.8412	64	11,802	146,995	7,520.612	11.4551
10	72,147	2,069,774	11,833.550	27.6883	65	11,241	135,193	7,302.896	11.0268
11	70,018	1,997,627	11,805.376	27.5302	66	10,688	123,952	7,077.732	10.5973
12	67,952	1,927,609	11,778.724	27.3672	67	10,143	113,264	6,843.807	10.1667
13	65,946	1,859,657	11,752.167	27.1997	68	9,602.2	103,121	6,598.607	9.7393
14	63,998	1,793,711	11,724.400	27.0276	69	9,064.8	93,519.1	6,340.907	9.3167
15	62,104	1,729,713	11,694.874	26.8519	70	8,530.7	84,454.3	6,070.884	8.9000
16	60,263	1,667,609	11,662.469	26.6722	71	7,999.9	75,923.6	5,788.492	8.4906
17	58,473	1,607,346	11,627.983	26.4887	72	7,472.8	67.923.7	5,494.446	8.0895
18	56,734	1,548,873	11,592.152	26.3006	73	6,950.3	60,450.9	5,189.546	7.6976
19	55,045	1,492,139	11,555.083	26.1076	74	6,434.1	53,500.6	4,875.796	7.3152
20	53,404	1,437,094	11,517.987	25.9099	75	5,926.3	47,066.5	4,555.389	6.9420
21	51,811	1,383,690	11,479.821	25.7065	76	5,428.5	41,140.2	4,230.246	6.5786
22	50,263	1,331,879	11,441.723	25.4982	77	4,942.5	35,711.7	3,902.354	6.2254
23	48,760	1,281,616	11,402.708	25.2842	78	4,469.9	30,769.2	3,573.643	5.8836
24	47,301	1,232,856	11,363.845	25.0641	79	4,012.6	26,299.3	3,246.569	5.5542
25	45,885	1,185,555	11,324.681	24.8375	80	3,573.6	22,286.7	2,924.416	5.2365
26	44,509	1,139,670	11,285.267	24.6054	81	3,155.1	18,713.1	2,610.003	4.9311
27	43,173	1,095,161	11,245.650	24.3668	82	2,759.6	15,558.0	2,306.432	4.6378
28	41,875	1,051,988	11,205.002	24.1221	83	2,389.1	12,798.4	2,016.261	4.3570
29	40,614	1,010,113	11,163.840	23.8711	84	2,045.4	10,409.3	1,742.224	4.0891
30	39,388	969,499	11,120.993	23.6141	85	1,730.6	8,363.87	1,486.950	3.8329
31	38,197	930,111	11,077.394	23.3504	86	1,445.5	6,633.27	1,252.255	3.5889
32	37,039	892,914	11,031.959	23.1074	87	1,190.9	5,187.77	1,039.753	3.3562
33	35,913	855,875	10,984.831	22.8319	88	966.50	3,996.87	850.059	3.1354
34	34,818	819,962	10,935.781	22.5499	89	771.83	3,030.37	683.535	2.9262
35	33,753	785,144	10,884.961	22.2615	90	605.73	2,258.54	539.903	2.7286
36	32,717	751,391	10,832.171	21.9664	91	466.60	1,652.81	418.446	2.5422
37	31,709	718,674	10,777.234	21.6647	92	352.36	1,186.21	317.795	2.3665
38	30,728	686,965	10,719.344	21.3563	93	260.50	833.85	236.203	2.2010
39	29,772	656,237	10,658.403	21.0421	94	188.24	573.35	171.526	2.0458
40	28,841	626,465	10,594.333	20.7213	95	132.70	385.11	121.478	1.9021
41	27,933	597,624	10,526.771	20.3949	96	91.142	252.41	83.781	1.7694
42	27,048	569,691	10,455.109	20.0622	97	60.918	161.27	56.211	1.6473
43	26,185	542,643	10,379.643	19.7234	98	39.596	100.35	36.664	1.5343
44	25,343	516,458	10,300.110	19.3787	99	25.005	60.756	23.228	1.4298
45	24,520	491,115	10,215.754	19.0292	100	15.320	35.751	14.273	1.3336
46	23,717	466,595	10,127.180	18.6734	101	9.0971	20.431	8.4938	1.2459
47	22,933	442,878	10,033.459	18.3118	102	5.2327	11.334	4.8943	1.1660
48	22,167	419,945	9,935.207	17.9446	103	2.9161	6.1015	2.7301	1.0923
49	21,418	397,778	9,831.829	17.5721	104	1.5751	3.1854	1.4740	1.0223
					105	.82461	1.6103	.76935	.9528
50	20,686	376,360	9,723.934	17.1939	106	.41831	.78568	.38705	.8782
51	19,971	355,674	9,611.209	16.8095	107	.20543	.36737	.18635	.7883
52	19,271	335,703	9,493.382	16.4201	108	.09753	.16194	.08444	.6604
53	18,586	316,432	9,369.384	16.0253	109	.04468	.06441	.03443	.4416
54	17,914	297,846	9,239.270	15.6264	110	.01973	.01973	.01077	-

TABLE 11. UNITED STATES WHITE FEMALES: 1949-51—ACTUARIAL FUNCTIONS AT 3½ PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,618,393	11,455.334	25.1839	55	13,221	203,711	6,332.552	14.4081
1	94,343	2,518,393	9,179.971	25.6940	56	12,665	190,490	6,223.453	14.0407
2	90,980	2,424,050	9,007.271	25.6438	57	12,123	177,825	6,109.599	13.6684
3	87,805	2,333,070	8,908.959	25.5710	58	11,594	165,702	5,990.213	13.2920
4	84,762	2,245,265	8,834.886	25.4891	59	11,077	154,108	5,865.142	12.9124
5	81,839	2,160,503	8,778.474	25.3994	60	10,571	143,031	5,734.146	12.5305
6	79,023	2,078,664	8,730.477	25.3045	61	10,077	132,460	5,597.278	12.1448
7	76,310	1,999,641	8,689.605	25.2042	62	9,593.0	122,383	5,454.373	11.7575
8	73,695	1,923,331	8,654.672	25.0985	63	9,119.5	112,790	5,305.311	11.3680
9	71,171	1,849,636	8,623.122	24.9886	64	8,656.8	103,671	5,151.002	10.9757
10	68,737	1,778,465	8,595.474	24.8735	65	8,205.1	95,013.9	4,992.079	10.5798
11	66,386	1,709,728	8,568.761	24.7543	66	7,764.1	86,808.8	4,828.514	10.1808
12	64,116	1,643,342	8,543.613	24.6308	67	7,332.4	79,044.7	4,659.406	9.7802
13	61,922	1,579,226	8,518.676	24.5035	68	6,908.1	71,712.3	4,483.003	9.3809
14	59,803	1,517,304	8,492.729	24.3717	69	6,490.0	64,804.2	4,298.501	8.9852
15	57,753	1,457,501	8,465.272	24.2368	70	6,078.1	58,314.2	4,106.111	8.5941
16	55,770	1,399,748	8,435.283	24.0986	71	5,672.3	52,236.1	3,905.881	8.2090
17	53,852	1,343,978	8,403.522	23.9569	72	5,273.0	46,563.8	3,698.394	7.8306
18	51,998	1,290,126	8,370.682	23.8111	73	4,880.6	41,290.8	3,484.289	7.4602
19	50,206	1,238,128	8,336.872	23.6610	74	4,496.3	36,410.2	3,265.032	7.0978
20	48,475	1,187,922	8,303.200	23.5059	75	4,121.4	31,913.9	3,042.204	6.7435
21	46,801	1,139,447	8,268.724	23.3466	76	3,757.0	27,792.5	2,817.175	6.3975
22	45,184	1,092,646	8,234.476	23.1821	77	3,404.1	24,035.5	2,591.340	6.0608
23	43,621	1,047,462	8,199.573	23.0128	78	3,063.7	20,631.4	2,366.036	5.7341
24	42,111	1,003,841	8,164.974	22.8380	79	2,737.0	17,567.7	2,142.934	5.4186
25	40,653	961,730	8,130.276	22.6570	80	2,425.8	14,830.7	1,924.252	5.1137
26	39,243	921,077	8,095.525	22.4711	81	2,131.4	12,404.9	1,711.854	4.8201
27	37,881	881,834	8,060.764	22.2791	82	1,855.2	10,273.5	1,507.773	4.5377
28	36,565	843,953	8,025.270	22.0809	83	1,598.3	8,418.28	1,313.640	4.2670
29	35,293	807,388	7,989.501	21.8767	84	1,361.8	6,819.98	1,131.187	4.0081
30	34,062	772,095	7,952.448	21.6673	85	1,146.6	5,458.18	962.048	3.7603
31	32,873	738,033	7,914.927	21.4510	86	953.12	4,311.58	807.294	3.5236
32	31,722	705,160	7,876.014	21.2294	87	781.45	3,358.46	667.852	3.2977
33	30,609	673,438	7,835.846	21.0013	88	631.14	2,577.01	543.978	3.0831
34	29,532	642,829	7,794.242	20.7672	89	501.58	1,945.87	435.760	2.8795
35	28,491	613,297	7,751.345	20.5260	90	391.74	1,444.29	342.870	2.6869
36	27,483	584,806	7,707.001	20.2788	91	300.31	1,052.55	264.700	2.5049
37	26,508	557,323	7,661.076	20.0247	92	225.68	752.24	200.235	2.3332
38	25,563	530,815	7,612.916	19.7650	93	166.04	526.56	148.229	2.1713
39	24,648	505,252	7,562.463	19.4987	94	119.40	360.52	107.203	2.0194
40	23,762	480,604	7,509.675	19.2257	95	83.769	241.12	75.611	1.8784
41	22,903	456,842	7,454.280	18.9468	96	57.256	157.36	51.929	1.7484
42	22,070	433,939	7,395.807	18.6619	97	38.084	100.10	34.693	1.6284
43	21,263	411,869	7,334.527	18.3702	98	24.635	62.015	22.532	1.5174
44	20,479	390,606	7,270.257	18.0735	99	15.482	37.380	14.213	1.4144
45	19,719	370,127	7,202.419	17.7701	100	9.4394	21.898	8.6956	1.3198
46	18,981	350,408	7,131.533	17.4610	101	5.5782	12.458	5.1519	1.2333
47	18,265	331,427	7,056.889	17.1455	102	3.1930	6.8801	2.9555	1.1547
48	17,569	313,162	6,979.016	16.8247	103	1.7708	3.6871	1.6413	1.0822
49	16,893	295,593	6,897.475	16.4980	104	.95188	1.9163	.88224	1.0132
					105	.49593	.96440	.45843	.9446
50	16,237	278,700	6,812.783	16.1645	106	.25036	.46847	.22962	.8712
51	15,600	262,463	6,724.727	15.8246	107	.12236	.21811	.11008	.7825
52	14,981	246,863	6,633.130	15.4784	108	.05781	.09575	.04968	.6563
53	14,379	231,882	6,537.201	15.1264	109	.02636	.03794	.02018	.4393
54	13,792	217,503	6,437.027	14.7702	110	.01158	.01158	.00629	-

TABLE 12. UNITED STATES WHITE FEMALES: 1949-51—ACTUARIAL FUNCTIONS AT 4 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,362,263	9,143.762	22.6226	55	10,143	148,711	4,423.218	13.6614
1	93,889	2,262,263	6,879.340	23.0951	56	9,669.4	138,568	4,339.924	13.3306
2	90,107	2,168,374	6,708.297	23.0644	57	9,211.1	128,898	4,253.418	12.9938
3	86,545	2,078,267	6,611.396	23.0137	58	8,766.5	119,686	4,163.145	12.6527
4	83,143	1,991,722	6,538.738	22.9554	59	8,335.2	110,921	4,069.027	12.3075
5	79,890	1,908,579	6,483.669	22.8901	60	7,916.5	102,585	3,970.925	11.9584
6	76,771	1,828,689	6,437.040	22.8200	61	7,510.0	94,669.0	3,868.918	11.6057
7	73,779	1,751,918	6,397.524	22.7455	62	7,115.2	87,159.0	3,762.924	11.2497
8	70,908	1,678,139	6,363.912	22.6664	63	6,731.5	80,043.8	3,652.895	10.8909
9	68,150	1,607,231	6,333.701	22.5837	64	6,359.3	73,312.3	3,539.540	10.5284
10	65,503	1,539,081	6,307.354	22.4963	65	5,998.5	66,953.0	3,423.356	10.1616
11	62,958	1,473,578	6,282.020	22.4057	66	5,648.8	60,954.5	3,304.353	9.7907
12	60,513	1,410,620	6,258.285	22.3110	67	5,309.1	55,305.7	3,181.910	9.4172
13	58,162	1,350,107	6,234.863	22.2129	68	4,977.8	49,996.6	3,054.798	9.0439
14	55,901	1,291,945	6,210.609	22.1113	69	4,654.0	45,018.8	2,922.491	8.6731
15	53,725	1,236,044	6,185.067	22.0069	70	4,337.7	40,364.8	2,785.191	8.3056
16	51,631	1,182,319	6,157.304	21.8994	71	4,028.6	36,027.1	2,642.983	7.9428
17	49,616	1,130,688	6,128.042	21.7888	72	3,727.0	31,998.5	2,496.329	7.5856
18	47,678	1,081,072	6,097.931	21.6744	73	3,433.1	28,271.5	2,345.723	7.2350
19	45,813	1,033,394	6,067.079	21.5568	74	3,147.6	24,838.4	2,192.237	6.8912
20	44,020	987,581	6,036.501	21.4348	75	2,871.3	21,690.8	2.036.999	6.5543
21	42,296	943,561	6,005.344	21.3085	76	2,604.8	18,819.5	1,880.981	6.2249
22	40,638	901,265	5,974.541	21.1779	77	2,348.8	16,214.7	1,725.159	5.9034
23	39,044	860,627	5,943.300	21.0425	78	2,103.7	13,865.9	1,570.451	5.5912
24	37,512	821,583	5,912.480	20.9019	79	1,870.4	11,762.2	1,417.991	5.2886
25	36,038	784,071	5,881.720	20.7568	80	1,649.7	9,891.82	1,269.271	4.9961
26	34,621	748,033	5,851.061	20.6063	81	1,442.5	8,242.12	1,125.518	4.7138
27	33,259	713,412	5,820.541	20.4502	82	1,249.6	6,799.62	988.058	4.4414
28	31,949	680,153	5,789.528	20.2887	83	1,071.4	5,550.02	857.926	4.1802
29	30,689	648,204	5,758.425	20.1217	84	908.47	4,478.62	736.213	3.9298
30	29,477	617,515	5,726.360	19.9490	85	761.25	3,570.15	623.923	3.6899
31	28,311	588,038	5,694.046	19.7707	86	629.72	2,808.90	521.679	3.4606
32	27,189	559,727	5,660.694	19.5865	87	513.82	2,179.18	429.992	3.2411
33	26,109	532,538	5,626.432	19.3967	88	413.00	1,665.36	348.933	3.0323
34	25,069	506,429	5,591.116	19.2014	89	326.63	1,252.37	278.461	2.8342
35	24,069	481,360	5,554.878	18.9992	90	253.88	925.73	218.260	2.6463
36	23,106	457,291	5,517.597	18.7910	91	193.69	671.85	167.842	2.4687
37	22,179	434,185	5,479.172	18.5764	92	144.86	478.16	126.463	2.3008
38	21,285	412,006	5,439.071	18.3566	93	106.07	333.30	93.242	2.1423
39	20,425	390,721	5,397.263	18.1295	94	75.903	227.23	67.161	1.9937
40	19,596	370,296	5,353.731	17.8965	95	52.998	151.32	47.174	1.8552
41	18,797	350,700	5,308.268	17.6572	96	36.049	98.325	32.264	1.7275
42	18,026	331,903	5,260.510	17.4125	97	23.862	62.276	21.464	1.6098
43	17,283	313,877	5,210.700	17.1610	98	15.362	38.414	13.881	1.5006
44	16,566	296,594	5,158.711	16.9038	99	9.6076	23.052	8.7184	1.3994
45	15,874	280,028	5,104.099	16.6407	100	5.8297	13.445	5.3108	1.3063
46	15,207	264,154	5,047.307	16.3706	101	3.4285	7.6152	3.1327	1.2211
47	14,563	248,947	4,987.793	16.0945	102	1.9531	4.1867	1.7892	1.1436
48	13,941	234,384	4,926.002	15.8126	103	1.0779	2.2336	.98921	1.0722
49	13,340	220,443	4,861.612	15.5250	104	.57663	1.1557	.52936	1.0042
					105	.29899	.57902	.27386	.9366
50	12,761	207,103	4,795.055	15.2294	106	.15021	.28003	.13656	.8643
51	12,201	194,342	4,726.187	14.9284	107	.07306	.12982	.06520	.7769
52	11,660	182,141	4,654.894	14.6210	108	.03435	.05676	.02930	.6524
53	11,138	170,481	4,580.589	14.3062	109	.01559	.02241	.01186	.4375
54	10,632	159,343	4,503.368	13.9871	110	.00682	.00682	.00369	-

TABLE 13. UNITED STATES NONWHITE MALES: 1949-51—ACTUARIAL FUNCTIONS AT 3 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,648,323	22,864.337	25.4832	55	12,814	167,237	7,942.789	12.0511
1	92,147	2,548,323	17,923.559	26.6550	56	12,097	154,423	7,599.306	11.7654
2	89,046	2,456,176	17,506.932	26.5832	57	11,398	142,326	7,252.473	11.4869
3	86,227	2,367,130	17,281.807	26.4523	58	10,719	130,928	6,905.118	11.2146
4	83,568	2,280,903	17,134.318	26.2940	59	10,061	120,209	6,559.664	10.9480
5	81,017	2,197,335	17,017.003	26.1219	60	9,426.1	110,148	6,217.822	10.6854
6	78,559	2,116,318	16,919.017	25.9392	61	8,815.2	100,722	5,811.488	10.4259
7	76,189	2,037,759	16,836.895	25.7461	62	8,228.6	91,906.6	5,551.589	10.1692
8	73,899	1,961,570	16,765.848	25.5439	63	7,666.5	83,678.0	5,229.124	9.9148
9	71,684	1,887,671	16,703.002	25.3332	64	7,129.4	76,011.5	4,915.297	9.6617
10	69,538	1,815,987	16,644.963	25.1150	65	6,617.6	68,882.1	4,611.197	9.4089
11	67,456	1,746,449	16,588.614	24.8902	66	6,130.9	62,264.5	4,317.233	9.1558
12	65,433	1,678,993	16,530.399	24.6597	67	5,668.7	56,133.6	4,033.625	8.9024
13	63,465	1,613,560	16,467.752	24.4244	68	5,230.3	50,464.9	3,760.287	8.6486
14	61,545	1,550,095	16,397.012	24.1864	69	4,815.0	45,234.6	3,497.383	8.3945
15	59,671	1,488,550	16,314.854	23.9460	70	4,422.7	40,419.6	3,245.294	8.1391
16	57,838	1,428,879	16,220.133	23.7048	71	4,052.6	35,996.9	3,003.980	7.8824
17	56,046	1,371,041	16,112.440	23.4628	72	3,703.7	31,944.3	2,773.148	7.6250
18	54,294	1,314,995	15,992.611	23.2199	73	3,374.9	28,240.6	2,552.275	7.3678
19	52,581	1,260,701	15,861.445	22.9764	74	3,065.7	24,865.7	2,341.313	7.1109
20	50,906	1,208,120	15,717.489	22.7324	75	2,775.0	21,800.0	2,139.983	6.8559
21	49,267	1,157,214	15,562.137	22.4886	76	2,502.7	19,025.0	1,948.430	6.6018
22	47,668	1,107,947	15,397.219	22.2430	77	2,248.2	16,522.3	1,766.872	6.3491
23	46,108	1,060,279	15,226.464	21.9956	78	2,011.1	14,274.1	1,595.288	6.0977
24	44,592	1,014,171	15,053.303	21.7433	79	1,791.3	12,263.0	1,434.026	5.8459
25	43,121	969,579	14,880.410	21.4851	80	1,588.6	10,471.7	1,283.475	5.5918
26	41,693	926,458	14,708.843	21.2209	81	1,402.2	8,883.12	1,143.330	5.3351
27	40,309	884,765	14,538.672	20.9496	82	1,231.1	7,480.92	1,013.114	5.0766
28	38,965	844,456	14,368.649	20.6722	83	1,074.3	6,249.82	892.195	4.8176
29	37,659	805,491	14,197.638	20.3891	84	931.58	5,175.52	780.727	4.5556
30	36,390	767,832	14,025.427	20.1001	85	802.44	4,243.94	678.747	4.2888
31	35,156	731,442	13,851.833	19.8056	86	686.02	3,441.50	585.719	4.0166
32	33,956	696,286	13,675.916	19.5055	87	581.04	2,755.48	500.749	3.7423
33	32,788	662,330	13,496.829	19.2004	88	486.27	2,174.44	422.928	3.4717
34	31,650	629,542	13,314.173	18.8907	89	400.85	1,688.17	351.673	3.2115
35	30,542	597,892	13,127.242	18.5761	90	324.59	1,287.32	287.087	2.9660
36	29,461	567,350	12,935.749	18.2577	91	257.61	962.73	229.556	2.7372
37	28,406	537,889	12,739.114	17.9358	92	200.03	705.12	179.481	2.5251
38	27,377	509,483	12,537.474	17.6099	93	151.78	505.09	137.059	2.3278
39	26,372	482,106	12,330.339	17.2810	94	112.35	353.31	102.049	2.1447
40	25,393	455,734	12,118.815	16.9472	95	80.937	240.96	73.910	1.9771
41	24,436	430,341	11,902.142	16.6109	96	56.650	160.03	51.978	1.8249
42	23,502	405,905	11,679.355	16.2711	97	38.479	103.38	35.455	1.6867
43	22,587	382,403	11,448.468	15.9302	98	25.349	64.898	23.443	1.5602
44	21,689	359,816	11,208.781	15.5898	99	16.179	39.549	15.013	1.4445
45	20,808	338,127	10,959.151	15.2499	100	9.9883	23.370	9.2948	1.3397
46	19,942	317,319	10,699.590	14.9121	101	5.9590	13.382	5.5565	1.2457
47	19,091	297,377	10,429.892	14.5768	102	3.4347	7.4228	3.2057	1.1611
48	18,255	278,286	10,149.899	14.2444	103	1.9141	3.9881	1.7853	1.0835
49	17,434	260,031	9,860.206	13.9152	104	1.0328	2.0740	.95957	1.0081
50	16,627	242,597	9,560.930	13.5905	105	.54004	1.0412	.49682	.9280
51	15,835	225,970	9,252.875	13.2703	106	.27372	.50114	.24621	.8308
52	15,057	210,135	8,936.376	12.9560	107	.13438	.22742	.11485	.6924
53	14,294	195,078	8,612.396	12.6475	108	.06381	.09304	.04819	.4581
54	13,547	180,784	8,281.031	12.3449	109	.02923	.02923	.01548	-

TABLE 14. UNITED STATES NONWHITE FEMALES: 1949-51—ACTUARIAL FUNCTIONS AT 3 PERCENT INTEREST

x	D_x	N_x	M_x	a_x	x	D_x	N_x	M_x	a_x
0	100,000	2,729,871	20,489.167	26.2987	55	13,812	197,071	8,072.255	13.2681
1	93,119	2,629,871	16,521.205	27.2420	56	13,110	183,259	7,771.946	12.9786
2	90,057	2,536,752	16,170.559	27.1683	57	12,424	170,149	7,468.143	12.6952
3	87,245	2,446,695	15,982.040	27.0440	58	11,757	157,725	7,162.924	12.4154
4	84,563	2,359,450	15,840.771	26.9017	59	11,109	145,968	6,857.854	12.1396
5	81,995	2,274,887	15,736.395	26.7442	60	10,482	134,859	6,554.371	11.8658
6	79,522	2,192,792	15,650.972	26.5747	61	9,876.3	124,377	6,253.631	11.5935
7	77,136	2,113,370	15,581.859	26.3980	62	9,291.7	114,501	5,956.690	11.3229
8	74,833	2,036,234	15,525.022	26.2104	63	8,728.3	105,209	5,663.893	11.0538
9	72,606	1,961,401	15,477.504	26.0143	64	8,186.4	96,481.0	5,376.155	10.7855
10	70,450	1,888,795	15,436.579	25.8104	65	7,665.9	88,294.6	5,094.164	10.5178
11	68,361	1,818,345	15,399.013	25.5992	66	7,167.0	80,628.7	4,818.537	10.2500
12	66,331	1,749,984	15,360.437	25.3826	67	6,689.3	73,461.7	4,549.557	9.9820
13	64,357	1,683,653	15,318.899	25.1611	68	6,232.5	66,772.4	4,287.609	9.7136
14	62,434	1,619,296	15,269.976	24.9361	69	5,796.6	60,539.9	4,033.291	9.4440
15	60,555	1,556,862	15,209.641	24.7099	70	5,381.8	54,743.3	3,787.264	9.1719
16	58,718	1,496,307	15,136.107	24.4829	71	4,987.2	49,361.5	3,549.383	8.8976
17	56,922	1,437,589	15,050.195	24.2554	72	4,611.9	44,374.3	3,319.384	8.6217
18	55,169	1,380,667	14,955.037	24.0261	73	4,255.2	39,762.4	3,097.008	8.3444
19	53,459	1,325,498	14,852.386	23.7947	74	3,915.7	35,507.2	2,881.445	8.0679
20	51,793	1,272,039	14,743.312	23.5601	75	3,593.1	31,591.5	2,672.924	7.7923
21	50,170	1,220,246	14,628.814	23.3222	76	3,287.1	27,998.4	2,471.534	7.5177
22	48,590	1,170,076	14,509.823	23.0806	77	2,997.4	24,711.3	2,277.653	7.2442
23	47,052	1,121,486	14,387.204	22.8350	78	2,724.3	21,713.9	2,091.812	6.9705
24	45,555	1,074,434	14,260.777	22.5854	79	2,468.0	18,989.6	1,914.869	6.6943
25	44,100	1,028,879	14,132.779	22.3306	80	2,228.4	16,521.6	1,747.120	6.4141
26	42,686	984,779	14,002.944	22.0703	81	2,004.9	14,293.2	1,588.545	6.1291
27	41,311	942,093	13,871.489	21.8049	82	1,796.9	12,288.3	1,438.930	5.8386
28	39,974	900,782	13,737.743	21.5342	83	1,603.2	10,491.4	1,297.543	5.5440
29	38,673	860,808	13,601.104	21.2586	84	1,424.3	8,888.20	1,165.367	5.2404
30	37,408	822,135	13,462.264	20.9775	85	1,260.6	7,463.90	1,043.121	4.9209
31	36,177	784,727	13,320.669	20.6913	86	1,110.4	6,203.30	929.709	4.5865
32	34,978	748,550	13,175.819	20.4006	87	971.35	5,092.90	822.961	4.2431
33	33,810	713,572	13,026.517	20.1054	88	840.82	4,121.55	720.733	3.9018
34	32,671	679,762	12,872.412	19.8063	89	717.20	3,280.73	621.625	3.5744
35	31,560	647,091	12,712.490	19.5035	90	600.67	2,563.53	525.963	3.2678
36	30,475	615,531	12,546.530	19.1979	91	492.58	1,962.86	435.396	2.9849
37	29,415	585,056	12,374.014	18.8897	92	394.66	1,470.28	351.817	2.7254
38	28,379	555,641	12,195.465	18.5793	93	308.49	1,075.62	277.136	2.4867
39	27,368	527,262	12,010.433	18.2656	94	234.75	767.13	212.397	2.2679
40	26,380	499,894	11,819.755	17.9497	95	173.41	532.38	157.898	2.0701
41	25,414	473,514	11,622.428	17.6320	96	124.08	358.97	113.619	1.8931
42	24,470	448,100	11,418.712	17.3122	97	85.884	234.89	79.032	1.7350
43	23,546	423,630	11,207.183	16.9916	98	57.476	149.01	53.126	1.5926
44	22,640	400,084	10,987.106	16.6716	99	37.149	91.532	34.475	1.4639
45	21,752	377,444	10,758.366	16.3522	100	23.144	54.383	21.550	1.3498
46	20,880	355,692	10,520.371	16.0351	101	13.884	31.239	12.962	1.2500
47	20,026	334,812	10,273.854	15.7189	102	8.0220	17.355	7.5036	1.1634
48	19,188	314,786	10,019.513	15.4054	103	4.4704	9.3334	4.1856	1.0878
49	18,368	295,598	9,758.484	15.0931	104	2.4091	4.8630	2.2545	1.0186
					105	1.2579	2.4539	1.1737	.9508
50	17,566	277,230	9,491.143	14.7822	106	.63696	1.1960	.58937	.8777
51	16,782	259,664	9,218.522	14.4728	107	.31261	.55905	.28358	.7883
52	16,015	242,882	8,940.510	14.1659	108	.14842	.24644	.12848	.6604
53	15,265	226,867	8,656.819	13.8619	109	.06800	.09802	.05239	.4415
54	14,531	211,602	8,367.406	13.5621	110	.03002	.03002	.01639	-

TABLE 15. UNITED STATES WHITE MALES: 1949-51—ACTUARIAL FUNCTIONS AT 3 PERCENT INTEREST

(Continuous basis)

x	D_x	$\bar{N}_x$	$\bar{M}_x$	$\bar{a}_x$	x	D_x	$\bar{N}_x$	$\bar{M}_x$	$\bar{a}_x$
0	100,000	2,777,904	17,888.71	27.7790	55	15,839	218,100	9,392.25	13.7698
1	94,108	2,680,872	14,864.61	28.4872	56	15,133	202,616	9,144.46	13.3890
2	91,174	2,588,239	14,668.49	28.3879	57	14,438	187,833	8,886.38	13.0096
3	88,395	2,498,462	14,544.03	28.2647	58	13,754	173,739	8,618.64	12.6319
4	85,730	2,411,406	14,452.05	28.1279	59	13,081	160,324	8,342.02	12.2562
5	83,158	2,326,969	14,375.88	27.9825	60	12,420	147,576	8,057.61	11.8821
6	80,671	2,245,061	14,309.58	27.8298	61	11,771	135,483	7,766.26	11.5099
7	78,263	2,165,600	14,250.16	27.6708	62	11,135	124,032	7,468.30	11.1389
8	75,932	2,088,508	14,198.08	27.5050	63	10,511	113,211	7,164.20	10.7707
9	73,673	2,013,711	14,150.63	27.3331	64	9,899.8	103,007.5	6,855.02	10.4050
10	71,484	1,941,138	14,106.83	27.1549	65	9,303.2	93,408.2	6,542.22	10.0404
11	69,360	1,870,721	14,064.30	26.9712	66	8,721.1	84,398.3	6,226.41	9.6775
12	67,298	1,802,397	14,021.59	26.7823	67	8,153.3	75,963.3	5,907.89	9.3169
13	65,294	1,736,106	13,977.36	26.5891	68	7,599.2	68,089.2	5,586.55	8.9600
14	63,344	1,671,792	13,928.38	26.3923	69	7,059.1	60,762.2	5,263.08	8.6076
15	61,444	1,609,403	13,872.36	26.1930	70	6,534.0	53,967.7	4,938.78	8.2595
16	59,592	1,548,890	13,809.11	25.9916	71	6,024.8	47,690.4	4,615.09	7.9157
17	57,787	1,490,205	13,738.49	25.7879	72	5,531.4	41,914.3	4,292.49	7.5775
18	56,030	1,433,301	13,663.37	25.5810	73	5,054.2	36,623.5	3,971.66	7.2462
19	54,320	1,378,130	13,584.07	25.3706	74	4,593.7	31,801.5	3,653.68	6.9229
20	52,657	1,324,646	13,502.03	25.1561	75	4,151.2	27,430.9	3,340.43	6.6079
21	51,040	1,272,802	13,418.01	24.9373	76	3,728.0	23,493.1	3,033.62	6.3018
22	49,470	1,222,551	13,332.73	24.7130	77	3,325.5	19,968.1	2,735.33	6.0045
23	47,945	1,173,847	13,247.88	24.4832	78	2,944.9	16,834.5	2,447.35	5.7165
24	46,467	1,126,645	13,165.00	24.2461	79	2,587.9	14,069.7	2,171.98	5.4367
25	45,035	1,080,898	13,085.50	24.0013	80	2,255.9	11,649.3	1,911.59	5.1639
26	43,649	1,036,560	13,009.73	23.7476	81	1,949.4	9,548.0	1,667.21	4.8979
27	42,307	993,585	12,937.54	23.4851	82	1,668.4	7,740.4	1,439.57	4.6394
28	41,005	951,932	12,867.01	23.2150	83	1,412.4	6,201.1	1,229.12	4.3905
29	39,742	911,562	12,797.24	22.9370	84	1,181.0	4,905.4	1,035.99	4.1536
30	38,516	872,436	12,728.25	22.6513	85	974.00	3,828.8	860.83	3.9310
31	37,326	834,518	12,659.24	22.3576	86	791.45	2,946.87	704.35	3.7234
32	36,170	797,773	12,589.48	22.0562	87	633.23	2,235.26	567.16	3.5299
33	35,046	762,168	12,517.92	21.7476	88	498.61	1,669.96	449.245	3.3492
34	33,953	727,671	12,443.62	21.4317	89	386.27	1,228.04	349.974	3.1792
35	32,888	694,253	12,367.15	21.1096	90	294.33	888.17	268.072	3.0176
36	31,851	661,886	12,286.61	20.7807	91	220.31	631.20	201.649	2.8651
37	30,840	630,543	12,202.29	20.4456	92	161.95	440.34	148.933	2.7190
38	29,854	600,199	12,112.84	20.1045	93	116.72	301.22	107.820	2.5807
39	28,891	570,829	12,017.98	19.7580	94	82.384	201.833	76.418	2.4499
40	27,950	542,411	11,916.86	19.4065	95	56.864	132.330	52.952	2.3271
41	27,029	514,924	11,809.02	19.0508	96	38.341	84.815	35.834	2.2121
42	26,129	488,347	11,694.06	18.6898	97	25.228	53.093	23.6585	2.1045
43	25,247	462,661	11,571.34	18.3254	98	16.185	32.430	15.2266	2.0037
44	24,383	437,848	11,440.59	17.9571	99	10.119	19.3068	9.5479	1.9080
45	23,536	413,891	11,301.57	17.5854	100	6.1555	11.1887	5.8248	1.8177
46	22,704	390,773	11,153.57	17.2116	101	3.6387	6.3036	3.4525	1.7324
47	21,889	368,479	10,996.98	16.8340	102	2.0889	3.4472	1.98697	1.6502
48	21,087	346,993	10,830.70	16.4553	103	1.1642	1.82511	1.11030	1.5677
49	20,300	326,302	10,654.72	16.0740	104	.62967	.93074	.60215	1.4781
50	19,526	306,391	10,469.74	15.6914	105	.33003	.45233	.31666	1.3706
51	18,766	287,247	10,275.09	15.3068	106	.16755	.20432	.161511	1.2195
52	18,017	268,858	10,070.40	14.9225	107	.082287	.079810	.079929	.9699
53	17,281	251,211	9,855.36	14.5368	108	.039066	.019342	.038495	.4951
54	16,555	234,295	9,629.30	14.1525					

TABLE 16. UNITED STATES WHITE FEMALES: 1949-51—ACTUARIAL FUNCTIONS AT 3 PERCENT INTEREST

(Continuous basis)

x	D_x	$\bar{N}_x$	$\bar{M}_x$	$\bar{a}_x$	x	D_x	$\bar{N}_x$	$\bar{M}_x$	$\bar{a}_x$
0	100,000	2,877,756	14,937.09	28.7776	55	17,256	271,243	9,238.84	15.7188
1	94,801	2,780,374	12,616.59	29.3285	56	16,611	254,311	9,093.62	15.3098
2	91,865	2,687,049	12,439.61	29.2500	57	15,977	238,019	8,941.33	14.8976
3	89,090	2,596,579	12,338.37	29.1456	58	15,353	222,356	8,780.87	14.4829
4	86,420	2,508,831	12,261.72	29.0307	59	14,740	207,311	8,611.95	14.0645
5	83,845	2,423,705	12,203.06	28.9070	60	14,135	192,875	8,434.17	13.6452
6	81,353	2,341,112	12,152.91	28.7772	61	13,540	179,039	8,247.52	13.2230
7	78,941	2,260,971	12,110.00	28.6413	62	12,952	165,795	8,051.69	12.8007
8	76,606	2,183,203	12,073.15	28.4991	63	12,373	153,134	7,846.43	12.3765
9	74,342	2,107,735	12,039.70	28.3519	64	11,802	141,048	7,632.92	11.9512
10	72,147	2,034,496	12,010.24	28.1993	65	11,241	129,528	7,411.95	11.5228
11	70,018	1,963,419	11,981.65	28.0416	66	10,688	118,565	7,183.42	11.0933
12	67,952	1,894,439	11,954.60	27.8791	67	10,143	108,150.5	6,946.00	10.6626
13	65,946	1,827,495	11,927.65	27.7120	68	9,602.2	98,279.8	6,697.14	10.2351
14	63,998	1,762,528	11,899.47	27.5404	69	9,064.8	88,948.3	6,435.59	9.8125
15	62,104	1,699,482	11,869.50	27.3651	70	8,530.7	80,152.5	6,161.54	9.3958
16	60,263	1,638,303	11,836.61	27.1859	71	7,999.9	71,889.2	5,874.93	8.9863
17	58,473	1,598,939	11,801.61	27.0029	72	7,472.8	64,154.9	5,576.49	8.5851
18	56,734	1,521,340	11,765.24	26.8153	73	6,950.3	56,945.4	5,267.04	8.1932
19	55,045	1,465,455	11,727.62	26.6229	74	6,434.1	50,255.3	4,948.61	7.8108
20	53,404	1,411,235	11,689.97	26.4256	75	5,926.3	44,077.2	4,623.42	7.4376
21	51,811	1,358,632	11,651.24	26.2228	76	5,428.5	38,401.8	4,293.42	7.0741
22	50,263	1,307,599	11,612.57	26.0151	77	4,942.5	33,218.3	3,960.63	6.7210
23	48,760	1,258,091	11,572.97	25.8017	78	4,469.9	28,514.1	3,627.01	6.3791
24	47,301	1,210,064	11,533.53	25.5822	79	4,012.6	24,274.8	3,295.05	6.0496
25	45,885	1,163,475	11,493.78	25.3563	80	3,573.6	20,483.6	2,968.09	5.7319
26	44,509	1,118,281	11,453.78	25.1248	81	3,155.1	17,121.1	2,648.98	5.4265
27	43,173	1,074,443	11,413.57	24.8869	82	2,759.6	14,165.5	2,340.88	5.1332
28	41,875	1,031,922	11,372.32	24.6429	83	2,389.1	11,592.8	2,046.38	4.8524
29	40,614	990,681	11,330.54	24.3926	84	2,045.4	9,377.1	1,768.25	4.5845
30	39,388	950,683	11,287.05	24.1364	85	1,730.6	7,490.5	1,509.17	4.3283
31	38,197	911,894	11,242.80	23.8734	86	1,445.5	5,903.7	1,270.97	4.0842
32	37,039	874,279	11,196.69	23.6043	87	1,190.9	4,586.7	1,055.30	3.8515
33	35,913	837,806	11,148.86	23.3288	88	966.50	3,509.01	862.78	3.6306
34	34,818	802,443	11,099.08	23.0468	89	771.83	2,640.74	693.77	3.4214
35	33,753	768,160	11,047.50	22.7583	90	605.71	1,952.74	547.99	3.2239
36	32,717	734,928	10,993.92	22.4632	91	466.61	1,417.23	424.72	3.0373
37	31,709	702,718	10,938.16	22.1615	92	352.31	1,008.30	322.503	2.8620
38	30,728	671,502	10,879.41	21.8531	93	260.52	702.31	239.758	2.6958
39	29,772	641,255	10,817.56	21.5389	94	188.25	478.26	174.116	2.5406
40	28,841	611,951	10,752.53	21.2181	95	132.70	318.05	123.303	2.3968
41	27,933	583,566	10,683.96	20.8916	96	91.125	206.331	85.026	2.2643
42	27,048	556,078	10,611.23	20.5589	97	60.895	130.464	57.038	2.1424
43	26,185	529,464	10,534.64	20.2201	98	39.580	80.328	37.205	2.0295
44	25,343	503,702	10,453.92	19.8754	99	24.996	48.109	23.5742	1.9247
45	24,520	478,773	10,368.30	19.5258	100	15.313	28.001	14.4856	1.8286
46	23,717	454,657	10,278.41	19.1701	101	9.0931	15.8279	8.6253	1.7406
47	22,933	431,334	10,183.29	18.8084	102	5.2283	8.6857	4.9716	1.6613
48	22,167	408,786	10,083.57	18.4412	103	2.9137	4.6258	2.7770	1.5876
49	21,418	386,996	9,978.65	18.0687	104	1.5737	2.3885	1.50308	1.5178
					105	.82407	1.19323	.78879	1.4480
50	20,686	365,946	9,869.14	17.6905	106	.41803	.57414	.40105	1.3734
51	19,971	345,620	9,754.73	17.3061	107	.20528	.26351	.19748	1.2837
52	19,271	326,001	9,635.14	16.9167	108	.097471	.112647	.094141	1.1557
53	18,586	307,074	9,509.29	16.5218	109	.044664	.041834	.043427	.9366
54	17,914	288,826	9,377.23	16.1229	110	.019719	.009763	.019430	.4951

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VITAL STATISTICS-SPECIAL REPORTS

LIFE TABLES FOR 1949-51

United States Life Tables for the First Year of Life 1949-51

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Office of Vital Statistics

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United States Life Tables for the First Year of Life: 1949-51*

By Monroe G. Sirken, Chief, Actuarial Analysis Section

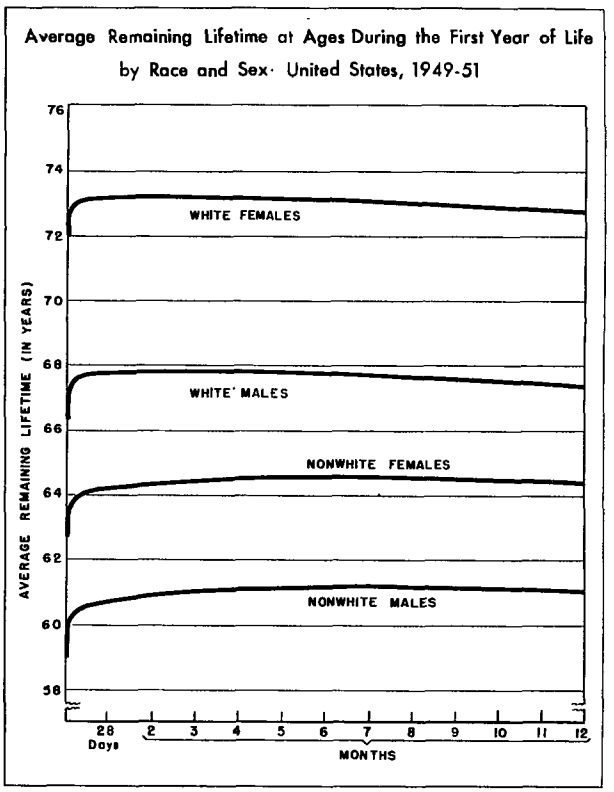
Infant life tables, 1949-51

This report is a supplement to the detailed life tables for the United States, 1949-51,[1] which were published previously. Life tables for the first year of life are given for the nine population groups for which detailed life tables were prepared; namely, for white and nonwhite males and females, for total whites and total nonwhites, for total males and total females, and for the total population. The infant life tables contained in this report are based on tabulations of registered deaths by subdivisions of the first year of life for the 3 years from 1949 through 1951, and on tabulations of registered births during the 4 years from 1948 through 1951, which constitute the cohorts of infants in these age intervals during the 3-year period.

Life table values, 1949-51

The age specific mortality rates for a population group during a particular period may be summarized by the life table method. The basis of the method is a hypothetical closed cohort which is assumed to be subject to these mortality rates. In the detailed life table, a closed cohort of 100,000 births is subject to the prevailing mortality rates for each year of age throughout the lives of the members. However, in the infant life table, a closed cohort is subject to the mortality rates for subdivisions of a year of age, but for the first year of life only. For example, table 1 presents an infant life table for the total population, showing the progress of a cohort starting with 100,000 live births, and subject during subdivisions of the first year of life to the average mortality rates for the 3-year period 1949-51.

The expectation of life is the customary measure of comparative longevity of different populations based on the life table. The expectation of life at a specified age is the average number of years of life remaining for the members of the life table cohort who attain the age in question. Values of the average remaining lifetime at ages during the first year of life are plotted in the chart for each race-sex group. In each case, the curve rises at a rapid rate during the first few days of life. It continues to rise thereafter, but at a much slower rate until the age at which the maximum value of the expectation of life is attained. Then the curve declines at almost an imperceptible rate for the remainder of the first year of life. The maximum value of the expectation of life is attained in the fourth and fifth months by white males, in the third and fourth months by white females, and in the eighth month of life by nonwhite males and nonwhite females.



*The author wishes to acknowledge the assistance of Mr. Gustav A. Carlson in the computation of the tables.

[1]National Office of Vital Statistics, "United States Life Tables, 1949-51," Vital Statistics—Special Reports, vol. 41, No. 1, 1954.

Despite substantial increases in the expectation of life in the first year for each race-sex group, the minimum value for females exceeds the maximum value for males, and the minimum value for whites exceeds the maximum value for nonwhites. However, the differences in longevity among the race-sex groups are largest at birth and become smaller with advancing age. Thus, the difference in the expectation of life between white females and nonwhite males is 1.41 years smaller at 1 year of age than at birth.

Trend of infant life table values for 1929-51

Selected infant life table values for three decennial life tables covering the period 1929 to 1951 are given in tables 3 to 5, by race and sex. The life tables for these periods are based on data for the entire continental United States. However, the values may not be strictly comparable between periods because the improvement in the completeness of registration of births and of infant deaths by subdivisions of the first year of life has not necessarily occurred at the same rate.

There was a spectacular improvement in longevity for all race-sex groups during the past two decades. The expectation of life at birth increased 7.74 years for white males, 9.89 years for white females, 11.36 years for nonwhite males, and 13.19 years for nonwhite females. The rapid decline in infant mortality rates contributed substantially to the improvement in longevity. Thus, the expectation of life at birth would be about 2.2 years smaller for white males and nonwhite males, and about 2.0 years smaller for white females and nonwhite females than the values shown in the 1949-51 life tables, if the infant mortality rates had not changed since 1929-31. Infant mortality rates, according to life tables for the past three decennial periods, are shown in table A.

The improvement in longevity during the past two decades was greater for females than for males, and greater for nonwhites than for whites. The relative improvement in longevity for the race-sex groups, increased the disparity between the sexes and decreased the disparity between the races in the expectation of life at birth. Nevertheless, the disparity in longevity between the races far exceeds the disparity between the sexes in the 1949-51 infant life tables. It is noteworthy, that nonwhites barely attained an expectation of life at birth in 1949-51 that was reached by whites in 1929-31.

TABLE A. INFANT MORTALITY RATES BY RACE AND SEX: UNITED STATES, 1929-31, 1939-41, AND 1949-51

(Deaths under 1 year per 1,000 live births in each race-sex group)

RACE AND SEX	1949-51	1939-41[1]	1929-31[1]
White males	30.69	48.12	62.32
White females	23.55	37.89	49.63
Nonwhite males	50.89	82.28	87.32
Nonwhite females	40.87	65.84	72.04

[1]Figures for nonwhites refer to Negroes only.

Method of constructing the infant life tables

Accuracy of the data.—Tabulations of registered infant deaths and live births in the continental United States were used to prepare the infant life tables in this report. It has been stated that these tables are based on tabulations of registered deaths by subdivisions of the first year of life for the 3 years from 1949 through 1951, and on tabulations of registered live births during the 4 years from 1948 through 1951, which constitute the cohorts of infants in these age intervals during the

TABLE B. MORTALITY DATA EMPLOYED IN THE COMPUTATION OF PROBABILITIES OF DYING DURING SUBDIVISIONS OF THE FIRST YEAR OF LIFE, BY RACE AND SEX: UNITED STATES, 1949-51

AGE INTERVAL	REGISTERED DEATHS UNDER 1 YEAR			
	White		Nonwhite	
	Male	Female	Male	Female
TOTAL	147,760	107,136	37,810	29,695
0-1 day	53,129	37,948	10,828	8,212
1-2 days	16,897	11,321	3,195	2,397
2-3 days	11,517	7,420	2,038	1,417
3-4 days	6,014	3,794	1,214	850
4-5 days	3,234	2,205	830	632
5-6 days	2,365	1,710	705	536
6-7 days	1,737	1,240	513	403
0-1 week	94,893	65,638	19,323	14,447
1-2 weeks	6,587	4,988	2,018	1,624
2-3 weeks	3,657	2,867	1,237	977
3-4 weeks	2,754	1,981	887	728
0-4 weeks	107,891	75,474	23,465	17,776
4 weeks-2 months	8,743	6,202	3,194	2,416
2-3 months	6,600	4,880	2,281	1,917
3-4 months	5,277	4,315	1,860	1,565
4-5 months	4,229	3,378	1,524	1,341
5-6 months	3,423	2,777	1,256	1,116
6-7 months	2,780	2,329	1,085	948
7-8 months	2,363	2,039	863	702
8-9 months	1,992	1,818	707	617
9-10 months	1,705	1,494	601	521
10-11 months	1,411	1,289	518	420
11-12 months	1,346	1,141	456	356

NOTE.—Deaths at ages "not stated" were distributed proportionately.

3-year period. All the basic data actually used in the construction of the infant life tables are presented in tables B and C.

A test of registration completeness for 1950[2] indicated that 98.6 percent of the white births and 93.5 percent of the nonwhite births were registered. In the absence of definitive information on the completeness of infant death registration, it was assumed that the reported statistics of births and of deaths during each subdivision of the first year of life, were equally complete. Information on the extent of misstatement of age reported on death certificates of infants is virtually nonexistent. Since the evidence did not indicate too many deaths at some ages and too few at other ages of the first year of life, the infant mortality statistics were not adjusted for this type of error. Deaths at ages "not stated" were distributed proportionately within each age group, including subdivisions of the first year of life, for each race-sex population category. They represented less than one-tenth of 1 percent of total white deaths and less than three-tenths of 1 percent of total nonwhite deaths.

TABLE C. NATALITY DATA EMPLOYED IN THE COMPUTATION OF PROBABILITIES OF DYING DURING SUBDIVISIONS OF THE FIRST YEAR OF LIFE, BY RACE AND SEX: UNITED STATES, 1949-51

MONTH AND YEAR OF OCCURRENCE	REGISTERED LIVE BIRTHS			
	White		Nonwhite	
	Male	Female	Male	Female
1948-Total-	1,583,344	1,496,972	230,508	224,244
January--	131,939	124,523	19,741	19,291
February-	127,272	120,752	19,082	18,588
March----	134,575	127,449	19,375	19,064
April----	125,208	117,404	17,789	17,235
May------	122,159	115,732	17,563	16,823
June-----	120,829	113,202	17,160	16,521
July-----	137,697	130,018	20,427	19,868
August---	143,493	135,942	20,983	20,550
September	139,642	132,300	20,409	20,160
October--	138,121	131,294	19,490	18,815
November-	130,455	123,237	18,883	17,977
December-	131,954	125,119	19,606	19,352
1949-Total-	1,585,854	1,497,867	240,498	235,310
1950-Total-	1,575,309	1,488,318	248,246	242,276
1951[1]-Total	1,663,782	1,573,290	259,238	254,540
January--	132,430	126,300	22,470	22,338
February-	124,002	117,692	20,064	20,360
March----	138,132	130,862	22,064	21,762
April----	131,530	125,176	20,038	19,180
May------	140,028	131,804	20,988	20,150
June-----	136,146	128,982	20,842	20,818
July-----	145,372	137,036	23,150	22,650
August---	148,554	139,928	23,114	22,668
September	146,512	137,274	22,630	22,292
October--	147,258	138,876	21,678	21,354
November-	135,280	128,576	20,590	19,856
December-	138,538	130,784	21,610	21,112

[1]Based on a 50-percent sample.

[2]For results of the test, see "Birth Registration Completeness in the United States and Geographic Areas, 1950," by Sam Shapiro and Joseph Schachter, Vital Statistics—Special Reports, vol. 39, No. 2, 1954.

Calculation of q_x.—The formula for ${}_tq_x^{1949-51}$, the probability of dying in the age interval x to $x+t$ during the 3-year period, 1949-51, is usually taken as:

$$ {}_tq_x^{1949-51} = \frac{{}_tD_x^{1949-51}}{E_x^{1949-51} + {}_tf_x^{1948}P_x^{1949} - {}_tf_x^{1952}P_x^{1952}} $$

The numerator ${}_tD_x^{1949-51}$ denotes the number dying in the 3-year period 1949-51, whose age at time of death is x to $x+t$. The denominator represents the number of exposures to the risk of death in the age interval x to $x+t$ during the 3-year period 1949-51. The symbol $E_x^{1949-51}$ denotes the number reaching exact age x during the 3-year period. The symbol ${}_tf_x^z$ denotes the fraction of the period between ages x and $x+t$ that the P_x^z infants alive at ages x to $x+t$ on January 1 of calendar year z are exposed, on the average, to the risk of death in calendar year z.

The method that was adopted for estimating the number of exposures involved two basic assumptions which simplified the computations considerably. For each race-sex group, it was assumed that:

(a) the number of deaths among live births that would otherwise have attained age x during the 3-year period 1949-51, is the same as the observed number of deaths at ages prior to x that actually occurred during 1949-51 for each subdivision of the first year of life.

(b) the number of births are divided equally among the days and distributed evenly over each day within each month of the calendar years 1948 and 1951.

Based on these assumptions, the denominator of ${}_t\hat{q}_x^{1949-51}$ (the estimate of ${}_tq_x^{1949-51}$) is one-half the number of births who were exposed during only part of the age interval x to $x+t$ in the period 1949-51 or would have been so exposed if they had not died, plus all other births who attained age x in the period 1949-51 or would have done so had they not died, less the number of deaths prior to age x in the period 1949-51. Thus ${}_t\hat{q}_x^{1949-51}$, the

estimate of the probability of dying during the second day of life is:

$$ {}_{t}\hat{q}_{x}^{1949-51} = \frac{\text{Deaths in the period "1-2 days," 1949-51}}{B^{1949-51} + \frac{3}{62}(B_{12}^{1948} - B_{12}^{1951}) - D^{1949-51}_{\text{under 1 day}}} $$

where $B^{1949-51}$ and "$D^{1949-51}$ *under 1 day,*" respectively, denote the number of births and the number of deaths under 1 day in the 3-year period 1949-51, and B_j^z denotes the number of births during the jth month of calendar year z. The estimate of the probability of dying during the second week of life is:

$$ {}_{t}\hat{q}_{x}^{1949-51} = \frac{\text{Deaths in the period "1-2 weeks," 1949-51}}{B^{1949-51} + \frac{21}{62}(B_{12}^{1948} - B_{12}^{1951}) - D^{1949-51}_{\text{under 1 week}}} $$

And the estimate of the probability of dying during the twelfth month of life is:

$$ {}_{t}\hat{q}_{x}^{1949-51} = \frac{\text{Deaths in the period "11-12 months," 1949-51}}{B^{1948-50} + \frac{1}{2}(B_{1}^{1951} - B_{1}^{1948}) - D^{1949-51}_{\text{under 11 months}}} $$

The estimates of the probability of dying for other subdivisions of the first year of life were obtained by analogous formulas. The formulas employed in the computation of the denominators are listed in table D. It will be noted that the portions of births included for calendar years 1948 and 1951 were not computed precisely for every age interval. Thus, the age interval "4 weeks-2 months" was treated as equivalent to "1 to 2 months," and differences in the length of calendar months were ignored. The computational refinements did not appear to be warranted in these infant life tables in view of their negligible effect. The denominators of the probabilities of dying for combinations of population groups were obtained by aggregating the denominators for the component population groups.

The original values of the probabilities of dying during subdivisions of the first year of life were adjusted slightly for nonwhite males, nonwhite females, total males, total females, and for the total population. This was done in order to achieve agreement between the infant mortality rates based

TABLE D. FORMULAS EMPLOYED IN THE COMPUTATION OF THE NUMBER OF EXPOSURES TO THE RISK OF DEATH BY SUBDIVISIONS OF THE FIRST YEAR OF LIFE: UNITED STATES, 1949-51

AGE INTERVAL (1)	Registered births in these months (2)	Registered deaths at stated ages subtracted from the sum of births in column (2) (3)
0-1 day----------	1/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 61/62 Dec. 1951	None
1-2 days---------	3/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 59/62 Dec. 1951	0-1 day in 1949-51
2-3 days---------	5/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 57/62 Dec. 1951	0-2 days in 1949-51
3-4 days---------	7/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 55/62 Dec. 1951	0-3 days in 1949-51
4-5 days---------	9/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 53/62 Dec. 1951	0-4 days in 1949-51
5-6 days---------	11/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 51/62 Dec. 1951	0-5 days in 1949-51
6-7 days---------	13/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 49/62 Dec. 1951	0-6 days in 1949-51
0-1 week[1]		
1-2 weeks--------	21/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 41/62 Dec. 1951	0-1 week in 1949-51
2-3 weeks--------	35/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 27/62 Dec. 1951	0-2 weeks in 1949-51
3-4 weeks--------	49/62 Dec. 1948 + Jan. 1949 through Nov. 1951 + 13/62 Dec. 1951	0-3 weeks in 1949-51
0-4 weeks[2]		
4 weeks-2 months-	1/2 Nov. 1948 + Dec. 1948 through Oct. 1951 + 1/2 Nov. 1951	0-4 weeks in 1949-51
2-3 months-------	1/2 Oct. 1948 + Nov. 1948 through Sept. 1951 + 1/2 Oct. 1951	0-2 months in 1949-51
3-4 months-------	1/2 Sept. 1948 + Oct. 1948 through Aug. 1951 + 1/2 Sept. 1951	0-3 months in 1949-51
4-5 months-------	1/2 Aug. 1948 + Sept. 1948 through July 1951 + 1/2 Aug. 1951	0-4 months in 1949-51
5-6 months-------	1/2 July 1948 + Aug. 1948 through June 1951 + 1/2 July 1951	0-5 months in 1949-51
6-7 months-------	1/2 June 1948 + July 1948 through May 1951 + 1/2 June 1951	0-6 months in 1949-51
7-8 months-------	1/2 May 1948 + June 1948 through Apr. 1951 + 1/2 May 1951	0-7 months in 1949-51
8-9 months-------	1/2 Apr. 1948 + May 1948 through Mar. 1951 + 1/2 Apr. 1951	0-8 months in 1949-51
9-10 months------	1/2 Mar. 1948 + Apr. 1948 through Feb. 1951 + 1/2 Mar. 1951	0-9 months in 1949-51
10-11 months-----	1/2 Feb. 1948 + Mar. 1948 through Jan. 1951 + 1/2 Feb. 1951	0-10 months in 1949-51
11-12 months-----	1/2 Jan. 1948 + Feb. 1948 through Dec. 1950 + 1/2 Jan. 1951	0-11 months in 1949-51

[1]The probability of dying during the interval "0-1 week" was derived directly from life table deaths during the first 7 days of life.

[2]The probability of dying during the interval "0-4 weeks" was derived directly from life table deaths during the first 4 weeks of life.

on them and on those calculated by another procedure and published in an earlier life table report.[3] In almost all instances in this report the published values of the probabilities of dying during subdivisions of the first year of life were unaffected by the adjustment. The adjustment method, itself, is described in the following section.

Calculation of l_x and ${}_td_x$.—The values of l_x and ${}_td_x$ were obtained by successive multiplication starting with a radix of 100,000 live births by the formulas:

$$ {}_td_x = l_x \; {}_tq_x $$

$$ l_{x+t} = l_x - {}_td_x $$

In the computations, values of ${}_tq_x$ were carried to seven decimal places unrounded, and three decimals unrounded were retained in the l_x and d_x values. The set of values of ${}_tq_x$ for a population group was revised if the sum of the original set of ${}_td_x$ values for all subdivisions of the first year of life, rounded to the nearest integer, was different from the respective number of infant deaths, d_o, published in the previous life table report.[4] The adjustment was made by multiplying each of the original ${}_td_x$ values by the ratio, d_o divided by the sum of the original ${}_td_x$. Revised values of l_x and ${}_tq_x$ were obtained by reapplication of the above formulas.

The probabilities of dying during the intervals "0-1 week" and "0-1 month" were obtained by dividing the sum of the calculated deaths for subdivisions of the respective age intervals by the radix of 100,000 births. For example, the probability of dying during the interval "0-1 week" was computed as the sum of the calculated number of life table deaths on each day of the first week of life divided by the radix of 100,000 births.

In the published tables, all the l_x values were rounded to the nearest integer, while the d_x values were obtained by differencing the published l_x column, and, for that reason, differ slightly in some cases from the figures which would result from rounding the originally calculated d_x values directly. The published ${}_tq_x$ values were rounded at five decimal places.

Calculation of ${}_tL_x$.—Except for the first day of life, it was assumed that infants who die between the age x and $x + t$ live on the average half the period. The following formula was employed:

$$ {}_tL_x = \tfrac{1}{2}\, t\, (l_x + l_{x+t}) $$

The values of t were taken as 1/365, 7/365, and 28/365, respectively, for periods of 1 day, of 1 week, and of 28 days. The method employed to evaluate t as fractions of a year for longer periods was consistent with the processing rules used in the National Office of Vital Statistics in the regular tabulations of deaths by age. The first month of life was regarded as containing exactly 30 days and each successive month as containing exactly one-eleventh of the remaining 365 days or 30 and 5/11 days. Therefore, the period "28 days-2 months" contained 2 more than 30 and 5/11 days and the value of t was taken as 32 and 5/11 days divided by 365 days or 357/4015. The value of t for periods of exactly 1 month was taken as 30 and 5/11 days divided by 365 days or 335/4015.

For the first day of life, ${}_tL_o$ was obtained by the formula:

$$ {}_tL_o = t \left[l_o - (1 - {}_tf_o) \; {}_td_o \right] $$

where ${}_tf_o$ denotes the fraction of deaths under 1 day which occurred on the day following birth. Deaths under 1 day are not tabulated according to whether death occurred on the same day as birth or on the following day. Another alternative is to estimate the values of ${}_tf_o$ by making use of tabulations of deaths by subdivisions of the first day of life. However, detailed tabulations of that kind were not made during the 3-year period 1949-51, but it was felt that they could be approximated with sufficient accuracy from existing tabulations for purposes of evaluating ${}_tf_o$. Of the total number of deaths under 1 day, the estimate of the proportion of deaths under 1 hour was based on a study of neonatal mortality conducted in connection with the 1950 test for the underregistration of births,[5] and the estimates of the proportion of deaths in each of the other subdivisions of the first day of life except for the interval "1-3 hours" were based on unpublished provisional tabulations of infant deaths for 1948. The undistributed proportion of deaths under 1 day was allotted to the interval "1-3 hours." The estimates of deaths under 1 day by age, race, and sex based on these computations are presented in table E.

It was assumed that within each age interval shown, 1/24 of the total deaths occurred on each hour of the first day of life, and that infants who died in each period lived on the average half the period. On this basis, only births during the last 1/2 hour of the first day of life, died under 1 hour of age on the second day of life. Therefore, 1/2 of 1/24, or 1/48 of the deaths under 1 hour, occurred on the day following birth. It may be helpful to give one further illustration. Only births during

[3] Op. cit., vol. 41, No. 1.

[4] Op. cit., vol. 41, No. 1.

[5] The tabulation is based on neonatal deaths among infants born in the United States between January 1 and March 31, 1950. For a discussion of the source of data, see "Weight at Birth and Its Effect on Survival of the Newborn in the United States, Early 1950," by Sam Shapiro and Jeanne Unger, Vital Statistics—Special Reports, vol. 39, No. 1, 1954.

TABLE E. ESTIMATES OF DEATHS UNDER 1 DAY BY AGE, RACE, AND SEX: UNITED STATES, 1949-51

AGE INTERVAL	WHITE		NONWHITE	
	Male	Female	Male	Female
Total under 1 day	53,129	37,948	10,828	8,212
Under 1 hour	10,412	8,789	2,120	1,684
1-3 hours	9,827	6,461	2,240	1,654
3-6 hours	9,932	6,282	2,160	1,463
6-12 hours	13,226	9,200	2,550	2,123
12-18 hours	6,725	4,936	1,233	926
18-24 hours	3,007	2,280	525	362

the last $4\frac{1}{2}$ hours of the first day of life died in the age period "3-6 hours" on the second day of life. Therefore, 9/2 of 1/24, or 3/16 of the deaths between 3 and 6 hours, occurred on the day following birth. Fractions for other subdivisions of the first day of life were obtained by similar reasoning and are distributed in table F.

The following procedure was employed to estimate the values of ${}_tf_o$ shown in table G for each race-sex category. The product of the number of deaths (shown in table E) and the proportion of deaths assumed to represent births of the previous day for the respective age period (shown in table F) gave the number of deaths during the particular age period representing births of the previous day. In a similar manner, the number of deaths representing births of the preceding day was obtained separately for each age interval, and the sum of these deaths was divided

TABLE F. PROPORTION OF DEATHS UNDER 1 DAY OF AGE ASSUMED TO REPRESENT BIRTHS OF THE PREVIOUS DAY

AGE AT DEATH	Assumed proportion born on previous day
Under 1 hour	1/48
1-3 hours	1/12
3-6 hours	3/16
6-12 hours	3/8
12-18 hours	5/8
18-24 hours	7/8

TABLE G. VALUES OF ${}_tf_o$ FOR DEATHS UNDER 1 DAY BY RACE AND SEX: UNITED STATES, 1949-51

RACE AND SEX	Values of ${}_tf_o$
White males	0.276
White females	.275
Nonwhite males	.261
Nonwhite females	.260

by the total number of deaths under 1 day to obtain estimates of ${}_tf_o$ for each population category.

The values of ${}_tf_o$ are primarily of theoretical interest in this report since substantial variations in their values have very small effect on the resulting values of ${}_tL_x$ for the first day of life. For example, the published values of ${}_tL_x$ for the first day of life based on values of ${}_tf_o$ shown in table G and on values of ${}_tf_o$ equal to $\frac{1}{2}$ would differ from each other by 1 at most in each of the 1949-51 life tables.

All values of ${}_tL_x$ were retained to two decimal places unrounded for use in subsequent calculations. The published ${}_tL_x$ values were obtained by differencing the published T_x column, and therefore differ slightly in some cases from the figures which would result from rounding the originally calculated L_x values directly.

Computation of T_x and $\overset{o}{e}_x$.—Values of T_x for subdivisions of the first year of life were obtained by adding the value of T_x at age 1, which was published earlier,[6] to the accumulated values of ${}_tL_x$ down to and including the youngest age interval. The values of $\overset{o}{e}_x$ were computed by the formula:

$$\overset{o}{e}_x = \frac{T_x}{l_x}$$

The T_x values were unrounded at two decimals, and the l_x values were used to the full number of decimals originally retained. The published values of T_x were rounded to the nearest integer, and those of $\overset{o}{e}_x$ were rounded at two decimals.

Values of T_o for the separate population groups published in this report are not precisely equal to the respective values of T_o published earlier. However, the differences are sufficiently small in all cases so that the published values of $\overset{o}{e}_o$ in both reports are identical.

[6] Op. cit., vol. 41, No. 1.

EXPLANATION OF THE COLUMNS OF THE LIFE TABLE FOR THE FIRST YEAR OF LIFE

Both the descriptive titles and the conventional actuarial symbols appear at the head of the columns in each of the tables. The description which follows gives a more detailed explanation of the seven columns of the life table.

Column 1—Age interval (x to x + t).—The age interval shown in column 1 is the interval between the two exact ages indicated. For instance, "3-4 days" indicates the 24 hour interval between the completion of the third and fourth days following birth, in other words, the fourth day of life.

Column 2—Proportion dying ($_tq_x$).—This column shows the proportion dying in the indicated age interval during the first year of life among those alive at the beginning of the interval. For example, the proportion dying in the age interval "3-4 days" for white males is .00127. In other words, during 1949-51 out of every 100,000 white males alive at exactly 3 days of age, 127 would die before reaching 4 days of age. The "proportion dying" column forms the basis of the life table, all other columns being derived from it.

Column 3—Number living (l_x).—This column shows the number of persons who survive to the beginning of the indicated age interval out of a cohort of 100,000 births, among whom the proportions dying in each age interval during the first year of life are exactly those shown in column 2. Thus, out of 100,000 white male babies born alive, 98,899 will complete the first day of life and enter the second, 98,549 will begin the third day; 98,033 will reach 1 week of age; and 96,960 will live to be 11 months old.

Column 4—Number dying ($_td_x$).— This column shows the number dying in each successive age interval during the first year of life out of 100,000 births. Out of 100,000 white males born alive, 1,101 will die in the first day of life, 350 on the second day, 136 in the second week of life, and 29 in the twelfth month of life. Each figure in column 4 is the difference between two successive figures in column 3.

Columns 5 and 6—Stationary population ($_tL_x$ and T_x).—Suppose that a group of 100,000 individuals like that assumed in columns 3 and 4 is born every year, and that the proportions dying in each such group in each age interval of the first year of life are exactly those shown in column 2 in this report and the proportions dying in each such group in each subsequent year of life throughout the lives of the members are exactly those shown in column 2 of United States Life Tables, 1949-51.[7] If there were no migration and if the births were evenly distributed over the calendar year, the survivors of these births would make up what is called a stationary population—stationary because in such a population the number of persons living in any given age interval would never change. When an individual left an interval, either by death or by growing older and entering the next higher age interval, his place would immediately be taken by some one entering from the next lower age interval. Thus, a census taken at any time in such a stationary community would always show the same total population and the same numerical distribution of that population among the the various age intervals. In such a stationary population supported by 100,000 annual births, column 3 shows the number of persons who, each year, reach the beginning of the age interval indicated in column 1, while column 4 shows the number of persons who die each year in the indicated age interval.

Column 5, $_tL_x$, shows the number of persons in the stationary population in the indicated age interval of the first year of life. For example, the figure given for white males in the age interval "3-4 days" is 269. This means that a stationary population supported by 100,000 annual births and with proportions dying in each age group interval always in accordance with column 2, a census taken on any date would show 269 infants between 3 and 4 days old. The number of persons in the stationary population in each year of life at subsequent single years of age, is shown in column 5 of United States Life Tables, 1949-51.[8]

Column 6, T_x, shows the total number of persons in the stationary population (column 5) in the indicated age interval and all subsequent age intervals. For example, in the stationary population of white males referred to in the last illustration, column 6 shows that there would be at any given moment a total of 6,630,565 persons who are 3 days old or older. The population at all ages 0 and above (in other words, the total population of the stationary community) would be 6,631,377.

Column 7—Average remaining lifetime ($\mathring{e}_x$).—The average remaining lifetime (also called the complete expectation of life) at any age is the average number of years to be lived by those surviving to that age, on the basis of a given set of age-specific rates of dying. In order to arrive at this value, it is first necessary to observe that the figures in column 5 of the life tables can also be interpreted in terms of a single life table cohort, without introducing the concept of the stationary population. From this point of view, each figure in column 5 represents the total time (in years) lived between the beginning and end of the indicated age interval by all those reaching the beginning of the age interval among the survivors of a cohort of 100,000 live births. Then, the figure 269 for white males in the age interval "3-4 days" is the total number of years lived during the fourth day of life by the 98,310 (column 3) who reach the age of exactly 3 days out of 100,000 infants born alive. The corresponding figure in column 6 (6,630,565) is the total number of years lived after attaining 3 days of age by the 98,310 reaching that age. This number of years divided by the number of persons (6,630,565 divided by 98,310) gives 67.45 years as the average remaining lifetime of white males at age 3 days.

[7] Op. cit., vol. 41, No. 1.

[8] Op. cit., vol. 41, No. 1.

TABLE 1. LIFE TABLE FOR THE FIRST YEAR OF LIFE, TOTAL POPULATION: UNITED STATES, 1949-51

AGE INTERVAL	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of infants alive at beginning of age interval dying during interval	Number living at beginning of age interval	Number dying during age interval	In the age interval	In this and all subsequent age intervals	Average number of years of life remaining at beginning of age interval
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x + t$	${}_tq_x$	l_x	${}_td_x$	${}_tL_x$	T_x	$\mathring{e}_x$
0-1 day	0.01014	100,000	1,014	272	6,807,193	68.07
1-2 days	.00314	98,986	311	271	6,806,921	68.77
2-3 days	.00209	98,675	206	270	6,806,650	68.98
3-4 days	.00111	98,469	110	270	6,806,380	69.12
4-5 days	.00065	98,359	63	269	6,806,110	69.20
5-6 days	.00050	98,296	49	269	6,805,841	69.24
6-7 days	.00036	98,247	36	269	6,805,572	69.27
0-1 week	.01789	100,000	1,789	1,890	6,807,193	68.07
1-2 weeks	.00143	98,211	140	1,882	6,805,303	69.29
2-3 weeks	.00082	98,071	81	1,880	6,803,421	69.37
3-4 weeks	.00060	97,990	58	1,879	6,801,541	69.41
0-4 weeks	.02068	100,000	2,068	7,531	6,807,193	68.07
4 weeks-2 months	.00194	97,932	190	8,699	6,799,662	69.43
2-3 months	.00148	97,742	145	8,149	6,790,963	69.48
3-4 months	.00123	97,597	120	8,138	6,782,814	69.50
4-5 months	.00100	97,477	97	8,129	6,774,676	69.50
5-6 months	.00082	97,380	80	8,122	6,766,547	69.49
6-7 months	.00068	97,300	66	8,116	6,758,425	69.46
7-8 months	.00057	97,234	56	8,111	6,750,309	69.42
8-9 months	.00050	97,178	48	8,106	6,742,198	69.38
9-10 months	.00042	97,130	41	8,103	6,734,092	69.33
10-11 months	.00035	97,089	34	8,099	6,725,989	69.28
11-12 months	.00032	97,055	31	8,097	6,717,890	69.22

TABLE 2. LIFE TABLES FOR THE FIRST YEAR OF LIFE, BY RACE AND SEX: UNITED STATES, 1949-51

AGE INTERVAL	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of infants alive at beginning of age interval dying during interval	Number living at beginning of age interval	Number dying during age interval	In the age interval	In this and all subsequent age intervals	Average number of years of life remaining at beginning of age interval
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x + t$	${}_tq_x$	l_x	${}_td_x$	${}_tL_x$	T_x	$\mathring{e}_x$
TOTAL MALES						
0-1 day	0.01148	100,000	1,148	272	6,547,109	65.47
1-2 days	.00365	98,852	361	270	6,546,837	66.23
2-3 days	.00247	98,491	243	270	6,546,567	66.47
3-4 days	.00132	98,248	130	269	6,546,297	66.63
4-5 days	.00074	98,118	73	269	6,546,028	66.72
5-6 days	.00056	98,045	55	269	6,545,759	66.76
6-7 days	.00041	97,990	40	268	6,545,490	66.80
0-1 week	.02050	100,000	2,050	1,887	6,547,109	65.47
1-2 weeks	.00158	97,950	155	1,877	6,545,222	66.82
2-3 weeks	.00090	97,795	87	1,875	6,543,345	66.91
3-4 weeks	.00067	97,708	66	1,873	6,541,470	66.95
0-4 weeks	.02358	100,000	2,358	7,512	6,547,109	65.47
4 weeks-2 months	.00220	97,642	215	8,672	6,539,597	66.98
2-3 months	.00164	97,427	160	8,122	6,530,925	67.03
3-4 months	.00132	97,267	128	8,110	6,522,803	67.06
4-5 months	.00107	97,139	104	8,101	6,514,693	67.07
5-6 months	.00087	97,035	85	8,093	6,506,592	67.05
6-7 months	.00072	96,950	70	8,086	6,498,499	67.03
7-8 months	.00061	96,880	59	8,081	6,490,413	66.99
8-9 months	.00051	96,821	49	8,076	6,482,332	66.95
9-10 months	.00044	96,772	43	8,073	6,474,256	66.90
10-11 months	.00037	96,729	35	8,069	6,466,183	66.85
11-12 months	.00034	96,694	33	8,066	6,458,114	66.79
TOTAL FEMALES						
0-1 day	0.00873	100,000	873	272	7,095,821	70.96
1-2 days	.00262	99,127	259	271	7,095,549	71.58
2-3 days	.00169	98,868	167	271	7,095,278	71.77
3-4 days	.00089	98,701	88	270	7,095,007	71.88
4-5 days	.00054	98,613	53	270	7,094,737	71.95
5-6 days	.00043	98,560	43	270	7,094,467	71.98
6-7 days	.00032	98,517	31	270	7,094,197	72.01
0-1 week	.01514	100,000	1,514	1,894	7,095,821	70.96
1-2 weeks	.00127	98,486	125	1,888	7,093,927	72.03
2-3 weeks	.00074	98,361	73	1,886	7,092,039	72.10
3-4 weeks	.00052	98,288	51	1,884	7,090,153	72.14
0-4 weeks	.01763	100,000	1,763	7,552	7,095,821	70.96
4 weeks-2 months	.00166	98,237	163	8,728	7,088,269	72.15
2-3 months	.00132	98,074	129	8,178	7,079,541	72.19
3-4 months	.00114	97,945	112	8,168	7,071,363	72.20
4-5 months	.00092	97,833	90	8,159	7,063,195	72.20
5-6 months	.00076	97,743	74	8,152	7,055,036	72.18
6-7 months	.00064	97,669	63	8,147	7,046,884	72.15
7-8 months	.00054	97,606	52	8,142	7,038,737	72.11
8-9 months	.00048	97,554	47	8,138	7,030,595	72.07
9-10 months	.00040	97,507	39	8,134	7,022,457	72.02
10-11 months	.00034	97,468	33	8,131	7,014,323	71.97
11-12 months	.00030	97,435	29	8,129	7,006,192	71.91

TABLE 2. LIFE TABLES FOR THE FIRST YEAR OF LIFE, BY RACE AND SEX: UNITED STATES, 1949-51—Continued

AGE INTERVAL	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of infants alive at beginning of age interval dying during interval	Number living at beginning of age interval	Number dying during age interval	In the age interval	In this and all subsequent age intervals	Average number of years of life remaining at beginning of age interval
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x + t$	${}_tq_x$	l_x	${}_td_x$	${}_tL_x$	T_x	$\mathring{e}_x$
TOTAL WHITES						
0-1 day	0.00971	100,000	971	272	6,902,072	69.02
1-2 days	.00304	99,029	300	271	6,901,800	69.69
2-3 days	.00204	98,729	202	270	6,901,529	69.90
3-4 days	.00106	98,527	105	270	6,901,259	70.04
4-5 days	.00059	98,422	58	270	6,900,989	70.12
5-6 days	.00044	98,364	43	269	6,900,719	70.15
6-7 days	.00032	98,321	32	269	6,900,450	70.18
0-1 week	.01711	100,000	1,711	1,891	6,902,072	69.02
1-2 weeks	.00126	98,289	123	1,884	6,900,181	70.20
2-3 weeks	.00071	98,166	70	1,882	6,898,297	70.27
3-4 weeks	.00051	98,096	50	1,881	6,896,415	70.30
0-4 weeks	.01954	100,000	1,954	7,538	6,902,072	69.02
4 weeks-2 months	.00163	98,046	160	8,711	6,894,534	70.32
2-3 months	.00125	97,886	122	8,162	6,885,823	70.35
3-4 months	.00105	97,764	103	8,153	6,877,661	70.35
4-5 months	.00084	97,661	82	8,145	6,869,508	70.34
5-6 months	.00068	97,579	66	8,139	6,861,363	70.32
6-7 months	.00056	97,513	55	8,134	6,853,224	70.28
7-8 months	.00049	97,458	48	8,130	6,845,090	70.24
8-9 months	.00042	97,410	41	8,126	6,836,960	70.19
9-10 months	.00036	97,369	35	8,123	6,828,834	70.13
10-11 months	.00030	97,334	29	8,120	6,820,711	70.08
11-12 months	.00028	97,305	27	8,118	6,812,591	70.01
TOTAL NONWHITES						
0-1 day	0.01288	100,000	1,288	271	6,073,271	60.73
1-2 days	.00383	98,712	378	270	6,073,000	61.52
2-3 days	.00238	98,334	234	269	6,072,730	61.76
3-4 days	.00142	98,100	139	269	6,072,461	61.90
4-5 days	.00101	97,961	99	268	6,072,192	61.99
5-6 days	.00086	97,862	84	268	6,071,924	62.05
6-7 days	.00063	97,778	62	268	6,071,656	62.10
0-1 week	.02284	100,000	2,284	1,883	6,073,271	60.73
1-2 weeks	.00252	97,716	247	1,872	6,071,388	62.13
2-3 weeks	.00154	97,469	150	1,868	6,069,516	62.27
3-4 weeks	.00112	97,319	109	1,865	6,067,648	62.35
0-4 weeks	.02790	100,000	2,790	7,488	6,073,271	60.73
4 weeks-2 months	.00392	97,210	381	8,627	6,065,783	62.40
2-3 months	.00295	96,829	286	8,067	6,057,156	62.56
3-4 months	.00242	96,543	234	8,046	6,049,089	62.66
4-5 months	.00204	96,309	196	8,028	6,041,043	62.73
5-6 months	.00170	96,113	163	8,013	6,033,015	62.77
6-7 months	.00146	95,950	141	8,000	6,025,002	62.79
7-8 months	.00113	95,809	109	7,990	6,017,002	62.80
8-9 months	.00096	95,700	92	7,981	6,009,012	62.79
9-10 months	.00082	95,608	78	7,974	6,001,031	62.77
10-11 months	.00069	95,530	66	7,968	5,993,057	62.74
11-12 months	.00060	95,464	57	7,963	5,985,089	62.69

TABLE 2. LIFE TABLES FOR THE FIRST YEAR OF LIFE, BY RACE AND SEX: UNITED STATES, 1949-51—Continued

AGE INTERVAL	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of infants alive at beginning of age interval dying during interval	Number living at beginning of age interval	Number dying during age interval	In the age interval	In this and all subsequent age intervals	Average number of years of life remaining at beginning of age interval
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x + t$	${}_tq_x$	l_x	${}_td_x$	${}_tL_x$	T_x	$\mathring{e}_x$
WHITE MALES						
0-1 day	0.01101	100,000	1,101	272	6,631,377	66.31
1-2 days	.00354	98,899	350	270	6,631,105	67.05
2-3 days	.00242	98,549	239	270	6,630,835	67.28
3-4 days	.00127	98,310	125	269	6,630,565	67.45
4-5 days	.00068	98,185	67	269	6,630,296	67.53
5-6 days	.00050	98,118	49	269	6,630,027	67.57
6-7 days	.00037	98,069	36	269	6,629,758	67.60
0-1 week	.01967	100,000	1,967	1,888	6,631,377	66.31
1-2 weeks	.00139	98,033	136	1,879	6,629,489	67.62
2-3 weeks	.00077	97,897	76	1,877	6,627,610	67.70
3-4 weeks	.00058	97,821	57	1,875	6,625,733	67.73
0-4 weeks	.02236	100,000	2,236	7,519	6,631,377	66.31
4 weeks-2 months	.00186	97,764	182	8,685	6,623,858	67.75
2-3 months	.00141	97,582	137	8,136	6,615,173	67.79
3-4 months	.00113	97,445	110	8,126	6,607,037	67.80
4-5 months	.00091	97,335	88	8,118	6,598,911	67.80
5-6 months	.00074	97,247	72	8,111	6,590,793	67.77
6-7 months	.00060	97,175	58	8,106	6,582,682	67.74
7-8 months	.00051	97,117	50	8,101	6,574,576	67.70
8-9 months	.00043	97,067	42	8,097	6,566,475	67.65
9-10 months	.00037	97,025	36	8,094	6,558,378	67.59
10-11 months	.00031	96,989	29	8,091	6,550,284	67.54
11-12 months	.00029	96,960	29	8,089	6,542,193	67.47
WHITE FEMALES						
0-1 day	0.00832	100,000	832	272	7,203,155	72.03
1-2 days	.00250	99,168	249	271	7,202,883	72.63
2-3 days	.00165	98,919	162	271	7,202,612	72.81
3-4 days	.00084	98,757	84	270	7,202,341	72.93
4-5 days	.00049	98,673	48	270	7,202,071	72.99
5-6 days	.00038	98,625	37	270	7,201,801	73.02
6-7 days	.00028	98,588	28	270	7,201,531	73.05
0-1 week	.01440	100,000	1,440	1,894	7,203,155	72.03
1-2 weeks	.00111	98,560	109	1,889	7,201,261	73.06
2-3 weeks	.00064	98,451	63	1,888	7,199,372	73.13
3-4 weeks	.00044	98,388	44	1,886	7,197,484	73.15
0-4 weeks	.01656	100,000	1,656	7,557	7,203,155	72.03
4 weeks-2 months	.00139	98,344	136	8,738	7,195,598	73.17
2-3 months	.00109	98,208	107	8,190	7,186,860	73.18
3-4 months	.00097	98,101	95	8,181	7,178,670	73.18
4-5 months	.00076	98,006	75	8,174	7,170,489	73.16
5-6 months	.00063	97,931	61	8,169	7,162,315	73.14
6-7 months	.00053	97,870	52	8,164	7,154,146	73.10
7-8 months	.00046	97,818	45	8,160	7,145,982	73.05
8-9 months	.00041	97,773	41	8,156	7,137,822	73.00
9-10 months	.00034	97,732	33	8,153	7,129,666	72.95
10-11 months	.00029	97,699	29	8,151	7,121,513	72.89
11-12 months	.00026	97,670	25	8,148	7,113,362	72.83

TABLE 2. LIFE TABLES FOR THE FIRST YEAR OF LIFE, BY RACE AND SEX: UNITED STATES, 1949-51—Continued

AGE INTERVAL	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of infants alive at beginning of age interval dying during interval	Number living at beginning of age interval	Number dying during age interval	In the age interval	In this and all subsequent age intervals	Average number of years of life remaining at beginning of age interval
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x + t$	${}_tq_x$	l_x	${}_td_x$	${}_tL_x$	T_x	$\mathring{e}_x$
NONWHITE MALES						
0-1 day	0.01449	100,000	1,449	271	5,890,733	58.91
1-2 days	.00434	98,551	428	269	5,890,462	59.77
2-3 days	.00278	98,123	272	268	5,890,193	60.03
3-4 days	.00166	97,851	163	268	5,889,925	60.19
4-5 days	.00114	97,688	111	267	5,889,657	60.29
5-6 days	.00097	97,577	94	267	5,889,390	60.36
6-7 days	.00070	97,483	69	267	5,889,123	60.41
0-1 week	.02586	100,000	2,586	1,877	5,890,733	58.91
1-2 weeks	.00277	97,414	270	1,866	5,888,856	60.45
2-3 weeks	.00171	97,144	166	1,861	5,886,990	60.60
3-4 weeks	.00123	96,978	119	1,859	5,885,129	60.69
0-4 weeks	.03141	100,000	3,141	7,463	5,890,733	58.91
4 weeks-2 months	.00443	96,859	429	8,593	5,883,270	60.74
2-3 months	.00319	96,430	308	8,033	5,874,677	60.92
3-4 months	.00261	96,122	251	8,010	5,866,644	61.03
4-5 months	.00215	95,871	207	7,991	5,858,634	61.11
5-6 months	.00179	95,664	170	7,975	5,850,643	61.16
6-7 months	.00155	95,494	149	7,962	5,842,668	61.18
7-8 months	.00124	95,345	118	7,950	5,834,706	61.20
8-9 months	.00102	95,227	98	7,941	5,826,756	61.19
9-10 months	.00087	95,129	83	7,934	5,818,815	61.17
10-11 months	.00076	95,046	72	7,927	5,810,881	61.14
11-12 months	.00067	94,974	63	7,922	5,802,954	61.10
NONWHITE FEMALES						
0-1 day	0.01123	100,000	1,123	272	6,270,223	62.70
1-2 days	.00332	98,877	328	270	6,269,951	63.41
2-3 days	.00197	98,549	194	270	6,269,681	63.62
3-4 days	.00118	98,355	116	269	6,269,411	63.74
4-5 days	.00088	98,239	86	269	6,269,142	63.82
5-6 days	.00075	98,153	74	269	6,268,873	63.87
6-7 days	.00056	98,079	55	269	6,268,604	63.91
0-1 week	.01976	100,000	1,976	1,888	6,270,223	62.70
1-2 weeks	.00227	98,024	222	1,878	6,268,335	63.95
2-3 weeks	.00137	97,802	134	1,874	6,266,457	64.07
3-4 weeks	.00102	97,668	100	1,872	6,264,583	64.14
0-4 weeks	.02432	100,000	2,432	7,512	6,270,223	62.70
4 weeks-2 months	.00340	97,568	331	8,661	6,262,711	64.19
2-3 months	.00271	97,237	264	8,102	6,254,050	64.32
3-4 months	.00223	96,973	216	8,082	6,245,948	64.41
4-5 months	.00192	96,757	186	8,065	6,237,866	64.47
5-6 months	.00161	96,571	155	8,051	6,229,801	64.51
6-7 months	.00137	96,416	133	8,039	6,221,750	64.53
7-8 months	.00102	96,283	99	8,029	6,213,711	64.54
8-9 months	.00091	96,184	87	8,022	6,205,682	64.52
9-10 months	.00077	96,097	73	8,015	6,197,660	64.49
10-11 months	.00062	96,024	60	8,009	6,189,645	64.46
11-12 months	.00053	95,964	51	8,005	6,181,636	64.42

TABLE 3. PROPORTION OF INFANTS DYING DURING SPECIFIED AGE INTERVALS OF THE FIRST YEAR OF LIFE WHO WERE ALIVE AT THE BEGINNING OF THE AGE INTERVAL, BY RACE AND SEX: UNITED STATES; 1929-31, 1939-41, AND 1949-51

SEX AND AGE	WHITE			NONWHITE		
	1949-51	1939-41	1929-31	1949-51	1939-41[1]	1929-31
MALE						
0-1 day	0.01101	0.01538	0.01660	0.01449	0.01921	---
1-2 days	.00354	.00403	.00470	.00434	.00554	---
2-3 days	.00242	.00257	.00335	.00278	.00417	---
3-7 days	.00282	.00384	.00545	.00446	.00726	---
0-1 week	.01967	.02563	.02982	.02586	.03576	---
1-2 weeks	.00139	.00249	.00360	.00277	.00529	---
2-3 weeks	.00077	.00164	.00249	.00171	.00336	---
3-4 weeks	.00058	[2].00144	[2].00220	.00123	[2].00289	---
0-4 weeks	.02236	[3].03105	[3].03784	.03141	[3].04684	---
4 weeks-2 months	.00186	[4].00359	[4].00529	.00443	[4].00733	---
2-3 months	.00141	.00283	.00428	.00319	.00560	---
3-4 months	.00113	.00227	.00333	.00261	.00480	---
4-5 months	.00091	.00181	.00268	.00215	.00418	---
5-6 months	.00074	.00154	.00230	.00179	.00334	---
6-7 months	.00060	.00126	.00213	.00155	.00314	---
7-8 months	.00051	.00114	.00190	.00124	.00250	---
8-9 months	.00043	.00099	.00179	.00102	.00224	---
9-10 months	.00037	.00085	.00165	.00087	.00180	---
10-11 months	.00031	.00076	.00141	.00076	.00147	---
11-12 months	.00029	.00070	.00127	.00067	.00140	---
FEMALE						
0-1 day	0.00832	0.01187	0.01275	0.01123	0.01486	---
1-2 days	.00250	.00298	.00364	.00332	.00448	---
2-3 days	.00165	.00176	.00235	.00197	.00277	---
3-7 days	.00199	.00285	.00417	.00336	.00510	---
0-1 week	.01440	.01934	.02275	.01976	.02698	---
1-2 weeks	.00111	.00202	.00303	.00227	.00450	---
2-3 weeks	.00064	.00135	.00209	.00137	.00282	---
3-4 weeks	.00044	[2].00111	[2].00172	.00102	[2].00245	---
0-4 weeks	.01656	[3].02372	[3].02941	.02432	[3].03646	---
4 weeks-2 months	.00139	[4].00275	[4].00396	.00340	[4].00596	---
2-3 months	.00109	.00228	.00328	.00271	.00468	---
3-4 months	.00097	.00189	.00267	.00223	.00412	---
4-5 months	.00076	.00153	.00212	.00192	.00341	---
5-6 months	.00063	.00128	.00193	.00161	.00276	---
6-7 months	.00053	.00112	.00172	.00137	.00252	---
7-8 months	.00046	.00094	.00153	.00102	.00194	---
8-9 months	.00041	.00084	.00146	.00091	.00164	---
9-10 months	.00034	.00074	.00139	.00077	.00156	---
10-11 months	.00029	.00062	.00126	.00062	.00113	---
11-12 months	.00026	.00062	.00115	.00053	.00119	---

[1]Figures for nonwhites refer to Negroes only.
[2]3 weeks to 1 month.
[3]0 to 1 month.
[4]1 to 2 months.

Symbol: Three dashes (---) indicate data are not available.

TABLE 4. NUMBER SURVIVING TO THE BEGINNING OF THE SPECIFIED AGE INTERVALS OF THE FIRST YEAR OF LIFE OUT OF 100,000 BORN ALIVE, BY RACE AND SEX: UNITED STATES, 1929-31, 1939-41, AND 1949-51

SEX AND AGE	WHITE			NONWHITE		
	1949-51	1939-41	1929-31	1949-51	1939-41[1]	1929-31
MALE						
0-1 day	100,000	100,000	100,000	100,000	100,000	---
1-2 days	98,899	98,462	98,340	98,551	98,079	---
2-3 days	98,549	98,065	97,878	98,123	97,536	---
3-7 days	98,310	97,813	97,549	97,851	97,129	---
0-1 week	100,000	100,000	100,000	100,000	100,000	---
1-2 weeks	98,033	97,437	97,018	97,414	96,424	---
2-3 weeks	97,897	97,194	96,669	97,144	95,914	---
3-4 weeks	97,821	97,035	96,428	96,978	95,592	---
0-4 weeks	100,000	100,000	100,000	100,000	100,000	---
4 weeks-2 months	97,764	[2]96,895	[2]96,216	96,859	[2]95,316	---
2-3 months	97,582	96,547	95,706	96,430	94,617	---
3-4 months	97,445	96,274	95,297	96,122	94,087	---
4-5 months	97,335	96,055	94,980	95,871	93,635	---
5-6 months	97,247	95,881	94,725	95,664	93,244	---
6-7 months	97,175	95,733	94,507	95,494	92,933	---
7-8 months	97,117	95,612	94,306	95,345	92,641	---
8-9 months	97,067	95,503	94,126	95,227	92,409	---
9-10 months	97,025	95,408	93,957	95,129	92,202	---
10-11 months	96,989	95,327	93,802	95,046	92,036	---
11-12 months	96,960	95,255	93,670	94,974	91,901	---
FEMALE						
0-1 day	100,000	100,000	100,000	100,000	100,000	---
1-2 days	99,168	98,813	98,725	98,877	98,514	---
2-3 days	98,919	98,519	98,366	98,549	98,073	---
3-7 days	98,757	98,346	98,135	98,355	97,801	---
0-1 weeks	100,000	100,000	100,000	100,000	100,000	---
1-2 weeks	98,560	98,066	97,725	98,024	97,302	---
2-3 weeks	98,451	97,868	97,430	97,802	96,864	---
3-4 weeks	98,388	97,736	97,226	97,668	96,591	---
0-4 weeks	100,000	100,000	100,000	100,000	100,000	---
4 weeks-2 months	98,344	[2]97,628	[2]97,059	97,568	[2]96,354	---
2-3 months	98,208	97,360	96,674	97,237	95,780	---
3-4 months	98,101	97,138	96,358	96,973	95,332	---
4-5 months	98,006	96,954	96,100	96,757	94,939	---
5-6 months	97,931	96,806	95,896	96,571	94,615	---
6-7 months	97,870	96,682	95,712	96,416	94,354	---
7-8 months	97,818	96,574	95,547	96,283	94,116	---
8-9 months	97,773	96,483	95,401	96,184	93,933	---
9-10 months	97,732	96,402	95,262	96,097	93,779	---
10-11 months	97,699	96,331	95,130	96,024	93,633	---
11-12 months	97,670	96,271	95,010	95,964	93,527	---

[1]Figures for nonwhites refer to Negroes only.
[2]1 to 2 months.

Symbol: Three dashes (---) indicate data are not available.

TABLE 5. AVERAGE REMAINING LIFETIME IN YEARS AT THE BEGINNING OF THE SPECIFIED AGE INTERVALS OF THE FIRST YEAR OF LIFE, BY RACE AND SEX: UNITED STATES, 1929-31, 1939-41, AND 1949-51

SEX AND AGE	WHITE			NONWHITE		
	1949-51	1939-41	1929-31	1949-51	1939-41[1]	1929-31[1]
MALE						
0-1 day	66.31	62.81	58.57	58.91	52.26	47.55
1-2 days	67.05	63.79	59.56	59.77	53.28	---
2-3 days	67.28	64.05	59.84	60.03	53.57	---
3-7 days	67.45	64.21	60.03	60.19	53.79	---
0-1 week	66.31	62.81	58.57	58.91	52.26	47.55
1-2 weeks	67.62	64.44	60.35	60.45	54.18	---
2-3 weeks	67.70	64.59	60.55	60.60	54.44	---
3-4 weeks	67.73	64.67	60.68	60.69	54.61	---
0-4 weeks	66.31	62.81	58.57	58.91	52.26	47.55
4 weeks-2 months	67.75	[2]64.74	[2]60.79	60.74	[2]54.74	---
2-3 months	67.79	64.89	61.03	60.92	55.06	---
3-4 months	67.80	64.99	61.21	61.03	55.29	---
4-5 months	67.80	65.06	61.33	61.11	55.47	---
5-6 months	67.77	65.09	61.41	61.16	55.62	---
6-7 months	67.74	65.11	61.47	61.18	55.72	---
7-8 months	67.70	65.11	61.52	61.20	55.82	---
8-9 months	67.65	65.10	61.55	61.19	55.87	---
9-10 months	67.59	65.08	61.58	61.17	55.91	---
10-11 months	67.54	65.05	61.60	61.14	55.93	---
11-12 months	67.47	65.02	61.60	61.10	55.93	---
FEMALE						
0-1 day	72.03	67.29	62.14	62.70	55.56	49.51
1-2 days	72.63	68.10	62.93	63.41	56.40	---
2-3 days	72.81	68.30	63.16	63.62	56.65	---
3-7 days	72.93	68.41	63.31	63.74	56.80	---
0-1 week	72.03	67.29	62.14	62.70	55.56	49.51
1-2 weeks	73.06	68.60	63.56	63.95	57.08	---
2-3 weeks	73.13	68.72	63.74	64.07	57.32	---
3-4 weeks	73.15	68.79	63.85	64.14	57.46	---
0-4 weeks	72.03	67.29	62.14	62.70	55.56	49.51
4 weeks-2 months	73.17	[2]68.84	[2]63.93	64.19	[2]57.58	---
2-3 months	73.18	68.95	64.10	64.32	57.84	---
3-4 months	73.18	69.02	64.23	64.41	58.03	---
4-5 months	73.16	69.07	64.32	64.47	58.19	---
5-6 months	73.14	69.09	64.37	64.51	58.30	---
6-7 months	73.10	69.10	64.41	64.53	58.38	---
7-8 months	73.05	69.09	64.44	64.54	58.44	---
8-9 months	73.00	69.07	64.46	64.52	58.47	---
9-10 months	72.95	69.05	64.47	64.49	58.49	---
10-11 months	72.89	69.01	64.47	64.46	58.49	---
11-12 months	72.83	68.97	64.47	64.42	58.48	---

[1]Figures for nonwhites refer to Negroes only.
[2]1 to 2 months.

Symbol: Three dashes (---) indicate data are not available.

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VITAL STATISTICS-SPECIAL REPORTS

LIFE TABLES FOR 1949-51

Life Tables for the Geographic Divisions of the United States 1949-51

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Office of Vital Statistics

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Life Tables for the Geographic Divisions of the United States: 1949-51

This report contains the detailed 1949-51 life tables for the nine geographic divisions of the United States. Separate life tables are presented for males and females among the white population and among the nonwhite population for each division. Detailed life tables by race and sex were computed for the four regions but are not being published. These unpublished life tables are available upon request.

The mortality rates form the basis of the life tables. In general, the mortality rates in this report are based on the 1950 Census of Population and on the average annual number of resident deaths during the 3-year period 1949-51. In deriving the mortality rates at ages under 5, use was made of reported births for each of the 8 years 1944 to 1951, and of deaths among them during this period. Special methods were devised to estimate the mortality rates at ages over 87 for nonwhites, and at ages over 92 for whites because the recorded population and death figures at these ages were regarded as unreliable. Therefore, the life table values at the oldest ages may not represent actual conditions.

The life table assumes that a hypothetical cohort traced from birth is subject, through successive ages, to the mortality rates of a population group under observation during a specified period. For example, table 1 presents a life table for white males in New England; this shows the experience of a cohort starting with 100,000 live births and subject to the average annual mortality rates for successive ages during the 3-year period 1949-51.

The life table shows for this hypothetical cohort the average number of remaining years of life among those who reach each age. The text table below presents values of the average remaining lifetime at selected ages for the United States and its geographic divisions according to the 1949-51 life tables. Values are shown at birth and at ages 25 and 65 for white and nonwhite males and females.

These life tables were computed in the Statistical Bureau of the Metropolitan Life Insurance Company.

AVERAGE REMAINING LIFETIME IN YEARS AT SPECIFIED AGES, BY RACE AND SEX: UNITED STATES AND EACH GEOGRAPHIC DIVISION, 1949-51

AREA	AT BIRTH				AGE 25				AGE 65			
	White		Nonwhite		White		Nonwhite		White		Nonwhite	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
UNITED STATES	66.3	72.0	58.9	62.7	44.9	49.8	39.5	42.4	12.8	15.0	12.8	14.5
New England	66.9	72.1	61.3	64.0	44.9	49.5	41.0	43.4	12.6	14.8	12.1	13.6
Middle Atlantic	66.2	71.2	59.0	63.3	44.3	48.6	39.2	42.6	12.2	14.2	11.8	13.7
East North Central	66.5	71.9	59.1	62.9	45.0	49.5	39.2	42.0	12.7	14.8	11.7	13.8
West North Central	67.8	73.3	57.6	61.3	46.4	50.9	38.8	41.4	13.3	15.5	11.7	13.6
South Atlantic	66.0	72.5	57.5	62.0	44.7	50.3	38.0	41.6	13.0	15.3	13.0	15.1
East South Central	66.0	71.8	58.9	61.8	45.3	50.1	39.7	41.5	13.2	15.1	12.8	14.1
West South Central	66.1	72.6	60.3	63.7	45.6	51.2	41.1	43.6	13.4	16.0	13.6	15.2
Mountain	65.4	71.9	55.4	58.8	45.0	50.4	42.5	44.8	13.1	15.7	14.3	15.7
Pacific	66.1	72.9	63.6	68.1	44.6	50.4	43.1	47.0	12.7	15.6	13.2	16.0

Source: Divisional life tables were computed in the Statistical Bureau of the Metropolitan Life Insurance Company from mortality data supplied by the National Office of Vital Statistics and population data supplied by the U. S. Bureau of the Census.

EXPLANATION OF THE COLUMNS OF THE LIFE TABLE

(Values shown are from table 1)

Column 1—Year of age (x to x + 1).—The year of age, shown in column 1, is the interval between the two exact ages indicated. For instance, "21-22" indicates the interval between the twenty-first birthday and the twenty-second, in other words, the twenty-second year of life.

Column 2—Proportion dying (q_x).—This column shows the proportion dying within 1 year after the birthday indicated among those alive on that birthday. For example, the proportion dying in the age interval 21-22 for white males is .00122. In other words, during 1949-51, out of every 1,000 white males alive and exactly 21 years old, 1.22 would die before reaching their twenty-second birthday. The "proportion dying" column forms the basis of the life table, all the other columns being derived from it.

Column 3—Number living (l_x).— This column shows the number of persons who survive to each age out of a cohort of 100,000 live births, among whom the proportions dying in each age throughout their lives are exactly those shown in column 2. Thus, out of 100,000 white male babies born alive, 97,291 will complete the first year of life and enter the second; 97,129 will begin the third year; 95,708 will reach age 21; and 37,409 will live to age 75.

Column 4—Number dying (d_x).—This column shows the number dying in each successive year of age out of 100,000 live births. Out of 100,000 white males born alive, 2,709 die in the first year of life, 162 in the second year, 117 in the twenty-second year, and 2,854 in the seventy-sixth year. Each figure in column 4 is the difference between two successive figures in column 3.

Columns 5 and 6—Stationary population (L_x and T_x).—Suppose that a group of 100,000 individuals like that assumed in columns 3 and 4 is born every year, and that the proportions dying in each such group in each year of life throughout the lives of the members are exactly those shown in column 2. If there were no migration and if the births were evenly distributed over the calendar year, the survivors of these births would make up what is called a stationary population—stationary because in such a population the number of persons living in any given year of age would never change. When an individual left an age, either by death or by growing older and entering the next higher age, his place would immediately be taken by some one entering from the next lower age. Thus, a census taken at any time in such a stationary community would always show the same total population and the same numerical distribution of that population among the various ages. In such a stationary population supported by 100,000 annual births, column 3 shows the number of persons who, each year, reach the birthday indicated in column 1, while column 4 shows the number of persons who die each year in the indicated age interval.

Column 5, L_x, shows the number of persons in the stationary population in the indicated age interval. For example, the figure given for white males in the year of life 21-22 is 95,649. This means that in a stationary population of white males supported by 100,000 annual births and with proportions dying in each age group always in accordance with column 2, a census taken on any date would show 95,649 persons between 21 and 22 years old.

Column 6, T_x, shows the total number of persons in the stationary population (column 5) in the indicated age interval and all subsequent age intervals. For example, in the stationary population of white males referred to in the last illustration, column 6 shows that there would be at any given moment a total of 4,658,765 persons who have passed their twenty-first birthday. The population at all ages 0 and above (in other words, the white male population of the stationary community) would be 6,686,047.

Column 7—Average remaining lifetime ($\mathring{e}_x$).—The average remaining lifetime (also called the complete expectation of life) at any age is the average number of years remaining to be lived by those surviving to that age, on the basis of a given set of age-specific rates of dying. In order to arrive at this value, it is first necessary to observe that the figures in column 5 of the life tables can also be interpreted in terms of a single life table cohort, without introducing the concept of the stationary population. From this point of view, each figure in column 5 represents the total time (in years) lived between the two indicated birthdays by all those reaching the earlier birthday among the survivors of a cohort of 100,000 live births. Thus, the figure 95,649 for white males in the year of life 21-22 is the total number of years lived between the twenty-first and twenty-second birthdays by the 95,708 (column 3) who reach the twenty-first birthday out of 100,000 white males born alive. The corresponding figure in column 6 (4,658,765) is the total number of years lived after attaining age 21 by the 95,708 reaching that age. This number of years divided by the number of persons (4,658,765 divided by 95,708) gives 48.68 years as the average remaining lifetime of white males at age 21.

TABLE 1. LIFE TABLE FOR WHITE MALES: NEW ENGLAND DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02709	100,000	2,709	97,618	6,686,047	66.86
1-2	.00166	97,291	162	97,210	6,588,429	67.72
2-3	.00124	97,129	120	97,069	6,491,219	66.83
3-4	.00104	97,009	101	96,959	6,394,150	65.91
4-5	.00089	96,908	86	96,865	6,297,191	64.98
5-6	.00075	96,822	73	96,786	6,200,326	64.04
6-7	.00065	96,749	63	96,718	6,103,540	63.09
7-8	.00056	96,686	54	96,659	6,006,822	62.13
8-9	.00050	96,632	48	96,608	5,910,163	61.16
9-10	.00046	96,584	44	96,562	5,813,555	60.19
10-11	.00045	96,540	44	96,518	5,716,993	59.22
11-12	.00046	96,496	44	96,474	5,620,475	58.25
12-13	.00049	96,452	48	96,428	5,524,001	57.27
13-14	.00056	96,404	54	96,377	5,427,573	56.30
14-15	.00066	96,350	63	96,319	5,331,196	55.33
15-16	.00078	96,287	75	96,249	5,234,877	54.37
16-17	.00090	96,212	87	96,168	5,138,628	53.41
17-18	.00099	96,125	95	96,078	5,042,460	52.46
18-19	.00106	96,030	102	95,979	4,946,382	51.51
19-20	.00112	95,928	107	95,874	4,850,403	50.56
20-21	.00118	95,821	113	95,764	4,754,529	49.62
21-22	.00122	95,708	117	95,649	4,658,765	48.68
22-23	.00125	95,591	120	95,531	4,563,116	47.74
23-24	.00126	95,471	120	95,411	4,467,585	46.80
24-25	.00125	95,351	119	95,292	4,372,174	45.85
25-26	.00123	95,232	117	95,173	4,276,882	44.91
26-27	.00123	95,115	117	95,056	4,181,709	43.96
27-28	.00125	94,998	119	94,938	4,086,653	43.02
28-29	.00130	94,879	123	94,817	3,991,715	42.07
29-30	.00136	94,756	129	94,691	3,896,898	41.13
30-31	.00144	94,627	136	94,559	3,802,207	40.18
31-32	.00154	94,491	146	94,418	3,707,648	39.24
32-33	.00167	94,345	157	94,266	3,613,230	38.30
33-34	.00182	94,188	172	94,102	3,518,964	37.36
34-35	.00198	94,016	186	93,923	3,424,862	36.43
35-36	.00216	93,830	203	93,729	3,330,939	35.50
36-37	.00239	93,627	223	93,515	3,237,210	34.58
37-38	.00266	93,404	249	93,279	3,143,695	33.66
38-39	.00298	93,155	278	93,016	3,050,416	32.75
39-40	.00333	92,877	309	92,723	2,957,400	31.84
40-41	.00373	92,568	345	92,396	2,864,677	30.95
41-42	.00417	92,223	385	92,031	2,772,281	30.06
42-43	.00465	91,838	427	91,625	2,680,250	29.18
43-44	.00517	91,411	472	91,175	2,588,625	28.32
44-45	.00572	90,939	520	90,679	2,497,450	27.46
45-46	.00631	90,419	571	90,133	2,406,771	26.62
46-47	.00697	89,848	626	89,535	2,316,638	25.78
47-48	.00770	89,222	687	88,878	2,227,103	24.96
48-49	.00849	88,535	752	88,159	2,138,225	24.15
49-50	.00934	87,783	820	87,373	2,050,066	23.35
50-51	.01025	86,963	891	86,517	1,962,693	22.57
51-52	.01125	86,072	968	85,588	1,876,176	21.80
52-53	.01234	85,104	1,051	84,578	1,790,588	21.04
53-54	.01352	84,053	1,136	83,485	1,706,010	20.30
54-55	.01477	82,917	1,225	82,305	1,622,525	19.57

TABLE 1. LIFE TABLE FOR WHITE MALES: NEW ENGLAND DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01612	81,692	1,317	81,034	1,540,220	18.85
56-57	.01758	80,375	1,413	79,669	1,459,186	18.15
57-58	.01917	78,962	1,513	78,206	1,379,517	17.47
58-59	.02089	77,449	1,618	76,640	1,301,311	16.80
59-60	.02271	75,831	1,722	74,970	1,224,671	16.15
60-61	.02466	74,109	1,828	73,195	1,149,701	15.51
61-62	.02675	72,281	1,933	71,314	1,076,506	14.89
62-63	.02898	70,348	2,039	69,328	1,005,192	14.29
63-64	.03132	68,309	2,140	67,239	935,864	13.70
64-65	.03375	66,169	2,233	65,053	868,625	13.13
65-66	.03634	63,936	2,323	62,775	803,572	12.57
66-67	.03915	61,613	2,412	60,407	740,797	12.02
67-68	.04224	59,201	2,501	57,950	680,390	11.49
68-69	.04559	56,700	2,585	55,408	622,440	10.98
69-70	.04915	54,115	2,660	52,785	567,032	10.48
70-71	.05296	51,455	2,725	50,093	514,247	9.99
71-72	.05706	48,730	2,780	47,340	464,154	9.53
72-73	.06149	45,950	2,826	44,537	416,814	9.07
73-74	.06617	43,124	2,853	41,697	372,277	8.63
74-75	.07106	40,271	2,862	38,840	330,580	8.21
75-76	.07630	37,409	2,854	35,982	291,740	7.80
76-77	.08201	34,555	2,834	33,138	255,758	7.40
77-78	.08831	31,721	2,801	30,320	222,620	7.02
78-79	.09519	28,920	2,753	27,543	192,300	6.65
79-80	.10257	26,167	2,684	24,825	164,757	6.30
80-81	.11046	23,483	2,594	22,186	139,932	5.96
81-82	.11889	20,889	2,484	19,647	117,746	5.64
82-83	.12787	18,405	2,353	17,229	98,099	5.33
83-84	.13730	16,052	2,205	14,949	80,870	5.04
84-85	.14744	13,847	2,042	12,826	65,921	4.76
85-86	.15804	11,805	1,866	10,872	53,095	4.50
86-87	.16922	9,939	1,682	9,098	42,223	4.25
87-88	.18100	8,257	1,494	7,510	33,125	4.01
88-89	.19333	6,763	1,308	6,109	25,615	3.79
89-90	.20618	5,455	1,124	4,893	19,506	3.58
90-91	.21965	4,331	952	3,855	14,613	3.37
91-92	.23381	3,379	790	2,984	10,758	3.18
92-93	.24875	2,589	644	2,267	7,774	3.00
93-94	.26466	1,945	515	1,688	5,507	2.83
94-95	.28148	1,430	402	1,229	3,819	2.67
95-96	.29892	1,028	307	874	2,590	2.52
96-97	.31669	721	229	606	1,716	2.38
97-98	.33450	492	164	410	1,110	2.25
98-99	.35254	328	116	270	700	2.13
99-100	.37100	212	79	173	430	2.02
100-101	.38959	133	52	107	257	1.92
101-102	.40802	81	33	65	150	1.83
102-103	.42600	48	20	38	85	1.74
103-104	.44342	28	13	22	47	1.66
104-105	.46047	15	7	12	25	1.59
105-106	.47731	8	4	6	13	1.52
106-107	.49410	4	2	3	7	1.46
107-108	.51100	2	1	2	4	1.40
108-109	.52810	1		1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 2. LIFE TABLE FOR WHITE FEMALES: NEW ENGLAND DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02086	100,000	2,086	98,197	7,213,712	72.14
1-2	.00144	97,914	141	97,844	7,115,515	72.67
2-3	.00086	97,773	84	97,731	7,017,671	71.78
3-4	.00080	97,689	78	97,650	6,919,940	70.84
4-5	.00063	97,611	62	97,580	6,822,290	69.89
5-6	.00054	97,549	52	97,523	6,724,710	68.94
6-7	.00048	97,497	47	97,473	6,627,187	67.97
7-8	.00042	97,450	41	97,429	6,529,714	67.01
8-9	.00038	97,409	37	97,390	6,432,285	66.03
9-10	.00035	97,372	34	97,355	6,334,895	65.06
10-11	.00033	97,338	32	97,322	6,237,540	64.08
11-12	.00032	97,306	31	97,290	6,140,218	63.10
12-13	.00032	97,275	32	97,259	6,042,928	62.12
13-14	.00033	97,243	32	97,227	5,945,669	61.14
14-15	.00035	97,211	34	97,194	5,848,442	60.16
15-16	.00038	97,177	37	97,159	5,751,248	59.18
16-17	.00042	97,140	40	97,120	5,654,089	58.21
17-18	.00045	97,100	44	97,078	5,556,969	57.23
18-19	.00048	97,056	47	97,033	5,459,891	56.26
19-20	.00052	97,009	50	96,984	5,362,858	55.28
20-21	.00056	96,959	54	96,932	5,265,874	54.31
21-22	.00060	96,905	59	96,875	5,168,942	53.34
22-23	.00064	96,846	62	96,815	5,072,067	52.37
23-24	.00068	96,784	65	96,751	4,975,252	51.41
24-25	.00072	96,719	70	96,684	4,878,501	50.44
25-26	.00076	96,649	74	96,612	4,781,817	49.48
26-27	.00081	96,575	78	96,536	4,685,205	48.51
27-28	.00086	96,497	83	96,456	4,588,669	47.55
28-29	.00092	96,414	88	96,370	4,492,213	46.59
29-30	.00099	96,326	96	96,278	4,395,843	45.64
30-31	.00106	96,230	102	96,179	4,299,565	44.68
31-32	.00114	96,128	109	96,073	4,203,386	43.73
32-33	.00123	96,019	118	95,960	4,107,313	42.78
33-34	.00132	95,901	127	95,837	4,011,353	41.83
34-35	.00141	95,774	135	95,706	3,915,516	40.88
35-36	.00152	95,639	145	95,566	3,819,810	39.94
36-37	.00164	95,494	157	95,415	3,724,244	39.00
37-38	.00178	95,337	170	95,252	3,628,829	38.06
38-39	.00195	95,167	185	95,074	3,533,577	37.13
39-40	.00213	94,982	203	94,880	3,438,503	36.20
40-41	.00234	94,779	221	94,668	3,343,623	35.28
41-42	.00257	94,558	243	94,436	3,248,955	34.36
42-43	.00283	94,315	267	94,181	3,154,519	33.45
43-44	.00311	94,048	293	93,901	3,060,338	32.54
44-45	.00342	93,755	321	93,595	2,966,437	31.64
45-46	.00375	93,434	350	93,259	2,872,842	30.75
46-47	.00412	93,084	383	92,892	2,779,583	29.86
47-48	.00451	92,701	418	92,492	2,686,691	28.98
48-49	.00492	92,283	455	92,056	2,594,199	28.11
49-50	.00535	91,828	491	91,583	2,502,143	27.25
50-51	.00582	91,337	531	91,071	2,410,560	26.39
51-52	.00634	90,806	576	90,518	2,319,489	25.54
52-53	.00694	90,230	626	89,917	2,228,971	24.70
53-54	.00760	89,604	681	89,263	2,139,054	23.87
54-55	.00832	88,923	740	88,553	2,049,791	23.05

TABLE 2. LIFE TABLE FOR WHITE FEMALES: NEW ENGLAND DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.00910	88,183	803	87,782	1,961,238	22.24
56-57	.00998	87,380	872	86,944	1,873,456	21.44
57-58	.01097	86,508	949	86,034	1,786,512	20.65
58-59	.01208	85,559	1,033	85,043	1,700,478	19.87
59-60	.01328	84,526	1,123	83,965	1,615,435	19.11
60-61	.01459	83,403	1,217	82,795	1,531,470	18.36
61-62	.01600	82,186	1,315	81,529	1,448,675	17.63
62-63	.01752	80,871	1,416	80,163	1,367,146	16.91
63-64	.01907	79,455	1,516	78,697	1,286,983	16.20
64-65	.02066	77,939	1,610	77,134	1,208,286	15.50
65-66	.02239	76,329	1,709	75,475	1,131,152	14.82
66-67	.02438	74,620	1,819	73,711	1,055,677	14.15
67-68	.02674	72,801	1,947	71,828	981,966	13.49
68-69	.02945	70,854	2,086	69,811	910,138	12.85
69-70	.03242	68,768	2,230	67,653	840,327	12.22
70-71	.03571	66,538	2,376	65,350	772,674	11.61
71-72	.03935	64,162	2,525	62,900	707,324	11.02
72-73	.04339	61,637	2,674	60,300	644,424	10.46
73-74	.04776	58,963	2,816	57,555	584,124	9.91
74-75	.05242	56,147	2,943	54,675	526,569	9.38
75-76	.05749	53,204	3,059	51,674	471,894	8.87
76-77	.06307	50,145	3,163	48,564	420,220	8.38
77-78	.06928	46,982	3,255	45,355	371,656	7.91
78-79	.07618	43,727	3,331	42,062	326,301	7.46
79-80	.08371	40,396	3,381	38,705	284,239	7.04
80-81	.09176	37,015	3,397	35,316	245,534	6.63
81-82	.10020	33,618	3,368	31,934	210,218	6.25
82-83	.10894	30,250	3,296	28,602	178,284	5.89
83-84	.11756	26,954	3,169	25,370	149,682	5.55
84-85	.12614	23,785	3,000	22,285	124,312	5.23
85-86	.13529	20,785	2,812	19,379	102,027	4.91
86-87	.14562	17,973	2,617	16,665	82,648	4.60
87-88	.15774	15,356	2,422	14,145	65,983	4.30
88-89	.17207	12,934	2,226	11,821	51,838	4.01
89-90	.18820	10,708	2,015	9,701	40,017	3.74
90-91	.20551	8,693	1,787	7,800	30,316	3.49
91-92	.22337	6,906	1,542	6,135	22,516	3.26
92-93	.24117	5,364	1,294	4,717	16,381	3.05
93-94	.25903	4,070	1,054	3,543	11,664	2.87
94-95	.27738	3,016	837	2,598	8,121	2.69
95-96	.29600	2,179	645	1,857	5,523	2.53
96-97	.31472	1,534	483	1,293	3,666	2.39
97-98	.33332	1,051	350	876	2,373	2.26
98-99	.35194	701	247	578	1,497	2.14
99-100	.37072	454	168	370	919	2.02
100-101	.38946	286	111	230	549	1.92
101-102	.40795	175	72	139	319	1.83
102-103	.42600	103	44	81	180	1.74
103-104	.44349	59	26	46	99	1.66
104-105	.46055	33	15	25	53	1.59
105-106	.47737	18	9	14	28	1.52
106-107	.49412	9	4	7	14	1.46
107-108	.51100	5	3	4	7	1.40
108-109	.52810	2	1	2	3	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 3. LIFE TABLE FOR NONWHITE MALES: NEW ENGLAND DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04179	100,000	4,179	96,517	6,132,648	61.33
1-2	.00350	95,821	335	95,453	6,036,131	62.99
2-3	.00238	95,486	228	95,372	5,940,478	62.21
3-4	.00163	95,258	155	95,181	5,845,106	61.36
4-5	.00130	95,103	124	95,041	5,749,925	60.46
5-6	.00121	94,979	114	94,922	5,654,884	59.54
6-7	.00114	94,865	109	94,810	5,559,962	58.61
7-8	.00107	94,756	101	94,706	5,465,152	57.68
8-9	.00102	94,655	97	94,607	5,370,446	56.74
9-10	.00099	94,558	93	94,512	5,275,839	55.79
10-11	.00099	94,465	94	94,418	5,181,327	54.85
11-12	.00102	94,371	96	94,323	5,086,909	53.90
12-13	.00108	94,275	102	94,224	4,992,586	52.96
13-14	.00120	94,173	113	94,117	4,898,362	52.01
14-15	.00137	94,060	129	93,996	4,804,245	51.08
15-16	.00156	93,931	146	93,858	4,710,249	50.15
16-17	.00174	93,785	163	93,703	4,616,391	49.22
17-18	.00187	93,622	175	93,534	4,522,688	48.31
18-19	.00193	93,447	181	93,356	4,429,154	47.40
19-20	.00194	93,266	181	93,176	4,335,798	46.49
20-21	.00194	93,085	180	92,995	4,242,622	45.58
21-22	.00196	92,905	182	92,814	4,149,627	44.67
22-23	.00204	92,723	190	92,628	4,056,813	43.75
23-24	.00219	92,533	202	92,432	3,964,185	42.84
24-25	.00240	92,331	222	92,220	3,871,753	41.93
25-26	.00262	92,109	241	91,989	3,779,533	41.03
26-27	.00284	91,868	261	91,737	3,687,544	40.14
27-28	.00303	91,607	278	91,468	3,595,807	39.25
28-29	.00316	91,329	288	91,185	3,504,339	38.37
29-30	.00326	91,041	297	90,892	3,413,154	37.49
30-31	.00334	90,744	303	90,592	3,322,262	36.61
31-32	.00346	90,441	313	90,284	3,231,670	35.73
32-33	.00363	90,128	327	89,964	3,141,386	34.85
33-34	.00384	89,801	345	89,628	3,051,422	33.98
34-35	.00407	89,456	364	89,274	2,961,794	33.11
35-36	.00435	89,092	388	88,898	2,872,520	32.24
36-37	.00469	88,704	416	88,496	2,783,622	31.38
37-38	.00512	88,288	452	88,062	2,695,126	30.53
38-39	.00565	87,836	496	87,588	2,607,064	29.68
39-40	.00628	87,340	548	87,066	2,519,476	28.85
40-41	.00697	86,792	605	86,489	2,432,410	28.03
41-42	.00771	86,187	665	85,854	2,345,921	27.22
42-43	.00849	85,522	726	85,159	2,260,067	26.43
43-44	.00930	84,796	789	84,402	2,174,908	25.65
44-45	.01016	84,007	853	83,581	2,090,506	24.88
45-46	.01106	83,154	920	82,694	2,006,925	24.14
46-47	.01201	82,234	987	81,740	1,924,231	23.40
47-48	.01303	81,247	1,059	80,717	1,842,491	22.68
48-49	.01409	80,188	1,130	79,623	1,761,774	21.97
49-50	.01519	79,058	1,201	78,458	1,682,151	21.28
50-51	.01635	77,857	1,273	77,221	1,603,693	20.60
51-52	.01760	76,584	1,348	75,910	1,526,472	19.93
52-53	.01895	75,236	1,425	74,524	1,450,562	19.28
53-54	.02041	73,811	1,507	73,057	1,376,038	18.64
54-55	.02196	72,304	1,588	71,510	1,302,981	18.02

TABLE 3. LIFE TABLE FOR NONWHITE MALES: NEW ENGLAND DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02360	70,716	1,669	69,882	1,231,471	17.41
56-57	.02532	69,047	1,748	68,173	1,161,589	16.82
57-58	.02711	67,299	1,824	66,387	1,093,416	16.25
58-59	.02896	65,475	1,896	64,527	1,027,029	15.69
59-60	.03087	63,579	1,963	62,597	962,502	15.14
60-61	.03287	61,616	2,025	60,603	899,905	14.61
61-62	.03498	59,591	2,085	58,548	839,302	14.08
62-63	.03721	57,506	2,140	56,436	780,754	13.58
63-64	.03957	55,366	2,191	54,271	724,318	13.08
64-65	.04205	53,175	2,236	52,057	670,047	12.60
65-66	.04464	50,939	2,274	49,802	617,990	12.13
66-67	.04735	48,665	2,304	47,513	568,188	11.68
67-68	.05018	46,361	2,326	45,198	520,675	11.23
68-69	.05314	44,035	2,340	42,865	475,477	10.80
69-70	.05623	41,695	2,345	40,523	432,612	10.38
70-71	.05943	39,350	2,338	38,181	392,089	9.96
71-72	.06274	37,012	2,322	35,851	353,908	9.56
72-73	.06615	34,690	2,295	33,542	318,057	9.17
73-74	.06951	32,395	2,252	31,269	284,515	8.78
74-75	.07283	30,143	2,195	29,045	253,246	8.40
75-76	.07632	27,948	2,133	26,881	224,201	8.02
76-77	.08021	25,815	2,071	24,779	197,320	7.64
77-78	.08469	23,744	2,011	22,739	172,541	7.27
78-79	.08926	21,733	1,940	20,763	149,802	6.89
79-80	.09376	19,793	1,855	18,865	129,039	6.52
80-81	.09899	17,938	1,776	17,050	110,174	6.14
81-82	.10571	16,162	1,709	15,308	93,124	5.76
82-83	.11471	14,453	1,658	13,624	77,816	5.38
83-84	.12665	12,795	1,620	11,985	64,192	5.02
84-85	.14102	11,175	1,576	10,387	52,207	4.67
85-86	.15681	9,599	1,505	8,846	41,820	4.36
86-87	.17303	8,094	1,401	7,394	32,974	4.07
87-88	.18868	6,693	1,263	6,062	25,580	3.82
88-89	.20376	5,430	1,106	4,877	19,518	3.59
89-90	.21894	4,324	947	3,851	14,641	3.39
90-91	.23421	3,377	791	2,982	10,790	3.19
91-92	.24958	2,586	645	2,264	7,808	3.02
92-93	.26507	1,941	515	1,684	5,544	2.86
93-94	.28066	1,426	400	1,226	3,860	2.71
94-95	.29635	1,026	304	874	2,634	2.57
95-96	.31215	722	225	609	1,760	2.44
96-97	.32807	497	163	415	1,151	2.32
97-98	.34410	334	115	276	736	2.21
98-99	.36025	219	79	179	460	2.10
99-100	.37650	140	53	114	281	2.00
100-101	.39288	87	34	70	167	1.91
101-102	.40938	53	22	42	97	1.83
102-103	.42600	31	13	25	55	1.74
103-104	.44280	18	8	14	30	1.67
104-105	.45978	10	5	8	16	1.59
105-106	.47685	5	2	4	8	1.52
106-107	.49395	3	2	2	4	1.46
107-108	.51100	1		1	2	1.40
108-109	.52810	1	1	1	1	1.35
109-110	.54529					1.29

TABLE 4. LIFE TABLE FOR NONWHITE FEMALES: NEW ENGLAND DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04115	100,000	4,115	96,606	6,400,636	64.01
1-2	.00250	95,885	240	95,765	6,304,030	65.75
2-3	.00165	95,645	158	95,566	6,208,265	64.91
3-4	.00132	95,487	126	95,424	6,112,699	64.02
4-5	.00095	95,361	90	95,316	6,017,275	63.10
5-6	.00087	95,271	83	95,229	5,921,959	62.16
6-7	.00078	95,188	74	95,151	5,826,730	61.21
7-8	.00069	95,114	66	95,081	5,731,579	60.26
8-9	.00061	95,048	58	95,019	5,636,498	59.30
9-10	.00055	94,990	52	94,964	5,541,479	58.34
10-11	.00052	94,938	50	94,913	5,446,515	57.37
11-12	.00053	94,888	50	94,863	5,351,602	56.40
12-13	.00059	94,838	56	94,810	5,256,739	55.43
13-14	.00073	94,782	69	94,748	5,161,929	54.46
14-15	.00094	94,713	89	94,669	5,067,181	53.50
15-16	.00119	94,624	113	94,568	4,972,512	52.55
16-17	.00142	94,511	134	94,444	4,877,944	51.61
17-18	.00159	94,377	150	94,302	4,783,500	50.69
18-19	.00169	94,227	159	94,148	4,689,198	49.76
19-20	.00176	94,068	166	93,985	4,595,050	48.85
20-21	.00180	93,902	169	93,818	4,501,065	47.93
21-22	.00184	93,733	172	93,647	4,407,247	47.02
22-23	.00190	93,561	178	93,472	4,313,600	46.10
23-24	.00197	93,383	184	93,291	4,220,128	45.19
24-25	.00205	93,199	191	93,104	4,126,837	44.28
25-26	.00213	93,008	198	92,909	4,033,733	43.37
26-27	.00223	92,810	207	92,706	3,940,824	42.46
27-28	.00236	92,603	219	92,494	3,848,118	41.56
28-29	.00253	92,384	233	92,268	3,755,624	40.65
29-30	.00272	92,151	251	92,025	3,663,356	39.75
30-31	.00293	91,900	269	91,765	3,571,331	38.86
31-32	.00316	91,631	290	91,486	3,479,566	37.97
32-33	.00339	91,341	309	91,186	3,388,080	37.09
33-34	.00359	91,032	327	90,868	3,296,894	36.22
34-35	.00377	90,705	342	90,534	3,206,026	35.35
35-36	.00398	90,363	360	90,183	3,115,492	34.48
36-37	.00425	90,003	382	89,812	3,025,309	33.61
37-38	.00465	89,621	417	89,412	2,935,497	32.75
38-39	.00518	89,204	462	88,973	2,846,085	31.91
39-40	.00581	88,742	516	88,484	2,757,112	31.07
40-41	.00652	88,226	575	87,939	2,668,628	30.25
41-42	.00729	87,651	639	87,332	2,580,689	29.44
42-43	.00809	87,012	704	86,660	2,493,357	28.66
43-44	.00896	86,308	773	85,921	2,406,697	27.88
44-45	.00993	85,535	850	85,110	2,320,776	27.13
45-46	.01092	84,685	924	84,223	2,235,666	26.40
46-47	.01187	83,761	995	83,264	2,151,443	25.69
47-48	.01271	82,766	1,052	82,240	2,068,179	24.99
48-49	.01340	81,714	1,094	81,167	1,985,939	24.30
49-50	.01399	80,620	1,128	80,056	1,904,772	23.63
50-51	.01453	79,492	1,155	78,914	1,824,716	22.95
51-52	.01511	78,337	1,184	77,745	1,745,802	22.29
52-53	.01579	77,153	1,218	76,544	1,668,057	21.62
53-54	.01655	75,935	1,257	75,306	1,591,513	20.96
54-55	.01734	74,678	1,295	74,031	1,516,207	20.30

TABLE 4. LIFE TABLE FOR NONWHITE FEMALES: NEW ENGLAND DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01820	73,383	1,335	72,715	1,442,176	19.65
56-57	.01916	72,048	1,381	71,357	1,369,461	19.01
57-58	.02025	70,667	1,431	69,952	1,298,104	18.37
58-59	.02144	69,236	1,484	68,494	1,228,152	17.74
59-60	.02270	67,752	1,538	66,983	1,159,658	17.12
60-61	.02409	66,214	1,595	65,416	1,092,675	16.50
61-62	.02566	64,619	1,659	63,790	1,027,259	15.90
62-63	.02745	62,960	1,728	62,096	963,469	15.30
63-64	.02945	61,232	1,803	60,331	901,373	14.72
64-65	.03162	59,429	1,879	58,489	841,042	14.15
65-66	.03400	57,550	1,957	56,571	782,553	13.60
66-67	.03661	55,593	2,035	54,575	725,982	13.06
67-68	.03948	53,558	2,115	52,501	671,407	12.54
68-69	.04265	51,443	2,194	50,346	618,906	12.03
69-70	.04609	49,249	2,270	48,114	568,560	11.54
70-71	.04975	46,979	2,337	45,811	520,446	11.08
71-72	.05359	44,642	2,392	43,446	474,635	10.63
72-73	.05755	42,250	2,432	41,034	431,189	10.21
73-74	.06192	39,818	2,465	38,586	390,155	9.80
74-75	.06674	37,353	2,493	36,106	351,569	9.41
75-76	.07157	34,860	2,495	33,612	315,463	9.05
76-77	.07597	32,365	2,459	31,136	281,851	8.71
77-78	.07952	29,906	2,378	28,717	250,715	8.38
78-79	.08131	27,528	2,238	26,409	221,998	8.06
79-80	.08262	25,290	2,090	24,245	195,589	7.73
80-81	.08417	23,200	1,952	22,224	171,344	7.39
81-82	.08572	21,248	1,822	20,337	149,120	7.02
82-83	.08725	19,426	1,695	18,579	128,783	6.63
83-84	.09395	17,731	1,666	16,898	110,204	6.22
84-85	.10245	16,065	1,645	15,242	93,306	5.81
85-86	.11257	14,420	1,624	13,608	78,064	5.41
86-87	.12414	12,796	1,588	12,002	64,456	5.04
87-88	.13699	11,208	1,536	10,440	52,454	4.68
88-89	.15140	9,672	1,464	8,940	42,014	4.34
89-90	.16749	8,208	1,375	7,521	33,074	4.03
90-91	.18483	6,833	1,263	6,202	25,553	3.74
91-92	.20301	5,570	1,131	5,005	19,351	3.47
92-93	.22161	4,439	983	3,948	14,346	3.23
93-94	.24091	3,456	833	3,039	10,398	3.01
94-95	.26120	2,623	685	2,281	7,359	2.81
95-96	.28205	1,938	547	1,665	5,078	2.62
96-97	.30303	1,391	421	1,181	3,413	2.45
97-98	.32375	970	314	813	2,232	2.30
98-99	.34447	656	226	543	1,419	2.17
99-100	.36547	430	157	351	876	2.04
100-101	.38634	273	106	220	525	1.93
101-102	.40665	167	68	133	305	1.83
102-103	.42600	99	42	78	172	1.74
103-104	.44410	57	25	44	94	1.66
104-105	.46124	32	15	24	50	1.59
105-106	.47783	17	8	13	26	1.52
106-107	.49428	9	4	7	13	1.46
107-108	.51100	5	3	3	6	1.40
108-109	.52810	2	1	2	3	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 5. LIFE TABLE FOR WHITE MALES: MIDDLE ATLANTIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02725	100,000	2,725	97,604	6,621,198	66.21
1-2	.00164	97,275	160	97,195	6,523,594	67.06
2-3	.00112	97,115	108	97,061	6,426,399	66.17
3-4	.00089	97,007	87	96,964	6,329,338	65.25
4-5	.00080	96,920	77	96,882	6,232,374	64.30
5-6	.00074	96,843	72	96,807	6,135,492	63.36
6-7	.00068	96,771	66	96,738	6,038,685	62.40
7-8	.00063	96,705	61	96,675	5,941,947	61.44
8-9	.00059	96,644	57	96,616	5,845,272	60.48
9-10	.00056	96,587	54	96,560	5,748,656	59.52
10-11	.00054	96,533	52	96,507	5,652,096	58.55
11-12	.00055	96,481	53	96,455	5,555,589	57.58
12-13	.00058	96,428	56	96,400	5,459,134	56.61
13-14	.00065	96,372	62	96,341	5,362,734	55.65
14-15	.00075	96,310	73	96,273	5,266,393	54.68
15-16	.00087	96,237	83	96,195	5,170,120	53.72
16-17	.00099	96,154	96	96,106	5,073,925	52.77
17-18	.00108	96,058	103	96,007	4,977,819	51.82
18-19	.00115	95,955	111	95,899	4,881,812	50.88
19-20	.00122	95,844	117	95,786	4,785,913	49.93
20-21	.00128	95,727	122	95,666	4,690,127	48.99
21-22	.00133	95,605	127	95,541	4,594,461	48.06
22-23	.00136	95,478	130	95,413	4,498,920	47.12
23-24	.00137	95,348	131	95,283	4,403,507	46.18
24-25	.00136	95,217	129	95,152	4,308,224	45.25
25-26	.00134	95,088	128	95,024	4,213,072	44.31
26-27	.00133	94,960	126	94,897	4,118,048	43.37
27-28	.00134	94,834	127	94,770	4,023,151	42.42
28-29	.00138	94,707	131	94,642	3,928,381	41.48
29-30	.00142	94,576	134	94,509	3,833,739	40.54
30-31	.00149	94,442	141	94,372	3,739,230	39.59
31-32	.00157	94,301	148	94,227	3,644,858	38.65
32-33	.00169	94,153	159	94,074	3,550,631	37.71
33-34	.00183	93,994	172	93,908	3,456,557	36.77
34-35	.00199	93,822	187	93,729	3,362,649	35.84
35-36	.00218	93,635	204	93,533	3,268,920	34.91
36-37	.00241	93,431	225	93,319	3,175,387	33.99
37-38	.00269	93,206	251	93,081	3,082,068	33.07
38-39	.00302	92,955	280	92,815	2,988,987	32.16
39-40	.00340	92,675	315	92,517	2,896,172	31.25
40-41	.00382	92,360	353	92,183	2,803,655	30.36
41-42	.00428	92,007	394	91,810	2,711,472	29.47
42-43	.00479	91,613	439	91,393	2,619,662	28.59
43-44	.00533	91,174	486	90,931	2,528,269	27.73
44-45	.00591	90,688	536	90,420	2,437,338	26.88
45-46	.00653	90,152	589	89,858	2,346,918	26.03
46-47	.00722	89,563	646	89,240	2,257,060	25.20
47-48	.00799	88,917	711	88,562	2,167,820	24.38
48-49	.00882	88,206	778	87,817	2,079,258	23.57
49-50	.00971	87,428	849	87,004	1,991,441	22.78
50-51	.01068	86,579	924	86,117	1,904,437	22.00
51-52	.01175	85,655	1,007	85,152	1,818,320	21.23
52-53	.01296	84,648	1,097	84,100	1,733,168	20.48
53-54	.01431	83,551	1,195	82,953	1,649,068	19.74
54-55	.01578	82,356	1,300	81,706	1,566,115	19.02

TABLE 5. LIFE TABLE FOR WHITE MALES: MIDDLE ATLANTIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01736	81,056	1,407	80,353	1,484,409	18.31
56-57	.01903	79,649	1,516	78,891	1,404,056	17.63
57-58	.02079	78,133	1,624	77,321	1,325,165	16.96
58-59	.02260	76,509	1,729	75,644	1,247,844	16.31
59-60	.02448	74,780	1,831	73,864	1,172,200	15.68
60-61	.02646	72,949	1,930	71,984	1,098,336	15.06
61-62	.02857	71,019	2,029	70,004	1,026,352	14.45
62-63	.03086	68,990	2,129	67,925	956,348	13.86
63-64	.03328	66,861	2,225	65,748	888,423	13.29
64-65	.03580	64,636	2,314	63,479	822,675	12.73
65-66	.03849	62,322	2,399	61,122	759,196	12.18
66-67	.04141	59,923	2,481	58,682	698,074	11.65
67-68	.04462	57,442	2,563	56,160	639,392	11.13
68-69	.04806	54,879	2,638	53,560	583,232	10.63
69-70	.05170	52,241	2,701	50,891	529,672	10.14
70-71	.05561	49,540	2,755	48,163	478,781	9.66
71-72	.05989	46,785	2,802	45,384	430,618	9.20
72-73	.06461	43,983	2,841	42,562	385,234	8.76
73-74	.06983	41,142	2,873	39,705	342,672	8.33
74-75	.07549	38,269	2,889	36,824	302,967	7.92
75-76	.08152	35,380	2,884	33,938	266,143	7.52
76-77	.08784	32,496	2,855	31,068	232,205	7.15
77-78	.09437	29,641	2,797	28,243	201,137	6.79
78-79	.10081	26,844	2,706	25,491	172,894	6.44
79-80	.10720	24,138	2,588	22,844	147,403	6.11
80-81	.11401	21,550	2,457	20,322	124,559	5.78
81-82	.12169	19,093	2,323	17,932	104,237	5.46
82-83	.13071	16,770	2,192	15,674	86,305	5.15
83-84	.14142	14,578	2,062	13,547	70,631	4.85
84-85	.15351	12,516	1,921	11,556	57,084	4.56
85-86	.16645	10,595	1,764	9,713	45,528	4.30
86-87	.17971	8,831	1,587	8,038	35,815	4.06
87-88	.19275	7,244	1,396	6,546	27,777	3.83
88-89	.20539	5,848	1,201	5,247	21,231	3.63
89-90	.21798	4,647	1,013	4,140	15,984	3.44
90-91	.23080	3,634	839	3,215	11,844	3.26
91-92	.24413	2,795	682	2,454	8,629	3.09
92-93	.25825	2,113	546	1,840	6,175	2.92
93-94	.27330	1,567	428	1,353	4,335	2.77
94-95	.28910	1,139	329	974	2,982	2.62
95-96	.30543	810	248	686	2,008	2.48
96-97	.32209	562	181	472	1,322	2.35
97-98	.33887	381	129	317	850	2.23
98-99	.35591	252	90	207	533	2.12
99-100	.37336	162	60	132	326	2.01
100-101	.39099	102	40	82	194	1.92
101-102	.40861	62	25	49	112	1.83
102-103	.42600	37	16	29	63	1.74
103-104	.44314	21	9	16	34	1.67
104-105	.46015	12	6	9	18	1.59
105-106	.47710	6	3	5	9	1.52
106-107	.49403	3	1	2	4	1.46
107-108	.51100	2	1	1	2	1.40
108-109	.52810	1	1	1	1	1.35
109-110	.54529					1.29

TABLE 6. LIFE TABLE FOR WHITE FEMALES: MIDDLE ATLANTIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02123	100,000	2,123	98,165	7,120,436	71.20
1-2	.00148	97,877	145	97,805	7,022,271	71.75
2-3	.00093	97,732	91	97,687	6,924,466	70.85
3-4	.00074	97,641	72	97,605	6,826,779	69.92
4-5	.00061	97,569	60	97,539	6,729,174	68.97
5-6	.00053	97,509	51	97,484	6,631,635	68.01
6-7	.00047	97,458	46	97,435	6,534,151	67.05
7-8	.00042	97,412	41	97,392	6,436,716	66.08
8-9	.00039	97,371	38	97,352	6,339,324	65.10
9-10	.00037	97,333	36	97,315	6,241,972	64.13
10-11	.00036	97,297	35	97,280	6,144,657	63.15
11-12	.00036	97,262	35	97,245	6,047,377	62.18
12-13	.00037	97,227	36	97,209	5,950,132	61.20
13-14	.00039	97,191	38	97,172	5,852,923	60.22
14-15	.00042	97,153	41	97,133	5,755,751	59.24
15-16	.00046	97,112	44	97,090	5,658,618	58.27
16-17	.00050	97,068	49	97,043	5,561,528	57.30
17-18	.00054	97,019	52	96,993	5,464,485	56.32
18-19	.00057	96,967	55	96,939	5,367,492	55.35
19-20	.00060	96,912	59	96,882	5,270,553	54.38
20-21	.00063	96,853	61	96,823	5,173,671	53.42
21-22	.00066	96,792	64	96,760	5,076,848	52.45
22-23	.00069	96,728	66	96,695	4,980,088	51.49
23-24	.00073	96,662	71	96,626	4,883,393	50.52
24-25	.00076	96,591	73	96,554	4,786,767	49.56
25-26	.00080	96,518	77	96,479	4,690,213	48.59
26-27	.00085	96,441	82	96,400	4,593,734	47.63
27-28	.00090	96,359	87	96,315	4,497,334	46.67
28-29	.00096	96,272	93	96,226	4,401,019	45.71
29-30	.00103	96,179	99	96,130	4,304,793	44.76
30-31	.00111	96,080	106	96,027	4,208,663	43.80
31-32	.00120	95,974	115	95,916	4,112,636	42.85
32-33	.00129	95,859	124	95,797	4,016,720	41.90
33-34	.00139	95,735	133	95,668	3,920,923	40.96
34-35	.00149	95,602	143	95,531	3,825,255	40.01
35-36	.00160	95,459	152	95,383	3,729,724	39.07
36-37	.00173	95,307	165	95,224	3,634,341	38.13
37-38	.00189	95,142	180	95,052	3,539,117	37.20
38-39	.00208	94,962	198	94,863	3,444,065	36.27
39-40	.00229	94,764	217	94,656	3,349,202	35.34
40-41	.00253	94,547	239	94,428	3,254,546	34.42
41-42	.00279	94,308	263	94,177	3,160,118	33.51
42-43	.00307	94,045	289	93,901	3,065,941	32.60
43-44	.00337	93,756	316	93,598	2,972,040	31.70
44-45	.00369	93,440	344	93,268	2,878,442	30.81
45-46	.00404	93,096	377	92,908	2,785,174	29.92
46-47	.00442	92,719	409	92,515	2,692,266	29.04
47-48	.00485	92,310	448	92,086	2,599,751	28.16
48-49	.00531	91,862	488	91,618	2,507,665	27.30
49-50	.00578	91,374	528	91,110	2,416,047	26.44
50-51	.00631	90,846	573	90,559	2,324,937	25.59
51-52	.00689	90,273	622	89,962	2,234,378	24.75
52-53	.00756	89,651	678	89,312	2,144,416	23.92
53-54	.00829	88,973	738	88,604	2,055,104	23.10
54-55	.00907	88,235	800	87,835	1,966,500	22.29

TABLE 6. LIFE TABLE FOR WHITE FEMALES: MIDDLE ATLANTIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.00993	87,435	868	87,001	1,878,665	21.49
56-57	.01089	86,567	943	86,096	1,791,664	20.70
57-58	.01198	85,624	1,026	85,111	1,705,568	19.92
58-59	.01320	84,598	1,116	84,040	1,620,457	19.15
59-60	.01454	83,482	1,214	82,875	1,536,417	18.40
60-61	.01599	82,268	1,316	81,610	1,453,542	17.67
61-62	.01754	80,952	1,419	80,243	1,371,932	16.95
62-63	.01918	79,533	1,526	78,770	1,291,689	16.24
63-64	.02080	78,007	1,622	77,196	1,212,919	15.55
64-65	.02241	76,385	1,712	75,529	1,135,723	14.87
65-66	.02418	74,673	1,806	73,770	1,060,194	14.20
66-67	.02628	72,867	1,915	71,910	986,424	13.54
67-68	.02888	70,952	2,049	69,928	914,514	12.89
68-69	.03201	68,903	2,205	67,800	844,586	12.26
69-70	.03555	66,698	2,372	65,512	776,786	11.65
70-71	.03947	64,326	2,539	63,057	711,274	11.06
71-72	.04374	61,787	2,702	60,436	648,217	10.49
72-73	.04834	59,085	2,856	57,657	587,781	9.95
73-74	.05323	56,229	2,993	54,732	530,124	9.43
74-75	.05842	53,236	3,110	51,681	475,392	8.93
75-76	.06398	50,126	3,207	48,522	423,711	8.45
76-77	.06995	46,919	3,282	45,278	375,189	8.00
77-78	.07638	43,637	3,333	41,970	329,911	7.56
78-79	.08320	40,304	3,354	38,627	287,941	7.14
79-80	.09039	36,950	3,340	35,280	249,314	6.75
80-81	.09803	33,610	3,294	31,963	214,034	6.37
81-82	.10626	30,316	3,222	28,705	182,071	6.01
82-83	.11517	27,094	3,120	25,534	153,366	5.66
83-84	.12473	23,974	2,990	22,479	127,832	5.33
84-85	.13487	20,984	2,830	19,569	105,353	5.02
85-86	.14564	18,154	2,644	16,832	85,784	4.73
86-87	.15709	15,510	2,437	14,291	68,952	4.45
87-88	.16928	13,073	2,213	11,967	54,661	4.18
88-89	.18219	10,860	1,978	9,871	42,694	3.93
89-90	.19577	8,882	1,739	8,012	32,823	3.70
90-91	.21007	7,143	1,501	6,393	24,811	3.47
91-92	.22511	5,642	1,270	5,007	18,418	3.26
92-93	.24091	4,372	1,053	3,846	13,411	3.07
93-94	.25770	3,319	855	2,891	9,565	2.88
94-95	.27547	2,464	679	2,124	6,674	2.71
95-96	.29388	1,785	525	1,523	4,550	2.55
96-97	.31257	1,260	394	1,063	3,027	2.40
97-98	.33122	866	287	723	1,964	2.27
98-99	.35005	579	202	478	1,241	2.14
99-100	.36928	377	139	307	763	2.03
100-101	.38858	238	93	191	456	1.92
101-102	.40760	145	59	116	265	1.83
102-103	.42600	86	37	68	149	1.74
103-104	.44363	49	22	38	81	1.66
104-105	.46070	27	12	21	43	1.59
105-106	.47747	15	7	11	22	1.52
106-107	.49416	8	4	6	11	1.46
107-108	.51100	4	2	3	5	1.40
108-109	.52810	2	1	1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 7. LIFE TABLE FOR NONWHITE MALES: MIDDLE ATLANTIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04749	100,000	4,749	96,042	5,901,456	59.01
1-2	.00327	95,251	311	95,095	5,805,414	60.95
2-3	.00206	94,940	196	94,842	5,710,319	60.15
3-4	.00151	94,744	143	94,672	5,615,477	59.27
4-5	.00138	94,601	131	94,536	5,520,805	58.36
5-6	.00123	94,470	116	94,412	5,426,269	57.44
6-7	.00109	94,354	103	94,303	5,331,857	56.51
7-8	.00098	94,251	92	94,205	5,237,554	55.57
8-9	.00089	94,159	84	94,117	5,143,349	54.62
9-10	.00084	94,075	79	94,036	5,049,232	53.67
10-11	.00084	93,996	79	93,957	4,955,196	52.72
11-12	.00088	93,917	82	93,876	4,861,239	51.76
12-13	.00097	93,835	92	93,789	4,767,363	50.81
13-14	.00114	93,743	106	93,690	4,673,574	49.86
14-15	.00139	93,637	131	93,572	4,579,884	48.91
15-16	.00167	93,506	156	93,428	4,486,312	47.98
16-17	.00196	93,350	183	93,259	4,392,884	47.06
17-18	.00222	93,167	206	93,064	4,299,625	46.15
18-19	.00247	92,961	230	92,846	4,206,561	45.25
19-20	.00273	92,731	253	92,604	4,113,715	44.36
20-21	.00297	92,478	275	92,340	4,021,111	43.48
21-22	.00319	92,203	294	92,056	3,928,771	42.61
22-23	.00335	91,909	308	91,755	3,836,715	41.74
23-24	.00343	91,601	314	91,444	3,744,960	40.88
24-25	.00344	91,287	314	91,130	3,653,516	40.02
25-26	.00344	90,973	313	90,816	3,562,386	39.16
26-27	.00346	90,660	314	90,503	3,471,570	38.29
27-28	.00355	90,346	321	90,186	3,381,067	37.42
28-29	.00372	90,025	334	89,858	3,290,881	36.56
29-30	.00394	89,691	354	89,514	3,201,023	35.69
30-31	.00419	89,337	374	89,150	3,111,509	34.83
31-32	.00449	88,963	400	88,763	3,022,359	33.97
32-33	.00484	88,563	428	88,349	2,933,596	33.12
33-34	.00523	88,135	461	87,904	2,845,247	32.28
34-35	.00567	87,674	497	87,425	2,757,343	31.45
35-36	.00614	87,177	536	86,909	2,669,918	30.63
36-37	.00666	86,641	577	86,353	2,583,009	29.81
37-38	.00722	86,064	621	85,754	2,496,656	29.01
38-39	.00781	85,443	667	85,109	2,410,902	28.22
39-40	.00843	84,776	715	84,418	2,325,793	27.43
40-41	.00910	84,061	765	83,679	2,241,375	26.66
41-42	.00982	83,296	818	82,887	2,157,696	25.90
42-43	.01061	82,478	875	82,041	2,074,809	25.16
43-44	.01146	81,603	935	81,135	1,992,768	24.42
44-45	.01238	80,668	999	80,169	1,911,633	23.70
45-46	.01335	79,669	1,063	79,137	1,831,464	22.99
46-47	.01438	78,606	1,131	78,040	1,752,327	22.29
47-48	.01549	77,475	1,200	76,875	1,674,287	21.61
48-49	.01665	76,275	1,270	75,640	1,597,412	20.94
49-50	.01787	75,005	1,340	74,335	1,521,772	20.29
50-51	.01916	73,665	1,412	72,959	1,447,437	19.65
51-52	.02054	72,253	1,484	71,511	1,374,478	19.02
52-53	.02202	70,769	1,558	69,990	1,302,967	18.41
53-54	.02362	69,211	1,635	68,394	1,232,977	17.81
54-55	.02532	67,576	1,711	66,721	1,164,583	17.23

TABLE 7. LIFE TABLE FOR NONWHITE MALES: MIDDLE ATLANTIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02710	65,865	1,785	64,973	1,097,862	16.67
56-57	.02896	64,080	1,855	63,152	1,032,889	16.12
57-58	.03087	62,225	1,921	61,264	969,737	15.58
58-59	.03283	60,304	1,980	59,314	908,473	15.06
59-60	.03486	58,324	2,033	57,307	849,159	14.56
60-61	.03695	56,291	2,080	55,251	791,852	14.07
61-62	.03910	54,211	2,120	53,151	736,601	13.59
62-63	.04130	52,091	2,151	51,015	683,450	13.12
63-64	.04347	49,940	2,171	48,854	632,435	12.66
64-65	.04562	47,769	2,179	46,679	583,581	12.22
65-66	.04786	45,590	2,182	44,499	536,902	11.78
66-67	.05032	43,408	2,185	42,316	492,403	11.34
67-68	.05311	41,223	2,189	40,129	450,087	10.92
68-69	.05623	39,034	2,195	37,937	409,958	10.50
69-70	.05959	36,839	2,195	35,742	372,021	10.10
70-71	.06321	34,644	2,190	33,549	336,279	9.71
71-72	.06710	32,454	2,178	31,365	302,730	9.33
72-73	.07128	30,276	2,158	29,197	271,365	8.96
73-74	.07597	28,118	2,136	27,050	242,168	8.61
74-75	.08116	25,982	2,109	24,928	215,118	8.28
75-76	.08652	23,873	2,065	22,841	190,190	7.97
76-77	.09170	21,808	2,000	20,808	167,349	7.67
77-78	.09636	19,808	1,909	18,854	146,541	7.40
78-79	.10016	17,899	1,792	17,003	127,687	7.13
79-80	.10331	16,107	1,664	15,275	110,684	6.87
80-81	.10635	14,443	1,536	13,675	95,409	6.61
81-82	.10980	12,907	1,417	12,198	81,734	6.33
82-83	.11417	11,490	1,312	10,834	69,536	6.05
83-84	.11899	10,178	1,211	9,572	58,702	5.77
84-85	.12391	8,967	1,111	8,411	49,130	5.48
85-86	.12964	7,856	1,019	7,346	40,719	5.18
86-87	.13691	6,837	936	6,369	33,373	4.88
87-88	.14643	5,901	864	5,469	27,004	4.58
88-89	.15853	5,037	798	4,638	21,535	4.28
89-90	.17273	4,239	733	3,872	16,897	3.99
90-91	.18854	3,506	661	3,176	13,025	3.71
91-92	.20545	2,845	584	2,553	9,849	3.46
92-93	.22298	2,261	504	2,009	7,296	3.23
93-94	.24145	1,757	425	1,545	5,287	3.01
94-95	.26119	1,332	348	1,158	3,742	2.81
95-96	.28171	984	277	846	2,584	2.62
96-97	.30251	707	214	600	1,738	2.46
97-98	.32309	493	159	414	1,138	2.31
98-99	.34378	334	115	276	724	2.17
99-100	.36491	219	80	179	448	2.04
100-101	.38599	139	54	112	269	1.93
101-102	.40652	85	34	68	157	1.83
102-103	.42600	51	22	40	89	1.74
103-104	.44415	29	13	23	49	1.66
104-105	.46129	16	7	12	26	1.59
105-106	.47786	9	4	7	14	1.52
106-107	.49429	5	3	3	7	1.46
107-108	.51100	2	1	2	4	1.40
108-109	.52810	1		1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 8. LIFE TABLE FOR NONWHITE FEMALES: MIDDLE ATLANTIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03764	100,000	3,764	96,895	6,332,296	63.32
1-2	.00296	96,236	285	96,094	6,235,401	64.79
2-3	.00171	95,951	164	95,869	6,139,307	63.98
3-4	.00137	95,787	131	95,721	6,043,438	63.09
4-5	.00136	95,656	130	95,591	5,947,717	62.18
5-6	.00112	95,526	107	95,472	5,852,126	61.26
6-7	.00091	95,419	87	95,375	5,756,654	60.33
7-8	.00074	95,332	71	95,297	5,661,279	59.38
8-9	.00061	95,261	58	95,232	5,565,982	58.43
9-10	.00052	95,203	49	95,179	5,470,750	57.46
10-11	.00048	95,154	46	95,131	5,375,571	56.49
11-12	.00049	95,108	47	95,085	5,280,440	55.52
12-13	.00056	95,061	53	95,035	5,185,355	54.55
13-14	.00071	95,008	67	94,975	5,090,320	53.58
14-15	.00093	94,941	88	94,897	4,995,345	52.62
15-16	.00119	94,853	113	94,796	4,900,448	51.66
16-17	.00146	94,740	139	94,670	4,805,652	50.72
17-18	.00168	94,601	159	94,522	4,710,982	49.80
18-19	.00186	94,442	175	94,355	4,616,460	48.88
19-20	.00204	94,267	193	94,171	4,522,105	47.97
20-21	.00220	94,074	207	93,971	4,427,934	47.07
21-22	.00234	93,867	219	93,758	4,333,963	46.17
22-23	.00246	93,648	231	93,533	4,240,205	45.28
23-24	.00255	93,417	238	93,298	4,146,672	44.39
24-25	.00260	93,179	242	93,058	4,053,374	43.50
25-26	.00265	92,937	246	92,814	3,960,316	42.61
26-27	.00271	92,691	252	92,565	3,867,502	41.72
27-28	.00280	92,439	258	92,310	3,774,937	40.84
28-29	.00292	92,181	270	92,046	3,682,627	39.95
29-30	.00305	91,911	280	91,771	3,590,581	39.07
30-31	.00320	91,631	293	91,485	3,498,810	38.18
31-32	.00339	91,338	310	91,183	3,407,325	37.30
32-33	.00363	91,028	330	90,863	3,316,142	36.43
33-34	.00392	90,698	356	90,520	3,225,279	35.56
34-35	.00425	90,342	384	90,150	3,134,759	34.70
35-36	.00462	89,958	415	89,751	3,044,609	33.84
36-37	.00503	89,543	451	89,318	2,954,858	33.00
37-38	.00547	89,092	487	88,849	2,865,540	32.16
38-39	.00595	88,605	527	88,341	2,776,691	31.34
39-40	.00646	88,078	569	87,793	2,688,350	30.52
40-41	.00701	87,509	614	87,202	2,600,557	29.72
41-42	.00761	86,895	661	86,565	2,513,355	28.92
42-43	.00825	86,234	711	85,878	2,426,790	28.14
43-44	.00895	85,523	766	85,140	2,340,912	27.37
44-45	.00971	84,757	823	84,346	2,255,772	26.61
45-46	.01050	83,934	881	83,494	2,171,426	25.87
46-47	.01133	83,053	941	82,582	2,087,932	25.14
47-48	.01218	82,112	1,000	81,612	2,005,350	24.42
48-49	.01302	81,112	1,056	80,584	1,923,738	23.72
49-50	.01385	80,056	1,109	79,501	1,843,154	23.02
50-51	.01473	78,947	1,163	78,366	1,763,653	22.34
51-52	.01570	77,784	1,221	77,174	1,685,287	21.67
52-53	.01679	76,563	1,286	75,920	1,608,113	21.00
53-54	.01803	75,277	1,357	74,599	1,532,193	20.35
54-55	.01940	73,920	1,434	73,203	1,457,594	19.72

TABLE 8.. LIFE TABLE FOR NONWHITE FEMALES: MIDDLE ATLANTIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02086	72,486	1,512	71,730	1,384,391	19.10
56-57	.02238	70,974	1,588	70,180	1,312,661	18.49
57-58	.02393	69,386	1,661	68,555	1,242,481	17.91
58-59	.02552	67,725	1,728	66,861	1,173,926	17.33
59-60	.02716	65,997	1,793	65,101	1,107,065	16.77
60-61	.02885	64,204	1,852	63,278	1,041,964	16.23
61-62	.03060	62,352	1,908	61,398	978,686	15.70
62-63	.03241	60,444	1,959	59,465	917,288	15.18
63-64	.03425	58,485	2,003	57,484	857,823	14.67
64-65	.03612	56,482	2,040	55,462	800,339	14.17
65-66	.03805	54,442	2,072	53,406	744,877	13.68
66-67	.04009	52,370	2,099	51,321	691,471	13.20
67-68	.04227	50,271	2,125	49,208	640,150	12.73
68-69	.04453	48,146	2,144	47,074	590,942	12.27
69-70	.04685	46,002	2,155	44,924	543,868	11.82
70-71	.04931	43,847	2,162	42,766	498,944	11.38
71-72	.05200	41,685	2,168	40,601	456,178	10.94
72-73	.05499	39,517	2,173	38,431	415,577	10.52
73-74	.05832	37,344	2,178	36,255	377,146	10.10
74-75	.06193	35,166	2,178	34,077	340,891	9.69
75-76	.06577	32,988	2,169	31,903	306,814	9.30
76-77	.06980	30,819	2,151	29,743	274,911	8.92
77-78	.07396	28,668	2,121	27,607	245,168	8.55
78-79	.07836	26,547	2,080	25,507	217,561	8.20
79-80	.08302	24,467	2,031	23,451	192,054	7.85
80-81	.08780	22,436	1,970	21,451	168,603	7.51
81-82	.09254	20,466	1,894	19,519	147,152	7.19
82-83	.09707	18,572	1,803	17,671	127,633	6.87
83-84	.10039	16,769	1,683	15,927	109,962	6.56
84-85	.10260	15,086	1,548	14,312	94,035	6.23
85-86	.10522	13,538	1,425	12,826	79,723	5.89
86-87	.10977	12,113	1,329	11,449	66,897	5.52
87-88	.11778	10,784	1,270	10,149	55,448	5.14
88-89	.12972	9,514	1,234	8,897	45,299	4.76
89-90	.14457	8,280	1,197	7,681	36,402	4.40
90-91	.16163	7,083	1,145	6,510	28,721	4.05
91-92	.18016	5,938	1,070	5,403	22,211	3.74
92-93	.19946	4,868	971	4,383	16,808	3.45
93-94	.22000	3,897	857	3,468	12,425	3.19
94-95	.24226	3,040	737	2,672	8,957	2.95
95-96	.26552	2,303	611	1,998	6,285	2.73
96-97	.28907	1,692	489	1,447	4,287	2.53
97-98	.31218	1,203	376	1,015	2,840	2.36
98-99	.33533	827	277	689	1,825	2.20
99-100	.35901	550	198	451	1,136	2.06
100-101	.38249	352	134	285	685	1.94
101-102	.40506	218	89	174	400	1.83
102-103	.42600	129	55	102	226	1.74
103-104	.44484	74	33	58	124	1.66
104-105	.46208	41	19	32	66	1.59
105-106	.47838	22	10	17	34	1.52
106-107	.49446	12	6	9	17	1.46
107-108	.51100	6	3	4	8	1.40
108-109	.52810	3	2	2	4	1.35
109-110	.54529	1		1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 9. LIFE TABLE FOR WHITE MALES: EAST NORTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02898	100,000	2,898	97,451	6,649,333	66.49
1-2	.00191	97,102	185	97,009	6,551,882	67.47
2-3	.00129	96,917	125	96,854	6,454,873	66.60
3-4	.00099	96,792	96	96,744	6,358,019	65.69
4-5	.00087	96,696	84	96,654	6,261,275	64.75
5-6	.00080	96,612	78	96,573	6,164,621	63.81
6-7	.00073	96,534	70	96,499	6,068,048	62.86
7-8	.00068	96,464	66	96,431	5,971,549	61.90
8-9	.00064	96,398	61	96,367	5,875,118	60.95
9-10	.00062	96,337	60	96,307	5,778,751	59.98
10-11	.00061	96,277	59	96,247	5,682,444	59.02
11-12	.00064	96,218	62	96,187	5,586,197	58.06
12-13	.00069	96,156	66	96,123	5,490,010	57.09
13-14	.00079	96,090	76	96,052	5,393,887	56.13
14-15	.00093	96,014	89	95,970	5,297,835	55.18
15-16	.00109	95,925	105	95,873	5,201,865	54.23
16-17	.00125	95,820	119	95,760	5,105,992	53.29
17-18	.00137	95,701	132	95,635	5,010,232	52.35
18-19	.00146	95,569	139	95,500	4,914,597	51.42
19-20	.00154	95,430	147	95,356	4,819,097	50.50
20-21	.00161	95,283	153	95,206	4,723,741	49.58
21-22	.00165	95,130	157	95,051	4,628,535	48.65
22-23	.00168	94,973	160	94,893	4,533,484	47.73
23-24	.00167	94,813	158	94,734	4,438,591	46.81
24-25	.00163	94,655	155	94,578	4,343,857	45.89
25-26	.00158	94,500	149	94,426	4,249,279	44.97
26-27	.00155	94,351	146	94,278	4,154,853	44.04
27-28	.00154	94,205	145	94,132	4,060,575	43.10
28-29	.00156	94,060	147	93,986	3,966,443	42.17
29-30	.00160	93,913	150	93,838	3,872,457	41.23
30-31	.00166	93,763	156	93,685	3,778,619	40.30
31-32	.00175	93,607	164	93,525	3,684,934	39.37
32-33	.00186	93,443	173	93,356	3,591,409	38.43
33-34	.00200	93,270	187	93,176	3,498,053	37.50
34-35	.00216	93,083	201	92,982	3,404,877	36.58
35-36	.00234	92,882	217	92,773	3,311,895	35.66
36-37	.00256	92,665	238	92,546	3,219,122	34.74
37-38	.00282	92,427	260	92,297	3,126,576	33.83
38-39	.00311	92,167	287	92,023	3,034,279	32.92
39-40	.00343	91,880	315	91,723	2,942,256	32.02
40-41	.00379	91,565	347	91,391	2,850,533	31.13
41-42	.00420	91,218	383	91,026	2,759,142	30.25
42-43	.00465	90,835	423	90,624	2,668,116	29.37
43-44	.00515	90,412	465	90,180	2,577,492	28.51
44-45	.00569	89,947	512	89,691	2,487,312	27.65
45-46	.00628	89,435	562	89,154	2,397,621	26.81
46-47	.00692	88,873	615	88,566	2,308,467	25.97
47-48	.00763	88,258	673	87,922	2,219,901	25.15
48-49	.00839	87,585	735	87,218	2,131,979	24.34
49-50	.00920	86,850	799	86,451	2,044,761	23.54
50-51	.01007	86,051	866	85,618	1,958,310	22.76
51-52	.01103	85,185	940	84,715	1,872,692	21.98
52-53	.01209	84,245	1,019	83,736	1,787,977	21.22
53-54	.01325	83,226	1,102	82,675	1,704,241	20.48
54-55	.01449	82,124	1,190	81,529	1,621,566	19.75

TABLE 9. LIFE TABLE FOR WHITE MALES: EAST NORTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01583	80,934	1,281	80,293	1,540,037	19.03
56-57	.01726	79,653	1,375	78,965	1,459,744	18.33
57-58	.01878	78,278	1,470	77,543	1,380,779	17.64
58-59	.02037	76,808	1,565	76,025	1,303,236	16.97
59-60	.02204	75,243	1,658	74,414	1,227,211	16.31
60-61	.02381	73,585	1,752	72,709	1,152,797	15.67
61-62	.02571	71,833	1,847	70,909	1,080,088	15.04
62-63	.02778	69,986	1,944	69,014	1,009,179	14.42
63-64	.02998	68,042	2,040	67,022	940,165	13.82
64-65	.03229	66,002	2,131	64,936	873,143	13.23
65-66	.03476	63,871	2,221	62,761	808,207	12.65
66-67	.03745	61,650	2,308	60,496	745,446	12.09
67-68	.04041	59,342	2,398	58,143	684,950	11.54
68-69	.04357	56,944	2,481	55,703	626,807	11.01
69-70	.04687	54,463	2,553	53,186	571,104	10.49
70-71	.05046	51,910	2,619	50,600	517,918	9.98
71-72	.05446	49,291	2,685	47,948	467,318	9.48
72-73	.05899	46,606	2,749	45,232	419,370	9.00
73-74	.06401	43,857	2,807	42,453	374,138	8.53
74-75	.06943	41,050	2,850	39,625	331,685	8.08
75-76	.07533	38,200	2,878	36,761	292,060	7.65
76-77	.08177	35,322	2,888	33,878	255,299	7.23
77-78	.08883	32,434	2,881	30,993	221,421	6.83
78-79	.09647	29,553	2,851	28,127	190,428	6.44
79-80	.10465	26,702	2,795	25,305	162,301	6.08
80-81	.11342	23,907	2,711	22,552	136,996	5.73
81-82	.12280	21,196	2,603	19,894	114,444	5.40
82-83	.13285	18,593	2,470	17,358	94,550	5.09
83-84	.14351	16,123	2,314	14,966	77,192	4.79
84-85	.15476	13,809	2,137	12,741	62,226	4.51
85-86	.16667	11,672	1,945	10,699	49,485	4.24
86-87	.17932	9,727	1,745	8,855	38,786	3.99
87-88	.19279	7,982	1,539	7,213	29,931	3.75
88-89	.20743	6,443	1,336	5,775	22,718	3.53
89-90	.22320	5,107	1,140	4,537	16,943	3.32
90-91	.23955	3,967	950	3,492	12,406	3.13
91-92	.25596	3,017	772	2,631	8,914	2.95
92-93	.27189	2,245	611	1,939	6,283	2.80
93-94	.28727	1,634	469	1,400	4,344	2.66
94-95	.30244	1,165	352	989	2,944	2.53
95-96	.31754	813	258	684	1,955	2.41
96-97	.33267	555	185	462	1,271	2.29
97-98	.34796	370	129	306	809	2.19
98-99	.36333	241	87	197	503	2.09
99-100	.37870	154	59	125	306	2.00
100-101	.39419	95	37	77	181	1.91
101-102	.40992	58	24	46	104	1.82
102-103	.42600	34	14	27	58	1.74
103-104	.44255	20	9	15	31	1.67
104-105	.45950	11	5	8	16	1.59
105-106	.47667	6	3	4	8	1.52
106-107	.49389	3	1	2	4	1.46
107-108	.51100	2	1	1	2	1.40
108-109	.52810	1	1	1	1	1.35
109-110	.54529					1.29

TABLE 10. LIFE TABLE FOR WHITE FEMALES: EAST NORTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02212	100,000	2,212	98,089	7,192,371	71.92
1-2	.00167	97,788	163	97,706	7,094,282	72.55
2-3	.00098	97,625	96	97,577	6,996,576	71.67
3-4	.00079	97,529	77	97,490	6,898,999	70.74
4-5	.00063	97,452	61	97,421	6,801,509	69.79
5-6	.00058	97,391	57	97,362	6,704,088	68.84
6-7	.00053	97,334	51	97,308	6,606,726	67.88
7-8	.00049	97,283	48	97,259	6,509,418	66.91
8-9	.00046	97,235	45	97,212	6,412,159	65.94
9-10	.00043	97,190	42	97,169	6,314,947	64.98
10-11	.00041	97,148	40	97,128	6,217,778	64.00
11-12	.00041	97,108	39	97,089	6,120,650	63.03
12-13	.00041	97,069	40	97,049	6,023,561	62.05
13-14	.00043	97,029	42	97,008	5,926,512	61.08
14-15	.00047	96,987	45	96,964	5,829,504	60.11
15-16	.00051	96,942	50	96,917	5,732,540	59.13
16-17	.00056	96,892	54	96,865	5,635,623	58.16
17-18	.00060	96,838	58	96,809	5,538,758	57.20
18-19	.00063	96,780	61	96,749	5,441,949	56.23
19-20	.00066	96,719	64	96,687	5,345,200	55.27
20-21	.00069	96,655	67	96,622	5,248,513	54.30
21-22	.00072	96,588	69	96,553	5,151,891	53.34
22-23	.00075	96,519	73	96,483	5,055,338	52.38
23-24	.00078	96,446	75	96,409	4,958,855	51.42
24-25	.00081	96,371	78	96,332	4,862,446	50.46
25-26	.00084	96,293	81	96,253	4,766,114	49.50
26-27	.00087	96,212	84	96,170	4,669,861	48.54
27-28	.00092	96,128	88	96,084	4,573,691	47.58
28-29	.00097	96,040	93	95,993	4,477,607	46.62
29-30	.00104	95,947	100	95,897	4,381,614	45.67
30-31	.00110	95,847	105	95,794	4,285,717	44.71
31-32	.00118	95,742	113	95,685	4,189,923	43.76
32-33	.00127	95,629	122	95,568	4,094,238	42.81
33-34	.00137	95,507	131	95,442	3,998,670	41.87
34-35	.00147	95,376	140	95,306	3,903,228	40.92
35-36	.00159	95,236	151	95,160	3,807,922	39.98
36-37	.00172	95,085	164	95,003	3,712,762	39.05
37-38	.00187	94,921	177	94,832	3,617,759	38.11
38-39	.00204	94,744	194	94,647	3,522,927	37.18
39-40	.00222	94,550	209	94,445	3,428,280	36.26
40-41	.00242	94,341	229	94,226	3,333,835	35.34
41-42	.00265	94,112	249	93,988	3,239,609	34.42
42-43	.00290	93,863	272	93,727	3,145,621	33.51
43-44	.00318	93,591	298	93,442	3,051,894	32.61
44-45	.00348	93,293	325	93,131	2,958,452	31.71
45-46	.00380	92,968	353	92,792	2,865,321	30.82
46-47	.00416	92,615	385	92,422	2,772,529	29.94
47-48	.00454	92,230	419	92,020	2,680,107	29.06
48-49	.00494	91,811	453	91,584	2,588,087	28.19
49-50	.00537	91,358	491	91,112	2,496,503	27.33
50-51	.00582	90,867	529	90,602	2,405,391	26.47
51-52	.00633	90,338	572	90,052	2,314,789	25.62
52-53	.00689	89,766	618	89,457	2,224,737	24.78
53-54	.00750	89,148	669	88,813	2,135,280	23.95
54-55	.00813	88,479	719	88,119	2,046,467	23.13

TABLE 10. LIFE TABLE FOR WHITE FEMALES: EAST NORTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.00883	87,760	775	87,372	1,958,348	22.31
56-57	.00962	86,985	837	86,566	1,870,976	21.51
57-58	.01053	86,148	907	85,695	1,784,410	20.71
58-59	.01155	85,241	985	84,749	1,698,715	19.93
59-60	.01266	84,256	1,066	83,723	1,613,966	19.16
60-61	.01387	83,190	1,154	82,613	1,530,243	18.39
61-62	.01520	82,036	1,247	81,412	1,447,630	17.65
62-63	.01667	80,789	1,347	80,116	1,366,218	16.91
63-64	.01820	79,442	1,446	78,719	1,286,102	16.19
64-65	.01977	77,996	1,542	77,225	1,207,383	15.48
65-66	.02151	76,454	1,644	75,632	1,130,158	14.78
66-67	.02353	74,810	1,760	73,930	1,054,526	14.10
67-68	.02594	73,050	1,895	72,102	980,596	13.42
68-69	.02871	71,155	2,043	70,133	908,494	12.77
69-70	.03176	69,112	2,195	68,014	838,361	12.13
70-71	.03514	66,917	2,352	65,741	770,347	11.51
71-72	.03890	64,565	2,511	63,310	704,606	10.91
72-73	.04309	62,054	2,674	60,717	641,296	10.33
73-74	.04765	59,380	2,830	57,965	580,579	9.78
74-75	.05255	56,550	2,971	55,065	522,614	9.24
75-76	.05787	53,579	3,101	52,028	467,549	8.73
76-77	.06372	50,478	3,216	48,870	415,521	8.23
77-78	.07018	47,262	3,317	45,603	366,651	7.76
78-79	.07724	43,945	3,394	42,248	321,048	7.31
79-80	.08482	40,551	3,440	38,831	278,800	6.88
80-81	.09298	37,111	3,451	35,386	239,969	6.47
81-82	.10172	33,660	3,424	31,948	204,583	6.08
82-83	.11108	30,236	3,358	28,557	172,635	5.71
83-84	.12083	26,878	3,248	25,254	144,078	5.36
84-85	.13094	23,630	3,094	22,083	118,824	5.03
85-86	.14177	20,536	2,911	19,080	96,741	4.71
86-87	.15367	17,625	2,709	16,270	77,661	4.41
87-88	.16700	14,916	2,491	13,671	61,391	4.12
88-89	.18220	12,425	2,264	11,293	47,720	3.84
89-90	.19905	10,161	2,022	9,150	36,427	3.58
90-91	.21686	8,139	1,765	7,256	27,277	3.35
91-92	.23495	6,374	1,498	5,625	20,021	3.14
92-93	.25262	4,876	1,232	4,260	14,396	2.95
93-94	.26991	3,644	983	3,153	10,136	2.78
94-95	.28726	2,661	765	2,279	6,983	2.62
95-96	.30465	1,896	577	1,608	4,704	2.48
96-97	.32205	1,319	425	1,106	3,096	2.35
97-98	.33941	894	303	742	1,990	2.23
98-99	.35677	591	211	485	1,248	2.12
99-100	.37414	380	142	309	763	2.01
100-101	.39149	238	93	191	454	1.92
101-102	.40879	145	59	115	263	1.83
102-103	.42600	86	37	67	148	1.74
103-104	.44310	49	22	38	81	1.67
104-105	.46011	27	12	21	43	1.59
105-106	.47708	15	7	11	22	1.52
106-107	.49403	8	4	6	11	1.46
107-108	.51100	4	2	3	5	1.40
108-109	.52810	2	1	1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 11. LIFE TABLE FOR NONWHITE MALES: EAST NORTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04462	100,000	4,462	96,282	5,913,488	59.13
1-2	.00385	95,538	368	95,354	5,817,206	60.89
2-3	.00214	95,170	203	95,068	5,721,852	60.12
3-4	.00183	94,967	174	94,880	5,626,784	59.25
4-5	.00167	94,793	159	94,714	5,531,904	58.36
5-6	.00138	94,634	130	94,569	5,437,190	57.45
6-7	.00115	94,504	109	94,449	5,342,621	56.53
7-8	.00096	94,395	90	94,350	5,248,172	55.60
8-9	.00082	94,305	78	94,266	5,153,822	54.65
9-10	.00074	94,227	70	94,192	5,059,556	53.70
10-11	.00072	94,157	67	94,124	4,965,364	52.73
11-12	.00075	94,090	71	94,054	4,871,240	51.77
12-13	.00085	94,019	80	93,979	4,777,186	50.81
13-14	.00103	93,939	97	93,891	4,683,207	49.85
14-15	.00129	93,842	121	93,782	4,589,316	48.90
15-16	.00160	93,721	150	93,646	4,495,534	47.97
16-17	.00192	93,571	179	93,482	4,401,888	47.04
17-18	.00223	93,392	208	93,288	4,308,406	46.13
18-19	.00254	93,184	237	93,065	4,215,118	45.23
19-20	.00287	92,947	267	92,813	4,122,053	44.35
20-21	.00320	92,680	297	92,532	4,029,240	43.47
21-22	.00349	92,383	322	92,222	3,936,708	42.61
22-23	.00370	92,061	341	91,891	3,844,486	41.76
23-24	.00380	91,720	348	91,546	3,752,595	40.91
24-25	.00380	91,372	347	91,198	3,661,049	40.07
25-26	.00380	91,025	346	90,852	3,569,851	39.22
26-27	.00382	90,679	347	90,506	3,478,999	38.37
27-28	.00387	90,332	349	90,158	3,388,493	37.51
28-29	.00401	89,983	361	89,802	3,298,335	36.66
29-30	.00419	89,622	376	89,434	3,208,533	35.80
30-31	.00441	89,246	393	89,050	3,119,099	34.95
31-32	.00467	88,853	415	88,645	3,030,049	34.10
32-33	.00498	88,438	440	88,218	2,941,404	33.26
33-34	.00534	87,998	470	87,763	2,853,186	32.42
34-35	.00575	87,528	504	87,276	2,765,423	31.59
35-36	.00619	87,024	538	86,755	2,678,147	30.77
36-37	.00667	86,486	577	86,197	2,591,392	29.96
37-38	.00718	85,909	617	85,600	2,505,195	29.16
38-39	.00770	85,292	657	84,964	2,419,595	28.37
39-40	.00822	84,635	695	84,287	2,334,631	27.58
40-41	.00879	83,940	738	83,571	2,250,344	26.81
41-42	.00942	83,202	784	82,810	2,166,773	26.04
42-43	.01014	82,418	836	82,000	2,083,963	25.29
43-44	.01095	81,582	893	81,136	2,001,963	24.54
44-45	.01182	80,689	954	80,212	1,920,827	23.81
45-46	.01277	79,735	1,018	79,226	1,840,615	23.08
46-47	.01378	78,717	1,085	78,175	1,761,389	22.38
47-48	.01486	77,632	1,153	77,055	1,683,214	21.68
48-49	.01597	76,479	1,222	75,868	1,606,159	21.00
49-50	.01713	75,257	1,289	74,613	1,530,291	20.33
50-51	.01836	73,968	1,358	73,289	1,455,678	19.68
51-52	.01971	72,610	1,431	71,894	1,382,389	19.04
52-53	.02120	71,179	1,509	70,424	1,310,495	18.41
53-54	.02287	69,670	1,593	68,873	1,240,071	17.80
54-55	.02470	68,077	1,682	67,236	1,171,198	17.20

TABLE 11. LIFE TABLE FOR NONWHITE MALES: EAST NORTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02663	66,395	1,768	65,511	1,103,962	16.63
56-57	.02864	64,627	1,851	63,701	1,038,451	16.07
57-58	.03067	62,776	1,925	61,813	974,750	15.53
58-59	.03272	60,851	1,991	59,855	912,937	15.00
59-60	.03481	58,860	2,049	57,835	853,082	14.49
60-61	.03696	56,811	2,100	55,761	795,247	14.00
61-62	.03920	54,711	2,145	53,639	739,486	13.52
62-63	.04154	52,566	2,183	51,475	685,847	13.05
63-64	.04396	50,383	2,215	49,275	634,372	12.59
64-65	.04646	48,168	2,238	47,049	585,097	12.15
65-66	.04905	45,930	2,253	44,804	538,048	11.71
66-67	.05178	43,677	2,261	42,546	493,244	11.29
67-68	.05466	41,416	2,264	40,284	450,698	10.88
68-69	.05768	39,152	2,258	38,023	410,414	10.48
69-70	.06081	36,894	2,244	35,772	372,391	10.09
70-71	.06410	34,650	2,221	33,539	336,619	9.71
71-72	.06756	32,429	2,191	31,334	303,080	9.35
72-73	.07124	30,238	2,154	29,161	271,746	8.99
73-74	.07509	28,084	2,109	27,029	242,585	8.64
74-75	.07910	25,975	2,055	24,948	215,556	8.30
75-76	.08332	23,920	1,993	22,924	190,608	7.97
76-77	.08780	21,927	1,925	20,965	167,684	7.65
77-78	.09259	20,002	1,852	19,076	146,719	7.34
78-79	.09784	18,150	1,776	17,262	127,643	7.03
79-80	.10351	16,374	1,695	15,527	110,381	6.74
80-81	.10939	14,679	1,605	13,877	94,854	6.46
81-82	.11526	13,074	1,507	12,320	80,977	6.19
82-83	.12091	11,567	1,399	10,868	68,657	5.94
83-84	.12553	10,168	1,276	9,530	57,789	5.68
84-85	.12928	8,892	1,150	8,317	48,259	5.43
85-86	.13334	7,742	1,032	7,226	39,942	5.16
86-87	.13893	6,710	932	6,244	32,716	4.88
87-88	.14725	5,778	851	5,352	26,472	4.58
88-89	.15866	4,927	782	4,536	21,120	4.29
89-90	.17235	4,145	714	3,788	16,584	4.00
90-91	.18779	3,431	644	3,109	12,796	3.73
91-92	.20445	2,787	570	2,502	9,687	3.48
92-93	.22178	2,217	492	1,971	7,185	3.24
93-94	.24014	1,725	414	1,518	5,214	3.02
94-95	.25990	1,311	341	1,141	3,696	2.82
95-96	.28051	970	272	834	2,555	2.63
96-97	.30144	698	210	593	1,721	2.46
97-98	.32215	488	157	409	1,128	2.31
98-99	.34300	331	114	274	719	2.17
99-100	.36434	217	79	178	445	2.05
100-101	.38565	138	53	111	267	1.93
101-102	.40638	85	35	68	156	1.83
102-103	.42600	50	21	40	88	1.74
103-104	.44421	29	13	22	48	1.66
104-105	.46136	16	7	12	26	1.59
105-106	.47790	9	4	7	14	1.52
106-107	.49430	5	3	3	7	1.46
107-108	.51100	2	1	2	4	1.40
108-109	.52810	1		1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 12. LIFE TABLE FOR NONWHITE FEMALES: EAST NORTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03522	100,000	3,522	97,095	6,293,609	62.94
1-2	.00314	96,478	303	96,327	6,196,514	64.23
2-3	.00171	96,175	164	96,093	6,100,187	63.43
3-4	.00162	96,011	156	95,933	6,004,094	62.54
4-5	.00115	95,855	110	95,800	5,908,161	61.64
5-6	.00095	95,745	91	95,699	5,812,361	60.71
6-7	.00076	95,654	73	95,618	5,716,662	59.76
7-8	.00061	95,581	58	95,552	5,621,044	58.81
8-9	.00049	95,523	47	95,499	5,525,492	57.84
9-10	.00042	95,476	40	95,456	5,429,993	56.87
10-11	.00039	95,436	37	95,417	5,334,537	55.90
11-12	.00042	95,399	40	95,379	5,239,120	54.92
12-13	.00052	95,359	50	95,334	5,143,741	53.94
13-14	.00072	95,309	69	95,275	5,048,407	52.97
14-15	.00102	95,240	97	95,192	4,953,132	52.01
15-16	.00135	95,143	128	95,079	4,857,940	51.06
16-17	.00166	95,015	160	94,935	4,762,861	50.13
17-18	.00192	94,855	182	94,764	4,667,926	49.21
18-19	.00207	94,673	196	94,575	4,573,162	48.30
19-20	.00217	94,477	205	94,375	4,478,587	47.40
20-21	.00224	94,272	211	94,167	4,384,212	46.51
21-22	.00231	94,061	217	93,952	4,290,045	45.61
22-23	.00240	93,844	226	93,731	4,196,093	44.71
23-24	.00252	93,618	235	93,501	4,102,362	43.82
24-25	.00264	93,383	247	93,259	4,008,861	42.93
25-26	.00278	93,136	259	93,007	3,915,602	42.04
26-27	.00292	92,877	271	92,742	3,822,595	41.16
27-28	.00308	92,606	285	92,463	3,729,853	40.28
28-29	.00324	92,321	299	92,171	3,637,390	39.40
29-30	.00340	92,022	313	91,865	3,545,219	38.53
30-31	.00358	91,709	329	91,545	3,453,354	37.66
31-32	.00380	91,380	347	91,207	3,361,809	36.79
32-33	.00407	91,033	370	90,848	3,270,602	35.93
33-34	.00440	90,663	399	90,463	3,179,754	35.07
34-35	.00476	90,264	430	90,049	3,089,291	34.23
35-36	.00518	89,834	465	89,601	2,999,242	33.39
36-37	.00562	89,369	503	89,118	2,909,641	32.56
37-38	.00611	88,866	543	88,595	2,820,523	31.74
38-39	.00663	88,323	585	88,031	2,731,928	30.93
39-40	.00719	87,738	631	87,422	2,643,897	30.13
40-41	.00778	87,107	678	86,768	2,556,475	29.35
41-42	.00842	86,429	727	86,065	2,469,707	28.57
42-43	.00910	85,702	780	85,312	2,383,642	27.81
43-44	.00983	84,922	835	84,504	2,298,330	27.06
44-45	.01060	84,087	891	83,641	2,213,826	26.33
45-46	.01141	83,196	950	82,721	2,130,185	25.60
46-47	.01226	82,246	1,008	81,742	2,047,464	24.89
47-48	.01313	81,238	1,067	80,705	1,965,722	24.20
48-49	.01400	80,171	1,122	79,610	1,885,017	23.51
49-50	.01489	79,049	1,177	78,460	1,805,407	22.84
50-51	.01581	77,872	1,231	77,256	1,726,947	22.18
51-52	.01681	76,641	1,289	75,997	1,649,691	21.52
52-53	.01792	75,352	1,350	74,677	1,573,694	20.88
53-54	.01916	74,002	1,418	73,293	1,499,017	20.26
54-55	.02050	72,584	1,488	71,840	1,425,724	19.64

TABLE 12. LIFE TABLE FOR NONWHITE FEMALES: EAST NORTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02192	71,096	1,558	70,317	1,353,884	19.04
56-57	.02338	69,538	1,626	68,725	1,283,567	18.46
57-58	.02487	67,912	1,689	67,068	1,214,842	17.89
58-59	.02637	66,223	1,746	65,350	1,147,774	17.33
59-60	.02789	64,477	1,798	63,578	1,082,424	16.79
60-61	.02946	62,679	1,847	61,755	1,018,846	16.25
61-62	.03109	60,832	1,891	59,886	957,091	15.73
62-63	.03280	58,941	1,934	57,974	897,205	15.22
63-64	.03457	57,007	1,970	56,022	839,231	14.72
64-65	.03638	55,037	2,002	54,036	783,209	14.23
65-66	.03827	53,035	2,030	52,020	729,173	13.75
66-67	.04026	51,005	2,054	49,978	677,153	13.28
67-68	.04240	48,951	2,075	47,914	627,175	12.81
68-69	.04464	46,876	2,093	45,830	579,261	12.36
69-70	.04696	44,783	2,103	43,732	533,431	11.91
70-71	.04942	42,680	2,109	41,626	489,699	11.47
71-72	.05207	40,571	2,112	39,515	448,073	11.04
72-73	.05496	38,459	2,114	37,402	408,558	10.62
73-74	.05812	36,345	2,113	35,289	371,156	10.21
74-75	.06153	34,232	2,106	33,179	335,867	9.81
75-76	.06512	32,126	2,092	31,080	302,688	9.42
76-77	.06885	30,034	2,068	29,000	271,608	9.04
77-78	.07268	27,966	2,032	26,950	242,608	8.68
78-79	.07660	25,934	1,987	24,940	215,658	8.32
79-80	.08065	23,947	1,931	22,981	190,718	7.96
80-81	.08482	22,016	1,868	21,082	167,737	7.62
81-82	.08911	20,148	1,795	19,251	146,655	7.28
82-83	.09351	18,353	1,716	17,495	127,404	6.94
83-84	.09713	16,637	1,616	15,829	109,909	6.61
84-85	.09997	15,021	1,502	14,270	94,080	6.26
85-86	.10338	13,519	1,397	12,820	79,810	5.90
86-87	.10870	12,122	1,318	11,463	66,990	5.53
87-88	.11727	10,804	1,267	10,171	55,527	5.14
88-89	.12957	9,537	1,236	8,919	45,356	4.76
89-90	.14469	8,301	1,201	7,701	36,437	4.39
90-91	.16194	7,100	1,150	6,525	28,736	4.05
91-92	.18061	5,950	1,074	5,413	22,211	3.73
92-93	.20002	4,876	976	4,388	16,798	3.45
93-94	.22062	3,900	860	3,470	12,410	3.18
94-95	.24288	3,040	738	2,671	8,940	2.94
95-96	.26610	2,302	613	1,995	6,269	2.72
96-97	.28959	1,689	489	1,445	4,274	2.53
97-98	.31264	1,200	375	1,012	2,829	2.36
98-99	.33572	825	277	686	1,817	2.20
99-100	.35929	548	197	449	1,131	2.06
100-101	.38266	351	134	284	682	1.94
101-102	.40513	217	88	173	398	1.83
102-103	.42600	129	55	101	225	1.74
103-104	.44482	74	33	58	124	1.66
104-105	.46204	41	19	32	66	1.59
105-106	.47836	22	10	17	34	1.52
106-107	.49445	12	6	9	17	1.46
107-108	.51100	6	3	4	8	1.40
108-109	.52810	3	2	2	4	1.35
109-110	.54529	1		1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 13. LIFE TABLE FOR WHITE MALES: WEST NORTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02865	100,000	2,865	97,480	6,777,015	67.77
1-2	.00205	97,135	199	97,035	6,679,535	68.77
2-3	.00131	96,936	127	96,872	6,582,500	67.91
3-4	.00098	96,809	95	96,761	6,485,628	66.99
4-5	.00090	96,714	87	96,670	6,388,867	66.06
5-6	.00081	96,627	78	96,588	6,292,197	65.12
6-7	.00074	96,549	72	96,513	6,195,609	64.17
7-8	.00068	96,477	65	96,444	6,099,096	63.22
8-9	.00064	96,412	62	96,381	6,002,652	62.26
9-10	.00063	96,350	61	96,320	5,906,271	61.30
10-11	.00063	96,289	60	96,259	5,809,951	60.34
11-12	.00067	96,229	65	96,196	5,713,692	59.38
12-13	.00073	96,164	70	96,129	5,617,496	58.42
13-14	.00084	96,094	81	96,054	5,521,367	57.46
14-15	.00100	96,013	96	95,965	5,425,313	56.51
15-16	.00117	95,917	112	95,861	5,329,348	55.56
16-17	.00134	95,805	128	95,741	5,233,487	54.63
17-18	.00146	95,677	140	95,607	5,137,746	53.70
18-19	.00154	95,537	147	95,463	5,042,139	52.78
19-20	.00160	95,390	153	95,313	4,946,676	51.86
20-21	.00164	95,237	156	95,159	4,851,363	50.94
21-22	.00166	95,081	158	95,002	4,756,204	50.02
22-23	.00168	94,923	159	94,843	4,661,202	49.11
23-24	.00168	94,764	160	94,684	4,566,359	48.19
24-25	.00167	94,604	158	94,525	4,471,675	47.27
25-26	.00164	94,446	154	94,369	4,377,150	46.35
26-27	.00163	94,292	154	94,215	4,282,781	45.42
27-28	.00163	94,138	154	94,061	4,188,566	44.49
28-29	.00165	93,984	155	93,907	4,094,505	43.57
29-30	.00168	93,829	157	93,751	4,000,598	42.64
30-31	.00173	93,672	162	93,591	3,906,847	41.71
31-32	.00179	93,510	168	93,426	3,813,256	40.78
32-33	.00188	93,342	175	93,255	3,719,830	39.85
33-34	.00199	93,167	186	93,074	3,626,575	38.93
34-35	.00211	92,981	196	92,883	3,533,501	38.00
35-36	.00226	92,785	209	92,680	3,440,618	37.08
36-37	.00243	92,576	225	92,463	3,347,938	36.16
37-38	.00263	92,351	243	92,229	3,255,475	35.25
38-39	.00284	92,108	262	91,977	3,163,246	34.34
39-40	.00307	91,846	282	91,705	3,071,269	33.44
40-41	.00333	91,564	305	91,412	2,979,564	32.54
41-42	.00363	91,259	331	91,094	2,888,152	31.65
42-43	.00399	90,928	363	90,747	2,797,058	30.76
43-44	.00441	90,565	399	90,365	2,706,311	29.88
44-45	.00488	90,166	440	89,946	2,615,946	29.01
45-46	.00539	89,726	484	89,484	2,526,000	28.15
46-47	.00594	89,242	530	88,977	2,436,516	27.30
47-48	.00652	88,712	578	88,423	2,347,539	26.46
48-49	.00711	88,134	627	87,820	2,259,116	25.63
49-50	.00772	87,507	676	87,169	2,171,296	24.81
50-51	.00836	86,831	725	86,468	2,084,127	24.00
51-52	.00909	86,106	783	85,714	1,997,659	23.20
52-53	.00992	85,323	847	84,900	1,911,945	22.41
53-54	.01085	84,476	916	84,018	1,827,045	21.63
54-55	.01186	83,560	991	83,064	1,743,027	20.86

TABLE 13. LIFE TABLE FOR WHITE MALES: WEST NORTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01295	82,569	1,069	82,034	1,659,963	20.10
56-57	.01415	81,500	1,154	80,923	1,577,929	19.36
57-58	.01545	80,346	1,241	79,726	1,497,006	18.63
58-59	.01684	79,105	1,332	78,439	1,417,280	17.92
59-60	.01832	77,773	1,425	77,060	1,338,841	17.21
60-61	.01991	76,348	1,520	75,588	1,261,781	16.53
61-62	.02163	74,828	1,619	74,019	1,186,193	15.85
62-63	.02351	73,209	1,721	72,349	1,112,174	15.19
63-64	.02548	71,488	1,821	70,578	1,039,825	14.55
64-65	.02754	69,667	1,919	68,707	969,247	13.91
65-66	.02976	67,748	2,016	66,740	900,540	13.29
66-67	.03224	65,732	2,119	64,672	833,800	12.68
67-68	.03505	63,613	2,230	62,498	769,128	12.09
68-69	.03813	61,383	2,340	60,213	706,630	11.51
69-70	.04141	59,043	2,445	57,820	646,417	10.95
70-71	.04501	56,598	2,548	55,324	588,597	10.40
71-72	.04903	54,050	2,650	52,725	533,273	9.87
72-73	.05357	51,400	2,753	50,023	480,548	9.35
73-74	.05859	48,647	2,851	47,221	430,525	8.85
74-75	.06401	45,796	2,931	44,331	383,304	8.37
75-76	.06991	42,865	2,997	41,367	338,973	7.91
76-77	.07636	39,868	3,044	38,346	297,606	7.46
77-78	.08343	36,824	3,072	35,288	259,260	7.04
78-79	.09106	33,752	3,074	32,215	223,972	6.64
79-80	.09919	30,678	3,043	29,157	191,757	6.25
80-81	.10794	27,635	2,983	26,144	162,600	5.88
81-82	.11738	24,652	2,893	23,206	136,456	5.54
82-83	.12761	21,759	2,777	20,370	113,250	5.20
83-84	.13881	18,982	2,635	17,665	92,880	4.89
84-85	.15091	16,347	2,467	15,114	75,215	4.60
85-86	.16366	13,880	2,271	12,744	60,101	4.33
86-87	.17679	11,609	2,053	10,582	47,357	4.08
87-88	.19004	9,556	1,816	8,648	36,775	3.85
88-89	.20336	7,740	1,574	6,953	28,127	3.63
89-90	.21693	6,166	1,337	5,497	21,174	3.43
90-91	.23082	4,829	1,115	4,271	15,677	3.25
91-92	.24511	3,714	910	3,259	11,406	3.07
92-93	.25988	2,804	729	2,439	8,147	2.91
93-94	.27522	2,075	571	1,790	5,708	2.75
94-95	.29108	1,504	438	1,285	3,918	2.60
95-96	.30732	1,066	327	902	2,633	2.47
96-97	.32381	739	240	619	1,731	2.34
97-98	.34041	499	170	414	1,112	2.22
98-99	.35721	329	117	271	698	2.11
99-100	.37431	212	80	172	427	2.01
100-101	.39156	132	51	107	255	1.92
101-102	.40884	81	33	64	148	1.83
102-103	.42600	48	21	38	84	1.74
103-104	.44304	27	12	21	46	1.67
104-105	.46004	15	7	12	25	1.59
105-106	.47703	8	4	6	13	1.52
106-107	.49401	4	2	3	7	1.46
107-108	.51100	2	1	2	4	1.40
108-109	.52810	1		1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 14. LIFE TABLE FOR WHITE FEMALES: WEST NORTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02170	100,000	2,170	98,125	7,329,177	73.29
1-2	.00167	97,830	163	97,748	7,231,052	73.91
2-3	.00107	97,667	105	97,614	7,133,304	73.04
3-4	.00085	97,562	83	97,521	7,035,690	72.12
4-5	.00065	97,479	63	97,448	6,938,169	71.18
5-6	.00057	97,416	56	97,388	6,840,721	70.22
6-7	.00050	97,360	48	97,336	6,743,333	69.26
7-8	.00046	97,312	45	97,289	6,645,997	68.30
8-9	.00043	97,267	42	97,246	6,548,708	67.33
9-10	.00042	97,225	41	97,205	6,451,462	66.36
10-11	.00041	97,184	40	97,164	6,354,257	65.38
11-12	.00042	97,144	40	97,124	6,257,093	64.41
12-13	.00043	97,104	42	97,083	6,159,969	63.44
13-14	.00045	97,062	44	97,040	6,062,886	62.46
14-15	.00049	97,018	47	96,994	5,965,846	61.49
15-16	.00053	96,971	52	96,945	5,868,852	60.52
16-17	.00057	96,919	55	96,892	5,771,907	59.55
17-18	.00061	96,864	59	96,834	5,675,015	58.59
18-19	.00064	96,805	62	96,774	5,578,181	57.62
19-20	.00067	96,743	65	96,710	5,481,407	56.66
20-21	.00070	96,678	68	96,644	5,384,697	55.70
21-22	.00073	96,610	70	96,575	5,288,053	54.74
22-23	.00075	96,540	73	96,504	5,191,478	53.78
23-24	.00077	96,467	74	96,430	5,094,974	52.82
24-25	.00078	96,393	75	96,356	4,998,544	51.86
25-26	.00079	96,318	76	96,280	4,902,188	50.90
26-27	.00081	96,242	78	96,203	4,805,908	49.94
27-28	.00084	96,164	81	96,124	4,709,705	48.98
28-29	.00087	96,083	83	96,041	4,613,581	48.02
29-30	.00091	96,000	88	95,956	4,517,540	47.06
30-31	.00096	95,912	92	95,866	4,421,584	46.10
31-32	.00102	95,820	98	95,771	4,325,718	45.14
32-33	.00109	95,722	104	95,670	4,229,947	44.19
33-34	.00118	95,618	113	95,562	4,134,277	43.24
34-35	.00128	95,505	122	95,444	4,038,715	42.29
35-36	.00140	95,383	134	95,316	3,943,271	41.34
36-37	.00153	95,249	145	95,177	3,847,955	40.40
37-38	.00166	95,104	158	95,025	3,752,778	39.46
38-39	.00180	94,946	171	94,860	3,657,753	38.52
39-40	.00194	94,775	184	94,683	3,562,893	37.59
40-41	.00209	94,591	198	94,492	3,468,210	36.67
41-42	.00226	94,393	213	94,287	3,373,718	35.74
42-43	.00246	94,180	232	94,064	3,279,431	34.82
43-44	.00268	93,948	251	93,823	3,185,367	33.91
44-45	.00293	93,697	275	93,559	3,091,544	33.00
45-46	.00319	93,422	298	93,273	2,997,985	32.09
46-47	.00347	93,124	323	92,962	2,904,712	31.19
47-48	.00378	92,801	351	92,626	2,811,750	30.30
48-49	.00410	92,450	379	92,261	2,719,124	29.41
49-50	.00442	92,071	407	91,868	2,626,863	28.53
50-51	.00477	91,664	437	91,446	2,534,995	27.66
51-52	.00517	91,227	472	90,991	2,443,549	26.79
52-53	.00562	90,755	510	90,500	2,352,558	25.92
53-54	.00612	90,245	552	89,969	2,262,058	25.07
54-55	.00666	89,693	597	89,394	2,172,089	24.22

TABLE 14. LIFE TABLE FOR WHITE FEMALES: WEST NORTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.00724	89,096	645	88,773	2,082,695	23.38
56-57	.00791	88,451	700	88,101	1,993,922	22.54
57-58	.00866	87,751	760	87,371	1,905,821	21.72
58-59	.00948	86,991	825	86,579	1,818,450	20.90
59-60	.01036	86,166	892	85,720	1,731,871	20.10
60-61	.01133	85,274	967	84,791	1,646,151	19.30
61-62	.01242	84,307	1,047	83,784	1,561,360	18.52
62-63	.01367	83,260	1,138	82,691	1,477,576	17.75
63-64	.01501	82,122	1,232	81,506	1,394,885	16.99
64-65	.01642	80,890	1,329	80,225	1,313,379	16.24
65-66	.01801	79,561	1,433	78,845	1,233,154	15.50
66-67	.01985	78,128	1,550	77,353	1,154,309	14.77
67-68	.02207	76,578	1,691	75,733	1,076,956	14.06
68-69	.02460	74,887	1,842	73,966	1,001,223	13.37
69-70	.02738	73,045	2,000	72,045	927,257	12.69
70-71	.03049	71,045	2,166	69,962	855,212	12.04
71-72	.03400	68,879	2,342	67,708	785,250	11.40
72-73	.03799	66,537	2,528	65,273	717,542	10.78
73-74	.04241	64,009	2,714	62,652	652,269	10.19
74-75	.04721	61,295	2,894	59,848	589,617	9.62
75-76	.05246	58,401	3,064	56,869	529,769	9.07
76-77	.05825	55,337	3,223	53,726	472,900	8.55
77-78	.06464	52,114	3,369	50,430	419,174	8.04
78-79	.07155	48,745	3,487	47,001	368,744	7.56
79-80	.07891	45,258	3,572	43,472	321,743	7.11
80-81	.08689	41,686	3,622	39,875	278,271	6.68
81-82	.09560	38,064	3,639	36,245	238,396	6.26
82-83	.10519	34,425	3,621	32,615	202,151	5.87
83-84	.11585	30,804	3,569	29,020	169,536	5.50
84-85	.12750	27,235	3,472	25,499	140,516	5.16
85-86	.13983	23,763	3,323	22,102	115,017	4.84
86-87	.15257	20,440	3,118	18,881	92,915	4.55
87-88	.16543	17,322	2,866	15,889	74,034	4.27
88-89	.17813	14,456	2,575	13,169	58,145	4.02
89-90	.19085	11,881	2,267	10,747	44,976	3.79
90-91	.20403	9,614	1,962	8,633	34,229	3.56
91-92	.21808	7,652	1,669	6,818	25,596	3.35
92-93	.23343	5,983	1,396	5,285	18,778	3.14
93-94	.25040	4,587	1,149	4,012	13,493	2.94
94-95	.26871	3,438	924	2,976	9,481	2.76
95-96	.28787	2,514	724	2,152	6,505	2.59
96-97	.30742	1,790	550	1,515	4,353	2.43
97-98	.32688	1,240	405	1,037	2,838	2.29
98-99	.34657	835	290	690	1,801	2.16
99-100	.36680	545	200	445	1,111	2.04
100-101	.38710	345	133	279	666	1.93
101-102	.40699	212	86	169	387	1.83
102-103	.42600	126	54	99	218	1.74
103-104	.44390	72	32	56	119	1.66
104-105	.46102	40	18	31	63	1.59
105-106	.47768	22	11	16	32	1.52
106-107	.49423	11	5	8	16	1.46
107-108	.51100	6	3	4	8	1.40
108-109	.52810	3	2	2	4	1.35
109-110	.54529	1		1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 15. LIFE TABLE FOR NONWHITE MALES: WEST NORTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.05478	100,000	5,478	95,435	5,760,669	57.61
1-2	.00644	94,522	609	94,218	5,665,234	59.94
2-3	.00384	93,913	360	93,733	5,571,016	59.32
3-4	.00278	93,553	260	93,423	5,477,283	58.55
4-5	.00196	93,293	183	93,201	5,383,860	57.71
5-6	.00173	93,110	161	93,029	5,290,659	56.82
6-7	.00151	92,949	141	92,878	5,197,630	55.92
7-8	.00131	92,808	121	92,747	5,104,752	55.00
8-9	.00114	92,687	106	92,634	5,012,005	54.07
9-10	.00101	92,581	93	92,534	4,919,371	53.14
10-11	.00093	92,488	86	92,445	4,826,837	52.19
11-12	.00091	92,402	85	92,359	4,734,392	51.24
12-13	.00097	92,317	89	92,273	4,642,033	50.28
13-14	.00112	92,228	103	92,176	4,549,760	49.33
14-15	.00135	92,125	125	92,062	4,457,584	48.39
15-16	.00163	92,000	150	91,925	4,365,522	47.45
16-17	.00195	91,850	179	91,761	4,273,597	46.53
17-18	.00227	91,671	208	91,567	4,181,836	45.62
18-19	.00263	91,463	240	91,343	4,090,269	44.72
19-20	.00304	91,223	278	91,084	3,998,926	43.84
20-21	.00346	90,945	314	90,788	3,907,842	42.97
21-22	.00383	90,631	348	90,457	3,817,054	42.12
22-23	.00410	90,283	370	90,098	3,726,597	41.28
23-24	.00418	89,913	376	89,725	3,636,499	40.44
24-25	.00420	89,537	376	89,349	3,546,774	39.61
25-26	.00422	89,161	376	88,973	3,457,425	38.78
26-27	.00423	88,785	375	88,597	3,368,452	37.94
27-28	.00424	88,410	375	88,222	3,279,855	37.10
28-29	.00438	88,035	386	87,842	3,191,633	36.25
29-30	.00455	87,649	399	87,450	3,103,791	35.41
30-31	.00476	87,250	415	87,043	3,016,341	34.57
31-32	.00500	86,835	434	86,618	2,929,298	33.73
32-33	.00527	86,401	456	86,173	2,842,680	32.90
33-34	.00555	85,945	477	85,707	2,756,507	32.07
34-35	.00586	85,468	500	85,218	2,670,800	31.25
35-36	.00619	84,968	526	84,705	2,585,582	30.43
36-37	.00658	84,442	556	84,164	2,500,877	29.62
37-38	.00704	83,886	591	83,591	2,416,713	28.81
38-39	.00754	83,295	628	82,981	2,333,122	28.01
39-40	.00809	82,667	668	82,333	2,250,141	27.22
40-41	.00869	81,999	713	81,642	2,167,808	26.44
41-42	.00940	81,286	764	80,904	2,086,166	25.66
42-43	.01024	80,522	825	80,110	2,005,262	24.90
43-44	.01123	79,697	895	79,250	1,925,152	24.16
44-45	.01235	78,802	973	78,316	1,845,902	23.42
45-46	.01357	77,829	1,056	77,301	1,767,586	22.71
46-47	.01486	76,773	1,141	76,203	1,690,285	22.02
47-48	.01618	75,632	1,223	75,020	1,614,082	21.34
48-49	.01755	74,409	1,306	73,756	1,539,062	20.68
49-50	.01898	73,103	1,388	72,409	1,465,306	20.04
50-51	.02047	71,715	1,468	70,981	1,392,897	19.42
51-52	.02200	70,247	1,545	69,474	1,321,916	18.82
52-53	.02356	68,702	1,619	67,892	1,252,442	18.23
53-54	.02514	67,083	1,686	66,240	1,184,550	17.66
54-55	.02675	65,397	1,750	64,522	1,118,310	17.10

TABLE 15. LIFE TABLE FOR NONWHITE MALES: WEST NORTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02839	63,647	1,807	62,744	1,053,788	16.56
56-57	.03009	61,840	1,860	60,910	991,044	16.03
57-58	.03185	59,980	1,911	59,024	930,134	15.51
58-59	.03366	58,069	1,954	57,092	871,110	15.00
59-60	.03553	56,115	1,994	55,118	814,018	14.51
60-61	.03744	54,121	2,026	53,108	758,900	14.02
61-62	.03943	52,095	2,055	51,068	705,792	13.55
62-63	.04149	50,040	2,076	49,002	654,724	13.08
63-64	.04357	47,964	2,090	46,919	605,722	12.63
64-65	.04567	45,874	2,095	44,827	558,803	12.18
65-66	.04787	43,779	2,095	42,732	513,976	11.74
66-67	.05024	41,684	2,095	40,637	471,244	11.31
67-68	.05287	39,589	2,093	38,543	430,607	10.88
68-69	.05573	37,496	2,089	36,452	392,064	10.46
69-70	.05875	35,407	2,080	34,367	355,612	10.04
70-71	.06200	33,327	2,067	32,293	321,245	9.64
71-72	.06553	31,260	2,048	30,236	288,952	9.24
72-73	.06938	29,212	2,027	28,198	258,716	8.86
73-74	.07352	27,185	1,999	26,186	230,518	8.48
74-75	.07791	25,186	1,962	24,205	204,332	8.11
75-76	.08262	23,224	1,919	22,265	180,127	7.76
76-77	.08771	21,305	1,868	20,371	157,862	7.41
77-78	.09323	19,437	1,812	18,531	137,491	7.07
78-79	.09932	17,625	1,751	16,749	118,960	6.75
79-80	.10593	15,874	1,681	15,033	102,211	6.44
80-81	.11288	14,193	1,602	13,392	87,178	6.14
81-82	.11998	12,591	1,511	11,835	73,786	5.86
82-83	.12704	11,080	1,408	10,376	61,951	5.59
83-84	.13352	9,672	1,291	9,027	51,575	5.33
84-85	.13954	8,381	1,170	7,796	42,548	5.08
85-86	.14592	7,211	1,052	6,685	34,752	4.82
86-87	.15350	6,159	945	5,686	28,067	4.56
87-88	.16309	5,214	851	4,789	22,381	4.29
88-89	.17496	4,363	763	3,982	17,592	4.03
89-90	.18855	3,600	679	3,261	13,610	3.78
90-91	.20348	2,921	594	2,624	10,349	3.54
91-92	.21935	2,327	511	2,072	7,725	3.32
92-93	.23578	1,816	428	1,602	5,653	3.11
93-94	.25302	1,388	351	1,213	4,051	2.92
94-95	.27134	1,037	281	896	2,838	2.74
95-96	.29034	756	220	646	1,942	2.57
96-97	.30964	536	166	453	1,296	2.42
97-98	.32884	370	122	309	843	2.28
98-99	.34820	248	86	205	534	2.15
99-100	.36799	162	60	132	329	2.03
100-101	.38781	102	39	82	197	1.93
101-102	.40728	63	26	50	115	1.83
102-103	.42600	37	16	29	65	1.74
103-104	.44378	21	9	17	36	1.66
104-105	.46088	12	6	9	19	1.59
105-106	.47758	6	3	5	10	1.52
106-107	.49419	3	1	3	5	1.46
107-108	.51100	2	1	1	2	1.40
108-109	.52810	1	1	1	1	1.35
109-110	.54529					1.29

TABLE 16. LIFE TABLE FOR NONWHITE FEMALES: WEST NORTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME.
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04170	100,000	4,170	96,561	6,129,063	61.29
1-2	.00625	95,830	599	95,531	6,032,502	62.95
2-3	.00367	95,231	349	95,056	5,936,971	62.34
3-4	.00263	94,882	250	94,757	5,841,915	61.57
4-5	.00168	94,632	159	94,553	5,747,158	60.73
5-6	.00139	94,473	131	94,407	5,652,605	59.83
6-7	.00114	94,342	108	94,288	5,558,198	58.92
7-8	.00093	94,234	87	94,190	5,463,910	57.98
8-9	.00076	94,147	72	94,111	5,369,720	57.04
9-10	.00065	94,075	61	94,044	5,275,609	56.08
10-11	.00060	94,014	57	93,986	5,181,565	55.11
11-12	.00060	93,957	56	93,929	5,087,579	54.15
12-13	.00068	93,901	64	93,869	4,993,650	53.18
13-14	.00087	93,837	81	93,796	4,899,781	52.22
14-15	.00116	93,756	109	93,701	4,805,985	51.26
15-16	.00149	93,647	140	93,577	4,712,284	50.32
16-17	.00182	93,507	170	93,422	4,618,707	49.39
17-18	.00206	93,337	192	93,241	4,525,285	48.48
18-19	.00221	93,145	206	93,042	4,432,044	47.58
19-20	.00229	92,939	213	92,833	4,339,002	46.69
20-21	.00236	92,726	219	92,617	4,246,169	45.79
21-22	.00243	92,507	224	92,395	4,153,552	44.90
22-23	.00254	92,283	235	92,165	4,061,157	44.01
23-24	.00270	92,048	248	91,924	3,968,992	43.12
24-25	.00288	91,800	265	91,667	3,877,068	42.23
25-26	.00308	91,535	282	91,394	3,785,401	41.35
26-27	.00329	91,253	300	91,103	3,694,007	40.48
27-28	.00349	90,953	317	90,794	3,602,904	39.61
28-29	.00368	90,636	334	90,469	3,512,110	38.75
29-30	.00386	90,302	348	90,128	3,421,641	37.89
30-31	.00406	89,954	366	89,771	3,331,513	37.04
31-32	.00428	89,588	383	89,397	3,241,742	36.19
32-33	.00455	89,205	406	89,002	3,152,345	35.34
33-34	.00487	88,799	432	88,583	3,063,343	34.50
34-35	.00522	88,367	462	88,136	2,974,760	33.66
35-36	.00561	87,905	493	87,659	2,886,624	32.84
36-37	.00605	87,412	529	87,148	2,798,965	32.02
37-38	.00652	86,883	566	86,600	2,711,817	31.21
38-39	.00703	86,317	607	86,013	2,625,217	30.41
39-40	.00757	85,710	649	85,386	2,539,204	29.63
40-41	.00815	85,061	693	84,715	2,453,818	28.85
41-42	.00880	84,368	743	83,997	2,369,103	28.08
42-43	.00951	83,625	795	83,228	2,285,106	27.33
43-44	.01030	82,830	853	82,404	2,201,878	26.58
44-45	.01116	81,977	915	81,520	2,119,474	25.85
45-46	.01208	81,062	979	80,573	2,037,954	25.14
46-47	.01304	80,083	1,044	79,561	1,957,381	24.44
47-48	.01403	79,039	1,109	78,484	1,877,820	23.76
48-49	.01504	77,930	1,172	77,344	1,799,336	23.09
49-50	.01608	76,758	1,235	76,141	1,721,992	22.43
50-51	.01716	75,523	1,296	74,875	1,645,851	21.79
51-52	.01828	74,227	1,356	73,549	1,570,976	21.16
52-53	.01945	72,871	1,418	72,162	1,497,427	20.55
53-54	.02067	71,453	1,477	70,715	1,425,265	19.95
54-55	.02195	69,976	1,536	69,208	1,354,550	19.36

TABLE 16. LIFE TABLE FOR NONWHITE FEMALES: WEST NORTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02327	68,440	1,592	67,644	1,285,342	18.78
56-57	.02462	66,848	1,646	66,025	1,217,698	18.22
57-58	.02599	65,202	1,695	64,355	1,151,673	17.66
58-59	.02738	63,507	1,739	62,638	1,087,318	17.12
59-60	.02878	61,768	1,777	60,880	1,024,680	16.59
60-61	.03022	59,991	1,813	59,084	963,800	16.07
61-62	.03171	58,178	1,845	57,255	904,716	15.55
62-63	.03329	56,333	1,875	55,395	847,461	15.04
63-64	.03491	54,458	1,901	53,507	792,066	14.54
64-65	.03655	52,557	1,921	51,596	738,559	14.05
65-66	.03828	50,636	1,939	49,666	686,963	13.57
66-67	.04015	48,697	1,955	47,720	637,297	13.09
67-68	.04221	46,742	1,973	45,756	589,577	12.61
68-69	.04443	44,769	1,989	43,775	543,821	12.15
69-70	.04677	42,780	2,001	41,780	500,046	11.69
70-71	.04929	40,779	2,010	39,774	458,266	11.24
71-72	.05202	38,769	2,017	37,761	418,492	10.79
72-73	.05503	36,752	2,022	35,741	380,731	10.36
73-74	.05830	34,730	2,025	33,718	344,990	9.93
74-75	.06179	32,705	2,021	31,695	311,272	9.52
75-76	.06553	30,684	2,010	29,679	279,577	9.11
76-77	.06952	28,674	1,994	27,677	249,898	8.72
77-78	.07377	26,680	1,968	25,696	222,221	8.33
78-79	.07826	24,712	1,934	23,745	196,525	7.95
79-80	.08298	22,778	1,890	21,833	172,780	7.59
80-81	.08797	20,888	1,838	19,969	150,947	7.23
81-82	.09328	19,050	1,777	18,162	130,978	6.88
82-83	.09894	17,273	1,709	16,419	112,816	6.53
83-84	.10433	15,564	1,623	14,752	96,397	6.19
84-85	.10942	13,941	1,526	13,178	81,645	5.86
85-86	.11516	12,415	1,430	11,700	68,467	5.51
86-87	.12248	10,985	1,345	10,313	56,767	5.17
87-88	.13235	9,640	1,276	9,002	46,454	4.82
88-89	.14513	8,364	1,214	7,757	37,452	4.48
89-90	.16019	7,150	1,145	6,578	29,695	4.15
90-91	.17697	6,005	1,063	5,473	23,117	3.85
91-92	.19491	4,942	963	4,461	17,644	3.57
92-93	.21347	3,979	849	3,554	13,183	3.31
93-94	.23301	3,130	730	2,765	9,629	3.08
94-95	.25389	2,400	609	2,096	6,864	2.86
95-96	.27557	1,791	494	1,544	4,768	2.66
96-97	.29749	1,297	386	1,104	3,224	2.49
97-98	.31909	911	290	766	2,120	2.33
98-99	.34074	621	212	515	1,354	2.18
99-100	.36281	409	148	335	839	2.05
100-101	.38475	261	101	211	504	1.93
101-102	.40600	160	65	128	293	1.83
102-103	.42600	95	40	75	165	1.74
103-104	.44440	55	25	43	90	1.66
104-105	.46158	30	14	23	47	1.59
105-106	.47805	16	7	12	24	1.52
106-107	.49435	9	5	6	12	1.46
107-108	.51100	4	2	3	6	1.40
108-109	.52810	2	1	2	3	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 17. LIFE TABLE FOR WHITE MALES: SOUTH ATLANTIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03236	100,000	3,236	97,154	6,599,622	66.00
1-2	.00209	96,764	202	96,663	6,502,468	67.20
2-3	.00137	96,562	133	96,496	6,405,805	66.34
3-4	.00104	96,429	100	96,379	6,309,309	65.43
4-5	.00093	96,329	89	96,284	6,212,930	64.50
5-6	.00085	96,240	82	96,199	6,116,646	63.56
6-7	.00077	96,158	74	96,121	6,020,447	62.61
7-8	.00070	96,084	68	96,050	5,924,326	61.66
8-9	.00064	96,016	61	95,986	5,828,276	60.70
9-10	.00060	95,955	58	95,926	5,732,290	59.74
10-11	.00057	95,897	54	95,870	5,636,364	58.78
11-12	.00058	95,843	56	95,815	5,540,494	57.81
12-13	.00062	95,787	59	95,758	5,444,679	56.84
13-14	.00070	95,728	67	95,694	5,348,921	55.88
14-15	.00083	95,661	80	95,621	5,253,227	54.92
15-16	.00098	95,581	93	95,535	5,157,606	53.96
16-17	.00113	95,488	108	95,434	5,062,071	53.01
17-18	.00127	95,380	121	95,319	4,966,637	52.07
18-19	.00140	95,259	134	95,192	4,871,318	51.14
19-20	.00154	95,125	146	95,052	4,776,126	50.21
20-21	.00167	94,979	159	94,900	4,681,074	49.29
21-22	.00179	94,820	169	94,735	4,586,174	48.37
22-23	.00187	94,651	177	94,562	4,491,439	47.45
23-24	.00188	94,474	178	94,385	4,396,877	46.54
24-25	.00189	94,296	178	94,207	4,302,492	45.63
25-26	.00190	94,118	179	94,028	4,208,285	44.71
26-27	.00191	93,939	180	93,849	4,114,257	43.80
27-28	.00191	93,759	179	93,670	4,020,408	42.88
28-29	.00195	93,580	182	93,489	3,926,738	41.96
29-30	.00201	93,398	188	93,304	3,833,249	41.04
30-31	.00208	93,210	194	93,113	3,739,945	40.12
31-32	.00217	93,016	202	92,915	3,646,832	39.21
32-33	.00228	92,814	211	92,709	3,553,917	38.29
33-34	.00241	92,603	223	92,491	3,461,208	37.38
34-35	.00255	92,380	236	92,262	3,368,717	36.47
35-36	.00272	92,144	251	92,019	3,276,455	35.56
36-37	.00293	91,893	269	91,759	3,184,436	34.65
37-38	.00319	91,624	292	91,478	3,092,677	33.75
38-39	.00351	91,332	321	91,172	3,001,199	32.86
39-40	.00388	91,011	353	90,835	2,910,027	31.97
40-41	.00429	90,658	389	90,464	2,819,192	31.10
41-42	.00475	90,269	428	90,055	2,728,728	30.23
42-43	.00523	89,841	470	89,606	2,638,673	29.37
43-44	.00574	89,371	513	89,114	2,549,067	28.52
44-45	.00628	88,858	558	88,579	2,459,953	27.68
45-46	.00686	88,300	606	87,997	2,371,374	26.86
46-47	.00749	87,694	657	87,365	2,283,377	26.04
47-48	.00818	87,037	712	86,681	2,196,012	25.23
48-49	.00891	86,325	769	85,941	2,109,331	24.43
49-50	.00967	85,556	827	85,142	2,023,390	23.65
50-51	.01050	84,729	890	84,284	1,938,248	22.88
51-52	.01142	83,839	957	83,360	1,853,964	22.11
52-53	.01248	82,882	1,035	82,364	1,770,604	21.36
53-54	.01368	81,847	1,119	81,287	1,688,240	20.63
54-55	.01501	80,728	1,212	80,122	1,606,953	19.91

TABLE 17. LIFE TABLE FOR WHITE MALES: SOUTH ATLANTIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01644	79,516	1,307	78,862	1,526,831	19.20
56-57	.01795	78,209	1,404	77,507	1,447,969	18.51
57-58	.01950	76,805	1,498	76,056	1,370,462	17.84
58-59	.02110	75,307	1,589	74,513	1,294,406	17.19
59-60	.02276	73,718	1,678	72,879	1,219,893	16.55
60-61	.02449	72,040	1,764	71,158	1,147,014	15.92
61-62	.02629	70,276	1,848	69,352	1,075,856	15.31
62-63	.02817	68,428	1,927	67,465	1,006,504	14.71
63-64	.03001	66,501	1,996	65,503	939,039	14.12
64-65	.03182	64,505	2,052	63,479	873,536	13.54
65-66	.03375	62,453	2,108	61,399	810,057	12.97
66-67	.03597	60,345	2,171	59,259	748,658	12.41
67-68	.03865	58,174	2,248	57,050	689,399	11.85
68-69	.04179	55,926	2,337	54,757	632,349	11.31
69-70	.04528	53,589	2,427	52,375	577,592	10.78
70-71	.04911	51,162	2,512	49,906	525,217	10.27
71-72	.05327	48,650	2,592	47,354	475,311	9.77
72-73	.05775	46,058	2,660	44,728	427,957	9.29
73-74	.06253	43,398	2,714	42,041	383,229	8.83
74-75	.06761	40,684	2,750	39,309	341,188	8.39
75-76	.07303	37,934	2,771	36,549	301,879	7.96
76-77	.07881	35,163	2,771	33,778	265,330	7.55
77-78	.08499	32,392	2,753	31,016	231,552	7.15
78-79	.09121	29,639	2,703	28,288	200,536	6.77
79-80	.09745	26,936	2,625	25,623	172,248	6.39
80-81	.10424	24,311	2,534	23,044	146,625	6.03
81-82	.11211	21,777	2,442	20,556	123,581	5.67
82-83	.12159	19,335	2,351	18,160	103,025	5.33
83-84	.13340	16,984	2,265	15,852	84,865	5.00
84-85	.14717	14,719	2,166	13,636	69,013	4.69
85-86	.16185	12,553	2,032	11,537	55,377	4.41
86-87	.17636	10,521	1,856	9,593	43,840	4.17
87-88	.18964	8,665	1,643	7,844	34,247	3.95
88-89	.20098	7,022	1,411	6,316	26,403	3.76
89-90	.21110	5,611	1,185	5,019	20,087	3.58
90-91	.22104	4,426	978	3,937	15,068	3.40
91-92	.23187	3,448	800	3,048	11,131	3.23
92-93	.24462	2,648	647	2,325	8,083	3.05
93-94	.25963	2,001	520	1,741	5,758	2.88
94-95	.27620	1,481	409	1,277	4,017	2.71
95-96	.29383	1,072	315	915	2,740	2.55
96-97	.31203	757	236	639	1,825	2.41
97-98	.33030	521	172	435	1,186	2.27
98-99	.34897	349	122	288	751	2.15
99-100	.36837	227	84	185	463	2.03
100-101	.38801	143	55	116	278	1.92
101-102	.40738	88	36	70	162	1.83
102-103	.42600	52	22	41	92	1.74
103-104	.44368	30	13	23	51	1.66
104-105	.46077	17	8	13	28	1.59
105-106	.47751	9	4	7	15	1.52
106-107	.49417	5	3	4	8	1.46
107-108	.51100	2	1	2	4	1.40
108-109	.52810	1		1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 18. LIFE TABLE FOR WHITE FEMALES: SOUTH ATLANTIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02445	100,000	2,445	97,887	7,248,579	72.49
1-2	.00191	97,555	186	97,462	7,150,692	73.30
2-3	.00121	97,369	118	97,310	7,053,230	72.44
3-4	.00087	97,251	85	97,209	6,955,920	71.53
4-5	.00069	97,166	67	97,133	6,858,711	70.59
5-6	.00060	97,099	58	97,070	6,761,578	69.64
6-7	.00053	97,041	51	97,015	6,664,508	68.68
7-8	.00047	96,990	46	96,967	6,567,493	67.71
8-9	.00043	96,944	42	96,923	6,470,526	66.74
9-10	.00040	96,902	39	96,883	6,373,603	65.77
10-11	.00038	96,863	36	96,845	6,276,720	64.80
11-12	.00037	96,827	36	96,809	6,179,875	63.82
12-13	.00038	96,791	37	96,772	6,083,066	62.85
13-14	.00040	96,754	39	96,735	5,986,294	61.87
14-15	.00045	96,715	43	96,694	5,889,559	60.90
15-16	.00050	96,672	48	96,648	5,792,865	59.92
16-17	.00055	96,624	54	96,597	5,696,217	58.95
17-18	.00060	96,570	58	96,541	5,599,620	57.99
18-19	.00064	96,512	61	96,482	5,503,079	57.02
19-20	.00068	96,451	66	96,418	5,406,597	56.06
20-21	.00071	96,385	68	96,351	5,310,179	55.09
21-22	.00075	96,317	73	96,281	5,213,828	54.13
22-23	.00078	96,244	75	96,207	5,117,547	53.17
23-24	.00081	96,169	78	96,130	5,021,340	52.21
24-25	.00083	96,091	79	96,052	4,925,210	51.26
25-26	.00086	96,012	83	95,970	4,829,158	50.30
26-27	.00089	95,929	85	95,886	4,733,188	49.34
27-28	.00094	95,844	90	95,799	4,637,302	48.38
28-29	.00101	95,754	97	95,705	4,541,503	47.43
29-30	.00109	95,657	104	95,605	4,445,798	46.48
30-31	.00118	95,553	113	95,496	4,350,193	45.53
31-32	.00127	95,440	121	95,379	4,254,697	44.58
32-33	.00137	95,319	131	95,253	4,159,318	43.64
33-34	.00146	95,188	139	95,119	4,064,065	42.70
34-35	.00156	95,049	148	94,975	3,968,946	41.76
35-36	.00166	94,901	158	94,822	3,873,971	40.82
36-37	.00177	94,743	167	94,659	3,779,149	39.89
37-38	.00190	94,576	180	94,486	3,684,490	38.96
38-39	.00205	94,396	194	94,299	3,590,004	38.03
39-40	.00221	94,202	208	94,098	3,495,705	37.11
40-41	.00239	93,994	224	93,882	3,401,607	36.19
41-42	.00258	93,770	242	93,649	3,307,725	35.27
42-43	.00280	93,528	262	93,397	3,214,076	34.36
43-44	.00303	93,266	283	93,124	3,120,679	33.46
44-45	.00328	92,983	305	92,831	3,027,555	32.56
45-46	.00355	92,678	329	92,514	2,934,724	31.67
46-47	.00385	92,349	355	92,171	2,842,210	30.78
47-48	.00417	91,994	384	91,802	2,750,039	29.89
48-49	.00452	91,610	414	91,403	2,658,237	29.02
49-50	.00488	91,196	445	90,973	2,566,834	28.15
50-51	.00527	90,751	478	90,512	2,475,861	27.28
51-52	.00571	90,273	516	90,015	2,385,349	26.42
52-53	.00620	89,757	556	89,479	2,295,334	25.57
53-54	.00673	89,201	601	88,901	2,205,855	24.73
54-55	.00729	88,600	646	88,277	2,116,954	23.89

TABLE 18. LIFE TABLE FOR WHITE FEMALES: SOUTH ATLANTIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.00790	87,954	694	87,607	2,028,677	23.07
56-57	.00859	87,260	750	86,885	1,941,070	22.24
57-58	.00938	86,510	811	86,104	1,854,185	21.43
58-59	.01025	85,699	879	85,259	1,768,081	20.63
59-60	.01119	84,820	949	84,346	1,682,822	19.84
60-61	.01222	83,871	1,025	83,359	1,598,476	19.06
61-62	.01337	82,846	1,107	82,292	1,515,117	18.29
62-63	.01468	81,739	1,200	81,139	1,432,825	17.53
63-64	.01606	80,539	1,294	79,892	1,351,686	16.78
64-65	.01750	79,245	1,387	78,552	1,271,794	16.05
65-66	.01912	77,858	1,488	77,114	1,193,242	15.33
66-67	.02101	76,370	1,605	75,567	1,116,128	14.61
67-68	.02330	74,765	1,742	73,894	1,040,561	13.92
68-69	.02598	73,023	1,897	72,075	966,667	13.24
69-70	.02897	71,126	2,061	70,096	894,592	12.58
70-71	.03229	69,065	2,230	67,950	824,496	11.94
71-72	.03594	66,835	2,402	65,634	756,546	11.32
72-73	.03993	64,433	2,573	63,147	690,912	10.72
73-74	.04413	61,860	2,729	60,496	627,765	10.15
74-75	.04853	59,131	2,870	57,696	567,269	9.59
75-76	.05333	56,261	3,000	54,761	509,573	9.06
76-77	.05876	53,261	3,130	51,696	454,812	8.54
77-78	.06500	50,131	3,259	48,502	403,116	8.04
78-79	.07217	46,872	3,382	45,181	354,614	7.57
79-80	.08013	43,490	3,485	41,747	309,433	7.12
80-81	.08872	40,005	3,549	38,230	267,686	6.69
81-82	.09778	36,456	3,565	34,673	229,456	6.29
82-83	.10718	32,891	3,525	31,128	194,783	5.92
83-84	.11679	29,366	3,430	27,651	163,655	5.57
84-85	.12672	25,936	3,287	24,293	136,004	5.24
85-86	.13713	22,649	3,105	21,097	111,711	4.93
86-87	.14820	19,544	2,897	18,095	90,614	4.64
87-88	.16007	16,647	2,665	15,315	72,519	4.36
88-89	.17264	13,982	2,413	12,776	57,204	4.09
89-90	.18580	11,569	2,150	10,494	44,428	3.84
90-91	.19972	9,419	1,881	8,479	33,934	3.60
91-92	.21457	7,538	1,617	6,729	25,455	3.38
92-93	.23054	5,921	1,365	5,238	18,726	3.16
93-94	.24793	4,556	1,130	3,991	13,488	2.96
94-95	.26664	3,426	913	2,969	9,497	2.77
95-96	.28619	2,513	719	2,153	6,528	2.60
96-97	.30608	1,794	549	1,519	4,375	2.44
97-98	.32585	1,245	406	1,042	2,856	2.29
98-99	.34581	839	290	694	1,814	2.16
99-100	.36629	549	201	448	1,120	2.04
100-101	.38680	348	135	281	672	1.93
101-102	.40686	213	86	170	391	1.83
102-103	.42600	127	54	100	221	1.74
103-104	.44397	73	33	56	121	1.66
104-105	.46109	40	18	31	65	1.59
105-106	.47773	22	11	17	34	1.52
106-107	.49424	11	5	9	17	1.46
107-108	.51100	6	3	4	8	1.40
108-109	.52810	3	2	2	4	1.35
109-110	.54529	1		1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 19. LIFE TABLE FOR NONWHITE MALES: SOUTH ATLANTIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.05244	100,000	5,244	95,630	5,748,750	57.49
1-2	.00447	94,756	424	94,544	5,653,120	59.66
2-3	.00243	94,332	229	94,218	5,558,576	58.93
3-4	.00177	94,103	166	94,020	5,464,358	58.07
4-5	.00135	93,937	127	93,873	5,370,338	57.17
5-6	.00117	93,810	110	93,755	5,276,465	56.25
6-7	.00102	93,700	95	93,652	5,182,710	55.31
7-8	.00091	93,605	86	93,562	5,089,058	54.37
8-9	.00083	93,519	77	93,481	4,995,496	53.42
9-10	.00079	93,442	74	93,405	4,902,015	52.46
10-11	.00079	93,368	74	93,331	4,808,610	51.50
11-12	.00084	93,294	78	93,255	4,715,279	50.54
12-13	.00094	93,216	88	93,172	4,622,024	49.58
13-14	.00110	93,128	102	93,077	4,528,852	48.63
14-15	.00131	93,026	122	92,965	4,435,775	47.68
15-16	.00157	92,904	146	92,831	4,342,810	46.75
16-17	.00185	92,758	172	92,672	4,249,979	45.82
17-18	.00213	92,586	197	92,488	4,157,307	44.90
18-19	.00243	92,389	224	92,277	4,064,819	44.00
19-20	.00275	92,165	254	92,038	3,972,542	43.10
20-21	.00308	91,911	283	91,770	3,880,504	42.22
21-22	.00340	91,628	311	91,472	3,788,734	41.35
22-23	.00370	91,317	338	91,148	3,697,262	40.49
23-24	.00396	90,979	361	90,799	3,606,114	39.64
24-25	.00420	90,618	380	90,428	3,515,315	38.79
25-26	.00442	90,238	399	90,038	3,424,887	37.95
26-27	.00466	89,839	419	89,630	3,334,849	37.12
27-28	.00491	89,420	439	89,201	3,245,219	36.29
28-29	.00518	88,981	461	88,751	3,156,018	35.47
29-30	.00546	88,520	483	88,279	3,067,267	34.65
30-31	.00575	88,037	506	87,784	2,978,988	33.84
31-32	.00606	87,531	531	87,266	2,891,204	33.03
32-33	.00641	87,000	557	86,722	2,803,938	32.23
33-34	.00678	86,443	586	86,150	2,717,216	31.43
34-35	.00717	85,857	616	85,549	2,631,066	30.64
35-36	.00759	85,241	647	84,918	2,545,517	29.86
36-37	.00805	84,594	681	84,254	2,460,599	29.09
37-38	.00855	83,913	717	83,554	2,376,345	28.32
38-39	.00906	83,196	754	82,819	2,292,791	27.56
39-40	.00958	82,442	790	82,047	2,209,972	26.81
40-41	.01016	81,652	830	81,237	2,127,925	26.06
41-42	.01084	80,822	876	80,384	2,046,688	25.32
42-43	.01168	79,946	933	79,479	1,966,304	24.60
43-44	.01268	79,013	1,002	78,512	1,886,825	23.88
44-45	.01380	78,011	1,077	77,472	1,808,313	23.18
45-46	.01505	76,934	1,158	76,355	1,730,841	22.50
46-47	.01640	75,776	1,242	75,155	1,654,486	21.83
47-48	.01785	74,534	1,331	73,868	1,579,331	21.19
48-49	.01942	73,203	1,421	72,492	1,505,463	20.57
49-50	.02110	71,782	1,515	71,024	1,432,971	19.96
50-51	.02289	70,267	1,608	69,463	1,361,947	19.38
51-52	.02475	68,659	1,700	67,809	1,292,484	18.82
52-53	.02667	66,959	1,786	66,066	1,224,675	18.29
53-54	.02871	65,173	1,871	64,238	1,158,609	17.78
54-55	.03090	63,302	1,956	62,324	1,094,371	17.29

TABLE 19. LIFE TABLE FOR NONWHITE MALES: SOUTH ATLANTIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.03312	61,346	2,032	60,330	1,032,047	16.82
56-57	.03528	59,314	2,092	58,268	971,717	16.38
57-58	.03729	57,222	2,134	56,155	913,449	15.96
58-59	.03914	55,088	2,156	54,010	857,294	15.56
59-60	.04089	52,932	2,164	51,850	803,284	15.18
60-61	.04256	50,768	2,161	49,687	751,434	14.80
61-62	.04414	48,607	2,146	47,534	701,747	14.44
62-63	.04566	46,461	2,121	45,401	654,213	14.08
63-64	.04708	44,340	2,088	43,296	608,812	13.73
64-65	.04839	42,252	2,044	41,230	565,516	13.38
65-66	.04964	40,208	1,996	39,210	524,286	13.04
66-67	.05086	38,212	1,944	37,240	485,076	12.69
67-68	.05211	36,268	1,890	35,323	447,836	12.35
68-69	.05330	34,378	1,832	33,462	412,513	12.00
69-70	.05442	32,546	1,771	31,661	379,051	11.65
70-71	.05556	30,775	1,710	29,920	347,390	11.29
71-72	.05684	29,065	1,652	28,239	317,470	10.92
72-73	.05837	27,413	1,600	26,613	289,231	10.55
73-74	.06003	25,813	1,550	25,038	262,618	10.17
74-75	.06174	24,263	1,498	23,514	237,580	9.79
75-76	.06368	22,765	1,449	22,041	214,066	9.40
76-77	.06603	21,316	1,408	20,612	192,025	9.01
77-78	.06897	19,908	1,373	19,222	171,413	8.61
78-79	.07236	18,535	1,341	17,865	152,191	8.21
79-80	.07608	17,194	1,308	16,540	134,326	7.81
80-81	.08034	15,886	1,276	15,248	117,786	7.41
81-82	.08533	14,610	1,247	13,986	102,538	7.02
82-83	.09125	13,363	1,219	12,753	88,552	6.63
83-84	.09776	12,144	1,188	11,550	75,799	6.24
84-85	.10472	10,956	1,147	10,383	64,249	5.86
85-86	.11265	9,809	1,105	9,257	53,866	5.49
86-87	.12206	8,704	1,062	8,173	44,609	5.13
87-88	.13346	7,642	1,020	7,132	36,436	4.77
88-89	.14717	6,622	975	6,135	29,304	4.43
89-90	.16286	5,647	919	5,187	23,169	4.10
90-91	.18003	4,728	852	4,302	17,982	3.80
91-92	.19820	3,876	768	3,492	13,680	3.53
92-93	.21688	3,108	674	2,771	10,188	3.28
93-94	.23640	2,434	575	2,146	7,417	3.05
94-95	.25707	1,859	478	1,620	5,271	2.84
95-96	.27842	1,381	385	1,189	3,651	2.64
96-97	.29995	996	298	847	2,462	2.47
97-98	.32118	698	225	586	1,615	2.32
98-99	.34243	473	162	392	1,029	2.17
99-100	.36402	311	113	255	637	2.05
100-101	.38547	198	76	160	382	1.93
101-102	.40630	122	50	97	222	1.83
102-103	.42600	72	31	57	125	1.74
103-104	.44427	41	18	32	68	1.66
104-105	.46143	23	11	18	36	1.59
105-106	.47795	12	6	9	18	1.52
106-107	.49432	6	3	5	9	1.46
107-108	.51100	3	1	2	4	1.40
108-109	.52810	2	1	1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 20. LIFE TABLE FOR NONWHITE FEMALES: SOUTH ATLANTIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04190	100,000	4,190	96,544	6,202,679	62.03
1-2	.00351	95,810	336	95,642	6,106,135	63.73
2-3	.00194	95,474	186	95,381	6,010,493	62.95
3-4	.00157	95,288	149	95,214	5,915,112	62.08
4-5	.00125	95,139	119	95,079	5,819,898	61.17
5-6	.00105	95,020	100	94,970	5,724,819	60.25
6-7	.00088	94,920	83	94,878	5,629,849	59.31
7-8	.00074	94,837	71	94,802	5,534,971	58.36
8-9	.00064	94,766	60	94,736	5,440,169	57.41
9-10	.00058	94,706	55	94,678	5,345,433	56.44
10-11	.00056	94,651	53	94,624	5,250,755	55.47
11-12	.00058	94,598	55	94,570	5,156,131	54.51
12-13	.00064	94,543	60	94,513	5,061,561	53.54
13-14	.00076	94,483	72	94,447	4,967,048	52.57
14-15	.00093	94,411	88	94,367	4,872,601	51.61
15-16	.00114	94,323	108	94,269	4,778,234	50.66
16-17	.00136	94,215	128	94,151	4,683,965	49.72
17-18	.00157	94,087	147	94,013	4,589,814	48.78
18-19	.00176	93,940	166	93,857	4,495,801	47.86
19-20	.00196	93,774	184	93,682	4,401,944	46.94
20-21	.00216	93,590	202	93,489	4,308,262	46.03
21-22	.00236	93,388	220	93,278	4,214,773	45.13
22-23	.00257	93,168	240	93,048	4,121,495	44.24
23-24	.00278	92,928	258	92,799	4,028,447	43.35
24-25	.00299	92,670	277	92,532	3,935,648	42.47
25-26	.00321	92,393	297	92,245	3,843,116	41.60
26-27	.00344	92,096	316	91,938	3,750,871	40.73
27-28	.00367	91,780	337	91,611	3,658,933	39.87
28-29	.00391	91,443	358	91,264	3,567,322	39.01
29-30	.00415	91,085	378	90,896	3,476,058	38.16
30-31	.00440	90,707	399	90,508	3,385,162	37.32
31-32	.00467	90,308	422	90,097	3,294,654	36.48
32-33	.00497	89,886	446	89,663	3,204,557	35.65
33-34	.00530	89,440	474	89,203	3,114,894	34.83
34-35	.00566	88,966	504	88,714	3,025,691	34.01
35-36	.00604	88,462	534	88,195	2,936,977	33.20
36-37	.00645	87,928	567	87,644	2,848,782	32.40
37-38	.00690	87,361	603	87,059	2,761,138	31.61
38-39	.00736	86,758	639	86,439	2,674,079	30.82
39-40	.00782	86,119	673	85,783	2,587,640	30.05
40-41	.00832	85,446	711	85,090	2,501,857	29.28
41-42	.00891	84,735	755	84,357	2,416,767	28.52
42-43	.00960	83,980	806	83,577	2,332,410	27.77
43-44	.01042	83,174	867	82,740	2,248,833	27.04
44-45	.01135	82,307	934	81,840	2,166,093	26.32
45-46	.01236	81,373	1,006	80,870	2,084,253	25.61
46-47	.01342	80,367	1,078	79,828	2,003,383	24.93
47-48	.01451	79,289	1,151	78,713	1,923,555	24.26
48-49	.01562	78,138	1,220	77,528	1,844,842	23.61
49-50	.01675	76,918	1,289	76,273	1,767,314	22.98
50-51	.01795	75,629	1,357	74,950	1,691,041	22.36
51-52	.01921	74,272	1,427	73,558	1,616,091	21.76
52-53	.02057	72,845	1,499	72,096	1,542,533	21.18
53-54	.02208	71,346	1,575	70,559	1,470,437	20.61
54-55	.02372	69,771	1,655	68,944	1,399,878	20.06

TABLE 20. LIFE TABLE FOR NONWHITE FEMALES: SOUTH ATLANTIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02541	68,116	1,731	67,251	1,330,934	19.54
56-57	.02708	66,385	1,797	65,486	1,263,683	19.04
57-58	.02865	64,588	1,851	63,662	1,198,197	18.55
58-59	.03010	62,737	1,888	61,793	1,134,535	18.08
59-60	.03150	60,849	1,917	59,890	1,072,742	17.63
60-61	.03285	58,932	1,936	57,964	1,012,852	17.19
61-62	.03416	56,996	1,947	56,023	954,888	16.75
62-63	.03545	55,049	1,951	54,073	898,865	16.33
63-64	.03672	53,098	1,950	52,123	844,792	15.91
64-65	.03796	51,148	1,942	50,177	792,669	15.50
65-66	.03917	49,206	1,927	48,243	742,492	15.09
66-67	.04035	47,279	1,908	46,325	694,249	14.68
67-68	.04149	45,371	1,882	44,430	647,924	14.28
68-69	.04253	43,489	1,850	42,564	603,494	13.88
69-70	.04347	41,639	1,810	40,734	560,930	13.47
70-71	.04441	39,829	1,769	38,945	520,196	13.06
71-72	.04545	38,060	1,730	37,195	481,251	12.64
72-73	.04669	36,330	1,696	35,482	444,056	12.22
73-74	.04809	34,634	1,665	33,801	408,574	11.80
74-75	.04959	32,969	1,635	32,151	374,773	11.37
75-76	.05124	31,334	1,606	30,531	342,622	10.93
76-77	.05308	29,728	1,578	28,939	312,091	10.50
77-78	.05518	28,150	1,553	27,374	283,152	10.06
78-79	.05735	26,597	1,525	25,834	255,778	9.62
79-80	.05957	25,072	1,494	24,325	229,944	9.17
80-81	.06208	23,578	1,464	22,846	205,619	8.72
81-82	.06516	22,114	1,441	21,394	182,773	8.27
82-83	.06906	20,673	1,427	19,960	161,379	7.81
83-84	.07308	19,246	1,407	18,542	141,419	7.35
84-85	.07705	17,839	1,374	17,152	122,877	6.89
85-86	.08202	16,465	1,351	15,789	105,725	6.42
86-87	.08903	15,114	1,345	14,441	89,936	5.95
87-88	.09915	13,769	1,366	13,086	75,495	5.48
88-89	.11286	12,403	1,399	11,704	62,409	5.03
89-90	.12946	11,004	1,425	10,291	50,705	4.61
90-91	.14822	9,579	1,420	8,869	40,414	4.22
91-92	.16839	8,159	1,374	7,472	31,545	3.87
92-93	.18923	6,785	1,284	6,143	24,073	3.55
93-94	.21124	5,501	1,162	4,920	17,930	3.26
94-95	.23491	4,339	1,019	3,830	13,010	3.00
95-96	.25950	3,320	862	2,889	9,180	2.77
96-97	.28426	2,458	698	2,109	6,291	2.56
97-98	.30847	1,760	543	1,488	4,182	2.38
98-99	.33261	1,217	405	1,014	2,694	2.22
99-100	.35717	812	290	667	1,680	2.07
100-101	.38141	522	199	422	1,013	1.94
101-102	.40460	323	131	258	591	1.83
102-103	.42600	192	82	151	333	1.74
103-104	.44508	110	49	86	182	1.66
104-105	.46234	61	28	47	96	1.59
105-106	.47856	33	16	25	49	1.52
106-107	.49452	17	8	13	24	1.46
107-108	.51100	9	5	6	11	1.40
108-109	.52810	4	2	3	5	1.35
109-110	.54529	2	1	1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 21. LIFE TABLE FOR WHITE MALES: EAST SOUTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03736	100,000	3,736	96,714	6,601,768	66.02
1-2	.00259	96,264	249	96,139	6,505,054	67.58
2-3	.00163	96,015	157	95,936	6,408,915	66.75
3-4	.00118	95,858	113	95,802	6,312,979	65.86
4-5	.00092	95,745	88	95,701	6,217,177	64.93
5-6	.00082	95,657	78	95,618	6,121,476	63.99
6-7	.00074	95,579	71	95,543	6,025,858	63.05
7-8	.00067	95,508	64	95,476	5,930,315	62.09
8-9	.00063	95,444	60	95,414	5,834,839	61.13
9-10	.00060	95,384	58	95,355	5,739,425	60.17
10-11	.00061	95,326	58	95,297	5,644,070	59.21
11-12	.00064	95,268	61	95,238	5,548,773	58.24
12-13	.00071	95,207	67	95,174	5,453,535	57.28
13-14	.00082	95,140	78	95,101	5,358,361	56.32
14-15	.00098	95,062	93	95,015	5,263,260	55.37
15-16	.00115	94,969	110	94,914	5,168,245	54.42
16-17	.00133	94,859	126	94,796	5,073,331	53.48
17-18	.00149	94,733	141	94,663	4,978,535	52.55
18-19	.00164	94,592	155	94,514	4,883,872	51.63
19-20	.00178	94,437	168	94,353	4,789,358	50.71
20-21	.00192	94,269	181	94,178	4,695,005	49.80
21-22	.00204	94,088	192	93,992	4,600,827	48.90
22-23	.00213	93,896	200	93,796	4,506,835	48.00
23-24	.00218	93,696	204	93,594	4,413,039	47.10
24-25	.00218	93,492	204	93,390	4,319,445	46.20
25-26	.00218	93,288	204	93,186	4,226,055	45.30
26-27	.00219	93,084	203	92,983	4,132,869	44.40
27-28	.00221	92,881	206	92,778	4,039,886	43.50
28-29	.00226	92,675	209	92,571	3,947,108	42.59
29-30	.00231	92,466	214	92,359	3,854,537	41.69
30-31	.00238	92,252	219	92,142	3,762,178	40.78
31-32	.00247	92,033	228	91,919	3,670,036	39.88
32-33	.00258	91,805	236	91,687	3,578,117	38.98
33-34	.00271	91,569	249	91,444	3,486,430	38.07
34-35	.00285	91,320	260	91,190	3,394,986	37.18
35-36	.00301	91,060	274	90,923	3,303,796	36.28
36-37	.00320	90,786	290	90,641	3,212,873	35.39
37-38	.00342	90,496	310	90,341	3,122,232	34.50
38-39	.00367	90,186	331	90,021	3,031,891	33.62
39-40	.00395	89,855	355	89,678	2,941,870	32.74
40-41	.00426	89,500	381	89,309	2,852,192	31.87
41-42	.00460	89,119	410	88,914	2,762,883	31.00
42-43	.00497	88,709	441	88,488	2,673,969	30.14
43-44	.00535	88,268	472	88,032	2,585,481	29.29
44-45	.00575	87,796	505	87,543	2,497,449	28.45
45-46	.00618	87,291	540	87,021	2,409,906	27.61
46-47	.00668	86,751	579	86,462	2,322,885	26.78
47-48	.00727	86,172	626	85,859	2,236,423	25.95
48-49	.00796	85,546	681	85,205	2,150,564	25.14
49-50	.00873	84,865	741	84,494	2,065,359	24.34
50-51	.00957	84,124	805	83,721	1,980,865	23.55
51-52	.01047	83,319	873	82,882	1,897,144	22.77
52-53	.01143	82,446	942	81,975	1,814,262	22.01
53-54	.01244	81,504	1,014	80,997	1,732,287	21.25
54-55	.01351	80,490	1,087	79,946	1,651,290	20.52

TABLE 21. LIFE TABLE FOR WHITE MALES: EAST SOUTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01465	79,403	1,164	78,821	1,571,344	19.79
56-57	.01585	78,239	1,240	77,619	1,492,523	19.08
57-58	.01712	76,999	1,318	76,340	1,414,904	18.38
58-59	.01844	75,681	1,396	74,983	1,338,564	17.69
59-60	.01980	74,285	1,470	73,550	1,263,581	17.01
60-61	.02124	72,815	1,547	72,041	1,190,031	16.34
61-62	.02280	71,268	1,625	70,456	1,117,990	15.69
62-63	.02451	69,643	1,707	68,790	1,047,534	15.04
63-64	.02628	67,936	1,785	67,044	978,744	14.41
64-65	.02809	66,151	1,858	65,222	911,700	13.78
65-66	.03006	64,293	1,933	63,326	846,478	13.17
66-67	.03235	62,360	2,017	61,351	783,152	12.56
67-68	.03509	60,343	2,118	59,284	721,801	11.96
68-69	.03820	58,225	2,224	57,113	662,517	11.38
69-70	.04159	56,001	2,329	54,836	605,404	10.81
70-71	.04537	53,672	2,435	52,454	550,568	10.26
71-72	.04966	51,237	2,545	49,965	498,114	9.72
72-73	.05456	48,692	2,656	47,364	448,149	9.20
73-74	.06019	46,036	2,771	44,650	400,785	8.71
74-75	.06648	43,265	2,876	41,827	356,135	8.23
75-76	.07326	40,389	2,959	38,909	314,308	7.78
76-77	.08034	37,430	3,007	35,926	275,399	7.36
77-78	.08755	34,423	3,014	32,916	239,473	6.96
78-79	.09452	31,409	2,969	29,925	206,557	6.58
79-80	.10137	28,440	2,883	26,999	176,632	6.21
80-81	.10866	25,557	2,777	24,169	149,633	5.85
81-82	.11693	22,780	2,664	21,448	125,464	5.51
82-83	.12675	20,116	2,549	18,842	104,016	5.17
83-84	.13870	17,567	2,437	16,348	85,174	4.85
84-85	.15242	15,130	2,306	13,977	68,826	4.55
85-86	.16701	12,824	2,142	11,753	54,849	4.28
86-87	.18161	10,682	1,940	9,712	43,096	4.03
87-88	.19533	8,742	1,707	7,888	33,384	3.82
88-89	.20775	7,035	1,462	6,304	25,496	3.62
89-90	.21944	5,573	1,223	4,962	19,192	3.44
90-91	.23106	4,350	1,005	3,848	14,230	3.27
91-92	.24324	3,345	814	2,938	10,382	3.10
92-93	.25663	2,531	649	2,207	7,444	2.94
93-94	.27141	1,882	511	1,626	5,237	2.78
94-95	.28714	1,371	394	1,174	3,611	2.63
95-96	.30357	977	296	829	2,437	2.49
96-97	.32040	681	218	572	1,608	2.36
97-98	.33736	463	156	385	1,036	2.24
98-99	.35464	307	109	252	651	2.12
99-100	.37242	198	74	161	399	2.02
100-101	.39043	124	48	100	238	1.92
101-102	.40838	76	31	60	138	1.83
102-103	.42600	45	19	35	78	1.74
103-104	.44323	26	12	20	43	1.66
104-105	.46026	14	6	11	23	1.59
105-106	.47717	8	4	6	12	1.52
106-107	.49406	4	2	3	6	1.46
107-108	.51100	2	1	2	3	1.40
108-109	.52810	1	1	1	1	1.35
109-110	.54529					1.29

TABLE 22. LIFE TABLE FOR WHITE FEMALES: EAST SOUTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02926	100,000	2,926	97,472	7,176,947	71.77
1-2	.00241	97,074	234	96,957	7,079,475	72.93
2-3	.00143	96,840	138	96,771	6,982,518	72.10
3-4	.00102	96,702	99	96,652	6,885,747	71.21
4-5	.00087	96,603	84	96,561	6,789,095	70.28
5-6	.00073	96,519	71	96,484	6,692,534	69.34
6-7	.00062	96,448	59	96,419	6,596,050	68.39
7-8	.00053	96,389	51	96,363	6,499,631	67.43
8-9	.00047	96,338	46	96,315	6,403,268	66.47
9-10	.00043	96,292	41	96,272	6,306,953	65.50
10-11	.00041	96,251	40	96,231	6,210,681	64.53
11-12	.00041	96,211	39	96,192	6,114,450	63.55
12-13	.00043	96,172	41	96,151	6,018,258	62.58
13-14	.00047	96,131	46	96,108	5,922,107	61.60
14-15	.00054	96,085	51	96,059	5,825,999	60.63
15-16	.00062	96,034	60	96,004	5,729,940	59.67
16-17	.00070	95,974	67	95,940	5,633,936	58.70
17-18	.00077	95,907	74	95,870	5,537,996	57.74
18-19	.00082	95,833	79	95,794	5,442,126	56.79
19-20	.00086	95,754	82	95,713	5,346,332	55.83
20-21	.00090	95,672	86	95,629	5,250,619	54.88
21-22	.00094	95,586	90	95,541	5,154,990	53.93
22-23	.00098	95,496	94	95,449	5,059,449	52.98
23-24	.00102	95,402	97	95,354	4,964,000	52.03
24-25	.00106	95,305	101	95,255	4,868,646	51.08
25-26	.00109	95,204	104	95,152	4,773,391	50.14
26-27	.00114	95,100	108	95,046	4,678,239	49.19
27-28	.00119	94,992	113	94,935	4,583,193	48.25
28-29	.00125	94,879	119	94,820	4,488,258	47.31
29-30	.00133	94,760	126	94,697	4,393,438	46.36
30-31	.00140	94,634	132	94,568	4,298,741	45.42
31-32	.00149	94,502	141	94,431	4,204,173	44.49
32-33	.00157	94,361	148	94,287	4,109,742	43.55
33-34	.00165	94,213	156	94,135	4,015,455	42.62
34-35	.00174	94,057	163	93,976	3,921,320	41.69
35-36	.00183	93,894	172	93,808	3,827,344	40.76
36-37	.00192	93,722	180	93,632	3,733,536	39.84
37-38	.00204	93,542	191	93,447	3,639,904	38.91
38-39	.00217	93,351	202	93,250	3,546,457	37.99
39-40	.00230	93,149	215	93,041	3,453,207	37.07
40-41	.00244	92,934	226	92,821	3,360,166	36.16
41-42	.00262	92,708	243	92,586	3,267,345	35.24
42-43	.00282	92,465	261	92,334	3,174,759	34.33
43-44	.00306	92,204	282	92,063	3,082,425	33.43
44-45	.00334	91,922	307	91,768	2,990,362	32.53
45-46	.00365	91,615	335	91,448	2,898,594	31.64
46-47	.00396	91,280	361	91,100	2,807,146	30.75
47-48	.00427	90,919	388	90,725	2,716,046	29.87
48-49	.00456	90,531	413	90,324	2,625,321	29.00
49-50	.00484	90,118	436	89,900	2,534,997	28.13
50-51	.00513	89,682	460	89,452	2,445,097	27.26
51-52	.00546	89,222	488	88,978	2,355,645	26.40
52-53	.00587	88,734	520	88,474	2,266,667	25.54
53-54	.00633	88,214	559	87,934	2,178,193	24.69
54-55	.00682	87,655	598	87,356	2,090,259	23.85

TABLE 22. LIFE TABLE FOR WHITE FEMALES: EAST SOUTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.00738	87,057	642	86,736	2,002,903	23.01
56-57	.00802	86,415	693	86,068	1,916,167	22.17
57-58	.00878	85,722	753	85,346	1,830,099	21.35
58-59	.00964	84,969	819	84,560	1,744,753	20.53
59-60	.01058	84,150	890	83,705	1,660,193	19.73
60-61	.01163	83,260	968	82,776	1,576,488	18.93
61-62	.01280	82,292	1,054	81,765	1,493,712	18.15
62-63	.01410	81,238	1,145	80,665	1,411,947	17.38
63-64	.01544	80,093	1,237	79,474	1,331,282	16.62
64-65	.01680	78,856	1,325	78,194	1,251,808	15.87
65-66	.01834	77,531	1,422	76,820	1,173,614	15.14
66-67	.02021	76,109	1,538	75,340	1,096,794	14.41
67-68	.02258	74,571	1,684	73,729	1,021,454	13.70
68-69	.02545	72,887	1,855	71,960	947,725	13.00
69-70	.02871	71,032	2,039	70,013	875,765	12.33
70-71	.03235	68,993	2,232	67,877	805,752	11.68
71-72	.03636	66,761	2,427	65,547	737,875	11.05
72-73	.04073	64,334	2,621	63,024	672,328	10.45
73-74	.04536	61,713	2,799	60,314	609,304	9.87
74-75	.05026	58,914	2,961	57,434	548,990	9.32
75-76	.05556	55,953	3,109	54,399	491,556	8.79
76-77	.06143	52,844	3,246	51,221	437,157	8.27
77-78	.06799	49,598	3,372	47,912	385,936	7.78
78-79	.07514	46,226	3,474	44,489	338,024	7.31
79-80	.08278	42,752	3,539	40,983	293,535	6.87
80-81	.09108	39,213	3,571	37,428	252,552	6.44
81-82	.10020	35,642	3,571	33,856	215,124	6.04
82-83	.11031	32,071	3,538	30,302	181,268	5.65
83-84	.12168	28,533	3,472	26,797	150,966	5.29
84-85	.13420	25,061	3,363	23,379	124,169	4.95
85-86	.14746	21,698	3,200	20,098	100,790	4.65
86-87	.16106	18,498	2,979	17,009	80,692	4.36
87-88	.17457	15,519	2,709	14,164	63,683	4.10
88-89	.18777	12,810	2,406	11,607	49,519	3.87
89-90	.20093	10,404	2,090	9,359	37,912	3.64
90-91	.21441	8,314	1,783	7,423	28,553	3.43
91-92	.22854	6,531	1,492	5,785	21,130	3.24
92-93	.24368	5,039	1,228	4,425	15,345	3.05
93-94	.26006	3,811	991	3,315	10,920	2.87
94-95	.27743	2,820	783	2,429	7,605	2.70
95-96	.29547	2,037	602	1,736	5,176	2.54
96-97	.31384	1,435	450	1,210	3,440	2.40
97-98	.33219	985	327	821	2,230	2.26
98-99	.35075	658	231	542	1,409	2.14
99-100	.36976	427	158	348	867	2.03
100-101	.38886	269	105	217	519	1.92
101-102	.40772	164	67	131	302	1.83
102-103	.42600	97	41	77	171	1.74
103-104	.44356	56	25	44	94	1.66
104-105	.46063	31	14	24	50	1.59
105-106	.47742	17	8	13	26	1.52
106-107	.49414	9	5	7	13	1.46
107-108	.51100	4	2	3	6	1.40
108-109	.52810	2	1	2	3	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 23. LIFE TABLE FOR NONWHITE MALES: EAST SOUTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.05264	100,000	5,264	95,613	5,889,088	58.89
1-2	.00465	94,736	441	94,516	5,793,475	61.15
2-3	.00272	94,295	256	94,167	5,698,959	60.44
3-4	.00167	94,039	157	93,960	5,604,792	59.60
4-5	.00143	93,882	134	93,815	5,510,832	58.70
5-6	.00123	93,748	116	93,690	5,417,017	57.78
6-7	.00108	93,632	101	93,582	5,323,327	56.85
7-8	.00096	93,531	90	93,486	5,229,745	55.91
8-9	.00089	93,441	83	93,400	5,136,259	54.97
9-10	.00085	93,358	79	93,319	5,042,859	54.02
10-11	.00087	93,279	81	93,238	4,949,540	53.06
11-12	.00092	93,198	86	93,155	4,856,302	52.11
12-13	.00103	93,112	96	93,064	4,763,147	51.16
13-14	.00119	93,016	111	92,961	4,670,083	50.21
14-15	.00140	92,905	130	92,840	4,577,122	49.27
15-16	.00166	92,775	154	92,698	4,484,282	48.34
16-17	.00194	92,621	179	92,532	4,391,584	47.41
17-18	.00225	92,442	208	92,338	4,299,052	46.51
18-19	.00261	92,234	241	92,113	4,206,714	45.61
19-20	.00302	91,993	278	91,854	4,114,601	44.73
20-21	.00345	91,715	316	91,557	4,022,747	43.86
21-22	.00385	91,399	352	91,223	3,931,190	43.01
22-23	.00416	91,047	379	90,857	3,839,967	42.18
23-24	.00437	90,668	396	90,470	3,749,110	41.35
24-25	.00451	90,272	407	90,068	3,658,640	40.53
25-26	.00462	89,865	415	89,657	3,568,572	39.71
26-27	.00471	89,450	422	89,239	3,478,915	38.89
27-28	.00482	89,028	429	88,814	3,389,676	38.07
28-29	.00494	88,599	438	88,380	3,300,862	37.26
29-30	.00504	88,161	444	87,939	3,212,482	36.44
30-31	.00515	87,717	452	87,491	3,124,543	35.62
31-32	.00529	87,265	461	87,035	3,037,052	34.80
32-33	.00549	86,804	477	86,565	2,950,017	33.98
33-34	.00575	86,327	496	86,079	2,863,452	33.17
34-35	.00605	85,831	519	85,571	2,777,373	32.36
35-36	.00639	85,312	546	85,039	2,691,802	31.55
36-37	.00675	84,766	572	84,480	2,606,763	30.75
37-38	.00714	84,194	601	83,894	2,522,283	29.96
38-39	.00752	83,593	629	83,279	2,438,389	29.17
39-40	.00788	82,964	653	82,638	2,355,110	28.39
40-41	.00830	82,311	683	81,969	2,272,472	27.61
41-42	.00880	81,628	719	81,268	2,190,503	26.84
42-43	.00945	80,909	764	80,527	2,109,235	26.07
43-44	.01025	80,145	822	79,734	2,028,708	25.31
44-45	.01118	79,323	887	78,880	1,948,974	24.57
45-46	.01220	78,436	957	77,958	1,870,094	23.84
46-47	.01332	77,479	1,032	76,963	1,792,136	23.13
47-48	.01451	76,447	1,109	75,893	1,715,173	22.44
48-49	.01577	75,338	1,188	74,744	1,639,280	21.76
49-50	.01712	74,150	1,269	73,515	1,564,536	21.10
50-51	.01855	72,881	1,352	72,205	1,491,021	20.46
51-52	.02006	71,529	1,435	70,811	1,418,816	19.84
52-53	.02165	70,094	1,518	69,335	1,348,005	19.23
53-54	.02338	68,576	1,603	67,775	1,278,670	18.65
54-55	.02523	66,973	1,690	66,128	1,210,895	18.08

TABLE 23. LIFE TABLE FOR NONWHITE MALES: EAST SOUTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02715	65,283	1,772	64,397	1,144,767	17.54
56-57	.02904	63,511	1,845	62,589	1,080,370	17.01
57-58	.03083	61,666	1,901	60,716	1,017,781	16.50
58-59	.03248	59,765	1,941	58,795	957,065	16.01
59-60	.03406	57,824	1,969	56,839	898,270	15.53
60-61	.03559	55,855	1,988	54,861	841,431	15.06
61-62	.03715	53,867	2,001	52,866	786,570	14.60
62-63	.03878	51,866	2,012	50,860	733,704	14.15
63-64	.04044	49,854	2,016	48,846	682,844	13.70
64-65	.04209	47,838	2,013	46,831	633,998	13.25
65-66	.04380	45,825	2,008	44,821	587,167	12.81
66-67	.04563	43,817	1,999	42,818	542,346	12.38
67-68	.04763	41,818	1,992	40,822	499,528	11.95
68-69	.04973	39,826	1,980	38,836	458,706	11.52
69-70	.05189	37,846	1,964	36,864	419,870	11.09
70-71	.05423	35,882	1,946	34,909	383,006	10.67
71-72	.05686	33,936	1,930	32,971	348,097	10.26
72-73	.05990	32,006	1,917	31,048	315,126	9.85
73-74	.06344	30,089	1,909	29,135	284,078	9.44
74-75	.06739	28,180	1,899	27,231	254,943	9.05
75-76	.07164	26,281	1,882	25,340	227,712	8.66
76-77	.07607	24,399	1,856	23,471	202,372	8.29
77-78	.08054	22,543	1,816	21,635	178,901	7.94
78-79	.08487	20,727	1,759	19,847	157,266	7.59
79-80	.08915	18,968	1,691	18,122	137,419	7.24
80-81	.09366	17,277	1,618	16,468	119,297	6.91
81-82	.09868	15,659	1,545	14,886	102,829	6.57
82-83	.10450	14,114	1,475	13,376	87,943	6.23
83-84	.11073	12,639	1,400	11,939	74,567	5.90
84-85	.11717	11,239	1,317	10,581	62,628	5.57
85-86	.12443	9,922	1,234	9,305	52,047	5.25
86-87	.13309	8,688	1,157	8,110	42,742	4.92
87-88	.14376	7,531	1,082	6,990	34,632	4.60
88-89	.15674	6,449	1,011	5,943	27,642	4.29
89-90	.17164	5,438	933	4,971	21,699	3.99
90-91	.18799	4,505	847	4,081	16,728	3.71
91-92	.20533	3,658	751	3,282	12,647	3.46
92-93	.22321	2,907	649	2,582	9,365	3.22
93-94	.24193	2,258	546	1,985	6,783	3.00
94-95	.26180	1,712	448	1,488	4,798	2.80
95-96	.28235	1,264	357	1,085	3,310	2.62
96-97	.30313	907	275	769	2,225	2.45
97-98	.32368	632	205	530	1,456	2.30
98-99	.34430	427	147	354	926	2.17
99-100	.36531	280	102	229	572	2.04
100-101	.38623	178	69	144	343	1.93
101-102	.40661	109	44	87	199	1.83
102-103	.42600	65	28	51	112	1.74
103-104	.44411	37	16	29	61	1.66
104-105	.46125	21	10	16	32	1.59
105-106	.47783	11	5	8	16	1.52
106-107	.49428	6	3	4	8	1.46
107-108	.51100	3	2	2	4	1.40
108-109	.52810	1		1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 24. LIFE TABLE FOR NONWHITE FEMALES: EAST SOUTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04154	100,000	4,154	96,574	6,179,639	61.80
1-2	.00400	95,846	383	95,654	6,083,065	63.47
2-3	.00193	95,463	185	95,370	5,987,411	62.72
3-4	.00149	95,278	142	95,207	5,892,041	61.84
4-5	.00111	95,136	105	95,084	5,796,834	60.93
5-6	.00100	95,031	95	94,983	5,701,750	60.00
6-7	.00089	94,936	85	94,894	5,606,767	59.06
7-8	.00079	94,851	75	94,814	5,511,873	58.11
8-9	.00071	94,776	67	94,743	5,417,059	57.16
9-10	.00066	94,709	62	94,678	5,322,316	56.20
10-11	.00064	94,647	61	94,616	5,227,638	55.23
11-12	.00067	94,586	63	94,554	5,133,022	54.27
12-13	.00075	94,523	71	94,487	5,038,468	53.30
13-14	.00090	94,452	85	94,409	4,943,981	52.34
14-15	.00113	94,367	107	94,313	4,849,572	51.39
15-16	.00138	94,260	130	94,195	4,755,259	50.45
16-17	.00165	94,130	155	94,052	4,661,064	49.52
17-18	.00189	93,975	178	93,886	4,567,012	48.60
18-19	.00210	93,797	197	93,699	4,473,126	47.69
19-20	.00231	93,600	216	93,492	4,379,427	46.79
20-21	.00251	93,384	235	93,267	4,285,935	45.90
21-22	.00272	93,149	253	93,023	4,192,668	45.01
22-23	.00294	92,896	273	92,760	4,099,645	44.13
23-24	.00318	92,623	295	92,476	4,006,885	43.26
24-25	.00343	92,328	316	92,170	3,914,409	42.40
25-26	.00369	92,012	340	91,842	3,822,239	41.54
26-27	.00394	91,672	361	91,492	3,730,397	40.69
27-28	.00418	91,311	382	91,120	3,638,905	39.85
28-29	.00439	90,929	399	90,730	3,547,785	39.02
29-30	.00459	90,530	415	90,322	3,457,055	38.19
30-31	.00478	90,115	431	89,899	3,366,733	37.36
31-32	.00499	89,684	448	89,460	3,276,834	36.54
32-33	.00523	89,236	466	89,003	3,187,374	35.72
33-34	.00550	88,770	489	88,526	3,098,371	34.90
34-35	.00579	88,281	511	88,026	3,009,845	34.09
35-36	.00611	87,770	536	87,502	2,921,819	33.29
36-37	.00645	87,234	563	86,953	2,834,317	32.49
37-38	.00683	86,671	592	86,375	2,747,364	31.70
38-39	.00723	86,079	622	85,768	2,660,989	30.91
39-40	.00764	85,457	653	85,131	2,575,221	30.13
40-41	.00809	84,804	686	84,461	2,490,090	29.36
41-42	.00861	84,118	724	83,756	2,405,629	28.60
42-43	.00921	83,394	768	83,010	2,321,873	27.84
43-44	.00990	82,626	818	82,217	2,238,863	27.10
44-45	.01067	81,808	873	81,371	2,156,646	26.36
45-46	.01151	80,935	932	80,469	2,075,275	25.64
46-47	.01240	80,003	992	79,507	1,994,806	24.93
47-48	.01335	79,011	1,055	78,484	1,915,299	24.24
48-49	.01434	77,956	1,117	77,398	1,836,815	23.56
49-50	.01539	76,839	1,183	76,247	1,759,417	22.90
50-51	.01649	75,656	1,248	75,032	1,683,170	22.25
51-52	.01765	74,408	1,313	73,752	1,608,138	21.61
52-53	.01889	73,095	1,381	72,405	1,534,386	20.99
53-54	.02022	71,714	1,450	70,989	1,461,981	20.39
54-55	.02165	70,264	1,521	69,504	1,390,992	19.80

TABLE 24. LIFE TABLE FOR NONWHITE FEMALES: EAST SOUTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02314	68,743	1,591	67,948	1,321,488	19.22
56-57	.02462	67,152	1,653	66,326	1,253,540	18.67
57-58	.02607	65,499	1,707	64,645	1,187,214	18.13
58-59	.02746	63,792	1,752	62,916	1,122,569	17.60
59-60	.02883	62,040	1,789	61,146	1,059,653	17.08
60-61	.03020	60,251	1,819	59,341	998,507	16.57
61-62	.03159	58,432	1,846	57,509	939,166	16.07
62-63	.03303	56,586	1,869	55,651	881,657	15.58
63-64	.03450	54,717	1,888	53,773	826,006	15.10
64-65	.03600	52,829	1,902	51,878	772,233	14.62
65-66	.03753	50,927	1,911	49,972	720,355	14.14
66-67	.03912	49,016	1,918	48,057	670,383	13.68
67-68	.04080	47,098	1,921	46,138	622,326	13.21
68-69	.04249	45,177	1,920	44,217	576,188	12.75
69-70	.04417	43,257	1,910	42,302	531,971	12.30
70-71	.04596	41,347	1,901	40,396	489,669	11.84
71-72	.04796	39,446	1,892	38,500	449,273	11.39
72-73	.05030	37,554	1,889	36,610	410,773	10.94
73-74	.05293	35,665	1,887	34,722	374,163	10.49
74-75	.05576	33,778	1,884	32,836	339,441	10.05
75-76	.05888	31,894	1,878	30,955	306,605	9.61
76-77	.06233	30,016	1,871	29,081	275,650	9.18
77-78	.06618	28,145	1,862	27,214	246,569	8.76
78-79	.07040	26,283	1,851	25,358	219,355	8.35
79-80	.07494	24,432	1,831	23,517	193,997	7.94
80-81	.07985	22,601	1,804	21,699	170,480	7.54
81-82	.08518	20,797	1,772	19,911	148,781	7.15
82-83	.09097	19,025	1,730	18,160	128,870	6.77
83-84	.09662	17,295	1,671	16,459	110,710	6.40
84-85	.10211	15,624	1,596	14,826	94,251	6.03
85-86	.10832	14,028	1,519	13,268	79,425	5.66
86-87	.11616	12,509	1,453	11,782	66,157	5.29
87-88	.12651	11,056	1,399	10,356	54,375	4.92
88-89	.13975	9,657	1,350	8,982	44,019	4.56
89-90	.15530	8,307	1,290	7,662	35,037	4.22
90-91	.17257	7,017	1,211	6,412	27,375	3.90
91-92	.19100	5,806	1,109	5,252	20,963	3.61
92-93	.21002	4,697	986	4,204	15,711	3.34
93-94	.23001	3,711	854	3,284	11,507	3.10
94-95	.25135	2,857	718	2,498	8,223	2.88
95-96	.27347	2,139	585	1,847	5,725	2.68
96-97	.29580	1,554	460	1,324	3,878	2.49
97-98	.31777	1,094	347	921	2,554	2.33
98-99	.33976	747	254	620	1,633	2.19
99-100	.36214	493	179	404	1,013	2.05
100-101	.38436	314	120	254	609	1.93
101-102	.40583	194	79	154	355	1.83
102-103	.42600	115	49	91	201	1.74
103-104	.44449	66	29	51	110	1.66
104-105	.46167	37	17	28	59	1.59
105-106	.47812	20	10	15	31	1.52
106-107	.49437	10	5	8	16	1.46
107-108	.51100	5	2	4	8	1.40
108-109	.52810	3	2	2	4	1.35
109-110	.54529	1		1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 25. LIFE TABLE FOR WHITE MALES: WEST SOUTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03765	100,000	3,765	96,689	6,613,150	66.13
1-2	.00328	96,235	316	96,077	6,516,461	67.71
2-3	.00176	95,919	168	95,835	6,420,384	66.94
3-4	.00133	95,751	128	95,687	6,324,549	66.05
4-5	.00101	95,623	96	95,575	6,228,862	65.14
5-6	.00093	95,527	89	95,482	6,133,287	64.20
6-7	.00085	95,438	81	95,397	6,037,805	63.26
7-8	.00078	95,357	75	95,319	5,942,408	62.32
8-9	.00072	95,282	68	95,248	5,847,089	61.37
9-10	.00068	95,214	65	95,181	5,751,841	60.41
10-11	.00067	95,149	64	95,117	5,656,660	59.45
11-12	.00068	95,085	64	95,053	5,561,543	58.49
12-13	.00073	95,021	70	94,986	5,466,490	57.53
13-14	.00083	94,951	79	94,912	5,371,504	56.57
14-15	.00097	94,872	92	94,826	5,276,592	55.62
15-16	.00114	94,780	108	94,726	5,181,766	54.67
16-17	.00131	94,672	124	94,610	5,087,040	53.73
17-18	.00147	94,548	139	94,479	4,992,430	52.80
18-19	.00163	94,409	154	94,332	4,897,951	51.88
19-20	.00180	94,255	169	94,171	4,803,619	50.96
20-21	.00197	94,086	186	93,993	4,709,448	50.05
21-22	.00211	93,900	198	93,801	4,615,455	49.15
22-23	.00220	93,702	206	93,599	4,521,654	48.26
23-24	.00223	93,496	208	93,392	4,428,055	47.36
24-25	.00221	93,288	207	93,185	4,334,663	46.47
25-26	.00217	93,081	202	92,980	4,241,478	45.57
26-27	.00213	92,879	197	92,781	4,148,498	44.67
27-28	.00212	92,682	197	92,583	4,055,717	43.76
28-29	.00213	92,485	197	92,387	3,963,134	42.85
29-30	.00215	92,288	198	92,189	3,870,747	41.94
30-31	.00218	92,090	201	91,989	3,778,558	41.03
31-32	.00224	91,889	206	91,786	3,686,569	40.12
32-33	.00232	91,683	213	91,577	3,594,783	39.21
33-34	.00243	91,470	222	91,359	3,503,206	38.30
34-35	.00257	91,248	234	91,131	3,411,847	37.39
35-36	.00273	91,014	249	90,889	3,320,716	36.49
36-37	.00291	90,765	264	90,633	3,229,827	35.58
37-38	.00312	90,501	282	90,360	3,139,194	34.69
38-39	.00335	90,219	303	90,068	3,048,834	33.79
39-40	.00359	89,916	322	89,755	2,958,766	32.91
40-41	.00386	89,594	346	89,421	2,869,011	32.02
41-42	.00417	89,248	372	89,062	2,779,590	31.14
42-43	.00455	88,876	405	88,673	2,690,528	30.27
43-44	.00499	88,471	441	88,251	2,601,855	29.41
44-45	.00547	88,030	482	87,789	2,513,604	28.55
45-46	.00601	87,548	526	87,285	2,425,815	27.71
46-47	.00660	87,022	574	86,735	2,338,530	26.87
47-48	.00725	86,448	627	86,134	2,251,795	26.05
48-49	.00794	85,821	681	85,480	2,165,661	25.23
49-50	.00868	85,140	739	84,770	2,080,181	24.43
50-51	.00948	84,401	801	84,001	1,995,411	23.64
51-52	.01035	83,600	865	83,168	1,911,410	22.86
52-53	.01133	82,735	937	82,267	1,828,242	22.10
53-54	.01242	81,798	1,016	81,290	1,745,975	21.34
54-55	.01361	80,782	1,100	80,232	1,664,685	20.61

TABLE 25. LIFE TABLE FOR WHITE MALES: WEST SOUTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01488	79,682	1,185	79,090	1,584,453	19.88
56-57	.01621	78,497	1,273	77,861	1,505,363	19.18
57-58	.01758	77,224	1,357	76,546	1,427,502	18.49
58-59	.01896	75,867	1,439	75,148	1,350,956	17.81
59-60	.02037	74,428	1,516	73,670	1,275,808	17.14
60-61	.02185	72,912	1,593	72,116	1,202,138	16.49
61-62	.02344	71,319	1,672	70,483	1,130,022	15.84
62-63	.02519	69,647	1,754	68,770	1,059,539	15.21
63-64	.02704	67,893	1,836	66,975	990,769	14.59
64-65	.02896	66,057	1,913	65,101	923,794	13.98
65-66	.03105	64,144	1,992	63,148	858,693	13.39
66-67	.03337	62,152	2,074	61,115	795,545	12.80
67-68	.03603	60,078	2,164	58,996	734,430	12.22
68-69	.03896	57,914	2,257	56,786	675,434	11.66
69-70	.04210	55,657	2,343	54,486	618,648	11.12
70-71	.04555	53,314	2,428	52,100	564,162	10.58
71-72	.04939	50,886	2,513	49,629	512,062	10.06
72-73	.05372	48,373	2,599	47,073	462,433	9.56
73-74	.05856	45,774	2,681	44,434	415,360	9.07
74-75	.06387	43,093	2,752	41,717	370,926	8.61
75-76	.06958	40,341	2,807	38,938	329,209	8.16
76-77	.07564	37,534	2,839	36,115	290,271	7.73
77-78	.08201	34,695	2,845	33,272	254,156	7.33
78-79	.08842	31,850	2,816	30,442	220,884	6.94
79-80	.09491	29,034	2,756	27,656	190,442	6.56
80-81	.10187	26,278	2,677	24,940	162,786	6.19
81-82	.10968	23,601	2,589	22,307	137,846	5.84
82-83	.11874	21,012	2,495	19,765	115,539	5.50
83-84	.12953	18,517	2,398	17,318	95,774	5.17
84-85	.14180	16,119	2,286	14,976	78,456	4.87
85-86	.15481	13,833	2,141	12,762	63,480	4.59
86-87	.16782	11,692	1,962	10,711	50,718	4.34
87-88	.18011	9,730	1,753	8,853	40,007	4.11
88-89	.19102	7,977	1,524	7,215	31,154	3.91
89-90	.20103	6,453	1,297	5,805	23,939	3.71
90-91	.21114	5,156	1,089	4,612	18,134	3.52
91-92	.22231	4,067	904	3,615	13,522	3.32
92-93	.23553	3,163	745	2,791	9,907	3.13
93-94	.25120	2,418	607	2,114	7,116	2.94
94-95	.26866	1,811	487	1,567	5,002	2.76
95-96	.28733	1,324	380	1,134	3,435	2.59
96-97	.30658	944	290	799	2,301	2.44
97-98	.32583	654	213	548	1,502	2.30
98-99	.34548	441	152	365	954	2.16
99-100	.36592	289	106	236	589	2.04
100-101	.38655	183	71	148	353	1.93
101-102	.40678	112	45	89	205	1.83
102-103	.42600	67	29	52	116	1.74
103-104	.44397	38	17	30	64	1.66
104-105	.46109	21	10	16	34	1.59
105-106	.47773	11	5	9	18	1.52
106-107	.49424	6	3	5	9	1.46
107-108	.51100	3	2	2	4	1.40
108-109	.52810	1		1	2	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 26. LIFE TABLE FOR WHITE FEMALES: WEST SOUTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02977	100,000	2,977	97,428	7,263,131	72.63
1-2	.00318	97,023	309	96,869	7,165,703	73.86
2-3	.00162	96,714	156	96,636	7,068,834	73.09
3-4	.00111	96,558	107	96,504	6,972,198	72.21
4-5	.00086	96,451	83	96,409	6,875,694	71.29
5-6	.00071	96,368	69	96,333	6,779,285	70.35
6-7	.00059	96,299	57	96,271	6,682,952	69.40
7-8	.00051	96,242	49	96,218	6,586,681	68.44
8-9	.00046	96,193	44	96,171	6,490,463	67.47
9-10	.00043	96,149	41	96,128	6,394,292	66.50
10-11	.00042	96,108	41	96,088	6,298,164	65.53
11-12	.00044	96,067	42	96,046	6,202,076	64.56
12-13	.00046	96,025	44	96,003	6,106,030	63.59
13-14	.00050	95,981	48	95,957	6,010,027	62.62
14-15	.00057	95,933	55	95,906	5,914,070	61.65
15-16	.00065	95,878	62	95,847	5,818,164	60.68
16-17	.00073	95,816	70	95,781	5,722,317	59.72
17-18	.00080	95,746	77	95,708	5,626,536	58.77
18-19	.00085	95,669	81	95,629	5,530,828	57.81
19-20	.00090	95,588	86	95,545	5,435,199	56.86
20-21	.00094	95,502	90	95,457	5,339,654	55.91
21-22	.00098	95,412	93	95,366	5,244,197	54.96
22-23	.00102	95,319	97	95,270	5,148,831	54.02
23-24	.00105	95,222	100	95,172	5,053,561	53.07
24-25	.00108	95,122	103	95,070	4,958,389	52.13
25-26	.00110	95,019	105	94,967	4,863,319	51.18
26-27	.00113	94,914	107	94,861	4,768,352	50.24
27-28	.00116	94,807	110	94,752	4,673,491	49.29
28-29	.00120	94,697	114	94,640	4,578,739	48.35
29-30	.00123	94,583	116	94,525	4,484,099	47.41
30-31	.00128	94,467	121	94,407	4,389,574	46.47
31-32	.00133	94,346	125	94,283	4,295,167	45.53
32-33	.00139	94,221	131	94,155	4,200,884	44.59
33-34	.00146	94,090	138	94,021	4,106,729	43.65
34-35	.00154	93,952	144	93,880	4,012,708	42.71
35-36	.00164	93,808	154	93,731	3,918,828	41.77
36-37	.00174	93,654	163	93,572	3,825,097	40.84
37-38	.00186	93,491	174	93,404	3,731,525	39.91
38-39	.00199	93,317	186	93,224	3,638,121	38.99
39-40	.00213	93,131	198	93,032	3,544,897	38.06
40-41	.00229	92,933	213	92,827	3,451,865	37.14
41-42	.00247	92,720	229	92,606	3,359,038	36.23
42-43	.00266	92,491	246	92,368	3,266,432	35.32
43-44	.00288	92,245	266	92,112	3,174,064	34.41
44-45	.00311	91,979	286	91,836	3,081,952	33.51
45-46	.00337	91,693	309	91,539	2,990,116	32.61
46-47	.00364	91,384	332	91,218	2,898,577	31.72
47-48	.00392	91,052	357	90,873	2,807,359	30.83
48-49	.00420	90,695	381	90,504	2,716,486	29.95
49-50	.00448	90,314	405	90,112	2,625,982	29.08
50-51	.00479	89,909	430	89,694	2,535,870	28.20
51-52	.00513	89,479	459	89,249	2,446,176	27.34
52-53	.00552	89,020	492	88,774	2,356,927	26.48
53-54	.00595	88,528	527	88,265	2,268,153	25.62
54-55	.00642	88,001	565	87,719	2,179,888	24.77

TABLE 26. LIFE TABLE FOR WHITE FEMALES: WEST SOUTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.00693	87,436	605	87,133	2,092,169	23.93
56-57	.00752	86,831	653	86,504	2,005,036	23.09
57-58	.00820	86,178	707	85,824	1,918,532	22.26
58-59	.00896	85,471	766	85,088	1,832,708	21.44
59-60	.00978	84,705	828	84,291	1,747,620	20.63
60-61	.01069	83,877	897	83,428	1,663,329	19.83
61-62	.01172	82,980	972	82,494	1,579,901	19.04
62-63	.01290	82,008	1,058	81,479	1,497,407	18.26
63-64	.01418	80,950	1,148	80,376	1,415,928	17.49
64-65	.01552	79,802	1,239	79,182	1,335,552	16.74
65-66	.01703	78,563	1,338	77,894	1,256,370	15.99
66-67	.01879	77,225	1,451	76,500	1,178,476	15.26
67-68	.02089	75,774	1,583	74,983	1,101,976	14.54
68-69	.02329	74,191	1,728	73,327	1,026,993	13.84
69-70	.02592	72,463	1,878	71,524	953,666	13.16
70-71	.02885	70,585	2,036	69,567	882,142	12.50
71-72	.03215	68,549	2,204	67,447	812,575	11.85
72-73	.03588	66,345	2,381	65,155	745,128	11.23
73-74	.04000	63,964	2,558	62,685	679,973	10.63
74-75	.04447	61,406	2,731	60,041	617,288	10.05
75-76	.04935	58,675	2,895	57,227	557,247	9.50
76-77	.05467	55,780	3,050	54,255	500,020	8.96
77-78	.06050	52,730	3,190	51,135	445,765	8.45
78-79	.06670	49,540	3,304	47,888	394,630	7.97
79-80	.07323	46,236	3,386	44,543	346,742	7.50
80-81	.08030	42,850	3,441	41,129	302,199	7.05
81-82	.08811	39,409	3,472	37,673	261,070	6.62
82-83	.09685	35,937	3,481	34,196	223,397	6.22
83-84	.10669	32,456	3,463	30,725	189,201	5.83
84-85	.11750	28,993	3,406	27,290	158,476	5.47
85-86	.12903	25,587	3,302	23,936	131,186	5.13
86-87	.14103	22,285	3,143	20,714	107,250	4.81
87-88	.15325	19,142	2,933	17,676	86,536	4.52
88-89	.16530	16,209	2,680	14,869	68,860	4.25
89-90	.17736	13,529	2,399	12,330	53,991	3.99
90-91	.18999	11,130	2,115	10,073	41,661	3.74
91-92	.20379	9,015	1,837	8,097	31,588	3.50
92-93	.21935	7,178	1,574	6,391	23,491	3.27
93-94	.23710	5,604	1,329	4,939	17,100	3.05
94-95	.25666	4,275	1,097	3,726	12,161	2.84
95-96	.27736	3,178	882	2,737	8,435	2.65
96-97	.29854	2,296	685	1,954	5,698	2.48
97-98	.31952	1,611	515	1,353	3,744	2.33
98-99	.34076	1,096	373	909	2,391	2.18
99-100	.36269	723	262	592	1,482	2.05
100-101	.38465	461	178	372	890	1.93
101-102	.40598	283	115	226	518	1.83
102-103	.42600	168	71	132	292	1.74
103-104	.44437	97	43	75	160	1.66
104-105	.46155	54	25	41	85	1.59
105-106	.47803	29	14	22	44	1.52
106-107	.49434	15	7	11	22	1.46
107-108	.51100	8	4	6	11	1.40
108-109	.52810	4	2	3	5	1.35
109-110	.54529	2	1	1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 27. LIFE TABLE FOR NONWHITE MALES: WEST SOUTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.05085	100,000	5,085	95,762	6,029,352	60.29
1-2	.00526	94,915	499	94,665	5,933,590	62.51
2-3	.00285	94,416	269	94,281	5,838,925	61.84
3-4	.00169	94,147	159	94,067	5,744,644	61.02
4-5	.00143	93,988	135	93,920	5,650,577	60.12
5-6	.00118	93,853	111	93,798	5,556,657	59.21
6-7	.00100	93,742	93	93,696	5,462,859	58.28
7-8	.00089	93,649	84	93,607	5,369,163	57.33
8-9	.00083	93,565	77	93,526	5,275,556	56.38
9-10	.00083	93,488	78	93,449	5,182,030	55.43
10-11	.00087	93,410	81	93,369	5,088,581	54.48
11-12	.00096	93,329	90	93,284	4,995,212	53.52
12-13	.00108	93,239	100	93,189	4,901,928	52.57
13-14	.00125	93,139	117	93,080	4,808,739	51.63
14-15	.00146	93,022	136	92,954	4,715,659	50.69
15-16	.00171	92,886	159	92,807	4,622,705	49.77
16-17	.00199	92,727	184	92,635	4,529,898	48.85
17-18	.00226	92,543	209	92,438	4,437,263	47.95
18-19	.00256	92,334	237	92,216	4,344,825	47.06
19-20	.00289	92,097	266	91,964	4,252,609	46.18
20-21	.00323	91,831	296	91,683	4,160,645	45.31
21-22	.00354	91,535	324	91,373	4,068,962	44.45
22-23	.00380	91,211	347	91,037	3,977,589	43.61
23-24	.00399	90,864	363	90,683	3,886,552	42.77
24-25	.00412	90,501	372	90,315	3,795,869	41.94
25-26	.00423	90,129	382	89,938	3,705,554	41.11
26-27	.00433	89,747	388	89,553	3,615,616	40.29
27-28	.00444	89,359	397	89,160	3,526,063	39.46
28-29	.00455	88,962	405	88,760	3,436,903	38.63
29-30	.00465	88,557	412	88,351	3,348,143	37.81
30-31	.00476	88,145	419	87,936	3,259,792	36.98
31-32	.00488	87,726	428	87,512	3,171,856	36.16
32-33	.00504	87,298	440	87,078	3,084,344	35.33
33-34	.00523	86,858	455	86,631	2,997,266	34.51
34-35	.00543	86,403	469	86,169	2,910,635	33.69
35-36	.00567	85,934	487	85,691	2,824,466	32.87
36-37	.00594	85,447	508	85,193	2,738,775	32.05
37-38	.00626	84,939	531	84,674	2,653,582	31.24
38-39	.00661	84,408	558	84,129	2,568,908	30.43
39-40	.00699	83,850	586	83,557	2,484,779	29.63
40-41	.00742	83,264	618	82,955	2,401,222	28.84
41-42	.00793	82,646	655	82,318	2,318,267	28.05
42-43	.00854	81,991	701	81,640	2,235,949	27.27
43-44	.00925	81,290	752	80,914	2,154,309	26.50
44-45	.01005	80,538	809	80,134	2,073,395	25.74
45-46	.01092	79,729	871	79,294	1,993,261	25.00
46-47	.01189	78,858	937	78,390	1,913,967	24.27
47-48	.01294	77,921	1,009	77,417	1,835,577	23.56
48-49	.01408	76,912	1,083	76,371	1,758,160	22.86
49-50	.01532	75,829	1,161	75,249	1,681,789	22.18
50-51	.01663	74,668	1,242	74,047	1,606,540	21.52
51-52	.01802	73,426	1,323	72,764	1,532,493	20.87
52-53	.01947	72,103	1,404	71,401	1,459,729	20.25
53-54	.02101	70,699	1,485	69,956	1,388,328	19.64
54-55	.02266	69,214	1,569	68,430	1,318,372	19.05

TABLE 27. LIFE TABLE FOR NONWHITE MALES: WEST SOUTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02435	67,645	1,647	66,822	1,249,942	18.48
56-57	.02606	65,998	1,720	65,138	1,183,120	17.93
57-58	.02773	64,278	1,782	63,387	1,117,982	17.39
58-59	.02935	62,496	1,834	61,579	1,054,595	16.87
59-60	.03096	60,662	1,879	59,723	993,016	16.37
60-61	.03257	58,783	1,914	57,826	933,293	15.88
61-62	.03419	56,869	1,944	55,897	875,467	15.39
62-63	.03586	54,925	1,970	53,940	819,570	14.92
63-64	.03754	52,955	1,988	51,961	765,630	14.46
64-65	.03921	50,967	1,998	49,968	713,669	14.00
65-66	.04093	48,969	2,005	47,966	663,701	13.55
66-67	.04272	46,964	2,006	45,961	615,735	13.11
67-68	.04464	44,958	2,007	43,955	569,774	12.67
68-69	.04664	42,951	2,003	41,949	525,819	12.24
69-70	.04870	40,948	1,994	39,951	483,870	11.82
70-71	.05087	38,954	1,982	37,963	443,919	11.40
71-72	.05320	36,972	1,967	35,989	405,956	10.98
72-73	.05577	35,005	1,952	34,029	369,967	10.57
73-74	.05855	33,053	1,935	32,085	335,938	10.16
74-75	.06152	31,118	1,915	30,161	303,853	9.76
75-76	.06468	29,203	1,889	28,259	273,692	9.37
76-77	.06804	27,314	1,858	26,385	245,433	8.99
77-78	.07161	25,456	1,823	24,545	219,048	8.60
78-79	.07528	23,633	1,779	22,744	194,503	8.23
79-80	.07904	21,854	1,727	20,990	171,759	7.86
80-81	.08307	20,127	1,672	19,291	150,769	7.49
81-82	.08753	18,455	1,616	17,647	131,478	7.12
82-83	.09262	16,839	1,559	16,060	113,831	6.76
83-84	.09773	15,280	1,494	14,533	97,771	6.40
84-85	.10276	13,786	1,416	13,078	83,238	6.04
85-86	.10857	12,370	1,343	11,698	70,160	5.67
86-87	.11608	11,027	1,280	10,387	58,462	5.30
87-88	.12615	9,747	1,230	9,132	48,075	4.93
88-89	.13918	8,517	1,185	7,925	38,943	4.57
89-90	.15459	7,332	1,134	6,765	31,018	4.23
90-91	.17177	6,198	1,064	5,666	24,253	3.91
91-92	.19016	5,134	977	4,646	18,587	3.62
92-93	.20916	4,157	869	3,723	13,941	3.35
93-94	.22916	3,288	754	2,911	10,218	3.11
94-95	.25056	2,534	635	2,217	7,307	2.88
95-96	.27277	1,899	518	1,640	5,090	2.68
96-97	.29520	1,381	407	1,177	3,450	2.50
97-98	.31726	974	309	819	2,273	2.33
98-99	.33935	665	226	552	1,454	2.19
99-100	.36185	439	159	360	902	2.05
100-101	.38418	280	107	226	542	1.94
101-102	.40576	173	70	138	316	1.83
102-103	.42600	103	44	81	178	1.74
103-104	.44452	59	26	46	97	1.66
104-105	.46171	33	15	25	51	1.59
105-106	.47814	18	9	13	26	1.52
106-107	.49438	9	4	7	13	1.46
107-108	.51100	5	3	3	6	1.40
108-109	.52810	2	1	2	3	1.35
109-110	.54529	1	1	1	1	1.29

TABLE 28. LIFE TABLE FOR NONWHITE FEMALES: WEST SOUTH CENTRAL DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.04239	100,000	4,239	96,504	6,372,725	63.73
1-2	.00419	95,761	401	95,560	6,276,221	65.54
2-3	.00259	95,360	247	95,236	6,180,661	64.81
3-4	.00157	95,113	150	95,038	6,085,425	63.98
4-5	.00118	94,963	112	94,907	5,990,387	63.08
5-6	.00107	94,851	101	94,801	5,895,480	62.16
6-7	.00095	94,750	90	94,705	5,800,679	61.22
7-8	.00083	94,660	79	94,621	5,705,974	60.28
8-9	.00072	94,581	68	94,547	5,611,353	59.33
9-10	.00064	94,513	60	94,483	5,516,806	58.37
10-11	.00059	94,453	56	94,425	5,422,323	57.41
11-12	.00058	94,397	55	94,370	5,327,898	56.44
12-13	.00062	94,342	58	94,313	5,233,528	55.47
13-14	.00073	94,284	69	94,249	5,139,215	54.51
14-15	.00091	94,215	86	94,172	5,044,966	53.55
15-16	.00112	94,129	105	94,076	4,950,794	52.60
16-17	.00135	94,024	127	93,960	4,856,718	51.65
17-18	.00156	93,897	147	93,824	4,762,758	50.72
18-19	.00178	93,750	167	93,667	4,668,934	49.80
19-20	.00201	93,583	188	93,489	4,575,267	48.89
20-21	.00224	93,395	209	93,291	4,481,778	47.99
21-22	.00246	93,186	229	93,072	4,388,487	47.09
22-23	.00263	92,957	245	92,835	4,295,415	46.21
23-24	.00274	92,712	254	92,585	4,202,580	45.33
24-25	.00281	92,458	259	92,329	4,109,995	44.45
25-26	.00286	92,199	264	92,067	4,017,666	43.58
26-27	.00293	91,935	269	91,800	3,925,599	42.70
27-28	.00304	91,666	279	91,526	3,833,799	41.82
28-29	.00319	91,387	292	91,241	3,742,273	40.95
29-30	.00337	91,095	307	90,942	3,651,032	40.08
30-31	.00357	90,788	324	90,626	3,560,090	39.21
31-32	.00381	90,464	344	90,292	3,469,464	38.35
32-33	.00408	90,120	368	89,936	3,379,172	37.50
33-34	.00439	89,752	394	89,555	3,289,236	36.65
34-35	.00474	89,358	424	89,146	3,199,681	35.81
35-36	.00512	88,934	455	88,707	3,110,535	34.98
36-37	.00553	88,479	489	88,234	3,021,828	34.15
37-38	.00595	87,990	524	87,728	2,933,594	33.34
38-39	.00638	87,466	558	87,187	2,845,866	32.54
39-40	.00681	86,908	592	86,612	2,758,679	31.74
40-41	.00727	86,316	627	86,003	2,672,067	30.96
41-42	.00778	85,689	667	85,355	2,586,064	30.18
42-43	.00836	85,022	711	84,667	2,500,709	29.41
43-44	.00901	84,311	759	83,932	2,416,042	28.66
44-45	.00973	83,552	813	83,145	2,332,110	27.91
45-46	.01050	82,739	869	82,304	2,248,965	27.18
46-47	.01130	81,870	925	81,407	2,166,661	26.46
47-48	.01212	80,945	981	80,454	2,085,254	25.76
48-49	.01294	79,964	1,035	79,446	2,004,800	25.07
49-50	.01378	78,929	1,088	78,385	1,925,354	24.39
50-51	.01465	77,841	1,140	77,271	1,846,969	23.73
51-52	.01558	76,701	1,195	76,104	1,769,698	23.07
52-53	.01659	75,506	1,253	74,880	1,693,594	22.43
53-54	.01771	74,253	1,315	73,596	1,618,714	21.80
54-55	.01891	72,938	1,379	72,249	1,545,118	21.18

TABLE 28. LIFE TABLE FOR NONWHITE FEMALES: WEST SOUTH CENTRAL DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.02018	71,559	1,444	70,837	1,472,869	20.58
56-57	.02146	70,115	1,505	69,363	1,402,032	20.00
57-58	.02275	68,610	1,561	67,830	1,332,669	19.42
58-59	.02402	67,049	1,610	66,244	1,264,839	18.86
59-60	.02528	65,439	1,654	64,612	1,198,595	18.32
60-61	.02658	63,785	1,696	62,937	1,133,983	17.78
61-62	.02791	62,089	1,733	61,223	1,071,046	17.25
62-63	.02932	60,356	1,769	59,472	1,009,823	16.73
63-64	.03079	58,587	1,804	57,685	950,351	16.22
64-65	.03230	56,783	1,834	55,866	892,666	15.72
65-66	.03388	54,949	1,862	54,018	836,800	15.23
66-67	.03552	53,087	1,886	52,144	782,782	14.75
67-68	.03723	51,201	1,906	50,248	730,638	14.27
68-69	.03897	49,295	1,921	48,335	680,390	13.80
69-70	.04072	47,374	1,929	46,410	632,055	13.34
70-71	.04257	45,445	1,935	44,478	585,645	12.89
71-72	.04459	43,510	1,940	42,540	541,167	12.44
72-73	.04686	41,570	1,948	40,596	498,627	11.99
73-74	.04952	39,622	1,962	38,641	458,031	11.56
74-75	.05252	37,660	1,978	36,671	419,390	11.14
75-76	.05565	35,682	1,985	34,689	382,719	10.73
76-77	.05867	33,697	1,977	32,708	348,030	10.33
77-78	.06139	31,720	1,948	30,746	315,322	9.94
78-79	.06356	29,772	1,892	28,826	284,576	9.56
79-80	.06534	27,880	1,822	26,969	255,750	9.17
80-81	.06706	26,058	1,747	25,185	228,781	8.78
81-82	.06907	24,311	1,679	23,471	203,596	8.37
82-83	.07172	22,632	1,623	21,820	180,125	7.96
83-84	.07406	21,009	1,556	20,231	158,305	7.54
84-85	.07586	19,453	1,476	18,715	138,074	7.10
85-86	.07854	17,977	1,412	17,271	119,359	6.64
86-87	.08350	16,565	1,383	15,874	102,088	6.16
87-88	.09215	15,182	1,399	14,482	86,214	5.68
88-89	.10506	13,783	1,448	13,059	71,732	5.20
89-90	.12129	12,335	1,496	11,587	58,673	4.76
90-91	.13998	10,839	1,517	10,080	47,086	4.34
91-92	.16031	9,322	1,495	8,574	37,006	3.97
92-93	.18143	7,827	1,420	7,117	28,432	3.63
93-94	.20390	6,407	1,306	5,754	21,315	3.33
94-95	.22828	5,101	1,165	4,519	15,561	3.05
95-96	.25372	3,936	998	3,437	11,042	2.80
96-97	.27939	2,938	821	2,527	7,605	2.59
97-98	.30444	2,117	645	1,795	5,078	2.40
98-99	.32943	1,472	485	1,230	3,283	2.23
99-100	.35492	987	350	812	2,053	2.08
100-101	.38008	637	242	516	1,241	1.95
101-102	.40405	395	160	315	725	1.83
102-103	.42600	235	100	185	410	1.74
103-104	.44534	135	60	105	225	1.66
104-105	.46263	75	35	58	120	1.59
105-106	.47875	40	19	31	62	1.52
106-107	.49458	21	10	16	31	1.46
107-108	.51100	11	6	8	15	1.40
108-109	.52810	5	3	4	7	1.35
109-110	.54529	2	1	2	3	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 29. LIFE TABLE FOR WHITE MALES: MOUNTAIN DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03836	100,000	3,836	96,626	6,541,204	65.41
1-2	.00305	96,164	293	96,017	6,444,578	67.02
2-3	.00186	95,871	179	95,782	6,348,561	66.22
3-4	.00135	95,692	129	95,628	6,252,779	65.34
4-5	.00106	95,563	101	95,513	6,157,151	64.43
5-6	.00098	95,462	94	95,415	6,061,638	63.50
6-7	.00091	95,368	86	95,325	5,966,223	62.56
7-8	.00086	95,282	82	95,241	5,870,898	61.62
8-9	.00083	95,200	79	95,160	5,775,657	60.67
9-10	.00081	95,121	77	95,082	5,680,497	59.72
10-11	.00082	95,044	78	95,005	5,585,415	58.77
11-12	.00086	94,966	82	94,925	5,490,410	57.81
12-13	.00093	94,884	88	94,840	5,395,485	56.86
13-14	.00105	94,796	100	94,746	5,300,645	55.92
14-15	.00121	94,696	114	94,639	5,205,899	54.97
15-16	.00139	94,582	132	94,516	5,111,260	54.04
16-17	.00157	94,450	148	94,376	5,016,744	53.12
17-18	.00172	94,302	162	94,221	4,922,368	52.20
18-19	.00184	94,140	174	94,053	4,828,147	51.29
19-20	.00194	93,966	182	93,875	4,734,094	50.38
20-21	.00203	93,784	190	93,689	4,640,219	49.48
21-22	.00211	93,594	198	93,495	4,546,530	48.58
22-23	.00217	93,396	202	93,295	4,453,035	47.68
23-24	.00220	93,194	205	93,091	4,359,740	46.78
24-25	.00221	92,989	206	92,886	4,266,649	45.88
25-26	.00221	92,783	205	92,681	4,173,763	44.98
26-27	.00222	92,578	206	92,475	4,081,082	44.08
27-28	.00225	92,372	207	92,269	3,988,607	43.18
28-29	.00231	92,165	213	92,058	3,896,338	42.28
29-30	.00238	91,952	219	91,842	3,804,280	41.37
30-31	.00247	91,733	227	91,620	3,712,438	40.47
31-32	.00257	91,506	235	91,389	3,620,818	39.57
32-33	.00269	91,271	245	91,148	3,529,429	38.67
33-34	.00282	91,026	257	90,897	3,438,281	37.77
34-35	.00295	90,769	268	90,635	3,347,384	36.88
35-36	.00310	90,501	280	90,361	3,256,749	35.99
36-37	.00329	90,221	297	90,072	3,166,388	35.10
37-38	.00351	89,924	316	89,766	3,076,316	34.21
38-39	.00377	89,608	338	89,439	2,986,550	33.33
39-40	.00407	89,270	363	89,089	2,897,111	32.45
40-41	.00440	88,907	391	88,711	2,808,022	31.58
41-42	.00476	88,516	422	88,305	2,719,311	30.72
42-43	.00517	88,094	455	87,867	2,631,006	29.87
43-44	.00561	87,639	492	87,393	2,543,139	29.02
44-45	.00609	87,147	530	86,882	2,455,746	28.18
45-46	.00661	86,617	573	86,330	2,368,864	27.35
46-47	.00718	86,044	618	85,735	2,282,534	26.53
47-48	.00781	85,426	667	85,093	2,196,799	25.72
48-49	.00848	84,759	719	84,400	2,111,706	24.91
49-50	.00918	84,040	771	83,655	2,027,306	24.12
50-51	.00994	83,269	828	82,855	1,943,651	23.34
51-52	.01078	82,441	889	81,997	1,860,796	22.57
52-53	.01173	81,552	956	81,074	1,778,799	21.81
53-54	.01279	80,596	1,031	80,080	1,697,725	21.06
54-55	.01396	79,565	1,111	79,010	1,617,645	20.33

TABLE 29. LIFE TABLE FOR WHITE MALES: MOUNTAIN DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01521	78,454	1,193	77,858	1,538,635	19.61
56-57	.01651	77,261	1,276	76,623	1,460,777	18.91
57-58	.01785	75,985	1,356	75,307	1,384,154	18.22
58-59	.01916	74,629	1,430	73,914	1,308,847	17.54
59-60	.02047	73,199	1,498	72,450	1,234,933	16.87
60-61	.02185	71,701	1,567	70,917	1,162,483	16.21
61-62	.02341	70,134	1,642	69,313	1,091,566	15.56
62-63	.02522	68,492	1,727	67,629	1,022,253	14.93
63-64	.02728	66,765	1,821	65,854	954,624	14.30
64-65	.02953	64,944	1,918	63,985	888,770	13.69
65-66	.03199	63,026	2,016	62,018	824,785	13.09
66-67	.03467	61,010	2,116	59,952	762,767	12.50
67-68	.03760	58,894	2,214	57,787	702,815	11.93
68-69	.04068	56,680	2,306	55,527	645,028	11.38
69-70	.04389	54,374	2,386	53,181	589,501	10.84
70-71	.04739	51,988	2,464	50,756	536,320	10.32
71-72	.05132	49,524	2,542	48,253	485,564	9.80
72-73	.05584	46,982	2,623	45,671	437,311	9.31
73-74	.06106	44,359	2,709	43,005	391,640	8.83
74-75	.06687	41,650	2,785	40,258	348,635	8.37
75-76	.07311	38,865	2,841	37,445	308,377	7.93
76-77	.07962	36,024	2,868	34,590	270,932	7.52
77-78	.08625	33,156	2,860	31,726	236,342	7.13
78-79	.09268	30,296	2,808	28,892	204,616	6.75
79-80	.09903	27,488	2,722	26,127	175,724	6.39
80-81	.10575	24,766	2,619	23,456	149,597	6.04
81-82	.11329	22,147	2,509	20,892	126,141	5.70
82-83	.12211	19,638	2,398	18,439	105,249	5.36
83-84	.13228	17,240	2,281	16,100	86,810	5.04
84-85	.14350	14,959	2,146	13,886	70,710	4.73
85-86	.15566	12,813	1,995	11,816	56,824	4.43
86-87	.16865	10,818	1,824	9,906	45,008	4.16
87-88	.18235	8,994	1,640	8,174	35,102	3.90
88-89	.19707	7,354	1,449	6,629	26,928	3.66
89-90	.21289	5,905	1,257	5,276	20,299	3.44
90-91	.22935	4,648	1,066	4,115	15,023	3.23
91-92	.24600	3,582	881	3,141	10,908	3.05
92-93	.26238	2,701	709	2,346	7,767	2.88
93-94	.27849	1,992	555	1,715	5,421	2.72
94-95	.29462	1,437	423	1,226	3,706	2.58
95-96	.31080	1,014	315	856	2,480	2.45
96-97	.32704	699	229	584	1,624	2.32
97-98	.34336	470	161	389	1,040	2.21
98-99	.35974	309	111	253	651	2.10
99-100	.37618	198	75	161	398	2.00
100-101	.39269	123	48	99	237	1.91
101-102	.40929	75	31	60	138	1.83
102-103	.42600	44	19	35	78	1.74
103-104	.44285	25	11	20	43	1.67
104-105	.45983	14	6	11	23	1.59
105-106	.47689	8	4	6	12	1.52
106-107	.49396	4	2	3	6	1.46
107-108	.51100	2	1	2	3	1.40
108-109	.52810	1	1	1	1	1.35
109-110	.54529					1.29

TABLE 30. LIFE TABLE FOR WHITE FEMALES: MOUNTAIN DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02946	100,000	2,946	97,454	7,186,024	71.86
1-2	.00276	97,054	268	96,920	7,088,570	73.04
2-3	.00145	96,786	140	96,716	6,991,650	72.24
3-4	.00102	96,646	99	96,597	6,894,934	71.34
4-5	.00082	96,547	79	96,508	6,798,337	70.41
5-6	.00073	96,468	70	96,433	6,701,829	69.47
6-7	.00066	96,398	64	96,366	6,605,396	68.52
7-8	.00061	96,334	59	96,305	6,509,030	67.57
8-9	.00057	96,275	55	96,248	6,412,725	66.61
9-10	.00055	96,220	53	96,194	6,316,477	65.65
10-11	.00055	96,167	52	96,141	6,220,283	64.68
11-12	.00056	96,115	54	96,088	6,124,142	63.72
12-13	.00058	96,061	56	96,033	6,028,054	62.75
13-14	.00062	96,005	60	95,975	5,932,021	61.79
14-15	.00069	95,945	66	95,912	5,836,046	60.83
15-16	.00077	95,879	74	95,842	5,740,134	59.87
16-17	.00084	95,805	80	95,765	5,644,292	58.91
17-18	.00091	95,725	87	95,681	5,548,527	57.96
18-19	.00096	95,638	92	95,592	5,452,846	57.02
19-20	.00102	95,546	97	95,497	5,357,254	56.07
20-21	.00106	95,449	102	95,398	5,261,757	55.13
21-22	.00110	95,347	104	95,295	5,166,359	54.18
22-23	.00114	95,243	109	95,188	5,071,064	53.24
23-24	.00117	95,134	111	95,078	4,975,876	52.30
24-25	.00118	95,023	112	94,967	4,880,798	51.36
25-26	.00119	94,911	113	94,854	4,785,831	50.42
26-27	.00121	94,798	115	94,740	4,690,977	49.48
27-28	.00124	94,683	118	94,624	4,596,237	48.54
28-29	.00128	94,565	121	94,505	4,501,613	47.60
29-30	.00132	94,444	124	94,382	4,407,108	46.66
30-31	.00137	94,320	129	94,255	4,312,726	45.72
31-32	.00143	94,191	135	94,123	4,218,471	44.79
32-33	.00150	94,056	141	93,985	4,124,348	43.85
33-34	.00158	93,915	149	93,841	4,030,363	42.92
34-35	.00168	93,766	157	93,688	3,936,522	41.98
35-36	.00179	93,609	168	93,525	3,842,834	41.05
36-37	.00191	93,441	178	93,352	3,749,309	40.12
37-38	.00207	93,263	193	93,166	3,655,957	39.20
38-39	.00226	93,070	211	92,965	3,562,791	38.28
39-40	.00248	92,859	230	92,744	3,469,826	37.37
40-41	.00272	92,629	252	92,503	3,377,082	36.46
41-42	.00297	92,377	274	92,240	3,284,579	35.56
42-43	.00322	92,103	297	91,955	3,192,339	34.66
43-44	.00347	91,806	318	91,647	3,100,384	33.77
44-45	.00372	91,488	341	91,318	3,008,737	32.89
45-46	.00397	91,147	361	90,966	2,917,419	32.01
46-47	.00424	90,786	385	90,593	2,826,453	31.13
47-48	.00450	90,401	407	90,197	2,735,860	30.26
48-49	.00474	89,994	427	89,780	2,645,663	29.40
49-50	.00494	89,567	442	89,346	2,555,883	28.54
50-51	.00517	89,125	461	88,894	2,466,537	27.68
51-52	.00547	88,664	485	88,421	2,377,643	26.82
52-53	.00588	88,179	519	87,920	2,289,222	25.96
53-54	.00642	87,660	562	87,379	2,201,302	25.11
54-55	.00706	87,098	615	86,790	2,113,923	24.27

TABLE 30. LIFE TABLE FOR WHITE FEMALES: MOUNTAIN DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.00777	86,483	672	86,147	2,027,133	23.44
56-57	.00855	85,811	734	85,444	1,940,986	22.62
57-58	.00936	85,077	796	84,679	1,855,542	21.81
58-59	.01019	84,281	859	83,851	1,770,863	21.01
59-60	.01105	83,422	922	82,961	1,687,012	20.22
60-61	.01198	82,500	988	82,006	1,604,051	19.44
61-62	.01300	81,512	1,060	80,982	1,522,045	18.67
62-63	.01415	80,452	1,138	79,883	1,441,063	17.91
63-64	.01533	79,314	1,216	78,706	1,361,180	17.16
64-65	.01653	78,098	1,291	77,452	1,282,474	16.42
65-66	.01787	76,807	1,373	76,121	1,205,022	15.69
66-67	.01951	75,434	1,471	74,699	1,128,901	14.97
67-68	.02159	73,963	1,597	73,164	1,054,202	14.25
68-69	.02408	72,366	1,743	71,495	981,038	13.56
69-70	.02688	70,623	1,898	69,674	909,543	12.88
70-71	.03004	68,725	2,065	67,693	839,869	12.22
71-72	.03358	66,660	2,238	65,541	772,176	11.58
72-73	.03755	64,422	2,419	63,212	706,635	10.97
73-74	.04198	62,003	2,603	60,701	643,423	10.38
74-75	.04685	59,400	2,783	58,009	582,722	9.81
75-76	.05209	56,617	2,949	55,143	524,713	9.27
76-77	.05765	53,668	3,094	52,121	469,570	8.75
77-78	.06347	50,574	3,210	48,969	417,449	8.25
78-79	.06911	47,364	3,273	45,727	368,480	7.78
79-80	.07460	44,091	3,289	42,446	322,753	7.32
80-81	.08061	40,802	3,289	39,157	280,307	6.87
81-82	.08778	37,513	3,293	35,866	241,150	6.43
82-83	.09676	34,220	3,311	32,564	205,284	6.00
83-84	.10800	30,909	3,339	29,240	172,720	5.59
84-85	.12108	27,570	3,338	25,901	143,480	5.20
85-86	.13530	24,232	3,278	22,593	117,579	4.85
86-87	.14999	20,954	3,143	19,382	94,986	4.53
87-88	.16444	17,811	2,929	16,346	75,604	4.24
88-89	.17846	14,882	2,656	13,554	59,258	3.98
89-90	.19250	12,226	2,353	11,049	45,704	3.74
90-91	.20688	9,873	2,043	8,851	34,655	3.51
91-92	.22190	7,830	1,737	6,961	25,804	3.30
92-93	.23788	6,093	1,450	5,368	18,843	3.09
93-94	.25505	4,643	1,184	4,051	13,475	2.90
94-95	.27320	3,459	945	2,987	9,424	2.72
95-96	.29198	2,514	734	2,147	6,437	2.56
96-97	.31104	1,780	554	1,503	4,290	2.41
97-98	.33001	1,226	404	1,024	2,787	2.27
98-99	.34914	822	287	678	1,763	2.15
99-100	.36866	535	197	436	1,085	2.03
100-101	.38821	338	131	272	649	1.92
101-102	.40744	207	85	164	377	1.83
102-103	.42600	122	52	96	213	1.74
103-104	.44370	70	31	55	117	1.66
104-105	.46079	39	18	30	62	1.59
105-106	.47753	21	10	16	32	1.52
106-107	.49418	11	5	8	16	1.46
107-108	.51100	6	3	4	8	1.40
108-109	.52810	3	2	2	4	1.35
109-110	.54529	1		1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 31. LIFE TABLE FOR NONWHITE MALES: MOUNTAIN DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.10650	100,000	10,650	91,125	5,540,477	55.40
1-2	.02156	89,350	1,926	88,387	5,449,352	60.99
2-3	.01066	87,424	932	86,958	5,360,965	61.32
3-4	.00685	86,492	593	86,195	5,274,007	60.98
4-5	.00375	85,899	322	85,738	5,187,812	60.39
5-6	.00298	85,577	255	85,450	5,102,074	59.62
6-7	.00239	85,322	204	85,220	5,016,624	58.80
7-8	.00196	85,118	167	85,035	4,931,404	57.94
8-9	.00167	84,951	142	84,880	4,846,369	57.05
9-10	.00151	84,809	128	84,745	4,761,489	56.14
10-11	.00145	84,681	122	84,620	4,676,744	55.23
11-12	.00149	84,559	126	84,496	4,592,124	54.31
12-13	.00160	84,433	135	84,365	4,507,628	53.39
13-14	.00182	84,298	154	84,221	4,423,263	52.47
14-15	.00217	84,144	183	84,053	4,339,042	51.57
15-16	.00258	83,961	216	83,853	4,254,989	50.68
16-17	.00299	83,745	251	83,620	4,171,136	49.81
17-18	.00336	83,494	280	83,354	4,087,516	48.96
18-19	.00368	83,214	306	83,061	4,004,162	48.12
19-20	.00399	82,908	331	82,742	3,921,101	47.29
20-21	.00428	82,577	354	82,400	3,838,359	46.48
21-22	.00455	82,223	374	82,036	3,755,959	45.68
22-23	.00480	81,849	393	81,653	3,673,923	44.89
23-24	.00501	81,456	408	81,252	3,592,270	44.10
24-25	.00518	81,048	419	80,838	3,511,018	43.32
25-26	.00534	80,629	431	80,413	3,430,180	42.54
26-27	.00549	80,198	440	79,978	3,349,767	41.77
27-28	.00565	79,758	451	79,532	3,269,789	41.00
28-29	.00582	79,307	461	79,076	3,190,257	40.23
29-30	.00599	78,846	473	78,609	3,111,181	39.46
30-31	.00615	78,373	482	78,132	3,032,572	38.69
31-32	.00631	77,891	491	77,645	2,954,440	37.93
32-33	.00645	77,400	499	77,150	2,876,795	37.17
33-34	.00656	76,901	505	76,648	2,799,645	36.41
34-35	.00663	76,396	506	76,143	2,722,997	35.64
35-36	.00671	75,890	510	75,635	2,646,854	34.88
36-37	.00681	75,380	513	75,124	2,571,219	34.11
37-38	.00697	74,867	522	74,606	2,496,095	33.34
38-39	.00719	74,345	534	74,078	2,421,489	32.57
39-40	.00745	73,811	550	73,536	2,347,411	31.80
40-41	.00775	73,261	568	72,977	2,273,875	31.04
41-42	.00808	72,693	587	72,399	2,200,898	30.28
42-43	.00844	72,106	609	71,801	2,128,499	29.52
43-44	.00882	71,497	631	71,182	2,056,698	28.77
44-45	.00921	70,866	652	70,540	1,985,516	28.02
45-46	.00964	70,214	677	69,875	1,914,976	27.27
46-47	.01012	69,537	704	69,185	1,845,101	26.53
47-48	.01068	68,833	735	68,466	1,775,916	25.80
48-49	.01130	68,098	769	67,713	1,707,450	25.07
49-50	.01196	67,329	806	66,926	1,639,737	24.35
50-51	.01269	66,523	844	66,101	1,572,811	23.64
51-52	.01350	65,679	887	65,236	1,506,710	22.94
52-53	.01440	64,792	933	64,326	1,441,474	22.25
53-54	.01539	63,859	982	63,368	1,377,148	21.57
54-55	.01647	62,877	1,036	62,359	1,313,780	20.89

TABLE 31. LIFE TABLE FOR NONWHITE MALES: MOUNTAIN DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01762	61,841	1,090	61,296	1,251,421	20.24
56-57	.01885	60,751	1,145	60,179	1,190,125	19.59
57-58	.02015	59,606	1,201	59,006	1,129,946	18.96
58-59	.02151	58,405	1,256	57,777	1,070,940	18.34
59-60	.02294	57,149	1,311	56,493	1,013,163	17.73
60-61	.02444	55,838	1,365	55,156	956,670	17.13
61-62	.02603	54,473	1,418	53,764	901,514	16.55
62-63	.02772	53,055	1,470	52,320	847,750	15.98
63-64	.02950	51,585	1,522	50,824	795,430	15.42
64-65	.03136	50,063	1,570	49,278	744,606	14.87
65-66	.03331	48,493	1,615	47,685	695,328	14.34
66-67	.03540	46,878	1,660	46,048	647,643	13.82
67-68	.03762	45,218	1,701	44,368	601,595	13.30
68-69	.03997	43,517	1,739	42,647	557,227	12.80
69-70	.04244	41,778	1,773	40,891	514,580	12.32
70-71	.04504	40,005	1,802	39,104	473,689	11.84
71-72	.04780	38,203	1,826	37,290	434,585	11.38
72-73	.05076	36,377	1,847	35,453	397,295	10.92
73-74	.05390	34,530	1,861	33,600	361,842	10.48
74-75	.05719	32,669	1,868	31,735	328,242	10.05
75-76	.06067	30,801	1,869	29,866	296,507	9.63
76-77	.06434	28,932	1,861	28,001	266,641	9.22
77-78	.06821	27,071	1,847	26,147	238,640	8.82
78-79	.07226	25,224	1,823	24,313	212,493	8.42
79-80	.07647	23,401	1,789	22,507	188,180	8.04
80-81	.08090	21,612	1,749	20,738	165,673	7.67
81-82	.08558	19,863	1,699	19,013	144,935	7.30
82-83	.09056	18,164	1,645	17,341	125,922	6.93
83-84	.09508	16,519	1,571	15,733	108,581	6.57
84-85	.09910	14,948	1,481	14,207	92,848	6.21
85-86	.10377	13,467	1,398	12,768	78,641	5.84
86-87	.11024	12,069	1,330	11,404	65,873	5.46
87-88	.11966	10,739	1,285	10,096	54,469	5.07
88-89	.13246	9,454	1,252	8,828	44,373	4.69
89-90	.14787	8,202	1,213	7,595	35,545	4.33
90-91	.16524	6,989	1,155	6,411	27,950	4.00
91-92	.18393	5,834	1,073	5,297	21,539	3.69
92-93	.20329	4,761	968	4,277	16,242	3.41
93-94	.22375	3,793	849	3,369	11,965	3.15
94-95	.24574	2,944	723	2,583	8,596	2.92
95-96	.26862	2,221	597	1,923	6,013	2.71
96-97	.29173	1,624	474	1,387	4,090	2.52
97-98	.31442	1,150	361	970	2,703	2.35
98-99	.33713	789	266	656	1,733	2.20
99-100	.36030	523	189	429	1,077	2.06
100-101	.38326	334	128	270	648	1.94
101-102	.40538	206	83	164	378	1.83
102-103	.42600	123	53	97	214	1.74
103-104	.44470	70	31	55	117	1.66
104-105	.46191	39	18	30	62	1.59
105-106	.47828	21	10	16	32	1.52
106-107	.49443	11	5	8	16	1.46
107-108	.51100	6	3	4	8	1.40
108-109	.52810	3	2	2	4	1.35
109-110	.54529	1		1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 32. LIFE TABLE FOR NONWHITE FEMALES: MOUNTAIN DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.08644	100,000	8,644	92,870	5,880,645	58.81
1-2	.02047	91,356	1,870	90,421	5,787,775	63.35
2-3	.01000	89,486	895	89,039	5,697,354	63.67
3-4	.00605	88,591	536	88,323	5,608,315	63.31
4-5	.00336	88,055	296	87,907	5,519,992	62.69
5-6	.00232	87,759	203	87,657	5,432,085	61.90
6-7	.00157	87,556	138	87,487	5,344,428	61.04
7-8	.00108	87,418	94	87,371	5,256,941	60.14
8-9	.00082	87,324	72	87,288	5,169,570	59.20
9-10	.00074	87,252	64	87,220	5,082,282	58.25
10-11	.00082	87,188	72	87,152	4,995,062	57.29
11-12	.00101	87,116	88	87,072	4,907,910	56.34
12-13	.00128	87,028	111	86,972	4,820,838	55.39
13-14	.00171	86,917	149	86,842	4,733,866	54.46
14-15	.00231	86,768	200	86,668	4,647,024	53.56
15-16	.00298	86,568	258	86,439	4,560,356	52.68
16-17	.00361	86,310	312	86,154	4,473,917	51.84
17-18	.00407	85,998	350	85,823	4,387,763	51.02
18-19	.00434	85,648	372	85,462	4,301,940	50.23
19-20	.00449	85,276	383	85,085	4,216,478	49.45
20-21	.00457	84,893	387	84,700	4,131,393	48.67
21-22	.00463	84,506	392	84,310	4,046,693	47.89
22-23	.00473	84,114	398	83,915	3,962,383	47.11
23-24	.00487	83,716	407	83,513	3,878,468	46.33
24-25	.00501	83,309	418	83,100	3,794,955	45.55
25-26	.00516	82,891	427	82,677	3,711,855	44.78
26-27	.00528	82,464	436	82,246	3,629,178	44.01
27-28	.00537	82,028	440	81,808	3,546,932	43.24
28-29	.00540	81,588	441	81,367	3,465,124	42.47
29-30	.00541	81,147	439	80,928	3,383,757	41.70
30-31	.00541	80,708	436	80,490	3,302,829	40.92
31-32	.00541	80,272	435	80,054	3,222,339	40.14
32-33	.00545	79,837	435	79,620	3,142,285	39.36
33-34	.00553	79,402	439	79,183	3,062,665	38.57
34-35	.00562	78,963	444	78,741	2,983,482	37.78
35-36	.00574	78,519	450	78,294	2,904,741	36.99
36-37	.00590	78,069	461	77,838	2,826,447	36.20
37-38	.00610	77,608	473	77,371	2,748,609	35.42
38-39	.00636	77,135	491	76,889	2,671,238	34.63
39-40	.00668	76,644	512	76,388	2,594,349	33.85
40-41	.00702	76,132	534	75,865	2,517,961	33.07
41-42	.00738	75,598	558	75,319	2,442,096	32.30
42-43	.00773	75,040	580	74,750	2,366,777	31.54
43-44	.00806	74,460	601	74,159	2,292,027	30.78
44-45	.00837	73,859	618	73,550	2,217,868	30.03
45-46	.00870	73,241	637	72,923	2,144,318	29.28
46-47	.00906	72,604	658	72,275	2,071,395	28.53
47-48	.00946	71,946	680	71,606	1,999,120	27.79
48-49	.00990	71,266	706	70,913	1,927,514	27.05
49-50	.01035	70,560	730	70,195	1,856,601	26.31
50-51	.01085	69,830	758	69,451	1,786,406	25.58
51-52	.01142	69,072	789	68,678	1,716,955	24.86
52-53	.01206	68,283	823	67,872	1,648,277	24.14
53-54	.01278	67,460	862	67,029	1,580,405	23.43
54-55	.01357	66,598	904	66,146	1,513,376	22.72

TABLE 32. LIFE TABLE FOR NONWHITE FEMALES: MOUNTAIN DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01444	65,694	949	65,220	1,447,230	22.03
56-57	.01537	64,745	995	64,248	1,382,010	21.35
57-58	.01639	63,750	1,045	63,228	1,317,762	20.67
58-59	.01747	62,705	1,095	62,158	1,254,534	20.01
59-60	.01860	61,610	1,146	61,037	1,192,376	19.35
60-61	.01982	60,464	1,198	59,865	1,131,339	18.71
61-62	.02116	59,266	1,255	58,639	1,071,474	18.08
62-63	.02266	58,011	1,314	57,354	1,012,835	17.46
63-64	.02436	56,697	1,381	56,006	955,481	16.85
64-65	.02625	55,316	1,452	54,590	899,475	16.26
65-66	.02824	53,864	1,521	53,103	844,885	15.69
66-67	.03027	52,343	1,585	51,550	791,782	15.13
67-68	.03226	50,758	1,637	49,940	740,232	14.58
68-69	.03417	49,121	1,679	48,282	690,292	14.05
69-70	.03605	47,442	1,710	46,587	642,010	13.53
70-71	.03796	45,732	1,736	44,864	595,423	13.02
71-72	.03997	43,996	1,758	43,117	550,559	12.51
72-73	.04214	42,238	1,780	41,348	507,442	12.01
73-74	.04424	40,458	1,790	39,563	466,094	11.52
74-75	.04622	38,668	1,787	37,774	426,531	11.03
75-76	.04844	36,881	1,787	35,987	388,757	10.54
76-77	.05123	35,094	1,798	34,195	352,770	10.05
77-78	.05495	33,296	1,829	32,381	318,575	9.57
78-79	.06010	31,467	1,892	30,521	286,194	9.10
79-80	.06646	29,575	1,965	28,593	255,673	8.64
80-81	.07326	27,610	2,023	26,598	227,080	8.22
81-82	.07973	25,587	2,040	24,567	200,482	7.84
82-83	.08511	23,547	2,004	22,545	175,915	7.47
83-84	.08805	21,543	1,897	20,595	153,370	7.12
84-85	.08906	19,646	1,750	18,771	132,775	6.76
85-86	.09016	17,896	1,613	17,090	114,004	6.37
86-87	.09337	16,283	1,520	15,523	96,914	5.95
87-88	.10072	14,763	1,487	14,019	81,391	5.51
88-89	.11276	13,276	1,497	12,527	67,372	5.07
89-90	.12814	11,779	1,510	11,024	54,845	4.66
90-91	.14603	10,269	1,499	9,520	43,821	4.27
91-92	.16560	8,770	1,453	8,044	34,301	3.91
92-93	.18599	7,317	1,360	6,637	26,257	3.59
93-94	.20778	5,957	1,238	5,338	19,620	3.29
94-95	.23151	4,719	1,093	4,173	14,282	3.03
95-96	.25636	3,626	929	3,162	10,109	2.79
96-97	.28148	2,697	759	2,317	6,947	2.58
97-98	.30604	1,938	593	1,641	4,630	2.39
98-99	.33060	1,345	445	1,122	2,989	2.22
99-100	.35571	900	320	740	1,867	2.08
100-101	.38054	580	221	470	1,127	1.95
101-102	.40425	359	145	287	657	1.83
102-103	.42600	214	91	168	370	1.74
103-104	.44524	123	55	95	202	1.66
104-105	.46252	68	31	52	107	1.59
105-106	.47868	37	18	28	55	1.52
106-107	.49456	19	9	14	27	1.46
107-108	.51100	10	5	7	13	1.40
108-109	.52810	5	3	3	6	1.35
109-110	.54529	2	1	2	3	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 33. LIFE TABLE FOR WHITE MALES: PACIFIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02839	100,000	2,839	97,503	6,605,406	66.05
1-2	.00200	97,161	194	97,064	6,507,903	66.98
2-3	.00146	96,967	142	96,896	6,410,839	66.11
3-4	.00115	96,825	111	96,769	6,313,943	65.21
4-5	.00092	96,714	89	96,669	6,217,174	64.28
5-6	.00081	96,625	78	96,586	6,120,505	63.34
6-7	.00072	96,547	70	96,512	6,023,919	62.39
7-8	.00065	96,477	63	96,446	5,927,407	61.44
8-9	.00061	96,414	59	96,385	5,830,961	60.48
9-10	.00059	96,355	56	96,327	5,734,576	59.52
10-11	.00059	96,299	57	96,270	5,638,249	58.55
11-12	.00063	96,242	61	96,211	5,541,979	57.58
12-13	.00069	96,181	66	96,148	5,445,768	56.62
13-14	.00079	96,115	76	96,077	5,349,620	55.66
14-15	.00094	96,039	90	95,994	5,253,543	54.70
15-16	.00111	95,949	107	95,895	5,157,549	53.75
16-17	.00127	95,842	122	95,781	5,061,654	52.81
17-18	.00142	95,720	136	95,652	4,965,873	51.88
18-19	.00155	95,584	148	95,510	4,870,221	50.95
19-20	.00169	95,436	161	95,356	4,774,711	50.03
20-21	.00181	95,275	172	95,189	4,679,355	49.11
21-22	.00191	95,103	182	95,012	4,584,166	48.20
22-23	.00197	94,921	187	94,827	4,489,154	47.29
23-24	.00198	94,734	188	94,640	4,394,327	46.39
24-25	.00195	94,546	184	94,454	4,299,687	45.48
25-26	.00189	94,362	178	94,273	4,205,233	44.56
26-27	.00185	94,184	175	94,097	4,110,960	43.65
27-28	.00184	94,009	173	93,923	4,016,863	42.73
28-29	.00186	93,836	174	93,749	3,922,940	41.81
29-30	.00189	93,662	177	93,573	3,829,191	40.88
30-31	.00194	93,485	181	93,394	3,735,618	39.96
31-32	.00202	93,304	189	93,209	3,642,224	39.04
32-33	.00213	93,115	198	93,016	3,549,015	38.11
33-34	.00228	92,917	212	92,811	3,455,999	37.19
34-35	.00246	92,705	228	92,591	3,363,188	36.28
35-36	.00267	92,477	247	92,353	3,270,597	35.37
36-37	.00292	92,230	269	92,095	3,178,244	34.46
37-38	.00320	91,961	295	91,813	3,086,149	33.56
38-39	.00351	91,666	321	91,505	2,994,336	32.67
39-40	.00384	91,345	351	91,169	2,902,831	31.78
40-41	.00422	90,994	384	90,802	2,811,662	30.90
41-42	.00464	90,610	421	90,400	2,720,860	30.03
42-43	.00513	90,189	462	89,958	2,630,460	29.17
43-44	.00569	89,727	511	89,471	2,540,502	28.31
44-45	.00630	89,216	562	88,935	2,451,031	27.47
45-46	.00697	88,654	618	88,345	2,362,096	26.64
46-47	.00769	88,036	677	87,698	2,273,751	25.83
47-48	.00845	87,359	738	86,990	2,186,053	25.02
48-49	.00926	86,621	802	86,220	2,099,063	24.23
49-50	.01010	85,819	867	85,385	2,012,843	23.45
50-51	.01101	84,952	935	84,484	1,927,458	22.69
51-52	.01197	84,017	1,006	83,514	1,842,974	21.94
52-53	.01300	83,011	1,079	82,472	1,759,460	21.20
53-54	.01409	81,932	1,154	81,355	1,676,988	20.47
54-55	.01522	80,778	1,230	80,163	1,595,633	19.75

TABLE 33. LIFE TABLE FOR WHITE MALES: PACIFIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01643	79,548	1,307	78,895	1,515,470	19.05
56-57	.01774	78,241	1,388	77,547	1,436,575	18.36
57-58	.01916	76,853	1,472	76,117	1,359,028	17.68
58-59	.02068	75,381	1,559	74,601	1,282,911	17.02
59-60	.02228	73,822	1,645	72,999	1,208,310	16.37
60-61	.02399	72,177	1,732	71,311	1,135,311	15.73
61-62	.02586	70,445	1,821	69,535	1,064,000	15.10
62-63	.02791	68,624	1,916	67,666	994,465	14.49
63-64	.03012	66,708	2,009	65,704	926,799	13.89
64-65	.03247	64,699	2,101	63,649	861,095	13.31
65-66	.03500	62,598	2,191	61,503	797,446	12.74
66-67	.03774	60,407	2,279	59,268	735,943	12.18
67-68	.04075	58,128	2,369	56,943	676,675	11.64
68-69	.04397	55,759	2,452	54,533	619,732	11.11
69-70	.04739	53,307	2,526	52,044	565,199	10.60
70-71	.05105	50,781	2,592	49,485	513,155	10.11
71-72	.05504	48,189	2,653	46,863	463,670	9.62
72-73	.05941	45,536	2,705	44,184	416,807	9.15
73-74	.06408	42,831	2,745	41,459	372,623	8.70
74-75	.06900	40,086	2,766	38,703	331,164	8.26
75-76	.07431	37,320	2,773	35,934	292,461	7.84
76-77	.08012	34,547	2,768	33,163	256,527	7.43
77-78	.08658	31,779	2,751	30,404	223,364	7.03
78-79	.09367	29,028	2,719	27,668	192,960	6.65
79-80	.10130	26,309	2,665	24,976	165,292	6.28
80-81	.10948	23,644	2,589	22,349	140,316	5.93
81-82	.11824	21,055	2,489	19,810	117,967	5.60
82-83	.12758	18,566	2,369	17,381	98,157	5.29
83-84	.13741	16,197	2,226	15,084	80,776	4.99
84-85	.14771	13,971	2,063	12,940	65,692	4.70
85-86	.15864	11,908	1,889	10,963	52,752	4.43
86-87	.17033	10,019	1,707	9,165	41,789	4.17
87-88	.18293	8,312	1,520	7,552	32,624	3.92
88-89	.19666	6,792	1,336	6,124	25,072	3.69
89-90	.21144	5,456	1,154	4,879	18,948	3.47
90-91	.22691	4,302	976	3,814	14,069	3.27
91-92	.24275	3,326	807	2,922	10,255	3.08
92-93	.25863	2,519	652	2,193	7,333	2.91
93-94	.27459	1,867	512	1,611	5,140	2.75
94-95	.29087	1,355	394	1,158	3,529	2.60
95-96	.30738	961	296	813	2,371	2.47
96-97	.32403	665	215	558	1,558	2.34
97-98	.34076	450	154	373	1,000	2.22
98-99	.35761	296	106	243	627	2.11
99-100	.37464	190	71	155	384	2.01
100-101	.39177	119	47	96	229	1.91
101-102	.40892	72	29	58	133	1.83
102-103	.42600	43	18	34	75	1.74
103-104	.44302	25	11	19	41	1.67
104-105	.46002	14	7	11	22	1.59
105-106	.47701	7	3	6	11	1.52
106-107	.49400	4	2	3	5	1.46
107-108	.51100	2	1	1	2	1.40
108-109	.52810	1	1	1	1	1.35
109-110	.54529					1.29

TABLE 34. LIFE TABLE FOR WHITE FEMALES: PACIFIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.02091	100,000	2,091	98,193	7,284,522	72.85
1-2	.00165	97,909	162	97,828	7,186,329	73.40
2-3	.00105	97,747	102	97,696	7,088,501	72.52
3-4	.00090	97,645	88	97,601	6,990,805	71.59
4-5	.00070	97,557	68	97,523	6,893,204	70.66
5-6	.00062	97,489	61	97,458	6,795,681	69.71
6-7	.00054	97,428	52	97,402	6,698,223	68.75
7-8	.00048	97,376	47	97,352	6,600,821	67.79
8-9	.00043	97,329	42	97,308	6,503,469	66.82
9-10	.00039	97,287	38	97,268	6,406,161	65.85
10-11	.00036	97,249	35	97,232	6,308,893	64.87
11-12	.00036	97,214	35	97,197	6,211,661	63.90
12-13	.00037	97,179	36	97,161	6,114,464	62.92
13-14	.00041	97,143	40	97,123	6,017,303	61.94
14-15	.00049	97,103	47	97,079	5,920,180	60.97
15-16	.00057	97,056	56	97,028	5,823,101	60.00
16-17	.00065	97,000	63	96,969	5,726,073	59.03
17-18	.00071	96,937	69	96,903	5,629,104	58.07
18-19	.00074	96,868	71	96,833	5,532,201	57.11
19-20	.00076	96,797	74	96,760	5,435,368	56.15
20-21	.00077	96,723	74	96,686	5,338,608	55.19
21-22	.00078	96,649	76	96,611	5,241,922	54.24
22-23	.00080	96,573	77	96,535	5,145,311	53.28
23-24	.00082	96,496	79	96,457	5,048,776	52.32
24-25	.00085	96,417	82	96,376	4,952,319	51.36
25-26	.00088	96,335	85	96,293	4,855,943	50.41
26-27	.00091	96,250	87	96,206	4,759,650	49.45
27-28	.00096	96,163	93	96,117	4,663,444	48.50
28-29	.00102	96,070	98	96,021	4,567,327	47.54
29-30	.00108	95,972	103	95,921	4,471,306	46.59
30-31	.00116	95,869	111	95,813	4,375,385	45.64
31-32	.00124	95,758	119	95,698	4,279,572	44.69
32-33	.00134	95,639	128	95,575	4,183,874	43.75
33-34	.00145	95,511	139	95,441	4,088,299	42.80
34-35	.00156	95,372	149	95,298	3,992,858	41.87
35-36	.00169	95,223	161	95,143	3,897,560	40.93
36-37	.00183	95,062	174	94,975	3,802,417	40.00
37-38	.00198	94,888	187	94,795	3,707,442	39.07
38-39	.00215	94,701	204	94,599	3,612,647	38.15
39-40	.00233	94,497	220	94,387	3,518,048	37.23
40-41	.00252	94,277	238	94,158	3,423,661	36.31
41-42	.00273	94,039	257	93,911	3,329,503	35.41
42-43	.00297	93,782	278	93,643	3,235,592	34.50
43-44	.00323	93,504	302	93,353	3,141,949	33.60
44-45	.00351	93,202	327	93,038	3,048,596	32.71
45-46	.00382	92,875	355	92,697	2,955,558	31.82
46-47	.00414	92,520	383	92,328	2,862,861	30.94
47-48	.00449	92,137	414	91,930	2,770,533	30.07
48-49	.00485	91,723	445	91,501	2,678,603	29.20
49-50	.00522	91,278	476	91,040	2,587,102	28.34
50-51	.00562	90,802	510	90,547	2,496,062	27.49
51-52	.00605	90,292	547	90,019	2,405,515	26.64
52-53	.00653	89,745	586	89,452	2,315,496	25.80
53-54	.00705	89,159	628	88,845	2,226,044	24.97
54-55	.00759	88,531	672	88,195	2,137,199	24.14

TABLE 34. LIFE TABLE FOR WHITE FEMALES: PACIFIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.00818	87,859	719	87,499	2,049,004	23.32
56-57	.00884	87,140	770	86,755	1,961,505	22.51
57-58	.00959	86,370	828	85,956	1,874,750	21.71
58-59	.01041	85,542	891	85,096	1,788,794	20.91
59-60	.01129	84,651	956	84,173	1,703,698	20.13
60-61	.01226	83,695	1,026	83,182	1,619,525	19.35
61-62	.01333	82,669	1,102	82,118	1,536,343	18.58
62-63	.01454	81,567	1,186	80,974	1,454,225	17.83
63-64	.01580	80,381	1,270	79,746	1,373,251	17.08
64-65	.01710	79,111	1,353	78,435	1,293,505	16.35
65-66	.01856	77,758	1,443	77,037	1,215,070	15.63
66-67	.02028	76,315	1,547	75,541	1,138,033	14.91
67-68	.02239	74,768	1,674	73,931	1,062,492	14.21
68-69	.02485	73,094	1,817	72,185	988,561	13.52
69-70	.02760	71,277	1,967	70,294	916,376	12.86
70-71	.03066	69,310	2,125	68,247	846,082	12.21
71-72	.03409	67,185	2,290	66,040	777,835	11.58
72-73	.03794	64,895	2,463	63,663	711,795	10.97
73-74	.04213	62,432	2,630	61,117	648,132	10.38
74-75	.04664	59,802	2,789	58,408	587,015	9.82
75-76	.05157	57,013	2,940	55,543	528,607	9.27
76-77	.05701	54,073	3,083	52,531	473,064	8.75
77-78	.06305	50,990	3,215	49,383	420,533	8.25
78-79	.06967	47,775	3,328	46,111	371,150	7.77
79-80	.07680	44,447	3,414	42,740	325,039	7.31
80-81	.08449	41,033	3,467	39,300	282,299	6.88
81-82	.09279	37,566	3,485	35,823	242,999	6.47
82-83	.10173	34,081	3,467	32,347	207,176	6.08
83-84	.11132	30,614	3,408	28,910	174,829	5.71
84-85	.12152	27,206	3,306	25,553	145,919	5.36
85-86	.13235	23,900	3,164	22,318	120,366	5.04
86-87	.14380	20,736	2,981	19,246	98,048	4.73
87-88	.15589	17,755	2,768	16,371	78,802	4.44
88-89	.16842	14,987	2,524	13,725	62,431	4.17
89-90	.18138	12,463	2,261	11,332	48,706	3.91
90-91	.19507	10,202	1,990	9,207	37,374	3.66
91-92	.20977	8,212	1,723	7,351	28,167	3.43
92-93	.22577	6,489	1,465	5,757	20,816	3.21
93-94	.24343	5,024	1,223	4,413	15,059	3.00
94-95	.26257	3,801	998	3,302	10,646	2.80
95-96	.28263	2,803	792	2,407	7,344	2.62
96-97	.30308	2,011	610	1,706	4,937	2.46
97-98	.32336	1,401	453	1,175	3,231	2.31
98-99	.34385	948	326	785	2,056	2.17
99-100	.36490	622	227	509	1,271	2.04
100-101	.38597	395	152	319	762	1.93
101-102	.40652	243	99	193	443	1.83
102-103	.42600	144	61	113	250	1.74
103-104	.44413	83	37	64	137	1.66
104-105	.46127	46	21	35	73	1.59
105-106	.47785	25	12	19	38	1.52
106-107	.49428	13	6	10	19	1.46
107-108	.51100	7	4	5	9	1.40
108-109	.52810	3	1	2	4	1.35
109-110	.54529	2	1	1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 35. LIFE TABLE FOR NONWHITE MALES: PACIFIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03765	100,000	3,765	96,862	6,359,835	63.60
1-2	.00339	96,235	326	96,072	6,262,973	65.08
2-3	.00191	95,909	183	95,817	6,166,901	64.30
3-4	.00158	95,726	152	95,650	6,071,084	63.42
4-5	.00125	95,574	119	95,515	5,975,434	62.52
5-6	.00109	95,455	104	95,403	5,879,919	61.60
6-7	.00098	95,351	94	95,304	5,784,516	60.67
7-8	.00090	95,257	85	95,215	5,689,212	59.72
8-9	.00086	95,172	82	95,131	5,593,997	58.78
9-10	.00084	95,090	80	95,050	5,498,866	57.83
10-11	.00085	95,010	81	94,970	5,403,816	56.88
11-12	.00088	94,929	83	94,887	5,308,846	55.92
12-13	.00093	94,846	89	94,802	5,213,959	54.97
13-14	.00100	94,757	94	94,710	5,119,157	54.02
14-15	.00108	94,663	103	94,612	5,024,447	53.08
15-16	.00119	94,560	112	94,504	4,929,835	52.13
16-17	.00132	94,448	125	94,386	4,835,331	51.20
17-18	.00146	94,323	137	94,254	4,740,945	50.26
18-19	.00163	94,186	154	94,109	4,646,691	49.34
19-20	.00182	94,032	171	93,946	4,552,582	48.42
20-21	.00203	93,861	191	93,766	4,458,636	47.50
21-22	.00223	93,670	209	93,566	4,364,870	46.60
22-23	.00243	93,461	227	93,348	4,271,304	45.70
23-24	.00262	93,234	244	93,112	4,177,956	44.81
24-25	.00282	92,990	262	92,859	4,084,844	43.93
25-26	.00300	92,728	278	92,589	3,991,985	43.05
26-27	.00318	92,450	294	92,303	3,899,396	42.18
27-28	.00333	92,156	307	92,002	3,807,093	41.31
28-29	.00344	91,849	316	91,691	3,715,091	40.45
29-30	.00352	91,533	322	91,372	3,623,400	39.59
30-31	.00359	91,211	328	91,047	3,532,028	38.72
31-32	.00367	90,883	333	90,716	3,440,981	37.86
32-33	.00380	90,550	344	90,378	3,350,265	37.00
33-34	.00397	90,206	359	90,026	3,259,887	36.14
34-35	.00416	89,847	373	89,661	3,169,861	35.28
35-36	.00437	89,474	391	89,278	3,080,200	34.43
36-37	.00463	89,083	413	88,876	2,990,922	33.57
37-38	.00492	88,670	436	88,452	2,902,046	32.73
38-39	.00525	88,234	463	88,002	2,813,594	31.89
39-40	.00562	87,771	494	87,524	2,725,592	31.05
40-41	.00603	87,277	526	87,014	2,638,068	30.23
41-42	.00648	86,751	562	86,470	2,551,054	29.41
42-43	.00697	86,189	601	85,889	2,464,584	28.60
43-44	.00750	85,588	642	85,267	2,378,695	27.79
44-45	.00805	84,946	683	84,604	2,293,428	27.00
45-46	.00866	84,263	730	83,898	2,208,824	26.21
46-47	.00932	83,533	779	83,144	2,124,926	25.44
47-48	.01006	82,754	832	82,338	2,041,782	24.67
48-49	.01085	81,922	889	81,477	1,959,444	23.92
49-50	.01169	81,033	947	80,559	1,877,967	23.18
50-51	.01260	80,086	1,009	79,581	1,797,408	22.44
51-52	.01361	79,077	1,077	78,538	1,717,827	21.72
52-53	.01475	78,000	1,150	77,425	1,639,289	21.02
53-54	.01603	76,850	1,232	76,234	1,561,864	20.32
54-55	.01744	75,618	1,319	74,959	1,485,630	19.65

TABLE 35. LIFE TABLE FOR NONWHITE MALES: PACIFIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01894	74,299	1,407	73,596	1,410,671	18.99
56-57	.02053	72,892	1,497	72,144	1,337,075	18.34
57-58	.02216	71,395	1,582	70,604	1,264,931	17.72
58-59	.02384	69,813	1,664	68,981	1,194,327	17.11
59-60	.02558	68,149	1,743	67,277	1,125,346	16.51
60-61	.02739	66,406	1,819	65,496	1,058,069	15.93
61-62	.02929	64,587	1,892	63,641	992,573	15.37
62-63	.03128	62,695	1,961	61,715	928,932	14.82
63-64	.03334	60,734	2,025	59,722	867,217	14.28
64-65	.03545	58,709	2,081	57,669	807,495	13.75
65-66	.03767	56,628	2,133	55,561	749,826	13.24
66-67	.04003	54,495	2,182	53,404	694,265	12.74
67-68	.04259	52,313	2,228	51,199	640,861	12.25
68-69	.04530	50,085	2,269	48,951	589,662	11.77
69-70	.04814	47,816	2,301	46,665	540,711	11.31
70-71	.05116	45,515	2,329	44,350	494,046	10.85
71-72	.05441	43,186	2,350	42,011	449,696	10.41
72-73	.05795	40,836	2,366	39,653	407,685	9.98
73-74	.06176	38,470	2,376	37,282	368,032	9.57
74-75	.06580	36,094	2,375	34,906	330,750	9.16
75-76	.07011	33,719	2,364	32,537	295,844	8.77
76-77	.07470	31,355	2,342	30,184	263,307	8.40
77-78	.07959	29,013	2,309	27,858	233,123	8.04
78-79	.08505	26,704	2,272	25,568	205,265	7.69
79-80	.09106	24,432	2,224	23,320	179,697	7.35
80-81	.09723	22,208	2,160	21,128	156,377	7.04
81-82	.10318	20,048	2,068	19,014	135,249	6.75
82-83	.10850	17,980	1,951	17,004	116,235	6.46
83-84	.11213	16,029	1,797	15,130	99,231	6.19
84-85	.11432	14,232	1,627	13,418	84,101	5.91
85-86	.11670	12,605	1,471	11,869	70,683	5.61
86-87	.12086	11,134	1,346	10,461	58,814	5.28
87-88	.12844	9,788	1,257	9,160	48,353	4.94
88-89	.13987	8,531	1,193	7,934	39,193	4.59
89-90	.15409	7,338	1,131	6,772	31,259	4.26
90-91	.17041	6,207	1,058	5,678	24,487	3.94
91-92	.18817	5,149	969	4,665	18,809	3.65
92-93	.20669	4,180	864	3,748	14,144	3.38
93-94	.22642	3,316	751	2,941	10,396	3.13
94-95	.24781	2,565	635	2,248	7,455	2.91
95-96	.27019	1,930	522	1,669	5,207	2.70
96-97	.29289	1,408	412	1,202	3,538	2.51
97-98	.31522	996	314	839	2,336	2.35
98-99	.33764	682	230	567	1,497	2.19
99-100	.36061	452	163	370	930	2.06
100-101	.38344	289	111	233	560	1.94
101-102	.40546	178	72	142	327	1.83
102-103	.42600	106	45	83	185	1.74
103-104	.44465	61	27	47	102	1.66
104-105	.46186	34	16	26	55	1.59
105-106	.47824	18	9	14	29	1.52
106-107	.49441	9	4	7	15	1.46
107-108	.51100	5	3	4	8	1.40
108-109	.52810	2	1	2	4	1.35
109-110	.54529	1		1	2	1.29
110-111	.56243	1	1	1	1	1.24

TABLE 36. LIFE TABLE FOR NONWHITE FEMALES: PACIFIC DIVISION, 1949-51

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
0-1	0.03180	100,000	3,180	97,377	6,808,206	68.08
1-2	.00288	96,820	279	96,681	6,710,829	69.31
2-3	.00175	96,541	169	96,457	6,614,148	68.51
3-4	.00124	96,372	119	96,312	6,517,691	67.63
4-5	.00092	96,253	89	96,208	6,421,379	66.71
5-6	.00077	96,164	74	96,127	6,325,171	65.77
6-7	.00065	96,090	62	96,059	6,229,044	64.83
7-8	.00056	96,028	54	96,001	6,132,985	63.87
8-9	.00049	95,974	47	95,950	6,036,984	62.90
9-10	.00045	95,927	43	95,905	5,941,034	61.93
10-11	.00044	95,884	43	95,863	5,845,129	60.96
11-12	.00045	95,841	43	95,820	5,749,266	59.99
12-13	.00050	95,798	48	95,774	5,653,446	59.01
13-14	.00058	95,750	55	95,723	5,557,672	58.04
14-15	.00070	95,695	67	95,661	5,461,949	57.08
15-16	.00084	95,628	80	95,588	5,366,288	56.12
16-17	.00100	95,548	96	95,500	5,270,700	55.16
17-18	.00117	95,452	112	95,396	5,175,200	54.22
18-19	.00137	95,340	130	95,275	5,079,804	53.28
19-20	.00160	95,210	153	95,134	4,984,529	52.35
20-21	.00184	95,057	174	94,970	4,889,395	51.44
21-22	.00204	94,883	194	94,786	4,794,425	50.53
22-23	.00217	94,689	206	94,586	4,699,639	49.63
23-24	.00219	94,483	206	94,380	4,605,053	48.74
24-25	.00212	94,277	200	94,177	4,510,673	47.84
25-26	.00203	94,077	191	93,981	4,416,496	46.95
26-27	.00195	93,886	183	93,794	4,322,515	46.04
27-28	.00195	93,703	183	93,611	4,228,721	45.13
28-29	.00202	93,520	189	93,425	4,135,110	44.22
29-30	.00213	93,331	199	93,232	4,041,685	43.30
30-31	.00228	93,132	212	93,026	3,948,453	42.40
31-32	.00246	92,920	229	92,806	3,855,427	41.49
32-33	.00268	92,691	248	92,567	3,762,621	40.59
33-34	.00294	92,443	272	92,307	3,670,054	39.70
34-35	.00325	92,171	299	92,021	3,577,747	38.82
35-36	.00358	91,872	329	91,707	3,485,726	37.94
36-37	.00394	91,543	361	91,362	3,394,019	37.08
37-38	.00430	91,182	392	90,986	3,302,657	36.22
38-39	.00466	90,790	423	90,578	3,211,671	35.37
39-40	.00503	90,367	455	90,140	3,121,093	34.54
40-41	.00542	89,912	487	89,669	3,030,953	33.71
41-42	.00583	89,425	521	89,164	2,941,284	32.89
42-43	.00626	88,904	557	88,625	2,852,120	32.08
43-44	.00672	88,347	594	88,050	2,763,495	31.28
44-45	.00722	87,753	633	87,437	2,675,445	30.49
45-46	.00773	87,120	674	86,783	2,588,008	29.71
46-47	.00826	86,446	714	86,089	2,501,225	28.93
47-48	.00880	85,732	754	85,355	2,415,136	28.17
48-49	.00933	84,978	793	84,581	2,329,781	27.42
49-50	.00986	84,185	830	83,770	2,245,200	26.67
50-51	.01041	83,355	868	82,921	2,161,430	25.93
51-52	.01102	82,487	909	82,033	2,078,509	25.20
52-53	.01171	81,578	955	81,101	1,996,476	24.47
53-54	.01249	80,623	1,007	80,119	1,915,375	23.76
54-55	.01333	79,616	1,061	79,085	1,835,256	23.05

TABLE 36. LIFE TABLE FOR NONWHITE FEMALES: PACIFIC DIVISION, 1949-51—Continued

YEAR OF AGE	PROPORTION DYING	OF 100,000 BORN ALIVE		STATIONARY POPULATION		AVERAGE REMAINING LIFETIME
Period of life between two exact ages stated	Proportion of persons alive at beginning of year of age dying during year	Number living at beginning of year of age	Number dying during year of age	In year of age	In this year of age and all subsequent years	Average number of years of life remaining at beginning of year of age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
x to $x+1$	q_x	l_x	d_x	L_x	T_x	$\mathring{e}_x$
55-56	.01424	78,555	1,119	77,995	1,756,171	22.36
56-57	.01521	77,436	1,178	76,847	1,678,176	21.67
57-58	.01624	76,258	1,238	75,639	1,601,329	21.00
58-59	.01731	75,020	1,299	74,371	1,525,690	20.34
59-60	.01843	73,721	1,358	73,042	1,451,319	19.69
60-61	.01961	72,363	1,419	71,653	1,378,277	19.05
61-62	.02088	70,944	1,482	70,203	1,306,624	18.42
62-63	.02224	69,462	1,545	68,690	1,236,421	17.80
63-64	.02367	67,917	1,607	67,114	1,167,731	17.19
64-65	.02515	66,310	1,668	65,476	1,100,617	16.60
65-66	.02674	64,642	1,728	63,778	1,035,141	16.01
66-67	.02847	62,914	1,792	62,018	971,363	15.44
67-68	.03040	61,122	1,858	60,193	909,345	14.88
68-69	.03252	59,264	1,927	58,301	849,152	14.33
69-70	.03481	57,337	1,996	56,339	790,851	13.79
70-71	.03726	55,341	2,062	54,310	734,512	13.27
71-72	.03988	53,279	2,125	52,217	680,202	12.77
72-73	.04267	51,154	2,182	50,063	627,985	12.28
73-74	.04566	48,972	2,236	47,854	577,922	11.80
74-75	.04886	46,736	2,284	45,594	530,068	11.34
75-76	.05221	44,452	2,321	43,292	484,474	10.90
76-77	.05565	42,131	2,344	40,959	441,182	10.47
77-78	.05911	39,787	2,352	38,611	400,223	10.06
78-79	.06291	37,435	2,355	36,257	361,612	9.66
79-80	.06708	35,080	2,353	33,903	325,355	9.27
80-81	.07117	32,727	2,330	31,562	291,452	8.91
81-82	.07471	30,397	2,271	29,262	259,890	8.55
82-83	.07724	28,126	2,172	27,040	230,628	8.20
83-84	.07736	25,954	2,008	24,950	203,588	7.84
84-85	.07748	23,946	1,855	23,019	178,638	7.46
85-86	.07760	22,091	1,714	21,234	155,619	7.04
86-87	.07772	20,377	1,584	19,585	134,385	6.60
87-88	.07784	18,793	1,463	18,062	114,800	6.11
88-89	.08911	17,330	1,544	16,558	96,738	5.58
89-90	.10456	15,786	1,651	14,961	80,180	5.08
90-91	.12314	14,135	1,740	13,265	65,219	4.61
91-92	.14380	12,395	1,783	11,503	51,954	4.19
92-93	.16547	10,612	1,756	9,734	40,451	3.81
93-94	.18887	8,856	1,672	8,020	30,717	3.47
94-95	.21469	7,184	1,543	6,412	22,697	3.16
95-96	.24189	5,641	1,364	4,959	16,285	2.89
96-97	.26940	4,277	1,152	3,701	11,326	2.65
97-98	.29617	3,125	926	2,662	7,625	2.44
98-99	.32291	2,199	710	1,844	4,963	2.26
99-100	.35032	1,489	522	1,228	3,119	2.09
100-101	.37734	967	365	785	1,891	1.95
101-102	.40292	602	242	481	1,106	1.84
102-103	.42600	360	154	283	625	1.74
103-104	.44587	206	92	160	342	1.65
104-105	.46323	114	53	88	182	1.58
105-106	.47915	61	29	47	94	1.52
106-107	.49472	32	16	24	47	1.46
107-108	.51100	16	8	12	23	1.40
108-109	.52810	8	4	6	11	1.35
109-110	.54529	4	2	3	5	1.29
110-111	.56243	2	1	1	2	1.24
111-112	.57938	1	1	1	1	1.24

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LIFE TABLES FOR 1949-51

Method of Constructing the 1949-51 National, Divisional, and State Life Tables

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Office of Vital Statistics

PREFACE

This report describes the methods of constructing the decennial national (1), divisional (2), and State life tables (3) for 1949-51. Beginning with the census of 1900, national life tables have been prepared decennially and have appeared in Federal Government publications. These tables are based on the population data collected in the census and on mortality statistics referring to a 2- or 3-year period straddling the census date. Life tables for selected States were prepared in conjunction with national life tables for 1900-02 (4), 1909-11 (5), and 1919-20 (6). Life tables for each State, except Texas, were prepared for 1929-31 (7) and for all States and geographic divisions for 1939-41 (8, 9).

After experimenting, it was decided to construct the 1949-51 decennial life tables by following very closely the methods used by Dr. T. N. E. Greville (10) in preparing the 1939-41 national life tables. The problems of adjusting the recorded population and vital statistics and the graduation of these data for the 1949-51 life tables were similar to those encountered in constructing the 1939-41 life tables because the national vital statistics system and population census methods for the United States were already well developed by 1940. By adopting similar methods for constructing life tables, differences between the tables for 1949-51 and for 1939-41 introduced by variations in computation procedure are minimized.

Part I of this report describes the construction of the national, divisional, and State life tables for 1949-51. Part II is a reproduction of pages 101-136 of the *United States Life Tables and Actuarial Tables, 1939-41* by Thomas N. E. Greville (National Office of Vital Statistics, 1947) which is out of print. This is the part of Greville's report containing the description of the methods of construction used by him for the life tables.

Acknowledgement is made to Dr. T. N. E. Greville who was consulted at all stages in the preparation of the national and subnational life tables, and to Mr. G. A. Carlson for his assistance in the computation of the national life tables.

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Method of Constructing the 1949-51 National, Divisional, and State Life Tables

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PART I

Introduction

The experimental work and the construction of the national life tables were conducted in the National Office of Vital Statistics. In this section, reference will be made to part II of this report, "Method of Construction and Graduation of the 1939-41 Life Tables," when the methodology used for the 1939-41 life tables is applicable to the construction of the 1949-51 life tables. However, departures from the methods described there will be explained in some detail.

In deciding on the methods to use in constructing the national life tables, consideration was given to their utility in constructing the subnational tables. Hence it is not accidental that essentially the same methods were used in constructing the divisional and State life tables for 1949-51 in the Statistical Bureau of the Metropolitan Life Insurance Company. Deviations from the national tables in constructing the subnational tables are indicated. It is noteworthy that all computations for the subnational life tables were performed by machine methods. Conventional IBM equipment was used in all steps through calculation of the mortality rates and a Univac electronic computer was used for calculating the values of the other life table functions.

National life tables, nine in number, were constructed for total persons and for each sex, and corresponding sets for white persons and for nonwhite persons. Life tables were also computed separately for white and nonwhite persons of each sex in each of the nine geographic divisions. For the white population, life tables were computed separately for males and females in each State and the District of Columbia, and for the nonwhite population life tables were computed separately for males and females in each State of the South Atlantic, East South Central, and West South Central Divisions.

The population data enumerated as of April 1 used in the construction of the national and subnational life tables were published by the U. S. Bureau of the Census in *U. S. Census of Population: 1950*, Volume II, *Characteristics of the Population*, Part 2, Chapter B, Table 15; and Chapter C, table 51 (1953).

Birth and death data were extracted from the following annual issues of *Vital Statistics of the United States* published by the National Office of Vital Statistics:

1944 Part II, table 3.
1945 Part II, tables 3 and 19.
1946 Part II, tables 4 and 20.
1947 Part II, tables 3 and 21.
1948 Part II, tables 5 and 21.
1949 Part II, tables 3 and 22.
1950 Volume II, table 17; and Volume III, table 56.
1951 Volume I, table 21; and Volume II, table 57.

Preliminary Adjustment of the Data

Birth and death data.--The few deaths of unknown age were prorated over the known ages.

It was assumed that the registration of births and deaths under 5 years of age were equally complete, so that adjustment in the recorded data was not necessary for the computation of mortality rates at these ages. This is a departure from Greville, who assumed that registration of births and deaths under 1 year of age were equally com-

plete, but less complete than registration of deaths at ages 1 through 4 years. The new assumption was made in consideration of the substantial improvement in the level of birth registration completeness between 1940 and 1950.

Population data.—Experimental national life tables for white females, based upon an estimated population for July 1, 1950, showed very little difference from corresponding tables based upon the census of population as of April 1. An adjustment of the census population figures to July 1 depends upon a number of assumptions, and in addition, would have been costly and difficult to make for use in the computation of the subnational life tables. Accordingly, the national, divisional, and State life tables for 1949-51 were based on the population enumerated in the census as of April 1, 1950, rather than as of July 1, the midpoint of the 3-year period for which deaths are used.

By 1951 there was a sizable United States population abroad. Trial computations indicated that the incorporation of the experience of the population outside of the United States would have virtually no effect on the results and consequently no adjustment was made for them.

The complete count data in the reports from the 1950 census of population were by 5-year-age groups up to age 75 years, the residual age groups being for 75-84 years and for 85 years and over. The population counts at ages 75 years and over were distributed into 5-year-age groups, with a residual class for ages 100 years and over, on the basis of the 20-percent sample count by single years of age.

Special adjustment of nonwhite data.—The statement of age reporting on the death certificates and on the population enumerations around age 65 years was investigated for both the white and nonwhite population. In the case of the white population, the apparent misstatement of age was not considered sufficient to seriously affect the life table values; unadjusted data were therefore used. In the case of the nonwhite, when misstatement of age was sufficiently marked to affect the life table values, the method used by Greville to redistribute recorded deaths and the population around age 65 years was followed. Adjustments were made for ages 50 through 70 years, whereas Greville made his adjustments for ages 55 to 70 years, in 1940.

The procedure used in this study to redistribute the nonwhite population and deaths at ages 50-69 years follows:

If

W_x = White population (or deaths) at ages x and over

N_x = Nonwhite population (or deaths) at ages x and over

$r_x = N_x \div W_x$

And given

$r_{45}, r_{50}, r_{70}, r_{75}$

Then by Waring's formula

$$r'_{55} = -.4r_{45} + 1.2r_{50} + .4r_{70} - .2r_{75}$$

$$r'_{60} = -.4r_{45} + .9r_{50} + .9r_{70} - .4r_{75}$$

$$r'_{65} = -.2r_{45} + .4r_{50} + 1.2r_{70} - .4r_{75}$$

For x = 55, 60, and 65

$$N'_x = r'_x \cdot W_x$$

The redistributed nonwhite population (or deaths) in 5-year-age groups, $5N'_x$, is then

$$5N'_{50} = N_{50} - N'_{55} \qquad 5N'_{60} = N'_{60} - N'_{65}$$

$$5N'_{55} = N'_{55} - N'_{60} \qquad 5N'_{65} = N'_{65} - N_{70}$$

Computation of Mortality Rates

Table 1 digests the procedure used in this phase of the construction of the life tables.

Ages 0-4 years.—The procedures used by Greville to compute mortality rates by single years of age under 5 years were duplicated for the most part in the construction of the 1949-51 life tables. The separation factors for the first year of life used in the construction of the 1949-51 life tables are shown in table 2. Since a moderate variation in the separation factor at ages 1-4 years

TABLE 1. DIGEST OF PROCEDURE AND FORMULAE USED TO COMPUTE MORTALITY RATES: NATIONAL, DIVISIONAL, AND STATE LIFE TABLES, 1949-51

Stage of computation	Reference to procedure[1]
Mortality rates, ages 0-4 years	Part II, pp. 175-179 (pp. 115-119). (No adjustment was made in the number of survivors to age 1 and for the effect of migration.)
Pivotal ages—	
a. Population and deaths:	
(i) white: age 7 years	Formula No. 28, part II, p. 183 (p. 123)
ages 12 to 92 years	Formula No. 27, part II, p. 183 (p. 123)
(ii) nonwhite: age 7 years	Formula No. 28, part II, p. 183 (p. 123)
ages 12 to 27 years	Formula No. 27, part II, p. 183 (p. 123)
ages 32 to 72 years	Formula No. 29, part II, p. 184 (p. 124)
ages 77 to 87 years	Formula No. 27, part II, p. 183 (p. 123)
b. Mortality rates:	
(i) white: ages 7 to 92 years	Formula No. 25 with n - 3, part II, p. 183 (p. 123)
(ii) nonwhite: ages 7 to 87 years	
(iii) both races: ages 102, 107, 112, and 117 years	Rates based on the experience of Civil War veterans (See reference 13.)
(iv) white: age 97 years	$q_{97} = -.16q_{87} + .6q_{92} + .19883$
(v) nonwhite: age 92 years	$q_{92} = -.3q_{82} + 1.0q_{67} + .1108$
age 97 years	$q_{97} = -.2q_{82} + .5q_{87} + .2727$
Interpolated ages—	
(i) ages 5 and 6, and 8 to 11 years	Formula Nos. 40 and 41, part II, p. 196 (p. 136)
(ii) ages 13 years and over	Formula No. 35, part II, p. 186 (p. 126)

[1]Page numbers in parentheses refer to original publication.

TABLE 2. SEPARATION FACTORS AT AGE 0, BY COLOR AND SEX: UNITED STATES, 1944-51

YEAR	White		Nonwhite	
	Male	Female	Male	Female
1944	0.1620	0.1751	0.2091	0.2241
1945	.1397	.1531	.1760	.1902
1946	.1170	.1207	.1690	.1817
1947	.1304	.1428	.1698	.1833
1948	.1204	.1567	.1607	.1997
1949	.1268	.1440	.1720	.1809
1950	.1190	.1341	.1583	.1703
1951	.1149	.1300	.1697	.1741

has only a slight effect on the mortality rates the separation factors at these ages were assumed to be one-half (11). Trial calculations indicated that no adjustment was needed at ages 0-4 years for migration in the construction of the national and subnational life tables; also, as indicated previously with regard to these data, no adjustment was needed in the life tables for the years 1949-51 to correct for differentials in completeness of registration of births and deaths under 5 years of age. Whenever necessary, adjustments were made in the mortality rates under 5 years as computed from basic data in the subnational tables to remove anomalies, the principal ones being rates that advance with age and

rates for females higher than for males in the same area.

Ages 5 years and over.—The formulae used for the computation of population and deaths at the pivotal ages from age 7 years to the very old ages are indicated in table 1. The highest pivotal ages based upon census population and NOVS death data were 92 years for the white population and 87 years for the nonwhite; the use of pivotal age data at the higher ages would have introduced irregularities in the mortality curve. Table 1 also refers to the formula used to compute mortality rates at the pivotal ages.

To obtain mortality rates at the higher pivotal ages an extrapolation was made by Greville's method, and the results were compared with those produced by using one set of mortality rates at the highest ages based upon data by Vincent (12) and another set based on Civil War data by Myers and Shudde (13). The mortality rates from Vincent were incompatible with the acceptable rates at ages up to 92 years for the white population and up to 87 for the nonwhite, but this was not the case for the Civil War veteran data. The latter were accordingly used for pivotal mortality rates at the terminal ages of 102, 107, 112, and 117 years for each race and sex category. The mortality rates at the pivotal ages between the last accepted age and age 102 years were obtained by interpolation using Waring's formula. In the life tables combining both white and nonwhite, the pivotal mortality at age 92 years was computed in a special way. The pivotal value of the number of deaths for the nonwhite population, as originally calculated, was regarded as correct but an adjusted population count for the nonwhite was obtained by dividing the number of deaths by the mortality rate at this age obtained by interpolation.

The mortality rates for the single year ages between the pivotal ages were computed according to the interpolation formulae indicated in table 1. As required, adjustments were made in the mortality rates at pivotal and interpolated ages in the subnational tables to remove anomalies or undulations in the mortality curve. The anomalies were generally isolated instances where the mortality rate for females was higher than for males, or the rate for the white population higher than for the nonwhite.

Calculation of Other Life Table Functions

To compute the L_0 in each of the 1949-51 national life tables, the infant deaths in each of the 3 years were separated according to the calendar year of birth by means of the separation factor for each year, and the results were summed to compute a composite separation factor for the 3-year period. The same separation factors were used in each of the corresponding subnational life tables. The remaining life table functions were computed by conventional methods as described by Greville (part II, pages 195 and 194).

PART II

METHOD OF CONSTRUCTION AND GRADUATION OF THE 1939-41 LIFE TABLES

(Pages 163-198 of Part II are exact copies of pages 101-136 of the *United States Life Tables and Actuarial Tables, 1939-41,* by Thomas N. E. Greville.)

PART V

METHOD OF CONSTRUCTION AND GRADUATION OF THE LIFE TABLES

The entire process of constructing a life table consists of three major steps: (1) the preliminary adjustment of the population, birth, and death statistics which are to be used, in order to remove any errors and biases for which corrections are available or can be derived; and the approximation of certain detailed distributions of the data, needed in the computations but not available from the actual tabulations; (2) the calculation, from the adjusted data, of the rates of mortality for each year of age, which form the basis of the life tables; and (3) the computation of the remaining life table values. Of these, the first step is by far the most difficult. While the second step requires technical skill and the exercise of judgment, valuable assistance is provided by the large body of literature on the subject and the accumulated experience of actuaries in the construction of life tables. The third step involves little more than the routine application of standard formulas. However, in making the preliminary adjustment of the data, it is necessary to break new ground, as comparatively little attention has been given to this subject, and, besides, the data of each country and each epoch present their own peculiar problems, so that past experience is not a satisfactory guide.

The following description of the methods and processes used is divided into three main sections corresponding to the three major steps in the construction of a life table.

A. PRELIMINARY ADJUSTMENT OF THE DATA

In this section, the description of the various preliminary adjustments made in the data of births, deaths, and populations has been arranged in approximately the order in which the various operations were actually carried out. This order was adopted in order to avoid complicating unnecessarily the explanation of many of the steps, but does not correspond to any systematic classification of the various adjustments by either the purpose of the adjustment or the class of data involved. The adjustments made are of four types: (1) those intended to correct for incompleteness of reporting, (2) those necessitated by incomplete or inaccurate age statements, (3) those intended to eliminate roughness due to the small volume of data in certain classifications, and (4) the estimation of certain figures needed in the construction of life tables but not available from actual tabulations. Adjustments of the first type were confined to statistics of births and infant deaths. In the latter case, the adjustment of (a) the total infant deaths, and (b) the figures for subdivisions of the first year of life are separately discussed. The second type of adjustment includes the treatment of deaths for which age was not reported, and the redistribution of Negro populations and deaths at ages 55 to 69. The only adjustment of the third type was a redistribution by month of age of deaths at ages 1 month to 11 months of nonwhite infants other than Negroes. The principal adjustment of the fourth type is that made for the change in the distribution of population between April 1, 1940, the date of the census, and July 1, 1940, the date on which populations were needed for the purpose of life table construction. Also included in this category is the estimation of the distribution by single years of age of the foreign-born population under age 5, this being needed for a special purpose, as explained later.[1]

Accuracy of the data

It has been stated that the life tables in this volume are based on the results of the 1940 census of population and the tabulations of reported deaths in the continental United States for the 3 years 1939–1941. In deriving life table values for ages under 5, use was made also of the tabulations of reported births for the years 1934 to 1941, inclusive, and of deaths under 5 years of age during those years. If all these data were known to be absolutely complete and correct, the construction of life tables from them would present few problems. However, the data are affected by two main types of error: (a) incompleteness or underreporting, and (b) misstatement of age in populations and deaths, which makes the figures too large at some ages and too small at others. As will be explained later, some adjustment has been made for errors of type (b) through the graduation of the data, and, in the case of the Negro data, by a preliminary redistribution of the numbers in certain age groups for which this type of error was believed to be especially marked. Except in the case of statistics of births and infant deaths (those occurring at ages under 1 year), no attempt has been made to adjust for errors of type (a).

If it should happen that the enumeration of the population and the reporting of deaths were both deficient by exactly the same percent, the use of the unadjusted figures would produce exactly the correct mortality rates. However, if the reporting of deaths should be more complete than the enumeration of

[1] See p. 119.

population, the rates of mortality would be overstated by using the reported figures. If, on the contrary, the enumeration of population should be more complete than the registration of deaths, the mortality rates would be understated. Using the unadjusted data thus involves the assumption that the reporting of deaths and the enumeration of population have the same degree of completeness. It would be a remarkable coincidence if this were exactly true. It would be even more remarkable if it were true, not only in the aggregate but within each of the various subdivisions by sex, race, and age, for which rates of mortality have been calculated. This assumption has been made then, not because it is believed to be precisely correct, but because specific information regarding the relative completeness of death reporting and census enumeration is almost entirely lacking.

Completeness of birth registration

It has long been recognized that the census enumeration of children under 5, and particularly of those under 1 year, is markedly deficient. This is illustrated by the following figures relating to the 1940 census. The total native population enumerated as under 1 year of age on April 1, 1940, the date of the census, is closely [2] estimated as 2,019,662. The same population estimated from registered births and deaths during the year ending April 1, 1940, is 2,192,557, which exceeds the census figure by 172,895. Since it is known that birth registration is not entirely complete, the deficiency in the census enumeration of children under 1 year of age is actually greater than that num-

[2] The only estimation involved is in determining the deduction for foreign-born nonwhites which are given only by 5-year age groups and only for the principal non white races. By the most liberal estimate, the number of these is less than 100.

TABLE AB.—REGISTERED AND ADJUSTED BIRTHS, 1939–1941, AND PERCENT COMPLETENESS OF BIRTH REGISTRATION, DEC. 1, 1939, TO MAR. 31, 1940, FOR WHITE AND NONWHITE, BY STATES

STATE	Registered births, 1939–1941	Percent completeness,[1] Dec. 1, 1939, to Mar. 31, 1940	Adjusted births, 1939–1941	STATE	Registered births, 1939–1941	Percent completeness,[1] Dec. 1, 1939, to Mar. 31, 1940	Adjusted births, 1939–1941
WHITE							
Alabama	116,987	86.6	135,089	Nebraska	65,183	97.0	67,199
Arizona	20,695	93.8	31,658	Nevada	5,820	97.5	5,969
Arkansas	87,231	79.6	109,587	New Hampshire	24,651	98.6	25,001
California	325,818	98.1	332,128	New Jersey	170,310	99.0	172,030
Colorado	62,242	89.8	69,312	New Mexico	42,192	91.2	46,263
Connecticut	76,401	99.4	76,862	New York	562,717	99.0	568,401
Delaware	11,655	97.2	11,991	North Carolina	165,346	88.4	187,043
District of Columbia	22,038	98.5	22,374	North Dakota	38,013	94.6	40,183
Florida	73,363	91.3	80,354	Ohio	331,037	95.3	347,363
Georgia	119,035	83.6	142,386	Oklahoma	120,695	87.0	138,730
Idaho	34,248	95.1	36,013	Oregon	52,253	97.3	53,703
Illinois	358,550	97.3	368,499	Pennsylvania	471,585	97.2	485,170
Indiana	178,893	96.6	185,189	Rhode Island	32,109	98.8	32,499
Iowa	133,517	94.7	140,989	South Carolina	68,192	82.7	82,457
Kansas	85,354	95.6	89,282	South Dakota	33,982	96.6	35,178
Kentucky	178,200	89.2	199,776	Tennessee	142,185	81.4	174,674
Louisiana	90,537	87.7	103,235	Texas	336,566	89.3	376,894
Maine	46,148	96.3	47,921	Utah	39,265	97.1	40,438
Maryland	78,610	97.8	80,378	Vermont	20,477	97.3	21,045
Massachusetts	195,356	98.9	197,529	Virginia	125,357	92.5	135,521
Michigan	288,311	97.9	294,495	Washington	83,240	98.0	84,939
Minnesota	155,394	99.3	156,489	West Virginia	121,724	86.7	140,397
Mississippi	71,006	93.8	75,699	Wisconsin	164,322	96.9	169,579
Missouri	172,456	90.7	190,130	Wyoming	15,157	95.9	15,805
Montana	32,104	98.0	32,759				
NONWHITE [2]							
Alabama	72,008	82.6	87,177	Missouri	12,521	82.7	15,140
Arizona	4,289	48.4	8,862	Montana	1,994	91.1	2,189
Arkansas	27,434	63.2	43,408	Nebraska	980	93.1	1,053
California	15,264	96.5	15,818	New Jersey	14,019	98.7	14,234
Colorado	803	90.4	888	New Mexico	1,565	40.3	3,883
Connecticut	1,938	97.9	1,980	New York	30,664	96.5	31,776
Delaware	2,297	98.6	2,330	North Carolina	78,837	81.0	97,330
District of Columbia	12,833	96.9	13,285	North Dakota	1,272	95.2	1,336
Florida	30,331	86.4	35,105	Ohio	18,648	93.7	19,902
Georgia	78,035	77.6	100,561	Oklahoma	13,572	66.9	20,287
Illinois	21,076	90.6	23,263	Oregon	779	84.1	926
Indiana	6,544	94.0	6,962	Pennsylvania	28,842	92.9	31,046
Iowa	797	90.1	885	Rhode Island	746	100.0	746
Kansas	3,236	92.9	3,483	South Carolina	66,791	71.8	93,024
Kentucky	9,819	87.6	11,209	South Dakota	2,271	79.8	2,846
Louisiana	63,784	83.7	76,205	Tennessee	25,921	75.1	34,515
Maryland	20,947	94.1	22,260	Texas	48,450	68.7	70,524
Massachusetts	2,922	98.0	2,982	Virginia	46,904	90.2	52,100
Michigan	12,470	94.0	13,266	Washington	2,079	88.7	2,344
Minnesota	2,001	97.2	2,059	West Virginia	6,207	81.3	7,745
Mississippi	88,102	86.2	102,206	Wisconsin	1,949	93.2	2,091

[1] Grove, Robert D., *Studies in Completeness of Birth Registration, Part I, Completeness of Birth Registration, United States, Dec. 1, 1939, to Mar. 31, 1940*, U. S. Bureau of the Census, Vital Statistics—Special Reports, vol. 17, No. 18, p. 228, 1943.

[2] The States of Idaho, Maine, Nevada, New Hampshire, Utah, Vermont, and Wyoming, each of which reported less than 500 nonwhite births in the period 1939–1941 are omitted.

ber. For this reason birth statistics were relied upon in obtaining a population base for the rate of mortality in the first year. This raises the question as to how completely births are reported.

Following the 1940 census, there became available for the first time reliable information as to the completeness of birth registration in the United States. This information was obtained by preparing special infant cards for all infants enumerated in the census who were under 4 months of age on April 1, 1940, and by matching these cards against copies of the birth certificates for all births reported as having occurred between December 1, 1939, and April 1, 1940. Copies of all death certificates of infants born in this 4-month period were also obtained, and matched where possible with the birth certificates. Table AB shows, for white and nonwhite separately, the number of births reported in each State in the 3-year period 1939–1941, the percent completeness of birth registration as indicated by the test just described, and the adjusted number of births obtained by dividing the number of registered births by the proportion of births registered. In the case of the nonwhite, those States in which less than 500 nonwhite births were reported in the 3-year period have been omitted from the table.

Further tabulations were made for a special sample of infant cards, which yield the completeness of birth registration by a more detailed racial classification for the United States as a whole. This sample did not include matching with death records; and, for this reason, the results obtained are probably somewhat more suitable for use in adjusting birth statistics to be employed in the construction of life tables, since those infants whose deaths are registered probably constitute a biased sample from the standpoint of birth registration. Table AC shows, for whites, Negroes, and other races separately, the number of births reported in the 3-year period in the continental United States, the percent completeness of registration as obtained from the tabulation of the sample, and the adjusted number of births obtained by dividing the registered figure by the indicated proportion of births registered.

TABLE AC.—REGISTERED AND ADJUSTED BIRTHS, 1939–1941, BY RACE, AND PERCENT COMPLETENESS OF BIRTH REGISTRATION (EXCLUDING MATCHED INFANT DEATH RECORDS), DEC. 1, 1939, TO MAR. 31, 1940: UNITED STATES

RACE	Registered births	Percent [1] completeness, Dec. 1, 1939, to Mar. 31, 1940	Adjusted births
White	6,255,527	93.98	6,656,232
Negro	843,483	81 87	1,030,271
Other races	40,404	75 05	53,836

[1] Based on tabulation of special sample.

Completeness of registration of infant deaths

It has already been mentioned that all death statistics were used without any adjustment for incompleteness of reporting, with the exception of infant deaths: that is, those occurring under 1 year of age. In the construction of all the life tables prepared by the Bureau of the Census prior to 1940, even infant deaths were not adjusted for underreporting. However, there is evidence that the proportion of infant deaths not reported is sufficiently large to have an appreciable effect on life table values, and it appears that the former practice of relating fully adjusted birth data to unadjusted infant death statistics has resulted in a substantial understatement of the rate of mortaility at age 0.

The problem of making a proper adjustment for incomplete reporting of infant deaths is a difficult one, because almost no information is available bearing directly on the point, and an indirect method of approach must be resorted to. This approach is based on an examination of infant mortality rates for subdivisions of the first year of life. Table AD shows, for each State included in table AB, the number of deaths occurring in the 3-year period 1939–1941 in each of seven subdivisions of the first year of life, per 1,000 adjusted births (table AB) in the same period. With the exception of the column pertaining to deaths under 1 day of age, these figures cannot be regarded as mortality rates in the true sense of the word, as the denominator used was, in each case, the number of births for the year, and not the number of survivors to the beginning of the age period indicated. However, this refinement would have comparatively little effect on the comparison between States, which is the chief purpose in view.

For convenience in making comparisons, the various States appear in table AD in decreasing order of the completeness of birth registration. A careful study of the table shows that there is a close relationship between the completeness of birth registration and the actual level of infant mortality in the various States. For example, if the 48 States and the District of Columbia are ranked also according to the mortality rate among white infants 9 to 11 months of age, it is found that of the 10 States having the most complete registration, 5 are also among the 10 having the lowest mortality rates. Likewise, among the 10 having least complete registration, 4 are also among the 10 having the highest mortality rates. This is not surprising, because, generally speaking, those States having the most efficient registration are States in which sanitation and public health measures have made relatively greater progress.

TABLE AD.—DEATHS UNDER 1 YEAR PER 1,000 ADJUSTED BIRTHS, BY AGE: EACH STATE, 1939–1941

STATE	AGE AT DEATH						
	Under 1 day	1 day to 1 week	1 week to 1 month	1 and 2 months	3 to 5 months	6 to 8 months	9 to 11 months
WHITE							
Connecticut	12.5	8.1	3.2	3.3	3.1	1.7	1.0
Minnesota	13.2	7.5	3.3	3.7	2.9	1.8	1.2
New Jersey	11.6	7.6	3.8	3.6	3.5	2.0	1.4
Massachusetts	12.3	8.1	3.9	4.2	3.5	2.2	1.6
Rhode Island	13.0	7.8	3.5	5.0	3.6	1.9	1.2
New York	12.7	7.9	3.6	4.1	3.3	1.9	1.3
New Hampshire	14.0	9.2	4.1	5.5	4.5	2.4	1.6
District of Columbia	15.2	8.0	7.5	4.2	2.8	1.7	1.1
California	13.8	7.3	3.8	4.4	4.4	2.6	1.7
Montana	14.2	7.6	4.5	4.8	4.2	2.1	1.8
Washington	12.4	8.1	3.4	3.8	3.0	1.8	1.0
Michigan	12.2	8.6	4.5	5.0	4.2	2.6	1.7
Maryland	11.8	7.7	5.0	5.4	4.8	3.1	2.2
Nevada	16.1	8.7	1.5	5.9	5.7	2.7	1.8
Illinois	12.3	7.6	3.4	3.7	3.3	2.1	1.5
Oregon	11.4	7.2	2.7	3.6	2.8	2.0	1.3
Vermont	14.4	7.9	5.9	6.1	4.5	2.5	1.8
Delaware	9.1	7.8	3.3	5.2	4.4	3.9	2.8
Pennsylvania	13.4	8.7	4.7	5.2	4.7	2.7	1.8
Utah	13.8	7.8	3.5	3.2	3.5	1.9	1.3
Nebraska	12.9	7.4	3.5	3.8	3.5	1.9	1.2
Wisconsin	13.0	7.7	3.7	4.4	3.7	2.0	1.2
Indiana	11.0	8.6	4.3	5.0	4.5	2.9	2.0
South Dakota	13.9	7.6	3.4	3.8	3.4	1.9	1.0
Maine	13.2	12.4	5.6	7.6	6.2	3.0	2.4
Wyoming	14.0	8.2	3.4	4.1	4.9	2.5	2.3
Kansas	12.9	7.3	3.3	4.2	4.0	2.3	1.6
Ohio	12.6	8.0	4.5	4.7	4.3	2.7	1.9
Idaho	14.2	8.1	3.4	5.2	4.3	2.0	1.2
Iowa	13.0	7.4	3.7	4.1	3.6	2.1	1.1
North Dakota	13.7	7.7	4.9	5.5	4.5	2.0	1.5
Arizona	14.9	8.3	6.6	11.0	14.3	9.9	5.1
Mississippi	14.5	9.2	5.4	5.6	4.5	3.5	2.5
Virginia	14.9	9.1	5.9	6.4	6.0	3.3	2.4
Florida	14.0	7.7	4.6	4.8	4.3	3.1	2.2
New Mexico	17.7	10.9	9.9	14.5	18.4	11.5	6.8
Missouri	12.2	7.3	4.8	5.4	4.8	3.0	2.2
Colorado	14.0	8.3	5.1	7.8	7.8	4.3	2.5
Texas	12.8	9.4	6.0	7.7	8.8	6.0	4.5
Kentucky	10.2	10.7	6.9	7.1	5.9	3.9	2.8
North Carolina	12.6	8.4	5.3	6.2	5.9	3.7	2.4
Louisiana	13.0	7.1	5.0	6.0	4.9	2.9	1.9
Oklahoma	12.5	7.8	5.0	5.3	4.3	2.7	2.3
West Virginia	11.4	9.1	6.1	7.5	6.8	3.9	2.7
Alabama	13.5	8.6	5.3	6.3	4.8	3.0	2.4
Georgia	11.6	9.0	4.9	5.5	4.4	2.9	2.3
South Carolina	12.5	9.3	5.0	6.5	5.8	3.4	2.4
Tennessee	10.3	7.5	5.2	6.1	5.1	3.6	2.5
Arkansas	9.2	6.6	4.2	4.7	4.4	3.2	2.5
NONWHITE [1]							
Rhode Island	21.4	6.7	5.4	8.0	8.0	5.4	6.7
New Jersey	19.0	14.4	6.3	9.6	9.3	5.7	3.9
Delaware	15.5	15.5	6.0	13.7	13.3	8.6	7.7
Massachusetts	16.4	10.4	8.7	6.0	5.7	8.0	4.0
Connecticut	17.2	13.6	7.1	5.6	5.1	5.6	2.0
Minnesota	15.5	6.8	8.3	9.7	9.7	10.7	11.2
District of Columbia	19.5	13.1	12.8	10.5	9.6	5.0	2.5
California	11.6	8.3	5.1	6.7	6.8	4.9	2.2
New York	17.8	11.3	4.8	7.9	6.6	3.7	2.2
North Dakota	13.5	12.0	15.0	15.7	18.0	9.7	9.0
Maryland	15.7	12.9	7.6	12.2	12.7	10.9	8.0
Indiana	13.5	11.8	9.0	8.2	8.6	5.5	3.4
Michigan	15.4	10.6	6.1	4.2	7.2	4.1	3.2
Ohio	16.8	10.7	7.1	7.8	7.9	5.4	3.0
Wisconsin	13.4	14.3	6.7	10.5	14.8	12.9	7.2
Nebraska	18.0	16.1	6.6	9.5	16.1	4.7	4.7
Kansas	13.5	10.3	8.3	9.2	10.6	4.9	4.6
Pennsylvania	19.1	10.7	6.2	8.1	8.8	5.7	3.3
Montana	10.1	12.3	8.2	23.8	23.3	18.3	11.0
Illinois	14.8	10.4	4.3	5.2	6.8	3.3	2.8
Colorado	16.9	10.1	3.4	11.3	4.5	9.0	2.3
Virginia	14.7	13.9	10.2	12.1	12.6	8.6	5.5
Iowa	19.2	9.0	4.5	9.0	10.2	7.9	4.5
Washington	14.5	10.2	7.3	15.8	12.4	11.9	10.2
Kentucky	11.7	17.6	10.8	11.5	10.9	7.9	5.3
Florida	14.7	14.7	10.7	9.2	7.7	5.8	3.8
Mississippi	11.1	9.2	6.4	8.2	8.5	5.4	3.9
Oregon	19.4	10.8	10.8	13.0	15.1	15.1	5.4
Louisiana	14.5	11.7	12.4	10.8	10.1	5.9	3.9
Missouri	15.4	9.4	10.0	10.2	9.8	6.5	4.8
Alabama	15.2	11.8	7.8	9.3	8.7	6.0	3.6
West Virginia	15.2	13.8	9.3	10.7	10.6	7.7	4.0
North Carolina	12.5	10.2	8.1	10.5	10.2	6.5	4.2
South Dakota	6.0	11.2	9.8	15.1	13.7	13.7	12.6
Georgia	12.4	11.3	8.3	8.8	7.8	5.0	2.9
Tennessee	11.9	10.6	6.4	8.8	8.6	6.2	4.5
South Carolina	10.8	11.8	8.1	9.3	10.9	6.9	4.0
Texas	11.1	10.7	8.7	8.1	7.9	4.6	3.1
Oklahoma	8.4	10.5	7.8	8.3	8.0	5.3	4.3
Arkansas	5.6	5.0	4.1	5.6	6.2	4.2	3.1
Arizona	7.7	9.0	12.5	16.1	20.1	15.8	13.2
New Mexico	13.1	11.1	8.0	12.4	16.0	13.4	9.5

[1] See footnote 2 to table AB, p. 102.

However, if the comparison is made with the mortality rates for infants under 1 day old, instead of those aged 9 to 11 months, just the opposite tendency is observed, the lower mortality rates being recorded, in general, in the States with less complete registration of births. For example, among the 10 States having the least complete registration of white births, 5 were also among the lowest 10 when ranked according to the mortality rate for white infants under 1 day old. It might be expected that mortality rates for infants in the first day of life would fail to show the close relationship to the completeness of birth registration which was observed in the case of the rates for infants 9 to 11 months old, because a large proportion of deaths occurring immediately after birth are due, at least in part, to mechanical causes connected with the process of childbirth. The great improvement in infant mortality in recent years has, in fact, affected the frequency of neonatal deaths to a much less degree than that of deaths occurring later in infancy.

It is not, however, to be expected that the death rate in very early infancy would be totally unaffected by varying conditions in the environment. Still less can it be thought that the normal relationship is actually reversed,[3] the lower mortality rates occurring where conditions are less favorable. It is necessary, therefore, to look for some source of error in the mortality rates for the first day of life as shown in table AD. Inasmuch as these rates were obtained from births corrected for incomplete registration, but without any corresponding adjustment in the death statistics, the most natural inference is that deaths occurring in early infancy are affected by an incompleteness of reporting having, in general, the same geographical incidence as in the case of births.

The relationships which led to this conclusion are brought out more clearly in table AE, which shows the results of arranging the States in the order of the percent completeness of birth registration and then combining them into five groups (three groups in the case of nonwhites) in such a way that the total number of reported deaths under 1 year of age is approximately the same for each group used. In the case of the data for white lives, the States of Arizona, New Mexico, and Texas have been omitted, because in these States the mortality rates for white infants in the latter part of the first year of life are so much higher than those for other States that the general relationship would be obscured by their inclusion. This condition is believed to be due to the presence, in the white population of these States, of a large number of Mexican agricultural workers in low income groups, among whom the rate of infant mortality is extremely high. Except for the omission of these 3 States from group 4, the spacing in table AD indicates the particular States included in

[3] There are certain factors tending to cause fewer deaths in the first day of life when the general infant death rate is high. For example, there are probably fewer instrumental deliveries in areas of high mortality. However, the effect of such factors is believed to be small.

each group. In making the calculations for nonwhites, the 7 States having less than 500 nonwhite births in the 3-year period, which were omitted from tables AB and AD, were again omitted here. Upon examining the part of table AE which shows data for the white population, it is observed that the percent completeness of birth registration decreases rather slowly in the first three groups and then falls at an accelerating pace as groups 4 and 5 are reached. The States in group 5 (where registration is least complete) contain only 18 percent of the adjusted white births in all five groups but contain 45 percent of the assumed unregistered (adjusted less registered) births. Above the age of 1 week, the death rates based on adjusted births rise consistently from group 1 to group 5, but in the case of deaths in the first day of life, the rates begin to decrease with group 4, and group 5 actually shows the lowest death rate of the five groups. In the age period 1 day to 1 week, a less marked but similar tendency is observed. The behavior of the rates for these two youngest age periods strongly suggests that the decline which appears in groups 4 and 5 may be spurious, and attributable, as already intimated, to incomplete reporting of deaths occurring in early infancy in these States. Among the nonwhite, the tendency toward lower apparent death rates in those States having less complete registration of births is more marked, and persists throughout the entire first year of life.

TABLE AE.—DEATHS UNDER 1 YEAR PER 1,000 ADJUSTED BIRTHS, BY AGE AND RACE, 1939–1941, FOR GROUPS OF STATES ARRANGED ACCORDING TO THE COMPLETENESS OF BIRTH REGISTRATION

	WHITE [1]					NONWHITE [2]		
	State group [3]					State group [3]		
	1	2	3	4	5	1	2	3
Percent of total deaths under 1 year for all groups	18.1	19.6	18.4	22.8	21.1	31.3	36.4	32.3
Percent completeness of birth registration	99.0	97.7	96.8	92.8	85.0	92.7	83.3	71.0
Deaths per 1,000 adjusted births:								
Under 1 day	12.6	12.7	12.9	12.8	11.8	15.8	13.3	10.6
1 day to 1 week	7.9	7.8	8.4	8.4	8.2	12.4	10.6	10.4
1 week to 1 month	3.7	3.9	4.2	5.0	5.2	7.8	8.6	7.8
1 and 2 months	4.0	4.4	4.9	5.5	6.0	9.2	9.7	8.7
3 to 5 months	3.3	3.9	4.4	4.9	5.2	9.3	9.4	8.9
6 to 8 months	2.0	2.4	2.5	3.0	3.3	6.4	6.0	5.8
9 to 11 months	1.3	1.6	1.7	2.1	2.4	4.2	3.9	3.9

[1] The States of Arizona, New Mexico, and Texas were omitted from the computations for white lives. See text, p. 104.
[2] Those States reporting less than 500 births of nonwhites in 1939–1941 were omitted from the computations. See footnote to table AB, p. 102.
[3] Higher numbers indicate less complete registration, as shown in the second line of the table.

In summary, it may be stated that the preceding analysis appears to show: (1) that there is substantial underreporting of infant deaths, (2) that this underreporting tends, in general, to be greater in those States in which underreporting of births is greater, and (3) that it is relatively greater in the case of deaths occurring in the first week of life than for those which occur later. However, it is not sufficient, for the purpose of life table construction merely to know that such a condition exists. It is necessary also to make some assumption as to the magnitude of the underreporting. As no information was available from which this could be estimated directly, an effort was made to estimate it indirectly by assuming the percent of nonreporting of infant deaths to be some fixed proportion or multiple, State by State, of the percent of nonreporting of births and adjusting the State death rates in accordance with that assumption, and then examining the death rates based on various assumed proportions or multiples to see which produced results most nearly in accordance with expectation. It was considered that, when adequately adjusted, the State death rates in each age period should show a consistent tendency to increase with decreasing completeness of birth registration, since, in general, the States having more complete registration are also those with better sanitation and public health facilities.

Such calculations were made for the first three age periods employed in table AD, which together comprise the first month of life. Since the individual State figures show minor fluctuations which make it difficult to observe the general tendency, these calculations were made for the same groups of States which were used in table AE. Three different sets of calculations were made, based on the assumption that the percent adjustment required for incomplete reporting of deaths in each age period was (a) 50 percent, (b) 100 percent, and (c) 150 percent of the corresponding percent adjustment required for births in the same State. The results of the calculations are shown in table AF.

In the case of white infant deaths under 1 day, adjustment in accordance with assumption (a) still leaves group 5 with a lower death rate than group 4. Assumption (b) produces a death rate in group 5 which is slightly higher than that in group 4, but the difference is much less than might reasonably be expected in view of the substantial difference in the completeness of birth registration in the two groups. In the case of the nonwhite, even assumption (c) fails to produce increasing death rates, although it tends in that direction, indicating that a more drastic adjustment would do so. The implication of these observations that deaths occurring in the first day of life may be less completely registered than births is less startling than it may at first appear, if one considers that there is probably a substantial number of cases of very early death, especially in rural areas and among the more underprivileged classes, in which neither the birth nor the death is registered. This group would of course constitute a much larger percent of the total infant deaths than of the total births. It is also possible that there may be a tendency, in some States, to report such cases as stillbirths.

In the case of white deaths at ages 1 day to 1 week, assumption (a) gives death rates which increase, but not by a sufficient amount, while the rates resulting from assumption (b) appear reasonable. For the non-

white, assumption (c) at least seems to be called for. The deaths of white infants aged 1 week to 1 month yield increasing rates even without adjustment, and it is somewhat difficult to judge which assumption produces the most plausible rates. However, one would expect these deaths also to be somewhat less completely reported than those occurring after the first year of life, and to require some adjustment.

The age distribution of deaths of white infants in the period 1939–1941 was 31 percent under 1 day, 20 percent from 1 day to 1 week, and 49 percent from 1 week to 1 year. As indicated in the foregoing discussion, it may be assumed for illustrative purposes on the basis of table AF that the percent adjustment required for incomplete reporting of infant deaths was related as follows to the corresponding percent adjustment for births:

Age at death	*Number of times the percent adjustment for births*
Under 1 day	1½
1 day to 1 week	1
1 week to 1 year	½

This gives for the average percent adjustment for incomplete reporting of white infant deaths $.31 \times 1.5 + .20 \times 1 + .49 \times 0.5$, or approximately 91 percent[4] of the corresponding percent adjustment for white births. Since reporting of white births was found to be about 94 percent complete (corresponding to an adjustment of 6.4 percent for incomplete reporting, see table AC), this would imply that white infant deaths were about 94.5 percent completely reported.

Similarly, the age distribution of nonwhite infant deaths was 22 percent under 1 day, 18 percent from 1 day to 1 week, 13 percent from 1 week to 1 month, and 47 percent from 1 month to 1 year; and the required percent adjustment for incomplete reporting of deaths of nonwhite infants may be assumed to be related as follows to the corresponding percent adjustment for births:

Age at death	*Number of times the percent adjustment for births*
Under 1 day	2
1 day to 1 week	1½
1 week to 1 month	1
1 month to 1 year	½

This would give for the average percent adjustment for incomplete reporting of nonwhite infant deaths $.22 \times 2 + .18 \times 1.5 + .13 \times 1 + .47 \times 0.5$, or approximately 107.5 percent[4] of the corresponding percent adjustment for nonwhite births. Since reporting of nonwhite births was found in 1940 to be about 82 percent complete, this would mean that on the assumptions made deaths of nonwhite infants were slightly under 81 percent complete. These assumptions are, of course, rough, and such a calculation can be no more than suggestive; however, it does indicate that, in the absence of accurate information on the completeness of registration of infant deaths, it is not unreasonable to assume that for the first year of life taken as a whole the percent completeness of registration of white deaths is the same as that of white births. This assumption is probably as accurate as could be expected with the meager information available, and leads to some simplification in the numerical computation. Accordingly, it was adopted in the preparation of the life tables in this volume. As a matter of convenience, it was used for nonwhites as well as whites, although a somewhat larger correction for nonwhites might be justified.

It should be pointed out that although this assumption is considered appropriate for the data of the United States as a whole, this does not imply that it could properly be employed for separate States, areas, or regions. It is probable that the relationship between the completeness of registration of births and that of infant deaths varies widely in different localities. It is likely, for example, that in highly urban areas where registration is a well established practice, registration of infant deaths is more complete than birth registration. On the contrary, there are indications that the reverse is true in rural areas. Such an indication is found, for example, in the comparison of infant mortality rates by population groups classified according to size.[5] Although these rates tend, in general, to

TABLE AF.—DEATHS UNDER 1 MONTH PER 1,000 ADJUSTED BIRTHS, BY AGE AND RACE, 1939–1941, ON VARIOUS ASSUMPTIONS AS TO THE COMPLETENESS OF DEATH REGISTRATION, FOR GROUPS OF STATES ARRANGED ACCORDING TO THE COMPLETENESS OF BIRTH REGISTRATION

	WHITE [1]					NONWHITE [2]		
	State group [3]					State group [3]		
	1	2	3	4	5	1	2	3
Percent completeness of birth registration	99.0	97.7	96.8	92.8	85.0	92.7	83.3	71.0
Deaths under 1 day:								
Unadjusted	12.6	12.7	12.9	12.8	11.8	15.8	13.3	10.6
Adjusted [4] according to:								
Assumption (a)	12.7	12.8	13.1	13.3	12.8	16.4	14.7	12.7
Assumption (b)	12.7	12.9	13.3	13.8	13.9	17.1	16.0	14.9
Assumption (c)	12.8	13.1	13.5	14.3	14.9	17.7	17.3	16.6
Deaths after 1 day to 1 week:								
Unadjusted	7.9	7.8	8.4	8.1	8.2	12.4	10.6	10.4
Adjusted [4] according to:								
Assumption (a)	7.9	7.9	8.6	8.8	8.9	12.9	11.7	12.6
Assumption (b)	7.9	8.0	8.7	9.1	9.6	13.4	12.8	14.7
Assumption (c)	8.0	8.1	8.8	9.4	10.3	13.9	13.9	16.4
Deaths after 1 week to 1 month:								
Unadjusted	3.7	3.9	4.2	5.0	5.2	7.8	8.6	7.8
Adjusted [4] according to:								
Assumption (a)	3.7	3.9	4.3	5.2	5.6	8.2	9.4	9.4
Assumption (b)	3.8	4.0	4.4	5.4	6.1	8.5	10.3	11.1
Assumption (c)	3.8	4.0	4.4	5.7	6.5	8.8	11.2	12.3

[1] The States of Arizona, New Mexico, and Texas were omitted from the computations for white lives. See text, p 104

[2] Those States reporting less than 500 births of nonwhites in 1939–1941 were omitted from the computations. See footnotes to table AB, p. 102

[3] Higher numbers indicate less complete registration of births.

[4] Assumptions (a), (b), and (c) suppose that the percent adjustment needed to correct for incompleteness of reporting of deaths in each State in the indicated age period is, respectively, 50, 100, and 150 percent of that required for births in the same State.

[4] Strictly speaking, the proportions of infant deaths occurring in the three age periods used in this calculation should be based on total infant deaths (after adjustment for underreporting). Allowance for this factor would slightly increase the resulting average.

[5] See, for example, Forrest E. Linder and Robert D Grove, *Vital Statistics Rates in the United States, 1900–1940*, table 28, p 578, Government Printing Office, Washington, D C., 1943

increase steadily with diminishing population size, the rates for rural areas are usually somewhat lower than those for the smallest urban places.[6] It is doubtful if this can be wholly explained on the basis of faulty allocation by residence, since the rates are based not on census populations but on births, which should be affected by errors in allocation in the same direction as infant deaths.

Method of adjustment of infant data

Inasmuch as the statistics of births and infant deaths were assumed to be equally complete, mortality rates at age 0 were obtained directly from the reported figures. However, as previously stated, the populations at ages 1 to 4 used in determining the number exposed to risk at those ages were not obtained from the census, but were calculated from birth and death statistics. To the extent that they entered into the calculation of populations at these subsequent ages, the statistics of births and infant deaths required some adjustment. The method followed was to compute, from reported figures only, the number of survivors to the exact age of 1 year from each year's births, and then to increase this number of survivors by the desired percentage before extending the calculations to higher ages. The method of determining the adjustment factors to be applied to the number of survivors at age 1 will now be described.

On first consideration, it might appear that the percents of completeness of birth registration obtained from the birth registration study could be used as divisors to obtain the corrected number of survivors. However, such a procedure would not be consistent with the assumptions being made in connection with ages 5 and above. At these ages it is not assumed that the census figures and the registered deaths are 100 percent complete, but rather that both have the same percent of incompleteness. Since it is not considered that deaths at ages 1 to 4 are reported any more completely than those at ages 5 and above, the populations to be used in rate computations at ages 1 to 4 should not be corrected to a higher degree of completeness than the census populations at ages 5 and over, if a consistent series of mortality rates is to be produced.

In order to determine the proper adjustment factors, a calculation was made, by two independent methods, of the survivors to exact age 1 out of the births corresponding to the 1940 census population at each single year of age from 1 to 9, inclusive. For example, the native population at age 5 (that is, between the fifth and sixth birthdays) on the census date, April 1, 1940, are survivors of babies born in the year April 1, 1934, to April 1, 1935. The survivors to exact age 1 of this group of births were estimated (a) by subtracting from the reported births of that period the reported infant deaths occurring among this group of lives and (b) by adding to the native population aged 5 on April 1, 1940, as enumerated in the census, the reported deaths among this group of lives after age 1, but before April 1, 1940. Similar calculations were made for the groups at each of the other ages under 10 in the 1940 census. Table AG shows the results, which are given separately for the three racial groups: whites, Negroes, and other races. It will be observed that the ratio of estimate (a) to estimate (b) falls sharply from birth to age 3, but from age 3 to age 9 merely fluctuates without showing any consistent trend. It shows, however, a marked tendency to be low at even ages and high at odd ages. This suggests that the fluctuation may be principally due to preference for certain ages in the census and that the ratio might be very nearly constant except for this disturbance. At the very young ages, where the ratio is particularly high, the census enumeration is known to be markedly deficient.

TABLE AG.—COMPARISON OF SURVIVORS TO AGE 1 AS ESTIMATED BY TWO METHODS. UNITED STATES, 1930–1939

TIME PERIOD IN WHICH BIRTHS OCCURRED (APR. 1 TO MAR 31)	Age on April 1, 1940, in completed years	SURVIVORS TO FIRST BIRTHDAY: Method (a) (based on registered births and deaths)	SURVIVORS TO FIRST BIRTHDAY: Method (b) (based on 1940 census enumeration and registered deaths)	Ratio (a) ÷ (b)
		WHITE		
1939–1940	0	[1] 1,924,622	[2] 1,777,738	1.083
1938–1939	1	1,907,032	1,820,840	1.047
1937–1938	2	1,859,609	1,932,436	.962
1936–1937	3	1,776,542	1,862,403	.954
1935–1936	4	1,797,748	1,892,182	.950
1934–1935	5	1,807,799	1,894,413	.954
1933–1934	6	1,722,081	1,808,031	.952
1932–1933	7	1,784,366	1,862,620	.958
1931–1932	8	1,862,495	1,964,620	.948
1930–1931	9	1,911,381	1,974,105	.968
1930–1937	3–9	12,662,412	13,258,347	.9551
		NEGRO		
1939–1940	0	[1] 255,798	[2] 229,795	1.113
1938–1939	1	247,842	230,601	1.075
1937–1938	2	243,215	267,545	.909
1936–1937	3	230,240	263,205	.875
1935–1936	4	233,565	272,955	.856
1934–1935	5	236,128	266,885	.885
1933–1934	6	224,318	270,927	.828
1932–1933	7	229,476	265,838	.863
1931–1932	8	227,439	272,604	.834
1930–1931	9	225,908	256,179	.882
1930–1937	3–9	1,607,094	1,863,593	.8601
		OTHER RACES		
1939–1940	0	[1] 12,137	[2] 12,129	1.001
1938–1939	1	11,882	11,576	1.026
1937–1938	2	11,315	13,511	.837
1936–1937	3	10,474	13,345	.785
1935–1936	4	10,609	13,866	.765
1934–1935	5	10,799	13,335	.810
1933–1934	6	10,214	12,983	.787
1932–1933	7	10,571	12,805	.826
1931–1932	8	10,743	13,103	.820
1930–1931	9	10,980	12,332	.890
1930–1937	3–9	74,390	91,769	.8106

[1] Survivors to Apr. 1, 1940.
[2] 1940 census population under 1 year of age.

An average ratio was therefore obtained for each racial group based on the totals of estimates (a) and (b) for the entire age group 3 to 9 in 1940. These average ratios (also shown in table AG) were then used as divisors, in the construction of the life tables, to

[6] The suggestion has sometimes been made that this may be a genuine phenomenon. See, for example, Herbert J. Sommers, *Infant Mortality in Rural and Urban Areas*, Public Health Reports, vol. 57, No 40, p. 1498, October 1942.

inflate the number of each group of survivors to age 1, as calculated from births and deaths, to the general level of completeness of the census. The populations at age 1, 2, 3, and 4 used in the actual life table calculations were derived from age 1 survivors adjusted in this manner.

In this method of adjustment it is implicitly assumed that the completeness of birth registration, relative to that of enumeration in the census, did not improve during the decade 1930 to 1940. Similar calculations were also made on the assumption of a progressive improvement in birth registration during the decade, adjusting the reported births of earlier years up to the level of completeness of 1940. This produced a series of ratios (of survivors calculated by the two methods) decreasing with increasing age, which would imply that the enumeration in the 1940 census at ages under 10 became less complete with advancing age. This seems absurd; but, on the other hand, it appears unlikely that there was no improvement during the decade in the completeness of birth registration. As the number of deaths entering into the calculation is small in relation to the total survivors, the completeness of death registration is not an important factor. In view of these inconsistencies in the data, it seemed expedient to adopt the simplest course and assume, for this purpose, no change during the decade in the completeness of birth registration.

Adjustment for incomplete reporting of infant deaths by subdivisions of the first year of life

Statistics of infant deaths for subdivisions of the first year of life were used in computing life table values for such subdivisions, as will be explained later.[7] It has already been mentioned that neither births nor infant deaths were corrected for underreporting in obtaining mortality rates for the first year of life as a whole, the assumption being made that reported statistics of births and of deaths under 1 year of age are equally complete. Since births were assumed to be deficient in the proportions indicated in table AC, this is equivalent to the assumption that total infant deaths are deficient in the same proportions. However, in dealing with subdivisions of the first year, consideration must be given to any age variation *within* the year in the assumed completeness of death reporting. It has already been stated that the evidence indicates a progressive improvement with increasing age from birth up to the first birthday. In order to give effect to this condition, the admittedly rough assumption was made that the *percent* addition which must be made to the reported deaths at any specific age during the first year of life in order to correct for underregistration is directly proportional to the time interval remaining up to the first birthday. It can only be said for this assumption that it gives plausible results, and, in the absence of any real information as to the specific age incidence of nonreporting of infant deaths, it seems as reasonable as any other assumption which might be made. Naturally, the resulting life table values for subdivisions of the first year cannot be considered as reliable as those for integral ages, but it is believed that they serve a useful purpose in indicating the general trend of mortality and survival in this important period of life; and, in any case, these values are not an essential part of the life table. The values for integral ages were computed quite independently of the assumption just stated, the supplementary values for the first year being then inserted at a later stage.

In carrying out the numerical work under this assumption as to nonreporting of infant deaths, the remaining portion of the first year of life was taken, for each of the subdivisions in which infant deaths are tabulated, as the interval of time between the *middle* of such subdivision and the end of the year of age. The length of the entire year was taken as 365¼ days, this being the average length of the three calendar years (1939–1941) covered by the experience. For this purpose, 1 month was regarded as being exactly one-twelfth of a year or 30⅜ days. Table AH shows, on these assumptions, the number of days remaining in the year after the middle of each subdivision of the first year of life. The assumption that the *percent* additions required in the various age periods are proportional to these numbers implies that the *actual numbers* of deaths assumed to be unreported will be proportional to the products obtained by multiplying the time intervals indicated in table AH by the numbers of deaths actually reported in the corresponding age periods. These products were obtained separately by sex and for whites, Negroes, and other races; and in proportion to them the total number of deaths assumed unreported for the entire first year of life was distributed by age, in each of the six classifications. These total numbers, in turn, were obtained by dividing the total deaths reported for the year by the proportion assumed to be

TABLE AH.—ASSUMED NUMBER OF DAYS REMAINING IN THE FIRST YEAR OF LIFE FOLLOWING THE MIDDLE OF EACH OF THE AGE PERIODS INDICATED

AGE PERIOD	Number of days remaining in year after middle of period
Under 1 day	364⅚
1 day	363⅚
2 days	362⅚
3 to 6 days	360½
1 week	354⅚
2 weeks	347⅚
3 weeks to 1 month	339 11/12
1 month	319⅜
2 months	289⅜
3 months	258⅞
4 months	228½
5 months	197⅜
6 months	167⅜
7 months	137
8 months	106⅜
9 months	76⅛
10 months	45⅝
11 months	15⅜

[7] See p. 133.

registered, as indicated in table AC, and subtracting the reported number from the result. Within each classification by race, the same percents of completeness were assumed to hold for both males and females. The figures resulting from this adjustment are shown in part III of table AM, except those for "other races" aged 1 to 11 months, in which case a further adjustment was made as described later.

Redistribution of "other races" deaths under 1 year of age

The reported deaths for subdivisions of the first year of life for the group of nonwhites other than Negroes show serious irregularities, due apparently to the small size of the experience, which, if not adjusted for, would cause a marked lack of smoothness in the life table values. Accordingly, the deaths occurring at ages between 1 month and 1 year, after being adjusted for assumed underreporting, were redistributed by fitting a second degree curve to the monthly values by the method of least squares, subject to the condition that the total for the 11-month period must be reproduced. If y_x denotes the original, and y_x' the adjusted number of deaths at the age of x months, and if x' stands for $x-6$, then it is found by applying the usual least squares criterion that y_x' is given by the equation:

$$y_x' = a + bx' + cx'^2$$

where

$$a = \frac{1}{429}(89\Sigma y_x - 5\Sigma x'^2 y_x)$$

$$b = \frac{1}{110}\Sigma x' y_x$$

$$c = \frac{1}{858}(\Sigma x'^2 y_x - 10\Sigma y_x)$$

all the summations being from $x=1$ to 11: that is, from $x' = -5$ to $+5$. Writing the equation in terms of x' rather than x makes the 11-month total a symmetrical expression and leads to results of a simpler form than would otherwise be obtained. Table AJ shows the calculated number of deaths in each of the 11 months, both before and after the least squares adjustment.

TABLE AJ.—LEAST SQUARES ADJUSTMENT OF DEATHS OF OTHER RACES [1] AT AGES 1 TO 11 MONTHS: UNITED STATES, 1939–1941

AGE	MALE DEATHS— After adjustment for nonreporting but before smoothing	MALE DEATHS— After smoothing	FEMALE DEATHS— After adjustment for nonreporting but before smoothing	FEMALE DEATHS— After smoothing
Total 1 to 11 months	1,510	1,510	1,391	1,391
1 month	251	244	251	228
2 months	216	217	164	199
3 months	180	192	184	174
4 months	174	169	149	151
5 months	138	148	128	130
6 months	133	128	116	113
7 months	116	110	97	98
8 months	89	95	80	86
9 months	100	81	96	76
10 months	56	68	71	70
11 months	57	58	55	66

[1] All except white and Negro

Unreported ages at death

For a small proportion of deaths the age is not specified. In order not to understate the total mortality, these deaths must be distributed in some manner among the various age groups. The method used was to divide them in proportion to the numbers actually reported in each age group. While this is probably not strictly correct, the entire number of deaths involved is so small a fraction of the total that little error could result. This problem does not arise in connection with the population figures, because in the 1940 census probable ages were assigned by a special process to all persons whose age was not reported, so that no unknown ages appear in the final tabulations.[8]

Estimation of July 1, 1940, populations

For ages 5 and above, the populations required in the construction of life tables for the 3-year period 1939–1941 are those at the middle of the period: that is, on July 1, 1940. Since the census was taken as of April 1, 1940, an adjustment is necessary to arrive at the July 1, 1940, figures. For this purpose the following formula was applied to each subdivision of the population by race and sex for each 5-year age group from age 5 to age 100, and for the final group consisting of ages 100 and over. Estimates for the age group 3–4 years were also obtained, to be used in the interpolation process as described later.

$$P^{7/1}_{x/x+n-1} = P^{4/1}_{x/x+n-1} - kD^{1940}_{x/x+n-1} + \tfrac{1}{4}(P^{4/1}_{x-1} - P^{4/1}_{x+n-1}) + M_{x/x+n-1}$$

Here, $P^{4/1}_{x/x+n-1}$ denotes the population on April 1, 1940, at ages x to $x+n-1$, inclusive (that is, between exact age x and exact age $x+n$); and $P^{7/1}_{x/x+n-1}$ denotes the corresponding population on July 1, 1940. Similarly, $P^{4/1}_{x-1}$ denotes the April 1 population at age $x-1$, and $P^{4/1}_{x+n-1}$ denotes the April 1 population at age $x+n-1$. $D^{1940}_{x/x+n-1}$ denotes the number of reported deaths occurring in 1940 at ages x to $x+n-1$; and $M_{x/x+n-1}$ denotes the estimated net immigration (positive or negative) during the period April 1 to July 1, 1940, at ages x to $x+n-1$. The symbol k denotes the ratio, for both sexes and all races combined, of the reported deaths occurring in April, May, and June, 1940, to the total for the year.

The term $kD^{1940}_{x/x+n-1}$ represents the estimated deaths occurring in the particular age group between April 1 and July 1, 1940. This approximation had to be used, as deaths were not tabulated simultaneously by month of occurrence and by race or sex. The term $\tfrac{1}{4}(P^{4/1}_{x-1} - P^{4/1}_{x+n-1})$ is an adjustment for the fact that in the 3 months between April 1 and July 1 some individuals passed out of the group by reaching age $x+n$, while others entered from the next lower age group by reaching age x. In dealing with the final age group "100 and over," this term reduced to merely $\tfrac{1}{4}P^{4/1}_{99}$, and the subscript "$x/x+n-1$" in the other terms

[8] U. S. Bureau of the Census, *Sixteenth Census of the United States: 1940, Population, vol. II, Characteristics of the Population, Part I*, p. 9, Government Printing Office, Washington, D. C., 1943.

was interpreted as "100 and over." The net immigration was estimated on the basis of information furnished by the Immigration and Naturalization Service, Department of Justice. For the white population, the migration adjustment never exceeded 0.06 of 1 percent of the corresponding enumerated population in any classification.

While the total nonwhite population was available by single years of age, Negroes were tabulated separately only by 5-year age groups up to age 75 and also for a few selected single years of age under 21. The single age figures for Negroes were obtained by assuming that, for each sex separately, the ratio of Negroes to total nonwhites was the same in each single year of age as in the smallest age group containing that year of age for which separate figures for Negroes and other nonwhites were available. In each classification, estimated figures for "other races" were obtained by subtracting Negroes from total nonwhites. A further difficulty was encountered in that the migration estimates used were furnished only for total nonwhites, and not for Negroes separately. As the movement of Negroes into and out of the United States is believed to be exceedingly small, and as the migration estimates for total nonwhites were small in any case, never reaching 100 for either sex in any 5-year age group, they were assumed to relate wholly to races other than Negroes, no migration adjustment being made in the Negro populations.

The estimates of July 1, 1940, population resulting from the application of the above formula are shown in part II of table AM, except those for Negroes between ages 55 and 70, in which case a further adjustment was made as explained in the next subsection. These estimated populations differ only slightly from those previously published by the Bureau of the Census.[9] It was decided not to use the previously published estimates in the construction of the life tables because they were based on a graduated, or smoothed distribution by single years of age of the April 1 population. While such a procedure was entirely appropriate in preparing population estimates for general use, it was felt that, in the construction of the life tables, the smoothness of the rates of mortality was adequately provided for by the graduation of the rates themselves,[10] and that there were some objections to graduating the enumerated populations. The single year populations, since they arise, in the beginning, from fluctuating numbers of annual births, cannot be expected to form a perfectly smooth series, and any genuine irregularities will be reflected also in the death statistics, so that the smooth progression of the rates of mortality will not be disturbed. Moreover, this appears to be true also, in large measure, of the irregularities which are not genuine, since the analysis of digit preference later in this report[11] indicates that, in the usual system of 5-year age grouping (5–9, 10–14, etc.), errors of this type in the populations and deaths tend to cancel out in the computation of mortality rates. Therefore, if the populations were partially smoothed, without subjecting the death statistics to some similar treatment, the result might only be to diminish the smoothness of the mortality rates.

Special adjustment of Negro data

Both population and death statistics in the neighborhood of age 65 show evidence of substantial misstatement of age. In the case of the data for Negroes, this error appeared sufficiently marked to seriously affect life table values. This condition is brought out in table AK in which the 1940 Negro populations actually enumerated in the various age groups are compared with those expected on the basis of the 1930 populations of the same groups of individuals (then 10 years younger) and the deaths of the intervening period. It will be noted that while these population figures show, on the whole, a steady decrease with advancing age, the *enumerated* 1940 populations level off sharply at age 65. The 1930 figures do not show any such tendency. Moreover, the *expected* 1940 populations, from the 1930 enumeration and the deaths during the decade, are free from the leveling off effect. This strongly suggests an overstatement in the 1940 census of the age groups just beyond 65 at the expense of those just under that age. This phenomenon is probably attributable to the enactment of social security legislation providing benefits to persons over 65.

TABLE AK.—COMPARISON OF NEGRO POPULATIONS IN CERTAIN AGE GROUPS: UNITED STATES, 1930 AND 1940

[Numbers given in thousands]

Age in 1930 (1)	Age in 1940 (2)	Population enumerated in 1930 (3)	1940 population estimated from 1930 population and deaths (4)	Population enumerated in 1940 (5)	Discrepancy in 1940 estimates (4)−(5)
MALE					
40–44	50–54	339	264	283	−19
45–49	55–59	323	245	207	+38
50–54	60–64	278	207	154	+53
55–59	65–69	174	109	152	−43
60–64	70–74	133	76	84	−8
65–69	75–79	83	40	40	0
70–74	80–84	51	20	19	+1
75–79	85–89	29	7	9	−2
FEMALE					
40–44	50–54	348	285	267	+18
45–49	55–59	307	242	190	+52
50–54	60–64	227	169	142	+27
55–59	65–69	135	83	145	−62
60–64	70–74	109	63	79	−16
65–69	75–79	72	36	42	−6
70–74	80–84	48	22	22	0
75–79	85–89	29	10	11	−1

The conclusion that such misstatement of age has occurred is reinforced by the observation that mortality rates calculated from the reported data without adjustment also level off sharply at 65, in the case of the females actually showing a temporary decrease

[9] U. S. Bureau of the Census, *Estimated Population in Continental United States, by Age, Color, and Sex: 1940–1948*, Population—Special Reports, Series P-44, No. 9, 1944

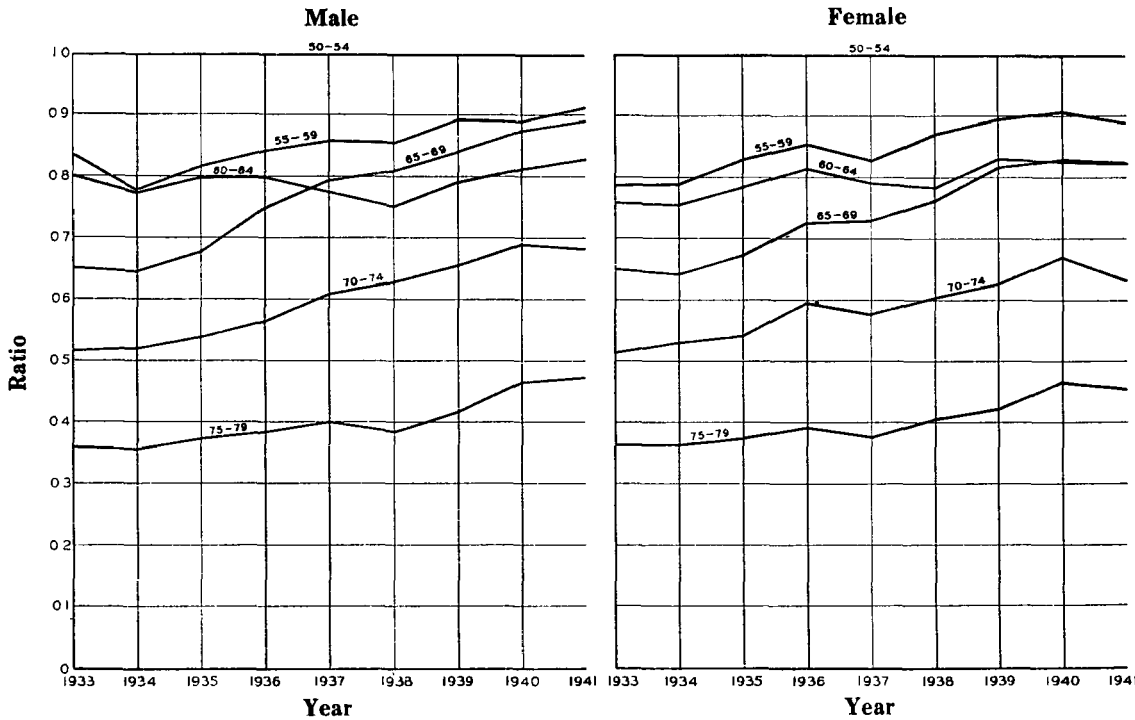
[10] See pp 122–126.

[11] See pp 120–122.

with increasing age. There is evidence also that the death statistics have been affected in the same way. This is indicated by figure 12, which shows the trend for the period 1933–1941 of the ratio of Negro deaths in certain selected age groups to those occurring in the same year in the age group 50–54. The age groups selected extend from age 55 to age 80. The general tendency of each of these ratios over any fairly long period is to increase gradually, because of the steadily increasing proportion of the population in the older age groups. In every year of the period covered by the graph, the Negro deaths by 5-year age groups have reached a maximum in the group 50–54, and prior to 1937 have decreased steadily thereafter to the end of life. However, in 1937 and each subsequent year, the reported deaths for Negro males in the age period 65–69 have exceeded those in the group 60–64. In this connection it will be remembered that the Social Security Act was enacted in 1935 and that State old-age assistance programs as provided by the act did not go into operation until 1936 or, in a few States, even later. In the case of Negro females the effect is less noticeable, although the number of deaths in these two age groups began in 1937 to move closer together, and in 1940 there was actually a larger number in the group 65–69. In view of the magnitude of this disturbance, it seemed advisable to make a preliminary redistribution of the Negro populations and deaths between 55 and 70. After experimenting with various empirical methods of redistribution, the one described in the next paragraph was adopted as giving the most plausible results.

From the estimated July 1, 1940, populations, obtained as previously described, the ratio of the Negro population 50 and over to the corresponding white population was obtained, for males and females separately. Similar ratios were obtained for the population 55 and over, 60 and over, and so on up to and including 75 and over: a total of six ratios for each sex. The calculated ratios for ages 60 and over and 65 and over were rejected, and corrected values of these ratios were obtained by interpolation from the remaining four ratios, using Waring's formula.[12] By applying these corrected ratios to the white populations 60 and over and 65 and over, corrected Negro populations were obtained. By inserting these corrected values in the original series of Negro populations 50 and over, 55 and over, etc., and differencing, corrected populations by 5-year age groups were obtained. By this method, only

FIGURE 12.—RATIO OF NEGRO DEATHS IN SELECTED AGE GROUPS TO NEGRO DEATHS AT AGES 50–54 IN THE SAME YEAR: UNITED STATES, 1933–1941



[12] Also known as Lagrange's formula. See E. T. Whittaker and G. Robinson, *The Calculus of Observations*, second edition, pp. 28–32, Blackie and Son, Ltd., London and Glasgow, 1937; also T. N. E. Greville, *A Generalization of Waring's Formula*, Annals of Mathematical Statistics, vol. 15, No. 2, pp 218–219, June 1944.

the figures for the age groups 55–59, 60–64, and 65–69 are changed, and these automatically add to the original total for the entire 15-year age period. The method does not assume that the white and Negro populations have similar age distributions, but merely that the ratio between them progresses fairly smoothly by age. The Negro deaths reported in these three age groups were redistributed by relating them to the corresponding white deaths in the same manner. Table AL shows the original figures for Negro populations and deaths and also the adjusted figures obtained in the redistribution. For comparison, the figures for the two adjacent age groups on each side are also shown.

TABLE AL.—ORIGINAL AND REDISTRIBUTED NEGRO STATISTICS FOR AGES 55 TO 69:[1] UNITED STATES, 1939–1941

AGE	DEATHS, 1939–1941				ESTIMATED POPULATIONS, JULY 1, 1940			
	Male		Female		Male		Female	
	Reported	Adjusted	Reported	Adjusted	Original[2]	Adjusted	Original[2]	Adjusted
50–54	25,041	25,041	20,677	20,677	285,012	285,012	270,679	270,679
55–59	22,485	23,335	18,531	19,162	208,656	218,324	191,534	203,048
60–64	20,306	21,452	17,038	17,540	154,632	168,242	142,381	155,619
65–69	21,760	19,764	16,056	15,823	151,407	128,129	144,314	119,562
70–74	16,938	16,938	13,286	13,286	84,436	84,436	79,045	79,045
55–69	64,551	64,551	52,525	52,525	514,695	514,695	478,229	478,229

[1] Adjacent 5-year age groups also shown for comparison.
[2] Calculated from reported data by the formula given on p. 109.

Estimation of foreign-born population under 5

As will be explained later when the method of calculating mortality rates under 5 is described, the distribution by nativity of the 1940 population in this age group, separately by sex, race, and single years of age, was required. For whites, the census tabulations give, for males and females separately, the number of foreign-born under 1 year, the number at ages 1–4, and the number at age 5. Single year figures for both sexes were obtained by assuming that the figures for single years starting with age 1 and ending with age 5 formed an arithmetic progression. This assumption was suggested by a study of the data of previous censuses, in which the complete detail was available. The resulting values were then distributed by sex in the same ratio as the entire age group 1–4, and rounded to add to the correct total.

Nativity was tabulated for Negroes by 5-year age groups only, and the foreign-born Negroes under age 5 were distributed by single years of age on the assumption that, for each sex separately, the numbers for the first 5 years of age formed an arithmetic progression in which the common difference was equal to the number under 1 year of age. In the case of the remaining races, foreign-born were given by age only for Chinese and Japanese. Hence, it was assumed that there were no foreign-born under age 5 of races other than white, Negro, Chinese, and Japanese. In actual fact, the number of such children is believed to have been very small. The estimated native population in each classification was, of course, obtained by subtracting the estimated foreign-born from the total.

B. CALCULATION OF THE RATES OF MORTALITY

The description of the process of obtaining rates of mortality divides itself naturally into two main parts, corresponding to ages 0 to 4 and ages 5 and over, since the methods used in the two cases were very different. In connection with the calculation of mortality rates for ages 0 to 4, two subordinate topics are discussed under separate subheadings. These are (1) the derivation of separation factors for estimating the distribution of deaths by calendar year of birth, and (2) the adjustment of the mortality rates to allow for the effect of migration.

Basically, the method employed in obtaining rates at ages 5 and over consisted of three steps. First, populations and deaths were estimated by interpolation for the middle age of each of the 5-year age groups in which the data were tabulated. Secondly, rates of mortality for these middle ages (at 5-year intervals) were computed from the interpolated populations and deaths. Finally, osculatory interpolation was applied to the mortality rates derived in the second step in order to obtain rates for all ages. In the discussion which follows, each of these three steps is treated under a separate subheading. Additional subsections are devoted to (1) a justification of the basic procedure just described, as against other procedures which have sometimes been employed, and (2) a description of the tests which were applied to the final rates of mortality in order to be sure that the graduation was satisfactory. Further subsections deal with two digressions from the main theme: (a) an analysis of preferences shown in the reporting of age for figures ending with certain digits and the effect of this bias on mortality rates, with reference to the selection of a particular way of combining single ages into 5-year age groups; and (b) the method used in obtaining mortality rates at the very old ages, where the ordinary methods fail to give satisfactory results, because of unreliable age reporting and the small volume of data.

All the basic data actually used in the construction of the various life tables are given in table AM. Part I of that table contains the data required in the computation of mortality rates for ages 0 to 4, inclusive; while part II contains the data used in deriving mortality rates for ages 5 and over. Part III contains certain additional data required in obtaining life table values for subdivisions of the first year of life.

TABLE AM.—DATA EMPLOYED IN THE COMPUTATION OF MORTALITY RATES FOR THE UNITED STATES, 1939–1941

PART I—AGES UNDER 5

A—Registered births, and registered deaths at certain ages under 5, by race and sex, 1934–1941

RACE, SEX, AND ITEM TABULATED	1941	1940	1939	1938	1937	1936	1935	1934
WHITE MALES								
Registered births	1,133,394	1,064,067	1,019,021	1,030,398	991,356	966,332	969,916	975,804
Registered deaths:								
Age:								
Under 1	52,191	51,477	50,201	54,121	55,540	56,970	56,424	60,319
1	4,717	4,929	5,292	6,366	6,781	7,491	7,183	
2	2,517	2,592	2,759	3,255	3,671	3,834		
3	1,756	1,731	2,012	2,334	2,461			
4	1,363	1,432	1,572	1,729				
WHITE FEMALES								
Registered births	1,071,509	1,003,886	963,650	975,557	937,081	915,551	918,096	922,697
Registered deaths:								
Age:								
Under 1	38,742	38,013	37,683	40,411	41,575	42,601	41,548	45,302
1	3,995	4,124	4,542	5,574	5,906	6,165	6,137	
2	1,954	2,130	2,181	2,780	3,098	3,158		
3	1,444	1,442	1,598	1,850	2,042			
4	1,105	1,131	1,276	1,416				
NEGRO MALES								
Registered births	149,147	140,675	137,072	135,328	132,990	127,017	129,578	130,795
Registered deaths:								
Age:								
Under 1	12,180	11,482	11,201	11,636	11,951	12,067	11,700	13,053
1	1,339	1,361	1,388	1,660	1,771	1,720	1,618	
2	615	605	595	724	728	710		
3	341	341	415	445	457			
4	261	275	329	356				
NEGRO FEMALES								
Registered births	145,407	138,194	132,988	132,372	129,472	124,081	125,546	126,311
Registered deaths:								
Age:								
Under 1	9,708	8,920	8,598	9,269	9,613	9,605	9,263	10,410
1	1,211	1,071	1,170	1,407	1,441	1,399	1,406	
2	534	490	530	601	621	660		
3	344	304	359	413	428			
4	263	270	298	338				
OTHER RACES, MALES								
Registered births	7,193	6,942	6,507	6,815	6,295	6,116	5,995	6,104
Registered deaths:								
Age:								
Under 1	689	691	642	771	750	795	761	684
1	159	116	175	149	192	179	212	
2	66	69	65	68	68	55		
3	33	29	40	43	41			
4	22	22	30	31				
OTHER RACES, FEMALES								
Registered births	6,777	6,635	6,350	6,492	6,143	5,693	5,974	5,925
Registered deaths:								
Age:								
Under 1	554	549	611	594	607	625	567	589
1	160	124	157	161	191	166	194	
2	71	62	68	65	68	68		
3	38	36	32	53	41			
4	22	26	26	29				

B—Estimated distribution by nativity, race, and sex of the enumerated population under 5 on Apr. 1, 1940

NATIVITY AND AGE	WHITE		NEGRO		OTHER RACES	
	Male	Female	Male	Female	Male	Female
NATIVE						
Age:						
Under 1	906,653	871,085	113,809	115,986	6,085	6,044
1	925,801	889,247	114,602	114,509	5,752	5,642
2	977,608	940,835	131,392	132,779	6,589	6,538
3	933,924	908,668	127,357	131,223	6,379	6,456
4	953,265	914,098	134,509	132,855	6,730	6,532
FOREIGN-BORN						
Age:						
Under 1	244	251	1	3	8	5
1	597	579	3	5	15	10
2	862	834	4	8	23	16
3	1,126	1,091	5	10	30	21
4	1,390	1,347	7	13	38	26

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TABLE AM.—DATA EMPLOYED IN THE COMPUTATION OF MORTALITY RATES FOR THE UNITED STATES, 1939–1941—Continued

PART II—AGES 5 AND OVER

Registered deaths, 1939–1941, and estimated population on July 1, 1940, by race and sex, for ages 3 and over

SEX AND AGE	WHITE		NEGRO		OTHER RACES	
	Registered deaths, 1939–1941	Estimated population, July 1, 1940	Registered deaths, 1939–1941	Estimated population, July 1, 1940	Registered deaths, 1939–1941	Estimated population, July 1, 1940
MALE						
3–4	9,866	1,894,925	1,962	260,949	176	13,142
5–9	16,716	4,736,987	3,003	646,283	242	30,765
10–14	17,062	5,234,717	3,438	658,972	222	31,773
15–19	28,507	5,511,945	7,043	633,259	426	34,184
20–24	35,522	5,131,965	10,661	551,484	475	28,808
25–29	37,146	4,905,853	12,472	530,348	471	28,938
30–34	42,405	4,588,155	13,602	470,605	561	29,031
35–39	53,285	4,253,778	15,927	457,586	670	28,303
40–44	72,956	4,021,881	18,961	408,541	676	24,272
45–49	105,256	3,841,840	21,830	346,047	758	18,401
50–54	142,217	3,461,903	25,041	285,012	894	17,892
55–59	173,192	2,808,550	23,335	218,324	1,030	14,140
60–64	201,341	2,238,579	21,452	168,242	1,129	11,104
65–69	229,887	1,749,889	19,764	128,129	1,031	7,260
70–74	235,612	1,190,567	16,938	84,436	804	3,848
75–79	208,875	683,763	11,302	41,108	667	2,266
80–84	157,479	342,554	7,048	18,709	443	1,042
85–89	76,515	114,282	4,296	8,902	248	491
90–94	23,084	25,165	2,060	3,279	131	181
95–99	4,396	4,292	961	1,274	41	71
100 and over	626	573	628	747	42	41
FEMALE						
3–4	7,996	1,831,178	1,838	263,942	180	13,015
5–9	12,109	4,576,540	2,579	652,833	216	30,786
10–14	11,334	5,069,216	3,012	665,957	213	30,405
15–19	19,140	5,436,705	8,525	675,628	414	30,838
20–24	25,475	5,241,255	11,246	644,699	479	24,087
25–29	29,490	5,030,298	12,253	617,641	399	18,265
30–34	33,709	4,651,066	12,930	528,854	283	14,085
35–39	39,774	4,267,585	15,520	517,645	312	13,968
40–44	50,335	3,969,185	17,503	426,087	292	13,201
45–49	68,003	3,609,217	18,194	342,504	328	11,155
50–54	87,083	3,242,931	20,677	270,679	342	8,330
55–59	107,050	2,658,635	19,162	203,048	345	5,757
60–64	135,810	2,191,641	17,540	155,619	371	4,611
65–69	171,664	1,776,057	15,823	119,562	387	3,745
70–74	193,091	1,227,732	13,286	79,945	376	2,218
75–79	180,795	740,120	9,237	42,764	321	1,301
80–84	159,109	395,970	6,061	21,721	252	774
85–89	88,451	145,982	4,217	11,376	158	407
90–94	31,981	37,184	2,380	4,911	101	174
95–99	7,365	6,825	1,144	2,011	30	73
100 and over	1,064	929	1,133	1,383	44	50

PART III—SUBDIVISIONS OF THE FIRST YEAR OF LIFE

Estimated total deaths under 1 year by age, race, and sex

AGE	WHITE		NEGRO		OTHER RACES	
	Male	Female	Male	Female	Male	Female
Total	163,592	121,704	42,467	33,178	2,688	2,278
Under 1 day	52,275	38,122	9,913	7,487	420	332
1 day	13,507	9,437	2,802	2,222	93	84
2 days	8,555	5,558	2,102	1,372	86	77
3 to 6 days	12,773	8,097	3,639	2,516	218	135
1 week	8,263	6,347	2,632	2,208	159	113
2 weeks	5,418	4,231	1,662	1,378	99	74
3 weeks to 1 month	4,749	3,475	1,423	1,195	103	72
1 month	11,823	8,624	3,607	2,894	211	228
2 months	9,281	7,130	2,735	2,255	217	199
3 months	7,460	5,895	2,335	1,978	192	174
4 months	5,906	4,750	2,017	1,631	169	151
5 months	5,045	3,998	1,607	1,317	148	130
6 months	4,119	3,483	1,508	1,200	128	113
7 months	3,711	2,914	1,197	921	110	98
8 months	3,224	2,600	1,066	778	95	86
9 months	2,768	2,292	857	733	81	76
10 months	2,446	1,935	699	535	68	70
11 months	2,269	1,916	666	558	58	66

Basic process for obtaining mortality rates at ages 0 to 4

The basic equation employed in obtaining mortality rates at ages 0 to 4 is based on the interpretation of the rate of mortality as a probability of death. For example, the rate of mortality[13] at age x, denoted by q_x, can be regarded as the probability that a person exactly x years old will die before reaching exact age $x+1$. Similarly, the complement $p_x=1-q_x$ represents the probability that an individual exactly x years of age will survive to exact age $x+1$. In order to facilitate its calculation from the data available, p_x may be expressed as the product of two separate probabilities. Thus:[14]

$$p_x={}_ap_x\,{}_bp_x$$

where ${}_ap_x$ denotes the probability that an individual alive at exact age x will survive to the end of the calendar year in which this exact age was attained, and ${}_bp_x$ denotes the probability that an individual who is alive at the end of the calendar year in which he attained age x will survive to exact age $x+1$. It follows that:

$$q_x=1-{}_ap_x\,{}_bp_x \tag{10}$$

this being the basic formula employed in computing mortality rates at ages 0 to 4. In order to derive expressions for the partial probabilities ${}_ap_x$ and ${}_bp_x$ in terms of the data as given, the following special symbols will be employed:

E_x^z denotes the number reaching exact age x during the calendar year z.

P_x^z denotes the number living on January 1 of the year z whose age in completed years is x.

D_x^z denotes the number dying in the year z whose age in completed years at the time of death is x.

${}_aD_x^z$ denotes that portion of D_x^z consisting of cases in which exact age x was reached during the year z.

${}_bD_x^z$ denotes that portion of D_x^z consisting of cases in which exact age x was reached during the year $z-1$.

E_x denotes the total number reaching exact age x during the entire period of observation, which is assumed to be an integral number of years.

P_x' denotes the total number who, after attaining exact age x during the period of observation, are still alive at the end of the year in which exact age x was attained.

P_x'' denotes the total number who are alive at the end of the year in which age x was attained, and whose $(x+1)$th birthday falls within the period of observation.

u and v denote, respectively, the first and last years included in the period of observation.

Certain relationships between these symbols are immediately apparent. For example,

$$E_x^z-{}_aD_x^z=P_x^{z+1} \tag{11}$$

and

$$P_x^z-{}_bD_x^z=E_{x+1}^z \tag{12}$$

If birth and death statistics were available in the necessary detail, it would be possible, by successive applications of formulas (11) and (12), to obtain values of E_x^z and P_x^z for any desired ages. It is to be noted that E_0^z denotes the number reaching age 0: that is, the number of births, in the year z.

For example, suppose it is desired to find the number alive on January 1, 1940, at age 4 in completed years, and also the number reaching exact age 5 in 1940. Anyone whose age in completed years on January 1, 1940, is 4, or who reaches exact age 5 in 1940, must have been born in 1935. Therefore, one would start with E_0^{1935}, the number of births occurring in that year. Formula (11) gives:

$$E_0^{1935}-{}_aD_0^{1935}=P_0^{1936}$$

and formula (12) gives:

$$P_0^{1936}-{}_bD_0^{1936}=E_1^{1936}$$

By continuing in this fashion and applying formulas (11) and (12) alternately, the desired values would eventually be reached, provided, of course, the necessary birth and death statistics are available.

It is obvious from the definition of E_x, P_x', and P_x'' that

$$E_x=\sum_{z=u}^{v}E_x^z \tag{13}$$

$$P_x'=\sum_{z=u+1}^{v+1}P_x^z \tag{14}$$

and

$$P_x''=\sum_{z=u}^{v}P_x^z \tag{15}$$

Finally, the values of the partial probabilities ${}_ap_x$ and ${}_bp_x$, on the basis of the experience which is being employed, are given by:

$${}_ap_x=\frac{P_x'}{E_x} \tag{16}$$

and

$${}_bp_x=\frac{E_{x+1}}{P_x''} \tag{17}$$

Formulas (11) to (17) and formula (10) would seem to provide the means of computing mortality rates up to any age desired, if adequate birth and death statistics are available. There remain, however, two difficulties. In the first place, deaths are not ordinarily tabulated so as to give the separate parts denoted by ${}_aD_x$ and ${}_bD_x$; and, secondly, the effect of migration has been ignored. The methods employed in order to overcome these two

[13] The rates of mortality shown in the life tables which appear in this volume (except in the case of tables 14, 25, and 38) are values of $1{,}000q_x$, the rate of mortality per 1,000 survivors at age x. However, in developing the mathematical theory of the life table, it is more convenient to use the rate of mortality per single survivor.

[14] The notation employed in this development follows, with slight modifications, that of Hugh H. Wolfenden in *Population Statistics and Their Compilation* (*Actuarial Studies, No 5*), pp. 70–84, Actuarial Society of America, New York, 1925. The basic formula (10) given here is Wolfenden's formula (12), p. 76

difficulties form the subject of the next two subsections. However, it will be useful, before taking up these rather technical points, to give a numerical illustration of the application of the formulas just derived. In this illustration, the required values of ${}_aD_x$ and ${}_sD_x$ will be given without explanation as to how they were obtained; and, inasmuch as the correction for migration was made as a final adjustment in the mortality rates, after the calculations had been otherwise completed, the consideration of this point can easily be postponed.

Another point which needs to be mentioned at this time concerns the method of applying the correction for underreporting of births and infant deaths. Since these were assumed to be equally complete,[15] the rates of mortality at age 0 were obtained from registered figures without applying any correction. To this end, the calculations were begun by taking as the values of E_0^z the number of births registered in the various years. By the subtraction of registered deaths, values of P_0^z and E_1^z were obtained. The values of q_0 were computed from these three sets of quantities as indicated by formulas (13) to (17) and formula (10). Next, the values of E_1^z were corrected for underreporting by dividing by the ratios derived for that purpose,[16] which were based on comparison with census populations in the age period 3 to 9. These adjusted values of E_1^z were taken as the starting point in obtaining corrected values of P_x^z and E_x^z for subsequent ages, it being assumed that deaths occurring at ages 1 and over required no correction. Mortality rates at ages 1 to 4 were then computed entirely on the basis of corrected figures.

The calculation of mortality rates at ages 0 to 4 for white males will be taken as a numerical illustration of the process. The registered births for each of the 8 years 1934 to 1941 are given in part I of table AM, page 113. Those values of ${}_aD_x$ and ${}_sD_x$ which will be needed in the computations are shown in table AN. The calculation of the values of P_0 and E_1 and the adjustment of E_1 for underreporting are shown in table AO. For the births of the years 1934 to 1937, the number of survivors to the end of the year of birth is not required, since the children concerned will have reached age 1 before January 1, 1939, the commencement of the period of observation. Therefore, for the births of these years, the total number of infant deaths to be subtracted, although the sum of two figures in table AN, is shown as a single figure in table AO. It will be noted that each of these totals contains deaths occurring in two different calendar years. In each case, the number of survivors to exact age 1 of the *registered* births is corrected for underregistration by dividing by .9551, the ratio previously derived for that purpose.[17]

[15] See p. 106.

[16] These ratios are given in the final column of table AG, p. 107.

[17] See table AG, p. 107.

TABLE AN.—DEATHS OF WHITE MALES AT AGES 0 TO 4, BY AGE AND YEAR OF DEATH, SEPARATED ACCORDING TO WHETHER DEATH OCCURRED IN THE SAME YEAR AS THE LAST BIRTHDAY ATTAINED, OR IN THE FOLLOWING YEAR: UNITED STATES, 1934–1941

CLASS OF DEATHS[1]	YEAR OF DEATH							
	1934	1935	1936	1937	1938	1939	1940	1941
${}_aD_0$	49,039	45,196	46,658	44,654	44,542	41,165	43,138	43,423
${}_sD_0$	(2)	11,228	10,312	10,886	9,579	9,036	8,339	8,768
${}_aD_1$	(2)	4,238	4,420	4,001	3,756	3,122	2,908	2,783
${}_sD_1$	(2)	(2)	3,071	2,780	2,610	2,170	2,021	1,934
${}_aD_2$	(2)	(2)	2,032	1,946	1,725	1,462	1,374	1,331
${}_sD_2$	(2)	(2)	(2)	1,725	1,530	1,297	1,218	1,183
${}_aD_3$	(2)	(2)	(2)	1,280	1,214	1,046	900	913
${}_sD_3$	(2)	(2)	(2)	(2)	1,120	966	831	843
${}_aD_4$	(2)	(2)	(2)	(2)	869	817	745	709
${}_sD_4$	(2)	(2)	(2)	(2)	(2)	755	687	654

[1] For explanation of the symbols in this column, see text, p. 115.

[2] Value not needed in life table calculations.

TABLE AO.—NUMBER OF REGISTERED BIRTHS OF WHITE MALES, NUMBER SURVIVING SPECIFIED PERIODS, AND ADJUSTMENT FOR UNDERREPORTING, BY YEAR OF BIRTH (z): UNITED STATES, 1934–1941

	1934	1935	1936	1937	1938	1939	1940	1941
Registered births (E_0^z)	975,804	969,916	966,332	991,356	1,030,398	1,019,021	1,064,067	1,133,394
Deaths to be subtracted (${}_aD_0^z$)	49,039	45,196	46,658	44,654	44,542	41,165	43,138	43,423
Survivors to end of year of birth (P_0^z)	(1)	(1)	(1)	(1)	985,856	977,856	1,020,929	1,089,971
Deaths to be subtracted (${}_sD_0^{z+1}$)	11,228	10,312	10,886	9,579	9,036	8,339	8,768	(1)
Survivors to exact age 1 (E_1^{z+1})	915,537	914,408	908,788	937,123	976,820	969,517	1,012,161	(1)
Survivors to exact age 1 (corrected for underreporting)	958,577	957,395	951,511	981,178	1,022,741	1,015,095	1,050,743	(1)

[1] Not needed in life table calculations.

Continuation of the process of subtracting the appropriate groups of deaths, in accordance with formulas (11) and (12), gives the various numbers shown in table AP. In the case of the births of the years 1934 to 1936, the deaths occurring between the attainment of age 1 and January 1, 1939, can be lumped together, as it is not necessary to know the number of survivors on any prior date. It will be noted that the successive death figures to be subtracted from a given year's births form a sort of broken diagonal extending downward and to the right in table AN, consisting of ${}_aD_0$ from the column for the given year itself, ${}_sD_0$ and ${}_aD_1$ from the column for the following year, ${}_sD_1$ and ${}_aD_2$ from the column for the next following year, and so on. After January 1, 1939, has been reached, the successive death figures must be subtracted one by one, noting the remainder after each subtraction, until the cohort has been carried to January 1, 1942, after which no further values are needed. The various numbers of survivors shown in table AP are arranged not according to the year of birth, but according to the calendar year in which the indicated exact age is attained, or at the

beginning of which the indicated population exists. In those lines of the table which give values of P_x^z, the total for 1939–1941 is, of course, P_x'', while the total for 1940–1942 is P_x'.

Values of ${}_ap_x$ and ${}_bp_x$ for ages 1 to 4 obtained from the figures in the last two columns of table AP are given in table AQ which also shows the calculation of the mortality rates except for the final adjustment for migration. The calculations for age 0 are not shown, since in that case the adjustment for migration was introduced at an earlier stage in the computation. This point is explained in detail on pages 119 and 120.

In the case of the life tables for combinations of classes such as total whites or total males, the values of E_x, P_x', and P_x'' for the component parts were combined before computing the partial probabilities of survival, the remainder of the calculation being exactly the same as for the separate classes.

TABLE AP.—NUMBER OF WHITE MALES SURVIVING SPECIFIED PERIODS OF LIFE BETWEEN BIRTH AND AGE 5: UNITED STATES, 1939–1941

CLASS OF SURVIVORS [1]	CALENDAR YEAR IN WHICH INDICATED BIRTHDAY IS REACHED, OR AT THE BEGINNING OF WHICH INDICATED POPULATION EXISTS (z)					
	1939	1940	1941	1942	Total 1939–1941	Total 1940–1942
E_1^z [2]	1,022,741	1,015,095	1,059,743		3,097,579	
P_1^z	977,422	1,019,619	1,012,187	1,056,960	3,009,228	3,088,766
E_2^z	975,252	1,017,598	1,010,253		3,003,103	
P_2^z	943,175	973,790	1,016,224	1,008,919	2,933,189	2,998,933
E_3^z	941,878	972,572	1,015,041		2,929,491	
P_3^z	945,505	940,832	971,672	1,014,128	2,858,009	2,926,632
E_4^z	944,539	940,001	970,829		2,855,369	
P_4^z	944,212	943,722	939,256	970,120	2,827,190	2,853,098
E_5^z	943,457	943,035	938,602		2,825,094	

[1] For explanation of symbols in this column, see text, p. 115.
[2] Corrected for underreporting.

TABLE AQ.—CALCULATION OF RATES OF MORTALITY [1] FOR WHITE MALES AT AGES [2] 1 TO 4: UNITED STATES, 1939–1941

	1	2	3	4
${}_ap_x=P_x'/E_x$	0.99715487	0.99861144	0.99902406	0.99920466
${}_bp_x=E_{x+1}/P_x''$	.99796459	.99873926	.99907628	.99925863
$p_x={}_ap_x{}_bp_x$	99512525	.99735245	.99810124	.99846388
$q_x=1-p_x$	00487475	.00264755	.00189876	.00153612

[1] Unadjusted for effect of migration.
[2] Age denoted by x.

Derivation of separation factors for deaths

In the preceding section, mention was made of the necessity of separating the deaths of each calendar year into two groups according to whether death occurred in the same calendar year as the last birthday attained, or in the following year. This could evidently be accomplished by sorting on the year of birth. To illustrate this, consider the case of children dying in 1940 at age 3. In this group, all those who reached exact age 3 in 1939 were obviously born in 1936, while those who reached exact age 3 in 1940 were born in 1937. However, deaths in the United States are not tabulated by year of birth; and it was therefore necessary to estimate, in each case, the subdivision of D_x^z into ${}_aD_x^z$ and ${}_bD_x^z$.

This is accomplished by employing what may be called "separation factors." The separation factor, denoted by f_x^z, is defined as

$$f_x^z=\frac{{}_bD_x^z}{D_x^z} \tag{18}$$

In dealing with death statistics not tabulated by year of birth, it is customary to employ values of this ratio obtained from other data, so that the working formulas are:

$${}_aD_x^z=(1-f_x^z)D_x^z \tag{19}$$

and

$${}_bD_x^z=f_x^zD_x^z \tag{20}$$

Tabulations of deaths from which values of f_x^z can be obtained directly have never been made in the United States, and are found in only a few countries, notably Germany.[18] Such a tabulation is now being undertaken in the Bureau of the Census based on a 10-percent sample of all 1944 deaths under age 5; and the values derived from it will be available for use in the preparation of future life tables.

It is not always satisfactory to use values of f_x^z based on the statistics of other countries, particularly if such statistics are, in addition, not very recent, as the values of this ratio have been observed to vary as between different countries and to change markedly over periods of time. Another alternative is to approximate the values of f_x^z by making use of tabulations of deaths by month of age, if these are available. In the United States, such tabulations have been made in recent years only for the first year of life. However, it is in the first year of life that the values of f_x^z are most subject to change, so that reliance on values obtained from outside sources is most unsatisfactory. Accordingly, the values of f_0^z used in connection with the life tables in this volume were all estimated from the tabulations of deaths by subdivisions of the first year of life.

The method of arriving at such estimates is best illustrated by a numerical example. This example will be based on the tabulation of infant deaths for males of all races in 1935. The data to be used are given in table AR. In this table, attention is called to the figures in bold-face type which extend across the table more or less diagonally. It is evident that all the figures below and to the left of the bold-face figures represent deaths of infants born in 1934. Similarly, all the figures above and to the right of the bold-face figures refer to deaths of infants born in 1935. However, the bold-face figures themselves include some deaths of infants born in 1934 and some deaths of infants born in 1935. In the case of all these figures except those which represent deaths in the month of January, it was assumed that an equal number were born in each of the 2 years. When one of these numbers was an odd number, the extra infant was assumed to have been born in the year of death (in this case, 1935).

[18] See U. S. Bureau of the Census, *United States Life Tables, 1890, 1901, 1910, and 1901–1910*, p. 339, Government Printing Office, Washington, D. C., 1921.

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TABLE AR.—DEATHS OF MALES UNDER 1 YEAR OF AGE, BY MONTH OF DEATH AND BY AGE: UNITED STATES, 1935

AGE	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Total under 1 year	7,145	6,376	6,691	5,740	5,747	5,489	5,413	5,219	4,920	5,107	5,143	5,815
Under 1 day	1,548	1,451	1,610	1,561	1,680	1,689	1,746	1,631	1,405	1,502	1,486	1,470
1 day	413	394	413	379	380	373	391	421	391	375	310	414
2 days	314	327	304	264	238	235	260	231	238	218	251	202
3 to 6 days	624	508	553	502	409	442	406	420	409	417	422	485
1 week	382	352	371	280	309	287	297	290	274	265	291	350
2 weeks	303	245	270	189	174	178	149	177	168	156	195	224
3 weeks to 1 month	282	233	193	184	161	142	162	142	162	154	158	199
1 month	717	558	528	435	450	354	321	366	381	447	412	476
2 months	531	431	429	347	333	310	268	259	281	324	356	390
3 months	416	352	346	296	293	216	228	202	259	257	261	347
4 months	322	272	279	204	206	239	231	197	190	209	198	237
5 months	267	237	249	189	184	177	171	171	154	159	184	212
6 months	237	253	242	182	186	170	187	146	123	152	149	148
7 months	186	188	220	184	161	155	141	147	128	113	112	142
8 months	158	172	200	151	166	135	133	124	120	110	121	115
9 months	159	162	186	162	170	165	133	107	98	87	93	108
10 months	124	113	141	120	115	118	102	83	73	77	82	112
11 months	160	128	157	111	123	104	87	105	66	85	62	94

In the month of January, the assumption was made that, within each age period shown, $1/31$ of the total deaths occurred on each day of the month. In the case of deaths under 1 day, an infant included in this group who was born in 1934 must have died on January 1. However, even among those dying on January 1 at an age under 1 day, some were born in 1935. Therefore it was assumed that $1/2$ of $1/31$, or $1/62$ of the deaths under 1 day occurring in January were of infants born in 1934. Multipliers for the other age periods under 1 month were obtained by similar reasoning, and are shown in table AS. It will be sufficient to give one further illustration. Those infants dying in January 1935 at the age of 1 week (exact age 1–2 weeks), who were born in 1934 include all those dying in this age interval on January 1 to 7, inclusive, and a portion of those dying on January 8 to 14, inclusive. The number of deaths on January 1 to 7 is assumed to be $7/31$ of the total for the month. The number occurring on January 8 to 14 is likewise assumed to be $7/31$, and it is further assumed that one-half of these are of infants born in 1934. Therefore, the proportion of the total January 1935 deaths at the age of 1 week which are assumed to represent 1934 births is $7/31$ plus $1/2$ of $7/31$, or $21/62$.

By the application of these rules, the estimated total number of deaths under 1 year in 1935 of infants born in 1934 is found to be 14,236 to the nearest integer, while the total number of deaths under 1 year in 1935, irrespective of the year of birth, is 68,805. Therefore, the value of f_0^{1935} is the quotient of 14,236 by 68,805, or .207.

TABLE AS.—PROPORTION OF JANUARY DEATHS UNDER 1 MONTH ASSUMED TO REPRESENT BIRTHS OF THE PREVIOUS YEAR

Age at death	Under 1 day	1 day	2 days	3 to 6 days	1 week	2 weeks	3 weeks to 1 month
Assumed proportion born in previous year	1/62	3/62	5/62	19/62	21/62	35/62	52/62

However, this value applies to all males of all races combined; and it is desired to obtain values for the different races separately, as f_0^x is known to vary significantly by race. A difficulty is encountered in that the tabulation of infant deaths in the United States by age and month of death was further subdivided only by sex prior to 1939; and commencing with that year, even the sex classification was eliminated.[19] However, for all the years involved in the life table calculations, another tabulation was available giving infant deaths for the United States by age, race, and sex (but not by month of death). Separation factors at age 0 by race and sex for the years 1939 to 1941 were obtained by making the assumption that, within each age period, the distribution of deaths by race and sex was the same in each calendar month of death as for the entire calendar year. The values for the years 1934 to 1938 had previously been calculated by a somewhat less refined method, and were not recomputed. The values of f_0^x actually employed for each of the years 1934 to 1941 are given in table AT.

TABLE AT.—SEPARATION FACTORS AT AGE 0 (VALUES OF f_0^x) BY RACE AND SEX: UNITED STATES, 1934–1941

YEAR	WHITE		NEGRO		OTHER RACES	
	Male	Female	Male	Female	Male	Female
1934	0.187	0.198	0.216	0.226	0.291	0.319
1935	.199	.210	.210	.215	.302	.304
1936	.181	.191	.216	.221	.275	.315
1937	.196	.204	.214	.219	.277	.310
1938	.177	.188	.222	.223	.296	.332
1939	.180	.191	.226	.231	.304	.348
1940	.162	.174	.202	.209	.270	.320
1941	.168	.180	.223	.230	.328	.310

As no data were available for the United States from which separation factors for ages 1 to 4 could be estimated, the values employed by Glover[20] were again used. These are given in table AU.

TABLE AU.—SEPARATION FACTORS USED AT AGES[1] 1 TO 4

	1	2	3	4
Separation factor f_x	0.410	0.470	0.480	0.480

[1] Age denoted by x.

It will be noted that the values are given by age only, and are assumed independent of sex or race. As the values used by Glover were based on German

[19] This was resumed in the tabulation of infant deaths for 1943.

[20] U. S. Bureau of the Census, *op. cit.*, p. 310.

statistics of 1911 and prior years, their appropriateness for use in connection with recent data for the United States was tested before they were used for this purpose. A technical explanation of the test which was applied is given in section A of the appendix.[21]

Adjustment of mortality rates at ages 0 to 4 for the effect of migration

In the method previously described for obtaining rates of mortality at ages 0 to 4, it was assumed that the population under observation was not affected by migration during the period and at the ages considered, and that the deaths allocated to each annual cohort of births included all the deaths occurring in the cohort, and no deaths outside the cohort. Actually, it must be supposed that the deaths reported included some deaths of children born outside the continental limits of the United States, and failed to include some deaths of infants born in the United States who died outside. Some indication of the effect of immigration can be gained from the census tabulations of foreign-born population. The effect of emigration is more difficult to appraise, but is believed to have been negligible at the ages and during the period under consideration, and was therefore ignored. In other words, it was assumed that the native population under age 5 on the date of the census included all the survivors of births of the 5-year period ending on that date.

The method employed to allow for the effect of immigration involves certain concepts which make it necessary to refer briefly to the calculation of death rates at ages 5 and over. The central death rate is defined in terms of the life table as[22]

$$m_x=\frac{d_x}{L_x} \tag{21}$$

In other words, it is the number of deaths occurring during a year in the stationary life table population at age x last birthday, divided by the total number of persons at age x last birthday in the stationary population. When the life table covers a short period, such as 1 or 3 years, it is usually assumed that this is equal to the central death rate computed from the actual data: that is,

$$m_x=\frac{D_x}{nP_x} \tag{22}$$

where D_x denotes the number of deaths in the period of observation at age x last birthday, P_x denotes the population at age x last birthday at the middle of the period, and n denotes the number of years in the period. This assumption serves to bridge the gap between the actual population and the ideal life table population. Under this method, migration presents no difficulty if it can be assumed that the net migration has been uniformly spread over the period. For, in that event, the adjustment required in the number of person-years of exposure to the risk of dying is $n/2$ times the net migration, and since the population at the *middle* of the period has already been subjected to about half the net migration for the entire period (and is multiplied by n in the formula), the necessary adjustment is automatically taken care of.

This method of obtaining mortality rates was not used at the very young ages because of the known deficiency in the census enumeration. However, the procedure actually followed, while designed to produce estimated populations corrected for underenumeration, yields an estimate of the native population only (ignoring emigration). Now, formula (22) can be written in the form:

$$m_x=\frac{D_x}{nP_x^N}\,\frac{P_x^N}{P_x}=m_x^N\,\frac{P_x^N}{P_x}$$

when P_x^N denotes the native population at age x last birthday at the middle of the period, and m_x^N denotes an approximate value of m_x, in which the native population, rather than the total population, has been used as the denominator. Since the value of m_x obtained from births and deaths by the process described is really m_x^N, it needs to be corrected by multiplying by the factor P_x^N/P_x.

If it is assumed (as it usually is) that, in the life table, $L_x=l_x-\frac{1}{2}d_x$, it follows that[23]

$$m_x=\frac{2q_x}{2-q_x} \tag{23}$$

or, solving for q_x,

$$q_x=\frac{2m_x}{2+m_x} \tag{24}$$

Therefore, it would be possible to convert the values of q_x obtained without considering migration into values of m_x by formula (23), multiply them by P_x^N/P_x, and then convert them back to q_x values by formula (24). However, this lengthy procedure is unnecessary, for the ratio P_x^N/P_x is always very close to unity, and thus represents only a slight adjustment; and putting equation (24) in the form:

$$q_x=m_x\left(1+\frac{1}{2}m_x\right)^{-1}$$

$$=m_x-\frac{1}{2}m_x^2+\ \ldots$$

shows that a slight adjustment in the value of m_x results in a very nearly proportional adjustment in q_x. Therefore, the adjustment factor P_x^N/P_x may, without appreciable error, be applied to the values of q_x directly.

In the case of the life tables in this volume, P_x^N and P_x should properly represent populations on July 1, 1940, the midpoint of the 3-year period 1939–1941. However, since the adjustment involved is small in any case, it

[21] See p. 135

[22] See pp 21–22 for definition and explanation of the life table functions

[23] Spurgeon, E F, *Life Contingencies*, third edition, pp. 4-5, Cambridge University Press, London, 1938

was felt that little error would result in calculating this ratio from populations on the census date (April 1, 1940). Hence, the actual procedure at ages 1 to 4, was merely to multiply the unadjusted rate of mortality by the ratio of the native population to the total population, as enumerated in the census, at the corresponding age and in the same classification by race and sex. This, of course, involves the assumption that the enumeration was equally complete for the native and foreign-born elements of the population. The method used in estimating the distribution of the foreign-born under age 5 by single years of age has already been described,[24] and the resulting distribution by nativity, race, and sex of the population on April 1, 1940, is given in part I of table AM.[25]

The above method is not appropriate for adjusting the mortality rate at age 0, because in that case, the small amount of immigration which occurs is believed to be heavily concentrated in the latter part of the year of life, while the mortality is very much heavier in the early part. Therefore, the application of the ratio P_0^N/P_0 to the mortality rate q_0 would greatly overstate the amount of the necessary correction. Hence, the expedient was adopted of applying the adjustment ratio to the mortality rate for the second portion only of the first year of life: that is, to the probability ${}_1q_0 = 1 - {}_1p_0$.

The numerical illustration showing the calculation of mortality rates for white males in the United States in 1939–1941 is completed, for ages 1 to 4, in table AW which exhibits the adjustment for the effect of migration.

TABLE AW.—ADJUSTMENT OF RATES OF MORTALITY FOR WHITE MALES AT AGES[1] 1 TO 4, TO ALLOW FOR IMMIGRATION: UNITED STATES, 1939–1941

	1	2	3	4
Unadjusted q_x	0.00487475	0.00264755	0.00189876	0.00153612
Adjustment factor[2]	.99935557	.99911903	.99879579	.99854398
Adjusted q_x	.0048716	.0026452	.0018965	.0015339

[1] Age denoted by x.
[2] Estimated native white male population at age x divided by total white male population at age x, April 1, 1940. See table AM, part I, p. 113.

In the case of age 0, formulas (16) and (17) give ${}_\alpha p_0 = .96029016$ and ${}_\beta p_0 = .99124082$. It follows that ${}_\beta q_0$, the complement of ${}_\beta p_0$, is .00875918. Multiplying this value by the adjustment factor .99973095, which is the quotient of the number of native white males enumerated at age 0 by the total white males so enumerated, gives .00875682 as the corrected value of ${}_\beta q_0$. The complement ${}_\beta p_0$, which is .99124318, multiplied by ${}_\alpha p_0$ gives .9518811 as the adjusted value of p_0. The complement .0481189 is the final value of q_0.

There is a criticism of the theory underlying the method adopted in correcting for the effect of migration the mortality rates at ages under 5, in that the deaths which were deducted from the recorded births in order to obtain the number of survivors at the various ages include some deaths of children born outside the United States, so that the number of survivors of the native births is understated. As the deaths improperly deducted are very few, the resulting error is slight, and in any case serves as a partial offset to the failure to take account of emigration.

Grouping of ages for the computation of rates of mortality at ages 5 and over

Deaths at ages 5 and over were not tabulated by single years of age during the period 1939–1941, but only in the 5-year age groups 5–9, 10–14, etc., with a final group at ages 100 and over. As a matter of fact, it has frequently been considered preferable, in the construction of national life tables, to work with grouped data for the reason that statements of age, both in death reports and in the census, usually show what is known as "heaping": that is, marked preference for ages ending in certain digits, at the expense of other digits. This preference is especially noticeable in the case of ages which are multiples of five; while, to a lesser degree, even numbers tend to be given more frequently than odd numbers. A notable exception to the latter rule is observed at age 21, where a marked concentration is commonly found. The use of grouped data tends to smooth out the irregularities resulting from digit preference by averaging together ages at which the reported figures are excessive and other ages where a deficiency appears.

However, the particular grouping in which the 1939–1941 deaths were tabulated has not often been found the most satisfactory from the point of view of life table construction.[26] Glover had both deaths and populations tabulated by single years of age, and made an exhaustive study [27] of the results of all the possible methods of grouping in 5-year periods, finally deciding on the grouping 4–8, 9–13, etc. Wolfenden [28] has also given a very full discussion of the general problem of heaping and the conclusions reached by a number of actuaries as to the best method of age grouping for the data of various countries. In dealing with the 1939–1941 data, there was, however, no choice as to the mode of grouping, insofar as deaths are concerned. While the census populations were available by single years of age, the estimated populations on July 1, 1940, were much more easily obtained for the age groups in which deaths were available, and the computation of rates of mortality is appreciably simplified by having deaths and populations similarly grouped.

Nevertheless, it was thought advisable to study the nature of the heaping present in the population data of the 1940 census and to test the effect of various

[24] See p. 112.
[25] See p. 113.

[26] See, however, Nathan Keyfitz, *Census Monograph No. 13, Canadian Life Tables, 1931*, p. 8, Dominion Bureau of Statistics, Ottawa, 1937. Here, the "7–9" grouping was decided upon, even though both populations and deaths were available by single years of age.
[27] U. S. Bureau of Census, *op. cit.*, pp. 356–364.
[28] Wolfenden, *op. cit.*, pp. 32–44, 54–57. See also Wolfenden's discussion in the *Transactions, Actuarial Society of America*, vol. 42, Part 1, No. 105, pp. 78–86, May 1941.

possible groupings. This was done by summing the reported figures for ages ending with the same digit and comparing the totals by means of Myers' "blended" method.[29] For comparison, the deaths of the year 1935, the most recent year for which deaths have been tabulated by single years of age, were analyzed in the same way. In this method of analysis, the ages below 20 are omitted, because they exhibit a pattern of digit preference which differs markedly from that observed at adult ages. The ages in the immediate neighborhood of age 21 may also be omitted because of the peculiar form of heaping usually present there.[30] Myers' blended method is designed to eliminate any bias due to a particular choice of the starting age.

In this case, ages 23 to 32 were employed as starting ages and the summations were not carried beyond age 99.[31] The results are shown in table AY. In this table, Negroes and other races are not shown separately, because these separate races were not tabulated by single years of age in the 1940 census. In interpreting the table, it should be noted that the extent of heaping or deficiency at any particular digit is indicated by the amount by which the percent shown for that digit differs from 10 percent. The "index of preference," which is the sum of the absolute deviations from 10 percent, is a useful general measure of the amount of bias present. The smaller the index, the less error is present, since if there were no bias, all the percentages would be exactly 10 percent, and the index would be 0.

TABLE AY.—PREFERENCE FOR DIGITS OF AGE BY RACE AND SEX, IN THE UNITED STATES, FOR 1935 DEATHS AND 1940 CENSUS POPULATIONS: NUMBERS REPORTED AT EACH DIGIT OF AGE [1] AS PERCENT OF TOTAL NUMBER

DIGIT OF AGE	1935 DEATHS					1940 POPULATIONS				
	Total deaths	White		Nonwhite		Total population	White		Nonwhite	
		Male	Female	Male	Female		Male	Female	Male	Female
0	11.1	10.5	10.6	15.8	15.9	11.6	11.0	11.5	14.6	15.0
1	8.7	9.0	8.9	7.4	7.3	8.5	8.8	8.6	6.8	6.5
2	10.0	10.0	10.0	9.8	9.6	10.4	10.5	10.4	10.1	9.9
3	9.7	9.9	9.8	8.4	8.4	9.6	9.8	9.6	8.3	8.2
4	10.1	10.2	10.3	8.9	9.1	9.7	9.9	9.8	9.0	8.8
5	11.4	11.0	10.9	14.5	14.1	10.7	10.5	10.6	12.5	12.4
6	9.6	9.7	9.8	8.4	8.6	9.6	9.7	9.7	9.0	9.0
7	9.6	9.8	9.7	8.2	8.4	9.6	9.7	9.6	8.8	8.7
8	10.1	10.1	10.1	9.7	9.7	10.3	10.1	10.3	10.6	11.2
9	9.7	9.8	9.9	8.9	8.9	10.0	10.0	9.9	10.3	10.5
Index of preference [2]	5.4	3.6	3.8	20.6	20.0	6.0	4.2	5.6	16.2	18.2

[1] Computed by Myers' blended method, using starting ages 23 to 32 and ending at age 99 in all cases.
[2] Sum of deviations from 10 percent, taken without regard to sign.

Inspection of the values of the index of preference shows, as might be expected, that the error is much more serious for the nonwhite than for the white races. Among white persons, there is slightly greater bias in the populations than in the death statistics; but among the nonwhite the reverse is true. In fact, in the nonwhite deaths, the heaping on digits 0 and 5 is so pronounced that all the other digits show a deficiency. Table AZ shows the value of the index of preference for the total population in each census from 1880 to 1940. With the exception of the 1940 figure, these values are taken from Myers' article.[32] This table indicates a steady improvement over the entire period in the accuracy of age statements. The relatively low figure for 1900 is due to the fact that in that census both age and date of birth were asked for, while in other censuses only age was obtained.

TABLE AZ.—INDEX OF PREFERENCE IN STATEMENTS OF AGE IN THE CENSUS OF POPULATION: UNITED STATES, 1880–1940

CENSUS	Index of preference	CENSUS	Index of preference
1880	20.8	1920	9.0
1890	15.6	1930	8.0
1900	9.4	1940	6.0
1910	11.2		

The percents in table AY may be used to test the effectiveness of different grouping methods by adding the percentages for the five digits which are combined in the particular grouping method. The closer the resulting total is to 50 percent, the better is the given method. Table BA shows the results obtained with the data of table AY. If it can be assumed that the pattern of digit preference among the 1939–1941 deaths was similar to that found in 1935, evaluation of table BA purely on the basis of the proximity of the totals to 50 percent would indicate the best groupings for deaths to be "1–5" for whites and "2–6" for nonwhites; while for the populations the preferred groupings would be either "4–8" or "5–9" for whites and "4–8" for nonwhites. However, in computing rates of mortality, if the same grouping is to be used for both populations and deaths, it is of little avail to select the most effective grouping for populations if this grouping produces marked bias in the death figures, and vice versa. On the other hand, the correct mortality rates will be obtained, even with considerable error in both population and death statistics, if both are deficient or both excessive in the same proportion. This suggests choosing as the best age grouping for mortality rate calculations the one in which the smallest difference is found between the percents in table BA for deaths and populations. This criterion indicates as the best groupings "5–9" for whites and "4–8" for nonwhites. Since the "5–9" grouping appears to be an advantageous one for the data of white lives, and no other grouping is actually available in the census for Negroes and other races separately, and in view of the simplification which results from employing the same grouping for both populations and deaths, it was decided to use the "5–9" grouping throughout.

[29] Myers, Robert J., *Errors and Bias in the Reporting of Ages in Census Data*, Transactions, Actuarial Society of America, vol. 41, Part 2, No. 101, pp. 395-415, October-November 1940. See especially pp. 402-407, 411-415.
[30] See p. 120.
[31] For the details of Myers' method, see his article, previously cited.
[32] Myers, *op. cit.*, p. 403.

TABLE BA.—PERCENTAGE OF TOTAL REPORTED IN VARIOUS QUINQUENNIAL AGE GROUPINGS IN THE UNITED STATES, FOR 1935 DEATHS AND 1940 CENSUS POPULATIONS [1]

DIGIT GROUPING	1935 DEATHS					1940 POPULATIONS				
	Total deaths	White		Nonwhite		Total population	White		Nonwhite	
		Male	Female	Male	Female		Male	Female	Male	Female
1-5	49.9	50.1	49.9	49.0	48.5	48.9	49.5	49.0	46.7	45.6
2-6	50.8	50.8	50.8	50.0	49.8	50.0	50.4	50.1	48.9	48.3
3-7	50.4	50.6	50.5	48.4	48.6	49.2	49.6	49.3	47.6	47.1
4-8	50.8	50.8	50.8	49.7	49.9	49.9	49.9	50.0	49.9	50.1
5-9	50.4	50.4	50.4	49.7	49.7	50.2	50.0	50.1	51.2	51.8

[1] The figures in this table were obtained by summing the appropriate ones in table AY.

General procedure used in obtaining rates of mortality at ages 5 and over

The method used in obtaining mortality rates for individual years at age from the grouped data at ages 5 and over was that of osculatory interpolation. This method has been used for many years in the construction of the national life tables of England and Wales, and the United States, and was adopted in the most recent official life tables of Canada and Australia. It produces a satisfactory degree of smoothness while at the same time yielding mortality rates which fit the original data closely. Osculatory interpolation may be defined as that method of interpolation which insures smooth junction between the curves representing the interpolated values in adjacent tabular intervals by requiring that such adjacent curves have the same first derivative (or, sometimes, the same first and second derivatives) at the point of junction.[33]

In applying the principle of osculatory interpolation to the construction of life tables, there are two possible methods of approach. In the first method, osculatory interpolation is applied to the populations and deaths separately in order to obtain smooth interpolated values for single years of age. The rates of mortality are then computed by relating the interpolated values for deaths and population at each age. In the second method, "pivotal" rates of mortality are obtained at specified intervals, and osculatory interpolation is then applied directly to the mortality rates, in order to fill in the intermediate values. The pivotal rates are obtained by first deriving pivotal values of populations and deaths separately from quinquennial (or other) sums of data, usually by ordinary interpolation, the interpolation process being sometimes combined with a certain amount of graduation, or smoothing.

There has been much discussion of the relative merits of these two methods of approach. The first method was introduced by Dr. John Tatham and used by him in constructing the English Life table number 6, covering the period 1891–1900. It was improved by George King, and in this improved form was adopted in this country by Glover and Foudray and has been used in all previous United States life tables. The second method was introduced by George King in connection with the English Life tables numbers 7 and 8, and has been followed by Sir Alfred Watson in preparing the subsequent tables numbers 9 and 10. It has also been used in the most recent official life tables for Canada and Australia. For the former method it is argued that by its use the investigator is enabled to keep closer to the original data, and can test the reasonableness of the interpolated results in the light of his knowledge of the basic characteristics of the populations he is dealing with. The method also has the practical advantages that it requires no decision as to the ages at which pivotal values are to be calculated or the formula to be used in obtaining them, and that mortality rates for any combination of the original population classes can be readily obtained without performing a new interpolation. Such a case, for example, would be the preparation of a life table for total whites, after separate tables for white males and white females had been completed.

For the second method it may be argued that all mathematical formulas of interpolation, particularly those of the osculatory variety, are based on the assumption that the values being estimated can properly be expected to form a smooth series. Now, it can reasonably be expected that, with a large enough body of data, the rates of mortality should exhibit a smooth progression from age to age. However, the populations and deaths at single ages, arising as they do from fluctuating annual cohorts of births, and affected to a considerable extent by the incidence of past migration, can hardly be expected to be perfectly smooth. Hence, the assumption underlying the use of an interpolation formula is not entirely valid when it is applied to such data. There is also a practical advantage in that only one complete interpolation is required, as against the two separate interpolations needed in the other method. Also, the second method is found, in general, to produce a smoother series, because the graduating effect of the osculatory formula is applied directly to the mortality rates. A further point is made by Sir George Hardy, who states [34] that in "graduating separately the numbers in the two series of 'exposed to risk' and 'died' rather than their ratio, . . . we thereby discard our previous knowledge of the nature of the curve expressing that ratio—our general knowledge, that is, of the nature of the curve q_x or μ_x."

In the preparation of the present life tables, careful consideration was given to the choice as between the two general methods of procedure, and experimental calculations were made by both methods. In the end, the method of operating directly on the rates of mortality was adopted, as it was found to produce smoother

[33] For a synopsis of the theory of osculatory interpolation and of the historical development of the subject, see Hugh H. Wolfenden, *The Fundamental Principles of Mathematical Statistics*, pp. 121–132, Actuarial Society of America, New York, 1942.

[34] Hardy, G. F., *The Theory of the Construction of Tables of Mortality and of Similar Statistical Tables in Use by the Actuary*, p. 21, Charles and Edwin Layton, London, 1909.

values, and the theoretical arguments in its favor seemed more cogent. Pivotal values of both populations and deaths were obtained by interpolation for the middle age of each of the age groups used: that is, at ages 7, 12, 17, etc., and the corresponding pivotal rates of mortality were obtained by the usual formula:

$$q_x=\frac{D_x}{nP_x+\frac{1}{2}D_x} \tag{25}$$

where D_x and P_x denote the pivotal values of deaths and populations, respectively, and n is the number of years in the period of observation: in this instance, 3. This formula is obtained at once by substituting in formula (24) the value of m_x given by formula (22). On the basis of these pivotal rates, values of q_x were obtained by osculatory interpolation for all integral ages from age 5 to the limiting age of each life table. The formulas used in obtaining pivotal values and in performing the osculatory interpolation, the method of securing smooth junction with the mortality rates at ages under 5, and the special devices adopted to extend the tables into the very high ages where the use of actual data leads to unreasonable results, are described in the sections which follow.

Pivotal value formulas employed

The pivotal value formula employed in the majority of cases was the usual King formula, which, written in central difference notation, is:[35]

$$v_x=.2w_x-.008\delta^2w_x \tag{26}$$

where v_x denotes an interpolated value for the single year of age x; w_x denotes a quinquennial sum of data centered on age x: in other words, $w_x=\sum_{t=-2}^{2}u_{x+t}$, where the "$u$'s" denote unadjusted single year values; and the symbol δ denotes a central difference[36] taken at quinquennial intervals. In other words, if data (e. g., deaths or populations) are available for three consecutive 5-year age groups, this is a formula for estimating the number at the single age in the middle of the middle group. If the single year values for all 15 ages are exactly fitted by a third degree polynomial, this formula gives exactly the correct value. The assumption is, therefore, that the single year values would be approximately fitted by a third degree polynomial if they were unaffected by age heaping or sampling error. To facilitate the numerical computation, the formula was put in the alternative form:

$$v_x=-.008w_{x-5}+.216w_x-.008w_{x+5} \tag{27}$$

which was used (with certain exceptions to be noted later) to compute pivotal values of populations and deaths at each fifth age from age 12 to 97. The pivotal values for populations were taken to the nearest integer; those for deaths, to two places of decimals. In applying formula (27) to obtain pivotal values at age 97, figures for the age group 100 and over were used as though they represented the age group 100–104.

Applying King's formula to obtain a pivotal value at age 7 would involve substituting in the formula a value of w_2, which would be a sum of data for the age group 0–4. It was not considered proper to regard such a figure as belonging to the same series with the other "w" values: in the case of the deaths, because of the special mortality conditions prevailing in the first year of life; and in the case of the populations, because of the substantial underenumeration of infants and small children in the census. Hence, the pivotal values at age 7 were obtained by the following special formula based on ordinary interpolation from sums of data for the three age groups 3–4, 5–9, and 10–14, assuming that the 12 single year values can be fitted by a second degree curve:

$$v_7=\frac{1}{700}\left[-25(u_3+u_4)+157w_7-7w_{12}\right] \tag{28}$$

To derive this formula, suppose that $u_{7+x}=a+bx+cx^2$. Then,

$$\begin{aligned} u_7&=a\\ w_7&=5a+10c\\ w_{12}&=5a+25b+135c\\ u_3+u_4&=2a-7b+25c \end{aligned}$$

Now if it be assumed that $u_7=m(u_3+u_4)+nw_7+rw_{12}$, substituting the above expressions and equating coefficients of a, b, and c gives:

$$\begin{aligned} 2m+5n+5r&=1\\ -7m+25r&=0\\ 25m+10n+135r&=0 \end{aligned}$$

Solving these equations yields $m=-\frac{1}{28}$, $n=\frac{157}{700}$, and $r=-\frac{1}{100}$, which are precisely the coefficients in formula (28).

The other exceptions made to the use of King's pivotal value formula were confined to the life tables for Negroes and other races. In working with Negro data it has often been found that the substantial amount of heaping present tends to produce cyclical fluctuations or waves which give to certain portions of the graph of the q_x function somewhat the appearance of a sine curve superimposed on the basic mortality curve. This condition is quite apparent in the published graphs of the q_x function in certain previous United States life tables.[37] However, this peculiarity can scarcely be considered a genuine characteristic of the data and there would seem to be little justification for reproducing it in the life table.

It will be remembered that in the discussion of digit preference in age statements[38] the "5–9" grouping was found to be not the most desirable for the nonwhite

[35] For a derivation of King's formula, see pp. 109–110 of Wolfenden's Actuarial Study, previously cited.

[36] Freeman, Harry, *Mathematics for Actuarial Students*, vol. 2, p. 76. Cambridge University Press, London, 1939.

[37] U. S. Bureau of the Census, *op. cit.*, p. 215, and *United States Life Tables, 1939–1959 (Preliminary), for White and Nonwhite*, by Sir, pp. 12–14, July 1941.

[38] See p. 121.

data. In fact, table BA shows that in the digit grouping 5–9, the nonwhite populations are overstated, while the nonwhite deaths are understated. In the digit grouping 0–4, the reverse would of course be true. This would mean that the rate of mortality would be consistently understated in the groups consisting of ages ending with the digits 5–9, and consistently overstated in the "0–4" groups, producing just the sine curve effect so frequently observed. When pivotal values were obtained by King's formula, this tendency was clearly observed from age 30 to about age 60, where it became obscured by more serious errors in age statement.[39] Although the osculatory interpolation formula used has a moderate graduating effect, this was found not to eliminate the waviness entirely. Therefore, it was decided to use also a pivotal value formula which incorporates an element of graduation.

The formula selected for this purpose was [40]

$$v_x=\frac{1}{7}\left[.696w_x+.488(w_{x+5}+w_{x-5})-.136(w_{x+10}+w_{x-10})\right] \quad (29)$$

This formula gives the middle term of a 25-term series summed in five groups of five, on the assumption that the individual terms can be represented by a third degree curve. However, it is not unique in this respect, as an infinite number of other formulas exist which have the same property. Its uniqueness lies in the fact that, of the entire class of such formulas, this is the one for which the mean square error of the interpolated value, v_x, is least, on the assumption that the mean square errors of the five sums of "u" values are all equal.[41]

This formula involves the assumption that the "true values," after adjusting for errors in the data, of any five consecutive age groups will be exactly fitted by a third degree curve. There are certain portions of the mortality curve in which this assumption is unsuitable. For both Negroes and "other races," this is true of the ages under 30, where the death statistics form a curve with very rapidly changing curvature, and where, in any case, the tendency to "waviness" is not apparent. Here the use of formula (29) was found to produce unwarranted distortion in the mortality rate; accordingly, King's formula was used. For the Negroes, a similar situation exists beyond age 75, where both populations and deaths are decreasing so rapidly that the assumption of fitting a third degree curve to the data of five consecutive age groups was clearly inappropriate. In the case of the data for "other races," populations and deaths also decrease rapidly above age 75, but the figures are so irregular, because of the small size of the data, that the smoothing effect of the special formula (29) was needed, and the values are so rough, in any case, that any distortion resulting from the use of this formula is not of much importance. To sum up, formula (29) was used instead of King's formula in obtaining pivotal values of populations and deaths at ages 32 to 72, inclusive, for Negroes; and at ages 32 to 87, inclusive, for "other races."

Derivation of pivotal rates of mortality

Pivotal rates of mortality were computed at every fifth age from age 7 to age 97 by applying formula (25) to the pivotal values of populations and deaths. They were carried out to seven decimal places on a unit basis: that is, to four decimal places on a per 1,000 basis. The progression of these rates at the very high ages was carefully studied, and unsuitable values were rejected by inspection. In the end, the originally calculated rates were retained through age 92 for white males and females and Negro males, and through age 87 for Negro females and "other races" males and females. In the case of the life tables for combinations of classes, pivotal rates of mortality were obtained by summing separately the values used as numerators and denominators in obtaining pivotal rates for the individual classes, at all ages at which the originally calculated rates were retained for all the individual classes included.

Treatment of the very old ages

At the very old ages (those above age 90, approximately) mortality rates obtained in the conventional manner from the data as reported frequently appear unreasonable or even absurd. This condition is probably due in part to inaccuracies in age statements, and in part to random irregularities made possible by the very small size of the experience at these ages. It is customary, therefore, to reject those values which are considered unsuitable, and to end the life table in some more or less artificial manner. From a practical standpoint, it probably makes little difference what method is used for this purpose, as little reliance is placed on the values obtained at the very old ages, and they affect only slightly other life table values which are extensively used. The question may properly be raised as to why it is necessary to show life table values at all beyond those ages at which they can be considered reliable. It may be answered that, in order to obtain values of the average future lifetime and of life annuity and assurance premiums, it is necessary to assume *some* values of the rate of mortality at the oldest ages, and the user of the tables may properly wish to be informed as to what values were assumed.

In connection with the life tables included in this volume, the use of a fifth difference interpolation formula (as described in the next subsection) made it desirable to extend the series of pivotal rates of mortality in some manner, prior to performing the interpolation. This was done, in each case, by fitting a third degree curve to the last four pivotal rates retained. In carrying out the actual arithmetic, each pivotal rate

[39] See p. 110.

[40] This formula was first published in an unsigned book review in the Journal of the Institute of Actuaries, vol. 51, No. 272, p. 368, October 1919. It is also given by Wolfenden in his Actuarial Study (previously cited), p. 113.

[41] See Wolfenden's derivation of this formula, already referred to.

beyond those retained from the original series was computed from the four preceding ones by the formula:

$$u_x = 4u_{x-5} - 6u_{x-10} + 4u_{x-15} - u_{x-20}$$

In the case of the life tables for combinations of classes, pivotal rates of mortality were not calculated beyond age 92. A special problem arose at age 92 when individual classes for which the originally calculated rate had been rejected were included in the combination. In such cases the pivotal value of the number of deaths, as originally calculated, was regarded as the correct numerator, and an adjusted denominator was obtained by dividing this numerator by the extrapolated pivotal rate of mortality. These adjusted denominators were carried out to two decimal places in order to avoid inconsistency between the life tables for combinations of classes and those for the individual classes included.

Osculatory interpolation formulas used

The osculatory interpolation formula used for the main body of the life tables in this volume was Jenkins' modified fifth difference formula.[42] The word "modified" in the name of this formula indicates that, although satisfying the conditions of smooth junction, it does not exactly reproduce the pivotal rates of mortality, but has a moderate graduating effect. The advantages of using a formula of this type have been aptly expressed by the Scottish actuary, James Buchanan, who says:[43]

> The weak point of the osculatory method, regarded as a smoothing agent, rests on the fact that the graduated curve is required to pass through certain predetermined points. The curve will in fact be constrained to take a form similar to that assumed by a flexible steel wire which is clamped at fixed points, so that, while the curve is free from discontinuities, any departure of these points from the smooth curve will be reproduced with resulting undulations. To remove this tendency to waviness, Jenkins has devised his modified osculatory method, which, while requiring the successive interpolation curves to have the same slope and curvature at their common points at the end of each interval, does not require the curves to pass through the points corresponding to the calculated values.

The practice of employing such a formula in the construction of national life tables has been slow to gain general acceptance, perhaps because it has been considered that fidelity to the original data is here more fundamental than smoothness. However, experience has shown that a well chosen modified osculatory formula can usually be depended on to preserve the basic underlying trend of the mortality curve, only local irregularities being smoothed out. National life tables are being increasingly used for population projections, valuation of old-age pensions and survivors' benefits, and other calculations in which a lack of smoothness in the life table is likely to produce irregularities and inconsistencies which, although minor, can be awkward and inconvenient. Also, it may justly be argued that it is better to produce a smooth table which, in all likelihood, represents the true underlying conditions as precisely as they can be inferred from a careful analysis of the data, rather than a table which merely reproduces the data along with all the errors they are known to contain. It is a virtue of the better modified osculatory formulas that when applied to a series containing many undulations, such as rates of mortality for Negroes in the United States, they exert a considerable smoothing effect, and yet when applied to a series which is already fairly smooth, such as the corresponding rates for white persons, they produce only an insignificant change.

In the case of 5-year age intervals, Jenkins' modified fifth difference formula can be written in the form:[44]

$$v_{a+t} = \frac{s}{5}\left(u_a - \frac{1}{36}\delta^4 u_a\right) + \frac{s(s^2-25)}{750}\left(\delta^2 u_a - \frac{1}{6}\delta^4 u_a\right) + \frac{t}{5}\left(u_{a+5} - \frac{1}{36}\delta^4 u_{a+5}\right) + \frac{t(t^2-25)}{750}\left(\delta^2 u_{a+5} - \frac{1}{6}\delta^4 u_{a+5}\right) \quad (30)$$

where u_a and u_{a+5} denote consecutive pivotal values, δ denotes a central difference as before, t is a number between 0 and 5, $s=5-t$, and v_{a+t} denotes the interpolated value obtained by the formula. This formula produces contact of the second order: that is, the interpolation curves in any two adjacent age intervals have equal ordinates and equal first and second derivatives at their point of junction. It may be noted that this formula gives, on substituting $t=0$ and 5, respectively:

$$v_a = u_a - \frac{1}{36}\delta^4 u_a \quad (31)$$

$$v_{a+5} = u_{a+5} - \frac{1}{36}\delta^4 u_{a+5} \quad (32)$$

These results show that the pivotal values are adjusted by the formula to the extent of 1/36 of the negative of the corresponding fourth central difference. Substituting the expressions (31) and (32) and writing $\delta^2 y_a$ for $\delta^2 u_a - \frac{1}{6}\delta^4 u_a$ the equation (30) becomes:

$$v_{a+t} = \frac{s}{5}v_a + \frac{s(s^2-25)}{750}\delta^2 y_a + \frac{t}{5}v_{a+5} + \frac{t(t^2-25)}{750}\delta^2 y_{a+5} \quad (33)$$

In using a formula which appears in this symmetrical form, the arithmetic can be considerably shortened by

[42] Jenkins, W. A., *Graduation Based on a Modification of Osculatory Interpolation*. Transactions, Actuarial Society of America, vol. 28, Part 2, No. 78, p. 202, October 1927. The formula is also given (in a form more closely resembling that employed in this volume) by Robert Henderson, *Mathematical Theory of Graduation (Actuarial Studies No. 4)*, second edition, p. 22, Actuarial Society of America, New York, 1938.

[43] Buchanan, James, *Recent Developments of Osculatory Interpolation, With Applications to the Construction of National and Other Life Tables*, Transactions of the Faculty of Actuaries (Scotland), vol. 12, Part 5, No. 111, pp. 117-160, 1929.

[44] The form given here differs from that given by Jenkins and Henderson for the reason that here the single year of age is taken as the unit of reckoning, while in the other formulations the unit is the entire interval of interpolation (in this instance, 5 years). The formula given here is readily obtained from Henderson's expression upon replacing x by $t/5$ and y by $s/5$. Jenkins' original statement of the formula was in terms of advancing differences rather than central differences.

employing a special computation process in which the results of certain calculations are used twice.[45]

In the construction of all the life tables in this volume, this formula was used for interpolation from age 32 to the end of the table. As stated in the preceding subsection, the series of pivotal rates of mortality was extended to the very old ages by fitting a third degree curve to the last four of the original pivotal rates actually used, which is, of course, equivalent to assuming fourth differences to be 0. Under these conditions, formula (30) reduces to:

$$v_{a+t}=\frac{s}{5}u_a+\frac{s(s^2-25)}{750}\delta^2u_a+\frac{t}{5}u_{a+5}+\frac{t(t^2-25)}{750}\delta^2u_{a+5}$$

which is merely the ordinary Everett interpolation formula [46] for quinquennial intervals. This shows the special convenience, in connection with Jenkins' modified fifth difference formula, of the particular method chosen for terminating the life tables. It may be noted that, in carrying out the extrapolation for the very old ages, the second differences δ^2u_a were values of a first degree curve (or straight line), and could therefore be obtained by the formula:

$$\delta^2u_a=2\delta^2u_{a-5}-\delta^2u_{a-10} \qquad (34)$$

This formula holds at the last age for which the calculated pivotal rate was retained, and at subsequent ages.

In the case of the life tables for combinations of classes, it was found that interpolation of the rates of mortality beyond age 92 would, in some instances, give results inconsistent with the rates for the component classes. Therefore, in all these tables, the interpolation was terminated at that point, and mortality rates for subsequent ages were obtained from the l_x column of the life table, which was itself derived by a special process to be explained later. The value of δ^2q_{92} to substitute in the interpolation formula was obtained by equation (34). This, of course, implicitly assumes the existence of an extrapolated pivotal rate at age 97.

Because of the rapid change of curvature of the q_x curve at ages under 30, and the small size of the rate of mortality at these ages, the fourth differences of q_x are quite large in relation to the values of q_x itself, and an excessive adjustment is introduced by Jenkins' formula, which has the effect of replacing the pivotal values originally calculated by adjusted values obtained by formula (31), involving a fourth difference correction. Moreover, the mortality curve commonly displays genuine irregularities at these ages, which it is not desirable to remove by a smoothing process. Therefore, it seemed the wisest course to use a formula which would reproduce the pivotal values. The formula selected was the familiar Karup-King formula,[47]

$$v_{a+t}=\frac{s}{5}u_a+\frac{s^2(s-5)}{250}\delta^2u_a+\frac{t}{5}u_{a+5}+\frac{t^2(t-5)}{250}\delta^2u_{a+5} \qquad (35)$$

This formula was used for interpolation in all the life tables between ages 12 and 27.

Between ages 4 and 12 and between 27 and 32, special extensions were devised in order to secure smooth junction, in the one case with the mortality rates under age 5 specially computed from birth and death statistics, and in the other case with the rates above age 32 interpolated by Jenkins' formula. Inasmuch as both the two interpolation formulas are of the third degree, third degree curves were employed for the special extensions as well. The curve used for ages 5 to 11 was required to reproduce the calculated rates of mortality at ages 4, 7, and 12, and to have the same derivative at age 12 as the Karup-King curve used between ages 12 and 17. The curve used for ages 28 to 31 was required to have its ordinate and first derivative equal to those of the adjoining Karup-King curve at age 27 and to those of the adjoining Jenkins curve at age 32. In both cases, there are four conditions imposed, and this is enough to determine a third degree curve. In each case also, it was possible to regard the interpolation by the special curve as merely a further application of the Karup-King formula, by utilizing a suitable artificial extension of the series of pivotal values.[48]

Seven decimal places were retained throughout the interpolation process, and the resulting interpolated rates of mortality were rounded to six places. They are further rounded to five places (or two places on a per 1,000 basis) in the published tables.

Test of the graduation of the rates of mortality

Tests were applied to the final rates of mortality in each of the six life tables for individual classes of the population to determine whether the graduation could be deemed satisfactory. It was not considered necessary to test separately the mortality rates for combinations of classes. In making such tests, there are two chief points to be considered: (1) conformity to the original data, and (2) smoothness. Conformity to the original data is usually tested by calculating, for each age group, the number of deaths expected on the basis

[45] Freeman, *op. cit.*, pp. 73–75. See also T. N. E. Greville's discussion in the Record, American Institute of Actuaries, vol 32, Part 1, No. 65, pp. 86–87, June 1943. See also Louis I. Dublin and Alfred J. Lotka, *Length of Life*, pp. 338–339, The Ronald Press Co., New York, 1936.

[46] Freeman, *op. cit.*, p. 66 The form given here may be obtained from Freeman's expression by substituting central differences for advancing differences, changing the origin so that a corresponds to Freeman's "0," and replacing x by $t/5$ and ξ by $s/5$.

[47] This formula was first published by Johannes Karup in his article, *On a New Mechanical Method of Graduation*, Transactions of the Second International Actuarial Congress, p. 83, Charles and Edwin Layton, London, 1899. It was discovered independently by George King who published it in the Journal of the Institute of Actuaries, vol 41, p. 545, October 1907. Since its publication by King, it has been used extensively in the construction of national life tables, both in England and elsewhere. The formula is also given, in three different forms, by Wolfenden in his Actuarial Study (previously cited), p 105. The expression given here is obtained at once from Wolfenden's form (c) upon replacing x by $t/5$ and y by $s/5$, and changing the origin so that a corresponds to Wolfenden's "0."

For a discussion of computation methods, see John Boyer, *Osculatory Interpolation in Practice*, Record, American Institute of Actuaries, vol 31, Part 2, No. 64, pp. 337–338, October 1942. A method similar to that mentioned in connection with the Jenkins formula can also be employed.

[48] The formulas which were used for this purpose are derived in the appendix, p. 136.

of the calculated rates of mortality, and comparing this with the number of deaths actually reported. This would seem to be a simple enough procedure, but, in dealing with grouped data, questions immediately arise as to the proper method of calculating the expected deaths. The traditional method consists in multiplying the population at each single age by the number of years in the period of exposure and by the value of m_x at that age, based on the life table. In the present case, however, the populations used were estimated populations on July 1, 1940, and were not obtained by single years of age. Nor could such values be made available without considerable additional work, and without making some assumption as to the distribution of deaths by single ages. As an approximation to this procedure, experiments were made with the expedient of distributing the population in each 5-year age group into single years of age in the same proportion as the corresponding population on April 1, 1940, the date of the census. In the case of white males and white females, this method gave numbers of expected deaths consistently smaller than the corresponding number of reported deaths, although the differences were extremely small in most cases. This condition resulted from the fact that the greatest "heaping" occurs at the ages ending with the digits 0 and 5, and in the "5–9" mode of grouping these ages are, in every case, the youngest ages of the 5-year age groups in which they fall, and therefore, in general, the ages having the lowest mortality rate in the group. This padding at ages where mortality rates are lower results in understatement of the expected deaths.

Another possible method of computing the expected deaths would be to compute, from the life table, an average central death rate for each 5-year period by the formula:

$$ {}_5m_x = \frac{l_x - l_{x+5}}{T_x - T_{x+5}} \qquad (36) $$

and to apply this rate to the total population in the age group, multiplying also, of course, by the number of years in the period of exposure. In the case of white males and white females, this method has a tendency to produce expected deaths which are consistently very slightly in excess of the actual deaths. This results from the assumption underlying the method: namely, that the proportionate distribution by single years within the 5-year age group is the same in the actual population as in the hypothetical life table population. This assumption is not exactly fulfilled, as the numbers decrease more rapidly with age in the actual population, because of the effect of past migration and of a steadily declining birth rate in past years.

The fact that the general tendency of the relation between reported and expected deaths is completely reversed by making only a slight change in the method of computation of the expected deaths is in itself evidence that an excellent fit has been secured; and, by either method, the differences are in most cases small fractions of 1 percent of the numbers of deaths involved. However, it was felt that a more meaningful comparison would be obtained by estimating the populations at single years of age by an osculatory interpolation formula which preserves the 5-year totals. For this purpose, the Karup-King formula was used. In this connection the interpolation in the age group 5–9 was performed by a special extension by means of a curve having the property of reproducing the enumerated population in the age group 3–4. The resulting comparison is shown in table BB. No comparison is made for the ages under 5, where the methods used in deriving mortality rates should, at least in theory, produce exact agreement between actual and expected deaths.

TABLE BB.—COMPARISON OF REPORTED DEATHS AND EXPECTED DEATHS ON THE BASIS OF LIFE TABLES, BY RACE AND SEX: UNITED STATES, 1939–1941

Race and Age	Male				Female			
	Reported deaths	Expected deaths	Excess of expected over reported deaths +	Excess of expected over reported deaths −	Reported deaths	Expected deaths	Excess of expected over reported deaths +	Excess of expected over reported deaths −
WHITE								
5–9	16,716	16,590		126	12,109	12,049		60
10–14	17,062	17,273	211		11,334	11,438	104	
15–19	28,507	28,485		22	19,140	19,045		95
20–24	35,522	35,277		245	25,475	25,382		93
25–29	37,146	37,288	142		29,490	29,536	46	
30–34	42,405	42,390		15	33,709	33,664		45
35–39	53,285	53,196		89	39,774	39,703		71
40–44	72,956	73,042	86		50,335	50,435	100	
45–49	105,256	105,074		182	68,003	67,809		194
50–54	142,217	142,493	276		87,083	86,991		92
55–59	173,192	172,725		467	107,050	106,940		110
60–64	201,341	200,945		396	135,810	135,278		532
65–69	229,887	229,905	18		171,664	171,962	298	
70–74	235,612	236,137	525		193,091	193,359	268	
75–79	208,875	208,614		261	189,795	189,577		218
80–84	157,479	157,683	204		159,109	159,346	237	
85–89	76,515	76,336		179	88,451	88,250		201
90–94	23,084	23,091	7		31,981	31,943		38
95 and over	5,022	5,990	968		8,429	9,264	835	
Total 5 and over	1,862,079	1,862,534	2,437	1,982	1,461,832	1,461,971	1,888	1,749
Total of absolute values			4,419				3,617	
Net total			+455				+139	
NEGRO								
5–9	3,003	2,976		27	2,579	2,561		18
10–14	3,438	3,473	35		3,012	3,138	126	
15–19	7,043	7,074	31		8,525	8,399		126
20–24	10,661	10,566		95	11,246	11,215		31
25–29	12,472	12,502	30		12,253	12,286	33	
30–34	13,602	13,400		202	12,930	12,758		172
35–39	15,927	16,243	316		15,520	15,915	395	
40–44	18,961	18,954		7	17,503	17,032		471
45–49	21,830	22,173	343		18,194	18,850	656	
50–54	25,041	24,359		682	20,677	20,025		652
55–59	22,485	22,302		183	18,531	18,079		452
60–64	20,306	19,846		460	17,038	16,105		933
65–69	21,760	23,641	1,881		16,956	19,387	2,431	
70–74	16,938	16,772		166	13,286	13,163		123
75–79	11,302	11,282		20	9,237	9,182		55
80–84	7,048	7,009		39	6,061	6,058		3
85–89	4,296	4,297	1		4,217	4,222	5	
90–94	2,060	2,063	3		2,380	2,517	137	
95 and over	1,589	2,109	520		2,277	2,991	714	
Total 5 and over	239,762	241,041	3,160	1,881	212,422	213,883	4,497	3,036
Total of absolute values			5,041				7,533	
Net total			+1,279				+1,461	

TABLE BB.—COMPARISON OF REPORTED DEATHS AND EXPECTED DEATHS ON THE BASIS OF LIFE TABLES, BY RACE AND SEX: UNITED STATES, 1939–1941—Continued

RACE AND AGE	MALE				FEMALE			
	Reported deaths	Expected deaths	Excess of expected over reported deaths		Reported deaths	Expected deaths	Excess of expected over reported deaths	
			+	−			+	−
OTHER RACES								
5–9	242	240	------	2	216	214	------	2
10–14	222	226	4	------	213	215	2	------
15–19	420	418	------	2	414	412	------	2
20–24	475	471	------	4	479	477	------	2
25–29	471	475	4	------	399	401	2	------
30–34	561	556	------	5	283	302	19	------
35–39	670	654	------	16	312	295	------	17
40–44	676	705	29	------	292	308	16	------
45–49	758	711	------	47	328	324	------	4
50–54	894	944	50	------	342	340	------	2
55–59	1,030	1,015	------	15	345	338	------	7
60–64	1,129	1,124	------	5	371	371	------	------
65–69	1,031	1,022	------	9	387	410	23	------
70–74	804	789	------	15	376	344	------	32
75–79	667	681	14	------	321	341	20	------
80–84	443	423	------	20	252	231	------	21
85–89	248	278	30	------	158	176	18	------
90–94	131	152	21	------	104	128	24	------
95 and over	83	192	109	------	83	244	161	------
Total 5 and over	10,955	11,076	261	140	5,675	5,871	285	89
Total of absolute values			401				374	
Net total			+121				+196	

In the case of Negroes and "other races," the differences between reported and expected deaths are larger, and the comparison shows about the same relationships, regardless of how the expected deaths are computed. The method used in the case of white lives seemed, however, entirely suitable, and was therefore adopted. Table BB shows, for both Negro males and Negro females, a very large excess of expected over reported deaths in the age group 65–69, which is offset only to a small extent by deficiencies in the neighboring age groups. This is because the expected deaths were computed on the basis of populations as actually reported, while the rates of mortality are based on a redistribution by age of the population and deaths between ages 55 and 70. This redistribution was made in the belief that a substantial number of persons actually between ages 55 and 65 had been reported at ages between 65 and 70. If this is true, the expected deaths for the entire 15-year age period would be greatly overstated, because the rates of mortality are much higher at the ages incorrectly given than at the true ages of the groups affected by this error. Table BC shows how the comparison would be altered if based on the redistributed populations and deaths, and indicates that the calculated rates of mortality conform satisfactorily to the redistributed data.

The traditional procedure for testing the smoothness of the graduation of a series of rates of mortality calls for examination of the third differences of the graduated rates. If these are reasonably small and change sign fairly often, the smoothness of the graduation is considered satisfactory. The sum of the absolute values of the third differences over some specified range of ages is often taken as a criterion of smoothness. It is not, however, entirely clear why third differences, rather than differences of some other order, should always be used for this purpose; and in fact, there are strong arguments, at least from a theoretical standpoint, to support the view that the most appropriate order of differences to be so used depends on the characteristics of the particular data, and on the graduation formula employed. For example, in connection with the life tables in this volume, it can reasonably be argued that fourth differences are more suitable at ages 32 and above.

TABLE BC.—COMPARISON OF ASSUMED AND EXPECTED DEATHS FOR NEGROES AT AGES 50 TO 74, BASED ON REDISTRIBUTED POPULATIONS AND DEATHS: UNITED STATES, 1939–1941

AGE	MALE				FEMALE			
	Assumed[1] deaths	Expected deaths	Excess of expected over assumed deaths		Assumed[1] deaths	Expected deaths	Excess of expected over assumed deaths	
			+	−			+	−
50–54	25,041	24,367	------	674	20,677	20,035	------	642
55–59	23,335	23,352	17	------	19,162	19,182	20	------
60–64	21,452	21,566	114	------	17,540	17,577	37	------
65–69	19,764	19,976	212	------	16,823	16,039	216	------
70–74	16,938	16,826	------	112	13,286	13,202	------	84
Total 5 and over[2]	239,762	240,208	1,622	1,176	212,422	213,159	2,339	1,602
Total of absolute values			2,798				3,941	
Net total			+446				+737	

[1] Redistributed by age as described on p. 111.
[2] Using the values in this table for ages 50 to 74.

The argument is based on the fact that the interpolation formula employed above age 32 (Jenkins' fifth difference modified formula) has the property of reproducing a third degree curve. In other words, if it should happen that the guiding values at quinquennial ages were exactly the values of some third degree polynomial for the corresponding ages, then all the interpolated values would also be the corresponding values of the same polynomial. This implies that when a third degree curve can be fitted to the guiding values, such a curve constitutes an entirely satisfactory graduation, and does not require adjustment. Now, the third differences of a third degree polynomial are constant; therefore, they need not be small, and obviously do not change sign. Thus, the conventional test for smoothness employing third differences is inconsistent with the philosophy underlying the interpolation formula used. On the other hand, the fourth differences of a third degree polynomial are 0, so that there is no inconsistency in testing for smoothness by an examination of fourth differences.

The interpolation formulas used at ages under 32 have the property of reproducing second degree polynomials only, so that the same line of reasoning would justify the application of a third-difference test for smoothness. Table BD gives both the third and fourth differences of the rates of mortality for each of the six single classes of the population for ages 4 to 87, in-

clusive. The rates for ages under 5 were not graduated, but age 4 is included in the table because the value of q_4 was used to secure smooth junction with the rates for subsequent ages. As the method used in extrapolating mortality rates at the old ages resulted in employing a single third degree curve for all ages above 87, the mortality rates at these ages do not need to be tested for smoothness.

The range of ages covered by the table has been divided into three intervals of 28 ages each, for which separate totals are shown in table BD. The first of these intervals, including ages 4 to 31, is precisely the area in which it was argued on theoretical grounds that a criterion of smoothness based on third differences is appropriate. In general, it appears that in the two younger age intervals the differences of both orders change sign frequently, and the sum of the absolute values is satisfactorily small in both cases, being somewhat smaller for third differences than for fourth differences. However, in the oldest age interval, 60 to 87, the third differences show a marked tendency to form clusters of positive and negative values, and the sums of their absolute values are large, so that the graduation would probably be rejected as not sufficiently smooth if strict reliance were placed on third differences as the criterion of smoothness. On the other hand, the fourth differences in this interval change sign frequently and have small numerical values. Hence, on the basis of fourth differences, the smoothness would be judged satisfactory throughout.

TABLE BD.—THIRD AND FOURTH DIFFERENCES OF GRADUATED RATES OF MORTALITY,[1] AGES 4 TO 87: UNITED STATES, 1939–1941

PART I—WHITE

AGE (x)	MALE				FEMALE			
	$10^5\Delta^3 q_x$		$10^5\Delta^4 q_x$		$10^5\Delta^3 q_x$		$10^5\Delta^4 q_x$	
	+	−	+	−	+	−	+	−
4	3			5		1		−
5		2	4		−	−	−	−
6	2			4	−	−	−	−
7		2	3		−	−		1
8	1		−	−		1	1	
9	1			2	−	−	1	
10		1	3		1		−	−
11	2			4	1			4
12		2		2		3	3	
13		4	4		−	−		2
14	−	−	1			2	2	
15	1			2	−	−	2	
16		1	2		2			4
17	1			3		2	3	
18		2	2		1			2
19	−	−		1		1	2	
20		1	1		1			3
21	−	−	2			2	4	
22	2			1	2			2
23	1		3		−	−	1	
24	4			6	1			1
25		2	1		−	−		1
26		1	2			1	2	
27	1			2	1			1
28		1	3		−	−	1	
29	2			3		1	3	
30		1	1		2			4
31	−	−	−	−		2	4	
32	−	−	1		2			4
33	1			1		2	5	
34	−	−		1	3			6
35		1	3			3	6	
36	2			2	3			4
37	−	−	−	−		1	2	
38	−	−	1		1			2
39	1			2		1	3	
40		1	3		2			3
41	2			4		1	2	
42		2	5		1			2
43	3			6		1	1	
44		3	5		−	−	−	−
45	2			2	−	−	1	
46	−	−	2		1		−	−
47	2			3	1			2
48		1	3			1	3	
49	2			2	2			1
50	−	−	1		1			2
51	1			2		1	4	
52		1	1		3			4
53	−	−	−	−		1	3	
54	−	−		1	2			2
55		1	3		−	−	2	
56	2			1			2	2
57	1		1				−	−
58	2			1			1	1
59	1		1				2	3
60	2		−	−		1	7	
61	2		2				6	4
62	4			1			2	2
63	3		−	−			4	1
64	3		1				5	2
65	4			1			3	−
66	3		3				3	−
67	6			3			3	1
68	3		2				4	3
69	5			2			1	3
70	3			3			4	4
71	−	−	1				−	2
72	1			3			2	3
73		2	2			1		2
74	−	−	−	−			1	−
75	−	−	3				1	2
76	3		1				3	2
77	4			2			5	2
78	2		2				3	2
79	4			2			5	5
80	2			8			−	1
81		6	−	−		1		8
82		6		2		7	2	
83		8	3			5		−
84		5		4		5		−
85		9	4			5		−
86		5		1		5	2	
87		6	1			3		2
Total 4–31	21	20	32	35	12	16	30	25
Total of absolute values	41		67		28		55	
Net total	+1		−3		−4		+5	
Total 32–59	22	10	30	28	27	12	34	37
Total of absolute values	32		58		39		71	
Net total	+12		+2		+15		−3	
Total 60–87	54	47	25	32	55	33	28	34
Total of absolute values	101		57		88		62	
Net total	+7		−7		+22		−6	
Total 4–87	97	77	87	95	94	61	92	96
Total of absolute values	174		182		155		188	
Net total	+20		−8		+33		−4	

[1] Rates were taken to the nearest fifth decimal place and multiplied by 10^5.

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TABLE BD.—THIRD AND FOURTH DIFFERENCES OF GRADUATED RATES OF MORTALITY,[1] AGES 4 TO 87: UNITED STATES, 1939–1941—Continued

PART II—NEGRO

AGE (x)	MALE				FEMALE			
	$10^6\Delta^3q_x$		$10^5\Delta^4q_x$		$10^6\Delta^3q_x$		$10^5\Delta^4q_x$	
	+	−	+	−	+	−	+	−
4		–		1	1		1	
5	1		2		2			2
6	1			1		–	2	
7	–		–		2			1
8	–		–		1			2
9	–		2			1	9	
10	2			1	8			9
11	1			5		1		9
12		4	1			10	1	
13		3	3			9	–	
14	–		1			9	8	
15	1		3			1	8	
16	4			12	7			7
17		8	5		–		1	
18		3		4	1		–	
19		7	4		1			2
20		3	7			1		2
21	4		1			3	8	
22	5			2	5			1
23	3		3		4			2
24	6			7	2		–	
25		1		3	2			6
26		4	6			4		5
27	2			2	1			1
28	–		1		–		1	
29	1			1	1			2
30	–			1		1	3	
31		1	3		2			6
32	2			2		4	6	
33	–			1	2			3
34		1	1			1	–	
35	–		4			1	3	
36	4			5	2		–	
37		1	4		2		–	
38	3			2	2		–	
39	1		2		2		–	
40	3			6	2			4
41		3	1			2	1	
42		2	2			1	–	
43	–			3		1		2
44		3	3			3	4	
45	–			3	1			4
46		3	4			3	6	
47	1			3	3			5
48		2	2			2	3	
49	–			2	1			1
50		2	2		–			2
51	–			1		2		1
52		1	1			3	1	
53	–			2		2	–	
54		2	2			2		1
55	–		3			3	6	
56	3			–	3			–
57	3			1	3			1
58	2		3		2			1
59	5			4	3			1
60	1			–	2			–
61	1			–	2			2
62	1			–		–		–
63	1			2		–		1
64		1	4		1			–
65	3		3		1			4
66	6		2		5			1
67	8		1		6			3
68	9			1	3			4
69	8			3	7			5
70	5			6	2			5
71		1		7		3		3
72		8	5			6		1
73		3		3		7		1
74		6		–		6		3
75		6		2		3		7
76		8		–	4			–
77		8		3	4			4
78		11	4		8			3
79		7	2		5			2
80		5	13		7			4
81	8		6		3			3
82	14			2	6			2
83	12		2		4			–
84	14			2	4			2
85	12			1	6			2
86	11			2	4			1
87	9		3		5			1
Total 4–31	30	35	42	40	40	40	47	52
Total of absolute values	65		82		80		99	
Net total	−5		+2		0		−5	
Total 32–59	27	20	34	35	28	30	31	25
Total of absolute values	47		69		58		56	
Net total	+7		−1		−2		+6	
Total 60–87	123	64	45	34	89	25	33	31
Total of absolute values	187		79		114		64	
Net total	+59		+11		+64		+2	
Total 4–87	180	119	121	109	157	95	111	108
Total of absolute values	299		230		252		219	
Net total	+61		+12		+62		+3	

[1] Rates were taken to the nearest fifth decimal place and multiplied by 10^6.

TABLE BD.—THIRD AND FOURTH DIFFERENCES OF GRADUATED RATES OF MORTALITY,[1] AGES 4 TO 87: UNITED STATES, 1939–1941—Continued

PART III—OTHER RACES

AGE (x)	MALE $10^5\Delta^3 q_x$ +	MALE $10^5\Delta^3 q_x$ −	MALE $10^5\Delta^4 q_x$ +	MALE $10^5\Delta^4 q_x$ −	FEMALE $10^5\Delta^3 q_x$ +	FEMALE $10^5\Delta^3 q_x$ −	FEMALE $10^5\Delta^4 q_x$ +	FEMALE $10^5\Delta^4 q_x$ −
4		2	2			4	1	
5	–	–	–			3	1	
6	–	–		3		2	–	–
7		3	5			2		3
8	2			5		5	5	
9		3	8		–	–	1	
10	5			4	1		2	
11	1			7	3			8
12		6		2		5		1
13		8	5			6	2	
14		3	2			4	6	
15		1	6		2		2	
16	5			7	4			9
17		2		2		5	2	
18		4	2			3		1
19		2		3		4	2	
20		5	7			2	6	
21	2		4		4			2
22	6		2		2			2
23	8			1	–			4
24	7			8	4			6
25		1		1		2	–	–
26		2		1		2	5	
27		3	2		3			2
28		1		3	1			1
29		4	4		–	–	2	
30	–	–	1		2			2
31	1		1		–	–	–	–
32	2			3	–	–	2	
33		1	3		2			1
34	2			1	1			1
35	1			2	–	–	–	–
36		1	2		–	–	–	–
37	1			1	–	–	–	–
38	–	–		1	–	–		1
39		1	3			1	2	
40	2			2	1			2
41	–	–	1			1	5	
42	1			2	4			4
43		1	3		–	–	2	
44	2			1	2			2
45	1			3	–	–	1	
46		2	1		1			2
47		1	1			1	1	
48	–	–		2	–	–	–	–
49		2	1		–	–		1
50		1	6			1	–	–
51	5			4		1	–	–
52	1		5			1		1
53	6			4		2	3	
54	2		1		1			3
55	3			4		2	3	

AGE (x)	MALE $10^5\Delta^3 q_x$ +	MALE $10^5\Delta^3 q_x$ −	MALE $10^5\Delta^4 q_x$ +	MALE $10^5\Delta^4 q_x$ −	FEMALE $10^5\Delta^3 q_x$ +	FEMALE $10^5\Delta^3 q_x$ −	FEMALE $10^5\Delta^4 q_x$ +	FEMALE $10^5\Delta^4 q_x$ −
56		1		4	1		–	–
57		5	2		1		–	–
58		3	1		1		–	–
59		2		1	1		1	
60		3	8		2		–	–
61	5		2		2			2
62	7			2	–	–	4	
63	5		2		4			3
64	7			1	1		3	
65	6			3	4		1	
66	3		–	–	5		3	
67	3		2		8		1	
68	5			3	9			2
69	2			2	7			5
70	–	–		10	2			17
71		10		6		15		5
72		16	1			20		2
73		15	1			22	2	
74		14	5			20	7	
75		9	20			13	31	
76	11		6		18		9	
77	17		–	–	27			1
78	17			1	26			1
79	16		2		25		3	
80	18			5	28			9
81	13		–	–	19		3	
82	13		–	–	22			1
83	13		–	–	21			1
84	13		2		20		1	
85	15			4	21			1
86	11		3		20		2	
87	14			1	22			1
Total 4–31	37	50	51	47	26	49	41	37
Total of absolute values	87		98		75		74	
Net total	−13		+4		−23		8+	
Total 32–59	29	21	30	35	16	10	20	18
Total of absolute values	50		65		26		38	
Net total	+8		−5		+6		+2	
Total 60–87	214	67	54	38	313	90	70	51
Total of absolute values	281		92		403		121	
Net total	+147		+16		+223		+19	
Total 4–87	280	138	135	120	355	149	131	106
Total of absolute values	418		255		504		237	
Net total	+142		+15		+206		+25	

[1] Rates were taken to the nearest fifth decimal place and multiplied by 10^5.

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As regards the relative magnitude of third and fourth differences in the two younger age intervals, it should be pointed out that rounding errors contribute the greater part of the numerical values of differences at these ages, and their effect becomes more marked as the order of differences increases. This point is illustrated in table BE, which shows both the third and fourth differences obtained from the mortality rates for white males by retaining all the seven decimal places to which these rates were originally computed. Comparison of table BD and table BE shows that the absolute values of the differences are greatly reduced by using the two additional decimal places. (Note that figures in table BD must be multiplied by 100 to make them comparable with those of table BE.) The reduction in the sum of the absolute values over the entire age range shown amounts to 23 percent in the case of third differences and 74 percent in the case of fourth differences. Table BE shows that, in each of the three age subdivisions, the sum of the absolute values is less for fourth than for third differences when the effect of rounding is eliminated. It also shows that the third differences are in reality predominantly positive and do not change sign at all frequently above age 30. Therefore, the mortality rates would not have been considered satisfactory above age 30 if third differences had been taken as the criterion. This seems to reinforce the suggestion made earlier that the order of differences to be employed for this purpose should be varied according to the characteristics of the basic data and the graduation procedure used.

TABLE BE.—THIRD AND FOURTH DIFFERENCES OF GRADUATED RATES OF MORTALITY [1] FOR WHITE MALES, AGES 4 TO 87: UNITED STATES, 1939–1941

AGE (x)	$10^7\Delta^3 q_x$ +	$10^7\Delta^3 q_x$ −	$10^7\Delta^4 q_x$ +	$10^7\Delta^4 q_x$ −
4	8			4
5	4		2	
6	6		1	
7	7			2
8	5		2	
9	7		124	
10	131			134
11		3		195
12		198		2
13		200	3	
14		197	251	
15	54		77	
16	131			211
17		80		-
18		80		1
19		81		43
20		124	178	
21	54		131	
22	185		1	
23	186			2
24	184			204
25		20		100
26		120	146	
27	26			1
28	25		1	
29	26			12
30	14			7
31	7		8	
32	15		3	
33	18			4
34	14		7	
35	21		17	
36	38		5	
37	43		-	-
38	43			1
39	42			6
40	36			21
41	15			6
42	9			1
43	8			1
44	7		15	
45	22		49	
46	71		10	
47	81		4	
48	85			4
49	81			14
50	67			75
51		8		11
52		19		8
53		27	9	
54		18	19	
55	1		112	
56	113		23	
57	136		6	
58	142			6
59	136		33	
60	169		122	
61	291		32	
62	323			4
63	319		2	
64	321		20	
65	341		72	
66	413		21	
67	434			3
68	431		1	
69	432			79
70	353			325
71	28			80
72		52	4	
73		48		6
74		54	68	
75	14		261	
76	275		66	
77	341			2
78	339		-	-
79	339			171
80	168			691
81		523		173
82		696	-	-
83		696	1	
84		695	18	
85		677	87	
86		590	22	
87		568		4
Total 4–31	1,060	1,103	925	918
Total of absolute values	2,163		1,843	
Net total	−43		+7	
Total 32–59	1,244	72	312	158
Total of absolute values	1316		470	
Net total	+1,172		+154	
Total 60–87	5,331	4,599	797	1,538
Total of absolute values	9,930		2,335	
Net total	+732		−741	
Total 4–87	7,635	5,774	2,034	2,614
Total of absolute values	13,409		4,648	
Net total	+1,861		−586	

[1] Rates were taken to the nearest seventh decimal place and multiplied by 10^7.

C. CALCULATION OF OTHER LIFE TABLE FUNCTIONS

Calculation of l_x and d_x

The values of l_x and d_x were obtained by successive multiplication and subtraction commencing with a radix of 100,000 at birth, by the usual elementary formulas:

$$\left.\begin{aligned} d_x &= l_x q_x \\ l_{x+1} &= l_x - d_x \end{aligned}\right\} \qquad (37)$$

Values of q_x were used to seven decimal places, and three decimals were retained in the l_x and d_x values. At the very old ages, the number was increased, so as to give seven significant figures in every case. Although the published tables are terminated, in each case, at that age where l_x, taken to the nearest integer, first becomes 0, nevertheless, for reasons which will be explained later,[49] it was desired to have l_x values computed further for use in calculating the values of $\mathring{e}_x$, the average future lifetime. Accordingly, the process was continued so long as l_x values in excess of .0025 were obtained.

In the life tables for combinations of classes, this process could be carried only to age 93, as interpolated rates of mortality were not obtained beyond age 92. These tables were completed by a special process designed to avoid inconsistencies between the q_x values for the combination and those for the component classes. The value of l_{92} in the combined table was divided into as many parts as there were separate classes included, the division being made in proportion to the denominators used in computing the pivotal values of q_{92} for the corresponding life tables. Each separate part of the l_{92} figures was then carried forward by applying the mortality rates for the corresponding separate class, the results being summed to obtain the subsequent l_x values for the combined table. This is equivalent to expressing the value of l_x for the combined table as a weighted sum of the l_x values from the separate life tables for the component parts. Using the latter process shortens the arithmetic. For example, let $l_x^{(1)}$, $l_x^{(2)}$, etc., denote the l_x values in the separate life tables for the component classes, let l_{92}', l_{92}'', etc., denote the corresponding parts into which l_{92} for the combined table is divided, and let $w_1 = l_{92}^{(1)}/l_{92}'$, $w_2 = l_{92}^{(2)}/l_{92}''$, etc. Then, at ages above 92, l_x for the combined table is given by

$$l_x = w_1 l_x^{(1)} + w_2 l_x^{(2)} + \ldots$$

The q_x values were then obtained by the formula:

$$q_x = 1 - \frac{l_{x+1}}{l_x}$$

In the published tables, all the l_x values have been rounded to the nearest integer, while the published d_x values have been obtained by differencing the published l_x column, and, for that reason, differ slightly in some cases from the figures which would result from rounding the d_x values as originally calculated.

In view of the necessarily rough nature of the adjustments made in the data for subdivisions of the first year of life,[50] it was not felt that much refinement was justified in calculating the life table functions for these subdivisions. Accordingly, the value of d_0 obtained for the main life table was merely divided among the various age periods within the first year in proportion to the numbers of deaths in each age period during the 3 years (after adjustment for underreporting, and smoothing of the "other races" data). The intermediate l_x values were then obtained by subtraction, and the mortality rates by division.

Calculation of L_x

At ages 5 and over, it was considered sufficiently accurate to assume that

$$L_x = \frac{1}{2}(l_x + l_{x+1})$$

At ages 1 to 4, L_x was obtained by the formula:

$$L_x = l_x - (1 - f_x)d_x = l_{x+1} + f_x d_x$$

where f_x denotes the separation factor previously referred to.[51] In justification of this formula, it may be pointed out that, in the hypothetical stationary population, L_x represents the number of persons at age x last birthday who would be enumerated by a census taken at any time. Naturally this is equal to the number who have reached exact age x during the preceding year less those who have died in the meantime: that is, l_x less a part of d_x. If the incidence of deaths during a calendar year is the same in the stationary population as in the actual experience, the fraction of d_x to be taken is[52] ${}_aD_x/D_x = 1 - f_x$.

The value of L_0 was obtained by making separate calculations for the various subdivisions of the first year of life and adding. The process used is most readily explained by adopting the point of view which considers L_0 as the total number of person-years of life lived, between birth and exact age 1, by l_0 infants born alive. The function $T_x - T_{x+t}$ for a particular age interval, x to $x+t$, within the first year of life represents the number of person-years lived between these exact ages by the survivors of l_0 live births. This would be given by

$$T_x - T_{x+t} = tl_x - \frac{1}{2}t_t d_x = \frac{1}{2}t(l_x + l_{x+t}) \qquad (38)$$

on the assumption that those who die between ages x and $x+t$ live, on the average, half the period. It was necessary to express the values of t as fractions of a year,

[49] See p. 134.

[50] See p. 108

[51] See p. 117

[52] See p. 115.

on the same assumption previously made[53] that the total length of the year was 365¼ days. The value of L_0 was taken as the sum of the values of $T_x - T_{x+t}$ for all subdivisions of the first year of life.

With the exception of L_0, all the values of L_x were retained to not less than one place of decimals and to not less than six significant figures, for use in subsequent calculations. Values of $T_x - T_{x+t}$ for subdivisions of the first year of life were rounded to the nearest integer before addition. Values of L_x were obtained in each case up to, but not including the last age for which l_x was computed, but are shown in the published tables only when the value is at least 1 to the nearest integer. The published L_x values (except in the first year of life) were obtained by differencing the published T_x column, and therefore differ slightly in some cases from the figures which would result from rounding the originally calculated L_x values directly.

Calculation of T_x and $\mathring{e}_x$

Values of T_x were obtained by accumulating the computed values of L_x from the oldest age available down to age 0. The values of $T_x - T_{x+t}$ for subdivisions of the first year of life were added one by one, proceeding backward from age 1, in order to obtain T_x values within the first year. In the calculation of $\mathring{e}_x$ each value of T_x was used to the smallest number of decimal places retained in any of the L_x values included in it. However, the published values of T_x have all been rounded to the nearest integer.

The values of $\mathring{e}_x$, carried out to two decimal places in all cases, were computed by the formula:

$$\mathring{e}_x = \frac{T_x}{l_x}$$

the l_x values being used to the full number of decimal places originally retained. In order to obtain plausible values of $\mathring{e}_x$ at the oldest ages shown in the published tables, the actual computation of l_x values was continued so long as the values obtained exceeded .0025. In arriving at this limit, it was reasoned that the ages for which figures appear in the tables are those for which l_x is at least 1 to the nearest integer: that is, the exact value is at least .5. Therefore, accuracy to two decimal places will be secured, in most cases, by using, in the computation of T_x, all values of l_x which, when divided by .5, give a quotient of at least ½ of .01, or .005: that is, all values of l_x in excess of .0025.

[53] See p. 108.

APPENDIX

A. METHOD USED IN TESTING THE APPROPRIATENESS OF GLOVER'S SEPARATION FACTORS

It was stated in part V[1] that in dividing the deaths D_x occurring in each calendar year at ages 1 to 4 into the two parts ${}_aD_x$ and ${}_bD_x$ according to the year of birth, it was necessary to employ the same separation factors f_x used by Glover in connection with the 1910 life tables, as no statistics were available on which a new determination could be based. However, the appropriateness of Glover's factors for use with the 1939–1941 data was first tested in the manner described below.

Let $\theta_{x+t}dt$ denote the number of deaths which occur during a specified period of observation (assumed to be an integral number of years) between age $x+t$ (x being an integer and t a fraction) and age $x+t+dt$, let D_x denote the total deaths during the period at age x last birthday, and let K_{x+t} denote the total deaths at all ages under $x+t$, so that $K_x=\sum_{x=0}^{x-1}D_x$. It follows immediately that

$$K_{x+t}=\int_0^{x+t}\theta_z\,dz$$

therefore, $\frac{d}{dt}K_{x+t}=\theta_{x+t}$. On the assumption that the $\theta_{x+t}dt$ deaths occurring at exact age $x+t$ are uniformly distributed over each of the calendar years covered, these would include $t\theta_{x+t}dt$ deaths where exact age x was attained in the calendar year preceding the year of death, and $(1-t)\theta_{x+t}dt$ deaths where exact age x was attained in the year of death. The total number of deaths in the calendar year following the attainment of exact age x, but before attaining age $x+1$, which may be denoted by ${}_bD_x$, would therefore be:

$$\int_0^1 t\theta_{x+t}dt$$

Considering this expression to be of the form $\int UdV$, where $U=t$ and $dV=\theta_{x+t}dt$, and integrating by parts gives:

$${}_bD_x=K_{x+1}-\int_0^1 K_{x+t}dt$$

Dividing by D_x gives an average separation factor for the entire period of observation, which may be represented by f_x. Thus,

$$f_x=\frac{1}{D_x}\left(K_{x+1}-\int_0^1 K_{x+t}dt\right) \qquad (39)$$

[1] See p. 118.

Values of the expression (39) were obtained for ages 1, 2, and 3 by using the deaths of the 3-year period 1939–1941 and employing an approximate integration formula to evaluate the integral. In the case of ages 2 and 3, the formula used for this purpose was the symmetrical formula:

$$\int_0^1 K_{x+t}dt=\frac{1}{24}(-K_{x-1}+13K_x+13K_{x+1}-K_{x+2})$$

which is obtained by fitting a third degree polynomial to four consecutive integral values of K_x. When this expression is substituted in formula (39), the latter reduces to:

$$f_x=\frac{1}{2}-\frac{D_{x-1}-D_{x+1}}{24D_x}$$

This formula was not considered suitable for age 1 because of the very large difference between K_0 and K_1, and accordingly the following unsymmetrical formula was derived by fitting a third degree polynomial to the values of $K_{\frac{5}{12}}$, K_1, K_2, and K_3:

$$\int_0^1 K_{1+t}dt=\frac{1}{180}(-64K_{\frac{5}{12}}+165K_1+84K_2-5K_3)$$

The values so obtained are shown in table BF.

TABLE BF.—ESTIMATED SEPARATION FACTORS FOR AGES 1, 2, AND 3, OBTAINED BY APPROXIMATE INTEGRATION: UNITED STATES, 1939–1941

AGE	Separation factors used by Glover	SEPARATION FACTORS OBTAINED BY APPROXIMATE INTEGRATION					
		White		Negro		Other races	
		Male	Female	Male	Female	Male	Female
1	0.410	0.399	0.404	0.387	0.392	0.415	0.406
2	.470	.450	.446	.431	.434	.428	.431
3	.480	.474	.474	.464	.470	.448	.450

In interpreting these results, it must be remembered that the values which are being compared with Glover's values have been obtained by a method which is not only rough, but is also based on assumptions which are likely not to be exactly fulfilled. It may be mentioned also that a moderate change in the values of the separation factors affects the value of the mortality rate only minutely. Therefore, the results obtained are considered satisfactorily close to Glover's values, except perhaps in the numerically unimportant group of "other races," where the data are too scanty, in any case, to yield reliable results.

B. DERIVATION OF THE SPECIAL EXTENSIONS OF THE KARUP-KING FORMULA USED FOR INTERPOLATION OF MORTALITY RATES AT AGES 5 TO 11 AND 26 TO 31

As explained on pages 125 and 126 of part V, the rates of mortality in the various life tables were interpolated by Jenkins' modified fifth difference interpolation formula at ages 32 and over, and by the Karup-King formula at ages 12 to 27, while the rates for ages 0 to 4 were calculated directly from detailed statistics for the individual years of age. The rates for ages 5 to 11 were interpolated from a special third degree curve determined so as to reproduce the calculated rates of mortality at ages 4, 7, and 12, and to have the same first derivative at age 12 as the Karup-King curve used for interpolation in the age interval 12 to 17. Similarly, the rates for ages 28 to 31 were interpolated from a special third degree curve determined so as to have the same ordinate and the same first derivative at age 27 as the Karup-King curve used for interpolation in the age interval 22 to 27, and the same ordinate and first derivative at age 32 as the Jenkins curve employed in the interval 32 to 37. By a suitable artificial extension of the series of pivotal rates of mortality, it was possible to simplify the numerical work by regarding these two special third degree curves as merely continuations of the interpolation by the Karup-King formula. It is the purpose of this section to explain how these artificial extensions were arrived at.

If the Karup-King formula (formula (35), p. 126) were to be used in the regular way in the age interval 7 to 12, the formula would be:

$$q_{7+t}=\frac{s}{5}q_7+\frac{s^2(s-5)}{250}\delta^2q_7+\frac{t}{5}q_{12}+\frac{t^2(t-5)}{250}\delta^2q_{12} \qquad (40)$$

where $s=5-t$, and the requirements as to reproduction of the calculated values of q_7 and q_{12} and equality of the derivatives at age 12 would be automatically satisfied, no matter what value of δ^2q_7 is used. Therefore, it is proposed to use instead of the actual value of δ^2q_7 an artifical value ϵ determined so that the formula will reproduce the value of q_4. Setting $t=-3$ in formula (40) then gives:

$$q_4=1.6q_7+.768\epsilon-.6q_{12}-.288\delta^2q_{12}$$

Solving for ϵ and, at the same time, substituting $\delta_2q_{12}=q_{17}-2q_{12}+q_7$ gives:

$$\epsilon=\frac{1}{96}(125q_4-164q_7+3q_{12}+36q_{17}) \qquad (41)$$

Formula (40), with δ^2q_7 replaced by a value of ϵ computed from formula (41) was used not only in the interval 7 to 12, but for ages 5 and 6 as well.

In deriving the special formula used between ages 27 and 32, the pivotal rates of mortality will be denoted by "Q" and the interpolated rates (including the pivotal rates at ages 22 and 27 reproduced by the Karup-King formula and the adjusted rates obtained at the pivotal ages 32, 37, and 42 by Jenkins' formula) will be denoted by "q." The special formula for interpolation between 27 and 32 can be written in the Karup-King form:

$$q_{27+t}=\frac{s}{5}q_{27}+\frac{s^2(s-5)}{250}\delta^2q_{27}+\frac{t}{5}q_{32}-\frac{t^2(5-t)}{250}\epsilon \qquad (42)$$

where ϵ denotes an artificial value to be used instead of δ^2q_{32}. The conditions as to equality of ordinates and derivatives at age 27 and equality of ordinates at age 32 are automatically satisfied, regardless of the value of ϵ. Therefore, ϵ will be determined so as to secure equality of the derivatives at age 32. Differentiating formula (42) with respect to t and setting $t=5$ gives:

$$q_{32}'=-\frac{1}{5}q_{27}+\frac{1}{5}q_{32}+\frac{1}{10}\epsilon$$

Since $q_{27}=Q_{27}$ and

$$q_{32}=Q_{32}-\frac{1}{36}\delta^4Q_{32}$$

this may be written:

$$q_{32}'=-\frac{1}{5}Q_{27}+\frac{1}{5}Q_{32}-\frac{1}{180}\delta^4Q_{32}+\frac{1}{10}\epsilon \qquad (43)$$

On the other hand, the Jenkins formula to be used for interpolation between 32 and 37 may be written as

$$q_{32+t}=\frac{s}{5}\left(Q_{32}-\frac{1}{36}\delta^4Q_{32}\right)+\frac{s(s^2-25)}{750}\left(\delta^2Q_{32}-\frac{1}{6}\delta^4Q_{32}\right)+$$
$$\frac{t}{5}\left(Q_{37}-\frac{1}{36}\delta^4Q_{37}\right)+\frac{t(t^2-25)}{750}\left(\delta^2Q_{37}-\frac{1}{6}\delta^4Q_{37}\right)$$

Differentiating with respect to t and setting $t=0$ gives:

$$q_{32}'=-\frac{1}{5}Q_{32}-\frac{1}{15}\delta^2Q_{32}+\frac{1}{60}\delta^4Q_{32}+\frac{1}{5}Q_{37}-\frac{1}{30}\delta^2Q_{37} \qquad (44)$$

Equating formulas (43) and (44) and solving for ϵ gives:

$$\epsilon=2Q_{27}-4Q_{32}-\frac{2}{3}\delta^2Q_{32}+\frac{2}{9}\delta^4Q_{32}+2Q_{37}-\frac{1}{3}\delta^2Q_{37}$$

Upon substituting the expressions in terms of ordinates for the differences appearing in this formula, it becomes:

$$\epsilon=\frac{1}{9}(2Q_{22}+4Q_{27}-15Q_{32}+10Q_{37}-Q_{42})$$

This gives the value of ϵ to be employed in formula (42).

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