

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

UNITED STATES ABRIDGED
LIFE TABLES

1919-1920

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Populations for which life tables were computed:

WHITE POPULATIONS IN—

Aggregate of twenty-seven states and the District of Columbia.

The original registration states.

The separate states of—

California.	Kentucky.	Missouri.	Oregon.	Utah.
Connecticut.	Maryland.	New Jersey.	Pennsylvania.	Virginia.
Illinois.	Massachusetts.	New York.	South Carolina.	Washington.
Indiana.	Michigan.	North Carolina.	Tennessee.	Wisconsin.
Kansas.	Minnesota.	Ohio.		

Aggregate of fourteen cities.

The separate cities of—

Baltimore.	Chicago.	Los Angeles.	Philadelphia.	San Francisco.
Boston.	Cleveland.	New Orleans.	Pittsburgh.	Washington, D. C.
Buffalo.	Detroit.	New York.	St. Louis.	

NEGRO POPULATIONS IN—

States with less than 4 per cent Negro population.

States with more than 5 per cent Negro population.

Twelve large cities.

Original registration states.

HAWAIIAN POPULATIONS—

All races combined.

Japanese race.

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LETTER OF TRANSMITTAL.

DEPARTMENT OF COMMERCE,
BUREAU OF THE CENSUS,
Washington, D. C., June 30, 1922.

SIR:

I transmit herewith United States Abridged Life Tables, 1919-1920. These life tables, 92 in all, are based on the 1920 enumerated population and on the births and deaths which occurred during the calendar years 1919 and 1920 in 27 registration states, the District of Columbia, and the Territory of Hawaii, and relate to about 74 per cent of the total population of the United States and this Territory.

The preparation of these life tables was approved by the Census Advisory Committee, in order that 1919-1920 life tables might be quickly available as a supplement to the United States Life Tables, 1890, 1901, 1910, and 1901-1910, recently prepared in the Bureau of the Census by James W. Glover, professor of mathematics and insurance in the University of Michigan.

These abridged life tables were prepared under the direction of Dr. William H. Davis, chief statistician for vital statistics. The construction of these life tables was under the immediate supervision of Miss Elbertie Foudray, expert special agent of the Bureau of the Census, who selected the methods used, or devised them when necessary, and submitted methods and text for approval to Prof. James W. Glover, to whom acknowledgment is made. Acknowledgment is also made to Mr. Robert Henderson, actuary of the Equitable Life Assurance Society of the United States, who read the text and made the suggestions mentioned on pages 31, 32, and 34.

Respectfully,

W. M. STEUART,
Director of the Census.

HON. HERBERT HOOVER,
Secretary of Commerce.

UNITED STATES ABRIDGED LIFE TABLES: 1919-1920.

INTRODUCTION.

GENERAL STATEMENTS.

1. This third official publication on life tables issued by the Bureau of the Census is called *abridged* life tables because of the abridged process of constructing them and because they show life table values, such as rates of mortality and expectations of life, only at every fifth year of age instead of at each year of age.

Four life table functions are shown: Rate of mortality per thousand, number of survivors to each age out of 100,000 born alive, number of deaths in each age interval out of 100,000 born alive, and complete expectation of life in years. Annual rates of mortality are given for the following ages in years: 0, 1, 2, 7, 12, 17, 22, and so on at 5-year intervals up to 92. These rates of mortality are for the midyear of the quinquennial age groups 5-9, 10-14, 15-19, and so on, and represent roughly the average rate for that age group. From these rates the number of survivors out of 100,000 born alive was determined at the exact ages 1, 2, 7, 12, 17, and so on, at each fifth year of age up to age 92. From the survivors the expectation of life in years was derived for these same ages. Then the number of deaths out of 100,000 born alive was determined for age intervals 0-1, 1-2, 2-7, 7-12, and so on for each quinquennial age group up to age 92-97.

Altogether the life tables relate to 74 per cent of the population of the United States, exclusive of outlying possessions, except Hawaii, as enumerated in the census of 1920. The 1910 life tables relate to about 28 per cent of the total population of the United States, of which not more than 2 per cent are Negroes. Under these circumstances, therefore, life tables for total populations and for white populations do not differ much. But in the various states and cities and other groups of population for which 1919-1920 life tables are constructed the per cent of colored population varies from 0.6 in Wisconsin to 51.4 in South Carolina. No true comparisons could be made between aggregate populations because of this varying per cent of colored population. Accordingly all the abridged life tables, except those for Hawaii, are for white or Negro populations and not for the aggregate. All the tables are also shown by sex.

To render comparison easy the values of each life table function are grouped in tables by sex. Thus all the expectations of life at every fifth year of age for white males in 23 states, 14 cities, and in 3 other large

groups, and also for 4 groups of Negro males, and for the aggregate males and the Japanese males in Hawaii, are shown in one table.

The order or rank of each value of a function at any age or in any age interval is shown by small figures in a narrow column to the right. Thus in Table 3, page 12, in the column for the age 22 years, the figure 1 in the narrow column to the right of 3.93 shows that the lowest rate of mortality at this age was among Wisconsin white males. Also the 28 in the narrow column to the right of 5.17 in the same age column shows that rates of mortality among 27 male populations were lower than that among New Jersey white males at this age.

Abridged life tables for 1919-1920 were constructed for whites and for Negroes separately in the original registration states, which is the largest area upon which United States life tables have been based heretofore. To show the change in the ten-year period, the life table values for the period 1909-1911 are in italics just below the corresponding ones for 1919-1920. The 1919-1920 rates of mortality show that there was marked improvement among white males for each age given, except 17, 27, and 92, and among white females for each age given except 17, 22, 27, and 32. See Tables 3 and 4, pages 12 to 15. The values for Negroes at the bottom of these tables show similar fluctuations at the same ages, and also some at ages 52 to 62, 72, and 82. This lack of improvement in adult years was due to the influenza epidemics of 1919 and 1920. Values taken from the life tables for the Japanese Empire for the period 1908-1913¹ are in italics just below those for the Japanese in Hawaii in 1919-1920. From these values it appears that infant mortality is much lower among the Japanese in Hawaii than in the Japanese Empire. Possibly the desire for American citizenship influences the number of births registered among Japanese in the United States territory and this may be the cause for the differences in infant mortality rates among Japanese in Japan and in the United States. But after age 27 and up to old age mortality rates among Japanese appear to be more favorable in the Empire than in Hawaii. The number of Japanese over 50 years of age in Hawaii is too small to afford reliable life table values.

As the life table functions are shown for each sex separately, Table 11 permits a comparison of the rates of

¹ *Résumé Statistique de L'Empire du Japon*, Table 14, p. 17.

mortality of the two sexes in each area and age group. This table shows the excess of the rate of mortality among males over that among females in each age group in each area. Differences in bold-faced type indicate that the rate of mortality among females is greater than that among males in that age group and area. Thus, at age 27 it will be noted that the rate of mortality among white females exceeds that among white males by 0.89 in the state of Illinois; by 1.62 in Indiana; by 2.25 in Kentucky; by 2.04 in Michigan. It will also be seen that greater mortality among females than among males is more frequent in 1919-20 than in 1909-1911.

OUTLINE OF CONTENTS.

2. This report on life tables is divided into three parts, abridged life tables, description of the process used in computing them, and the original statistics on which these life tables are based.

In Part I each of the Tables 3 to 10 shows for one sex all the values for one life table function. Table 11 shows the excess of rates of mortality among males over those among females in the same area and age group. Bold-faced figures in any age group indicate that the rate of mortality among females is greater than that among males. Figures in italics in these tables are used for the values taken from the 1909-1911 life tables for whites and Negroes in the original registration states and for the values taken from the life tables for the Japanese Empire for the period 1908-1913¹ which are given in these tables for the sake of comparison.

Part II includes a full explanation of the method used to compute these 1919-1920 abridged life tables and photographs of the actual computation by this method of an abridged life table for males in the state of New York, 1909-1911. The computation of a life table by the extended method for males in the state of New York, 1909-1911, is shown in Part VII of the United States Life Tables, 1890, 1901, 1910, and 1901-1910, and these computations by the abridged method show not only the differences between the two processes of computation but also the differences between the results obtained by the two methods when applied to the same original data. The photographs are accompanied by a detailed description of the computations shown in them.

In Part III are the three tables of original statistics on which these abridged life tables are based. The first one, Table 16, gives the statistics used which were not compiled in the Bureau of the Census, but were either copied from state reports on vital statistics, or were compiled especially for these life tables through the courtesy of the individual state departments. Discussion of the statistics shown in this table is given at the beginning of Part III, section 44. Table 17 shows the statistics used in obtaining rates of mortality up to 2 years of age. Table 18 shows the

statistics used in obtaining the rates of mortality from age 7 to last age in table.

POPULATIONS ON WHICH LIFE TABLES ARE BASED.

3. By means of these abridged life tables it was desired to obtain life table values for all parts of the United States for which reliable death statistics could be obtained, in order to study the varying mortality conditions in the different sections of the country. Accordingly not so much attention was given to the size of the population on which life tables are based as to the reliability of the death statistics available for the calendar years 1919 and 1920, and as to whether any birth statistics were available which could be used to estimate practically the same per cent of the actual number of births in each of these areas from 1916 to 1920. The largest population on which an abridged life table is based is that for aggregate white males, 37,026,026. The smallest populations are those for Hawaii, the Japanese female population in Hawaii being only 46,630. Consequently these last tables are far from smooth, but it is believed that they are reliable up to about 50 years of age. The size of the population and the number of deaths on which each life table is based are shown in Table 18, pages 62 to 71.

Fourteen tables are based on the sum of the populations in a number of states or cities. Six are for whites and eight are for Negroes. The populations on which the life tables for whites are based total 77.09 per cent of the white population of the United States exclusive of outlying possessions, while those on which the life tables for Negroes are based total 46.13 per cent of the Negro population. Four of these tables are for white males and females and for Negro males and females in the original registration states, which include the New England states, New Jersey, New York, Indiana, Michigan, and the District of Columbia. Two life tables for aggregate white males and females include the populations of the original registration states, and California, Illinois, Kansas, Kentucky, Maryland, Minnesota, Missouri, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Utah, Virginia, Washington, and Wisconsin. Two life tables are for whites in fourteen large cities: Baltimore, Boston, Buffalo, Chicago, Cleveland, Detroit, Los Angeles, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, and Washington, D. C. Life tables for Negroes in states with less than 4 per cent Negro population² are based on the Negro population in sixteen states: California, Connecticut, Illinois, Indiana, Kansas, Massachusetts, Michigan, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, Utah, Washington, and Wisconsin. Life tables for Negroes in states with more than 5 per cent Negro population² are based on the Negro population in seven states: Kentucky, Mary-

¹ *Résumé Statistique de L'Empire du Japon*, Table 14, p. 17.

² No states for which life tables were computed had between 4 and 5 per cent Negro population.

land, Missouri, North Carolina, South Carolina, Tennessee, and Virginia. Two more life tables for Negroes are based on the Negro population in twelve cities: Baltimore, Boston, Buffalo, Chicago, Cleveland, Detroit, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis, and Washington, D. C.

MORTALITY OF CHILDREN UNDER 3 YEARS OF AGE.

4. A study of the birth statistics available for these life tables showed that the number of births registered ranged from about 75 per cent to practically 100 per cent of the actual number of births. Consequently, unless corrected, it was impossible to use these birth statistics as a basis for comparing mortality under 3 years of age. The method used to obtain the computed number of births for the United States Life Tables, 1890, 1901, 1910, and 1901-1910 could not be used for the 1919-20 tables, since the deaths during the calendar years 1921 to 1923 were, of course, not available at the time the abridged life tables were prepared. Accordingly a method or plan had to be devised whereby the number of births could be determined from the statistics available at the time of the computations of the tables. Census returns for children under 1 year of age are recognized throughout the civilized world as practically always incomplete. Mr. George King says:

The number of infants alive under one year of age should closely agree with the calculated number derived from the births and deaths, there having been no time for emigration to tell, whereas the number of children alive in each of the succeeding four years of age should progressively be a little less—the difference being an increasing one—than the number calculated from the births and deaths. It is, however, seen that the census returns do not comply with these conditions, and the conclusion seems to be inevitable that a large number of infants under two years of age escaped enumeration at both the censuses of 1901 and 1911, more especially so in 1911, although why that should be it is difficult to understand. Is there any other explanation? This is a matter that is well worthy of investigation before the next census comes to be taken.¹

It was assumed that the ratio of the actual number of children under 1 year of age to the number obtained from census returns was uniform throughout the United States. To determine approximately the value of this ratio an investigation was made of the children born in Washington, D. C., during the calendar year 1919. The census returns for the District and its death records were searched for the children born there in 1919, and a form letter was sent to the parents of those children whose names did not appear either in the census schedules of January 1, 1920, or on the death records for the District for 1919. Between 500 and 600 answers to these inquiries were received and they were used as a basis for estimating the status on January 1, 1920, of the children whose names were missing from the schedules and about whom it was impossible to obtain definite information. Separate records were kept for white and Negro children, and the per cent of children whose names were missing from the census

schedules, but who were actually living in the District on January 1, 1920, was found to be much greater among Negroes than among whites.

It was then assumed that the per cent of infants whose names were missing from the census schedules for the District was constant throughout the United States, and the per cent determined was used to obtain a close approximation to the actual number of children under 1 year of age in each community on January 1, 1920. Different constants were determined for white and Negro children. The constant per cent of infants whose names were missing was taken as 9 for whites and 25 for Negroes. When a close approximation to the number of children under 1 year of age in a community on January 1, 1920, was obtained, the number of births among whites or among Negroes, which occurred in the community during the calendar year 1919 was computed by the method described in section 109, page 340, of the United States Life Tables, 1890, 1901, 1910, and 1901-1910. Next it was necessary to determine the number of births in 1920 and in 1916, 1917, and 1918, as explained in section 8, page 32. Under present birth registration it may be assumed that the ratio between the number of births registered in 1919 and the actual number of births in that year should be very nearly equivalent to similar ratios for the years immediately preceding and following 1919. Accordingly the ratio between the computed number of births, based on corrected census returns for children under 1 year of age, and the number of births registered in 1919 in each area was determined and then this ratio was applied to the number of registered births by sex in each year from 1916 to 1920, inclusive, to determine a close approximation to the actual number of births in that community in each of those years.

Owing to the fluctuations in the birth and death rates since 1916 the populations by single years of age under 3 on January 1, 1919, and January 1, 1921, could not be estimated accurately by the usual methods. The 1920 Birth Statistics for the Birth Registration Area of the United States, page 8, shows the following birth rates from 1916 through 1920 in this area for each year. In 1920 the birth registration area included nearly 60 per cent of the population in the United States.

TABLE I.—BIRTH RATES IN BIRTH REGISTRATION AREA, 1916 TO 1920.

YEAR.	Total.	White.	Colored.
1920.....	23.7	23.5	27.0
1919.....	22.3	22.1	25.2
1918.....	24.6	24.6	24.5
1917.....	24.7	24.7	24.4
1916.....	25.0	25.1	20.4

From this table it will be seen that the number of white children at each age under 3 years on January 1, 1919, was probably greater than on January 1, 1920, and the number of children between 1 and 3 years of age

¹ Supplement to the Seventy-fifth Annual Report of the Registrar-General, 1912. England and Wales. Part I. Life Tables. Section 42, page 13.

on January 1, 1920, was probably greater than on January 1, 1921. The number of children at each year of age under 3 years according to the census returns of April 15, 1910, was less than the number at the corresponding age according to the census returns of January 1, 1920. Any form of interpolation between census returns would show a gradual increase in the number of children under 3 instead of the actual fluctuation that occurred, and therefore no interpolation between census returns could be used. The method adopted for determining the populations under 3 on January 1, 1919, and January 1, 1921, is a modification of the method used for determining the number of births for the United States Life Tables of 1890, 1901, 1910, and 1901-1910, section 109, page 340.

METHOD USED IN CONSTRUCTING ABRIDGED LIFE TABLES.

5. In deciding the method to be used for the construction of abridged life tables for the United States various methods were studied closely, and the one set forth by Mr. George King on pages 26 to 33 of the Supplement to the Seventy-fifth Annual Report of the Registrar-General of Births, Deaths and Marriages in England and Wales, Part I, Life Tables, was adopted with some modifications.

The process was shortened and methods for joining life table values at ages under 3 years with those at ages 12 years and over were devised so that expectations of life at birth and at other young ages could be obtained. The method used is explained fully in sections 9 to 13 of Part II, pages 33 to 35.

TABLE 2.

LIFE TABLE FUNCTIONS FOR
BY THE EXTENDED AND BY THE ABRIDGED METHODS

EXACT AGE IN YEARS.	1000q _x ANNUAL RATE OF MORTALITY PER THOUSAND AT AGE x.							
	By abridged method applied to 4-8 group.	In column 2 less corresponding rate in column 4.	By extended method applied to 4-8 group.	In column 6 less corresponding rate in column 4.	By abridged method applied to 5-9 group.	In column 6 less corresponding rate in column 8.	By extended method applied to 5-9 group.	In column 8 less corresponding rate in column 4.
1	2	3	4	5	6	7	8	9
0.....	127.49	+ .36	127.13	+ .36	127.49			
1.....	34.25	+ .61	33.64	+ .61	34.25			
2.....			15.56	+ .05	16.21			
6.....	4.53	+ .08	4.45					
7.....			3.70	+ .05	3.75			
11.....	2.30	.00	2.30					
12.....			2.32	- .04	2.28			
16.....	3.37	.00	3.37					
17.....			3.77	+ .11	3.88	- .05	3.93	+ .16
21.....	5.34	- .08	5.42					
22.....			5.63	- .16	5.47	- .04	5.51	- .12
26.....	6.27	+ .04	6.23					
27.....			6.48	+ .04	6.52	+ .04	6.48	.00
31.....	7.98	+ .03	7.95					
32.....			8.47	- .01	8.46	+ .03	8.43	- .04
36.....	10.67	- .05	10.72					
37.....			11.18	.00	11.18	- .07	11.25	+ .07
41.....	12.98	+ .01	12.97					
42.....			13.49	- .15	13.34	+ .06	13.28	- .21
46.....	15.98	- .01	15.99					
47.....			16.70	+ .04	16.74	- .04	16.78	+ .08
51.....	19.90	+ .08	19.82					
52.....			20.90	- .01	20.89	+ .07	20.82	- .08
56.....	27.26	- .12	27.38					
57.....			29.35	- .35	29.00	- .13	29.13	- .22
61.....	38.08	- .01	38.09					
62.....			40.54	+ .02	40.56	+ .03	40.53	- .01
66.....	51.61	+ .16	51.45					
67.....			54.87	- .19	54.68	+ .15	54.53	- .34
71.....	72.05	- .02	72.07					
72.....			77.26	- .61	76.65	.00	76.65	- .61
76.....	103.11	- .44	103.55					
77.....			111.00	+ .88	111.88	- .84	112.72	+1.72
81.....	148.20	- .96	149.16					
82.....			160.89	-3.09	157.80	- .04	157.84	-3.05
86.....	211.79	+1.36	210.43					
87.....			221.70	+3.50	225.20			
91.....	263.46	+ .24	263.22					
92.....			274.62	+3.83	278.45			

AGE GROUP OF ORIGINAL STATISTICS.

6. At the time it was decided to begin the computation of the abridged life tables population statistics were not available by each single year of age, but only by single years under 5 and the quinquennial age group 5-9, 10-14, and so on up to age 100 years and over. Although it was desired to use the group 4-8, 9-13, and so on up to end of life, to wait for a compilation of populations in the quinquennial age group 4-8, 9-13, and so on, would have delayed the computation of these tables too long.

To show the variations produced in life table functions by applying the abridged process to the original statistics in different age groups, the abridged process was applied to the original statistics for the 1909-1911 New York male life table in the age group 4-8,

9-13, and so on as well as in the age group 5-9,10-14, and so on. The results are shown in Table 2.

To obtain the probability of living from ages 1 to 6 years for column 10 from rates of mortality at these ages, equation (iia), page 35, with the coefficient of Δ^3u_0 changed from +1.0 to +1.2, was used. The coefficient +1.2 was derived in the same way as the coefficient +1.0. See section 12, page 34. Where the original statistics for both the extended and the abridged methods are based on the same age group, there is very close agreement. So any difference between several life tables for New York, males, 1909-1911, seems to be almost entirely due to the variation in the age groups of the original statistics from which they were derived.

MALES IN THE STATE OF NEW YORK: 1909-1911.

TABLE 2.

WITH ORIGINAL STATISTICS IN GROUPS 4-8 AND 5-9.

l_x NUMBER OF SURVIVORS AT AGE x OUT OF 100,000 BORN ALIVE					e_x COMPLETE EXPECTATION OF LIFE IN YEARS AT AGE x .					EXACT AGE IN YEARS.
Based on rates in column 2 by abridged method.	In column 10 less corresponding number in column 12.	Based on rates in column 4 by extended method.	In column 14 less corresponding number in column 12.	Based on rates in column 6 by abridged method.	Based on l_x in column 10 by abridged method.	In column 15 less corresponding e_x in column 17.	Based on l_x in column 12 by extended method.	In column 19 less corresponding e_x in column 17.	Based on l_x in column 14 by abridged method.	
10	11	12	13	14	15	16	17	18	19	20
100,000	0	100,000	0	100,000	47.87	-.02	47.89	-.08	47.81	0
87,251	-36	87,287	-36	87,251	53.79	-.03	53.82	-.10	53.72	1
		84,350	-87	84,263			54.68	-.07	54.61	2
81,135	-151	81,286	-295	80,629	52.69	.00	52.69			6
		80,924					51.92	+0.05	51.97	7
79,812	-152	79,964	-270	79,510	48.53	+0.01	48.52			11
		79,780					47.63	+0.05	47.68	12
78,796	-154	78,950	-279	78,405	44.12	+0.01	44.11			16
		78,684					43.26	+0.05	43.31	17
77,170	-134	77,304	-244	76,641	40.00	+0.01	39.99			21
		76,885					39.21	+0.04	39.25	22
74,988	-119	75,107	-223	74,416	36.09	.00	36.09			26
		74,639					35.31	+0.03	35.34	27
72,444	-132	72,576	-233	71,766	32.26	.00	32.26			31
		71,999					31.51	+0.04	31.55	32
69,232	-119	69,351	-199	68,408	28.64	.00	28.64			36
		68,607					27.94	+0.04	27.98	37
65,314	-106	65,420	-176	64,396	25.21	+0.01	25.20			41
		64,572					24.53	+0.03	24.56	42
60,833	-104	60,938	-140	59,824	21.87	.00	21.87			46
		59,964					21.22	+0.02	21.24	47
55,731	-73	55,804	-126	54,572	18.64	-.01	18.65			51
		54,698					18.01	+0.03	18.04	52
49,720	-102	49,822	-88	48,370	15.58	+0.01	15.57			56
		48,458					15.00	+0.02	15.02	57
42,400	-67	42,467	-34	40,815	12.83	.00	12.83			61
		40,849					12.31	+0.02	12.33	62
34,015	-38	34,053	-13	32,288	10.37	.00	10.37			66
		32,301					9.90	+0.01	9.91	67
25,085	-33	25,118	+60	23,367	8.17	+0.01	8.16			71
		23,307					7.76	-.02	7.74	72
16,220	-19	16,239	+38	14,595	6.28	+0.01	6.27			76
		14,557					5.94	-.02	5.92	77
8,565	-10	8,575	+21	7,317	4.74	+0.01	4.73			81
		7,296					4.47	-.04	4.43	82
3,299	-4	3,303	+66	2,674	3.04	-.01	3.05			86
		2,608					3.48	-.31	3.17	87
878	-4	882	-74	576	2.84	-.07	2.91			91
		650					2.78	-.75	2.03	92

PART I.—UNITED STATES ABRIDGED

TABLE 3.—Males. 1000q_x.

ANNUAL RATE OF MORTALITY

No. of life table.	AREA AND COLOR.	EXACT AGE IN YEARS.																	
		0		1		2		7		12		17		22		27		32	
		1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.
WHITE.																			
1	Aggregate ¹	84.33	22	17.59	18	8.45	17	3.01	15	2.20	*14	3.93	22	4.94	20	5.79	19	6.86	19
3	Original registration states ²	92.43	28	18.80	23	9.06	23	3.32	25	2.25	*21	3.92	21	4.97	21	5.86	20	6.87	20
	Original registration states, 1909-1911.....	125.26	.....	28.21	.....	12.73	.....	3.40	.....	2.29	.....	3.65	.....	5.59	.....	5.82	.....	7.51	.....
STATES.																			
5	California.....	72.77	9	14.89	10	7.52	9	3.13	17	2.77	35	4.80	38	5.87	37	7.22	38	8.39	36
7	Connecticut.....	94.60	30	16.53	14	9.01	22	3.26	*20	2.22	19	3.88	*19	5.03	23	6.01	23	6.84	18
9	Illinois.....	84.14	21	19.68	26	9.35	28	3.12	16	2.20	*14	4.05	26	4.63	11	5.49	12	6.58	10
11	Indiana.....	81.23	19	16.38	13	8.41	16	2.95	13	2.13	10	4.26	29	4.74	13	5.26	6	5.95	3
13	Kansas.....	67.81	4	13.00	6	6.87	6	2.57	6	2.09	*7	3.71	13	4.22	2	4.92	2	5.81	1
15	Kentucky.....	69.28	6	17.61	19	8.30	13	2.83	10	2.20	*14	4.35	31	5.50	34	5.65	17	6.18	4
17	Maryland.....	95.99	33	17.69	20	9.10	24	2.93	12	2.21	*17	3.33	2	5.00	22	6.18	28	7.50	33
19	Massachusetts.....	98.62	36	19.22	25	9.16	25	3.28	22	2.05	*5	3.37	3	4.24	3	5.64	16	6.31	6
21	Michigan.....	93.45	29	17.74	21	8.96	20	3.59	30	2.46	31	4.32	30	4.71	12	5.43	*9	6.51	9
23	Minnesota.....	68.80	5	11.01	2	5.65	*1	2.55	5	2.12	9	3.81	8	4.52	*6	5.25	5	6.62	11
25	Missouri.....	74.43	12	18.15	22	8.38	15	3.24	19	2.18	12	4.10	28	5.23	29	5.51	13	6.46	8
27	New Jersey.....	88.13	23	19.72	27	8.88	19	3.31	24	2.14	11	3.58	7	5.17	28	5.99	22	7.08	22
29	New York.....	92.26	27	20.37	31	9.46	29	3.40	26	2.30	25	3.95	24	5.38	31	6.27	31	7.39	29
31	North Carolina.....	72.71	8	19.98	28	7.81	10	1.97	1	1.78	1	3.40	5	4.81	16	6.07	24	6.76	16
33	Ohio.....	80.52	18	15.72	11	7.93	11	2.98	14	2.09	*7	3.94	23	4.52	*6	5.29	7	6.71	14
35	Oregon.....	62.64	1	10.46	1	5.65	*1	2.62	8	2.53	32	4.71	37	4.56	9	6.28	32	6.78	17
37	Pennsylvania.....	96.94	34	20.18	29	8.98	21	3.15	18	2.21	*17	3.70	12	5.14	27	6.10	*25	7.31	27
39	South Carolina.....	74.85	13	20.30	30	9.33	27	2.16	2	1.90	3	3.69	11	5.88	38	5.66	18	7.15	24
41	Tennessee.....	63.35	3	16.68	15	8.37	14	2.40	4	1.87	2	3.83	*16	4.90	18	5.45	11	6.23	5
43	Utah.....	73.88	10	12.07	5	6.75	5	2.74	9	2.79	36	4.40	32	5.04	24	7.21	37	9.00	38
45	Virginia.....	78.02	15	15.96	12	8.81	18	2.22	3	2.00	4	3.77	14	5.37	30	5.54	14	6.91	21
47	Washington.....	63.11	2	11.16	3	6.03	3	2.87	11	2.40	*28	4.61	34	5.77	35	6.58	33	6.73	15
49	Wisconsin.....	78.51	17	11.18	4	6.28	4	2.68	7	2.05	*5	3.62	9	3.93	1	4.75	1	5.84	2
CITIES.																			
51	Aggregate ³	95.24	*31	22.05	34	10.77	34	3.94	37	2.38	27	3.88	*19	5.11	25	5.96	21	7.40	30
53	Baltimore.....	103.42	37	21.85	35	11.71	39	3.43	28	2.19	13	2.95	1	4.75	14	6.10	*25	7.43	32
55	Boston.....	108.69	40	23.18	38	9.90	30	4.29	*38	2.40	*28	3.38	4	4.76	15	6.15	27	7.90	34
57	Buffalo.....	116.88	42	21.63	33	13.03	43	5.00	42	3.03	38	3.98	25	4.92	19	6.25	30	7.33	28
59	Chicago.....	98.44	35	23.99	*40	11.29	36	3.81	34	2.28	24	3.79	15	4.59	10	5.22	3	6.64	12
61	Cleveland.....	92.19	26	19.05	24	10.13	32	3.79	33	2.33	26	3.86	18	4.25	4	5.43	*9	7.25	25
63	Detroit.....	108.11	38	22.49	36	12.05	40	4.79	40	2.55	33	4.64	36	4.52	*6	5.23	4	6.37	7
65	Los Angeles.....	77.45	14	17.56	17	8.17	12	3.84	35	3.20	40	4.86	39	5.79	36	7.14	*35	8.43	37
67	New Orleans.....	74.08	11	14.81	9	9.21	26	3.29	23	3.47	43	4.87	40	5.48	32	7.42	39	11.26	42
69	New York, N. Y.....	89.45	25	23.07	37	10.55	33	3.65	*31	2.24	20	3.83	*18	5.49	33	6.21	29	7.41	31
71	Philadelphia.....	95.24	*31	21.27	32	10.92	35	3.65	*31	2.25	*21	3.53	6	4.83	17	5.62	15	7.11	23
73	Pittsburgh.....	120.79	43	27.45	43	12.70	42	4.89	41	2.61	34	4.54	33	7.09	40	7.59	40	9.93	41
75	St. Louis.....	82.57	20	17.17	16	10.07	31	5.61	45	2.25	*21	3.63	10	4.48	5	5.39	8	6.68	13
77	San Francisco.....	69.70	7	13.14	7	7.48	8	3.55	29	3.06	39	4.63	35	6.12	39	7.06	34	9.58	39
79	Washington, D. C.....	78.33	16	13.31	8	7.30	7	4.29	*38	2.41	30	4.09	27	5.13	26	7.14	*35	7.28	26
NEGROES.																			
81	States with less than 4 per cent Negroes ⁴	141.69	44	45.89	44	20.14	45	5.58	44	4.79	44	11.63	45	13.14	46	11.79	45	13.30	44
83	States with more than 5 per cent Negroes ⁵	109.19	41	26.21	42	11.70	38	3.41	27	3.28	42	8.28	43	12.24	44	12.47	46	14.32	46
85	Large cities ⁶	154.40	46	49.83	46	23.47	46	5.72	46	5.59	46	11.71	46	11.99	43	11.34	42	14.19	45
87	Original registration states ²	144.95	45	46.91	45	18.25	44	5.44	43	4.92	45	10.88	44	13.04	45	11.73	44	13.13	43
	Original registration states, 1909-1911.....	219.55	.....	66.82	.....	32.14	.....	6.22	.....	5.58	.....	9.75	.....	12.47	.....	12.82	.....	16.22	.....
HAWAII.																			
89	Hawaii (all races combined).....	108.20	39	23.81	39	12.16	41	3.93	36	3.23	41	7.00	42	9.52	42	11.43	43	9.65	40
91	Japanese in Hawaii.....	89.10	24	23.99	*40	11.69	37	3.26	*20	2.96	37	6.39	41	8.34	41	8.85	41	8.03	35
	Japanese in Japan, 1908-1915.....	160.50	.....	44.10	.....	23.57	.....	4.49	.....	3.12	.....	6.82	.....	9.11	.....	8.07	.....	7.74	.....

* Two or more rankings the same.

¹ Statistics for the aggregate tables are a compilation of those for the New England states, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Kansas, Utah, California, Oregon, and Washington.

² The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.

³ The 14 cities included in aggregate white in cities are those shown in the table.

LIFE TABLES: 1919-1920.

PER THOUSAND, 1919-1920.

1000q_x. Males. TABLE 3.

EXACT AGE IN YEARS.																								No. of life table.
37		42		47		52		57		62		67		72		77		82		87		92		
1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	
7.58	16	8.65	17	10.37	15	13.83	16	20.25	16	28.35	17	43.10	14	65.41	18	96.40	17	145.98	21	203.96	26	270.74	28	1
7.70	19	9.05	19	11.05	20	14.85	19	21.88	20	30.45	20	46.15	21	69.26	23	102.13	23	150.84	27	211.97	35	282.91	29	8
9.23	....	11.04	....	13.83	....	17.21	....	25.08	....	35.41	....	60.23	....	72.30	....	108.04	....	158.33	....	216.45	....	282.56	....
9.63	37	10.66	33	11.91	25	15.96	26	22.33	21	30.78	21	44.16	15	62.05	14	91.42	10	139.91	14	204.85	29	248.60	13	5
8.11	23	9.62	23	11.02	19	15.51	22	24.17	26	30.12	19	45.75	20	67.30	19	105.34	28	135.73	7	207.77	31	222.37	6	7
7.39	15	8.45	15	10.89	18	14.25	17	20.56	17	28.53	18	44.21	17	64.56	16	93.35	14	141.75	17	204.19	27	269.31	25	9
6.79	8	7.44	7	8.45	6	11.11	5	16.79	7	23.71	6	39.45	9	61.24	13	94.81	16	143.58	19	217.41	38	294.21	35	11
5.68	1	6.30	1	6.75	1	9.44	1	14.40	1	20.66	1	32.95	1	56.04	3	86.00	6	132.69	5	190.19	13	308.31	40	13
6.54	4	7.02	4	8.55	7	10.40	2	16.18	5	23.47	5	35.27	2	60.16	12	83.61	4	139.02	11	175.80	4	302.97	38	15
8.12	24	9.08	20	11.51	23	15.59	25	22.61	22	31.39	23	47.36	24	73.72	28	101.99	22	147.95	22	199.43	20	272.82	26	17
7.25	13	8.56	16	10.73	17	14.73	18	21.36	18	30.97	22	48.57	27	72.75	26	103.20	25	152.03	30	211.55	34	267.28	23	19
6.85	9	7.71	11	9.04	11	11.92	9	18.44	12	26.39	14	40.70	11	64.98	17	97.05	18	150.11	25	216.80	37	286.94	32	21
6.63	5	7.09	5	8.75	10	11.61	7	17.40	9	25.18	9	36.64	5	58.54	8	82.87	3	139.89	13	172.30	3	253.23	15	23
7.14	12	7.69	10	9.31	12	12.10	10	18.57	13	25.20	10	37.96	7	56.08	4	82.70	1	134.50	6	189.91	12	267.71	24	25
7.64	18	9.38	21	12.13	27	15.52	23	23.50	25	31.77	25	48.29	26	73.99	29	106.14	31	152.37	32	216.65	36	321.75	42	27
8.41	26	10.04	27	12.69	28	17.11	29	24.83	28	34.35	31	50.09	30	73.08	27	105.93	30	156.03	37	206.86	30	291.17	34	29
6.47	3	7.64	8	8.27	5	11.65	8	15.97	2	23.20	2	38.17	8	58.70	9	91.24	9	141.17	16	194.81	17	283.96	31	31
7.28	14	8.19	*13	9.56	13	12.61	13	18.24	11	26.76	16	42.30	13	63.49	15	98.37	19	152.10	31	202.56	23	319.62	41	33
7.83	22	6.96	3	8.71	8	12.24	11	17.74	10	25.55	11	41.45	12	60.12	11	92.66	13	142.61	18	202.75	24	242.92	10	35
8.43	28	9.80	25	11.78	24	15.44	21	22.94	23	31.55	24	47.18	23	72.23	24	104.52	26	154.83	36	219.79	39	298.15	36	37
7.61	17	8.19	*13	9.76	14	13.18	15	19.59	15	26.23	12	44.18	16	72.61	25	92.58	12	131.92	4	203.46	25	244.19	11	39
6.75	7	8.15	12	7.96	3	10.57	3	16.17	4	23.21	3	35.55	4	58.71	10	83.92	5	130.01	2	177.71	6	231.47	8	41
9.52	35	10.13	29	11.29	22	12.89	14	19.41	14	26.39	*14	46.74	22	57.01	6	92.56	11	139.32	12	185.16	8	256.60	17	43
6.70	6	7.31	6	8.04	4	11.13	6	17.10	8	24.39	7	39.67	10	68.49	20	100.05	20	156.77	38	222.57	41	277.58	27	45
6.98	10	7.68	9	8.72	9	12.25	12	16.56	6	26.36	13	37.74	6	58.43	7	94.30	15	124.74	1	201.61	22	230.19	7	47
5.84	2	6.48	2	7.70	2	10.87	4	16.04	3	23.29	4	35.33	3	56.88	5	88.34	7	137.51	9	192.62	14	283.07	30	49
8.71	31	10.60	32	14.05	34	18.71	35	27.91	38	38.18	36	56.15	35	79.29	35	109.02	35	151.79	29	200.51	21	267.00	22	51
8.38	25	11.09	37	14.46	35	18.52	34	26.74	32	36.79	34	56.56	37	82.00	39	108.53	33	153.54	34	188.70	10	218.72	5	53
8.60	30	10.98	36	15.10	38	19.64	36	27.57	35	39.08	38	56.81	38	84.04	41	113.51	41	159.84	40	219.83	40	192.02	1	55
8.91	33	12.42	39	12.84	29	18.36	33	27.98	39	37.96	35	56.45	36	77.61	32	113.15	40	167.69	42	227.28	42	450.71	45	57
7.81	21	9.65	24	13.54	33	17.49	32	25.65	30	35.70	33	52.05	31	74.30	30	101.24	21	140.56	15	182.09	7	265.17	21	59
9.23	34	10.83	35	13.43	32	17.18	30	25.52	29	35.39	32	55.65	34	77.70	33	112.77	39	158.04	39	189.22	11	350.66	44	61
6.99	11	8.83	18	10.62	16	14.91	20	21.56	19	32.57	27	49.04	28	77.32	31	107.50	32	150.26	26	204.26	28	249.56	14	63
9.53	36	10.10	28	12.13	26	16.13	27	23.37	24	31.99	26	47.52	25	55.64	2	82.76	2	130.64	3	194.07	16	248.06	12	65
12.44	41	13.36	41	21.19	45	25.64	43	42.76	45	55.31	45	75.71	45	102.84	46	120.88	43	172.29	44	304.81	45	302.45	37	67
8.83	32	10.57	31	14.88	36	20.16	37	29.65	40	39.70	39	58.79	40	82.38	40	111.20	38	154.52	35	192.86	15	262.05	20	69
8.42	27	10.75	34	12.94	30	17.29	31	27.56	34	38.33	37	54.06	33	80.25	36	108.72	34	149.09	24	186.34	9	259.32	19	71
11.89	40	14.00	42	17.12	42	21.21	39	31.93	41	40.55	41	58.13	39	89.35	44	125.50	45	148.53	23	266.47	44	255.05	16	73
8.49	29	9.60	22	13.05	31	16.74	28	27.68	36	39.95	40	60.93	41	80.79	38	118.62	42	160.44	41	210.67	32	329.81	43	75
10.74	38	12.22	38	15.61	39	22.43	41	33.31	42	44.30	42	62.03	43	78.28	34	125.09	44	171.11	43	232.18	43	259.14	18	77
7.75	20	9.91	26	11.20	21	15.54	24	24.71	27	33.25	29	53.01	32	87.13	42	110.48	37	152.41	33	210.90	33	302.98	39	79
16.07	45	18.59	45	21.02	44	28.01	45	35.30	43	45.89	43	61.95	42	80.50	37	105.51	29	144.30	20	176.91	5	214.24	3	81
14.43	43	15.71	43	16.67	41	22.85	42	27.75	37	33.36	30	45.58	19	68.87	21	89.01	8	138.06	10	166.15	2	236.57	9	83
17.64	46	19.32	46	23.95	46	34.92	46	43.26	46	56.79	46	76.50	46	96.18	45	110.30	36	136.94	8	161.45	1	210.79	2	85
15.25	44	18.01	44	20.94	43	27.35	44	36.40	44	48.71	44	65.70	44	88.89	43	103.06	24	151.27	28	198.34	19	216.98	4	87
18.38	....	22.47	....	26.49	....	34.16	....	44.17	....	55.76	....	70.93	....	83.94	....	124.82	....	146.08	....	196.74	....	261.86	....
12.85	42	12.53	40	16.48	40	21.32	40	27.34	33	33.02	28	49.50	29	69.02	22	105.15	27	179.03	45	196.70	18	287.42	33	89
11.25	39	10.56	30	14.99	37	20.24	38	26.25	31	25.13	8	44.40	18	49.81	1	.....	.....	.....	.....	.....	.....	.....	.....	91
8.54	....	10.51	....	13.67	....	18.61	....	23.58	....	33.05	....	55.44	....	80.98	....	116.67	....	169.00	....	244.81	....	354.63	....

* The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.

† The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.

‡ The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

TABLE 4. Females. 1000_{qx}.

ANNUAL RATE OF MORTALITY

No. of life table.	AREA AND COLOR.	EXACT AGE IN YEARS.																	
		0		1		2		7		12		17		22		27		32	
		1000 _{qx}	Rank	1000 _{qx}	Rank	1000 _{qx}	Rank	1000 _{qx}	Rank	1000 _{qx}	Rank	1000 _{qx}	Rank	1000 _{qx}	Rank	1000 _{qx}	Rank	1000 _{qx}	Rank
WHITE.																			
2	Aggregate ¹	67.32	22	15.82	16	7.74	17	2.60	16	1.89	16	3.45	*18	5.42	18	6.53	21	6.97	18
4	Original registration states ²	73.61	25	16.93	21	8.19	23	2.81	24	1.94	*20	3.47	*20	5.37	17	6.61	*24	6.89	17
	Original registration states, 1909-1911.....	102.26	....	25.85	....	11.45	....	5.09	....	2.02	....	5.25	....	4.70	....	5.54	....	6.45	....
STATES.																			
6	California.....	59.67	11	13.54	9	7.14	8	2.78	*22	2.04	24	3.84	33	5.78	27	6.61	*24	7.12	23
8	Connecticut.....	73.79	27	17.70	28	8.20	24	2.62	18	1.67	4	2.82	2	5.06	5	6.21	9	6.69	11
10	Illinois.....	66.05	21	17.25	25	8.83	31	2.61	17	1.91	*18	3.45	*18	6.13	7	6.38	*14	6.49	*5
12	Indiana.....	64.88	18	14.80	13	7.41	12	2.45	13	2.10	29	4.15	38	6.34	36	6.88	31	7.59	31
14	Kansas.....	53.98	6	12.47	8	6.19	6	2.10	5	1.94	*20	3.00	3	4.47	2	5.71	2	6.66	10
16	Kentucky.....	56.47	7	16.94	*22	8.03	20	2.67	19	2.13	30	4.36	39	7.04	39	7.90	38	8.25	37
18	Maryland.....	79.26	36	17.80	30	8.12	22	2.43	12	1.88	15	3.32	12	6.03	32	6.78	29	7.40	29
20	Massachusetts.....	78.26	34	17.55	27	7.96	19	2.78	*22	1.74	8	3.06	*4	4.79	4	5.99	4	6.64	9
22	Michigan.....	74.58	28	16.27	*13	8.39	26	3.19	31	2.21	*32	4.01	37	6.11	34	7.47	36	7.37	27
24	Minnesota.....	53.15	4	9.75	3	4.73	2	2.26	9	1.79	10	3.13	*6	5.08	6	6.33	13	6.74	*12
26	Missouri.....	56.75	8	15.87	17	7.92	18	2.85	25	2.02	23	3.49	21	5.66	*24	6.46	*16	7.01	*20
28	New Jersey.....	70.84	23	16.94	*22	7.70	16	2.76	21	1.85	*12	3.33	13	5.15	*8	6.81	30	6.51	7
30	New York.....	73.78	26	17.99	31	8.75	30	2.88	26	1.98	22	3.43	*16	5.28	14	6.60	23	6.74	*12
32	North Carolina.....	60.29	13	17.43	26	7.16	9	1.83	*1	1.47	2	3.50	22	5.61	23	7.03	32	8.12	35
34	Ohio.....	65.42	20	14.48	12	7.34	11	2.49	*14	1.73	7	3.43	*16	5.34	16	6.18	8	7.01	*20
36	Oregon.....	45.30	1	7.86	1	5.73	4	2.03	3	2.09	28	3.64	27	5.70	28	6.38	*14	6.54	8
38	Pennsylvania.....	78.33	35	17.74	29	8.40	27	2.71	20	1.91	*18	3.31	11	5.49	21	6.54	22	7.26	26
40	South Carolina.....	60.71	14	18.50	32	8.05	21	2.04	4	1.44	1	3.15	*8	5.44	19	6.48	18	8.23	36
42	Tennessee.....	53.68	5	15.16	14	7.17	10	2.33	10	1.77	9	3.85	34	6.07	33	7.44	35	7.78	34
44	Utah.....	57.81	9	10.14	5	6.55	7	1.83	*1	2.46	38	3.73	30	5.73	26	7.19	33	9.12	39
46	Virginia.....	60.05	12	15.18	15	8.44	28	2.20	7	1.58	3	3.06	*4	5.29	15	6.14	7	6.85	15
48	Washington.....	49.90	2	9.31	2	4.70	1	2.49	*14	2.16	31	3.82	32	5.16	*10	6.10	6	6.06	3
50	Wisconsin.....	59.59	10	10.00	4	5.55	3	2.25	8	1.72	6	2.80	1	4.64	3	5.78	3	5.98	2
CITIES.																			
52	Aggregate ³	75.84	31	19.63	34	9.45	33	3.28	32	2.07	27	3.59	25	5.48	20	6.68	27	6.98	19
54	Baltimore.....	83.60	37	22.44	39	10.53	40	2.41	11	2.05	*25	3.34	14	6.15	35	6.52	20	6.86	16
56	Boston.....	86.69	38	19.62	33	8.21	25	3.94	38	2.30	36	3.16	10	5.99	31	7.41	34	7.65	33
58	Buffalo.....	94.13	41	19.07	35	10.81	42	4.53	43	2.58	39	3.72	29	5.86	30	6.49	19	7.38	28
60	Chicago.....	76.92	32	21.37	38	9.74	36	3.00	*27	1.90	17	3.56	24	5.15	*8	6.29	*10	6.43	4
62	Cleveland.....	74.76	*29	16.88	20	7.61	*14	3.42	34	1.70	5	3.70	28	5.16	*10	6.29	*10	7.13	24
64	Detroit.....	86.76	39	21.00	37	10.34	39	4.13	40	2.28	34	4.55	40	6.42	37	7.63	37	7.62	32
66	Los Angeles.....	65.40	19	14.38	11	7.61	*14	3.31	33	2.37	37	3.92	35	5.66	*24	6.30	12	7.07	22
68	New Orleans.....	62.64	17	13.91	10	8.51	29	2.11	6	1.85	*12	3.77	31	6.93	38	9.94	40	8.57	38
70	New York, N. Y.....	71.60	24	20.59	36	9.64	35	3.03	29	2.05	*25	3.52	23	5.21	13	6.65	26	6.76	14
72	Philadelphia.....	74.76	*29	17.21	24	9.52	34	3.15	30	1.85	*12	3.61	26	5.84	29	6.73	28	7.21	25
74	Pittsburgh.....	97.33	43	24.42	43	10.79	41	3.89	37	2.92	40	3.97	36	7.38	40	8.62	39	9.53	40
76	St. Louis.....	62.26	16	16.37	*18	9.12	32	4.52	42	2.29	35	3.37	15	5.16	*10	6.07	5	6.49	*5
78	San Francisco.....	52.81	3	11.76	7	7.53	13	3.84	36	2.21	*32	3.15	*8	5.50	22	6.46	*16	7.55	30
80	Washington, D. C.....	61.83	15	10.98	6	5.85	5	3.00	*27	1.82	11	3.13	*6	3.14	1	4.21	1	4.79	1
NEGROES.																			
82	States with less than 4 per cent Negroes ⁴	114.80	44	43.54	44	16.63	45	5.22	44	5.20	46	10.79	45	11.79	45	11.50	42	12.63	42
84	States with more than 5 per cent Negroes ⁴	89.08	40	22.91	40	10.95	43	3.70	35	3.90	43	10.06	43	13.65	46	14.92	45	16.50	46
86	Large cities ⁵	126.44	46	45.58	46	18.98	46	5.72	45	5.14	45	11.79	46	11.78	44	12.28	43	13.24	43
88	Original registration states ²	120.35	45	44.01	45	16.15	44	5.73	46	4.86	44	10.76	44	10.72	41	11.40	41	12.53	41
	Original registration states, 1909-1911.....	155.07	....	58.84	....	24.50	....	5.84	....	6.41	....	10.62	....	10.66	....	10.26	....	13.12	....
HAWAII.																			
90	Hawaii (all races combined).....	96.95	42	24.30	42	9.79	37	4.06	39	3.36	42	9.96	42	11.10	43	15.15	46	15.22	45
92	Japanese in Hawaii.....	77.11	33	23.41	41	10.24	38	4.34	41	3.14	41	8.84	41	10.78	42	13.47	44	13.69	44
	Japanese in Japan, 1908-1913.....	145.04	....	43.70	....	23.86	....	4.86	....	4.75	....	9.45	....	10.78	....	10.01	....	9.89	....

* Two or more rankings the same.
¹ Statistics for the aggregate tables are a compilation of those for the New England states, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Kansas, Utah, California, Oregon, and Washington.
² The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.
³ The 14 cities included in aggregate white in cities are those shown in the table.

UNITED STATES ABRIDGED LIFE TABLES.

PER THOUSAND, 1919-1920.

1000q_x. Females. TABLE 4.

EXACT AGE IN YEARS.																								No. of life table
37		42		47		52		57		62		67		72		77		82		87		92		
1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	1000q _x	Rank.	
7.02	21	7.55	15	9.30	20	12.40	20	17.85	20	25.26	18	39.37	19	60.09	18	90.10	18	135.79	22	191.03	28	271.33	24	2
6.91	17	7.81	22	9.96	27	13.36	24	19.26	23	27.54	26	43.05	25	64.02	26	94.60	27	139.37	27	196.00	33	273.19	27	4
7.50	.....	8.60	.....	10.94	.....	14.15	.....	21.03	.....	29.97	.....	44.19	.....	66.55	.....	96.09	.....	149.10	.....	202.11	.....	282.82	.....
7.01	20	7.53	14	9.23	*15	11.96	15	16.00	10	23.45	13	34.48	7	53.01	8	83.67	12	127.07	9	173.13	10	266.19	19	6
6.85	15	7.71	19	9.25	*17	13.47	27	19.58	*25	29.06	31	43.02	24	62.86	23	86.21	15	132.00	16	190.95	27	250.84	12	8
6.68	9	7.28	10	9.04	14	12.44	21	17.76	19	23.96	15	39.36	18	58.76	15	85.34	14	131.26	15	191.45	29	270.53	23	10
7.14	25	7.49	13	9.23	*15	11.32	11	15.47	7	22.80	10	36.34	13	56.96	13	93.05	23	137.98	25	199.09	37	276.88	29	12
6.38	4	6.59	3	7.22	1	9.64	1	14.20	2	19.53	2	30.35	1	50.11	1	74.04	1	129.99	11	169.72	8	267.19	20	14
7.55	32	7.37	11	8.89	12	10.57	3	16.47	15	22.77	9	34.43	*5	56.28	12	84.74	13	130.47	13	190.16	25	251.18	13	16
7.18	26	7.70	21	9.84	*24	12.83	22	19.66	*27	26.04	20	38.97	17	69.61	33	101.34	36	140.12	29	205.56	42	287.06	32	18
6.79	*13	7.67	18	9.84	*24	13.49	28	18.35	21	27.45	24	42.76	23	63.23	24	91.43	21	140.90	32	190.44	26	268.50	21	20
7.41	31	7.87	23	9.85	26	12.33	19	17.17	18	25.04	17	38.96	16	59.57	16	93.83	25	142.22	35	202.65	41	298.83	36	22
6.78	12	6.86	4	8.42	7	10.75	4	16.22	12	20.76	3	32.76	3	50.36	2	80.02	4	115.76	3	183.84	18	240.94	7	24
6.95	18	7.08	7	8.28	5	10.79	6	15.25	5	21.20	5	35.20	9	52.09	7	81.82	8	121.43	6	173.36	11	243.57	8	26
6.58	7	7.60	17	9.09	*22	13.63	29	19.83	30	29.31	32	46.23	29	65.14	29	101.81	38	139.00	26	191.61	30	289.77	34	28
6.73	10	8.11	26	10.66	29	14.40	32	21.42	33	29.64	33	46.70	31	69.40	32	98.63	33	140.30	31	199.05	36	269.94	22	30
9.07	37	8.34	29	8.98	13	11.25	10	15.33	6	21.50	6	35.67	*10	61.46	21	91.08	19	139.73	28	165.70	7	254.32	14	32
6.74	11	7.04	6	8.68	*9	11.24	9	16.25	13	23.87	14	36.96	14	58.42	14	89.31	17	135.99	23	194.76	32	285.34	31	34
7.06	22	7.14	9	8.68	*9	10.99	8	15.64	9	22.87	11	34.24	4	51.55	4	82.73	11	133.27	19	181.98	17	376.70	43	36
7.28	25	7.95	25	9.69	*22	13.40	25	19.73	29	27.95	27	42.22	22	64.00	25	95.64	28	143.76	37	197.31	34	290.88	35	38
8.84	36	7.76	20	8.73	11	12.18	17	17.08	17	26.00	19	39.73	20	59.99	17	86.75	16	135.49	21	188.37	22	264.01	17	40
8.15	34	8.63	34	9.25	*17	10.95	7	15.60	8	21.13	4	35.68	12	53.71	9	82.23	10	132.95	17	176.21	12	210.53	4	42
9.33	38	8.50	31	7.74	3	11.33	12	14.84	3	19.29	1	35.67	*10	55.01	10	80.11	*5	145.49	38	170.46	9	339.60	41	44
7.91	33	7.02	5	8.31	6	11.92	14	16.16	11	24.01	16	37.08	15	60.73	19	93.12	24	141.29	33	200.20	38	271.68	25	46
6.55	5	7.11	8	8.45	8	10.77	5	16.37	14	21.87	8	34.43	*5	51.71	6	80.70	7	127.56	10	181.28	15	273.09	26	48
5.93	2	6.18	1	7.46	2	10.21	2	15.03	4	21.69	7	31.93	2	51.57	5	82.19	9	130.30	12	189.51	24	257.26	16	50
7.11	23	8.52	32	11.30	34	14.98	36	22.40	37	30.76	35	48.57	36	70.44	35	98.34	32	140.14	30	186.30	20	275.10	28	52
6.79	*13	9.09	37	11.25	33	13.86	30	23.18	38	27.14	22	43.80	26	72.86	38	103.30	41	131.21	14	210.72	43	287.86	33	54
8.68	35	9.51	39	12.51	38	16.32	39	21.97	36	32.76	37	51.08	39	70.26	34	94.53	26	153.89	42	187.28	21	246.54	10	56
6.57	6	8.16	27	11.44	35	13.44	26	20.47	31	30.72	34	48.51	35	81.34	45	103.82	42	154.79	43	221.70	44	247.12	11	58
6.65	8	8.17	28	10.26	28	14.63	34	21.74	35	28.79	29	46.51	30	66.87	30	91.36	20	133.26	18	185.23	19	265.99	18	60
7.19	27	7.94	24	10.72	30	14.76	35	20.48	32	27.18	23	44.90	27	64.93	28	100.38	44	142.82	36	181.69	16	335.08	39	62
7.33	30	8.87	36	11.73	36	13.35	23	19.58	*25	28.94	30	45.41	28	66.88	31	99.27	34	147.91	39	188.44	23	314.62	38	64
6.98	19	7.41	12	9.47	21	12.07	16	16.71	16	23.11	12	35.00	8	50.51	3	80.11	*5	121.64	7	149.72	4	235.75	6	66
9.95	39	10.71	40	12.81	40	18.00	42	24.35	40	35.20	41	51.65	40	73.20	39	97.72	31	158.69	45	194.36	31	393.87	44	68
6.87	16	8.60	33	11.75	37	15.75	38	24.41	41	32.92	38	53.86	41	77.04	41	103.10	40	136.26	24	177.80	13	255.70	15	70
7.12	24	8.48	30	11.19	31	15.12	37	23.41	39	32.17	36	47.16	32	71.69	37	100.28	35	142.06	34	178.44	14	284.89	30	72
10.74	40	10.84	41	13.03	41	17.51	40	25.17	42	35.25	42	54.64	42	74.57	40	106.82	45	152.13	40	227.77	45	369.14	42	74
7.28	*28	7.56	16	11.21	32	14.46	33	19.40	24	27.00	21	48.06	34	64.07	27	101.43	37	133.76	20	197.98	35	229.39	5	76
6.26	3	8.76	35	12.52	39	14.26	31	21.53	34	34.22	39	47.48	33	70.80	36	102.69	39	152.52	41	202.63	40	336.75	40	78
4.99	1	6.55	2	7.96	4	11.83	13	18.90	22	28.16	28	40.70	21	55.93	11	78.23	2	157.32	44	201.37	39	300.72	37	80
14.10	42	16.83	43	20.70	44	28.09	44	40.53	44	46.20	44	58.81	43	78.99	43	92.33	22	127.00	8	153.09	6	246.08	9	82
16.17	46	18.58	45	20.90	45	26.28	43	33.09	43	38.19	43	49.80	37	62.60	22	79.50	3	113.83	2	150.45	5	175.45	2	84
15.25	44	19.03	46	24.52	46	35.08	46	47.65	46	53.33	46	66.46	45	77.69	42	97.51	30	120.27	4	126.83	1	151.55	1	86
14.31	43	17.15	44	20.27	43	28.66	45	41.47	45	50.21	45	59.97	44	80.19	44	95.88	29	120.71	5	146.70	3	188.85	3	88
15.07	.....	19.03	.....	23.13	.....	27.82	.....	40.80	.....	49.98	.....	66.54	.....	75.74	.....	98.44	.....	136.81	.....	169.98	.....	176.82	.....
15.42	45	12.67	42	14.37	42	17.84	41	19.66	*27	34.44	40	50.22	38	60.95	20	105.00	43	101.29	1	137.10	2	411.45	45	90
11.33	41	9.29	38	9.28	19	12.32	19	7.00	1	27.53	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92
10.46	.....	10.63	.....	11.29	.....	14.56	.....	19.90	.....	28.60	.....	43.34	.....	60.88	.....	98.26	.....	145.79	.....	216.91	.....	322.73	.....

⁴The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.

⁵The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.

⁶The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

TABLE 5. Males. l_x .

NUMBER OF SURVIVORS OUT OF

No. of life table.	AREA AND COLOR.	EXACT AGE IN YEARS.																	
		0		1		2		7		12		17		22		27		32	
		l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank
WHITE.																			
1	Aggregate ¹	100,000		91,567	22	89,957	21	87,515	20	86,490	20	85,280	19	83,434	19	81,255	17	78,757	15
3	Original registration states ²	100,000		90,757	28	89,050	25	86,411	24	85,321	25	84,121	25	82,299	25	80,129	26	77,650	24
	Original registration states, 1909-1911.....	100,000		87,674	.....	85,201	.....	82,251	.....	81,140	.....	80,068	.....	78,516	.....	76,189	.....	73,801	.....
STATES.																			
5	California.....	100,000		92,723	9	91,342	9	89,033	9	87,856	11	86,320	13	84,076	14	81,419	16	78,337	17
7	Connecticut.....	100,000		90,541	30	89,044	27	86,433	23	85,358	23	84,172	24	82,351	24	80,136	25	77,631	25
9	Illinois.....	100,000		91,586	21	89,784	22	87,156	21	86,130	21	84,896	21	83,077	20	81,040	18	78,665	16
11	Indiana.....	100,000		91,877	19	90,372	19	87,907	19	86,944	17	85,676	16	83,758	16	81,711	14	79,479	12
13	Kansas.....	100,000		93,219	4	92,007	5	89,957	4	89,024	4	87,829	5	86,108	3	84,195	2	81,955	1
15	Kentucky.....	100,000		93,072	6	91,433	8	89,029	10	88,054	9	86,747	9	84,648	10	82,311	10	79,931	8
17	Maryland.....	100,000		90,401	33	88,802	31	86,398	25	85,347	24	84,260	23	82,592	23	80,353	22	77,685	22
19	Massachusetts.....	100,000		90,138	36	88,405	35	85,778	33	84,726	32	83,675	29	82,133	26	80,178	23	77,832	21
21	Michigan.....	100,000		90,655	29	89,046	26	86,311	26	85,142	26	83,811	27	81,932	30	79,915	29	77,593	27
23	Minnesota.....	100,000		93,121	5	92,095	4	90,246	3	89,290	3	88,107	2	86,357	1	84,308	1	81,881	2
25	Missouri.....	100,000		92,557	12	90,877	13	88,284	15	87,216	15	85,975	14	84,009	15	81,787	13	79,414	13
27	New Jersey.....	100,000		91,187	23	89,389	23	86,765	22	85,670	22	84,559	22	82,783	21	80,526	21	77,968	20
29	New York.....	100,000		90,774	27	88,925	29	86,206	28	85,082	27	83,871	26	81,979	27	79,650	31	77,011	32
31	North Carolina.....	100,000		92,730	8	90,876	14	88,947	11	88,218	8	87,163	6	85,417	7	83,160	7	80,528	6
33	Ohio.....	100,000		91,948	18	90,503	18	88,102	16	87,116	16	85,915	15	84,120	13	82,123	11	79,743	10
35	Oregon.....	100,000		93,736	1	92,756	1	90,885	1	89,882	1	88,362	1	86,317	2	84,085	3	81,384	5
37	Pennsylvania.....	100,000		90,307	34	88,484	33	85,960	30	84,900	28	83,756	28	81,971	29	79,729	30	77,142	29
39	South Carolina.....	100,000		92,515	13	90,637	16	88,422	14	87,617	13	86,519	11	84,529	11	82,097	12	79,571	11
41	Tennessee.....	100,000		93,665	3	92,102	3	89,845	5	89,015	5	87,868	4	85,989	4	83,803	4	81,415	4
43	Utah.....	100,000		92,012	10	91,494	7	89,534	6	88,405	6	86,906	8	84,910	8	82,451	8	79,207	14
45	Virginia.....	100,000		92,198	15	90,727	15	88,576	13	87,743	12	86,591	10	84,670	9	82,389	9	79,905	9
47	Washington.....	100,000		93,689	2	92,644	2	90,559	2	89,514	2	88,082	3	85,846	5	83,247	6	80,511	7
49	Wisconsin.....	100,000		92,149	17	91,118	11	89,163	8	88,248	7	87,088	7	85,459	6	83,670	5	81,510	3
CITIES.																			
51	Aggregate ³	100,000		90,476	*31	88,481	34	85,355	35	84,109	35	82,909	35	81,103	35	78,920	35	76,382	36
53	Baltimore.....	100,000		89,659	37	87,699	37	84,744	37	83,589	37	82,601	36	81,106	34	78,977	34	76,387	35
55	Boston.....	100,000		89,131	40	87,064	39	83,981	38	82,643	38	81,550	38	79,967	38	77,869	37	75,227	37
57	Buffalo.....	100,000		88,312	42	86,402	42	82,706	42	81,120	42	79,793	42	78,077	40	75,975	40	73,476	39
59	Chicago.....	100,000		90,156	35	87,994	36	84,853	36	83,671	36	82,510	37	80,813	36	78,885	36	76,637	34
61	Cleveland.....	100,000		90,781	26	89,052	24	86,055	29	84,857	29	83,646	30	81,973	28	80,079	27	77,657	23
63	Detroit.....	100,000		89,189	38	87,183	38	83,496	41	82,133	41	80,787	39	78,928	39	77,070	38	74,902	38
65	Los Angeles.....	100,000		92,252	14	90,636	17	88,010	18	86,577	19	84,945	20	82,741	22	80,162	24	77,137	30
67	New Orleans.....	100,000		92,526	11	91,221	10	88,794	12	87,388	14	85,648	17	83,491	18	80,965	20	77,391	28
69	New York, N. Y.....	100,000		91,055	25	88,955	28	85,949	31	84,783	31	83,622	31	81,746	32	79,405	33	76,796	33
71	Philadelphia.....	100,000		90,476	*31	88,552	32	85,536	34	84,357	34	83,245	33	81,566	33	79,493	32	77,061	31
73	Pittsburgh.....	100,000		87,921	43	85,508	43	81,783	43	80,364	43	79,091	43	76,894	42	74,129	41	71,045	41
75	St. Louis.....	100,000		91,743	20	90,168	20	86,218	27	84,646	33	83,537	32	81,884	31	79,928	28	77,610	26
77	San Francisco.....	100,000		93,030	7	91,808	6	89,377	7	87,999	10	86,423	12	84,179	12	81,498	15	78,267	18
79	Washington, D. C.....	100,000		92,168	16	90,940	12	88,027	17	86,676	18	85,397	18	83,496	17	81,035	19	78,137	19
NEGROES.																			
81	States with less than 4 per cent Negroes ⁴	100,000		85,832	44	81,893	44	77,093	45	75,513	44	72,745	45	68,290	45	64,095	45	60,271	45
83	States with more than 5 per cent Negroes ⁵	100,000		89,081	41	86,746	41	83,695	40	82,572	39	80,481	41	76,514	43	71,880	43	67,255	43
85	Large cities ⁶	100,000		84,560	46	80,346	46	75,364	46	73,617	46	70,711	46	66,537	46	62,758	46	58,988	46
87	Original registration states ²	100,000		85,505	45	81,494	45	77,109	44	75,465	45	72,789	44	68,514	44	64,323	44	60,509	44
	Original registration states, 1909-1911.....	100,000		78,065	.....	72,849	.....	67,510	.....	65,701	.....	63,405	.....	59,940	.....	56,321	.....	52,427	.....
HAWAII.																			
89	Hawaii (all races combined).....	100,000		89,180	39	87,057	40	83,771	39	82,497	40	80,614	40	77,409	41	73,446	42	69,612	42
91	Japanese in Hawaii.....	100,000		91,090	24	88,905	30	85,924	32	84,798	30	83,013	34	80,033	37	76,631	39	73,462	40

* Two or more rankings the same.

¹ Statistics for the aggregate tables are a compilation of those for the New England states, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Kansas, Utah, California, Oregon, and Washington.² The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.³ The 14 cities included in aggregate white in cities are those shown in the table.

UNITED STATES ABRIDGED LIFE TABLES.

100,000 MALES BORN ALIVE, 1919-1920.

l_x. Males. TABLE 5.

EXACT AGE IN YEARS.																								No. of life table.
37		42		47		52		57		62		67		72		77		82		87		92		
<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	
75,982	15	73,003	15	69,690	15	65,751	15	60,590	15	53,892	15	45,406	15	34,879	15	23,401	15	12,685	16	5,051	12	1,348	5	1
74,899	22	71,879	21	68,441	20	64,311	19	58,886	19	51,896	19	43,170	19	32,583	18	21,311	20	11,242	21	4,224	19	924	13	3
70,868	....	67,422	....	63,440	....	58,827	....	53,158	....	45,916	....	37,241	....	27,590	....	17,622	....	8,062	....	3,317	....	829	....	....
74,918	21	71,231	25	67,384	25	63,012	26	57,444	25	50,503	24	42,097	22	32,458	19	22,270	19	12,501	18	4,998	13	1,160	7	5
74,832	23	71,629	22	68,096	23	63,936	22	58,111	23	50,870	22	42,403	20	32,215	21	20,971	21	11,320	20	4,822	14	965	12	7
75,986	14	73,088	14	69,742	14	65,631	16	60,364	16	53,631	16	45,039	16	34,515	17	23,379	16	13,017	15	5,072	11	1,028	10	9
77,010	10	74,337	10	71,497	10	68,225	10	63,837	10	57,955	9	49,917	8	39,145	8	26,707	10	14,686	9	5,759	8	1,290	6	11
79,647	1	77,323	1	74,882	1	72,063	1	68,088	1	62,618	1	55,201	1	44,658	1	31,559	1	18,374	1	7,587	1	1,616	1	13
77,435	8	74,882	8	72,089	7	68,863	7	64,668	5	58,798	6	51,153	4	40,676	4	28,563	5	16,841	5	5,899	7	496	30	15
74,715	25	71,618	23	68,134	22	63,833	23	58,228	22	51,104	20	42,307	21	31,472	22	20,269	23	10,789	23	4,105	20	880	16	17
75,275	18	72,411	16	69,098	17	65,002	17	59,614	17	52,588	18	43,454	18	32,275	20	20,820	22	10,960	22	3,987	22	711	20	19
75,045	20	72,359	17	69,493	16	66,092	14	61,491	14	55,215	14	47,059	13	36,467	13	24,475	13	13,240	13	4,774	15	771	17	21
79,191	2	76,599	3	73,668	3	70,153	3	65,466	4	59,090	4	50,953	5	40,493	5	28,657	4	16,865	4	5,944	6	562	29	23
76,772	12	74,003	12	71,001	11	67,443	11	62,683	11	56,381	11	48,454	11	38,559	*10	27,502	7	16,207	6	6,375	5	1,093	9	25
75,173	19	72,125	18	68,444	19	64,015	21	58,304	21	50,987	21	42,078	23	31,215	24	19,906	25	10,304	25	3,921	23	903	15	27
74,061	30	70,789	29	66,986	28	62,347	28	56,359	29	48,819	28	39,782	28	29,412	27	18,849	27	9,710	28	3,502	27	700	21	29
77,895	6	75,245	6	72,357	6	68,994	6	64,551	6	58,816	5	50,855	6	40,253	6	27,971	6	15,471	8	5,571	9	919	14	31
77,008	11	74,121	11	70,971	12	67,286	12	62,502	12	56,137	12	47,594	12	36,826	12	24,841	12	13,045	14	4,226	18	564	28	33
78,473	5	75,591	5	72,804	5	69,246	5	64,444	7	58,120	7	49,528	9	38,679	9	26,764	9	14,397	10	4,389	17	421	33	35
74,109	28	70,940	27	67,293	26	63,024	25	57,481	24	50,372	25	41,686	24	31,157	25	20,077	24	10,451	24	3,731	25	651	24	37
76,681	13	73,737	13	70,582	13	66,808	13	61,752	13	55,313	13	46,879	14	35,230	14	23,203	17	13,401	12	5,253	10	649	25	39
78,839	4	75,989	4	72,988	4	69,843	4	65,542	3	59,635	3	51,875	3	41,351	3	29,100	3	17,279	2	6,986	3	1,126	8	41
75,609	16	72,000	20	68,280	21	64,373	18	59,602	18	53,427	17	44,840	17	34,660	16	24,383	14	12,606	17	3,201	30	221	36	43
77,203	9	74,575	9	71,819	9	68,621	8	64,161	8	58,103	8	49,988	7	38,559	*10	25,418	11	13,507	11	4,434	16	465	31	45
77,806	7	75,033	7	72,086	8	68,552	9	63,977	9	57,770	10	49,489	10	39,304	7	26,981	8	15,520	7	6,990	2	1,425	3	47
79,151	3	76,786	2	74,185	2	70,976	2	66,557	2	60,573	2	52,680	2	42,246	2	29,649	2	16,920	3	6,811	4	1,497	2	40
73,410	35	70,031	35	65,973	34	60,959	33	54,493	34	46,395	34	36,880	35	26,360	35	16,412	32	8,431	33	3,205	29	742	19	51
73,470	34	70,093	34	65,860	35	60,790	35	54,511	33	46,739	33	37,303	34	26,444	33	16,338	33	8,445	32	3,009	32	461	32	53
72,209	38	68,872	37	64,661	37	59,421	37	53,022	36	45,116	36	35,736	37	25,228	37	15,310	39	7,657	37	2,637	34	402	34	55
70,633	39	67,050	39	62,962	39	58,474	38	52,309	38	44,547	38	35,400	38	25,401	36	15,886	36	7,525	38	1,920	40	139	40	57
73,958	31	70,890	28	67,033	27	62,169	29	56,048	31	48,294	30	39,018	29	28,553	29	18,373	28	9,951	26	4,060	21	991	11	59
74,581	26	70,981	26	66,896	29	62,123	32	56,076	30	48,406	29	38,850	30	27,929	30	17,472	30	8,308	34	2,120	39	149	39	61
72,467	37	69,727	36	66,495	32	62,554	27	57,327	26	50,363	26	41,394	25	30,404	26	19,096	26	9,935	27	3,718	28	696	22	63
73,765	33	70,250	33	66,548	31	62,168	30	56,527	28	49,429	27	40,673	27	31,425	23	22,774	18	12,320	19	2,542	35	53	43	65
72,913	36	68,454	38	63,036	38	56,229	40	47,743	40	37,404	42	27,030	43	17,174	43	9,643	43	4,629	44	1,355	*43	113	41	67
73,790	32	70,384	31	66,211	33	60,838	34	53,943	35	45,543	35	35,835	36	25,218	38	15,469	38	7,854	36	2,899	33	600	27	69
74,176	29	70,785	30	66,791	30	62,133	31	55,835	32	47,540	32	37,961	32	27,262	31	16,911	31	8,776	30	3,348	28	678	23	71
67,318	41	63,155	41	58,508	41	53,307	41	46,891	41	39,220	41	30,882	41	21,493	42	12,396	41	6,142	40	2,272	36	202	37	73
74,777	24	71,521	24	67,714	24	63,034	24	56,752	27	48,188	31	37,667	33	26,462	32	16,269	34	7,193	39	1,355	*43	40	44	75
74,400	27	70,313	32	65,740	36	60,021	36	52,445	37	43,337	39	33,321	39	23,517	40	14,524	40	5,722	41	642	45	4	45	77
75,293	17	72,117	19	68,464	18	64,251	20	58,361	20	50,715	23	41,323	26	29,275	28	17,662	29	9,181	29	3,125	31	295	35	79
56,064	45	51,433	45	46,638	45	41,384	45	35,395	45	28,983	45	22,190	44	15,519	44	9,700	42	5,095	42	2,164	38	754	18	81
62,554	43	58,028	43	53,560	43	48,666	43	42,917	43	36,912	43	30,485	42	23,021	41	15,519	37	8,736	31	3,916	24	1,411	4	83
54,522	46	49,722	46	44,762	46	38,797	46	31,940	46	24,946	46	17,879	46	11,491	46	6,727	45	3,538	45	1,609	41	609	26	85
56,413	44	51,957	44	47,197	44	41,957	44	35,893	44	29,112	44	21,931	45	14,841	45	9,085	44	4,909	43	1,568	42	98	42	87
48,185	....	43,426	....	38,802	....	33,188	....	27,383	....	21,346	....	15,538	....	10,261	....	5,851	....	2,917	....	1,161	....	380	....	....
65,908	42	61,831	42	57,651	42	52,558	42	46,619	42	40,201	40	32,937	40	24,625	39	16,120	35	7,996	35	2,207	37	199	38	89
70,105	40	66,358	40	62,441	40	57,303	39	51,034	39	44,906	37	38,816	31	26,428	34	.....	.....	.....	.....	.....	.....	.....	.....	.....

*The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.

*The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.

*The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

TABLE 6. Females. l_x .

NUMBER OF SURVIVORS OUT OF

No. of life table.	AREA AND COLOR.	EXACT AGE IN YEARS.																	
		0		1		2		7		12		17		22		27		32	
		l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank	l_x	Rank
WHITE.																			
2	Aggregate ¹	100,000		93,268	22	91,792	21	89,569	20	88,651	19	87,589	19	85,741	18	83,231	16	80,461	17
4	Original registration states ²	100,000		92,639	25	91,070	24	88,703	24	87,739	24	86,673	24	84,849	24	82,364	25	79,615	24
	Original registration states, 1909-1911.....	100,000		89,774	....	87,455	....	84,651	....	83,640	....	82,629	....	81,048	....	79,020	....	76,727	....
STATES.																			
6	California.....	100,000		94,033	11	92,760	11	90,514	10	89,532	11	88,352	14	86,313	14	83,683	15	80,857	15
8	Connecticut.....	100,000		92,621	27	90,982	26	88,690	25	87,795	23	86,919	23	85,315	22	82,957	18	80,320	18
10	Illinois.....	100,000		93,395	21	91,784	22	89,405	21	88,486	20	87,414	20	85,621	20	83,213	17	80,557	16
12	Indiana.....	100,000		93,512	18	92,128	18	90,023	17	89,114	17	87,864	18	85,653	19	82,856	19	79,913	22
14	Kansas.....	100,000		94,603	6	93,423	5	91,706	5	90,838	4	89,799	4	88,201	4	86,023	2	83,408	3
16	Kentucky.....	100,000		94,353	7	92,754	12	90,418	13	89,455	14	88,168	16	85,776	17	82,617	23	79,324	27
18	Maryland.....	100,000		92,074	36	90,435	34	88,286	28	87,395	27	86,383	26	84,487	28	81,812	31	78,962	30
20	Massachusetts.....	100,000		92,174	34	90,557	32	88,225	31	87,303	29	86,366	28	84,757	25	82,530	24	79,965	20
22	Michigan.....	100,000		92,542	28	91,027	25	88,467	27	87,376	28	86,156	31	84,079	33	81,284	35	78,290	35
24	Minnesota.....	100,000		94,685	4	93,762	3	92,111	3	91,248	3	90,234	2	88,482	2	86,016	3	83,240	5
26	Missouri.....	100,000		94,326	8	92,829	9	90,453	11	89,430	15	88,323	15	86,402	13	83,821	13	81,045	13
28	New Jersey.....	100,000		92,916	23	91,342	23	89,047	22	88,106	22	87,084	22	85,336	21	82,849	20	80,090	19
30	New York.....	100,000		92,622	26	90,955	28	88,493	26	87,501	25	86,434	25	84,644	26	82,185	27	79,464	25
32	North Carolina.....	100,000		93,971	13	92,333	15	90,445	12	89,814	8	88,839	8	86,916	10	84,248	9	81,141	11
34	Ohio.....	100,000		93,458	20	92,105	20	89,938	18	89,087	18	88,067	17	86,220	15	83,782	14	81,070	12
36	Oregon.....	100,000		95,470	1	94,720	1	93,075	1	92,196	1	90,993	1	88,948	1	86,267	1	83,524	2
38	Pennsylvania.....	100,000		92,167	35	90,532	33	88,203	32	87,254	31	86,233	30	84,440	29	81,950	29	79,173	29
40	South Carolina.....	100,000		93,929	14	92,191	17	90,093	16	89,401	16	88,507	11	86,708	11	84,189	10	81,204	9
42	Tennessee.....	100,000		94,632	5	93,197	7	91,090	7	90,277	7	89,159	7	87,055	8	84,181	11	81,024	14
44	Utah.....	100,000		94,219	9	93,264	6	91,737	4	90,808	5	89,493	6	87,488	6	84,760	7	81,419	8
46	Virginia.....	100,000		93,965	12	92,568	13	90,370	14	89,591	10	88,673	9	86,923	9	84,478	8	81,803	7
48	Washington.....	100,000		95,010	2	94,126	2	92,403	2	91,437	2	90,185	3	88,225	3	85,784	4	83,198	6
50	Wisconsin.....	100,000		94,041	10	93,100	8	91,351	6	90,499	6	89,572	5	88,000	5	85,752	5	83,248	4
CITIES.																			
52	Aggregate ³	100,000		92,416	31	90,602	31	87,855	34	86,769	34	85,665	34	83,814	35	81,320	34	78,577	34
54	Baltimore.....	100,000		91,641	37	89,584	37	87,171	36	86,247	36	85,202	36	83,302	36	80,671	36	78,015	36
56	Boston.....	100,000		91,331	38	89,539	38	86,771	37	85,451	37	84,403	37	82,617	37	79,901	37	76,940	37
58	Buffalo.....	100,000		90,587	41	88,778	41	85,410	41	83,959	41	82,761	40	80,878	39	78,416	39	75,746	38
60	Chicago.....	100,000		92,308	32	90,336	35	87,647	35	86,677	35	85,620	35	83,300	34	81,485	33	78,918	31
62	Cleveland.....	100,000		92,524	*29	90,962	27	88,274	*29	87,280	30	86,250	29	84,405	30	82,053	28	79,354	26
64	Detroit.....	100,000		91,324	39	89,406	39	86,120	39	84,885	39	83,601	38	81,391	38	78,590	38	75,617	39
66	Los Angeles.....	100,000		93,460	19	92,116	19	89,634	19	88,456	21	87,187	21	85,178	23	82,672	22	79,963	21
68	New Orleans.....	100,000		93,736	17	92,432	14	90,296	15	89,489	13	88,385	13	86,202	16	82,677	21	78,840	32
70	New York, N. Y.....	100,000		92,840	24	90,928	30	88,274	*29	87,241	32	86,142	32	84,349	31	81,910	30	79,185	28
72	Philadelphia.....	100,000		92,524	*29	90,932	29	88,164	33	87,162	33	86,115	33	84,178	32	81,574	32	78,775	33
74	Pittsburgh.....	100,000		90,267	43	88,063	43	85,117	42	83,699	43	82,383	41	80,211	40	77,062	40	73,663	40
76	St. Louis.....	100,000		93,775	16	92,240	16	88,933	23	87,491	26	86,376	27	84,622	27	82,286	26	79,750	23
78	San Francisco.....	100,000		94,719	3	93,605	4	90,833	8	89,506	12	88,424	12	86,631	12	84,091	12	81,194	10
80	Washington, D. C.....	100,000		93,817	15	92,787	10	90,610	9	89,626	9	88,602	10	87,220	7	85,685	6	83,786	1
NEGROES.																			
82	States with less than 4 per cent Negroes ⁴ ..	100,000		88,520	44	84,666	44	80,515	44	78,779	44	75,907	44	71,670	44	67,586	44	63,664	44
84	States with more than 5 per cent Negroes ⁵ ..	100,000		91,092	40	89,005	40	85,835	40	84,559	40	81,958	42	77,279	42	71,932	43	66,488	43
86	Large cities ⁶	100,000		87,356	46	83,375	46	78,656	46	76,961	46	74,014	46	69,668	46	65,607	46	61,576	46
88	Original registration states ²	100,000		87,965	45	84,094	45	79,702	45	77,992	45	75,230	45	71,201	45	67,389	45	63,504	45
	Original registration states, 1909-1911.....	100,000		81,488	....	76,697	....	71,662	....	69,745	....	66,873	....	63,381	....	60,209	....	56,851	....
HAWAII.																			
90	Hawaii (all races combined).....	100,000		90,305	42	88,110	42	84,833	43	83,701	42	81,248	43	77,064	43	72,270	42	66,898	42
92	Japanese in Hawaii.....	100,000		92,290	33	90,129	36	86,606	38	85,368	38	83,132	39	79,164	41	74,554	41	69,564	41

* Two or more rankings the same.
¹ Statistics for the aggregate tables are a compilation of those for the New England states, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Kansas, Utah, California, Oregon, and Washington.
² The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.
³ The 14 cities included in aggregate white in cities are those shown in the table.

100,000 FEMALES BORN ALIVE, 1919-1920.

l_x. Females. TABLE 6.

EXACT AGE IN YEARS.																								No. of life table.
37		42		47		52		57		62		67		72		77		82		87		92		
<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	<i>l_x</i>	Rank.	
77,689	17	74,947	13	71,944	12	68,283	12	63,504	17	57,266	19	49,081	18	38,575	18	26,677	19	15,111	19	6,451	12	1,861	6	2
76,917	24	74,194	24	71,070	23	67,188	24	62,132	23	55,540	24	46,902	24	36,131	24	24,425	23	13,521	23	5,628	20	1,575	10	4
74,117	....	71,249	....	67,938	....	63,942	....	58,790	....	51,999	....	43,453	....	33,186	....	22,210	....	12,001	....	4,762	....	1,267	....	....
78,038	11	75,289	12	72,279	11	68,657	11	64,182	10	58,400	12	50,821	13	41,198	8	29,577	10	17,347	10	7,394	6	1,953	5	6
77,649	18	74,919	14	71,902	13	68,117	15	62,934	20	56,004	21	47,051	23	36,293	23	25,098	21	14,630	20	6,007	18	1,297	20	8
77,954	12	75,318	11	72,401	10	68,762	10	63,933	12	57,841	15	49,771	17	39,189	17	27,510	17	16,115	14	6,706	10	1,454	14	10
76,990	23	74,263	22	71,298	21	67,814	20	63,593	15	58,064	14	50,459	14	40,360	15	28,140	14	15,169	18	5,033	30	704	40	12
80,701	4	78,141	3	75,536	3	72,551	3	68,527	1	63,193	1	56,172	1	46,341	1	34,340	1	21,231	1	8,063	5	915	36	14
76,206	30	73,433	30	70,575	26	67,324	22	63,141	19	57,437	17	50,139	15	40,349	16	28,571	12	16,797	11	7,024	8	1,500	11	16
76,116	31	73,367	31	70,296	30	66,567	28	61,588	25	55,114	25	47,272	22	36,475	22	23,779	25	12,874	26	5,285	26	1,274	22	18
77,325	20	74,635	17	71,542	17	67,626	21	62,634	22	56,164	20	47,458	21	36,636	21	25,033	22	14,083	21	5,441	23	1,011	32	20
75,450	34	72,656	34	69,591	34	65,937	31	61,434	28	55,545	23	47,674	20	37,595	20	25,915	20	14,059	22	4,935	32	812	38	22
80,462	6	77,784	6	74,952	6	71,569	5	67,087	6	61,334	3	54,029	3	44,263	3	32,220	3	19,807	2	9,403	1	2,482	3	24
78,248	10	75,564	10	72,785	9	69,516	8	65,300	7	59,860	7	52,372	6	42,410	6	30,615	6	18,399	5	8,602	2	2,821	1	26
77,525	19	74,884	15	71,820	15	67,920	17	62,692	21	55,752	22	46,481	25	35,403	26	23,440	26	12,650	28	5,369	25	1,491	13	28
76,841	25	74,123	25	70,834	25	66,693	26	61,206	29	54,122	29	45,080	29	33,918	30	22,313	30	12,185	29	4,988	31	1,275	21	30
77,721	15	74,363	20	71,265	22	67,858	19	63,649	19	58,304	13	51,009	12	40,434	14	27,770	16	15,711	15	6,045	17	999	33	32
78,301	9	75,681	8	72,847	8	69,427	9	65,016	9	59,078	9	51,112	11	40,635	11	28,303	13	16,130	13	6,647	11	1,602	8	34
80,744	3	77,938	5	74,996	5	71,509	6	67,099	5	61,191	5	53,360	5	43,425	5	31,464	5	18,264	6	6,964	9	1,259	24	36
76,336	29	73,523	29	70,442	29	66,655	27	61,567	26	54,889	27	46,383	26	35,843	25	24,191	24	13,264	24	5,196	28	1,176	26	38
77,777	14	74,567	18	71,645	16	68,149	14	63,536	16	57,346	18	48,981	19	38,437	19	26,807	18	15,532	16	6,149	15	1,100	30	40
77,865	13	74,676	16	71,436	19	68,013	16	63,816	13	58,450	11	51,115	10	41,174	9	29,611	9	17,465	8	7,119	7	1,499	12	42
77,697	16	74,248	23	71,318	20	68,166	13	63,947	11	58,963	10	51,882	7	41,631	7	30,048	7	17,672	7	5,830	19	469	43	44
78,845	7	75,914	7	73,162	7	69,704	7	65,142	8	59,202	8	51,206	9	40,508	13	27,771	15	15,453	17	6,113	16	1,337	19	46
80,638	5	77,958	4	75,051	4	71,660	4	67,161	4	61,241	4	53,566	4	43,520	4	31,579	4	18,796	4	8,479	3	2,564	2	48
80,797	2	78,411	2	75,860	2	72,720	2	68,465	2	62,687	2	55,159	2	45,215	2	32,711	2	19,347	3	8,187	4	1,984	4	50
75,870	33	73,042	33	69,023	33	65,351	34	59,749	33	52,557	33	43,447	33	32,411	34	21,267	34	11,645	32	4,737	34	1,153	28	52
75,415	35	72,583	35	69,046	35	65,002	35	59,498	35	52,568	32	44,494	31	33,546	31	21,501	33	11,848	31	5,104	29	975	35	54
73,897	37	70,655	37	66,992	38	62,455	39	56,945	38	49,974	39	40,795	38	30,176	38	20,073	36	10,698	36	4,287	37	1,342	18	56
73,122	38	70,584	38	67,311	37	63,341	36	58,456	36	51,733	36	42,862	36	31,199	36	19,518	37	10,410	38	3,266	41	203	45	58
76,401	28	73,697	28	70,479	28	66,415	29	60,844	31	53,849	31	44,978	30	34,005	29	22,929	29	13,106	25	5,432	24	1,173	27	60
76,555	26	73,772	26	70,541	27	66,336	30	60,903	30	54,305	28	45,737	28	35,030	27	22,965	28	12,044	30	5,251	27	1,442	15	62
72,847	39	70,044	39	66,607	39	62,630	38	57,916	37	51,579	37	43,150	34	32,801	33	21,764	31	11,579	33	4,826	33	1,345	17	64
77,185	21	74,498	19	71,513	18	67,869	18	63,321	18	57,537	16	50,048	16	40,703	10	29,814	8	17,415	9	6,180	14	817	37	66
75,342	36	71,567	36	67,589	36	62,760	37	56,640	39	49,069	40	39,726	39	29,160	39	19,077	39	10,255	39	3,159	42	239	44	68
76,552	27	73,746	27	70,215	31	65,725	32	59,703	34	51,983	35	42,223	37	30,505	37	19,343	38	10,469	37	4,544	35	1,406	16	70
76,003	32	73,177	32	69,781	32	65,515	33	59,751	32	52,205	34	43,116	35	32,244	35	20,970	35	11,378	34	4,523	36	976	34	72
70,038	40	66,356	40	62,615	40	58,175	40	52,492	41	45,373	41	36,491	41	26,484	40	16,840	40	8,731	41	3,270	40	640	42	74
77,072	22	74,309	21	71,061	24	66,744	25	61,491	27	55,078	26	46,060	27	34,937	28	23,218	27	12,732	27	5,538	21	1,272	23	76
78,400	8	75,673	9	71,857	14	67,280	23	61,837	24	54,101	30	44,320	32	33,211	32	21,593	32	11,361	35	4,139	38	768	39	78
81,781	1	79,530	1	76,777	1	73,280	1	68,138	3	60,844	6	51,461	8	40,580	12	29,442	11	16,472	12	6,341	13	1,668	7	80
59,585	44	55,221	44	50,378	44	44,773	44	37,829	44	30,400	44	23,441	44	16,582	43	10,710	43	6,123	43	2,968	43	1,109	29	82
61,232	43	56,193	43	50,954	43	45,388	43	39,174	43	32,793	43	26,389	43	19,914	42	13,963	42	8,669	42	4,100	39	1,077	31	84
57,405	46	52,790	46	47,486	46	41,102	46	33,459	46	25,904	46	19,176	46	13,292	45	8,517	45	4,831	45	2,509	45	1,237	25	86
59,431	45	54,996	45	50,176	45	44,611	45	37,568	45	29,829	45	22,641	45	15,934	44	10,148	44	5,878	44	2,709	44	648	41	88
53,049	....	48,772	....	43,973	....	38,789	....	32,887	....	26,281	....	19,616	....	13,663	....	8,825	....	4,855	....	2,118	....	825	....	....
61,899	42	57,610	42	53,933	42	49,816	42	45,466	42	40,055	42	32,502	42	24,712	41	16,341	41	9,448	40	5,501	22	1,578	9	90
65,211	41	61,884	41	59,124	41	56,025	41	53,416	40	50,800	38	36,616	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92

⁴ The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.

⁵ The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.

⁶ The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

TABLE 7. Males. d_x .

NUMBER OF DEATHS OUT OF

No. of life table.	AREA AND COLOR.	AGE INTERVAL IN YEARS.																	
		0-1		1-2		2-7		7-12		12-17		17-22		22-27		27-32		32-37	
		d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.
WHITE.																			
1	Aggregate ¹	8,433	22	1,610	19	2,442	17	1,025	12	1,210	22	1,846	21	2,179	18	2,498	19	2,775	18
3	Original registration states ²	9,243	28	1,707	23	2,639	26	1,090	20	1,200	*19	1,822	20	2,170	17	2,479	17	2,751	17
	Original registration states, 1909-1911.....	12,326	....	2,473	....	2,950	....	1,111	....	1,072	....	1,752	....	2,127	....	2,388	....	2,945	....
STATES.																			
5	California.....	7,277	9	1,381	10	2,309	11	1,177	29	1,536	37	2,244	*39	2,657	38	3,082	36	3,419	37
7	Connecticut.....	9,459	30	1,497	13	2,611	21	1,075	19	1,186	17	1,821	19	2,215	21	2,505	21	2,799	20
9	Illinois.....	8,414	21	1,802	27	2,628	25	1,026	13	1,234	25	1,819	18	2,037	10	2,375	10	2,679	*11
11	Indiana.....	8,123	19	1,505	14	2,465	18	963	8	1,268	27	1,918	28	2,047	11	2,232	4	2,469	4
13	Kansas.....	6,781	4	1,212	6	2,050	6	933	6	1,195	18	1,721	11	1,913	4	2,210	3	2,338	1
15	Kentucky.....	6,928	6	1,639	21	2,404	*13	975	9	1,307	30	2,099	34	2,337	30	2,380	*11	2,496	5
17	Maryland.....	9,599	33	1,599	17	2,404	*13	1,051	15	1,087	4	1,668	6	2,239	24	2,668	31	2,970	30
19	Massachusetts.....	9,862	36	1,733	25	2,627	24	1,052	16	1,051	2	1,542	2	1,955	6	2,346	8	2,557	7
21	Michigan.....	9,345	29	1,609	18	2,735	28	1,169	28	1,331	32	1,879	*24	2,017	9	2,322	7	2,548	6
23	Minnesota.....	6,879	5	1,026	2	1,849	1	956	7	1,183	16	1,750	13	2,049	12	2,427	15	2,690	13
25	Missouri.....	7,443	12	1,680	22	2,593	20	1,068	18	1,241	26	1,966	30	2,222	22	2,373	9	2,642	10
27	New Jersey.....	8,813	23	1,798	26	2,624	22	1,095	21	1,111	8	1,776	14	2,257	*26	2,558	24	2,795	19
29	New York.....	9,226	27	1,849	29	2,719	27	1,124	23	1,211	*23	1,892	26	2,329	29	2,639	29	2,950	29
31	North Carolina.....	7,270	8	1,854	30	1,929	3	729	1	1,055	3	1,746	12	2,257	*26	2,632	28	2,633	9
33	Ohio.....	8,052	18	1,445	11	2,401	12	986	10	1,201	21	1,795	16	1,997	8	2,380	*11	2,735	16
35	Oregon.....	6,264	1	980	1	1,871	2	1,003	11	1,520	36	2,045	33	2,232	23	2,701	32	2,911	26
37	Pennsylvania.....	9,693	34	1,823	28	2,524	19	1,060	17	1,144	10	1,785	15	2,242	25	2,587	25	2,943	28
39	South Carolina.....	7,485	13	1,878	31	2,215	9	805	2	1,098	6	1,990	31	2,432	32	2,526	22	2,890	25
41	Tennessee.....	6,335	3	1,563	15	2,257	10	830	3	1,147	11	1,879	*24	2,186	20	2,388	13	2,576	8
43	Utah.....	7,388	10	1,118	5	1,960	5	1,129	25	1,499	35	1,996	32	2,450	33	3,244	40	3,598	38
45	Virginia.....	7,802	15	1,471	12	2,151	8	833	4	1,152	12	1,921	29	2,281	28	2,484	18	2,702	14
47	Washington.....	6,311	2	1,045	4	2,085	7	1,045	14	1,432	34	2,236	38	2,599	37	2,736	33	2,705	15
49	Wisconsin.....	7,851	17	1,031	3	1,955	4	915	5	1,160	13	1,629	4	1,789	1	2,160	1	2,359	2
CITIES.																			
51	Aggregate ³	9,524	*31	1,995	35	3,126	37	1,246	33	1,200	*19	1,806	17	2,183	19	2,538	23	2,972	31
53	Baltimore.....	10,341	37	1,960	34	2,955	30	1,155	26	988	1	1,495	1	2,129	16	2,590	26	2,917	27
55	Boston.....	10,869	40	2,067	37	3,083	36	1,338	35	1,093	5	1,583	3	2,098	14	2,642	30	3,018	33
57	Buffalo.....	11,688	42	1,910	32	3,696	41	1,586	44	1,327	31	1,716	10	2,102	15	2,499	20	2,843	22
59	Chicago.....	9,844	35	2,162	40	3,141	38	1,182	31	1,161	*14	1,697	9	1,928	5	2,248	5	2,679	*11
61	Cleveland.....	9,219	26	1,729	24	2,997	32	1,198	32	1,211	*23	1,673	7	1,894	3	2,422	14	3,076	34
63	Detroit.....	10,811	38	2,006	36	3,687	40	1,363	37	1,346	33	1,859	22	1,858	2	2,168	2	2,435	3
65	Los Angeles.....	7,745	14	1,619	20	2,626	23	1,433	41	1,632	39	2,204	37	2,579	36	3,025	35	3,372	36
67	New Orleans.....	7,408	11	1,371	9	2,427	15	1,406	39	1,740	40	2,157	35	2,526	35	3,574	41	4,478	45
69	New York, N. Y.....	8,945	25	2,100	38	3,006	33	1,166	27	1,161	*14	1,876	23	2,341	31	2,609	27	3,006	32
71	Philadelphia.....	9,524	*31	1,924	33	3,016	34	1,179	30	1,112	9	1,679	8	2,073	13	2,432	16	2,885	24
73	Pittsburgh.....	12,079	43	2,413	43	3,725	42	1,419	40	1,273	28	2,197	36	2,765	40	3,084	37	3,727	40
75	St. Louis.....	8,257	20	1,575	16	3,950	43	1,572	42	1,109	7	1,653	5	1,956	7	2,318	6	2,833	21
77	San Francisco.....	6,970	7	1,222	7	2,431	16	1,378	38	1,576	38	2,244	*39	2,681	39	3,231	39	3,867	41
79	Washington, D. C.....	7,832	16	1,228	8	2,913	29	1,351	36	1,279	29	1,901	27	2,461	34	2,898	34	2,844	23
NEGROES.																			
81	States with less than 4 per cent Negroes ⁴	14,168	44	3,939	44	4,800	45	1,580	43	2,768	45	4,455	46	4,195	45	3,824	44	4,207	43
83	States with more than 5 per cent Negroes ⁵	10,919	41	2,335	42	3,051	35	1,123	22	2,091	43	3,967	43	4,634	46	4,625	46	4,701	46
85	Large cities ⁶	15,440	46	4,214	46	4,982	46	1,747	46	2,906	46	4,174	44	3,779	42	3,770	42	4,466	44
87	Original registration states ²	14,495	45	4,011	45	4,385	44	1,644	45	2,676	44	4,275	45	4,191	44	3,814	43	4,096	42
	Original registration states, 1909-1911.....	21,985	....	5,216	....	5,339	....	1,809	....	2,296	....	3,465	....	3,619	....	3,894	....	4,292	....
HAWAII.																			
89	Hawaii (all races combined).....	10,820	39	2,123	39	3,236	39	1,274	34	1,883	42	3,205	42	3,963	43	3,834	45	3,704	39
91	Japanese in Hawaii.....	8,910	24	2,185	41	2,981	31	1,126	24	1,785	41	2,980	41	3,402	41	3,169	38	3,357	35

* Two or more rankings the same.
¹ Statistics for the aggregate tables are a compilation of those for the New England states, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Kansas, Utah, California, Oregon, and Washington.
² The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.
³ The 14 cities included in aggregate white in cities are those shown in the table.

100,000 MALES BORN ALIVE, 1919-1920.

d_x . Males. TABLE 7.

AGE INTERVAL IN YEARS.																						No. of life table.		
37-42		42-47		47-52		52-57		57-62		62-67		67-72		72-77		77-82		82-87		87-92			92-97	
d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.		d_x	Rank.
2,979	18	3,313	*16	3,939	16	5,161	16	6,698	20	8,486	22	10,527	25	11,478	31	10,716	31	7,634	28	3,703	29	1,154	40	1
3,020	19	3,438	19	4,130	20	5,425	20	6,990	25	8,726	28	10,587	28	11,272	27	10,069	28	7,018	26	3,300	27	838	32	2
3,458	....	3,982	....	4,615	....	5,669	....	7,242	....	8,675	....	9,651	....	9,968	....	8,660	....	5,645	....	2,488	....	700	....	3
3,687	37	3,847	29	4,372	25	5,568	22	6,941	23	8,406	19	9,639	8	10,188	16	9,769	25	7,503	27	3,838	30	1,042	37	5
3,203	24	3,533	21	4,160	21	5,825	27	7,241	31	8,467	21	10,188	15	11,244	26	9,651	24	6,498	22	3,857	31	943	35	7
2,898	16	3,346	18	4,111	19	5,267	18	6,733	21	8,592	*25	10,524	*23	11,136	24	10,362	29	7,945	29	4,044	35	961	36	9
2,673	8	2,840	6	3,272	6	4,388	4	5,882	4	8,038	13	10,772	34	12,438	42	12,021	41	8,927	34	4,469	36	1,176	41	11
2,324	1	2,441	1	2,819	1	3,975	1	5,470	1	7,417	7	10,543	27	13,099	44	13,185	45	10,787	43	5,971	45	1,515	45	13
2,553	3	2,793	5	3,226	5	4,195	2	5,870	3	7,645	8	10,477	20	12,113	38	11,722	35	10,942	45	5,403	42	494	17	15
3,097	22	3,484	20	4,301	24	5,605	23	7,124	30	8,797	30	10,835	35	11,203	25	9,480	21	6,684	23	3,225	25	804	30	17
2,864	13	3,313	*16	4,096	18	5,388	19	7,026	27	9,134	34	11,179	41	11,455	30	9,860	27	6,973	25	3,276	26	677	28	19
2,646	6	2,906	9	3,401	8	4,601	9	6,276	12	8,156	16	10,592	29	11,992	36	11,235	32	8,466	31	4,003	34	743	29	21
2,636	5	2,887	7	3,515	9	4,687	10	6,376	16	8,137	15	10,460	18	11,836	33	11,792	37	10,921	44	5,382	41	559	20	23
2,769	10	3,002	12	3,558	*11	4,760	11	6,302	13	7,927	11	9,895	11	11,057	22	11,295	33	9,832	38	5,282	39	1,053	38	25
3,048	20	3,681	24	4,429	27	5,711	25	7,317	32	8,909	31	10,863	38	11,309	29	9,602	22	6,383	21	3,018	21	823	31	27
3,272	27	3,803	27	4,639	29	5,988	30	7,540	33	9,037	33	10,370	16	10,563	21	9,139	18	6,208	19	2,802	18	646	25	29
2,650	7	2,888	8	3,363	7	4,443	6	5,735	2	7,961	12	10,602	30	12,282	40	12,500	43	9,900	39	4,652	38	879	33	31
2,887	15	3,150	13	3,685	13	4,784	13	6,365	15	8,543	23	10,768	33	11,985	35	11,796	38	8,819	33	3,662	28	547	18	33
2,882	14	2,787	4	3,558	*11	4,802	14	6,324	14	8,592	*25	10,849	36	11,915	34	12,367	42	10,008	40	3,968	32	416	13	35
3,259	26	3,647	22	4,269	23	5,543	21	7,109	29	8,686	27	10,529	26	11,080	23	9,626	23	6,720	24	3,080	24	620	22	37
2,944	17	3,155	14	3,774	14	5,056	15	6,439	19	8,434	20	11,649	44	12,027	37	9,802	26	8,148	30	4,604	37	644	24	39
2,850	12	3,001	11	3,145	2	4,301	3	5,907	5	7,760	9	10,524	*23	12,251	39	11,821	39	10,293	42	5,860	44	1,100	39	41
3,609	36	3,720	26	3,907	15	4,771	12	6,175	10	8,587	24	10,180	13	10,277	18	11,777	36	9,405	36	2,980	20	219	10	43
2,628	4	2,756	3	3,198	3	4,460	7	6,058	8	8,115	14	11,429	43	13,141	45	11,911	40	9,073	35	3,969	33	461	15	45
2,773	11	2,947	10	3,534	10	4,575	8	6,207	11	8,281	17	10,185	14	12,323	41	11,461	34	8,530	32	5,565	43	1,394	44	47
2,365	2	2,601	2	3,209	4	4,419	5	5,984	6	7,893	10	10,434	17	12,597	43	12,729	44	10,109	41	5,314	40	1,378	43	49
3,379	30	4,058	33	5,014	35	6,466	42	8,098	41	9,515	40	10,520	22	9,948	13	7,981	10	5,226	10	2,463	13	666	27	51
3,377	29	4,233	39	5,070	36	6,279	37	7,772	39	9,436	39	10,859	37	10,106	14	7,893	9	5,436	12	2,548	16	448	14	53
3,337	28	4,211	38	5,240	*40	6,399	40	7,906	40	9,380	37	10,508	21	9,918	12	7,653	8	5,020	8	2,235	11	390	12	55
3,583	34	4,088	35	4,488	28	6,165	35	7,762	38	9,147	35	9,999	12	9,515	10	8,361	13	5,605	13	1,781	7	138	6	57
3,068	21	3,857	30	4,864	33	6,121	34	7,754	37	9,276	36	10,465	19	10,180	15	8,422	14	5,891	16	3,069	23	894	34	59
3,600	35	4,085	34	4,773	32	6,047	32	7,670	35	9,556	41	10,921	39	10,457	20	9,164	20	6,188	18	1,971	8	148	7	61
2,740	9	3,232	15	3,941	17	5,227	17	6,964	24	8,969	32	10,990	40	11,308	28	9,161	19	6,217	20	3,022	22	664	26	63
3,515	33	3,702	25	4,380	26	5,641	24	7,098	28	8,756	29	9,248	6	8,651	7	10,454	30	9,778	37	2,489	14	53	3	65
4,459	43	5,418	46	6,807	46	8,486	46	10,374	46	10,374	45	9,856	10	7,531	5	5,014	4	3,274	3	1,242	3	112	5	67
3,406	32	4,173	36	5,373	43	6,895	44	8,400	43	9,708	43	10,617	31	9,749	11	7,615	7	4,955	7	2,299	12	555	19	69
3,391	31	3,994	32	4,658	30	6,298	39	8,295	42	9,579	42	10,699	32	10,351	19	8,135	12	5,428	11	2,670	17	639	23	71
4,163	41	4,647	42	5,201	39	6,416	41	7,671	36	8,338	18	9,389	7	9,097	9	6,254	5	3,870	5	2,070	10	202	9	73
3,256	25	3,807	28	4,680	31	6,282	38	8,564	44	10,521	46	11,205	42	10,193	17	9,076	17	5,838	15	1,315	4	40	2	75
4,087	40	4,573	41	5,719	44	7,576	45	9,108	45	10,016	44	9,804	9	8,993	8	8,802	16	5,080	9	638	1	4	1	77
3,176	23	3,653	23	4,213	22	5,890	28	7,646	34	9,392	38	12,048	45	11,613	32	8,481	15	6,056	17	2,830	19	294	11	79
4,631	45	4,795	44	5,254	42	5,989	31	6,412	17	6,793	3	6,671	2	5,819	3	4,605	3	2,931	2	1,410	5	562	21	81
4,526	44	4,468	40	4,894	34	5,749	26	6,005	7	6,427	2	7,464	4	7,502	4	6,783	6	4,820	6	2,505	15	1,196	42	83
4,800	46	4,960	45	5,965	45	6,857	43	6,994	26	7,067	4	6,388	1	4,764	1	3,189	1	1,929	1	1,000	2	468	16	85
4,456	42	4,760	43	5,240	*40	6,064	33	6,781	22	7,181	5	7,090	3	5,756	2	4,176	2	3,341	4	1,470	6	98	4	87
4,649	....	4,884	....	5,414	....	5,805	....	6,037	....	5,808	....	5,277	....	4,410	....	2,934	....	1,756	....	781	....	270	....	86
4,077	39	4,180	37	5,093	37	5,939	29	6,418	18	7,264	6	8,312	5	8,505	6	8,124	11	5,789	14	2,008	9	196	8	89
3,747	38	3,917	31	5,138	38	6,269	36	6,128	9	6,090	1	12,388	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	91

*The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.

†The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.

‡The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

TABLE 8. Females. d_x .

NUMBER OF DEATHS OUT OF

No. of life table.	AREA AND COLOR.	AGE INTERVAL IN YEARS.																	
		0-1		1-2		2-7		7-12		12-17		17-22		22-27		27-32		32-37	
		d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.
WHITE.																			
2	Aggregate ¹	6,732	22	1,476	16	2,223	16	918	14	1,062	19	1,848	21	2,510	22	2,770	22	2,772	*19
4	Original registration states ²	7,361	25	1,569	21	2,367	23	964	22	1,066	20	1,824	18	2,485	17	2,749	20	2,698	14
	<i>Original registration states, 1909-1911</i>	10,226	....	2,319	....	2,804	....	1,011	....	1,011	....	1,587	....	2,022	....	2,223	....	2,610	....
STATES.																			
6	California.....	5,967	11	1,273	9	2,246	17	982	25	1,180	30	2,039	32	2,630	27	2,826	27	2,819	27
8	Connecticut.....	7,379	27	1,639	*29	2,292	18	895	12	876	1	1,604	4	2,358	8	2,637	8	2,671	12
10	Illinois.....	6,605	21	1,611	25	2,379	25	919	15	1,072	22	1,793	*13	2,408	9	2,656	*9	2,603	7
12	Indiana.....	6,488	18	1,384	13	2,105	9	909	13	1,250	34	2,211	39	2,797	35	2,943	30	2,923	31
14	Kansas.....	5,397	6	1,180	8	1,717	4	868	9	1,039	14	1,598	3	2,178	2	2,615	7	2,707	*15
16	Kentucky.....	5,647	7	1,599	24	2,336	22	963	21	1,287	38	2,392	40	3,159	39	3,293	37	3,118	34
18	Maryland.....	7,926	36	1,639	*29	2,149	12	891	11	1,012	7	1,896	24	2,675	30	2,850	28	2,846	30
20	Massachusetts.....	7,826	34	1,617	26	2,332	21	922	16	937	5	1,609	5	2,227	3	2,565	4	2,640	11
22	Michigan.....	7,458	28	1,515	18	2,560	29	1,091	33	1,220	33	2,077	34	2,795	34	2,994	34	2,840	29
24	Minnesota.....	5,315	4	923	3	1,651	3	863	8	1,014	8	1,752	8	2,466	16	2,776	*23	2,778	*21
26	Missouri.....	5,674	8	1,497	17	2,376	24	1,023	30	1,107	27	1,921	26	2,581	25	2,776	*23	2,797	25
28	New Jersey.....	7,084	23	1,574	22	2,295	19	941	19	1,022	11	1,748	6	2,487	18	2,759	21	2,565	5
30	New York.....	7,378	26	1,667	31	2,462	27	992	27	1,067	21	1,790	*11	2,459	14	2,721	16	2,623	8
32	North Carolina.....	6,029	13	1,638	28	1,888	7	631	1	975	6	1,923	27	2,668	29	3,107	35	3,420	36
34	Ohio.....	6,542	20	1,353	12	2,167	13	851	6	1,020	9	1,847	20	2,438	10	2,712	15	2,769	17
36	Oregon.....	4,530	1	750	1	1,645	2	879	10	1,203	32	2,045	33	2,681	31	2,743	*18	2,780	23
38	Pennsylvania.....	7,833	35	1,635	27	2,329	20	949	20	1,021	10	1,793	*13	2,490	19	2,777	25	2,837	28
40	South Carolina.....	6,071	14	1,738	32	2,098	8	692	2	894	2	1,799	17	2,519	23	2,985	33	3,427	37
42	Tennessee.....	5,368	5	1,435	15	2,107	10	813	5	1,118	29	2,104	35	2,874	37	3,157	36	3,159	35
44	Utah.....	5,781	9	955	5	1,527	1	929	18	1,315	39	2,005	30	2,728	33	3,341	38	3,722	40
46	Virginia.....	6,005	12	1,427	14	2,198	15	779	3	918	3	1,750	7	2,445	13	2,675	12	2,958	32
48	Washington.....	4,990	2	884	2	1,723	5	966	23	1,252	35	1,960	29	2,441	12	2,586	6	2,560	4
50	Wisconsin.....	5,959	10	941	4	1,749	6	852	7	927	4	1,572	2	2,248	4	2,504	2	2,451	2
CITIES.																			
52	Aggregate ³	7,584	31	1,814	35	2,747	33	1,086	32	1,104	*25	1,851	22	2,494	20	2,743	*18	2,707	*15
54	Baltimore.....	8,359	37	2,057	39	2,413	26	924	17	1,045	15	1,900	25	2,631	28	2,656	*9	2,600	6
56	Boston.....	8,669	38	1,792	33	2,768	*34	1,320	39	1,048	17	1,786	10	2,716	32	2,961	31	3,043	33
58	Buffalo.....	9,413	41	1,809	34	3,368	42	1,451	43	1,198	31	1,883	23	2,462	15	2,670	11	2,624	9
60	Chicago.....	7,692	32	1,972	38	2,689	32	970	24	1,057	18	1,790	*11	2,345	6	2,567	5	2,517	3
62	Cleveland.....	7,476	*29	1,562	20	2,688	31	994	28	1,030	13	1,845	19	2,352	7	2,699	13	2,799	26
64	Detroit.....	8,676	39	1,918	37	3,286	40	1,235	36	1,284	37	2,210	38	2,801	36	2,973	32	2,770	18
66	Los Angeles.....	6,540	19	1,344	11	2,482	28	1,178	35	1,269	36	2,009	31	2,506	21	2,709	14	2,778	*21
68	New Orleans.....	6,264	17	1,304	10	2,136	11	807	4	1,104	*25	2,183	37	3,525	40	3,837	40	3,498	38
70	New York, N. Y.....	7,160	24	1,912	36	2,654	30	1,033	31	1,099	24	1,793	*13	2,439	11	2,725	17	2,633	10
72	Philadelphia.....	7,476	*29	1,592	23	2,768	*34	1,002	29	1,047	16	1,937	28	2,604	28	2,799	26	2,772	*19
74	Pittsburgh.....	9,733	43	2,204	43	2,946	37	1,418	41	1,316	40	2,172	36	3,149	38	3,399	39	3,625	39
76	St. Louis.....	6,225	16	1,535	19	3,307	41	1,442	42	1,115	28	1,754	9	2,336	5	2,536	3	2,678	13
78	San Francisco.....	5,281	3	1,114	7	2,772	36	1,327	40	1,082	23	1,793	*13	2,540	24	2,897	29	2,794	24
80	Washington, D. C.....	6,183	15	1,030	6	2,177	14	984	26	1,024	12	1,382	1	1,535	1	1,899	1	2,005	1
NEGROES.																			
82	States with less than 4 per cent Negroes ⁴	11,480	44	3,854	44	4,151	44	1,736	46	2,872	45	4,237	44	4,084	43	3,922	42	4,079	42
84	States with more than 5 per cent Negroes ⁵	8,908	40	2,087	40	3,170	38	1,276	38	2,601	43	4,679	46	5,347	46	5,444	46	5,256	46
86	Large cities ⁶	12,644	46	3,981	46	4,719	46	1,695	44	2,947	46	4,346	45	4,061	42	4,031	43	4,171	43
88	Original registration states ²	12,035	45	3,871	45	4,392	45	1,710	45	2,762	44	4,029	42	3,812	41	3,885	41	4,073	41
	<i>Original registration states, 1909-1911</i>	18,507	....	4,796	....	5,045	....	1,907	....	2,872	....	3,492	....	3,172	....	3,353	....	3,802	....
HAWAII.																			
90	Hawaii (all races combined).....	9,695	42	2,195	42	3,277	39	1,132	34	2,453	42	4,184	43	4,794	45	5,372	45	4,999	45
92	Japanese in Hawaii.....	7,710	33	2,161	41	3,523	43	1,238	37	2,236	41	3,968	41	4,610	44	4,900	44	4,353	44

* Two or more rankings the same.
¹ Statistics for the aggregate tables are a compilation of those for the New England states, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Kansas, Utah, California, Oregon, and Washington.
² The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.
³ The 14 cities included in aggregate white in cities are those shown in the table.

UNITED STATES ABRIDGED LIFE TABLES.

23

100,000 FEMALES BORN ALIVE; 1919-1920.

d_x Females. TABLE 8.

AGE INTERVAL IN YEARS.																							No. of life table.	
37-42		42-47		47-52		52-57		57-62		62-67		67-72		72-77		77-82		82-87		87-92		92-97		
d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x	Rank.	d_x		Rank.
2,742	19	3,003	17	3,661	21	4,779	21	6,238	21	8,185	25	10,506	22	11,898	32	11,566	28	8,660	26	4,590	27	1,588	40	2
2,723	15	3,124	26	3,832	25	5,056	26	6,592	27	8,638	30	10,771	32	11,706	28	10,904	21	7,893	22	4,053	20	1,337	32	4
2,868	....	3,511	....	3,996	....	5,152	....	6,791	....	8,546	....	10,267	....	10,976	....	10,209	....	7,259	....	3,495	....	1,079	....
2,749	*20	3,010	18	3,622	17	4,475	13	5,782	12	7,579	15	9,623	7	11,621	22	12,230	35	9,953	35	5,441	37	1,693	41	6
2,730	18	3,017	19	3,785	23	5,183	29	6,930	*31	8,953	35	10,758	31	11,195	15	10,468	18	8,623	24	4,710	29	1,199	27	8
2,636	6	2,917	11	3,639	18	4,829	22	6,092	19	8,070	23	10,582	27	11,679	25	11,395	27	9,409	30	5,252	34	1,356	33	10
2,727	*16	2,965	15	3,484	13	4,221	8	5,529	8	7,605	16	10,099	18	12,220	40	12,971	42	10,136	37	4,329	25	681	6	12
2,560	4	2,605	2	2,985	1	4,024	2	5,334	3	7,021	4	9,831	10	12,001	36	13,109	43	13,168	45	7,148	45	907	11	14
2,773	23	2,858	9	3,251	5	4,183	3	5,704	9	7,298	8	9,790	9	11,778	30	11,774	29	9,773	33	5,524	38	1,409	36	16
2,749	*20	3,071	22	3,729	22	4,979	24	6,474	26	7,842	19	10,797	33	12,696	44	10,905	22	7,589	20	4,011	18	1,166	25	18
2,690	12	3,093	24	3,916	27	4,992	25	6,470	25	8,706	31	10,822	34	11,603	19	10,950	25	8,642	25	4,430	26	961	14	20
2,794	25	3,065	21	3,654	20	4,503	16	5,889	14	7,871	20	10,079	17	11,680	26	11,856	30	9,124	27	4,123	21	774	8	22
2,678	8	2,832	7	3,383	7	4,482	14	5,753	10	7,305	9	9,766	8	12,043	37	12,413	39	10,404	40	6,921	44	2,311	45	24
2,684	10	2,779	6	3,269	6	4,216	6	5,440	7	7,488	11	9,962	14	11,795	31	12,216	34	9,797	34	5,781	41	2,274	44	26
2,641	7	3,064	20	3,900	26	5,228	30	6,940	33	9,271	41	11,078	40	11,963	35	10,790	20	7,281	19	3,878	16	1,321	31	28
2,718	14	3,289	32	4,141	33	5,487	34	7,084	36	9,042	37	11,162	43	11,605	20	10,128	15	7,197	17	3,713	14	1,124	23	30
3,358	38	3,098	25	3,407	9	4,209	5	5,345	4	7,295	7	10,575	46	12,664	43	12,059	31	9,666	32	5,046	32	969	*15	32
2,620	5	2,834	8	3,420	10	4,411	12	5,938	17	7,966	21	10,477	21	12,332	41	12,173	33	9,483	31	5,045	31	1,440	37	34
2,806	*27	2,942	14	3,487	14	4,410	11	5,908	15	7,831	18	9,935	11	11,961	34	13,200	44	11,300	43	5,705	40	1,193	26	36
2,813	29	3,081	23	3,787	24	5,088	27	6,678	29	8,506	28	10,540	23	11,652	24	10,927	24	8,068	23	4,020	19	1,065	20	38
3,210	35	2,922	12	3,496	15	4,613	19	6,190	20	8,365	26	10,544	24	11,630	23	11,275	26	9,383	29	5,049	33	1,057	19	40
3,189	34	3,240	29	3,423	11	4,197	4	5,366	5	7,335	10	9,941	12	11,563	17	12,146	32	10,346	39	5,620	39	1,394	35	42
3,449	39	2,930	13	3,152	4	4,219	7	4,984	2	7,081	5	10,251	19	11,583	18	12,376	37	11,842	44	5,361	35	467	3	44
2,931	33	2,752	3	3,458	12	4,562	18	5,940	18	7,996	22	10,698	29	12,737	45	12,318	36	9,340	28	4,776	30	1,231	29	46
2,680	9	2,907	10	3,391	8	4,499	15	5,920	16	7,675	17	10,046	16	11,941	33	12,783	40	10,317	38	5,915	42	2,233	43	48
2,386	2	2,551	1*	3,140	3	4,255	9	5,778	11	7,528	13	9,944	13	12,504	42	13,364	45	11,160	41	6,203	43	1,789	42	50
2,828	31	3,419	34	4,272	36	5,602	38	7,192	38	9,110	39	11,036	39	11,144	13	9,622	12	6,908	13	3,584	13	1,035	18	52
2,832	32	3,537	37	4,044	30	5,504	35	6,930	*31	8,074	24	10,948	37	12,045	38	9,653	13	6,744	9	4,129	22	954	13	54
3,242	36	3,663	38	4,537	40	5,510	36	6,971	34	9,179	40	10,619	28	10,103	8	9,375	10	6,411	8	2,945	6	1,100	22	56
2,538	3	3,273	31	3,970	28	4,885	23	6,723	30	8,871	*32	11,663	44	11,681	27	9,108	9	7,144	15	3,063	8	203	1	58
2,704	13	3,218	27	4,064	31	5,571	37	6,995	35	8,871	*32	10,973	38	11,076	11	9,823	14	7,674	21	4,259	23	1,099	21	60
2,783	24	3,231	28	4,205	34	5,433	32	6,598	28	8,568	29	10,707	30	12,065	39	10,921	23	6,793	11	3,809	15	1,378	34	62
2,803	26	3,437	35	3,977	29	4,714	20	6,337	22	8,429	27	10,349	20	11,037	10	10,185	16	6,753	10	3,481	11	1,262	30	64
2,687	11	2,985	16	3,644	19	4,548	17	5,784	13	7,489	12	9,345	6	10,889	9	12,399	38	11,235	42	5,363	36	798	9	66
3,775	41	3,978	42	4,829	42	6,120	42	7,571	43	9,343	42	10,566	25	10,083	7	8,822	7	7,096	14	2,920	5	238	2	68
2,806	*27	3,531	36	4,490	39	6,022	41	7,720	44	9,760	44	11,718	45	11,162	14	8,874	8	5,925	7	3,138	9	1,151	24	70
2,826	30	3,396	33	4,266	35	5,764	40	7,546	41	9,089	38	10,872	35	11,274	16	9,592	11	6,855	12	3,547	12	910	12	72
3,682	40	3,741	40	4,440	38	5,683	39	7,119	37	8,882	34	10,007	15	9,635	6	8,118	6	5,461	6	2,630	4	609	4	74
2,763	22	3,248	30	4,317	37	5,253	31	6,413	24	9,018	36	11,123	42	11,719	29	10,486	19	7,194	16	4,266	24	1,222	28	76
2,727	*16	3,816	41	4,577	41	5,443	33	7,736	45	9,781	45	11,109	41	11,618	21	10,232	17	7,222	18	3,371	10	725	7	78
2,251	1	2,753	4	3,497	16	5,142	28	7,294	39	9,383	43	10,881	36	11,138	12	12,970	41	10,131	36	4,673	28	1,508	38	80
4,364	43	4,843	44	5,605	45	6,944	44	7,429	40	6,959	3	6,859	4	5,872	3	4,587	3	3,155	2	1,859	2	969	*15	82
5,039	46	5,239	45	5,566	44	6,214	43	6,381	23	6,404	1	6,475	2	5,951	4	5,294	4	4,569	5	3,023	7	986	17	84
4,615	45	5,304	46	6,384	46	7,643	46	7,555	42	6,728	2	5,884	1	4,775	1	3,686	1	2,322	1	1,272	1	800	10	86
4,435	44	4,820	43	5,565	43	7,043	45	7,739	46	7,188	6	6,707	3	5,786	2	4,270	2	3,169	3	2,061	3	615	5	88
4,277	....	4,799	....	5,184	....	5,992	....	6,696	....	6,666	....	5,953	....	4,838	....	3,970	....	2,737	....	1,293	....	548	....
4,289	42	3,677	39	4,117	32	4,350	10	5,411	6	7,553	14	7,790	5	8,371	5	6,893	5	3,947	4	3,923	17	1,560	39	90
3,327	37	2,760	5	3,099	2	2,609	1	2,616	1	14,184	46	27,371	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92

*The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.

°The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.

°The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

TABLE 9. Males. e_x .

COMPLETE EXPECTATION OF

No. of life table.	AREA AND COLOR.	EXACT AGE IN YEARS.																	
		0		1		2		7		12		17		22		27		32	
		e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.
WHITE.																			
1	Aggregate ¹	55.33	15	59.38	15	59.43	15	56.03	16	51.67	16	47.36	15	43.35	16	39.45	16	35.62	15
3	Original registration states ²	54.05	20	58.51	19	58.62	18	55.34	18	51.02	18	46.71	19	42.69	19	38.77	18	34.93	18
	Original registration states, 1909-1911.....	60.23	....	56.26	....	56.88	....	53.85	....	49.56	....	45.18	....	41.13	....	37.21	....	33.33	....
STATES.																			
5	California.....	54.51	18	57.75	24	57.61	25	54.05	*26	49.74	*26	45.58	26	41.73	26	38.01	25	34.40	23
7	Connecticut.....	53.88	21	58.45	20	58.43	21	55.13	19	50.79	20	46.47	20	42.44	20	38.54	20	34.70	21
9	Illinois.....	55.17	16	59.19	16	59.37	16	56.09	15	51.74	14	47.45	14	43.43	14	39.46	15	35.57	16
11	Indiana.....	56.91	10	60.90	7	60.90	7	57.55	7	53.17	7	48.91	6	44.97	6	41.04	5	37.12	7
13	Kansas.....	59.82	1	63.14	1	62.96	1	59.85	1	54.94	1	50.66	1	46.62	1	42.62	1	38.70	1
15	Kentucky.....	57.71	8	60.97	6	61.06	6	57.65	6	53.26	5	49.02	5	45.17	4	41.38	4	37.54	3
17	Maryland.....	53.76	24	58.42	21	58.46	20	55.03	21	50.68	21	46.30	21	42.18	22	38.28	22	34.51	22
19	Massachusetts.....	54.07	19	58.93	17	59.07	17	55.81	17	51.48	17	47.09	17	42.93	17	38.91	17	35.01	17
21	Michigan.....	55.12	17	59.76	13	59.83	13	56.65	11	52.40	10	48.19	10	44.24	11	40.29	11	36.42	12
23	Minnesota.....	58.57	4	61.86	3	61.55	4	57.76	5	53.36	4	49.04	4	44.98	5	41.01	6	37.15	6
25	Missouri.....	56.80	11	60.32	11	60.43	9	57.14	*8	52.81	8	48.54	8	44.61	8	40.76	8	36.90	9
27	New Jersey.....	53.86	22	58.02	22	58.18	22	54.87	22	50.55	22	46.17	23	42.11	23	38.22	23	34.39	24
29	New York.....	52.82	27	57.13	27	57.31	27	54.05	*26	49.74	*26	45.42	27	41.40	28	37.54	29	33.74	29
31	North Carolina.....	57.76	7	61.25	5	61.49	5	57.78	4	53.24	6	48.85	7	44.79	7	40.94	7	37.19	5
33	Ohio.....	56.23	12	60.11	12	60.06	12	56.64	12	52.26	12	47.95	13	43.92	13	39.93	13	36.04	13
35	Oregon.....	57.90	5	60.73	9	60.37	11	56.57	13	52.17	13	48.02	12	44.10	12	40.20	12	36.45	11
37	Pennsylvania.....	53.27	26	57.93	23	58.12	23	54.76	23	50.42	23	46.07	24	42.02	24	38.12	24	34.32	25
39	South Carolina.....	56.04	13	59.54	14	59.76	14	56.20	14	51.70	15	47.32	16	43.37	15	39.58	14	35.76	14
41	Tennessee.....	58.61	3	61.54	4	61.58	3	58.07	3	53.59	3	49.26	3	45.28	3	41.39	3	37.53	4
43	Utah.....	55.39	14	58.77	18	58.48	19	54.71	24	50.38	24	46.20	22	42.23	21	38.41	21	34.88	19
45	Virginia.....	56.97	9	60.75	8	60.72	8	57.15	*8	52.67	9	48.33	9	44.37	9	40.53	10	36.71	10
47	Washington.....	57.84	6	60.70	10	60.38	10	56.72	10	52.36	11	48.17	11	44.35	10	40.66	9	36.95	8
49	Wisconsin.....	58.81	2	62.77	2	62.48	2	58.80	2	54.39	2	50.08	2	45.98	2	41.91	2	37.95	2
CITIES.																			
51	Aggregate ³	51.65	34	56.03	33	56.28	33	53.27	34	49.02	34	44.60	34	40.63	34	36.68	33	32.82	*33
53	Baltimore.....	51.55	36	56.44	32	56.69	32	53.59	32	49.30	33	44.86	33	40.64	33	36.67	34	32.82	*33
55	Boston.....	50.56	37	55.67	35	55.98	*34	52.95	35	48.77	35	44.39	36	40.22	36	36.23	36	32.41	36
57	Buffalo.....	49.62	*38	55.12	37	55.33	37	52.71	37	48.69	36	44.46	35	40.38	35	36.43	35	32.58	35
59	Chicago.....	52.36	29	57.02	28	57.41	26	54.46	25	50.20	25	45.87	25	41.78	25	37.74	27	33.77	28
61	Cleveland.....	52.47	28	56.75	30	56.84	31	53.74	30	49.47	31	45.15	31	41.02	31	36.93	31	33.00	31
63	Detroit.....	52.06	32	57.31	25	57.62	24	55.07	20	50.95	19	46.75	18	42.79	18	38.76	19	34.81	20
65	Los Angeles.....	53.53	25	56.98	29	56.99	29	53.63	31	49.48	30	45.38	29	41.52	27	37.77	26	34.15	26
67	New Orleans.....	49.62	*38	52.55	41	52.33	42	48.70	42	44.44	42	40.30	42	36.27	43	32.32	43	28.69	43
69	New York, N. Y.....	51.61	35	55.63	36	55.93	36	52.81	36	48.51	37	44.14	37	40.10	37	36.20	37	32.35	37
71	Philadelphia.....	52.22	31	56.66	31	56.88	30	53.81	29	49.53	29	45.16	30	41.04	30	37.04	30	33.13	30
73	Pittsburgh.....	47.18	42	52.59	40	53.06	40	50.38	40	46.23	39	41.93	40	38.06	41	34.38	41	30.76	42
75	St. Louis.....	52.34	30	56.01	34	55.98	*34	53.44	33	49.39	32	45.02	32	40.87	32	36.81	32	32.83	32
77	San Francisco.....	51.76	33	54.60	38	54.32	38	50.74	38	46.49	38	42.29	38	38.35	39	34.53	40	30.85	41
79	Washington, D. C.....	53.77	23	57.30	26	57.07	28	53.88	28	49.69	28	45.39	28	41.37	29	37.55	28	33.85	27
NEGROES.																			
81	States with less than 4 per cent Negroes ⁴	40.46	44	46.05	45	47.24	45	45.06	*44	40.95	45	37.41	44	34.68	44	31.79	44	28.65	44
83	States with more than 5 per cent Negroes ⁵	46.39	43	51.01	43	51.37	43	48.17	43	43.79	43	39.86	43	36.79	42	34.00	42	31.17	40
85	Large cities ⁶	38.45	46	44.38	46	45.69	46	43.57	46	39.55	46	36.07	46	33.17	46	30.02	46	26.77	46
87	Original registration states ²	40.45	45	46.23	44	47.48	44	45.06	*44	40.99	44	37.40	45	34.57	45	31.66	45	28.50	45
	Original registration states, 1909-1911.....	34.05	....	42.53	....	44.55	....	42.94	....	39.05	....	35.37	....	32.26	....	29.18	....	26.16	....
HAWAII.																			
89	Hawaii (all races combined).....	47.79	41	52.53	42	52.80	41	49.79	41	45.52	41	41.52	41	38.13	40	35.05	38	31.85	38
91	Japanese in Hawaii.....	49.53	40	53.32	39	53.62	39	50.41	39	46.05	40	41.98	39	38.45	38	35.04	30	31.44	39
	Japanese in Japan, 1908-1913.....	44.25	....	51.61	....	52.97	....	51.22	....	47.12	....	43.10	....	39.79	....	36.47	....	32.88	....

* Two or more rankings the same.
¹ Statistics for the aggregate tables are a compilation of those for the New England states, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Kansas, Utah, California, Oregon, and Washington.
² The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.
³ The 14 cities included in aggregate white in cities are those shown in the table.

UNITED STATES ABRIDGED LIFE TABLES.

LIFE IN YEARS, 1919-1920.

e_x . Males TABLE 9.

EXACT AGE IN YEARS.																								No. of life table.	
37		42		47		52		57		62		67		72		77		82		87		92			
e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.		
31.83	15	28.02	15	24.23	16	20.53	16	17.06	14	13.85	13	10.96	14	8.49	13	6.43	11	4.82	5	3.59	4	2.55	4	1	
31.12	18	27.32	*18	23.56	19	19.91	19	16.51	21	13.38	22	10.56	22	8.17	22	6.17	20	4.53	18	3.21	11	2.10	9	2	
29.61	....	25.99	....	22.46	....	19.02	....	15.77	....	12.85	....	10.25	....	7.95	....	6.04	....	4.56	....	3.49	....	2.70	....	3
30.86	22	27.32	*18	23.74	18	20.21	18	16.92	18	13.89	12	11.15	10	8.70	9	6.54	8	4.74	9	3.33	6	2.20	*6	5	
30.91	20	27.18	21	23.45	20	19.81	21	16.53	20	13.52	21	10.71	*19	8.29	18	6.39	17	4.79	7	3.13	14	1.78	20	7	
31.74	16	27.90	16	24.11	17	20.46	17	17.02	16	13.83	15	10.97	*12	8.54	12	6.42	*12	4.59	13	3.11	*16	1.87	17	9	
33.23	7	29.33	7	25.40	7	21.49	9	17.79	9	14.33	9	11.21	9	8.58	11	6.41	*14	4.66	11	3.26	9	2.09	10	11	
34.76	1	30.73	1	26.65	1	22.59	1	18.75	1	15.16	1	11.85	1	9.03	2	6.72	3	4.77	8	3.19	12	1.90	16	13	
33.67	*3	29.73	4	25.79	4	21.87	4	18.12	4	14.67	5	11.47	7	8.76	8	6.40	16	4.14	32	2.38	35	0.33	*41	15	
30.78	23	27.00	*23	23.25	23	19.64	23	16.28	*23	13.19	23	10.40	23	8.10	24	6.21	19	4.55	17	3.19	*18	2.04	11	17	
31.11	19	27.24	20	23.42	21	19.74	22	16.28	*23	13.11	25	10.32	26	8.02	26	6.07	25	4.36	24	2.95	21	1.77	21	19	
32.57	12	28.67	12	24.76	12	20.90	12	17.27	12	13.93	11	10.90	16	8.31	17	6.16	21	4.32	26	2.84	26	1.60	25	21	
33.33	6	29.39	6	25.44	6	21.58	6	17.94	7	14.59	6	11.51	6	8.82	7	6.42	*12	4.17	*30	2.44	33	0.60	38	23	
33.08	9	29.22	9	25.35	9	21.55	*7	17.99	5	14.71	4	11.69	2	9.04	1	6.65	6	4.57	*15	2.94	22	1.67	23	25	
30.57	26	26.76	26	23.06	26	19.47	26	16.12	26	13.07	26	10.29	27	7.98	27	6.11	22	4.57	*15	3.28	8	2.11	8	27	
29.98	28	26.25	27	22.59	27	19.08	28	15.83	28	12.88	30	10.22	28	7.94	29	6.00	*27	4.38	23	3.07	*18	1.92	15	29	
33.37	5	29.45	5	25.53	5	21.64	5	17.95	6	14.45	8	11.30	8	8.60	10	6.26	18	4.33	25	2.86	25	1.66	24	31	
32.23	13	28.39	13	24.54	13	20.74	13	17.13	13	13.77	16	10.77	18	8.18	21	5.91	*33	4.03	34	2.62	30	1.31	29	33	
32.71	11	28.86	11	24.87	11	21.02	11	17.39	10	13.99	10	10.97	*12	8.33	16	5.91	*33	3.87	37	2.37	36	0.66	37	35	
30.58	25	26.87	25	23.18	25	19.58	24	16.21	25	13.14	24	10.34	25	7.97	28	6.00	*27	4.31	27	2.91	23	1.74	22	37	
32.01	14	28.19	14	24.34	14	20.56	15	17.03	15	13.71	18	10.71	*19	8.40	*14	6.48	10	4.45	22	2.66	29	1.11	32	39	
33.67	*3	29.84	3	25.97	2	22.02	2	18.29	2	14.84	2	11.67	3	8.99	3	6.71	4	4.61	12	2.89	24	1.54	26	41	
31.42	17	27.87	17	24.25	15	20.57	14	17.01	17	13.67	19	10.79	17	8.21	20	5.61	39	3.53	40	2.09	42	.....	.....	43
32.90	10	28.98	10	24.99	10	21.03	10	17.31	11	13.84	14	10.66	21	8.06	25	5.93	*30	4.01	35	2.46	32	0.82	35	45	
33.15	8	29.28	8	25.38	8	21.55	*7	17.91	8	14.55	7	11.55	5	8.87	5	6.77	2	4.98	4	3.17	13	1.80	19	47	
34.01	2	29.98	2	25.94	3	22.00	3	18.28	3	14.83	3	11.66	4	8.90	4	6.60	7	4.72	10	3.24	10	2.02	12	49	
29.04	32	25.32	33	21.72	35	18.29	35	15.16	35	12.35	33	9.88	33	7.82	31	6.08	*23	4.58	14	3.30	7	2.20	*6	51	
29.03	33	25.30	34	21.76	34	18.36	34	15.18	34	12.27	34	9.73	34	7.69	35	5.93	*30	4.26	28	2.78	27	1.50	*27	53	
28.66	36	24.93	38	21.38	38	18.04	37	14.90	37	12.06	38	9.56	39	7.50	39	5.77	36	4.17	*30	2.76	28	1.50	*27	55	
28.79	35	25.19	36	21.66	36	18.12	36	14.95	36	12.11	36	9.58	38	7.36	41	5.29	43	3.50	*41	2.11	40	.....	.....	57
29.90	29	26.08	29	22.43	29	18.98	29	15.77	30	12.89	*27	10.35	24	8.22	19	6.41	*14	4.80	6	3.41	5	2.22	5	59	
29.25	31	25.61	30	22.01	31	18.51	32	15.22	32	12.22	35	9.60	*36	7.37	40	5.30	42	3.50	*41	2.10	41	.....	.....	61
30.90	21	27.01	22	23.20	24	19.49	25	16.03	27	12.89	*27	10.12	30	7.86	30	6.06	26	4.44	*20	3.01	20	1.81	18	63	
30.60	24	27.00	*23	23.36	22	19.83	20	16.55	19	13.55	20	10.92	15	8.40	*14	5.63	38	3.26	43	1.81	43	0.92	34	65	
25.30	45	21.78	45	18.43	45	15.35	45	12.62	46	10.40	46	8.44	45	6.88	44	5.40	41	3.73	38	2.27	*38	0.33	*41	67	
28.56	37	24.82	39	21.22	39	17.86	38	14.81	38	12.07	37	9.65	35	7.67	36	5.96	29	4.44	*20	3.12	15	1.94	*13	69	
29.32	30	25.60	31	21.98	32	18.43	33	15.21	33	12.42	31	9.91	32	7.81	32	6.08	*23	4.52	19	3.11	*16	1.94	*13	71	
27.32	*41	23.96	41	20.66	40	17.42	40	14.45	40	11.78	40	9.27	41	7.22	42	5.74	37	4.22	29	2.51	31	1.19	30	73	
28.98	34	25.18	37	21.45	37	17.85	39	14.54	39	11.66	41	9.20	42	7.04	43	4.92	44	3.08	44	1.75	44	1.05	33	75	
27.32	*41	23.76	42	20.23	42	16.91	43	13.98	43	11.38	43	9.05	44	6.79	45	4.46	45	2.60	45	0.94	45	0.75	36	77	
30.03	27	26.24	28	22.50	28	18.51	30	15.44	31	12.38	32	9.60	*36	7.51	38	5.84	35	4.05	33	2.42	34	0.59	39	79	
25.61	43	22.69	43	19.76	43	16.95	42	14.38	41	12.01	39	9.92	31	8.12	23	6.53	9	5.28	3	4.34	2	3.41	1	81	
28.32	39	25.33	32	22.24	30	19.22	27	16.45	22	13.72	17	11.07	11	8.84	6	6.92	1	5.41	2	4.21	3	2.77	3	83	
23.76	46	20.81	46	17.83	46	15.18	46	12.89	45	10.81	44	9.10	43	7.80	33	6.66	5	5.56	1	4.51	1	3.28	2	85	
25.39	44	22.35	44	19.35	44	16.45	44	13.79	44	11.42	42	9.33	40	7.62	37	5.92	32	3.93	36	2.31	37	1.15	31	87	
23.26	20.48	17.75	15.23	12.93	10.88	9.02	7.39	6.15	5.06	4.26	3.75
28.49	38	25.21	35	21.85	33	18.72	31	15.78	29	12.89	*27	10.17	29	7.75	34	5.52	40	3.66	39	2.27	*38	0.54	40	89	
27.83	40	24.26	40	20.62	41	17.23	41	14.04	42	10.62	45	6.86	46	3.80	46	2.15	46	1.02	46	.....	.....	.....	.....	91
29.07	25.33	21.71	18.26	15.06	12.16	9.61	7.44	6.63	4.14	2.96	2.03

*The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.
 *The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.
 *The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

TABLE 10. Females. e_x .

COMPLETE EXPECTATION OF

No. of life table.	AREA AND COLOR.	EXACT AGE IN YEARS.																	
		0		1		2		7		12		17		22		27		32	
		e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.
WHITE.																			
2	Aggregate ¹	57.52	19	60.63	16	60.60	15	57.05	14	52.62	13	48.22	13	44.21	*14	40.46	16	36.77	17
4	Original registration states ²	56.41	24	59.86	22	59.88	22	56.42	22	52.02	22	47.62	22	43.59	*22	39.83	23	36.12	23
	Original registration states, 1909-1911.....	53.62	.....	58.69	.....	59.24	.....	60.14	.....	61.79	.....	47.39	.....	43.26	.....	39.31	.....	35.40	.....
STATES.																			
6	California.....	58.44	11	61.12	11	60.95	10	57.41	11	53.01	10	48.69	9	44.77	9	41.10	8	37.45	8
8	Connecticut.....	56.84	20	60.33	19	60.41	*18	56.91	17	52.47	16	47.97	18	43.82	20	40.00	21	36.23	*21
10	Illinois.....	57.76	14	60.81	12	60.87	11	57.43	10	53.00	11	48.62	11	44.58	11	40.80	11	37.06	13
12	Indiana.....	57.55	18	60.51	17	60.41	*18	56.78	*19	52.33	*18	48.04	17	44.21	*14	40.02	15	37.02	14
14	Kansas.....	61.02	1	63.48	2	63.27	1	59.42	1	54.96	1	50.57	1	46.44	1	42.55	1	38.80	1
16	Kentucky.....	57.63	17	60.05	21	60.08	21	56.57	21	52.16	21	47.88	20	44.14	16	40.73	13	37.32	10
18	Maryland.....	55.99	27	59.77	24	59.84	24	56.25	25	51.80	25	47.37	27	43.38	26	39.71	24	36.05	24
20	Massachusetts.....	56.56	*21	60.32	20	60.30	20	56.93	16	52.51	15	48.05	16	43.91	19	40.03	19	36.23	*21
22	Michigan.....	56.01	26	59.48	26	59.46	26	56.12	26	51.79	*26	47.49	24	43.59	*22	40.01	20	36.44	19
24	Minnesota.....	60.59	3	62.97	3	62.58	3	58.67	4	54.20	4	49.78	4	45.71	4	41.95	3	38.26	3
26	Missouri.....	59.04	7	61.56	7	61.55	7	58.11	6	53.75	6	49.39	6	45.43	6	41.75	5	38.09	5
28	New Jersey.....	56.56	*21	59.83	23	59.86	23	56.34	23	51.92	23	47.50	23	43.42	24	39.65	25	35.92	26
30	New York.....	55.76	30	59.16	28	59.24	*28	55.83	30	51.44	30	47.04	30	42.98	30	39.19	30	35.44	30
32	North Carolina.....	58.03	13	60.72	14	60.79	13	57.01	15	52.40	17	47.94	19	43.94	18	40.25	18	36.70	18
34	Ohio.....	58.34	12	61.39	8	61.28	8	57.71	8	53.24	8	48.82	8	44.81	8	41.04	9	37.33	9
36	Oregon.....	60.45	*4	62.30	6	61.70	6	57.84	7	53.37	7	49.04	7	45.10	7	41.43	7	37.71	6
38	Pennsylvania.....	55.96	28	59.68	25	59.75	25	56.27	24	51.86	24	47.44	25	43.39	25	39.63	26	35.93	25
40	South Carolina.....	57.70	15	60.40	18	60.53	17	56.89	18	52.31	20	47.81	21	43.75	21	39.98	22	36.36	20
42	Tennessee.....	58.48	10	60.77	13	60.70	14	57.06	13	52.55	14	48.18	14	44.28	13	40.70	14	37.19	12
44	Utah.....	58.61	8	61.18	10	60.80	12	56.77	*19	52.33	*18	48.06	15	44.10	17	40.43	17	36.99	*15
46	Virginia.....	58.52	9	61.22	9	61.16	9	57.60	9	53.08	9	48.60	12	44.52	12	40.74	12	36.99	*15
48	Washington.....	60.45	*4	62.60	5	62.19	5	58.30	5	53.89	5	49.61	5	45.65	5	41.88	4	38.10	4
50	Wisconsin.....	60.73	2	63.55	1	63.19	2	59.35	2	54.89	2	50.43	2	46.28	2	42.43	2	38.63	2
CITIES.																			
52	Aggregate ³	54.87	33	58.34	33	58.49	32	55.26	32	50.92	32	46.54	32	42.51	32	38.74	33	35.00	33
54	Baltimore.....	54.70	35	58.64	31	58.98	30	55.55	31	51.12	31	46.72	31	42.72	31	39.03	31	35.28	32
56	Boston.....	53.31	38	57.33	38	57.47	38	54.23	38	50.93	38	45.62	38	41.55	38	37.87	38	34.23	38
58	Buffalo.....	53.01	39	57.47	*36	57.63	37	54.82	*36	50.72	34	46.42	33	42.44	34	38.69	34	34.97	34
60	Chicago.....	55.49	31	59.08	29	59.35	27	56.11	27	51.71	28	47.32	28	43.27	28	39.45	28	35.65	28
62	Cleveland.....	55.77	29	59.23	27	59.24	*28	55.98	28	51.59	29	47.18	29	43.15	29	39.31	29	35.56	29
64	Detroit.....	53.44	37	57.47	*36	57.70	36	54.82	*36	50.58	36	46.32	35	42.50	33	38.93	32	35.36	31
66	Los Angeles.....	57.68	16	60.69	15	60.56	16	57.18	12	52.91	12	48.64	10	44.73	10	41.01	10	37.31	11
68	New Orleans.....	54.22	36	56.81	39	56.60	39	52.89	39	48.35	39	43.92	39	39.96	39	36.56	39	33.21	39
70	New York, N. Y.....	54.83	34	58.02	35	58.23	35	54.91	35	50.54	37	46.15	37	42.07	37	38.25	37	34.48	37
72	Philadelphia.....	54.92	32	58.32	34	58.33	33	55.09	33	50.70	35	46.29	36	42.29	36	38.56	35	34.84	35
74	Pittsburgh.....	50.51	40	54.90	40	55.27	40	52.10	40	47.95	40	43.67	40	39.78	40	36.30	40	32.86	40
76	St. Louis.....	56.14	25	58.83	30	58.80	31	55.91	29	51.79	*26	47.43	26	43.36	27	39.51	27	35.69	27
78	San Francisco.....	56.50	23	58.63	32	58.32	34	55.03	34	50.81	33	46.40	34	42.31	35	38.51	36	34.79	36
80	Washington, D. C.....	59.81	6	62.72	4	62.41	4	58.86	3	54.48	3	50.08	3	45.83	3	41.60	6	37.49	7
NEGROES.																			
82	States with less than 4 per cent Negroes ⁴	42.77	44	47.25	44	48.38	44	45.76	44	41.72	*43	38.20	43	35.30	43	32.28	43	29.12	44
84	States with more than 5 per cent Negroes ⁵	45.46	43	48.85	43	48.99	43	45.72	45	41.37	45	37.60	45	34.72	45	32.11	44	29.54	43
86	Large cities ⁶	40.58	46	45.38	46	46.52	46	44.19	46	40.11	46	36.60	46	33.72	46	30.66	46	27.50	46
88	Original registration states ²	42.35	45	47.08	45	48.22	45	45.77	43	41.72	*43	38.15	44	35.17	44	32.02	45	28.82	45
	Original registration states, 1909-1911.....	37.67	.....	45.16	.....	46.96	.....	45.15	.....	41.29	.....	37.95	.....	34.90	.....	31.61	.....	28.35	.....
HAWAII.																			
90	Hawaii (all races combined).....	47.27	42	51.29	41	51.56	41	48.47	41	44.09	41	40.34	41	37.39	41	34.70	41	32.29	41
92	Japanese in Hawaii.....	47.66	41	50.60	42	50.80	42	47.79	42	43.45	42	39.54	42	36.39	42	33.48	42	30.71	42
	Japanese in Japan, 1908-1915.....	44.75	.....	51.24	.....	52.55	.....	60.85	.....	46.90	.....	43.88	.....	40.60	.....	37.68	.....	34.41	.....

* Two or more rankings the same.

¹ Statistics for the aggregate tables are a compilation of those for the New England states, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Kansas, Utah, California, Oregon, and Washington.² The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.³ The 14 cities included in aggregate white in cities are those shown in the table.

UNITED STATES ABRIDGED LIFE TABLES.

LIFE IN YEARS, 1919-1920.

e_x . Females. TABLE 10.

EXACT AGE IN YEARS.																				No. of life table.				
37		42		47		52		57		62		67		72		77		82			87		92	
e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.	e_x	Rank.		e_x	Rank.	e_x	Rank.
32.99	18*	29.11	19	25.21	18	21.43	17	17.84	17	14.50	*15	11.49	15	8.92	16	6.77	12	5.08	10	3.76	7	2.62	7	2
32.29	24	28.39	24	24.52	24	20.79	22	17.27	23	14.01	22	11.11	24	8.66	22	6.61	*19	4.98	14	3.70	9	2.63	6	4
31.56	.....	27.73	.....	23.96	.....	20.29	.....	16.84	.....	13.70	.....	10.89	.....	8.46	.....	6.41	.....	4.78	.....	3.61	.....	2.67	.....	.....
33.71	8	29.85	10	25.99	10	22.22	9	18.59	8	15.17	6	12.05	6	9.26	7	6.90	8	5.02	12	3.59	*11	2.49	9	6
32.39	21	28.48	21	24.56	22	20.78	*23	17.28	22	14.09	21	11.28	21	8.87	19	6.72	16	4.77	27	3.22	*25	1.99	26	8
33.22	16	29.29	16	25.37	16	21.57	16	18.00	15	14.63	14	11.57	*13	9.01	14	6.76	*13	4.81	*22	3.22	*25	1.94	*28	10
33.33	14	29.46	15	25.58	14	21.76	14	18.04	14	14.50	*15	11.29	20	8.47	*29	6.04	43	4.10	42	2.67	40	1.39	40	12
35.02	1	31.08	1	27.07	1	23.07	1	19.28	1	15.68	2	12.31	*2	9.37	5	6.76	*13	4.38	*38	2.59	42	0.97	43	14
33.74	7	29.92	*8	26.03	9	22.17	10	18.46	*10	15.03	10	11.84	10	9.09	9	6.79	11	4.82	21	3.22	*25	2.01	25	16
32.31	23	28.42	23	24.55	23	20.78	*23	17.25	24	13.98	24	10.86	*28	8.31	38	6.41	*34	4.80	*24	3.37	22	2.13	*19	18
32.38	22	28.46	22	24.58	21	20.85	21	17.30	21	14.00	23	11.09	25	8.61	26	6.44	*31	4.54	34	3.02	34	1.82	34	20
32.72	20	28.88	20	25.04	20	21.28	19	17.65	*19	14.25	20	11.17	23	8.47	*29	6.15	40	4.27	40	2.85	39	1.67	38	22
34.50	3	30.60	3	26.66	2	22.79	2	19.14	2	15.69	1	12.46	1	9.64	1	7.29	5	5.31	*5	3.55	15	2.12	21	24
34.36	4	30.49	4	26.56	4	22.69	*3	18.98	3	15.47	3	12.31	*2	9.59	2	7.31	4	5.53	4	4.12	3	2.99	2	26
32.03	26	28.07	26	24.16	26	20.40	28	16.88	*29	13.65	*31	10.86	*28	8.46	31	6.51	25	5.00	13	3.64	10	2.40	10	28
31.57	31	27.63	31	23.79	32	20.11	32	16.68	33	13.52	34	10.71	33	8.40	35	6.48	*26	4.85	19	3.50	16	2.37	11	30
33.20	17	29.59	13	25.76	12	21.93	12	18.21	12	14.64	13	11.35	18	8.64	25	6.43	33	4.48	36	2.89	38	1.60	39	32
33.56	*11	29.64	12	25.69	13	21.83	13	18.13	13	14.69	12	11.57	*13	8.89	*17	6.66	17	4.84	20	3.40	*20	2.23	14	34
33.92	6	30.05	7	26.13	8	22.27	8	18.57	9	15.11	8	11.94	7	9.08	10	6.57	22	4.51	35	2.99	*35	1.80	35	36
32.17	25	28.31	25	24.43	25	20.67	25	17.17	25	13.94	25	11.02	26	8.51	27	6.40	*36	4.66	*31	3.28	24	2.13	*19	38
32.85	19	29.15	18	25.24	17	21.40	18	17.77	18	14.40	19	11.42	17	8.84	20	6.59	21	4.59	33	2.99	*35	1.73	*36	40
33.59	10	29.92	*8	26.16	7	22.35	6	18.65	6	15.12	7	11.92	*8	9.17	8	6.76	*13	4.74	28	3.18	31	1.93	30	42
33.64	9	30.09	6	26.22	6	22.32	7	18.62	7	14.97	11	11.65	11	8.89	*17	6.33	39	4.01	43	2.33	43	0.23	44	44
33.28	15	29.47	14	25.48	15	21.62	15	17.95	16	14.49	17	11.34	19	8.65	*23	6.46	*28	4.67	30	3.22	*25	2.02	24	46
34.23	5	30.32	5	26.39	5	22.52	5	18.85	5	15.43	5	12.26	4	9.50	3	7.12	7	5.28	7	3.83	6	2.54	8	48
34.73	2	30.71	2	26.65	3	22.69	*3	18.94	4	15.44	4	12.19	5	9.30	6	6.89	9	4.93	*16	3.41	*18	2.21	16	50
31.16	33	27.27	33	23.48	33	19.84	34	16.46	34	13.36	35	10.62	*34	8.37	36	6.46	*28	4.80	*24	3.41	*18	2.24	13	52
31.41	32	27.53	32	23.81	31	20.13	31	16.75	32	13.62	33	10.62	*34	8.25	40	6.48	*26	4.81	*22	3.08	32	1.73	*36	54
30.54	38	26.82	37	23.15	38	19.64	38	16.29	36	13.20	37	10.59	36	8.44	*32	6.44	*31	4.96	15	3.93	5	2.87	4	56
31.13	34	27.16	34	23.36	35	19.66	*36	16.08	39	12.83	40	9.95	45	7.71	45	5.86	45	3.89	44	2.30	44	1.15	42	58
31.74	29	27.81	29	23.96	30	20.27	30	16.88	*29	13.74	*26	10.94	27	8.65	*23	6.63	18	4.78	26	3.21	29	1.92	31	60
31.77	28	27.88	28	24.03	29	20.39	29	16.98	27	13.73	28	10.82	31	8.34	37	6.40	*36	5.03	11	3.57	13	2.14	18	62
31.61	30	27.77	30	24.07	28	20.44	27	16.89	28	13.65	*31	10.81	32	8.41	34	6.41	*34	4.92	18	3.59	*11	2.22	15	64
33.56	*11	29.68	11	25.82	11	22.06	11	18.46	*10	15.06	9	11.92	*8	9.07	11	6.45	30	4.25	41	2.66	41	1.27	41	66
29.64	40	26.07	40	22.45	40	18.98	40	15.75	41	12.79	41	10.19	*42	7.97	43	5.88	44	3.85	45	2.26	45	0.07	45	68
30.58	37	26.65	39	22.86	39	19.24	39	15.92	40	12.89	39	10.28	41	8.26	39	6.61	*19	5.19	8	3.96	4	2.89	3	70
31.02	35	27.12	35	23.31	36	19.66	*36	16.30	35	13.29	36	10.54	37	8.24	41	6.34	38	4.66	*31	3.20	30	1.94	*28	72
29.43	41	25.92	41	22.32	41	18.83	41	15.59	42	12.62	42	10.07	44	7.93	44	6.05	42	4.46	37	3.06	33	1.87	32	74
31.84	27	27.93	27	24.09	27	20.48	26	17.01	26	13.69	*29	10.86	*28	8.50	28	6.54	23	4.93	*16	3.31	23	1.98	27	76
30.94	36	26.97	36	23.26	37	19.67	35	16.17	37	13.11	38	10.43	38	8.07	42	6.08	41	4.38	*38	2.99	*35	1.85	33	78
33.35	13	29.22	17	25.17	19	21.25	20	17.65	*19	14.45	18	11.62	12	9.06	12	6.52	24	4.70	29	3.48	17	2.26	12	80
25.94	44	22.79	44	19.74	44	16.88	43	14.52	43	12.45	43	10.41	40	8.70	21	7.13	6	5.70	3	4.28	2	2.65	5	82
26.86	43	24.04	42	21.26	42	18.55	42	16.09	38	13.74	*26	11.46	16	9.38	4	7.33	3	5.31	*5	3.56	14	2.20	17	84
24.31	46	21.22	46	18.30	46	15.74	46	13.76	45	12.05	45	10.42	39	8.95	15	7.62	1	6.63	1	5.65	1	4.14	1	86
25.62	45	22.49	45	19.40	45	16.50	44	14.11	44	12.12	44	10.19	*42	8.44	*32	6.88	10	5.15	9	3.40	*20	2.06	22	88
25.18	.....	22.16	.....	19.30	.....	16.55	.....	14.05	.....	11.96	.....	10.17	.....	8.55	.....	6.91	.....	5.59	.....	4.86	.....	4.14	.....	.....
29.69	39	26.72	38	23.38	34	20.10	33	16.78	31	13.69	*29	11.27	22	9.03	13	7.39	2	6.06	2	3.72	8	2.04	23	90
27.60	42	23.95	43	19.95	43	15.92	45	11.57	46	7.00	46	3.60	46	1.98	46	0.88	46	.....	.....	.....	.....	.....	.....	92
31.07	.....	27.63	.....	24.03	.....	20.41	.....	16.96	.....	13.73	.....	10.82	.....	8.35	.....	6.32	.....	4.62	.....	3.27	.....	2.22	.....	.....

* The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.
 * The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.
 * The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

UNITED STATES ABRIDGED LIFE TABLES.

TABLE 11. EXCESS OF ANNUAL RATE OF MORTALITY AMONG MALES OVER THAT

[Bold-faced type indicates that the rate among females is in

No. of line.	AREA AND COLOR.	EXACT AGE IN YEARS.								
		0	1	2	7	12	17	22	27	32
WHITE.										
1	Aggregate ¹	17.01	1.77	0.71	0.41	0.31	0.48	0.48	0.74	0.11
2	Original registration states ²	18.82	1.87	0.87	0.51	0.31	0.45	0.40	0.75	0.02
3	Original registration states, 1909-1911.....	<i>21.00</i>	<i>2.58</i>	<i>1.30</i>	<i>0.31</i>	<i>0.27</i>	<i>0.50</i>	<i>0.69</i>	<i>0.28</i>	<i>0.88</i>
STATES.										
4	California.....	13.10	1.35	0.38	0.35	0.73	0.96	0.09	0.61	1.27
5	Connecticut.....	20.81	1.17	0.81	0.64	0.55	1.06	0.03	0.20	0.15
6	Illinois.....	18.09	2.43	0.52	0.51	0.29	0.60	0.50	0.89	0.09
7	Indiana.....	16.35	1.58	1.00	0.50	0.03	0.11	1.60	1.62	1.64
8	Kansas.....	13.83	0.53	0.68	0.47	0.15	0.71	0.25	0.79	0.85
9	Kentucky.....	12.81	0.67	0.27	0.16	0.07	0.01	1.54	2.25	2.07
10	Maryland.....	16.73	0.11	0.98	0.50	0.33	0.01	1.03	0.60	0.10
11	Massachusetts.....	20.36	1.67	1.20	0.50	0.31	0.31	0.55	0.35	0.33
12	Michigan.....	18.87	1.37	0.57	0.40	0.25	0.31	1.40	2.04	0.86
13	Minnesota.....	15.65	1.26	0.92	0.29	0.33	0.48	0.56	1.08	0.12
14	Missouri.....	17.68	2.28	0.46	0.39	0.16	0.61	0.43	0.95	0.55
15	New Jersey.....	17.29	2.78	1.18	0.55	0.29	0.25	0.02	0.82	0.57
16	New York.....	18.48	2.38	0.71	0.52	0.32	0.52	0.10	0.33	0.65
17	North Carolina.....	12.42	2.55	0.65	0.14	0.31	0.01	0.80	0.96	1.36
18	Ohio.....	15.10	1.24	0.59	0.49	0.36	0.51	0.82	0.89	0.30
19	Oregon.....	17.34	2.60	0.08	0.59	0.44	1.07	1.23	0.10	0.24
20	Pennsylvania.....	18.61	2.44	0.58	0.44	0.30	0.39	0.35	0.44	0.05
21	South Carolina.....	14.14	1.80	1.28	0.12	0.46	0.54	0.44	0.82	1.08
22	Tennessee.....	9.67	1.52	1.20	0.07	0.10	0.02	1.17	1.99	1.55
23	Utah.....	16.07	1.93	0.20	0.91	0.33	0.67	0.69	0.02	0.12
24	Virginia.....	17.97	0.78	0.37	0.02	0.42	0.71	0.08	0.60	0.06
25	Washington.....	13.21	1.85	1.33	0.38	0.24	0.79	0.61	0.48	0.67
26	Wisconsin.....	18.92	1.18	0.73	0.33	0.33	0.82	0.71	1.03	0.14
CITIES.										
27	Aggregate ³	19.40	2.42	1.32	0.66	0.31	0.29	0.37	0.72	0.42
28	Baltimore.....	19.82	0.59	1.18	1.02	0.14	0.39	1.40	0.42	0.57
29	Boston.....	22.00	3.56	1.69	0.35	0.10	0.22	1.23	1.26	0.25
30	Buffalo.....	22.75	1.66	2.22	0.47	0.45	0.26	0.94	0.24	0.05
31	Chicago.....	21.52	2.62	1.55	0.81	0.38	0.23	0.66	1.07	0.21
32	Cleveland.....	17.43	2.17	2.52	0.37	0.63	0.16	0.91	0.86	0.12
33	Detroit.....	21.35	1.49	1.71	0.66	0.27	0.09	1.90	2.40	1.25
34	Los Angeles.....	12.65	3.18	0.56	0.53	0.83	0.94	0.13	0.84	1.36
35	New Orleans.....	11.44	0.90	0.70	1.18	1.62	1.10	1.45	2.52	2.69
36	New York, N. Y.....	17.85	2.48	0.91	0.62	0.19	0.31	0.28	0.44	0.65
37	Philadelphia.....	20.48	4.06	1.40	0.50	0.40	0.08	1.01	1.11	0.10
38	Pittsburgh.....	23.46	3.03	1.91	1.00	0.31	0.57	0.29	1.03	0.40
39	St. Louis.....	20.31	0.80	0.95	1.09	0.04	0.26	0.68	0.68	0.19
40	San Francisco.....	16.89	1.38	0.05	0.29	0.85	1.48	0.62	0.60	2.03
41	Washington, D. C.....	16.50	2.33	1.45	1.29	0.59	0.96	1.99	2.93	2.49
NEGROES.										
42	States having less than 4 per cent Negroes ⁴	23.89	2.35	3.51	0.36	0.41	0.84	1.35	0.29	0.67
43	States having more than 5 per cent Negroes ⁵	20.11	3.30	0.75	0.35	0.62	1.78	1.41	2.45	2.18
44	Large cities ⁶	27.96	4.25	4.49	0.00	0.45	0.08	0.21	0.94	0.95
45	Original registration states ²	24.60	2.90	2.10	0.29	0.06	0.12	2.32	0.33	0.60
46	Original registration states, 1909-1911.....	<i>34.28</i>	<i>7.98</i>	<i>7.64</i>	<i>0.58</i>	<i>0.83</i>	<i>0.87</i>	<i>1.91</i>	<i>2.66</i>	<i>5.10</i>
HAWAII.										
47	Hawaii (all races combined).....	11.25	0.49	2.37	0.13	0.13	2.96	1.58	3.72	5.57
48	Japanese in Hawaii.....	11.99	0.58	1.45	1.08	0.18	2.45	2.44	4.62	5.66
49	Japanese in Japan, 1908-1913.....	<i>15.46</i>	<i>0.40</i>	<i>0.29</i>	<i>0.37</i>	<i>1.63</i>	<i>2.63</i>	<i>1.67</i>	<i>1.94</i>	<i>2.15</i>

¹ Statistics for the aggregate tables are a compilation of those for the New England states, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Kansas, Utah, California, Oregon, and Washington.

² The original registration states include the New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.

³ The 14 cities included in aggregate white in cities are those shown in the table.

UNITED STATES ABRIDGED LIFE TABLES.

AMONG FEMALES IN THE SAME AREA AND AGE GROUP DURING 1919-1920. TABLE 11.

excess of that among males in the same area and age group.]

EXACT AGE IN YEARS.												No. of line.
37	42	47	52	57	62	67	72	77	82	87	92	
0.56	1.10	1.07	1.43	2.40	3.09	3.73	5.32	6.30	10.19	12.93	8.41	1
0.79	1.24	1.09	1.49	2.62	2.91	3.10	5.24	7.53	11.47	15.97	9.72	2
1.73	2.44	2.89	3.06	4.05	5.44	6.04	5.97	11.95	9.23	13.34	0.26	3
2.62	3.13	2.68	4.00	6.33	7.33	9.68	9.04	7.75	12.84	31.72	17.59	4
1.26	1.91	1.77	2.04	4.59	1.06	2.73	4.44	19.13	3.13	16.82	28.47	5
0.71	1.17	1.85	1.81	2.80	4.57	4.85	5.80	8.01	10.49	12.74	1.22	6
0.35	0.65	0.78	0.21	1.32	0.91	3.11	4.28	1.76	5.60	18.32	17.33	7
0.70	0.29	0.47	0.20	0.20	1.13	2.60	5.93	11.96	2.70	20.47	41.12	8
1.01	0.35	0.34	0.17	0.29	0.70	0.84	3.88	1.13	8.55	14.38	51.79	9
0.94	1.29	1.67	2.76	2.95	5.35	8.39	4.11	0.65	7.83	6.13	14.24	10
0.46	0.89	0.89	1.24	3.01	3.52	5.81	9.52	11.77	11.13	21.11	1.22	11
0.56	0.16	0.81	0.41	1.27	1.35	1.74	5.41	3.22	7.89	14.15	11.89	12
0.15	0.23	0.33	0.86	1.18	4.42	3.88	8.18	2.85	24.13	11.54	12.29	13
0.19	0.61	1.03	1.31	3.32	4.00	2.76	3.99	0.88	13.07	16.55	24.14	14
1.06	1.78	2.46	1.89	3.67	2.46	2.06	8.85	4.33	13.37	25.04	31.98	15
1.68	1.93	2.03	2.71	3.41	4.71	3.39	3.68	7.30	15.73	7.81	21.23	16
2.60	0.70	0.71	0.40	0.64	1.70	2.50	2.76	0.16	1.44	29.11	29.64	17
0.54	1.15	0.88	1.37	1.99	2.89	5.34	5.07	9.06	16.11	7.80	34.28	18
0.77	0.18	0.03	1.25	2.10	2.68	7.21	8.57	9.93	9.34	20.77	133.78	19
1.15	1.85	2.09	2.04	3.21	3.60	4.96	8.23	8.88	11.07	22.48	7.27	20
1.23	0.43	1.03	1.00	2.51	0.23	4.45	12.62	5.83	3.57	15.09	19.82	21
1.40	0.48	1.29	0.38	0.57	2.08	0.13	5.00	1.06	2.94	1.50	20.94	22
0.19	1.63	3.55	1.56	4.57	7.10	11.07	2.00	12.45	6.17	14.70	83.00	23
1.21	0.29	0.27	0.79	0.94	0.38	2.59	7.76	6.93	15.48	22.37	5.90	24
0.43	0.57	0.27	1.48	0.19	4.49	3.31	6.72	13.60	2.82	20.33	42.90	25
0.09	0.30	0.24	0.66	1.01	1.60	3.40	5.31	6.15	7.15	3.11	25.81	26
1.60	2.08	2.75	3.73	5.51	7.42	7.58	8.85	10.68	11.65	14.21	8.10	27
1.59	2.00	3.21	4.66	3.56	9.65	12.76	9.14	5.23	22.33	22.02	69.14	28
0.08	1.47	2.59	3.32	5.60	6.32	5.73	13.78	18.98	5.95	32.55	54.52	29
2.34	4.26	1.40	4.92	7.51	7.24	7.94	3.73	9.33	12.90	5.58	203.69	30
1.16	1.48	3.28	2.86	3.91	6.91	5.54	7.43	9.88	7.30	3.14	0.82	31
2.04	2.89	2.71	2.42	5.04	8.21	10.75	12.77	6.39	15.22	7.53	15.58	32
0.34	0.04	1.11	1.56	1.98	3.63	3.63	10.44	8.23	2.35	15.82	65.06	33
2.55	2.69	2.66	4.06	6.66	8.88	12.52	5.13	2.65	9.00	44.35	12.31	34
2.49	2.65	8.38	7.64	18.41	20.11	24.06	29.64	23.16	13.60	110.45	91.42	35
1.96	1.97	3.13	4.41	5.24	6.78	4.93	5.64	8.10	18.26	15.06	6.35	36
1.30	2.27	1.75	2.17	4.15	6.16	6.90	8.56	8.44	7.03	7.90	25.57	37
1.15	3.16	4.09	3.70	6.76	5.30	3.49	14.78	18.68	3.60	38.70	114.09	38
1.21	2.04	1.84	2.28	8.28	12.95	12.87	16.72	17.19	26.68	12.59	100.42	39
4.48	3.46	3.09	8.17	11.78	10.08	14.55	7.48	22.40	18.59	29.55	77.61	40
2.76	3.36	3.24	3.71	5.81	5.09	12.31	31.20	32.25	4.91	9.53	2.26	41
1.97	1.76	0.32	0.08	5.23	0.31	3.14	1.51	13.18	17.30	23.82	31.84	42
1.74	2.87	4.23	3.43	5.34	4.83	4.22	6.18	9.51	24.23	15.70	61.12	43
2.39	0.29	0.87	0.16	4.39	3.46	10.04	18.49	12.79	16.67	34.62	59.24	44
0.94	0.86	0.67	1.31	5.07	1.50	5.73	8.70	7.18	30.56	51.64	28.13	45
3.51	3.44	3.36	6.34	3.87	5.78	4.39	18.20	26.38	9.27	26.76	25.04	46
2.57	0.14	2.11	3.48	7.68	1.42	0.72	8.07	0.15	77.74	59.60	124.03	47
0.08	1.27	5.71	7.92	19.25	2.40	-----	-----	-----	-----	-----	-----	48
1.92	0.12	2.38	4.05	6.48	9.45	12.10	20.10	18.41	23.21	27.90	31.90	49

⁴ The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.

⁵ The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.

⁶ The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

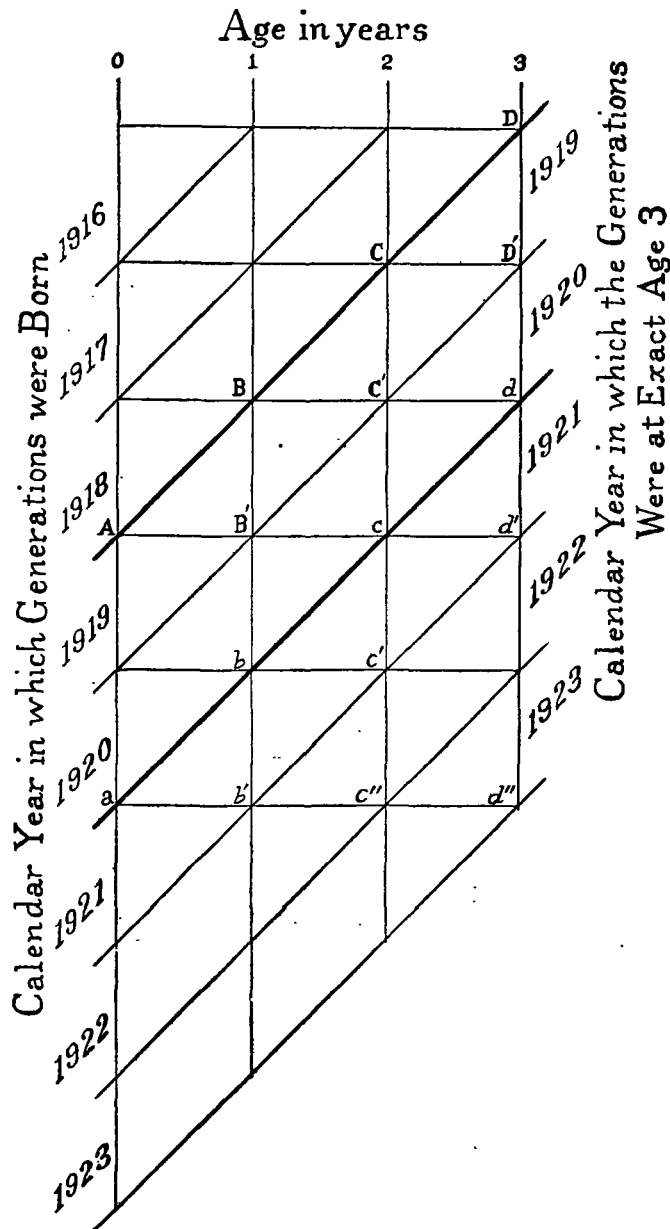
PART II.—METHODS USED AND ACTUAL COMPUTATION.

A.—EXPLANATION OF METHODS USED.

THEORY OF METHOD USED IN OBTAINING RATES OF MORTALITY AT AGES UNDER 3 YEARS.

7. Diagrams 1 to 3 represent the progress of generations. These diagrams are fully explained in sections 96, 106, and 109, pages 329, 338, and 340 of the United States Life Tables, 1890, 1901, 1910, and

DIAGRAM 1.—MOVEMENT OF GENERATIONS REPRESENTED GRAPHICALLY.



1901–1910. In brief, the ages of the generations are measured by vertical lines along the horizontal axis. In the diagram, time in calendar years is measured by the diagonal lines which are at right angles to the bisector of the angle between the vertical and horizontal axes. This bisector is not drawn in these diagrams. Thus the generations begin along the vertical

axis at age 0 and move horizontally to the right. See Diagrams 2 and 3, pages 33 and 37. In any generation many die under 1 year of age; for instance, of those born in 1916, E_0^{1916} , some die in 1916, lD_0^{1916} , and some in 1917, eD_0^{1917} . Of those who survive to exact age 1 year, E_1^{1916} , many die between exact ages 1 and 2 years, some in 1917, lD_1^{1917} , and some in 1918, eD_1^{1918} . Likewise, the deaths among the survivors to exact age 2 years, E_2^{1916} , occur in 1918, lD_2^{1918} , and some in 1919, eD_2^{1919} .

If a census be taken of these generations at any time, for instance, January 1, 1919, the children under 3 years of age enumerated would be those who were born between January 1, 1916, and January 1, 1919, who had not died before January 1, 1919. Thus the children between 2 and 3 years of age on January 1, 1919, would be that part of the 1916 generation, E_0^{1916} , which was not included in $lD_0^{1916} + eD_0^{1917} + lD_1^{1917} + eD_1^{1918} + lD_2^{1918}$.

The method used to derive the formula for the annual rate of mortality at each year of age under 3 is a modification of the method suggested by Mr. Robert Henderson. The rate of mortality of the generation that attains age x during the calendar period is by definition $q_x = d_x/l_x$, where l_x is the number that attain age x during the calendar period and d_x is the number of deaths that occur among the l_x persons before they become aged exactly $x+1$ years. Part of these d_x occur in the year following the calendar period of years. An illustration of this is afforded in Diagram 2. Thus, $E_0^{1919} + E_0^{1920}$, or E_0 , is the number of children born during the calendar period 1919–1920, or the number that attain age 0 during that period. Before this generation has become aged exactly 1 year, d_0 of them have died, lD_0^{1919} in 1919, $eD_0^{1920} + lD_0^{1920}$ in 1920, and eD_0^{1921} in 1921. On the other hand, some of the deaths under 1 year of age in 1919–1920, eD_0^{1919} , were of children born in 1918. Accordingly, it appears that the number of deaths under 1 year of age during 1919 and 1920 is

$$D_0 = eD_0^{1919} + lD_0^{1919} + eD_0^{1920} + lD_0^{1920}$$

and that in the generation born in 1919–1920 before it attains exact age 1 year is

$$d_0 = lD_0^{1919} + eD_0^{1920} + lD_0^{1920} + eD_0^{1921}$$

Thus the difference between the number of deaths under 1 year of age in the calendar period 1919–1920 and in the generation born in that period is

$$D_0 - d_0 = eD_0^{1919} - eD_0^{1921} = r_0^{1919}P_{1919}^{0/1} - r_0^{1921}P_{1921}^{0/1},$$

where r_y^x is the ratio of the number of deaths under 1 year of age in the calendar year y among those born in the previous year, $y-1$, to $P_y^{0/1}$.

From Diagram 2 it appears that the deaths under 1 year of age in the calendar period 1919-1920 must occur among the $P_{1919}^{0/1} + E_0^{1919} + E_0^{1920}$ children and that the $P_{1919}^{0/1}$ and $P_{1921}^{0/1}$ children lived only a part of their lives between birth and 1 year of age in the period 1919-1920. Hence the rate of mortality under 1 year of age in the *calendar period* 1919-1920 must be

$$q_0^c = D_0/E_0'$$

where E_0' may be called the equivalent generation which corresponds to the deaths D_0 .

In the special case where the force of mortality at each age in triangle $AB'B$, Diagram 1, is equal to that at the corresponding age in triangle $ab'b$ and in quadrilateral $AabB'$, the rates of mortality under 1 year of age in 1919-1920 and in the generation born in 1919-1920 would be the same, and r_0^{1919} , r_0^{1920} , r_0^{1921} would all be equal.

Then the equation

$$D_0 - d_0 = r_0^{1919}P_{1919}^{0/1} - r_0^{1921}P_{1921}^{0/1}$$

may be written

so that $D_0 = d_0 + r_0^{1919}\delta_0$, where δ_0 is $P_{1919}^{0/1} - P_{1921}^{0/1}$,

$$E_0'q_0^c = E_0q_0 + r_0^{1919}\delta_0.$$

Then since $q_0 = q_0^c$,

$$E_0' = E_0 + k_0\delta_0, \text{ where } k_0 \text{ is } r_0^{1919}/q_0.$$

When k_0 equals $\frac{1}{2}$, this formula for the approximate value of the equivalent generation is that given in equation (22) of the United States Life Tables, 1890, 1901, 1910, 1901-1910, page 337.

By reasoning similar to the above approximate values for rate of mortality between exact ages 1 and 2 years and between 2 and 3 years in 1919-1920 are shown to be, respectively,

$$q_1^c = D_1/(E_1 + r_1\delta_1/q_1) \text{ and } q_2^c = D_2/(E_2 + r_2\delta_2/q_2),$$

where E_1 and E_2 are the numbers of children that attain ages 1 and 2 years, respectively, in the calendar period 1919-1920.

Where the rate of mortality does not change very rapidly between ages x and $x+1$, r_x/q_x is very nearly equal $\frac{1}{2}$. However, the rate of mortality under 1 year of age does change very rapidly, and for this reason k_0 was determined from infant mortality statistics given in Table 13 of Birth Statistics of the Birth Registration Area of the United States in each year from 1918 to 1921, published by the Bureau of the Census. The statistics from which the value for k_0 was determined were from the same area as that covered by the 1919-1920 life tables, except Rhode Island, Illinois, Missouri, Tennessee, and Hawaii, and should, therefore, be a very good average for these tables. The results obtained were 0.275 for males and 0.280 for females. While the rate of mortality under 1 year of age has been very much lowered between 1909 and 1919, that under 1 day of age has not changed much. The consequence is that the per cent of born and died in a calen-

dar year has been raised, so that k_0 has changed from about 33 $\frac{1}{2}$ per cent in 1909-1911 to about 28 per cent in 1919-1920.¹

Unfortunately no statistics are available to determine k_1 and k_2 . However, there is no evidence of irregularity in the lowering of the rates of mortality during the age periods 1 to 2 years and 2 to 3 years, and so k_1 and k_2 were set equal to $\frac{1}{2}$, the ratio used for the 1909-1911 life tables. See United States Life Tables, 1890, 1901, 1910, and 1901-1910, page 343, equations (30).

From Diagram 2 it will be seen that

$$E_1 = E_0 + P_{1919}^{0/1} - P_{1921}^{0/1} - D_0 = E_0 + \delta_0 - D_0,$$

while

$$E_2 = E_1 + P_{1919}^{1/2} - P_{1921}^{1/2} - D_1 = E_1 + \delta_1 - D_1.$$

For the convenience of the operator the three equations just derived were expanded. Let G_x represent the denominator in the equation $q_x = D_x/(E_x + k_x\delta_x)$. Then

$$G_0 = E_0 + k_0\delta_0,$$

$$G_1 = E_1 + \frac{1}{2}\delta_1 = E_0 + \delta_0 + \frac{1}{2}\delta_1 - D_0 \\ = G_0 + (1 - k_0)\delta_0 - D_0 + \frac{1}{2}\delta_1,$$

$$G_2 = E_2 + \frac{1}{2}\delta_2 = E_1 + \delta_1 + \frac{1}{2}\delta_2 - D_1 \\ = G_1 - D_1 + \frac{1}{2}(\delta_1 + \delta_2).$$

Therefore, the three equations become

$$q_0 = D_0/G_0, \tag{1}$$

$$q_1 = D_1/[G_0 + (1 - k_0)\delta_0 - D_0 + \frac{1}{2}\delta_1], \tag{2}$$

$$q_2 = D_2/[G_1 - D_1 + \frac{1}{2}(\delta_1 + \delta_2)]. \tag{3}$$

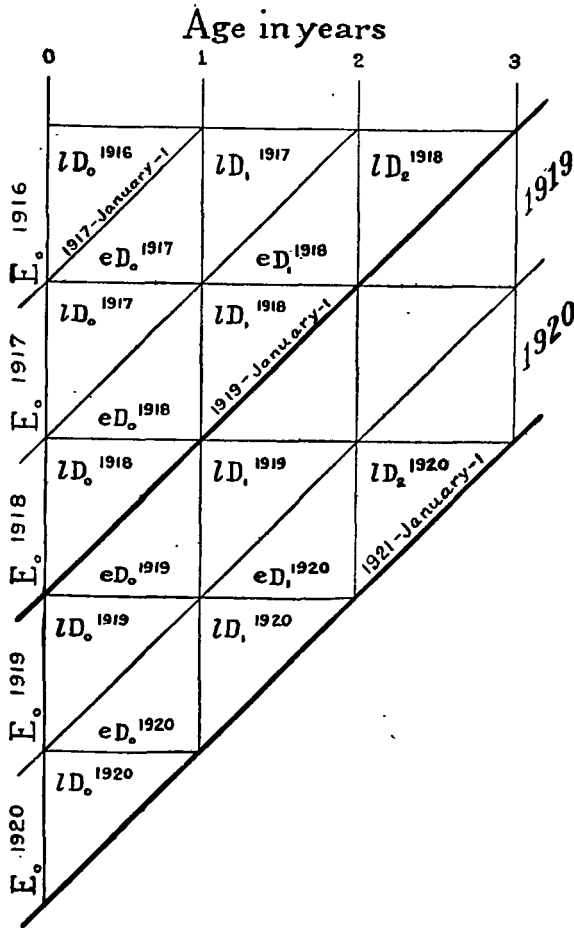
METHOD USED TO DETERMINE DIFFERENCE BETWEEN POPULATION IN SAME AGE INTERVAL AT BEGINNING AND END OF PERIOD.

8. Only the *differences* between the populations at corresponding ages on January 1, 1919, and on January 1, 1921, were used. Therefore, populations derived from birth and death statistics are sufficient since the effect of migration on the number of children under 1 year of age on January 1, 1919, should be about the same as that on the number of children under 1 year of age on January 1, 1921, and this effect would be cancelled out in a difference. The same is true of children between 1 and 2 years of age on January 1, 1919, and January 1, 1921, and also of children between 2 and 3 years on those dates. The method of determining these populations from birth and death statistics is based on the method used to determine the number of births for the United States Life Tables, 1890, 1901, 1910, 1901-1910,

¹ Mr. Henderson bases the ratio of the number of deaths under 1 year of age in the calendar year y among those born in the previous year, $y-1$, upon the statistics for two consecutive calendar years, so that he sets $r_0^{1920-21} = r_0^{1919-20} = r_0 = (eD_0^{1919} + eD_0^{1920})/(P_{1919}^{0/1} + P_{1920}^{0/1})$. The value for k_0 derived from this value of r_0 is 0.288 for males and 0.290 for females. While as a rule the value of k_0 seems to be decreasing with time, it probably varies considerably from locality to locality and from race to race. However, no statistics were available for the separate localities and races from which their values of k_0 could be determined.

explained in section 109, page 340. Instead of adding populations to deaths to find the number of births, deaths were subtracted from the births to obtain populations. E_y^z in Diagram 2 represents the number of births in any calendar year y ; lD_x^z , the number of deaths between ages x and $x+1$ in that year of those who were born in the *later* calendar year, and eD_x^z , the number of deaths between ages x and $x+1$ in that year of those who were born in the *earlier* calendar year.

DIAGRAM 2. GRAPHIC REPRESENTATION OF RELATION BETWEEN BIRTH AND DEATH RECORDS AND CENSUS STATISTICS FOR 1919-1920 LIFE TABLES.



From this it appears that the population under 1 year of age on January 1, 1919, is $P_{1919}^{0/1} = E_0^{1918} - lD_0^{1918}$ and the population under 1 year of age on January 1, 1921, is $P_{1921}^{0/1} = E_0^{1920} - lD_0^{1920}$.

As in equations (1) to (3) on page 32, the expression $(P_{1919}^{x/x+1} - P_{1921}^{x/x+1})$, is designated by δ_x . Consequently,

$$\delta_0 = (-E_0^{1920} + E_0^{1918}) + (-lD_0^{1918} + lD_0^{1920}). \quad (4)$$

The population between 1 and 2 years of age on January 1, 1919, is

$$P_{1919}^{1/2} = E_0^{1917} - lD_0^{1917} - eD_0^{1918} - lD_1^{1918}$$

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and the population between 1 and 2 years of age on January 1, 1921, is

$$P_{1921}^{1/2} = E_0^{1919} - lD_0^{1919} - eD_0^{1920} - lD_1^{1920}.$$

Hence,

$$\delta_1 = (-E_0^{1919} + E_0^{1917}) + (-lD_0^{1917} + lD_0^{1919}) + (-eD_0^{1918} + eD_0^{1920}) + (-lD_1^{1918} + lD_1^{1920}). \quad (5)$$

The population between 2 and 3 years of age on January 1, 1919, is

$$P_{1919}^{2/3} = E_0^{1916} - lD_0^{1916} - eD_0^{1917} - lD_1^{1917} - eD_1^{1918} - lD_2^{1918}$$

and the population between 2 and 3 years of age on January 1, 1921, is

$$P_{1921}^{2/3} = E_0^{1918} - lD_0^{1918} - eD_0^{1919} - lD_1^{1919} - eD_1^{1920} - lD_2^{1920}.$$

Accordingly,

$$\delta_2 = (-E_0^{1918} + E_0^{1916}) + (-lD_0^{1916} + lD_0^{1918}) + (-eD_0^{1917} + eD_0^{1919}) + (-lD_1^{1917} + lD_1^{1919}) + (-eD_1^{1918} + eD_1^{1920}) + (-lD_2^{1918} + lD_2^{1920}) \quad (6)$$

Then each number of deaths in Table 17, pages 58 to 61 was divided into lD and eD by applying the percentages given in the United States Life Tables, 1890, 1901, 1910, 1901-1910, page 340, Table 109, and the resulting lD and eD were entered in different colored ink just below the D from which they were derived. The method of taking these values of lD , eD , and E_0^z from the table in computing infant mortality is illustrated in tape 16, page 39.

METHOD USED TO OBTAIN RATES OF MORTALITY FOR AGES BETWEEN ADOLESCENCE AND OLD AGE.

9. In obtaining graduated rates of mortality for each fifth year of age from 12 to 92, the formula used was that employed by Mr. George King¹ for finding the graduated central value of a fifteen term series. Equations (82) in the United States Life Tables, 1890, 1901, 1910, 1901-1910, page 390, section 180, were transformed for the convenience of operators as follows:

	$-\Delta T_{x-7}$	$-\Delta T_{x-2}$	$-\Delta T_{x+2}$
$-200\Delta T_{x-2}$	=	-200	
$-(-8\Delta^3 T_{x-7})$	=	-8	+16
			-8

Since $-\Delta T_x$ is the sum of the population aged x to $x+4$ on January 1, 1920, the symbol $P_{1920}^{x/x+4}$ is used, and

$$10^3 L_{x+2} = (-10+2) (P_{1920}^{x-5/x-1} - 2P_{1920}^{x/x+4} + P_{1920}^{x+5/x+9}) + 200P_{1920}^{x/x+4}. \quad (7)$$

¹ Supplement to the Seventy-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, Part I—Life Tables, page 49, section 2.

Also since $-\Delta(2l)_x$ is the sum of the deaths occurring between ages x and $x+5$ during the two calendar years 1919 and 1920, the symbol $D_{x/x+4}^{1919-20}$ is used, and

$$10^3(2d)_{x+2} = (-10+2) (D_{x-5/x-1}^{1919-20} - 2D_{x/x+4}^{1919-20} + D_{x+5/x+9}^{1919-20}) + 200D_{x/x+4}^{1919-20}. \quad (8)$$

No knowledge of differencing, negative values, or fractions is required to use the equations in this form. The method of using them is illustrated on page 39, tapes 18 and 19.

METHOD USED TO JOIN MORTALITY OF CHILDREN UNDER 3 YEARS OF AGE WITH THAT IN THE MAIN TABLE.

10. The formula discussed in section 9 is for finding the central or eighth term of a fairly symmetrical series of fifteen values. The derivation of a formula for interpolating the third term in this series of fifteen values is similar to that for interpolating the eighth term of the series. If u_2 be the third term in a series of fifteen terms, u_0, u_1 , and so on up to u_{14} , and

$y_n = \sum_{x=n}^{x=14} u_x$, so that $\Delta y_n = -\sum_{x=n}^{x=n+4} u_x$, then

$$\begin{aligned} -u_2 &= y_3 - y_2 \\ y_3 &= y_0 + \frac{3}{5}\Delta y_0 - \frac{3}{25}\Delta^2 y_0 + \frac{7}{125}\Delta^3 y_0 \\ y_2 &= y_0 + \frac{2}{5}\Delta y_0 - \frac{3}{25}\Delta^2 y_0 + \frac{8}{125}\Delta^3 y_0 \\ -u_2 &= \frac{1}{5}\Delta y_0 - \frac{1}{125}\Delta^3 y_0 \\ &= .2\Delta y_0 - .008\Delta^3 y_0 \end{aligned}$$

OR

$$-10^3 u_2 = 200 \sum_{x=0}^{x=4} u_x - 8 \left(\sum_{x=0}^{x=4} u_x - 2 \sum_{x=5}^{x=9} u_x + \sum_{x=10}^{x=14} u_x \right).$$

When L_7 and $(3d)_7$ are substituted for u_2 , and $P_{1920}^{7/5+4}$ and $D_{x/x+4}^{1919-20}$ are substituted for $\sum u_x$, and age 5 is taken as 0, the following two equations are obtained:

$$10^3 L_7 = 200 P_{1920}^{5/9} + (-10+2) (P_{1920}^{5/9} - 2P_{1920}^{10/14} + P_{1920}^{15/19}) \quad (9)$$

$$10^3 (3d)_7 = 200 D_{5/9}^{1919-20} + (-10+2) (D_{5/9}^{1919-20} - 2D_{10/14}^{1919-20} + D_{15/19}^{1919-20}) \quad (10)$$

These formulas were used to determine graduated populations and deaths at age 7, and the results were found to be fairly good and served to join life table values of children under 3 years of age with those beginning at age 12. See values in Table 2, page 10.

METHOD USED TO EXTEND THE PROBABILITIES OF LIVING TO EXTREME OLD AGE.

11. The plan suggested by Mr. George King¹ was followed for the most part, in some cases a constant third difference being used when the fourth differences did not seem suitable. The logarithms of the last seven probabilities of living, given at quinquennial ages, were differenced four times and the largest negative fourth difference or the last negative fourth difference was used to extend these probabilities of living over periods of five years up to age 112. The processes used are illustrated in tapes 24 to 34, pages 43 and 45.

METHOD USED TO DERIVE $\log {}_5 p_x$ FROM $\log p_x$ AT EVERY FIFTH YEAR OF AGE AND DETERMINATION OF l_x COLUMN.

12. The formulas used for this process are those given by Mr. George King,¹ but the equations were put in another form that requires no differencing and is better suited for machine work. For convenience and reference equations (i) and (iii) are copied here.

$$w_5 = 5u_0 + 7\Delta u_0 + 1.6\Delta^2 u_0 - .2\Delta^3 u_0 \quad (i)$$

$$w_0 = 5u_0 + 2\Delta u_0 - 0.4\Delta^2 u_0 + .2\Delta^3 u_0, \quad (iii)$$

where $w_5 = \sum_{x=5}^{x=9} u_x$ and $w_0 = \sum_{x=0}^{x=4} u_x$. These two equations were transformed by substituting for the leading differences of u_0 their equivalents in terms of the quinquennial values of u_x . This work is indicated below.

Transformation of equation (iii)

	u_0	u_5	u_{10}	u_{15}
	$5.0u_0 = +5.0$			
	$2.0\Delta u_0 = -2.0$	$+2.0$		
	$-0.4\Delta^2 u_0 = -0.4$	$+0.8$	-0.4	
	$0.2\Delta^3 u_0 = -0.2$	$+0.6$	-0.6	$+0.2$
Total,	$w_0 = +2.4u_0 + 3.4u_5 - 1.0u_{10} + 0.2u_{15}$			

OR

$$10w_0 = 24u_0 + 34u_5 - 10u_{10} + 2u_{15} = 24(u_0 + u_5) + 10u_5 - 10u_{10} + 2u_{15} \quad (11)$$

Transformation of equation (i)

	u_0	u_5	u_{10}	u_{15}
	$5.0u_0 = +5.0$			
	$7.0\Delta u_0 = -7.0$	$+7.0$		
	$1.6\Delta^2 u_0 = +1.6$	-3.2	$+1.6$	
	$-0.2\Delta^3 u_0 = +0.2$	-0.6	$+0.6$	-0.2
Total,	$w_5 = -0.2u_0 + 3.2u_5 + 2.2u_{10} - 0.2u_{15}$			

OR

$$10w_5 = -2u_0 + 32u_5 + 22u_{10} - 2u_{15} = 2[-u_0 + 11(u_5 + u_{10}) - u_{15}] + 10u_5 \quad (12)$$

Section 36, page 44, shows that the computations indicated in equations (11) and (12) may be readily performed upon an adding machine.

Mr. Robert Henderson suggested that the curve of probabilities of living between ages 2 and 7 is so skew that formula (iii) should be adjusted by determining the coefficient of $\Delta^3 u_0$ from known values of $\log {}_5 p_2$.

¹ Supplement to the Seventy-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England and Wales, Part I—Life Tables, pages 26 to 28.

The values for the coefficient of Δ^3u_0 , computed from a number of the United States 1910 life tables, varied slightly about unity. Values for the coefficient Δ^3u_0 , computed in the same way from known values of $\log {}_5p_7$ in these same life tables, all varied only slightly from 0.2. Accordingly, $\log {}_5p_7$ was determined by using equation (11) and $\log {}_5p_2$ by using equation (11a), which is derived from a modification of equation (iii)—that is, from

$$w_0 = 5u_0 + 2\Delta u_0 - 0.4\Delta^2u_0 + \Delta^3u_0. \quad (\text{iii a})$$

Transformation of equation (iii a).

	u_0	u_5	u_{10}	u_{15}
$5u_0 =$	+ 5.0			
$2\Delta u_0 =$	- 2.0 + 2.0			
$-0.4\Delta^2u_0 =$	- 0.4 + 0.8 - 0.4			
$\Delta^3u_0 =$	- 1.0 + 3.0 - 3.0 + 1.0			
Total, $w_0 =$	+ 1.6 u_0 + 5.8 u_5 - 3.4 u_{10} + 1.0 u_{15}			

or

$$10w_0 = +17(u_0 + 4u_5 - 2u_{10}) - u_0 - 10u_5 + 10u_{15} \\ = (20-3)(u_0 + 4u_5 - 2u_{10}) - u_0 - 10u_5 + 10u_{15}. \quad (\text{11 a})$$

When $\log {}_5p$ is substituted for w and $\log p$ for u in equations (11a), (11), and (12), they become

$$10\log {}_5p_2 = (20-3)(\log p_2 + 4\log p_7 - 2\log p_{12}) \\ - \log p_2 - 10\log p_7 + 10\log p_{17} \quad (\text{13})$$

$$10\log {}_5p_7 = 24(\log p_7 + \log p_{12}) + 10\log p_{12} \\ - 10\log p_{17} + 2\log p_{22} \quad (\text{14})$$

$$10\log {}_5p_{12} = 2[-\log p_7 + 11(\log p_{12} + \log p_{17}) \\ - \log p_{22}] + 10\log p_{12} \quad (\text{15})$$

$$10\log {}_5p_{17} = 2[-\log p_{12} + 11(\log p_{17} + \log p_{22}) \\ - \log p_{27}] + 10\log p_{17} \quad (\text{16})$$

and so on.

100,000 was taken as the radix of the table, and to 5, its logarithm, $\log p_0$, $\log p_1$, $\log {}_5p_2$, $\log {}_5p_7$, and so on, were added, subtotals being taken after each addition. These subtotals are the logarithm of l_x .

METHOD OF DETERMINING EXPECTATION OF LIFE FROM SURVIVORS AT EVERY FIFTH YEAR OF AGE.

13. Equations (11) and (12) were transformed by substituting $N'_{w:5}$ for w and l for u , and the following equations were obtained:

$$10N'_{2:5} = 24(l_2 + l_7) + 10l_7 - 10l_{12} + 2l_{17} \quad (\text{17})$$

$$10N'_{7:5} = 2[-l_2 + 11(l_7 + l_{12}) - l_{17}] + 10l_7 \quad (\text{18})$$

$$10N'_{12:5} = 2[-l_7 + 11(l_{12} + l_{17}) - l_{22}] + 10l_{12} \quad (\text{19})$$

and so on to

$$10N'_{(w-10):5} = 2[-l_{w-15} + 11(l_{w-10} + l_{w-5}) - l_w] \\ + 10l_{w-10}. \quad (\text{20})$$

w designates the age of the last l_x , determined by the method described above, which had a value as large as 0.5. Any value between 0.5 and 1.0 was taken as 1.0. It will be noted that $N'_{(w-5):5}$ and $N'_{w:5}$ can not be determined by this formula. The general rule for obtaining $N'_{w-5:5}$ was to use 0 for l_{w+5} , thus forming the equation:

$$10N'_{(w-5):5} = 2[-l_{w-10} + 11(l_{w-5} + l_w) - 0] + 10l_{w-5}. \quad (\text{21})$$

Sometimes, however, a negative value was obtained by using this formula and in that case $N'_{(w-5):5}$ was determined as follows: $\log p_{w-5}$ was added four times to $\log l_{w-5}$, a subtotal being taken after each addition and a total at the end. These three subtotals and the total are the logarithms of the approximate values of

$$l_{w-4}, l_{w-3}, l_{w-2}, l_{w-1}. \quad \text{Then } N'_{(w-5):5} = \sum_{x=w-5}^{x=w-1} l_x. \quad (\text{21 a})$$

It was never necessary to use (21a) for $N'_{(w-5):5}$ except when $l_w = 1$. In that case $N'_{w:5}$ was simply taken as 1. When l_w was greater than 1, $N'_{w:5}$ was determined according to the process outlined for (21a). That is, $\log p_w$ was added four times to $\log l_w$, a subtotal being taken after each addition with a total at the end. Whenever any of these subtotals became less than 999|698980000, which is $\log 0.5$, the additions were stopped, since all values of l_x lower than 0.5 were taken as 0. Since $l_w = 1$ in tape 39, page 49, $N'_{w:5}$ is taken as 1, and the process indicated by (21a) was not needed.

Then to obtain N'_x , these values of $N'_{x:5}$ were summed, beginning with $N'_{w:5}$, and a subtotal was taken after each addition with a total at the end. The equation for the complete expectation of life is then

$$e_x = N'_x / l_x - 0.5. \quad (\text{22})$$

B.—ACTUAL COMPUTATION OF ABRIDGED LIFE TABLE FOR MALES IN THE STATE OF NEW YORK: 1909–1911.

PRELIMINARY STATEMENT.

14. To illustrate the process of constructing these abridged life tables, photographs of the actual computation of the New York Male, 1909–1911, Life Table, are shown on pages 39 to 52. The work of compiling the original statistics and that indicated in Table 12 is not given, but no other part of these computations is omitted except the divisions performed on computing machines to obtain the 21 rates of mortality in tapes 17 and 22 and the 22 expectations of life in tape 43, the multiplication of δ_0 by k_0 , and also the work of looking up the antilogarithms in tape 37. The computations are on 28 tapes, each tape being described in a section having same number as tape. Ages and complete headings were copied on many of the tapes which are not needed in actual computations.

Checks for the comparer are designated by numbers enclosed in circles. Thus the 1 and 2 opposite the totals in tapes 21 and 22, respectively, and also opposite the totals in tape 23 indicate that the numbers marked by the same symbol should agree.

Throughout this description the word "complements" is used freely to mean any two numbers whose sum is any power of ten instead of only for those whose sum is unity. The use of these "complements" is a great aid to speed and accuracy, for no attention need be given to signs.

PREPARATION OF STATISTICS FOR DETERMINATION OF RATES OF MORTALITY OF CHILDREN UNDER 3 YEARS OF AGE.

15. The first step in the computation of rates of mortality at ages under 3 years was to arrange the births and deaths as in Table 12. The numbers of registered births were copied from state reports. The adjusted number of births for the period 1909–1911 was taken from the computations by the extended method. (See United States Life Tables, 1890, 1901, 1910, 1901–1910, page 373, tape 142.) The ratio between this adjusted number of births and the sum of the number of births registered was determined, $346,664/327,314 = 1.059117545$, and this was applied to the numbers of registered births in 1906, 1907, and 1908 to obtain the adjusted number of births for each of these years.

The number of deaths by single years of age under 3 during each of the calendar years, 1906 through 1911, was obtained from the Mortality Statistics for each of these years, published by the Bureau of the Census. 72 per cent of the deaths under age 1 year were assumed to be born in the *later* calendar year, lD_0 , and 28 per cent in the *earlier* calendar year, eD_0 ; 59 per cent of the deaths in age interval 1–2 years were assumed to be born in the *later* calendar year, lD_1 , and 41 per cent in the *earlier* year, eD_1 ; 53 per cent of the

deaths in age interval 2–3 years were assumed to be born in the *later* calendar year, lD_2 , and 47 per cent in the *earlier* year, eD_2 . This is in accordance with the constants used in construction of United States Life Tables, 1890, 1901, 1910, 1901–1910, given in Table 109, page 340, of the volume of this title.

TABLE 12.—STATISTICS FROM WHICH RATES OF MORTALITY OF CHILDREN UNDER 3 YEARS OF AGE WERE DETERMINED FOR THE NEW YORK MALE LIFE TABLE, 1909–1911.

Calendar year.....	1906	1907	1908	1909	1910	1911
Number of births registered.	93,988	100,522	104,992	104,382	109,229	113,703
Adjusted number of births..	99,544	106,465	111,199	111,666	115,948	119,050
Number of deaths, 0-1, D_0 ..	15,209	15,432	14,632	14,569	15,234	14,040
Born in later year, lD_0 ..	10,950	11,111	10,535	10,490	10,968	10,109
Born in earlier year, eD_0 ..	4,259	4,321	4,097	4,079	4,266	3,931
Number of deaths, 1-2, D_1 ..		3,414	3,229	3,523	3,401	2,993
Born in later year, lD_1 ..		2,014	1,905	2,079	2,007	1,766
Born in earlier year, eD_1 ..		1,400	1,324	1,444	1,394	1,227
Number of deaths, 2-3, D_2 ..			1,442	1,484	1,545	1,320
Born in later year, lD_2 ..			764			700
Born in earlier year, eD_2 ..			678			620

DIFFERENCES BETWEEN POPULATIONS AT CORRESPONDING AGES ON JANUARY 1, 1909, AND JANUARY 1, 1912.

16. It was necessary to determine first the difference between the populations at corresponding ages on January 1, 1909, and January 1, 1912. Formulas for this work, (4), (5), and (6), were derived on page 33. The New York Male, 1910, Life Table, is based on a three-year period, 1909–1911. Hence, to use these equations for the computations of this table, 1906 was substituted for 1916, 1907 for 1917, 1908 for 1918; then 1909 for 1918, 1910 for 1919, 1911 for 1920, and 1912 for 1921. (See Diagram 3.)

$$\delta_0 = (-E_0^{1911} + E_0^{1908}) + (-lD_{0/1}^{1908} + lD_{0/1}^{1911}) \quad (4a)$$

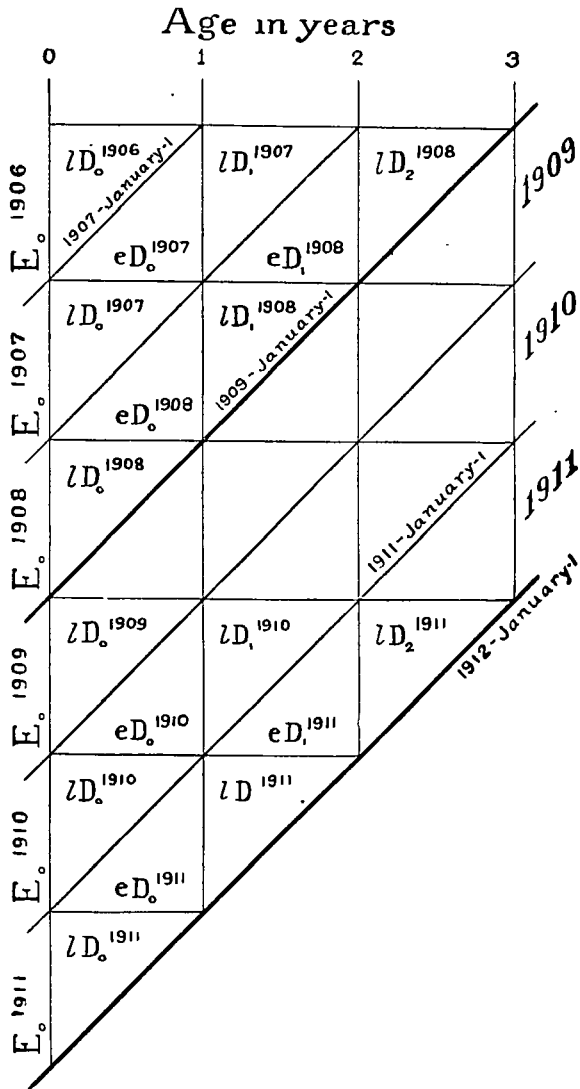
$$\delta_1 = (-E_0^{1910} + E_0^{1907}) + (-lD_{0/1}^{1907} + lD_{0/1}^{1910}) \\ + (-eD_{0/1}^{1908} + eD_{0/1}^{1911}) + (-lD_{1/2}^{1908} + lD_{1/2}^{1911}) \quad (5a)$$

$$\delta_2 = (-E_0^{1909} + E_0^{1906}) + (-lD_{0/1}^{1906} + lD_{0/1}^{1909}) \\ + (-eD_{0/1}^{1907} + eD_{0/1}^{1910}) + (-lD_{1/2}^{1907} + lD_{1/2}^{1910}) \\ + (-eD_{1/2}^{1908} + eD_{1/2}^{1911}) + (-lD_{2/3}^{1908} + lD_{2/3}^{1911}). \quad (6a)$$

As will be noticed these equations are rather symmetrical and their values can be selected from Table 12 according to rule. The last group on the right is always $-lD_{x/x+1}^{1908} + lD_{x/x+1}^{1911}$, x being 0, 1, and 2. The next to the last group of deaths is always $-eD_{x/x+1}^{1908} + eD_{x/x+1}^{1911}$, x being 0 and 1; the second from the last group of deaths is always $-lD_{x/x+1}^{1907} + lD_{x/x+1}^{1910}$, x being 0 and 1; the third from the last group of deaths is $-eD_{x/x+1}^{1907} + eD_{x/x+1}^{1910}$; the fourth from the last group of deaths is $-lD_{x/x+1}^{1908} + lD_{x/x+1}^{1911}$. The group of E 's is always for the same calendar years as the group of deaths adjoining, only the signs are changed. The additions were begun with the last

group in each equation. The adding machine was split between the banks 9 and 10, and the lD 's and eD 's were set up from Table 12 on the adding machine

DIAGRAM 3.—GRAPHIC REPRESENTATION OF RELATION BETWEEN BIRTH AND DEATH RECORDS AND CENSUS STATISTICS FOR 1909-1911 LIFE TABLES.



in the same order as they appear in the equations, while the E 's were added in the reverse order because of the change of sign.

Diagram 4 contains three outlines of Table 12 to indicate how to obtain the values for equations (4a), (5a), and (6a).

In actual computations Table 12 was extended in a straight line as in Table 17, which form was convenient

for the operator and also for those preparing the statistics for a number of tables at the same time. It will be noted that negative quantities were set up on the left side of the machine and positive on the right. Hence, when all the values on the right side of each equation were set up, a subtotal was taken and the complement of the sum on the left side was set up on

DIAGRAM 4.—OUTLINE SHOWING ORDER IN WHICH BIRTHS AND DEATHS IN TABLE 12 SHOULD BE ADDED TO OBTAIN VALUES FOR EQUATIONS (4a), (5a), AND (6a).

	1906	1907	1908	1909	1910	1911
Equation (4a)	Adjusted Births		3			4
	Deaths 0-1, D_0					
	lD_0		2			1
Equation (5a)	Adjusted Births		7		8	
	Deaths 0-1, D_0					
	lD_0		6		5	
Equation (6a)	Deaths 1-2, D_1			4		3
	lD_1			2		1
	eD_1					
Equation (6a)	Adjusted Births	11			12	
	Deaths 0-1, D_0					
	lD_0	10			9	
Equation (6a)	Deaths 1-2, D_1					
	lD_1		6		5	
	eD_1			4		3
Equation (6a)	Deaths 2-3, D_2					
	lD_2			2		1
	eD_2					

both sides of the machine and a total taken in the case of the additions for (4a) and (5a) and a subtotal after additions for (6a). The left side of the machine should be cleared if the correct complement is set up. The remainders on the right are δ_0 , δ_1 , and δ_2 , respectively. δ_1 is then set up below δ_2 and a total taken. δ_0 is then multiplied by k_0 , which in 1910 was about $\frac{1}{3}$, and the product entered in pencil just below δ_0 , and the difference $(1-k_0)\delta_0$ is written just below the product $k_0\delta_0$. Then $\frac{1}{2}$ of δ_1 and also of $(\delta_1+\delta_2)$ is copied just below them.

DETERMINATION OF RATES OF MORTALITY OF CHILDREN UNDER 3 YEARS OF AGE.

17. In tape 17 the values from equations (1), (2), and (3) were set up. The deaths during the period 1909-1911 were added on the right of the adding machine and the corresponding number of children, or the equivalent generation, was obtained on the left. To obtain the values needed in equation (1) the deaths aged 0-1, D_0 , for 1911, 1910, 1909, were added on the right side of the machine, and at the same time the number of births just above them in Table 12 were added on the left. To the left side was then added one-third of the first total in tape 16, 99997241, and a total taken.

To obtain the values needed in equation (2) the total just obtained on the left was added to the complement of the total on the right and to this was added the remainder (99994482) of the first total and one-half of the second total in tape 16. On the right side of the machine the deaths aged 1-2, D_1 , in the calendar years 1911, 1910, and 1909 were set up and a total taken.

To obtain the values needed in equation (3) the total just obtained on the left was added to the complement of the total on the right, and to this one-half of the third total in tape 16 was added. On the right side of the machine the deaths 2-3, D_2 , in the calendar years 1911, 1910, and 1909 were set up and a total taken. Then each total on the right was divided by the corresponding total on the left to obtain the rate of mortality at each age. The result to the nearest sixth decimal place was set up as a whole number under the heading 10^6q_x .

ORIGINAL STATISTICS FOR DETERMINING RATES OF MORTALITY AT AGES 7 YEARS AND OVER.

18. The original statistics, on which the life table for males in the state of New York, 1909-1911, was based, were obtained from the United States Life Tables, 1890, 1901, 1910, 1901-1910, page 450, Table 159. The populations in column 2 and the deaths in column 6 were summed in the quinquennial age groups 0-4, 5-9, 10-14, and so on through the group 95-99. The machine was split between banks 15-16 and 8-9, ages being entered in banks 16-17. Beginning with the age group 5-9, the populations were entered on the left side of the machine and the deaths on the right side, and a subtotal was taken after the group 95-99 was entered. To these subtotals the populations and deaths, respectively, 100 years of age and over, and the age groups 0-4, were added in order to check to the total populations and deaths as given in Table 159 mentioned above. The values in tape 18 are the $P_{1920}^{x/x+4}$ and the $P_{1919-20}^{1919-20/x/x+4}$ required by equations (7) to (10), pages 33 and 34, to obtain the graduated values of L_x and $(3d)_x$ for $x=7, 12, 17$, and so on. These are the central ages of the quinquennial age groups 5-9, 10-14, 15-19, and so on.

APPLICATION OF EQUATIONS (7) TO (10) TO THE STATISTICS IN TAPE 18.

19. For convenience of reference equations (7) to (10) are given with subscripts for period 1909-1911.

$$10^3L_7 = (-10 + 2) (P_{1910}^{5/9} - 2P_{1910}^{10/14} + P_{1910}^{15/19}) + 200P_{1910}^{5/9} \quad (9)$$

$$10^3(3d)_7 = (-10 + 2) (D_{1910}^{1909-11} - 2D_{1910}^{1909-11} + D_{1910}^{1909-11}) + 200D_{1910}^{1909-11} \quad (10)$$

$$10^3L_{x+2} = (-10 + 2) (P_{1910}^{x-5/x-1} - 2P_{1910}^{x/x+4} + P_{1910}^{x+5/x+9}) + 200P_{1910}^{x/x+4} \quad (7)$$

$$10^3(3d)_{x+2} = (-10 + 2) (D_{1910}^{1909-11} - 2D_{1910}^{1909-11} + D_{1910}^{1909-11}) + 200D_{1910}^{1909-11} \quad (8)$$

It was found convenient to split the adding machine between banks 9 and 10 and to apply equations (9) and (7) to the numbers on the left of tape 18 in banks 10 to 17 of the adding machine while applying equations (10) and (8) to the numbers on the right of tape 18 in banks 1 to 9. Accordingly, the first numbers in tape 18 (405163 and 4710) were set up in corresponding places on the adding machine and beneath them the complements of the second set of numbers in tape 18 were repeated twice and then the third set added. The numbers now appearing at the base of the adding machine, 24737 and 3820, are the values of the quantities in the second parentheses of equations (9) and (10), and are really second differences but may be called the operands. Since these operands are to be operated on by +2 and -10, they were added in unit's place and their complements in ten's place. In accordance with the last expressions in equations (9) and (10), the first numbers in tape 18 were added twice in hundred's place and a total taken. The sum on the right, 80834704, is $1000L_x$ and that on the left, 911440, is $1000(3d)_x$.

When 10 is substituted for x in equations (7) and (8), the left-hand members of the equations are 10^3L_{12} and $10^3(3d)_{12}$, while the operands are the same as in equations (9) and (10). Accordingly, the values for these operands, 24737 and 3820, were repeated twice in unit's place and their complements added in ten's place, and the second set of numbers in tape 18, 396114 and 2855, are repeated twice in hundred's place and a total taken. When 15 is substituted for x in equations (7) and (8), the left-hand members of the equations are 10^3L_{17} and $10^3(3d)_{17}$, while the first numbers in the operands are the 396114 and 2855 which appear in hundred's place just before the last total. To these are added the complements (repeated twice) of the numbers just below them in tape 18, 411802 and 4820, and then the fourth set of numbers in tape 18. The totals then appearing at the base of the adding machine, 36060 and 827, are set up in unit's place and their complements in ten's place in accordance with the operators +2 and -10, and to them are added the 411802 and 4820 in hundred's place (repeated twice), which are

the second numbers in the operands. After a total is taken, the 411802 and 4820 are entered in unit's place to begin the next computation. The operator soon learns this routine of repeating twice in hundred's place the second numbers in the operands, whose complements were repeated twice, and then so soon as a total is taken, starting the next set of computations with the same set of numbers, and the results can be obtained very rapidly by a careful machine operator without his understanding negative values, differencing, or decimals.

DETERMINATION OF NUMBER EXPOSED TO RISK OF DEATH TO OBTAIN RATES OF MORTALITY.

20. The rates of mortality were determined according to equations $q_x = d_x / (L_x + .5d_x)$. Since the deaths were for a 3-year period, as indicated by the symbols $(3d)_x$ and $(3d)_x$, and it was desired to obtain average annual rates, either the deaths had to be divided by three or the population multiplied by three. The latter method was found to be more convenient. Accordingly the above equation was written:

$$q_x = (3d)_x / [3L_x + \frac{1}{2}(3d)_x]. \quad (23)$$

In tape 20 the values of the denominator, $3L_x + \frac{1}{2}(3d)_x$, were determined by adding to the totals on the left

side of tape 19, repeated three times, one-half of the corresponding totals on the right side of tape 19.

21. In order to check the work from tapes 18 to 20, and for convenience in dividing, the totals in tape 20 were added in tape 21. These totals are the $10^8[3L_x + \frac{1}{2}(3d)_x]$ of equation (23).

22. Also the totals on the right side of tape 19 were added and fastened to the right side of the values in tape 21. They are the $(3d)_x$ of equation (23). Where the populations are small and the period is for two years instead of for three, so that only $2L_x + \frac{1}{2}(2d)_x$ is needed for the denominator in equation (23), it is often convenient to add these two sets of values on the same tape, the $10^8[2L_x + \frac{1}{2}(2d)_x]$ on the left side and the $(2d)_x$ on the right.

With the two tapes, 21 and 22, side by side, the operator performs the divisions indicated in equation (23), and enters the quotients to the nearest sixth decimal between them. Then they were cleared of fractions by entering them under the heading 10^6q_x .

23. Table 13 shows how the values in tape 18 enter into the totals in tape 19. In this table the values in tape 18 are represented by w_x at the top of the columns, and the totals in tape 19 by u_y in the left-hand margin. The coefficients of w_x in the equation for u_y are in the same line with u_y and each coefficient is in the same column with the w_x to which it belongs.

B.—ACTUAL COMPUTATION.

NUMBER EXPOSED TO RISK OF DEATH FOR ONE YEAR.

CALCULATION OF LIFE TABLE FOR MALES IN THE STATE OF NEW YORK: 1909-11.

PHOTOGRAPHS OF ADDING MACHINE TAPES UPON WHICH CALCULATIONS WERE MADE.

		20	Additions to obtain		
		x	$10^3[3L_x + \frac{1}{2}(3d)_x]$		
149105	13117*				43442816*
99884177	9985677				43442816
99884177	9985677				43442816
84802	14253				1375564
2261	9998724				
99977390	12760				
11582300	1432300				
11582300	1432300				
23146512	32874808*				
115823	14323				
99915198	9985747				
99915198	9985747				
56690	13466				
2909	9999283				
99970910	7170				
8480200	1425300				
8480200	1425300				
16937128	32856336*				
84802	14253				
99943310	9986534				
99943310	9986534				
32248	11303				
3670	9998624				
99963300	13760				
5669000	1346600				
5669000	1346600				
11308640	32704208*				
56690	13466				
99967752	9988697				
99967752	9988697				
15543	7840				
7737	9998700				
99922630	13000				
3224800	1130300				
3224800	1130300				
6387704	32271000*				
32248	11303				
99984457	9992160				
99984457	9992160				
5680	4186				
6842	9999809				
99931580	1910				
1554300	784000				
1554300	784000				
3053864	31569528*				
15543	7840				
99994320	9995814				
99994320	9995814				
1451	1361				
5634	829				
99943660	9991710				
568000	418600				
568000	418600				
1090928	830568*				
5680	4186				
99998549	9998639				
99998549	9998639				
222	269				
3000	1733				
99970000	9982670				
145100	136100				
145100	136100				
266200	258336*				

TABLE 13.—DERIVATION OF FORMULA FOR CHECK ON WORK IN TAPES 18 TO 22.

COMPUTATION OF CHECK IS GIVEN IN TAPE 23.

This table shows the coefficients of the values in tape 18 in the equations for the totals in tape 19, derived according to equations (7) to (10), page 38. The values in tape 18 are represented by w_x at the head of the columns and the totals in tape 19 by u_y in the left-hand margin. Any number in the table is the coefficient of the w_x at the head of its column in the equation for the u_y in the left margin of its line.

	w_5	w_{10}	w_{15}	w_{20}	w_{25}	w_{30}	{ and so } { on to }	w_{75}	w_{80}	w_{85}	w_{90}	w_{95}
u_7	200-8	+16	- 8									
u_{12}	-8	200+16	- 8									
u_{17}	-----	- 8	200+16	- 8								
u_{22}	-----	-----	- 8	200+16	- 8							
u_{27}	-----	-----	-----	- 8	200+16	- 8						
and so on to	-----	-----	-----	-----	-----	-----						
u_{82}	-----	-----	-----	-----	-----	-----		-8	200+16	- 8		
u_{87}	-----	-----	-----	-----	-----	-----		-----	- 8	200+16	- 8	
u_{92}	-----	-----	-----	-----	-----	-----		-----	-----	- 8	200+16	- 8
Total..	200-16	200+24	200-8	200	200	200		200	200	200	200+ 8	- 8

Thus 200 times either sum in tape 18, ages 5 to 95 (4148809 and 171099), lacks $-16w_5 + 24w_{10} - 8w_{15} + 8w_{90} - 8w_{95} - 200w_{95}$ of being equal to the sum of the corresponding totals in tape 19. This expression may be written as $(+2-10)(2w_5 - 3w_{10} + w_{15} - w_{90} + w_{95}) - 200w_{95}$. Then the sum of u_y for $y=7$ to $y=92$ is equal to the sum of 200 times the totals, ages 5 to 95, in tape 18 plus $(+2-10)(2w_5 - 3w_{10} + w_{15} - w_{90} + w_{95}) - 200w_{95}$. These additions are performed in tape 23, those for populations under tape 21, and those for deaths under tape 22. As in tape 19 the values of the operands were first obtained, and these were then added in unit's place and their complements in ten's place; then the complements of w_{95} were added once and the subtotals in tape 18 (4148809 and 171099) twice in hundred's place. A subtotal was then taken in the addition for populations, and this subtotal repeated twice and one-half the total of the deaths ($\frac{1}{2} \times 34129336$) added to it. As indicated by the symbols ① and ② to the right of the totals in tapes 21 and 22, respectively, and of those beneath in tape 23, the corresponding totals agree, indicating that the computations from tapes 18 to 23 are correct.

PROCESS OF OBTAINING THE $\log p_x$ NEEDED TO COMPUTE $\log {}_5p_x$.

24. Formulas 13 to 16 for determining $\log {}_5p_x$ required $\log p_x$. Accordingly the 10^6q_x in tape 24 were copied on the left of the machine and at the same time their complements, p_x , or in this case, $1,000,000 - 10^6q_x = 10^6p_x$, were set up on the right. After each addition the totals should be found to be complementary as are the totals at the end of the tape. To indicate this agreement the operator adds the subtotal on the left of the machine to that on the right. The total should be 0 in the first six places and 21 in the next two places. The 21 shows the operator how many terms he has set down.

25. Bauschinger and Peters eight-place logarithmic tables were used to obtain $\log p_x$. The mantissa of the logarithm of the first five digits of the p_x could be read directly from the book, and this was set up on the adding machine. Then the operator looked up the P. P. (proportional part) which corresponded to the sixth figure in p_x and added it to the mantissa of the first five digits, and took a total. Since the characteristics of all these $\log p_x$'s were -1 , the characteristics are omitted here and in the tapes that follow until tape 37, the additions for $\log L_x$. Also the decimal point is omitted. Accordingly $10^8(\log p_x + 1)$, is put in the headings of tapes 25 to 36, but in the discussion of the tapes simply $\log p_x$ is used.

To condense the work, the machine was split between banks 9-10, and the mantissas for two consecutive logarithms were set up side by side. That is, after the two parts of the mantissa of the first logarithm had been entered on the left of the adding machine, the platen was rolled back two places and the two parts of the mantissa of the second $\log p_x$ were added before a total was taken. Putting the logarithms on a tape in this form is of great convenience to the comparer and also tends to increase the accuracy of the computer.

EXTENSION OF THE SERIES OF $\log p_x$ TO A VERY OLD AGE.

26-30. As explained in section 11, the mantissas of the last seven values of $\log p_x$ in tape 25 were copied on a separate tape and differenced four times in tapes 27 to 30. This includes the logarithms of p_x from $x=62$ to $x=92$. The method of making these tapes was as follows: The first value in the tape for $\Delta^n(\log p_x + 1)$ was set up at the beginning of the tape for $\Delta^{n+1}(\log p_x + 1)$, and then the operator mentally subtracted the first value in the $\Delta^n(\log p_x + 1)$ tape from the one next below it and added the remainder under the first value which was set up at the beginning

RATES OF MORTALITY AND LOGARITHMS OF THE PROBABILITY OF LIVING ONE YEAR.

CALCULATION OF LIFE TABLE FOR MALES IN THE STATE OF NEW YORK: 1909-1911.

PHOTOGRAPHS OF ADDING MACHINE TAPES UPON WHICH CALCULATIONS WERE MADE.

21		22			
x	$10^3[3L_x + \frac{1}{2}(3d)_x]$	$10^6 q_x$	$(3d)_x$		
7	242959832	3751	911440	99416752	99266837*
12	237344932	2277	540440		.88
17	246694452	3881	957384		
22	280377324	5472	1534200	99416752	99266925*
27	274128196	6516	1786232		*
32	240145060	8458	2031176	99083149	98721476
37	222469740	11179	2486952	44	2.68
42	188777608	13340	2518304		
47	157625580	16738	2638296	99083193	98721744*
52	131704012	20889	2751128		*
57	89953444	29004	2609000	98201329	97557885
62	70876940	40561	2874808	408	92
67	52239552	54678	2856336		
72	35278024	76654	2704208	98201737	97557977*
77	20298612	111880	2271000		*
82	9946356	157799	1569528	96536165	94847165
87	3688068	225204	830568	282	
92	927768	278449	258336	96536447	94847165*
	2505435500* ^①		34129336* ^②		*
23 Checks on Computations Tapes 18 to 22					
	405163		4710	92541524	88918401
	999999603886		4710	52	336
	999999603886		99999997145	92541576	88918737*
	999999603886		99999997145		*
	411802		99999997145		
	99999998549		99999997145	85826643	
	222		4820	60	
	32557		99999998639	85826703	*
	999999674430	Operands	269		
	999999977800		4583		
	999999977800		999999954170		
	414880900		999999973100		
	414880900		999999973100		
	829456944		17109900		
	829456944		17109900		
	829456944		34129336* ^②		
	17064668				
	2505435500* ^①				
24					
x	$10^6 q_x$	$10^6 p_x$			
0	127486	872514*			
1	34246	965754			
2	16210	983790			
7	3751	996249			
12	2277	997723			
17	3881	996119			
22	5472	994528			
27	6516	993484			
32	8458	991542			
37	11179	988821			
42	13340	986660			
47	16738	983262			
52	20889	979111			
57	29004	970996			
62	40561	959439			
67	54678	945322			
72	76654	923346			
77	111880	888120			
82	157799	842201			
87	225204	774796			
92	278449	721551			
	1244672	19755328*			
		1244672			
	1244672	21000000*			
25					
x	$10^8(\log p_x + 1)$				
0	94077041	98486472*			
1	199	180			
2	94077240	98486652*			
7	99290240	99836398*			
12		392			
17	99290240	99836790*			
22		*			
27	99900868	99830730*			
32	131	392			
37	99900999	99831122*			
42		*			
47	99761352	99715913*			
52	350	175			
57	99761702	99716088*			
62		*			
67	99631024	99511724*			
72	88	44			
77	99631112	99511768*			
82					
26					
x	$10^8(\log p_x + 1)$				
62	98201737				
67	97557977				
72	96536447				
77	94847165				
82	92541576				
87	88918737				
92	85826703				
	654430342*				
27					
x	$10^8 \Delta[\log p_x + 1]$				
62	999999356240				
67	999998978470				
72	999998310718				
77	999997694411				
82	999996377161				
87	999996907966				
	85826703* ^③				
28					
x	$10^8 \Delta^2[\log p_x + 1]$				
62	999999622230				
67	999999332248				
72	999999383693				
77	999998682750				
82	530805				
	9999996907966* ^④				

of the $\Delta^{n+1}(\log p_x + 1)$ tape. If the subtraction is correct, the second value appears through the glass at the base of the adding machine. This is in accordance with the equation $\Delta^n u_x + \Delta^{n+1} u_x = \Delta^n u_{x+5}$. If the first value in the $\Delta^n(\log p_x + 1)$ is larger than the second, the subtraction is made as though the second value had been increased by 10^{12} , or whatever multiple of 10 is necessary to carry it beyond the split. This process of differencing is described fully in the United States Life Tables: 1890, 1901, 1910, 1901-1910, page 374, section 149.

31. An examination of tape 30 shows that these fourth differences are very rough. Either $\Delta^4 \log p_{92}$ or $\Delta^4 \log p_{72}$, if used as a constant $\Delta^4 \log p_x$ for all older ages, would give the *greatest* probability of living at the *oldest* age. Only $\Delta^4 \log p_{67}$ would produce reasonable results, if it were used as a constant $\Delta^4 \log p_x$ for ages older than 67. Accordingly this assumption was made, and $\Delta^4 \log p_{67}$ was added to the $\Delta^3 \log p_{72}$ six times, a subtotal being taken after the first five additions and a total at the end. Tape 31 shows this work. The first subtotal is used as $\Delta^3 \log p_{77}$ in place of 1,848,055 which produced such an irregular $\Delta^4 \log p_{72}$. The other five subtotals are used as $\Delta^3 \log p_{82}$ to $\Delta^3 \log p_{102}$.

32. In tape 32 the five subtotals and the total in tape 31 were added to $\Delta^2 \log p_{77}$, a subtotal being taken after each addition until the last when a total was taken. These subtotals and total serve as $\Delta^2 \log p_x$ from $x=82$ to $x=107$.

33-34. In the same way the subtotals and the total in tape 32 were added to $\Delta \log p_{82}$ to obtain $\Delta \log p_x$ for $x=87$ to $x=112$ in tape 33, and in tape 34 these new values of $\Delta \log p_x$ were added to $\log p_{87}$ to obtain $\log p_{92}$ to $\log p_{117}$. As stated in section 11, these values of $\log p_x$ to a very old age were used to determine $\log {}_5 p_x$ to ages old enough to reduce the radix of 100,000 to less than 0.5 or practically 0.

PROCESS OF OBTAINING $\log {}_5 p_x$ NEEDED TO COMPUTE l_x AT FIVE YEAR INTERVALS.

35. The $10^8[\log p_x + 1]$ obtained in tape 25 were copied in tape 35, except the last, for age 92, which was replaced by its estimated value in tape 34. The values in tape 25 were then followed by the other estimated $10^8[\log p_x + 1]$ in tape 34. Since equations (13) to (16) and so on, page 35, do not require the logarithms of p_0 and p_1 , they were added separately at the beginning of tape 35 and a total taken. The addition was begun with $\log p_2$ and continued through $\log p_{117}$.

36. In obtaining the value of $10^9 \log {}_5 p_2$ according to equation (13), ten times the value of the operand was obtained first. $10^8(\log p_2 + 1)$ in tape 35 was set up in ten's place, $10^8(\log p_7 + 1)$ repeated four times in ten's place, and the complement of $10^8(\log p_{12} + 1)$ repeated twice in ten's place. This gave ten times

the operand, which was read through the glass of the machine and set up again, and then one-tenth of its complement added three times. Then, in accordance with the other terms in equation (13), the complement of $10^8(\log p_2 + 1)$ was added in unit's place, that of $10^8(\log p_7 + 1)$ in ten's place, and $10^8(\log p_{17} + 1)$ was added in ten's place, and a total taken. This total is $10^9(\log {}_5 p_2 + 5)$.

To obtain the value for $10^9 \log {}_5 p_7$ according to equation (14) $10^8[\log p_7 + 1]$ in tape 35 was added to $10^8[\log p_{12} + 1]$ and a subtotal taken. Then the subtotal was set up and repeated three times in unit's place and set up again and repeated twice in ten's place, so that the total on the machine at the end of this step in the work may be represented by the expression $24[10^8(\log p_7 + 1 + \log p_{12} + 1)]$. This is in accordance with the first term on the right of equation (14). Then in accordance with the next three terms, $10^8(\log p_{12} + 1)$ was set up in ten's place, the complement of $10^8(\log p_{17} + 1)$ was set up in ten's place and $10^8[\log p_{22} + 1]$ is repeated twice in unit's place, giving as a total,

$$10^8[24(\log p_7 + \log p_{12}) + 10 \log p_{12} - 10 \log p_{17} + 2 \log p_{22} + (48 + 10 - 10 + 2)] = 10^8 [24(\log p_7 + \log p_{12}) + 10 \log p_{12} - 10 \log p_{17} + 2 \log p_{22}] + 5(10^9).$$

In other words the result obtained is $10^9 \log {}_5 p_7 + 5(10^9)$.

In the formulas (13) to (16) it will be noted that only four consecutive values of $\log p_x$ are used in each period. In this connection it was found convenient to use as a marker a cardboard with a rectangular opening cut in it just wide enough to allow four of the values on tape 35 to be seen.

Since the same ages appear in equation (15) as in equation (14), the cardboard was not moved, but the four values were added again in a different way. It will be noted that the values for ages 7 and 22, the first and last of the four values appearing in the opening of the cardboard, are in the first expression on the right of equation (15) with the coefficient -1 , while the two middle values have the coefficient $+11$ in this expression. Accordingly the first and last values in the opening of the cardboard were added first and a total taken. Then the two middle values were added and their sum, appearing at the base of the adding machine, was set up in ten's place. This gave $10^8 [11(\log p_{12} + 1 + \log p_{17} + 1)]$. To this the complement of the first two values were added, giving 10^8 times the value of the expression—

$$-\log p_7 - 1 + 11(\log p_{12} + 1 + \log p_{17} + 1) - \log p_{22} - 1 \\ = 20 + [-\log p_7 + 11(\log p_{12} + \log p_{17}) - \log p_{22}]$$

The expression in brackets is the same as that in equation (15). Since twice this expression is required, the sum appearing at the base of the adding machine was

B.—ACTUAL COMPUTATION.

PROBABILITIES OF LIVING ONE YEAR AT VERY OLD AGES.

CALCULATION OF LIFE TABLE FOR MALES IN THE STATE OF NEW YORK: 1909-1911.

PHOTOGRAPHS OF ADDING MACHINE TAPES UPON WHICH CALCULATIONS WERE MADE.

<p>29</p> <p>999999622230*</p> <p>x $10^8 \Delta^3 [\log p_x + 1]$</p> <p>62 999999710018</p> <p>67 514.45</p> <p>72 999999299057</p> <p>77 1848055 (6)</p> <p>5308.05* (5)</p>	<p>87 1999993606580*</p> <p>999995023700</p> <p>92 2999988630280*</p> <p>999992065593</p> <p>97 3999980695873*</p> <p>999988355098</p> <p>102 4999969050971*</p> <p>999983892215</p> <p>107 5999952943186*</p> <p>999978676944</p> <p>112 6999931620130*</p>	<p>36</p> <p>Computations of $10^8 \log_5 p_x + 5$*</p> <p>x</p> <p>992902400</p> <p>998367900</p> <p>998367900</p> <p>998367900</p> <p>998367900</p> <p>999000990010</p> <p>999000990010</p> <p>2988354020</p> <p>999701164598</p> <p>999701164598</p> <p>999701164598</p> <p>999900709760</p> <p>999001632100</p> <p>998311220</p>
<p>30</p> <p>999999710018</p> <p>x $10^8 \Delta^3 [\log p_x + 1]$</p> <p>62 341427</p> <p>67 999999247612</p> <p>72 2548998</p> <p>1848055* (6)</p>	<p>34</p> <p>x $10^8 [\log p_x + 1]$</p> <p>87 88918737</p> <p>999993606580</p> <p>92 82525317*</p> <p>999988630280</p> <p>97 71155597*</p> <p>999980695873</p> <p>102 51851470*</p> <p>999969050971</p> <p>107 20902441*</p> <p>999952943186</p> <p>112 4999973845627*</p> <p>999931620130</p> <p>117 5999905465757*</p>	<p>2 4980854914*</p> <p>99836790*</p> <p>99900999</p> <p>199737789*</p> <p>199737789</p> <p>199737789</p> <p>199737789</p> <p>199737789</p> <p>199737789</p> <p>999009990</p> <p>999001688780</p> <p>99761702</p> <p>99761702</p> <p>7 4993929110*</p> <p>99836790*</p> <p>99761702</p>
<p>31</p> <p>x $10^8 \Delta^3 [\log p_x + 1]$</p> <p>72 999999247612</p> <p>999999299057</p> <p>77 999998546669*</p> <p>999999247612</p> <p>82 2999997794281*</p> <p>999999247612</p> <p>87 3999997041893*</p> <p>999999247612</p> <p>92 4999996289505*</p> <p>999999247612</p> <p>97 5999995537117*</p> <p>999999247612</p> <p>102 6999994784729*</p>	<p>35</p> <p>x $10^8 [\log p_x + 1]$</p> <p>0 94077240 a</p> <p>1 98486652 b</p> <p>192563892*</p> <p>2 99290240 c</p> <p>7 99836790 d</p> <p>12 99900999 e</p> <p>17 99831122 f</p> <p>22 99761702 g</p> <p>27 99716088</p> <p>32 99631112</p> <p>37 99511768</p> <p>42 99416752</p> <p>47 99268925</p> <p>52 99083193</p> <p>57 98721744</p> <p>62 98201737</p> <p>67 97557977</p> <p>72 96536447</p> <p>77 94847165</p> <p>82 92541576</p> <p>87 88918737</p> <p>92 82525317</p> <p>97 71155597</p> <p>102 51851470</p> <p>107 20902441 x</p> <p>112 9999973845627 y</p> <p>117 9999905465757 z</p>	<p>99598492*</p> <p>99900999</p> <p>99831122</p> <p>1997321210</p> <p>999800401508</p> <p>1997454839</p> <p>999009990</p> <p>12 4993919668*</p> <p>99900999</p> <p>99716088</p> <p>199617087*</p> <p>99831122</p> <p>99761702</p> <p>1995928240</p> <p>999800382913</p> <p>1995903977</p> <p>998311220</p> <p>17 4990119174*</p> <p>99831122</p> <p>99631112</p> <p>199462234*</p> <p>99761702</p> <p>99716088</p> <p>1994777900</p> <p>999800537766</p> <p>1994793456</p> <p>997617020</p>
<p>32</p> <p>x $10^8 \Delta^2 [\log p_x + 1]$</p> <p>77 999998582750</p> <p>999998546669</p> <p>82 1999997229419*</p> <p>9999997794281</p> <p>87 2999995023700*</p> <p>9999997041893</p> <p>92 3999992065593*</p> <p>9999996289505</p> <p>97 4999988355098*</p> <p>9999995537117</p> <p>102 5999983892215*</p> <p>9999994784729</p> <p>107 6999978676944*</p>	<p>2 1868318283*</p>	<p>22 4987203932*</p>
<p>33</p> <p>x $10^8 \Delta [\log p_x + 1]$</p> <p>82 999996377161</p> <p>999997229419</p> <p>87 1999993606580*</p>		

set up again. In accordance with the last term in equation (15) the second value in the opening of the cardboard was added in ten's place and a total taken. The result is:

$$\begin{aligned} & 10^8 \{2[20 - \log p_7 + 11(\log p_{12} + \log p_{17}) - \log p_{22}] \\ & \quad + 10(\log p_{12} + 1)\} \\ & = 10^8 \{2[-\log p_7 + 11(\log p_{12} + \log p_{17}) - \log p_{22}] \\ & \quad + 10\log p_{12}\} + 5(10^9) \\ & = 10^9 \log {}_5p_{12} + 5(10^9). \end{aligned}$$

Then the cardboard was moved down one space and equation (16) applied to the next four consecutive values. It will be noted that equation (16) is the same general equation as (15). Hence the first and last values appearing in the cardboard were added and a total taken. Next the second and third values were added, their sum, appearing at the base of the adding machine, was set up in ten's place; the complement of the sum of the first and fourth just above was added; the sum appearing at the base of the adding machine was set up, and finally the second value in the opening was added in ten's place and a total taken. For reasons similar to the above, it will be found that this total is $10^9 \log {}_5p_{17} + 5(10^9)$. This same process was repeated on each four consecutive values in tape 35. These totals in tape 36 furnish the $\log {}_5p_x$ needed to obtain $\log l_x$ at every fifth year of age. The $\log {}_5p_x$ are in the following form: $10^9 \log {}_5p_x + 5(10^9)$.

$\log l_x$ AT EVERY FIFTH YEAR OF AGE.

37. Logarithms of l_x at every fifth year of age were obtained in tape 39 by adding to the logarithm of the radix $\log p_0$ and $\log p_1$ and then of each consecutive $\log {}_5p_x$, and taking a subtotal after each. Since the totals obtained in tape 36 are multiples of 10^9 , the decimal point comes between banks 9 and 10 of the machine and may be indicated by a vertical line drawn between these banks. The radix is taken as 100,000, and since its logarithm is 5, this figure was added in the tenth bank of the adding machine.

$\log p_0$ is given in tape 35 as $10^8(\log p_0 + 1)$, and multiplying this expression by 10 changes it to $10^9 \log p_0 + 10^9$. Accordingly 94,077,240, the first number in tape 35, was entered in ten's place. To remove the 10^9 , 9's were set up from bank 10 to the split in the machine between banks 12 and 13, and a subtotal taken. This subtotal is $\log l_1$. In the same way $10^8(\log p_1 + 1)$, the second number in tape 35, was set up in ten's place, with 9's from bank 10 to bank 12. The subtotal taken here is $\log l_2$.

From age 2 the l_x are required at five-year intervals. Accordingly, $10^9 \log {}_5p_2 + 5(10^9)$, the first total in tape 36, or 4,980,854,914, was added. To remove the $5(10^9)$, 5 was subtracted from the tenth bank of this first total, leaving 999 from banks 10 to 12 instead of 4 in bank 10. The subtotal taken here is $\log l_7$.

In this way each of the totals in tape 36 was added after 5 had been subtracted from the number in the tenth bank of the total, and a subtotal was taken after each addition. Since 4 is the number in the tenth bank of the totals in tape 36 from age 2 to 87, 999 is added in banks 10 to 12 for all these totals. The totals for age 92 and 97 contain 3 in the tenth bank, while those for ages 102 and 107 contain 2 and 0, respectively. Accordingly, for these four ages the numbers added in banks 10 to 12 in tape 37, were 998, 998, 997, 995, respectively.

Thus the series of subtotals in tape 37 are the logarithms of l_x . Whenever these subtotals became less than $999|698,000,000$, which is $\log 0.5$ on the adding machine tape, the remaining totals in tape 36 were added in without taking a subtotal, since all values in for l_x less than 0.5 were called 0.

Since 10^9 was subtracted from ten times each of the first two values in tape 35 before adding them in tape 37, and $5(10^9)$ was subtracted from each of the totals in tape 36 before they were added in tape 37, the total thus far obtained in tape 37 does not equal ten times the first two terms in tape 35 plus the totals in tape 36. Since there are always 22 totals in tape 36 and $5(10^9)$ was added at beginning of tape 37, this difference is $10^9(-5 + 2 + 5 \times 22) = 107(10^9)$. Therefore, for checking purposes 107 was added in banks 10 and 12 of tape 37 before the final total was taken. This final total is then ten times the first two values in tape 35 plus the totals in tape 36.

After this total had been checked, the antilogarithms of the subtotals in tape 37 were looked up in Bauschinger and Peters' logarithm tables and entered to the nearest integer to the left of the subtotal.

38. A check on the work in tapes 35 to 37 is derived in Table 14. In this table letters represent the $\log p_x$ for the values of x given just above them, and any number in the table is the coefficient of the $\log p_x$ at the top of its column in the equation for the $\log {}_5p_x$ on the left margin of the table in the same line with this number. These coefficients are taken from equations (13) to (16), and so on, page 35.

B.—ACTUAL COMPUTATION.

PROBABILITY OF LIVING FIVE YEARS.

CALCULATION OF LIFE TABLE FOR MALES IN THE STATE OF NEW YORK: 1909-1911.

PHOTOGRAPHS OF ADDING MACHINE TAPES UPON WHICH CALCULATIONS WERE MADE.

36 *Continued*

Computations of $10^9[\log_5 p_x + 5]$

	99761702*		99266923*		96536447*
	99511768		98201737		88918737
	199273470*		197468662*		185455184*
	99716088		99083193		94847165
	99631112		98721744		92541576
	1993472000		1978049370		1873887410
	999800726530		999802531338		999814544816
	1993545730		1978385645		1875820967
	997160880		990831930		948471650
27	4984252340*	52	4947603220*	77	4700113584*
	*		*		*
	*		*		*
	99716088		99083193		94847165
	99416752		97557977		82525317
	199132840*		196641170*		177372482*
	99631112		98721744		92541576
	99511768		98201737		88918737
	1991428800		1969234810		1814603130
	999800867160		999803358830		999822627518
	1991438840		1969517121		1818690961
	996311120		987217440		925415760
32	4979188800*	57	4926251682*	82	4562797682*
	*		*		*
	*		*		*
	99631112		98721744		92541576
	99266925		96536447		71155597
	198898037*		195258191*		163697173*
	99511768		98201737		88918737
	99416752		97557977		82525317
	1989285200		1957597140		1714440540
	999801101963		999804741809		999836302827
	1989315683		1958098663		1722187421
	995117680		982017370		889187370
37	4973749046*	62	4898214696*	87	4333562212*
	*		*		*
	*		*		*
	99511768		98201737		88918737
	99083193		94847165		51851470
	198594961*		193048902*		140770207*
	99416752		97557977		82525317
	99266925		96536447		71155597
	1986836770		1940944240		1536809140
	999801405039		999806951098		999859229793
	1986925486		1941989762		1549719847
	994167520		975579770		825253170
42	4968018492*	67	4859559294*	92	3924692864*
	*		*		*
	*		*		*
	99416752		97557977		82525317
	98721744		92541576		20902441
	198138496*		190099553*		103427758*
	99266925		96536447		71155597
	99083193		94847165		51851470
	1983501180		1913836120		1230070670
	999801861504		999809900447		999896572242
	1983712802		1915120179		1249649979
	992669250		965364470		711555970
47	4960094854*	72	4795604828*	97	3210855928*

UNITED STATES ABRIDGED LIFE TABLES.

TABLE 14.—DERIVATION OF FORMULA FOR CHECK ON WORK IN TAPES 35 TO 37.

COMPUTATION OF CHECK IS GIVEN IN TAPE 38.

In this table letters represent the $\log p_x$ for values of x given just above the letters, and any number in the table is the coefficient of the $\log p_x$ at the top of its column in the equation for the $\log {}_5p_x$ on the left margin of the table in the same line with this number. These coefficients are taken from equations (13) to (16), and so on, page 35.

10 $\log {}_5p_x$ for x equals—	log p_x for x equals—																
	0	1	2	7	12	17	22	27	32	37	and so on to	92	97	102	107	112	117
	a	b	c	d	e	f	g	h	i	j		u	v	w	x	y	z
2.....			+16	+58	-34	+10											
7.....				+24	+34	-10	+ 2										
12.....				- 2	+32	+22	- 2										
17.....					- 2	+32	+22	- 2									
22.....						- 2	+32	+22	- 2								
27.....							- 2	+32	+22	- 2							
32.....								- 2	+32	+22							
37.....									- 2	+32							
42.....										- 2							
and so on to																	
82.....												- 2					
87.....												+22	- 2				
92.....												+32	+22	- 2			
97.....												- 2	+32	+22	- 2		
102.....													- 2	+32	+22	- 2	
107.....														- 2	+32	+22	- 2
Total, 10 $\sum_{x=2}^{x=107} \log {}_5p_x$			+16	+80	+30	+52	+52	+50	+50	+50	and so on to	+50	+50	+50	+52	+20	- 2
50 $\sum_{x=2}^{x=117} \log p_x$			+50	+50	+50	+50	+50	+50	+50	+50		+50	+50	+50	+50	+50	+50
50 $\sum_{x=2}^{x=117} \log p_x - 10 \sum_{x=2}^{x=107} \log {}_5p_x$			+34 =30+4	-30	+20	- 2	- 2	0	0	0	.....	0	0	0	- 2	+30	+52= 2(30-4)

Therefore to reduce the sum of the totals in tape 36 to 50 times the second total in tape 35, ten times this sum must be increased by:
 $(30+4)c - 30d + 20e - 2f - 2g - 2x + 30y + 2(30-4)z$,
 or: $30(c-d+y+2z) + 2(2c+10e-f-g-x-4z)$.
 This formula was reduced to the following form, convenient for computation upon the adding machine:
 $2[2(c-2z) + 10e - f - g - x] + 3[10(c-d+y+2z)]$.

Accordingly, the complete expression for the check on tapes 36-37 is:

I. Add c to complement of z repeated twice, and repeat total seen at the base of the machine. To this add e in ten's place and the complements of f , g , and x in unit's place and again repeat the total now seen at the base of the adding machine. Then clear machine.

II. Add $c-d+y+2z$ in ten's place and then set up the total seen in the glass at the base of the adding machine, repeating this total twice. To this add the total obtained in I just above, indicated by symbol \star , and then the total in tape 37.

III. Set up the second total in tape 35 and repeat 5 times; add to it, in ten's place, the first total in that tape, and take a total. The totals of II and III should agree. They are designated by the mark \odot to the right of each total.

Before starting his check the computer puts the letters a , b , c , d , e , f , g , and x , y , and z in the right margin of tape 35 to aid him in following the rule for the check. To preserve the first part of II, should his totals in II and III not agree, the operator takes a subtotal before adding the total in I.

39. No check was provided for the l_x determined by finding the antilogarithms of the subtotals in tape 37 except to compare them with the duplicate work. When this was done these l_x in pencil on tape 37 were added in tape 39. This put the l_x column in a more convenient form for deriving from it the $N'_{x:5}$ according to equations (17) to (20), page 35.

DETERMINATION OF $N'_{x:5}$ FROM l_x AND OF N'_x FROM $N'_{x:5}$.

40. Equations (17) to (20) are the same general equations as (13) to (16) and accordingly the same general method was used in computing the $N'_{x:5}$ from the l_x as was used in computing the $\log {}_5p_x$ from the $\log p_x$. The same cardboard was used to mark off the l_x to which the equation was being applied, and the addition was begun with the third number on the tape; the first two may be separated by a horizontal line. The method of computing $N'_{x:5}$ is identical with that of computing $\log {}_5p_x$, but this is the only value of $N'_{x:5}$ obtained by the irregular formula.

However, since the l_x are much smaller numbers than the $\log p_x$, it was found more convenient to add the first and last values appearing in the opening of the cardboard on the right of the adding machine and

B—ACTUAL COMPUTATION.

NUMBER OF SURVIVORS.

CALCULATION OF LIFE TABLE FOR MALES IN THE STATE OF NEW YORK: 1909-1911.

PHOTOGRAPHS OF ADDING MACHINE TAPES UPON WHICH CALCULATIONS WERE MADE.

<p>71155597 * 999973845627 1 45001224* 51851470 20902441 727539110 999954998776 753291797 518514700 102 1 2029098294* * * * 51851470 999905465757 999957317227* 20902441 999973845627 999947480680 42682773 999984911521 209024410 107 3 178847452*</p> <p>37</p> <p>$10^3 \log l_x$ * 100,000 5 999940772400 87,251 1 4940772400s 999984866520 84,263 2 4925638920s 999980854914 80,629 3 4906493834s 999993929110 79,510 4 4900422944s 999993919668 78,405 5 4894342612s 999990119174. 76,641 6 4884461786s 999987203932 74,416 7 4871665718s 999984252340 71,766 8 4855918058s 999979188800 68,408 9 4835106858s 999973749046 64,396 10 4808855904s 999968018492 59,824 11 4776874396s 999960094854 54,572 12 4736969250s 999947603220 48,370 13 4684572470s 999926251682 14 -4610824152s</p>	<p>40,815 14 4610824152s 999898214696 32,288 15 4509038848s 999859559294 23,367 16 4368598142s 999795604828 14,595 17 4164202970s 999700113584 7,317 18 3864316554s 999562797682 2,674 19 3427114236s 999333562212 576 20 2760676448s 998924692864 48 21 1685369312s 998210855928 1 22 999896225240s 997 29098294 0 22 996925323534s 995178847452 107 24 99104170986*</p> <p>38 Check on tapes 35 to 37</p> <p>99290240 C * 94534243-Z 94534243-Z 288358726C-2Z 999009990 10C 999900168878-f 999900238298-g 999979097559-x 1355232177 2710464354 * * * * * * 992902400 10C 9990016322100-10d 999738456270 10Y 999054657570 10Z 999054657570 10Z 997842305910 997842305910 2710464354 * Total-Tape 37 → 99104170986 95341553070 (7) * * * * * * Second Total Tape 35 → 18683182830 18683182830 18683182830 18683182830 18683182830 First Total Tape 35 → 93415914150s 1925638920 (7) 95341553070*</p>	<p>39</p> <p>l_x * 0 100000 1 87251 2 84263 7 80629 12 79510 17 78405 22 76641 27 74416 32 71766 37 68408 42 64396 47 59824 52 54572 57 48370 62 40815 67 32288 72 23367 77 14595 82 7317 87 2674 92 576 97 48 102 1 1150132*</p> <p>40 Computations of $N'_{x:31}$ * 84263 80629 164892s 164892 164892 164892 164892 164892 806290 999204900 78405 78405 2 4125408 * * * * * * 80629 84263 79510 78405 1601390 99837332 1598861 806290 7 4004012 162668 * * * * * * 79510 80629 78405 76641 1579150 99842730 1579795 795100 3954690 12 157270 * * * * * * 78405 79510 76641 74416 1550460 99846074 1551580 784050 3887210 17 153926*</p>
--	---	---

the second and third on the left, the machine being split between banks 9-10. Accordingly the first value in the opening was set up on the right and the second on the left and the adding machine lever struck. Then the third was set up on the left and the fourth on the right and the lever again touched. The total seen at the base of the machine on the left was set up in ten's place, the complement of the total seen through the glass on the right was added to this, and the total then seen through the glass on the left was added. Then ten times the second number appearing in the opening of the cardboard was added on the left and a total taken. This process was continued until a total had been obtained from each group of four consecutive l_x . A total was then obtained from the last three l_x according to equation (21), page 35, which gives $10N'_{(w-5):5}$. Since $l_w = 1$, $N'_{w:5}$ was taken simply as 1.

That is, $\sum_{x=w+1}^{x=w+4} l_x$ is zero in this table.

According to equations (17) to (21) the totals in tape 40 are $10N'_{x:5}$.

41. Then to obtain N'_x these $10N'_{x:5}$ were added, beginning with $10N'_{w:5} = 10$ and taking a subtotal after each addition. After $10N'_{2:5}$ had been added and a subtotal taken, the $10N'_{1:5}$ and then the $10N'_{0:5}$ ($= 1,000,000$) were added, a subtotal being taken after addition of the first and a total after addition of the last.

For the benefit of the reader the l_x were copied on tape 41 to the left of the N'_x for the same age. Thus, the dividends of equation (22), page 35, are given on the right side of tape 41 and the divisors in the center and the ages on the left margin of the tape. To aid the computer a vertical line between the first and second banks marks the decimal point in these N'_x .

42. The check on the work in tapes 39 to 41 is derived in Table 15. As in Table 14 any number in the table is the coefficient of the l_x at the top of its column in the equation for the $N'_{x:5}$ on the left margin of the page in the same line with the number. These equations for $N'_{x:5}$ are (17) to (21), page 35.

TABLE 15.—DERIVATION OF CHECK ON WORK IN TAPES 39 TO 41.

COMPUTATION OF CHECK IS GIVEN IN TAPE 42.

This table shows equations for $10 N'_{x:5}$ in terms of l_x to l_{x+4} according to equations (17) to (21), page 35; $N'_{0:5} = l_0$ and $N'_{1:5} = l_1$.

Any number in the table from columns l_2 to $l_{w+5} = 0$ is the coefficient of the l_x at the top of its column in the equation for the $10 N'_{x:5}$ in first column in same line with the number.

$10 N'_{x:5}$	l_0	l_1	l_2	l_7	l_{12}	l_{17}	l_{22}	l_{27}	(and so on to)	l_{w-20}	l_{w-15}	l_{w-10}	l_{w-5}	l_w	$l_{w+5} = 0$	
$10N'_{0:5}$	+10															
$10N'_{1:5}$		+10														
$10N'_{x:5}$ for x equals—																
2.....			+24	+34	-10	+ 2										
7.....			- 2	+32	+22	- 2										
12.....				- 2	+32	+22	- 2									
17.....					- 2	+32	+22	- 2								
22.....						- 2	+32	+22								
27.....							- 2	+32								
32.....								- 2								
37.....																
And so on to																
$w-30$										- 2						
$w-25$										+22	- 2					
$w-20$										+32	+22					
$w-15$										- 2	+32	+22	- 2			
$w-10$										- 2	+32	+22	- 2			
$w-5$											- 2	+32	+22	- 2		
w														+10		$+10 \sum_{x=w+1}^{x=w+4} l_x$
Total $10 N'_0$	+10	+10	+22	+64	+42	+52	+50	+50	(and so on to)	+50	+50	+50	+52	+30	- 2	$+10 \sum_{x=w+1}^{x=w+4} l_x$
$50 \sum_{x=0}^{x=w} l_x$	+50	+50	+50	+50	+50	+50	+50	+50		+50	+50	+50	+50	+50	+50	
$50 \sum_{x=0}^{x=w} l_x - 10N'_0$	+40	+40	+28= (30-2)	-14= (-10-4)	+8= (+10-2)	- 2	0	0	0	0	0	0	- 2	+20	+52	$-10 \sum_{x=w+1}^{x=w+4} l_x$
or $40(l_0 + l_1) + 30l_2 - 10l_7 + 10l_{12} + 20l_w - 2(l_2 + 2l_7 + l_{12} + l_{17} + l_{w-5}) - 10 \sum_{x=w+1}^{x=w+4} l_x$, when $l_{w+5} = 0$.																

B.—ACTUAL COMPUTATION.

SUM OF SURVIVORS IN FIVE-YEAR GROUPS AND AT EACH FIFTH YEAR OF AGE AND OVER.

CALCULATION OF LIFE TABLE FOR MALES IN THE STATE OF NEW YORK: 1909-1911.

PHOTOGRAPHS OF ADDING MACHINE TAPES UPON WHICH CALCULATIONS WERE MADE.

40 <i>Continued</i>				41		
Computations of N'_x				x	l_x	N'_x
76641	784.05	40815	48370			
74416	717.66	32288	23367			
1510570		731030				
99849829		99928263				
1511456		732396				
766410		408150				
22		62				
3789322	1501.71*	1872942	71737*	102	1	10
	*		*			4.06
	*		*			41.68
74416	766.41	32288	40815	97	48	14138
71766	684.08	23367	14595			
1461820		556550				
99854951		99944590		92	576	145548
1462953		556795				83510
744160		322880				
27		67		87	2674	980648
3670066	1450.49*	1436470	55410*			262630
	*		*			
	*		*	82	7317	3606948
71766	744.16	23367	32288			575932
68408	643.96	14595	7317			
1401740		379620		77	14595	9366268
99861188		99960395				989624
1403102		377977				
717660		233670		72	23367	19262508
32		72				1436470
3523864	1388.12*	989624	39605*	67	32288	33627208
	*		*			1872942
	*		*	62	40815	52356628
68408	717.66	14595	23367			2272050
64396	598.24	7317	2674	62	40815	
1328040		219120				
99868410		99973959		57	48370	75077128
1329254		214991				2609166
684080		145950		52	54572	101168788
37		77				2889420
3342588	1315.90*	575932	26041*	47	59824	13 62988
	*		*			3130840
	*		*	42	64396	161371388
64396	684.08	7317	14595			3342588
59824	545.72	2674	576	37	68408	194797268
1242200		99910				3523864
99877020		99984829		32	71766	23 35908
1243440		94730				3670066
643960		73170		27	74416	266736568
42		82				3789322
3130840	1229.80*	262630	15171*	22	76641	304629788
	*		*			3887210
	*		*	17	78405	343501888
59824	643.96	2674	7317			3954690
54572	483.70	576	48	12	79510	383048788
1143960		32500				4 4012
99887234		99992635		7	80629	423088908
1145590		28385				4125408
598240		26740		2	84263	464342988
47		87				872510
2889420	1127.66*	83510	7365*	1	87251	473068088
	*		*			1
	*		*	0	100000	483068088*
54572	598.24	576	2674			
48370	408.15	48	1			
1029420		6240				
99899361		99997325				
1031723		4189				
545720		5760				
52		92				
2609166	1006.39*	14138	2675*			
	*		*			
	*		*			
48370	545.72	48	576			
40815	322.88	1				
891850		490				
99913140		99999424				
894175		99999963				
483700		480				
57		97				
2272050	868.60*	406	576*			
	*		*			

UNITED STATES ABRIDGED LIFE TABLES.

COMPLETE EXPECTATION OF LIFE.

CALCULATION OF LIFE TABLE FOR MALES IN THE STATE OF NEW YORK: 1909-1911.

PHOTOGRAPHS OF ADDING MACHINE TAPES UPON WHICH CALCULATIONS WERE MADE:

42	
Check on tapes 39 to 41.*	
1872510	
1872510	
1872510	
1872510	
842630	
842630	
842630	84263
	80629
99193710	80629
795100	79510
10	78405
10	48
	403484
99193032	
9199792	806958*
48306808	
⑧57506600	806958*
	**
	**
	11501320
	11501320
	11501320
	11501320
	11501320
	11501320
	*
	⑧57506600*

43		
x	N_x/l_x	e_x *
0	4831	4781
1	5422	5372
2	5511	5461
7	5247	5197
12	4818	4768
17	4381	4331
22	3975	3925
27	3584	3534
32	3205	3155
37	2848	2798
42	2506	2456
47	2174	2124
52	1854	1804
57	1552	1502
62	1283	1233
67	1041	991
72	824	774
77	642	592
82	493	443
87	367	317
92	253	203
97	87	37

Accordingly the rule for checking the work in tapes 39 to 41 is as follows: Split machine between banks 9 and 10.

I.—(1) Set up l_0+l_1 , that is, $100,000+l_1$, in ten's place on the left of the machine and repeat four times.

(2) Set up $10l_2$ on the left and repeat three times, adding it in unit's place on the right with the third repetition.

(3) Set up l_7 on the right of the machine, repeating twice, and with the second repetition setting up the complement of l_7 in ten's place on the left.

(4) Set up $10l_{12}$ on the left of the machine and l_{12} on the right.

(5) Set up $10l_w$ on the left of the machine and l_{17} on the right.

(6) Set up $10l_w$ on the left of the machine and l_{w-5} on the right.

(7) Repeat total seen at right through glass at base of machine.

(8) Set up on left of machine the complement of total now seen at right through the glass at its base.

(9) Set up complement of $10 \sum_{x=w+1}^{x=w+4} l_x$ on right of machine. $\sum_{x=w+1}^{x=w+4} l_x$ is zero in this table. See end of section 40.

(10) Add total of tape 41, and take a total.

II.—Repeat total of tape 39 five times in ten's place and take a total. As indicated by the marks ⑧

to the left of each of the totals of I and II, they should agree.

The operator, to preserve the first part of his check should his totals not agree, takes a subtotal between steps (8) and (9).

DETERMINATION OF e_x .

43. The work on this tape is generally performed in pencil on the left margin of tape 41, since the l_x are not copied there in actual practice. By putting in the ages in the right margin of tapes 39 and 41, the operator can readily find the dividend in tape 41 and the corresponding divisor in tape 39, and he can enter his quotient from the computing machine to the left of the dividend in tape 43.

When the finished tapes were no longer needed for further computations, they were pasted on a large sheet of heavy manila paper and enough headings inserted to make easy any possible future reference to them. In this way all the computations for each life table were kept in order. This paper was also easy to file away.

No knowledge of algebraic processes is needed to compute life table by the methods described in sections 16 to 45. Under proper supervision any good adding machine operator can readily learn these steps and then do all the work of computing life tables.

PART III.—ORIGINAL STATISTICS.

SOURCES OF ORIGINAL STATISTICS.

44. The population statistics upon which these life tables are based are the census returns for January 1, 1920. Practically all the birth and mortality statistics used were compiled by the Bureau of the Census. The exceptions to this rule are shown in Table 16. Only the total number of deaths by color and sex in Buffalo in 1919 and 1920, and in Cleveland and Detroit in 1919 could be obtained, whereas deaths by color, sex, and age groups as compiled by the Bureau of the Census were needed to render life tables for these cities comparable with those for other cities.

Accordingly certain registrars were requested to furnish the mortality statistics for whites and for Negroes separately by sex for the following age groups: single years of age under 5 and the quinquennial age groups 5-9, 10-14, and so on, to age 100 and over. When the totals for deaths by sex and color furnished by the state did not agree with those compiled by the Bureau of the Census, the totals compiled by the Bureau were distributed into age groups proportionately to those furnished by the state department.

Since birth statistics by sex and color for many other states and cities were not available for all the years 1916 to 1920, it was necessary either to vary the method of computing rates of mortality at ages under 3 years or else to estimate the sex and color distribution of the births. After studying the statistics which could be obtained, it was decided not to vary the method of computing rates of mortality at ages under 3 years, but to use the birth statistics which were available and then to distribute these by sex and color according to the birth statistics of

later years, or according to computed number of births for these years derived from population and death statistics. This last method was necessary only in the case of Chicago, Illinois, and New Jersey. It will be noted that it was necessary to make these distributions by sex and color for only a few areas in the years 1919 and 1920. Since only the differences between births in 1916 and 1918, 1917 and 1919, 1918 and 1920, were required by the formulas used, the errors introduced by these estimated distributions must be very small for the years 1916 to 1918.

For a few areas it was necessary to take from the state reports the deaths under 1 year of age in 1916 by sex and color or to estimate the distribution by sex and color of the total deaths under 1 year of age from state reports. In the case of Illinois the deaths under 1 year of age in 1916, and under 1 and from 1 to 2 years of age in 1917 had to be estimated from those in Chicago for these years. However, since but little weight is given to these deaths in the formulas it was possible to estimate for large areas with only slight errors in the rates of mortality under three years of age.

The populations and deaths at unknown ages are distributed in Tables 17 and 18, pages 58 and 62. This distribution was made by the usual method. That is, the population in each age group was multiplied by the constant ratio of total population to population at known ages to distribute the population at unknown ages among those of known ages, and the deaths at unknown ages were distributed among those of known ages by the same process.

UNITED STATES ABRIDGED LIFE TABLES.

TABLE 16.

STATISTICS USED IN THE CONSTRUCTION OF LIFE TABLES

A.—BIRTH

No. of line.	AREA AND SEX.	1916					1917						
		Total.	Total white.	Total colored.	Negro.	Other colored.	Color not stated.	Total.	Total white.	Total colored.	Negro.	Other colored.	Color not stated.
STATES.													
1	California: Total.....	50,638	46,272		199	4,167		52,230	47,313		328	4,589	
2	Males.....		23,928						24,319				
3	Females.....		22,344						22,994				
4	Illinois: Total.....	116,283						108,901					
5	Indiana: Total.....		62,343	969									
6	Males.....		31,893	528									
7	Females.....		30,450	441									
8	Kansas: Total.....	41,163											
9	Kentucky: Total.....	61,077											
10	Missouri: Total.....	73,486	71,344		2,129	13	67,041	64,616		2,425			
11	Males.....												
12	Females.....												
13	New Jersey: Total.....		68,283		1,927	1		73,063		2,243	3		
14	North Carolina: Males.....		27,481		11,950								
15	Females.....		25,965		11,262								
16	Ohio: Total.....	112,951											
17	Oregon: Total.....	12,960					13,149						
18	Males.....						6,871						
19	Females.....						6,278						
20	Rhode Island: Males.....												
21	Females.....												
22	South Carolina: Total.....		22,385		25,476			20,395		22,080		35	
23	Males.....		11,742		13,045			10,564		11,368			
24	Females.....		10,643		12,431			9,831		10,712			
Tennessee:													
25	Total (cities).....	6,072					6,304						
26	Males.....												
27	Females.....												
28	Total (rural).....	44,659					44,366						
29	Males.....												
30	Females.....												
31	Utah: Males.....		6,753		8	77							
32	Females.....		6,400		14	74							
33	Virginia: Total.....	41,297	18,855				30						
34	Males.....		21,150		9,481								
35	Females.....		20,147		9,374								
36	Washington: Total.....	23,831	22,685		66	1,080							
37	Males.....		12,328										
38	Females.....		11,503										
39	Wisconsin: Total.....	58,921					92						
40	Males.....		30,463										
41	Females.....		28,458										
CITIES.													
42	Chicago: Total.....	49,754					49,561						
43	Cleveland: Total.....	18,662											
44	Los Angeles: Males.....		3,712					3,802					
45	Females.....		3,612					3,678					
46	New Orleans: Total.....		5,836	2,693				5,877	2,303				
47	Males.....		3,001	1,394				3,030	1,226				
48	Females.....		2,835	1,299				2,847	1,077				
49	St. Louis: Total.....	14,101	13,414		678	9	13,868	12,893		975			
50	Males.....		7,228				7,091						
51	Females.....		6,873				6,777						
52	San Francisco: Males.....		3,827					3,809					
53	Females.....		3,471					3,596					
HAWAII.													
54	All races combined: Males.....	4,324					4,880						
55	Females.....	3,846					4,316						

No. of line.	AREA AND SEX.	NUMBER OF BIRTHS DURING			
		1916		1917	
		All races.	Japanese.	All races.	Japanese.
56	Hawaii: Total.....				
57	Males.....	4,197	1,974	4,640	2,321
58	Females.....	3,702	1,688	4,067	1,839

BUT NOT COMPILED IN THE BUREAU OF THE CENSUS.

TABLE 16.

STATISTICS.

1918						1919						1920						No. of line.	
Total.	Total white.	Total colored.	Negro.	Other colored.	Color not stated.	Total.	Total white.	Total colored.	Negro.	Other colored.	Color not stated.	Total.	Total white.	Total colored.	Negro.	Other colored.	Color not stated.		
51,248	50,986		262																1
	26,221																		2
	24,765																		3
118,368						115,072						128,992							4
																			5
																			6
																			7
																			8
64,001	61,843		2,143	15		61,193	58,777		2,416			65,416	62,656		2,760				9
32,702						29,730						33,609							10
31,299						31,463						31,807							11
	72,216		2,328	5			68,269		2,655	11			73,471		2,949	11			12
																			13
																			14
																			15
13,295																			16
6,780																			17
6,515																			18
																			19
													7,687		159				20
													7,203		149				21
	20,705		23,414		32														22
	10,653		12,165																23
	10,052		11,249																24
																			25
6,569						7,202						7,901	6,058	1,843					26
													3,099	928					27
													2,959	915					28
													37,753	5,249					29
													19,627	2,746					30
													18,126	2,503					31
																			32
																			33
																			34
																			35
																			36
																			37
																			38
																			39
																			40
																			41
																			42
51,020						47,460						54,879							43
	4,063																		44
	3,866																		45
		2,298					6,153	2,381				9,264							46
	6,064	1,133					3,142	1,221											47
	3,157	1,165					3,011	1,160											48
	2,907																		49
13,432	12,510		916	6		12,701	11,614		1,087			14,415	13,187		1,228				50
6,876						6,516						7,200							51
6,556						6,185						7,155							52
	4,103																		53
	3,877																		54
																			55
4,758						5,080						2,657							56
4,556						4,532						2,358							57
												January 1 to June 30, 1920						58	

YEAR ENDED JUNE 30 OF CALENDAR YEARS--

1918		1919		1920		1921	
All races.	Japanese.	All races.	Japanese.	All races.	Japanese.	All races.	Japanese.
4,829	2,365	4,807	2,356	10,165	4,963	10,156	4,910
4,575	2,214	4,357	2,035	5,385	2,630		
				4,780	2,327		

TABLE 16.

STATISTICS USED IN THE CONSTRUCTION OF LIFE TABLES

B.—MORTALITY

No. of line.	AREA, YEAR, SEX, AND COLOR.	All ages.	AGE INTERVAL IN YEARS									
			0-1	1-2	2-3	3-4	4-5	0-5	5 to 10	10 to 15	15 to 20	20 to 25
CLEVELAND, 1919.												
1	Colored males:											
	Total.....	388	50	12	6	5		73	8	6	20	19
	Negro.....	379	50	12	6	5		73	8	6	19	19
	Other colored.....	9									1	
4	Colored females:											
	Total.....	303	37	11	3	2		53	13	3	13	35
	Negro.....	303	37	11	3	2		53	13	3	13	35
	Other colored.....											
DETROIT, 1919.												
7	Males:											
	White.....	5,691	1,358	238	138	102	59	1,895	191	90	125	209
	Negro.....	314	46	6	5	3	2	62	10	4	16	29
8	Females:											
	White.....	5,091	1,030	225	105	80	62	1,502	163	76	144	237
	Negro.....	236	42	11	5	1	2	61	9	4	7	19
BUFFALO, 1919.												
11	Males:											
	White.....	3,730	773	119	63	55	27	1,057	126	69	86	100
	Negro.....	69	6	2	2		1	11			2	8
	Other colored.....	6	2					2			1	1
12	Females:											
	White.....	3,452	613	124	68	55	45	905	110	55	88	135
	Negro.....	30	6	3				9	1	2	2	1
	Other colored.....	2		1				1				1
BUFFALO, 1920.												
17	Males:											
	White.....	3,739	767	141	69	50	33	1,060	115	64	60	107
	Negro.....	68	10	5	2			17	4	.1	1	8
	Other colored.....	10	1	1				2			1	
18	Females:											
	White.....	3,382	585	111	55	39	37	827	110	61	71	149
	Negro.....	46	6	5	1			12	3		2	2
	Other colored.....	4										

AREA, COLOR, OR RACE.		NUMBER OF DEATHS AMONG CHILDREN UNDER 2					
		December 31, 1916.			December 31, 1917.		
		All ages.	Under 1 year.		Under 1 year.		1-2 years.
Total.	Males.		Females.	Males.	Females.	Males.	Females.
23	Oregon:						
	White.....		406	290	468	336	76
24	Colored.....		16	13	22	11	3
25	Tennessee: Total.....	3,993					
26	Hawaii:						
	All races combined.....	3,879					
27	Japanese.....						

TABLE 17.

STATISTICS ON WHICH RATES OF MORTALITY

[Italics indicate statistics not compiled in the Bureau of the Census; bold-faced type indi-

No. of life table.	AREA, SEX, AND COLOR.	NUMBER OF BIRTHS REGISTERED.					ADJUSTED NUMBER OF BIRTHS.				
		1916	1917	1918	1919	1920	1916	1917	1918	1919	1920
		WHITE.									
	Aggregate: ¹										
1	Males.....						925,118	930,225	941,806	880,694	952,938
2	Females.....						873,214	877,881	889,163	836,788	900,382
3	Original registration states: ¹										
4	Males.....	326,054	334,357	333,843	308,301	327,823	334,795	343,320	342,793	316,566	336,611
	Females.....	308,956	316,863	315,491	293,680	310,288	317,239	325,357	323,949	301,553	318,606
STATES.											
5	California:										
	Males.....	23,928	24,380	26,221	26,446	30,976	26,685	27,122	29,242	29,493	34,545
6	Females.....	22,344	22,994	24,765	24,261	29,763	24,919	25,644	27,619	27,057	33,193
7	Connecticut:										
	Males.....	18,095	18,885	18,633	17,251	17,019	18,638	19,451	19,192	17,768	17,530
8	Females.....	16,884	18,125	17,830	16,119	16,513	17,390	18,669	18,365	16,603	17,008
9	Illinois:										
	Males.....	58,397	54,728	59,520	57,307	64,676	72,211	67,674	73,599	70,863	79,975
10	Females.....	56,654	52,109	56,453	56,064	61,676	68,819	64,435	69,807	68,089	76,264
11	Indiana:										
	Males.....	31,893	31,734	32,476	29,805	32,373	34,278	34,107	34,905	32,034	34,794
12	Females.....	30,450	30,152	30,602	28,110	30,928	32,727	32,407	32,890	30,212	33,241
13	Kansas:										
	Males.....	20,376	19,576	19,648	18,137	19,904	23,741	22,264	22,345	20,627	22,637
14	Females.....	19,231	18,034	18,443	17,255	18,690	21,871	20,510	20,975	19,624	21,256
15	Kentucky:										
	Males.....	29,104	29,400	30,322	27,853	30,414	33,655	33,997	35,063	32,208	35,170
16	Females.....	27,682	27,862	28,051	25,805	28,333	31,895	32,219	32,437	32,208	32,763
17	Maryland:										
	Males.....	14,008	14,149	14,317	14,198	15,033	14,724	14,872	15,048	14,923	15,801
18	Females.....	13,297	13,370	13,643	13,250	14,419	13,976	14,053	14,340	13,927	15,155
19	Massachusetts:										
	Males.....	47,767	48,382	48,597	44,080	46,524				43,760	
20	Females.....	44,730	46,169	45,770	42,576	42,873				42,266	
21	Michigan:										
	Males.....	44,750	45,723	46,523	42,350	46,922	47,748	48,787	49,640	45,188	50,066
22	Females.....	41,638	42,853	43,622	40,526	44,375	44,428	45,724	46,545	43,241	47,348
23	Minnesota:										
	Males.....	28,331	27,859	28,756	26,458	28,560	30,598	30,088	31,057	28,575	30,845
24	Females.....	26,814	26,555	26,739	24,994	26,905	28,960	28,680	28,879	26,994	29,058
25	Missouri:										
	Males.....	36,745	35,158	31,599	28,556	32,191	43,059	38,856	37,029	33,463	37,723
26	Females.....	34,699	31,458	30,244	30,221	30,465	40,544	36,864	35,441	35,414	35,700
27	New Jersey:										
	Males.....	34,787	37,397	37,099	34,745	37,546	36,823	39,586	39,271	36,777	39,744
28	Females.....	33,496	35,066	35,117	33,586	33,825	35,457	37,754	37,173	35,488	38,028
29	New York:										
	Males.....	121,638	124,494	122,278	113,703	118,719				113,209	
30	Females.....	116,081	117,638	115,665	107,927	111,528				107,459	
31	North Carolina:										
	Males.....	27,451	27,581	27,027	26,895	29,515	30,802	30,914	30,293	30,145	33,082
32	Females.....	26,965	25,269	25,116	24,937	27,539	29,103	28,323	28,151	27,951	30,867
33	Ohio:										
	Males.....	56,838	60,970	62,613	56,366	61,571	65,249	69,870	71,753	64,594	70,559
34	Females.....	53,540	57,331	58,861	53,286	58,251	61,355	65,700	67,453	61,064	66,754
35	Oregon:										
	Males.....	6,450	6,702	6,613	6,846	7,464	7,370	7,622	7,521	7,786	8,489
36	Females.....	6,159	6,121	6,363	6,369	7,097	7,005	6,962	7,226	7,244	8,072
37	Pennsylvania:										
	Males.....	109,470	111,758	110,406	103,659	110,177	120,720	123,243	121,752	114,312	121,500
38	Females.....	103,513	105,771	104,554	98,010	103,775	114,151	116,641	115,299	108,082	114,440
39	South Carolina:										
	Males.....	11,751	10,673	10,661	11,416	12,331	14,068	12,658	12,763	13,667	14,762
40	Females.....	10,661	9,839	10,069	10,600	11,482	12,751	11,779	12,042	12,690	13,746
41	Tennessee:										
	Males.....	22,765	22,622	23,220	21,296	22,726	30,141	29,952	30,755	28,196	30,089
42	Females.....	21,099	20,989	21,533	19,766	21,086	27,935	27,789	28,510	26,157	27,917
43	Utah:										
	Males.....	6,763	6,863	7,312	6,567	7,086	7,184	7,301	7,779	6,986	7,538
44	Females.....	6,400	6,590	6,962	6,233	6,791	6,808	7,011	7,406	6,631	7,224
45	Virginia:										
	Males.....	21,160	21,591	22,299	21,410	23,191	22,969	23,437	24,206	23,241	25,174
46	Females.....	20,167	20,333	21,338	20,246	22,038	21,881	22,072	23,163	21,977	23,922
47	Washington:										
	Males.....	11,766	11,575	12,553	12,269	13,130	13,270	13,066	14,170	13,849	14,821
48	Females.....	10,943	10,774	11,993	11,516	12,478	12,352	12,161	13,537	12,999	14,085
49	Wisconsin:										
	Males.....	30,404	30,486	31,087	28,001	30,170	33,877	33,969	34,638	31,200	33,617
50	Females.....	28,406	28,434	29,553	26,471	28,145	31,650	31,682	32,929	29,495	31,360

¹ Statistics for the aggregate tables are a compilation of those for the original registration states, and Pennsylvania, Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Ohio, Illinois, Wisconsin, Minnesota, Missouri, Kansas, Utah, California, Oregon, and Washington.

AT AGES UNDER 3 YEARS ARE BASED.

TABLE 17.

cate aggregates which include some statistics not compiled in the Bureau of the Census.]

NUMBER OF DEATHS IN AGE INTERVAL.*												No. of life table.
0—1 year.					1—2 years.				2—3 years.			
1916	1917	1918	1919	1920	1917	1918	1919	1920	1918	1919	1920	
86,163	86,196	92,160	74,506	79,652	17,342	23,573	13,840	15,630	11,274	6,774	7,173	1
65,985	65,335	70,330	56,588	60,010	14,891	21,388	11,995	13,570	10,724	5,975	6,347	2
34,486	34,119	36,508	28,857	31,585	6,330	9,311	5,091	6,288	4,138	2,613	2,808	3
26,388	25,697	27,840	21,933	23,770	5,425	8,442	4,485	5,435	3,906	2,260	2,494	4
1,832	1,998	2,386	2,013	2,543	373	543	307	484	277	159	217	5
1,443	1,606	1,770	1,549	1,955	308	463	286	399	258	151	191	6
1,968	1,945	2,153	1,660	1,714	350	508	251	309	211	138	165	7
1,564	1,491	1,725	1,186	1,316	288	466	275	309	223	127	141	8
7,606	7,884	7,253	6,100	6,430	1,942	1,811	1,290	1,250	968	556	592	9
5,992	5,673	5,404	4,684	4,722	1,592	1,631	1,060	1,106	851	541	516	10
2,985	3,008	3,081	2,586	2,841	637	736	475	543	380	252	265	11
2,241	2,217	2,321	1,914	2,195	551	682	421	464	344	219	223	12
1,587	1,592	1,657	1,366	1,561	296	345	241	288	195	125	160	13
1,111	1,242	1,287	1,031	1,170	249	283	233	249	181	100	135	14
2,484	2,640	2,866	2,385	2,273	718	855	599	507	455	276	235	15
1,978	2,096	2,241	1,758	1,767	657	807	554	451	406	250	222	16
1,502	1,567	1,910	1,454	1,467	253	521	244	225	202	136	98	17
1,248	1,217	1,567	1,088	1,193	237	458	221	235	209	112	90	18
5,245	5,274	6,004	4,273	4,693	977	1,528	735	883	608	358	376	19
3,967	3,954	4,579	3,310	3,480	771	1,374	663	776	633	312	334	20
4,725	4,447	4,489	4,174	4,721	764	947	684	874	418	387	391	21
3,517	3,357	3,506	3,211	3,529	631	795	598	781	416	324	372	22
2,162	2,092	2,235	1,990	2,100	271	397	301	317	272	153	163	23
1,640	1,545	1,692	1,429	1,546	235	411	260	262	194	119	135	24
3,243	3,113	3,035	2,527	2,753	815	853	577	646	468	293	304	25
2,304	2,438	2,483	1,925	2,102	676	772	470	593	386	249	296	26
3,893	4,034	4,467	3,237	3,478	733	1,243	618	752	601	285	315	27
3,081	3,070	3,394	2,467	2,714	596	1,240	504	642	589	236	273	28
12,480	12,467	12,965	10,340	11,180	2,369	3,597	1,949	2,475	1,592	978	1,065	29
9,613	9,333	9,769	7,892	8,365	2,197	3,226	1,690	2,091	1,457	861	973	30
2,410	2,487	2,512	2,176	2,363	821	897	557	561	398	224	206	31
1,815	1,997	1,940	1,670	1,829	701	776	453	462	371	191	180	32
5,998	6,132	6,398	5,397	5,497	1,110	1,398	949	1,046	643	450	531	33
4,698	4,593	4,781	4,205	4,161	962	1,272	819	943	652	422	449	34
406	468	485	497	506	76	96	64	85	51	41	38	35
290	336	382	307	376	47	87	49	58	45	45	31	36
13,616	13,650	15,489	11,212	11,578	2,395	4,166	2,058	2,238	1,994	910	977	37
10,412	10,100	11,640	8,649	8,755	2,110	3,779	1,745	1,923	1,934	828	891	38
1,012	1,036	1,118	954	1,133	324	372	203	280	132	107	111	39
796	800	848	721	855	295	348	177	242	167	90	87	40
1,690	2,076	2,049	1,817	1,885	613	713	489	442	352	231	231	41
1,281	1,576	1,616	1,465	1,445	518	647	413	380	354	186	186	42
476	502	487	518	561	101	84	64	104	57	43	49	43
414	415	418	379	425	91	95	48	88	48	36	50	44
1,827	1,911	2,073	1,904	1,849	419	508	367	328	285	190	182	45
1,492	1,462	1,676	1,345	1,395	383	550	338	301	297	167	176	46
865	864	963	834	964	140	162	132	156	90	76	73	47
548	621	680	634	710	107	128	100	131	72	48	63	48
2,961	2,665	2,736	2,505	2,604	345	541	307	385	297	191	198	49
2,115	1,921	2,065	1,816	1,834	298	439	284	312	243	174	155	50

*The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.

*Proportionate part of number of deaths at unknown ages included.

TABLE 17.

STATISTICS ON WHICH RATES OF MORTALITY

[Italics indicate statistics not compiled in the Bureau of the Census; bold-faced type indi-

No. of life table.	AREA, SEX, AND COLOR.	NUMBER OF BIRTHS REGISTERED.					ADJUSTED NUMBER OF BIRTHS.				
		1916	1917	1918	1919	1920	1916	1917	1918	1919	1920
		WHITE—Continued.									
CITIES.											
Aggregate in cities: ¹											
51	Males.....	193,763	199,249	199,299	187,722	200,630					
52	Females.....	184,150	188,528	189,113	179,280	189,858					
Baltimore:											
53	Males.....	6,311	6,456	6,527	7,621	7,960	6,388	6,535	6,607	7,714	8,057
54	Females.....	5,967	6,189	6,292	7,190	7,694	6,040	6,265	6,360	7,278	7,788
Boston:											
55	Males.....	9,966	9,983	10,165	9,239	9,801				8,085	
56	Females.....	9,248	9,528	9,482	9,118	9,217				7,979	
Buffalo:											
57	Males.....	6,631	6,912	7,138	6,426	6,734				6,119	
58	Females.....	6,409	6,521	6,759	6,195	6,469				5,899	
Chicago:											
59	Males.....	24,883	24,917	25,426	23,504	27,393	31,431	31,474	32,117	29,689	34,602
60	Females.....	23,718	23,616	24,266	22,533	26,090	29,960	29,703	30,652	28,463	32,956
Cleveland:											
61	Males.....	9,383	10,193	10,439	9,082	9,478	9,379	10,732	10,991	9,562	9,979
62	Females.....	8,970	9,745	9,817	8,698	9,103	9,444	10,260	10,336	9,158	9,584
Detroit:											
63	Males.....	12,540	13,516	13,789	12,830	13,801	12,709	13,699	13,975	13,003	13,988
64	Females.....	11,597	12,524	12,787	12,182	12,928	11,754	12,693	12,960	12,347	13,103
Los Angeles:											
65	Males.....	3,712	3,802	4,063	4,140	5,249				4,000	
66	Females.....	3,612	3,678	3,866	3,927	5,212				3,795	
New Orleans:											
67	Males.....	3,001	3,080	3,157	3,142	3,447				2,850	
68	Females.....	2,835	2,847	2,907	3,011	3,238				2,731	
New York City:											
69	Males.....	69,126	70,929	68,905	64,939	66,483				63,139	
70	Females.....	65,993	67,302	65,371	61,685	62,191				59,976	
Philadelphia:											
71	Males.....	19,629	20,880	20,865	19,765	20,760				19,700	
72	Females.....	18,579	19,496	19,957	19,140	19,716				19,077	
Pittsburgh:											
73	Males.....	8,003	8,115	7,754	7,028	7,257				6,956	
74	Females.....	7,798	7,773	7,451	6,679	6,655				6,610	
St. Louis:											
75	Males.....	6,876	6,592	6,404	5,968	6,642	6,991	6,703	6,512	6,058	6,754
76	Females.....	6,538	6,301	6,106	5,666	6,645	6,648	6,407	6,209	5,751	6,655
San Francisco:											
77	Males.....	3,827	3,809	4,103	4,067	4,331				3,726	
78	Females.....	3,471	3,595	3,877	3,758	4,132				3,443	
Washington, D. C.:											
79	Males.....	2,547	2,716	3,027	3,043	3,285				2,957	
80	Females.....	2,432	2,534	2,994	2,858	3,034				2,777	
NEGROES.											
States with less than 4 per cent Negroes: ²											
81	Males.....	9,574	10,325	11,356	12,423	13,752	12,019	12,962	14,256	15,596	17,264
82	Females.....	8,232	10,211	11,077	12,210	13,563	11,590	12,819	13,906	15,328	17,027
States with more than 5 per cent Negroes: ³											
83	Males.....	44,562	43,104	43,625	42,012	45,313	60,350	58,375	59,081	56,897	61,367
84	Females.....	42,621	41,209	41,468	40,956	43,844	57,721	55,809	56,160	55,466	59,378
Large cities: ⁴											
85	Males.....	7,775	8,105	8,529	9,591	10,621	8,520	8,881	9,346	10,509	11,638
86	Females.....	7,540	7,887	8,340	9,330	10,294	8,262	8,642	9,139	10,224	11,280
Original registration states: ⁵											
87	Males.....	5,445	5,912	6,341	6,737	7,703	6,440	6,993	7,500	7,968	9,111
88	Females.....	5,218	5,936	6,311	6,634	7,471	6,172	7,021	7,465	7,847	8,837
HAWAII.											
Hawaii (all races combined):											
89	Males.....	4,324	4,880	4,758	5,080	5,388	4,537	5,120	4,992	5,330	5,648
90	Females.....	3,846	4,316	4,656	4,532	4,777	4,035	4,528	4,780	4,755	5,012
Japanese in Hawaii:											
91	Males.....	2,102	2,415	2,331	2,488	2,618	2,213	2,542	2,454	2,619	2,756
92	Females.....	1,796	2,074	2,167	2,164	2,318	1,891	2,183	2,281	2,278	2,440

¹ This aggregate includes the number of births registered in the fourteen cities shown below except in Chicago, Cleveland, Detroit, and St. Louis, whose adjusted number of births were included.

² The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.

³ The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.

AT AGES UNDER 3 YEARS ARE BASED—Continued.

TABLE 17.

cate aggregates which include some statistics not compiled in the Bureau of the Census.]

NUMBER OF DEATHS IN AGE INTERVAL.*												No. of life table.
0—1 year.					1—2 years.				2—3 years.			
1916	1917	1918	1919	1920	1917	1918	1919	1920	1918	1919	1920	
21,014	20,938	22,060	17,957	18,936	4,644	6,267	3,612	4,140	2,902	1,775	1,924	51
16,218	15,919	16,834	13,749	14,191	4,064	5,643	3,123	3,579	2,673	1,547	1,611	52
697	744	958	761	826	122	293	132	130	105	78	51	53
578	564	800	560	664	106	252	124	140	108	64	50	54
1,130	1,106	1,254	981	1,096	248	382	192	213	166	77	93	55
862	804	972	789	804	178	330	141	193	158	71	66	56
826	812	946	778	769	125	232	121	140	95	81	69	57
661	581	731	609	588	102	244	123	112	92	68	56	58
3,807	3,646	3,649	3,130	3,121	1,029	976	724	612	496	297	315	59
2,982	2,823	2,703	2,411	2,257	865	904	618	545	435	283	232	60
1,090	1,218	1,109	945	878	241	221	183	179	117	80	107	61
894	920	834	714	701	209	230	149	162	114	58	79	62
1,557	1,492	1,495	1,359	1,560	270	312	238	311	144	138	145	63
1,137	1,181	1,149	1,030	1,175	239	281	225	263	130	105	125	64
258	276	333	298	405	61	75	42	88	45	20	37	65
224	235	264	238	336	50	58	32	71	44	19	33	66
237	263	318	246	235	60	88	42	42	43	31	19	67
195	198	250	185	200	84	72	42	33	35	21	23	68
6,969	6,855	6,839	5,735	6,066	1,547	2,187	1,240	1,616	943	611	686	69
5,417	5,184	5,198	4,323	4,602	1,417	1,917	1,066	1,404	871	531	622	70
2,262	2,359	2,740	1,870	1,978	464	829	363	411	409	199	184	71
1,645	1,817	2,087	1,485	1,415	423	719	279	333	372	160	164	72
986	1,062	1,193	872	862	210	362	166	196	195	72	97	73
800	784	877	669	646	191	361	166	153	188	76	67	74
676	625	652	481	570	179	155	99	102	79	53	67	75
468	465	518	369	394	129	171	85	101	71	47	59	76
283	270	300	280	301	54	87	34	64	35	19	34	77
180	201	216	190	223	42	48	42	42	30	27	24	78
236	210	274	221	269	34	68	36	36	30	16	20	79
175	162	235	177	186	29	56	31	27	25	17	11	80
1,702	1,987	2,362	2,022	2,521	547	781	465	641	356	217	200	81
1,375	1,628	1,958	1,659	1,955	480	723	426	634	356	160	189	82
6,893	7,213	7,510	6,276	6,548	1,826	2,426	1,390	1,294	1,124	629	539	83
5,453	5,736	6,308	4,869	5,263	1,661	2,261	1,136	1,158	1,098	570	499	84
1,391	1,603	1,762	1,503	1,821	449	585	323	459	313	162	158	85
1,093	1,289	1,438	1,136	1,509	346	521	293	432	293	131	133	86
1,022	1,114	1,234	1,087	1,327	292	409	246	346	184	111	90	87
831	908	1,066	881	1,081	242	371	235	331	176	89	94	88
730	730	676	548	619	85	95	80	133	47	45	56	89
520	520	604	472	466	65	100	86	117	51	29	46	90
256	340	274	229	242	36	51	40	68	25	21	28	91
187	245	264	183	176	30	44	44	51	20	15	23	92

⁴ The twelve cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.
⁵ The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.
 * Proportionate part of number of deaths at unknown ages included.

TABLE 18.

POPULATIONS AND MORTALITY STATISTICS ON WHICH ALL

Populations and deaths at

No. of life table.	AREA, SEX, COLOR, POPULATION, AND DEATHS.	All ages.	AGE INTERVAL IN YEARS.									
			0-1	1-2	2-3	3-4	4-5	0-5	5 to 10	10 to 15	15 to 20	20 to 25
WHITE.												
1	Aggregate—Males: ¹											
	Population, Jan. 1, 1920.....	37,026,026	754,699	786,844	791,693	797,257	779,549	3,910,042	3,757,878	3,483,084	3,078,576	3,050,889
	Deaths, 1919.....	476,933	74,506	13,840	6,774	4,752	3,604	103,476	11,479	7,862	12,226	15,702
	Deaths, 1920.....	488,529	79,652	15,631	7,173	4,751	3,614	110,821	11,838	8,093	11,793	14,502
	Deaths, 1919 and 1920.....	965,462	154,158	29,471	13,947	9,503	7,218	214,297	23,317	15,955	24,019	30,204
2	Aggregate—Females: ¹											
	Population, Jan. 1, 1920.....	35,787,552	734,897	763,509	770,428	780,323	758,032	3,805,194	3,682,128	3,417,409	3,107,135	3,190,808
	Deaths, 1919.....	421,871	56,588	11,995	5,975	4,295	3,190	82,043	9,677	6,765	10,902	17,748
	Deaths, 1920.....	442,566	60,010	13,570	6,347	4,482	3,322	87,731	10,041	6,742	10,655	16,729
	Deaths, 1919 and 1920.....	864,437	116,598	25,565	12,322	8,777	6,512	169,774	19,718	13,507	21,557	34,477
3	Original registration states—Males: ²											
	Population, Jan. 1, 1920.....	13,729,188	269,612	282,866	288,178	287,058	277,175	1,404,889	1,327,302	1,223,673	1,085,948	1,130,899
	Deaths, 1919.....	187,949	28,857	5,091	2,613	1,839	1,379	39,779	4,572	2,816	4,365	5,896
	Deaths, 1920.....	192,782	31,585	6,289	2,808	1,825	1,373	43,880	4,493	2,937	4,100	5,374
	Deaths, 1919 and 1920.....	380,731	60,442	11,380	5,421	3,664	2,752	83,659	9,065	5,753	8,465	11,270
4	Original registration states—Females: ²											
	Population, Jan. 1, 1920.....	13,573,563	264,122	274,740	281,584	280,607	270,935	1,371,988	1,305,723	1,206,952	1,111,162	1,221,556
	Deaths, 1919.....	173,259	21,933	4,485	2,280	1,600	1,259	31,537	3,718	2,421	3,914	6,866
	Deaths, 1920.....	181,453	23,770	5,435	2,494	1,764	1,283	34,746	3,838	2,482	3,890	6,236
	Deaths, 1919 and 1920.....	354,712	45,703	9,920	4,754	3,364	2,542	66,283	7,556	4,903	7,774	13,102
STATES.												
5	California—Males:											
	Population, Jan. 1, 1920.....	1,710,223	25,508	26,315	26,093	26,367	26,475	130,758	135,767	127,287	119,555	132,938
	Deaths, 1919.....	25,143	2,013	307	159	146	104	2,729	398	327	533	803
	Deaths, 1920.....	25,342	2,543	484	217	147	129	3,520	474	401	609	767
	Deaths, 1919 and 1920.....	50,485	4,556	791	376	293	233	6,249	872	728	1,142	1,570
6	California—Females:											
	Population, Jan. 1, 1920.....	1,554,488	24,034	25,222	25,424	25,650	25,774	126,104	133,326	124,981	115,437	128,301
	Deaths, 1919.....	17,919	1,549	286	151	98	90	2,174	341	247	442	754
	Deaths, 1920.....	18,881	1,955	309	191	133	112	2,790	424	286	449	726
	Deaths, 1919 and 1920.....	36,800	3,504	685	342	231	202	4,964	765	533	891	1,480
7	Connecticut—Males:											
	Population, Jan. 1, 1920.....	683,837	15,091	15,290	15,950	15,858	14,630	76,819	69,184	60,522	51,654	54,329
	Deaths, 1919.....	9,385	1,660	251	138	94	67	2,210	236	142	210	289
	Deaths, 1920.....	9,448	1,714	309	165	87	65	2,340	228	139	189	259
	Deaths, 1919 and 1920.....	18,833	3,374	560	303	181	132	4,550	464	281	399	548
8	Connecticut—Females:											
	Population, Jan. 1, 1920.....	674,895	14,573	15,127	15,885	15,250	14,428	75,263	68,196	59,910	53,612	59,647
	Deaths, 1919.....	8,371	1,186	275	127	93	59	1,740	184	108	141	327
	Deaths, 1920.....	8,966	1,316	309	141	93	57	1,916	183	102	167	275
	Deaths, 1919 and 1920.....	17,337	2,502	584	268	186	116	3,656	367	210	308	602
9	Illinois—Males:											
	Population, Jan. 1, 1920.....	3,207,773	60,945	65,011	65,975	63,009	66,322	326,262	319,516	294,469	262,825	261,272
	Deaths, 1919.....	39,651	6,100	1,200	556	431	299	8,576	921	638	1,008	1,214
	Deaths, 1920.....	41,526	6,430	1,250	592	441	357	9,070	1,133	719	1,100	1,216
	Deaths, 1919 and 1920.....	81,177	12,530	2,540	1,148	872	656	17,746	2,054	1,357	2,108	2,430
10	Illinois—Females:											
	Population, Jan. 1, 1920.....	3,091,560	59,453	63,097	64,244	66,328	64,094	317,214	313,743	289,044	265,319	280,606
	Deaths, 1919.....	33,969	4,684	1,060	641	374	294	6,953	803	565	923	1,444
	Deaths, 1920.....	36,773	4,722	1,106	518	390	300	7,043	882	590	916	1,436
	Deaths, 1919 and 1920.....	70,742	9,406	2,166	1,057	764	603	13,996	1,685	1,155	1,839	2,880
11	Indiana—Males:											
	Population, Jan. 1, 1920.....	1,446,825	27,372	29,486	28,707	29,186	28,745	143,496	141,083	135,913	124,200	116,212
	Deaths, 1919.....	18,233	2,586	475	252	153	112	3,578	421	285	544	556
	Deaths, 1920.....	19,342	2,841	543	265	176	122	3,947	441	324	501	547
	Deaths, 1919 and 1920.....	37,575	5,427	1,018	517	329	234	7,525	862	609	1,045	1,103
12	Indiana—Females:											
	Population, Jan. 1, 1920.....	1,402,246	26,779	28,401	28,082	28,665	28,179	140,106	137,707	132,439	123,713	118,755
	Deaths, 1919.....	17,264	1,914	421	219	162	106	2,822	346	274	518	787
	Deaths, 1920.....	18,281	2,195	464	223	167	122	3,171	352	307	510	708
	Deaths, 1919 and 1920.....	35,545	4,109	885	442	329	228	5,993	698	581	1,028	1,495
13	Kansas—Males:											
	Population, Jan. 1, 1920.....	878,150	17,860	18,882	18,820	18,802	18,506	92,870	91,166	87,867	78,333	73,976
	Deaths, 1919.....	9,889	1,366	241	125	92	68	1,892	223	204	280	346
	Deaths, 1920.....	10,131	1,561	288	160	88	71	2,168	259	177	265	280
	Deaths, 1919 and 1920.....	20,020	2,927	529	285	180	139	4,060	482	381	575	626
14	Kansas—Females:											
	Population, Jan. 1, 1920.....	830,756	17,493	18,177	17,998	18,258	17,816	89,742	89,079	86,249	78,897	73,886
	Deaths, 1919.....	8,107	1,031	233	106	77	62	1,509	176	161	242	320
	Deaths, 1920.....	8,907	1,170	249	135	79	75	1,708	206	181	234	340
	Deaths, 1919 and 1920.....	17,014	2,201	482	241	156	137	3,217	382	342	476	660
15	Kentucky—Males:											
	Population, Jan. 1, 1920.....	1,108,853	27,575	28,062	27,128	27,567	27,868	138,200	134,863	126,191	107,514	92,575
	Deaths, 1919.....	13,133	2,385	599	276	138	138	3,586	413	311	420	559
	Deaths, 1920.....	12,213	2,273	619	335	132	120	3,267	375	268	405	453
	Deaths, 1919 and 1920.....	25,346	4,658	1,106	511	320	258	6,853	788	579	925	1,012
16	Kentucky—Females:											
	Population, Jan. 1, 1920.....	1,071,707	26,630	26,876	26,075	26,714	26,826	133,121	130,061	122,182	106,850	95,050
	Deaths, 1919.....	12,573	1,758	554	250	176	133	2,871	380	314	546	755
	Deaths, 1920.....	11,791	1,767	451	222	155	97	2,692	339	231	387	571
	Deaths, 1919 and 1920.....	24,364	3,525	1,005	472	331	230	5,563	719	545	933	1,326
17	Maryland—Males:											
	Population, Jan. 1, 1920.....	605,601	12,666	12,440	12,415	12,494	12,146	62,161	59,999	58,049	54,604	55,032
	Deaths, 1919.....	8,689	1,454	244	136	91	74	1,999	184	140	216	297
	Deaths, 1920.....	8,218	1,467	225	98	74	39	1,903	176	125	150	252
	Deaths, 1919 and 1920.....	16,907	2,921	469	234	165	113	3,902	360	265	366	549
18	Maryland—Females:											
	Population, Jan. 1, 1920.....	599,136	12,133	12,054	12,200	12,420	11,961	60,768	58,268	56,883	53,158	53,467
	Deaths, 1919.....	7,568	1,088	221	112	82	52	1,555	152	127	183	331
	Deaths, 1920.....	7,934	1,193									

RATES OF MORTALITY AT AGES 7 YEARS AND OVER ARE BASED.

TABLE 18.

unknown ages are distributed.

AGE INTERVAL IN YEARS.																No. of life table.
25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 to 100	100 years and over.	
3,176,040	2,958,375	2,867,053	2,353,629	2,189,634	1,829,925	1,392,008	1,154,021	786,254	519,714	314,762	139,109	51,254	11,249	2,126	314	1
19,469	21,445	22,698	21,042	23,532	25,282	28,125	32,480	33,422	33,533	29,999	20,200	10,858	3,264	729	110	2
17,442	19,207	20,947	19,930	22,313	25,788	28,666	33,914	35,421	36,118	32,978	22,540	11,732	3,657	708	121	3
36,911	40,652	43,645	40,972	45,845	51,070	56,791	66,394	68,843	69,651	62,977	42,740	22,500	6,921	1,437	231	4
3,155,083	2,800,117	2,602,938	2,204,847	1,938,197	1,656,189	1,284,533	1,067,924	754,292	527,320	338,650	167,437	66,883	16,651	3,297	502	5
21,145	19,581	18,243	16,711	17,958	20,223	22,497	26,188	29,195	31,201	30,264	22,553	13,059	4,667	1,062	189	6
20,011	19,487	18,506	16,860	18,352	21,180	23,703	28,529	31,075	33,603	32,955	25,217	14,450	5,253	1,205	187	7
41,156	39,068	36,749	33,571	36,310	41,403	46,200	54,717	60,270	64,894	63,219	47,770	27,509	9,925	2,267	376	8
1,221,406	1,142,984	1,094,345	905,120	840,474	708,189	528,809	433,172	294,299	193,676	117,025	52,600	19,263	4,213	806	96	9
7,687	8,329	8,904	8,427	9,602	10,572	11,561	13,098	13,392	13,302	11,805	7,978	4,257	1,199	272	41	10
6,680	7,405	8,040	8,051	9,151	10,660	11,739	13,688	14,230	14,246	12,973	8,787	4,598	1,436	272	42	11
14,367	15,734	16,944	16,478	18,753	21,232	23,300	26,786	27,622	27,548	24,868	16,765	8,855	2,635	549	83	12
1,231,495	1,083,987	1,017,366	872,555	772,703	672,110	515,110	426,903	300,097	211,837	136,128	69,228	28,035	7,042	1,391	195	13
8,452	7,602	7,013	6,951	7,716	8,823	9,822	11,569	12,747	13,345	12,892	9,695	5,625	2,035	455	71	14
7,782	7,490	7,156	6,783	7,786	9,292	10,180	12,299	13,493	14,512	13,860	10,656	6,242	2,206	487	67	15
16,234	15,092	14,169	13,734	15,502	18,115	20,002	23,868	26,240	27,847	26,752	20,351	11,867	4,241	942	138	16
149,958	153,459	159,392	132,138	122,036	101,523	78,483	63,424	42,627	29,650	18,619	8,455	3,259	712	154	29	17
1,191	1,484	1,619	1,522	1,575	1,659	1,776	1,996	1,867	1,829	1,679	1,213	694	197	44	8	18
981	1,102	1,461	1,311	1,368	1,609	1,760	1,961	1,958	1,950	1,850	1,271	745	192	43	9	19
2,172	2,586	3,080	2,833	2,943	3,268	3,536	3,957	3,825	3,779	3,529	2,484	1,439	380	87	17	20
142,730	137,273	133,866	115,660	90,606	85,440	65,732	54,083	37,269	26,391	16,349	7,906	3,115	755	135	29	21
1,071	1,035	975	866	932	1,000	1,032	1,208	1,388	1,383	1,013	533	211	101	45	8	22
818	919	914	891	919	1,056	1,093	1,353	1,346	1,471	1,434	1,084	620	225	51	12	23
1,889	1,954	1,889	1,757	1,851	2,056	2,125	2,561	2,607	2,850	2,817	2,097	1,153	436	96	20	24
62,122	58,145	54,542	44,909	41,966	33,666	24,186	20,579	13,484	8,952	5,203	2,400	898	229	45	3	25
398	403	455	467	489	519	573	632	607	616	557	323	199	43	13	4	26
351	396	433	400	448	535	598	646	623	623	578	367	202	70	15	5	27
749	799	888	867	937	1,054	1,171	1,263	1,253	1,239	1,135	690	401	113	28	6	28
62,197	53,587	49,702	42,181	37,703	32,289	23,905	20,097	14,069	10,221	6,740	3,567	1,492	416	91	10	29
393	366	332	312	360	422	479	582	585	600	563	443	292	112	29	1	30
378	352	353	342	346	453	466	601	646	717	645	551	321	118	33	2	31
771	718	685	654	706	875	945	1,183	1,231	1,317	1,208	994	613	230	62	1	32
287,494	275,323	260,471	207,996	189,178	160,668	120,920	96,635	61,679	40,502	25,410	11,628	4,339	994	170	22	33
1,631	1,852	2,020	1,901	2,076	2,290	2,445	2,702	2,712	2,548	2,285	1,599	887	279	62	5	34
1,541	1,777	1,844	1,741	2,009	2,331	2,562	2,891	2,811	2,813	2,640	1,860	1,024	311	59	8	35
3,172	3,629	3,864	3,542	4,145	4,621	5,007	5,593	5,523	5,361	4,925	3,465	1,911	590	121	13	36
292,624	257,864	230,102	189,146	166,215	142,978	110,663	87,853	59,334	41,417	26,882	13,478	5,359	1,393	297	29	37
1,827	1,645	1,464	1,372	1,410	1,782	1,888	1,943	2,283	2,302	2,218	1,651	1,044	365	74	13	38
1,893	1,713	1,627	1,403	1,621	1,806	2,062	2,332	2,440	2,677	2,534	2,058	1,160	404	111	9	39
3,720	3,358	3,091	2,775	3,031	3,582	3,950	4,277	4,723	4,979	4,752	3,709	2,204	829	188	22	40
115,198	107,451	106,056	88,402	85,438	76,719	61,799	53,002	39,148	26,165	16,242	7,199	2,500	495	97	10	41
651	679	732	644	725	848	1,059	1,225	1,480	1,579	1,462	1,017	577	136	28	1	42
565	605	711	677	734	875	1,029	1,332	1,645	1,702	1,727	1,157	596	185	37	5	43
1,216	1,284	1,443	1,321	1,459	1,723	2,088	2,557	3,131	3,281	3,189	2,174	1,173	321	65	6	44
115,035	105,950	101,052	85,324	78,415	69,278	57,224	48,345	35,894	25,197	16,284	7,678	3,035	677	126	12	45
828	780	705	638	713	888	1,088	1,101	1,253	1,425	1,521	1,064	612	199	33	3	46
761	826	748	652	742	829	902	1,134	1,394	1,517	1,611	1,164	691	212	44	6	47
1,589	1,606	1,453	1,290	1,455	1,583	1,790	2,235	2,647	2,942	3,132	2,228	1,303	411	77	9	48
70,303	63,660	61,380	51,896	48,242	41,289	32,881	29,727	20,952	15,751	10,945	4,700	1,796	334	71	11	49
409	408	353	311	336	403	500	630	680	887	833	619	345	101	23	6	50
284	320	349	344	324	383	453	615	724	917	1,013	682	388	121	25	1	51
693	737	702	655	660	786	953	1,245	1,404	1,804	1,946	1,301	733	222	48	7	52
68,924	61,947	56,897	48,429	42,476	34,796	28,251	24,199	18,300	13,300	8,995	4,289	1,634	392	65	9	53
414	417	379	322	298	316	383	410	539	644	642	536	262	112	24	1	54
373	405	351	320	322	360	423	548	589	712	734	620	331	115	32	3	55
787	822	730	642	620	676	806	958	1,128	1,356	1,376	1,156	593	227	56	4	56
83,558	70,942	71,150	58,723	57,718	47,864	36,007	31,138	22,565	14,953	9,222	3,905	1,398	306	50	11	57
506	506	521	447	521	537	574	744	755	888	785	535	256	100	18	7	58
398	372	413	384	470	471	597	735	865	940	812	593	272	101	15	7	59
948	878	934	831	991	1,008	1,171	1,479	1,620	1,828	1,597	1,128	528	201	33	14	60
83,067	71,480	68,924	57,240	51,472	41,838	33,025	27,568	20,406	14,238	8,986	4,102	1,605	394	81	17	61
707	634	585	450	486	437	523	641	698	782	757	548	323	104	21	11	62
606	544	462	404	433	460	569	631	731	852	815	570	331	113	41	9	63
1,313	1,178	1,047	854	919	897	1,092	1,272	1,429	1,634	1,572	1,118	654	217	62	20	64
51,514	46,272	43,552	36,825	36,004	29,754	22,713	19,272	13,250	8,548	5,070	2,091	721	140	25	5	65
350</																

OF MORTALITY AT AGES 7 YEARS AND OVER ARE BASED—Continued.

TABLE 18.

unknown ages are distributed.

AGE INTERVAL IN YEARS.																No. of life table.
25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 to 100	100 years and over.	
163,323	151,391	146,584	124,848	120,938	100,323	73,436	58,423	39,056	25,525	15,000	6,992	2,579	656	122	10	10
994	1,061	1,148	1,145	1,356	1,498	1,593	1,788	1,888	1,826	1,537	1,075	562	188	37	4	
845	856	988	1,008	1,263	1,479	1,571	1,886	1,968	1,988	1,690	1,175	622	202	47	3	
1,839	1,917	2,136	2,153	2,619	2,977	3,164	3,674	3,856	3,814	3,227	2,250	1,184	390	84	7	20
174,927	154,236	147,017	130,822	118,417	101,490	77,811	63,918	44,844	32,067	20,886	11,105	4,687	1,253	220	31	
1,121	1,055	1,028	1,054	1,191	1,335	1,356	1,773	1,866	1,969	1,904	1,571	893	345	82	14	
973	994	981	971	1,158	1,419	1,533	1,783	2,028	2,192	2,068	1,727	1,037	397	81	12	
2,094	2,049	2,009	2,025	2,349	2,754	2,889	3,556	3,894	4,161	3,972	3,298	1,930	742	163	26	21
180,939	164,730	150,554	116,982	105,425	86,892	69,694	58,817	41,957	27,821	17,290	7,684	2,883	601	129	22	
940	1,015	990	841	918	1,001	1,227	1,472	1,665	1,777	1,642	1,154	640	163	40	6	
1,036	1,127	1,082	971	1,004	1,095	1,360	1,677	1,808	1,923	1,844	1,277	717	218	36	12	
1,976	2,142	2,072	1,812	1,922	2,096	2,587	3,149	3,473	3,700	3,486	2,431	1,357	381	76	18	22
155,831	138,101	121,927	101,220	87,351	75,627	61,653	50,858	36,666	25,498	16,718	8,127	3,164	725	144	21	
1,080	952	834	784	814	895	1,043	1,196	1,443	1,470	1,509	1,129	654	214	43	7	
1,239	1,091	984	825	915	988	1,095	1,385	1,457	1,637	1,743	1,306	733	264	46	8	
2,319	2,043	1,818	1,609	1,729	1,883	2,138	2,581	2,900	3,116	3,252	2,435	1,387	478	89	15	23
109,900	100,111	90,531	71,960	67,151	58,004	49,708	39,431	25,106	16,109	10,083	4,504	2,021	500	80	7	
614	650	603	553	606	674	849	989	904	911	800	653	350	122	36	5	
546	669	603	477	578	688	859	1,015	962	1,008	931	659	401	153	28	1	
1,160	1,319	1,206	1,030	1,184	1,362	1,708	2,004	1,866	1,919	1,731	1,312	751	275	64	6	24
102,256	88,322	76,543	62,227	54,216	46,500	38,263	30,032	20,487	13,886	9,491	4,878	2,165	604	133	12	
638	568	527	418	484	503	623	611	655	685	727	545	419	141	40	6	
652	623	514	444	434	508	620	654	701	743	836	637	431	178	47	3	
1,290	1,191	1,041	892	918	1,011	1,243	1,265	1,356	1,428	1,563	1,182	850	319	87	9	25
131,158	119,678	119,172	101,146	97,900	83,118	65,299	56,346	38,626	26,635	16,435	7,210	2,561	581	118	20	
711	779	856	810	951	959	1,235	1,422	1,446	1,458	1,319	934	503	175	31	1	
743	768	849	759	886	1,075	1,201	1,458	1,525	1,594	1,488	1,085	533	164	40	5	
1,454	1,547	1,705	1,569	1,837	2,034	2,436	2,880	2,971	3,052	2,807	2,019	1,041	339	71	6	26
137,440	121,126	114,937	98,740	88,708	74,958	58,059	48,140	34,405	24,416	15,929	7,560	3,031	693	151	32	
848	783	787	707	724	766	887	984	1,193	1,235	1,263	893	507	168	46	8	
930	914	818	704	756	863	894	1,089	1,253	1,367	1,420	1,021	612	196	49	14	
1,778	1,697	1,605	1,411	1,480	1,629	1,781	2,073	2,446	2,602	2,683	1,914	1,119	364	95	22	27
137,012	130,283	125,739	102,148	93,550	75,501	53,323	41,694	26,236	17,126	10,048	4,458	1,524	289	51	8	
914	1,006	1,068	1,016	1,176	1,188	1,249	1,291	1,253	1,248	1,074	677	348	103	20	5	
734	839	868	712	1,110	1,181	1,268	1,399	1,324	1,355	1,149	761	368	102	23	1	
1,648	1,845	1,936	1,928	2,286	2,369	2,517	2,690	2,577	2,603	2,223	1,438	716	205	43	6	28
137,508	122,824	113,627	95,991	83,841	70,673	51,992	42,433	28,448	20,135	12,504	6,234	2,384	584	106	20	
1,012	841	759	639	731	836	946	1,054	1,222	1,348	1,298	914	484	167	35	6	
847	767	749	731	803	994	1,026	1,301	1,319	1,445	1,343	918	501	205	25	6	
1,859	1,608	1,508	1,470	1,639	1,940	2,080	2,523	2,667	2,704	2,641	1,832	985	372	60	12	29
463,055	440,889	421,165	347,369	313,532	265,983	193,349	154,909	100,938	64,135	38,148	16,778	6,184	1,354	259	30	
3,163	3,530	3,823	3,644	4,190	4,583	4,880	5,393	5,012	4,714	4,070	2,686	1,323	414	107	15	
2,672	3,008	3,302	3,375	3,836	4,603	4,798	5,414	5,283	4,927	4,356	2,852	1,458	456	77	12	
5,835	6,538	7,125	7,019	8,026	9,186	9,678	10,807	10,295	9,641	8,426	5,538	2,781	870	184	27	30
479,947	426,531	394,321	335,324	291,703	256,747	190,584	155,958	106,231	73,494	45,835	23,194	9,390	2,385	497	82	
3,359	2,949	2,695	2,828	3,144	3,716	4,059	4,863	4,509	4,552	3,273	1,945	700	155	30	3	
2,956	2,818	2,666	2,649	3,117	3,748	4,155	4,892	5,220	5,395	4,858	3,607	2,095	722	179	25	
6,315	5,767	5,361	5,477	6,261	7,464	8,214	9,401	10,083	10,479	9,410	6,880	4,040	1,422	334	55	31
64,386	54,424	54,571	43,351	39,699	32,076	24,714	22,875	17,281	10,979	5,281	2,193	838	193	43	14	
387	358	336	301	315	312	401	495	626	587	437	290	169	40	12	5	
393	376	377	361	350	438	397	585	710	726	552	357	183	80	10	4	
780	734	713	662	665	750	798	1,080	1,336	1,313	989	647	352	120	22	9	32
68,681	56,308	52,131	44,932	35,369	27,771	22,032	20,357	15,399	10,561	6,342	2,998	1,218	354	84	25	
472	476	447	353	319	322	319	418	531	628	554	394	223	91	23	3	
493	440	497	404	322	307	358	473	582	695	642	483	212	105	23	17	
965	916	944	757	641	629	682	891	1,113	1,323	1,196	877	435	196	46	20	33
257,064	236,092	227,892	180,297	172,077	141,050	109,729	92,492	65,132	43,370	27,083	11,758	4,248	861	147	14	
1,359	1,700	1,779	1,622	1,737	1,809	1,972	2,507	2,792	2,734	2,593	1,792	907	308	62	12	
1,379	1,460	1,555	1,443	1,581	1,778	2,069	2,515	2,798	2,918	2,937	1,971	959	297	64	8	
2,738	3,160	3,334	3,065	3,318	3,587	4,041	5,022	5,590	5,652	5,530	3,763	1,866	605	126	20	34
240,702	215,694	201,311	170,844	151,437	129,796	104,538	88,137	64,368	45,085	29,682	14,473	5,526	1,314	225	28	
1,545	1,500	1,437	1,209	1,320	1,479	1,712	1,989	2,286	2,642	2,651	1,943	1,113	369	79	18	
1,437	1,517	1,295	1,218	1,327	1,466	1,716	2,273	2,547	2,747	2,839	2,189	1,203	456	92	9	
2,982	3,017	2,732	2,647	2,945	3,428	4,262	4,833	5,433	5,389	5,490	4,132	2,316	825	171	27	35
33,441	34,359	35,571	28,795	26,147	22,821	18,717	15,564	10,613	6,648	3,884	1,753	670	162	26	6	
229	257	269	221	224	289	328	375	443	386	350	241	135	45	13	3	
190	212	286	187	236	274	342	432	446	432	394	284	158	42	9	3	
419	469	555	408	460	563	670	807	889	818	744	525	293	87	22	3	36
32,298	30,526	28,383	23,862	20,336	17,546	13,735	11,306	7,493	5,145	3,199	1,458	581	125	35	1	
235	192	204	181	158	170	225	250	250	259	240	183	110	48	10	2	
177	209	197	163	197	213	208	266	269	283	305	222	118	56	9	2	
412	401	401	344	355	389	433	522	519	542	545	405	228	104	19	2	37
357,916	336,643	329,213	270,272	252,434	202,313	149,207	120,420	81,548	53,074	30,551	13,106	4,332	898	160	22	
2,271	2,509	2,900	2,714	3,070	3,082	3,390	3,749	3,788	3,769	3,206	2,012	1,005	272	61	6	
2,112	2,425	2,672	2,612	2,929	3,229	3,500	3,960	4,049	4,100	3,442	2,276	1,059	321	43	11	
4,383																

OF MORTALITY AT AGES 7 YEARS AND OVER ARE BASED—Continued.

TABLE 18.

unknown ages are distributed.

AGE INTERVAL IN YEARS.																No of life table.
25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 to 100	100 years and over.	
32, 113	26, 588	27, 097	21, 749	19, 163	13, 958	9, 716	10, 144	7, 144	4, 373	2, 108	753	249	54	10	4	39
193	195	213	182	195	173	183	228	313	313	179	90	54	18	1	1	
175	184	201	177	182	197	200	316	328	333	225	117	54	11	7	2	
368	379	414	359	377	370	383	544	641	646	404	207	108	29	8	3	
32, 520	26, 635	25, 954	20, 333	16, 266	12, 269	9, 045	8, 815	6, 468	4, 471	2, 570	1, 227	460	114	24	8	40
210	225	209	155	144	159	150	208	232	265	199	145	76	26	11	3	
213	212	249	165	143	141	163	257	290	283	262	203	110	40	7	2	
423	437	458	320	287	300	313	465	522	548	461	348	186	66	18	5	
69, 024	59, 983	61, 329	48, 494	47, 460	41, 505	28, 791	25, 595	18, 778	12, 983	7, 865	3, 134	1, 087	238	48	15	41
375	388	423	388	396	426	467	578	666	780	645	404	211	54	14	4	
380	360	410	399	371	459	468	626	692	772	717	441	200	65	18	4	
755	748	833	787	767	885	935	1, 204	1, 358	1, 552	1, 362	845	411	119	32	8	
74, 725	62, 939	60, 887	49, 254	43, 185	33, 812	25, 409	22, 420	16, 541	11, 561	6, 951	3, 165	1, 232	276	66	23	42
556	512	515	430	399	371	406	490	588	629	580	408	222	55	26	6	
552	471	481	424	406	377	391	475	605	639	598	468	242	71	16	8	
1, 108	983	996	854	805	748	797	965	1, 193	1, 268	1, 178	876	464	126	42	14	
18, 227	16, 635	15, 800	12, 224	10, 432	8, 968	6, 618	5, 356	3, 433	2, 151	1, 303	602	253	59	10	.....	43
132	161	150	123	124	100	106	140	152	127	123	89	47	12	3	.....
131	138	152	126	113	132	152	148	170	126	126	87	54	21	4	.....
263	299	302	249	237	232	258	288	322	253	249	176	101	33	7	.....
17, 121	15, 134	13, 595	10, 811	8, 654	7, 361	5, 864	4, 802	3, 192	2, 096	1, 399	736	322	64	15	.....	44
130	146	127	73	90	90	88	85	114	119	108	100	50	21	4	.....
117	129	127	92	64	77	87	104	115	116	125	124	69	26	8	.....
247	275	254	185	137	167	175	189	229	185	233	224	119	47	12	1	
63, 496	53, 555	54, 208	45, 107	43, 264	33, 501	24, 388	22, 820	16, 749	10, 894	6, 059	2, 557	899	196	51	8	45
399	402	360	341	351	368	404	541	666	740	589	395	226	63	13	2	
310	334	371	321	353	383	435	592	687	782	670	450	209	58	20	3	
709	736	731	662	704	751	839	1, 133	1, 353	1, 522	1, 259	845	435	121	33	5	
62, 992	53, 749	51, 724	43, 556	37, 742	30, 099	22, 052	20, 718	15, 249	10, 706	6, 438	3, 080	1, 261	305	78	16	46
356	385	402	296	301	338	352	476	543	658	610	473	267	74	24	9	
358	354	413	325	333	381	369	533	608	671	631	443	279	109	35	4	
774	739	815	621	634	719	721	1, 009	1, 151	1, 329	1, 241	916	546	183	59	13	
61, 606	63, 461	64, 883	52, 307	46, 547	39, 909	32, 337	24, 657	15, 976	9, 452	5, 225	2, 289	817	197	33	9	47
437	466	452	373	395	464	543	628	570	533	503	281	168	41	15	.....
374	392	459	434	427	518	542	679	652	593	509	319	183	59	9	4	
811	858	911	807	822	982	1, 085	1, 307	1, 222	1, 126	1, 012	600	351	100	24	4	
55, 619	52, 321	49, 107	40, 567	33, 243	28, 250	21, 894	17, 075	10, 992	6, 982	4, 371	1, 971	736	178	26	2	48
361	310	304	277	270	293	365	363	366	362	357	260	134	57	7	3	
316	328	341	303	295	322	353	393	397	374	369	263	151	49	12	.....
677	638	645	580	565	615	718	756	763	736	726	523	285	106	19	3	
113, 416	104, 206	96, 406	79, 229	73, 708	63, 515	53, 971	44, 953	30, 496	19, 966	12, 594	5, 961	2, 503	611	124	21	49
544	612	541	524	596	701	871	1, 035	1, 042	1, 113	1, 147	772	496	200	38	6	
537	599	593	509	551	691	874	1, 082	1, 143	1, 204	1, 153	947	545	180	34	7	
1, 081	1, 211	1, 134	1, 033	1, 147	1, 392	1, 745	2, 117	2, 185	2, 317	2, 300	1, 719	1, 041	380	72	13	
108, 168	95, 946	85, 515	72, 271	62, 991	55, 374	46, 644	38, 269	27, 179	18, 233	12, 224	6, 176	2, 706	787	149	25	50
589	543	491	425	480	536	685	817	878	907	997	814	569	218	49	9	
657	605	528	476	468	605	727	859	883	1, 011	1, 077	872	535	229	55	14	
1, 246	1, 148	1, 019	901	948	1, 141	1, 412	1, 676	1, 761	1, 918	2, 074	1, 686	1, 104	447	104	23	
833, 151	775, 483	722, 381	567, 992	498, 467	405, 485	280, 373	214, 497	125, 736	76, 189	41, 909	17, 221	6, 028	1, 354	272	35	51
5, 268	6, 140	6, 758	6, 353	7, 393	7, 700	7, 861	8, 252	7, 096	6, 039	4, 638	2, 614	1, 255	377	89	14	
4, 736	5, 356	5, 891	5, 775	6, 712	7, 635	7, 897	8, 390	7, 266	6, 402	4, 894	2, 910	1, 359	416	61	16	
10, 004	11, 496	12, 649	12, 128	14, 105	15, 335	15, 758	16, 642	14, 362	12, 441	9, 532	5, 524	2, 614	793	150	30	
839, 771	717, 328	644, 328	529, 928	451, 898	384, 948	275, 346	216, 974	138, 712	92, 515	54, 547	26, 405	10, 006	2, 490	559	104	52
5, 872	5, 150	4, 666	4, 650	5, 076	5, 787	6, 020	6, 401	6, 579	6, 399	5, 386	3, 709	1, 880	701	156	24	
5, 323	4, 881	4, 579	4, 450	5, 190	5, 859	6, 379	7, 163	7, 087	6, 984	5, 770	4, 091	2, 136	800	205	25	
11, 195	10, 031	9, 245	9, 100	10, 266	11, 646	12, 399	13, 564	13, 666	13, 383	11, 156	7, 800	4, 016	1, 501	361	49	
29, 549	26, 149	24, 294	19, 698	18, 510	15, 318	11, 371	9, 310	5, 999	3, 592	2, 006	770	270	67	14	2	53
202	217	215	261	302	289	297	356	328	281	230	123	53	14	2	.....
159	172	196	178	237	285	317	342	363	325	225	126	57	18	3	1	
361	389	411	439	539	574	614	698	691	606	455	249	110	32	5	1	
29, 771	25, 908	24, 240	20, 313	18, 259	16, 109	11, 917	10, 231	7, 009	4, 632	2, 831	1, 370	497	110	21	5	54
222	186	178	183	206	217	278	321	321	343	293	185	106	27	7	2	
167	170	156	187	207	237	273	310	304	348	315	196	119	43	9	.....
389	356	334	370	413	454	551	568	625	691	608	381	225	70	16	2	
34, 444	31, 381	29, 811	25, 038	24, 320	19, 747	13, 735	10, 445	6, 407	3, 985	2, 160	847	314	104	13	1	55
225	296	281	303	393	414	390	422	382	334	239	127	75	23	5	.....
201	199	237	252	346	369	375	407	361	356	274	160	75	22	6	.....
426	495	518	555	739	785	765	829	743	690	513	287	150	45	11	.....
35, 761	30, 506	29, 619	26, 351	23, 721	19, 856	14, 523	11, 384	7, 643	5, 387	3, 296	1, 646	650	168	33	5	50
293	252	280	270	302	309	318	35									

OF MORTALITY AT AGES 7 YEARS AND OVER ARE BASED—Continued.

TABLE 18.

unknown ages are distributed.

AGE INTERVAL IN YEARS.																No. of life table.
25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 to 100	100 years and over.	
25,383	23,497	21,046	16,643	14,752	12,985	9,373	7,218	4,188	2,382	1,300	520	182	36	14	2	57
169	188	199	209	183	253	276	289	215	164	151	85	43	15	5	2	
149	153	179	202	203	229	229	268	265	217	156	100	48	22	2	1	
318	346	378	411	386	482	528	557	480	381	307	185	91	37	5	3	
25,085	21,989	19,178	15,986	13,953	12,245	9,253	7,278	4,576	2,836	1,725	917	334	94	14	1	58
162	174	128	146	139	170	175	230	216	221	196	147	76	21	6	1	
165	149	128	117	180	164	207	223	236	251	180	155	85	31	2	1	
327	323	256	263	319	334	334	453	472	472	376	302	161	52	8	1	
135,598	131,317	120,157	90,759	78,316	64,374	45,491	33,814	18,536	10,726	5,888	2,448	867	185	39	3	59
691	879	1,004	892	1,091	1,139	1,175	1,166	1,011	776	578	329	159	47	13	2	
736	868	881	875	1,038	1,137	1,175	1,279	945	858	661	394	180	59	10	1	
1,427	1,747	1,885	1,767	2,129	2,276	2,350	2,445	1,956	1,634	1,239	723	339	106	23	3	
140,218	119,276	101,346	80,001	68,294	57,891	42,030	31,664	19,242	12,667	7,353	3,592	1,322	361	84	12	60
874	766	638	657	643	841	887	854	864	800	647	453	251	89	26	3	
885	773	721	655	772	865	947	908	945	935	747	552	274	122	28	4	
1,759	1,539	1,359	1,312	1,415	1,706	1,834	1,852	1,809	1,735	1,394	1,005	525	211	54	7	
43,402	40,856	37,511	27,419	22,549	16,728	11,014	8,103	5,005	2,856	1,574	611	238	35	5	1	61
236	309	379	306	323	291	261	287	284	222	183	100	41	12	4	1	
239	285	314	281	286	289	304	296	281	235	187	104	57	14	3	1	
475	594	693	597	609	580	565	583	565	457	370	204	98	26	7	1	
39,524	33,935	29,443	22,207	18,106	14,361	10,367	8,171	5,319	3,486	2,096	967	411	97	18	4	62
255	235	197	170	197	218	205	189	218	201	132	77	35	6	1	1	
243	248	176	186	193	208	222	263	265	239	160	85	37	13	1	1	
498	483	426	356	390	426	427	483	466	466	462	292	162	72	19	1	
70,702	61,237	50,744	32,886	26,056	19,003	12,892	9,411	5,415	3,135	1,710	736	287	48	13	4	63
321	360	316	266	275	240	244	288	259	242	179	111	59	11	5	4	
423	419	397	314	283	329	316	331	280	254	204	123	68	15	2	2	
744	779	713	580	558	569	560	619	539	496	383	234	127	26	7	6	
53,243	43,542	34,087	24,732	19,636	16,004	11,816	8,777	5,684	3,609	2,124	1,016	406	97	22	2	64
379	291	224	217	214	190	224	250	249	233	207	131	81	27	3	2	
432	374	284	224	246	243	242	264	274	262	231	186	85	40	4	2	
811	665	505	441	460	433	466	514	523	495	438	317	166	67	7	4	
25,459	25,758	26,542	21,787	19,764	16,264	12,626	10,481	6,938	4,819	2,969	1,283	461	88	24	2	65
191	251	284	247	247	251	286	329	316	232	237	167	85	24	13	1	
174	185	223	197	237	279	309	352	350	321	270	182	106	23	4	1	
365	436	507	444	484	530	595	681	666	553	507	349	191	47	7	1	
27,260	25,912	25,999	22,582	19,660	17,258	13,195	11,027	7,742	5,377	3,182	1,463	547	126	15	2	66
201	190	187	166	180	189	224	224	262	267	254	174	79	26	5	1	
144	176	178	172	194	231	220	285	286	288	269	195	95	37	4	1	
345	366	365	338	374	420	444	516	548	555	523	369	174	63	9	1	
14,017	11,967	11,357	9,180	8,423	6,954	4,482	3,510	2,116	1,285	780	327	106	24	6	1	67
121	142	154	140	190	175	217	188	169	134	101	63	46	9	3	1	
89	126	130	111	168	189	169	210	161	141	99	58	26	8	2	1	
210	268	284	251	358	364	386	398	330	275	200	121	72	17	5	1	
13,832	11,773	10,977	9,298	8,410	6,824	4,845	4,220	2,870	1,859	1,260	597	242	54	11	5	68
155	129	131	95	117	138	114	135	145	144	136	105	55	25	8	1	
117	76	88	106	101	109	125	167	157	136	122	95	48	23	3	1	
272	205	219	201	218	247	239	302	302	280	258	200	103	48	11	1	
269,037	253,201	237,199	188,768	161,861	132,959	88,774	66,865	37,909	22,439	11,859	4,757	1,604	365	72	13	69
1,879	2,077	2,317	2,138	2,556	2,713	2,660	2,727	2,252	1,927	1,333	752	312	103	26	3	
1,481	1,689	1,887	1,893	2,290	2,700	2,674	2,674	2,281	1,882	1,421	801	357	106	15	5	
3,360	3,766	4,204	4,031	4,846	5,413	5,299	5,401	4,533	3,809	2,754	1,553	669	209	41	8	
283,501	240,250	217,684	177,711	147,865	128,120	87,622	67,948	41,795	27,135	15,148	7,248	2,719	701	179	38	70
2,037	1,733	1,546	1,592	1,765	2,103	2,136	2,165	2,169	2,072	1,570	953	474	191	37	8	
1,716	1,525	1,478	1,484	1,727	1,976	2,155	2,391	2,396	2,228	1,683	1,132	564	199	56	10	
3,753	3,258	3,024	3,076	3,492	4,079	4,291	4,556	4,565	4,300	3,253	2,085	1,038	390	93	18	
81,147	72,583	68,152	56,522	52,740	43,597	30,606	24,702	15,036	9,296	5,082	2,153	756	170	23	2	71
476	526	604	629	719	781	842	937	766	742	570	316	156	39	11	1	
442	508	551	590	660	746	855	986	893	792	583	362	148	57	6	2	
918	1,034	1,155	1,219	1,379	1,527	1,697	1,923	1,659	1,534	1,153	678	304	96	17	3	
81,893	69,607	63,863	56,278	50,398	43,555	31,678	26,307	17,086	11,783	7,151	3,651	1,377	336	75	15	72
544	522	437	502	585	663	685	836	817	824	725	538	255	108	21	3	
558	482	482	460	551	669	806	882	825	911	769	557	275	101	29	4	
1,102	1,004	919	962	1,136	1,332	1,491	1,718	1,642	1,735	1,404	1,095	530	209	50	7	
26,515	24,367	23,567	18,930	16,920	13,344	9,050	6,955	4,123	2,458	1,302	500	144	36	7	1	73
213	242	316	268	315	303	287	277	239	232	187	67	38	11	3	1	
194	243	267	266	269	271	294	298	251	221	155	92	45	10	1	1	
407	485	563	534	584	574	581	575	490	453	342	159	83	21	4	1	
26,630	22,776	21,291	17,787	15,086	12,450	9,078	7,139	4,620	3,054	1,756	781	282	50	11	2	74
247	217	223	195	178	223	209	241	242	237	188	123	66	21	4	1	
213	219	235	195	219	217	252	271	271	233	203	129	74	20	6	1	
460	436	458	390	397	440	461	512	513	470	391	252	140	41	10	1	
34,426	31,652	30,566	25,740	23,521	19,554	14,160	10,800	6,379	3,902	2,198	888	343	83	23	2	75
186	210	248	263	324	319	393	415	402	320	267	145	70	36	4	1	
187	206	271	237	293	346	396	462	388	353	278	158	88	25	4	1	
373	425	519	500	617	665	789	877	790	653	515	308	158	61	8	1	
36,648	32,161	29,314	25,220	21,878	18,788	13,833	10,416	6,924	4,652	2,880	1,396	573	119	31	6	76
218	190	217	202	253	254	262	261	314	274	292	108	25	10	2	2	
227	229	210	186	238	293	279	312	357	341	313	201	136	35	14	2	
445	419	427	388	491	547	541	573	671	615	605	395	244	60	24	4	

TABLE 18. POPULATION AND MORTALITY STATISTICS UPON WHICH ALL RATES

Populations and deaths at

No. of life table.	AREA, SEX, COLOR, POPULATION, AND DEATHS.	All ages.	AGE INTERVAL IN YEARS.									
			0-1	1-2	2-3	3-4	4-5	0-5	5 to 10	10 to 15	15 to 20	20 to 25
WHITE—Continued.												
CITIES—continued.												
77	San Francisco—Males:											
	Population, Jan. 1, 1920.....	260,885	3,204	3,177	3,104	3,192	3,091	15,768	16,509	15,524	18,034	22,332
	Deaths, 1919.....	4,501	280	34	19	21	22	376	63	45	65	144
	Deaths, 1920.....	3,963	301	64	34	22	17	438	57	53	103	130
	Deaths, 1919 and 1920.....	8,464	581	98	53	43	39	814	120	98	168	274
78	San Francisco—Females:											
	Population, Jan. 1, 1920.....	229,137	3,064	3,080	3,119	3,041	3,137	15,441	16,328	15,732	15,863	21,848
	Deaths, 1919.....	3,026	190	42	27	12	20	291	59	38	56	136
	Deaths, 1920.....	2,836	223	42	24	13	20	322	70	35	47	104
	Deaths, 1919 and 1920.....	5,862	413	84	51	25	40	613	129	73	103	240
79	Washington, D. C.—Males:											
	Population, Jan. 1, 1920.....	152,031	2,566	2,293	2,270	2,224	2,133	11,486	10,705	10,551	11,444	16,390
	Deaths, 1919.....	2,179	221	36	16	17	24	314	49	24	52	89
	Deaths, 1920.....	2,210	269	36	20	20	10	355	46	30	42	81
	Deaths, 1919 and 1920.....	4,389	490	72	36	37	34	669	95	54	94	170
80	Washington, D. C.—Females:											
	Population, Jan. 1, 1920.....	174,829	2,433	2,253	2,220	2,173	2,167	11,246	10,803	10,914	12,445	22,167
	Deaths, 1919.....	1,927	177	31	17	12	16	253	30	27	47	84
	Deaths, 1920.....	1,953	186	27	11	12	14	250	37	15	30	57
	Deaths, 1919 and 1920.....	3,880	363	58	28	24	30	503	67	42	77	141
NEGROES.												
81	States having less than 4 per cent Negroes—Males: ¹											
	Population, Jan. 1, 1920.....	668,278	10,672	9,647	9,268	9,671	9,574	48,832	47,573	44,682	45,992	71,208
	Deaths, 1919.....	13,594	2,022	465	217	99	77	2,880	274	230	531	884
	Deaths, 1920.....	14,854	2,521	641	200	117	75	3,554	285	226	531	986
	Deaths, 1919 and 1920.....	28,448	4,543	1,106	417	216	152	6,434	559	456	1,062	1,870
82	States having less than 4 per cent Negroes—Females: ¹											
	Population, Jan. 1, 1920.....	628,941	11,089	9,872	9,712	9,884	9,755	50,312	49,216	47,917	50,151	73,545
	Deaths, 1919.....	11,746	1,659	426	160	83	84	2,412	277	267	571	848
	Deaths, 1920.....	12,836	1,955	634	189	110	74	2,962	259	254	503	890
	Deaths, 1919 and 1920.....	21,582	3,614	1,060	349	193	158	5,374	536	521	1,074	1,738
83	States having more than 5 per cent Negroes—Males: ²											
	Population, Jan. 1, 1920.....	1,694,317	39,667	37,481	40,411	42,075	43,160	202,794	220,498	211,299	176,118	153,928
	Deaths, 1919.....	30,551	6,276	1,390	629	359	254	8,908	853	788	1,623	1,944
	Deaths, 1920.....	29,784	6,548	1,294	539	310	201	8,892	724	668	1,274	1,797
	Deaths, 1919 and 1920.....	60,335	12,824	2,684	1,168	669	455	17,800	1,577	1,456	2,897	3,741
84	States having more than 5 per cent Negroes—Females: ²											
	Population, Jan. 1, 1920.....	1,734,242	40,631	37,877	40,954	43,814	42,187	205,463	221,544	212,469	190,619	182,522
	Deaths, 1919.....	31,407	4,869	1,136	570	370	286	7,231	951	993	2,081	2,599
	Deaths, 1920.....	30,687	5,263	1,158	499	324	226	7,470	804	755	1,725	2,378
	Deaths, 1919 and 1920.....	62,094	10,132	2,294	1,069	694	512	14,701	1,755	1,748	3,806	4,977
85	Large cities—Males: ³											
	Population, Jan. 1, 1920.....	454,516	7,098	6,208	5,996	6,186	6,123	31,611	30,556	28,454	30,287	50,827
	Deaths, 1919.....	9,719	1,503	323	162	93	54	2,135	189	165	362	563
	Deaths, 1920.....	10,327	1,821	459	158	92	52	2,582	176	168	340	660
	Deaths, 1919 and 1920.....	20,046	3,324	782	320	185	106	4,717	365	333	702	1,223
86	Large cities—Females: ³											
	Population, Jan. 1, 1920.....	464,585	7,398	6,403	6,345	6,561	6,316	33,023	32,022	31,941	37,284	59,287
	Deaths, 1919.....	9,075	1,136	293	131	66	56	1,682	206	187	400	666
	Deaths, 1920.....	9,964	1,500	432	133	75	67	2,216	181	162	409	741
	Deaths, 1919 and 1920.....	19,039	2,645	725	264	141	123	3,898	387	349	809	1,407
87	Original registration states—Males: ⁴											
	Population, Jan. 1, 1920.....	319,926	5,364	4,903	4,752	4,793	4,789	24,601	23,528	21,897	22,543	34,448
	Deaths, 1919.....	6,660	1,087	246	111	69	44	1,557	126	117	238	455
	Deaths, 1920.....	7,059	1,327	346	90	59	40	1,862	142	110	251	442
	Deaths, 1919 and 1920.....	13,719	2,414	592	201	128	84	3,419	268	227	489	897
88	Original registration states—Females: ⁴											
	Population, Jan. 1, 1920.....	325,598	5,718	5,014	5,096	4,994	4,860	25,682	24,363	23,501	26,212	38,891
	Deaths, 1919.....	6,195	881	235	89	51	51	1,307	147	128	268	390
	Deaths, 1920.....	6,761	1,081	334	94	57	39	1,605	146	114	289	450
	Deaths, 1919 and 1920.....	12,956	1,962	569	183	108	90	2,912	293	242	557	840
HAWAII.												
89	All races combined—Males:											
	Population, Jan. 1, 1920.....	151,146	4,417	3,965	4,010	3,713	3,401	10,506	15,485	11,269	11,552	14,828
	Deaths, 1919.....	2,305	548	80	45	25	20	718	61	40	83	129
	Deaths, 1920.....	2,743	619	133	56	34	26	868	65	37	79	154
	Deaths, 1919 and 1920.....	5,048	1,167	213	101	59	46	1,586	126	77	162	283
90	All races combined—Females:											
	Population, Jan. 1, 1920.....	104,766	4,166	3,998	3,954	3,699	3,243	19,060	14,723	10,801	9,102	9,946
	Deaths, 1919.....	1,571	472	86	29	22	22	637	82	41	72	106
	Deaths, 1920.....	1,857	466	117	46	44	28	701	25	37	106	118
	Deaths, 1919 and 1920.....	3,428	938	203	75	72	50	1,338	143	78	178	224
91	Japanese males:											
	Population, Jan. 1, 1920.....	62,644	2,162	1,950	2,037	1,801	1,604	9,554	6,844	4,500	4,417	3,321
	Deaths, 1919.....	821	229	40	21	14	12	316	25	14	31	26
	Deaths, 1920.....	984	242	68	28	26	17	381	21	14	25	29
	Deaths, 1919 and 1920.....	1,805	471	108	49	40	29	697	46	28	56	55
92	Japanese females:											
	Population, Jan. 1, 1920.....	46,630	2,060	1,925	2,016	1,766	1,471	9,238	6,683	4,126	3,439	4,271
	Deaths, 1919.....	568	183	44	15	11	6	259	23	12	27	40
	Deaths, 1920.....	663	176	51	23	18	13	281	37	16	33	44
	Deaths, 1919 and 1920.....	1,231	359	95	38	29	19	540	60	28	60	93

¹ The states with less than 4 per cent Negro population are Connecticut, Massachusetts, New York, Michigan, Wisconsin, Minnesota, Washington, Oregon, California, Utah, Kansas, Illinois, Indiana, Ohio, Pennsylvania, and New Jersey.

² The states with more than 5 per cent Negro population are Maryland, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, and Missouri.

OF MORTALITY AT AGES 7 YEARS AND OVER ARE BASED—Continued.

TABLE 18.

unknown ages are distributed.

AGE INTERVAL IN YEARS.																No. of life table.
25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 to 100	100 years and over.	
26,632 208 173 381	27,508 329 198 527	28,668 346 273 619	23,431 331 247 578	20,203 366 272 638	16,117 389 341 730	11,167 415 335 750	8,159 399 337 736	4,813 311 298 609	3,249 264 265 529	1,674 210 227 437	750 138 137 275	267 76 60 136	67 22 17 39	12 4 2 6	1 1 1 1	77
25,280 190 138 328	23,483 182 170 352	22,417 151 162 287	18,576 165 182 327	15,257 199 182 381	12,330 180 177 357	8,916 193 195 388	6,953 242 238 480	4,376 229 195 424	3,151 240 219 459	1,823 196 194 390	913 162 133 295	331 70 76 146	92 39 31 70	23 7 12 19	4 1 1 1	78
16,840 150 89 239	14,010 105 100 205	12,767 95 105 200	11,191 100 122 222	10,532 109 130 239	8,541 143 125 268	5,632 128 151 279	4,724 172 148 320	2,872 162 149 311	2,065 169 202 371	1,407 173 154 327	631 91 113 204	189 42 44 86	46 11 20 31	7 1 3 4	1 1 1 1	79
21,125 95 82 177	16,210 83 72 155	14,870 79 71 150	12,886 90 79 169	11,375 98 85 183	9,157 92 126 218	6,264 110 128 238	5,459 150 161 311	3,826 149 167 316	2,887 171 160 331	1,922 139 174 313	848 140 138 278	315 56 82 138	85 29 28 57	22 5 10 15	3 5 1 1	80
78,426 898 977 1,875	68,097 911 920 1,831	76,535 1,206 1,270 2,476	54,483 973 1,067 2,040	51,215 1,109 1,073 2,182	32,150 877 932 1,809	17,848 620 654 1,274	12,479 580 587 1,167	7,965 483 527 1,010	5,171 418 444 862	3,361 374 368 742	1,330 169 235 404	594 109 118 227	196 36 56 92	76 16 23 39	65 16 21 37	81
78,488 896 927 1,823	63,953 799 828 1,627	64,503 874 960 1,834	45,686 740 808 1,548	35,183 673 799 1,472	24,772 709 696 1,405	14,842 562 647 1,209	11,279 501 566 1,067	7,707 447 484 931	5,272 405 453 858	3,217 299 322 621	1,562 125 218 416	774 125 130 255	284 85 67 152	139 26 32 58	139 32 31 63	82
125,346 1,641 1,513 3,154	97,550 1,446 1,352 2,798	112,710 1,720 1,563 3,283	85,369 1,392 1,309 2,701	93,645 1,564 1,525 3,174	71,661 1,564 1,721 3,285	43,143 1,156 1,261 2,417	38,623 1,290 1,337 2,627	27,098 1,259 1,263 2,522	17,314 1,164 1,271 2,435	9,594 865 910 1,775	4,435 626 654 1,280	1,879 308 365 673	717 173 199 372	335 85 86 171	261 97 100 197	83
146,465 2,335 2,062 4,397	110,943 1,839 1,833 3,672	119,756 2,026 1,897 3,923	89,890 1,680 1,663 3,363	74,122 1,585 1,552 3,137	57,093 1,502 1,526 3,028	34,801 1,182 1,157 2,324	31,155 1,249 1,241 2,431	22,185 1,064 1,148 2,254	16,278 1,004 1,092 2,096	9,181 742 770 1,512	5,252 583 665 1,248	2,193 335 364 699	1,240 217 255 472	489 97 102 199	582 152 200 352	84
58,412 634 711 1,345	50,158 702 734 1,436	54,981 981 968 1,949	38,589 748 763 1,511	35,198 893 816 1,709	20,305 697 723 1,420	10,052 450 432 882	6,751 377 407 784	3,792 309 287 596	2,295 212 146 459	1,361 170 146 316	526 66 86 152	236 36 46 82	78 17 19 36	26 10 11 21	21 3 5 8	85
63,435 778 791 1,569	50,404 636 711 1,347	50,536 644 792 1,555	34,498 644 678 1,322	25,944 601 686 1,287	17,298 611 612 1,223	9,617 444 481 831	7,585 261 427 635	4,654 191 341 635	3,337 261 277 385	1,896 115 194 385	963 62 128 133	492 34 71 133	207 34 33 67	93 16 19 34	69 29 14 34	86
38,209 466 442 908	32,692 442 424 866	35,433 535 554 1,089	25,649 446 484 930	23,287 488 490 987	14,888 409 411 820	8,294 308 302 610	5,861 285 297 582	3,782 251 162 510	2,319 212 107 426	1,526 169 162 331	603 85 57 192	233 43 57 100	81 13 26 39	27 8 7 15	25 7 7 14	87
40,387 471 456 927	33,276 400 440 840	33,670 464 507 971	23,952 410 416 826	18,544 357 405 762	13,216 390 374 764	7,747 308 339 647	6,111 229 336 627	4,127 253 257 510	2,865 152 245 474	1,605 105 169 321	804 68 99 204	393 55 55 123	133 25 29 54	62 14 13 27	57 18 17 35	88
11,645 97 167 264	12,934 127 128 255	11,833 123 180 303	11,921 148 156 304	10,978 159 205 364	7,520 139 183 322	4,543 131 119 250	3,779 124 130 254	1,888 83 105 188	797 49 63 112	390 43 42 85	146 24 31 55	76 16 17 33	22 2 12 14	16 7 1 8	18 2 1 3	89
9,859 124 174 298	7,761 100 138 238	7,087 97 122 219	5,648 67 79 146	4,145 55 65 120	2,551 43 48 91	1,541 30 32 62	1,098 33 37 76	651 29 37 66	365 22 24 46	209 29 16 45	121 15 11 26	54 7 9 16	19 11 7 18	15 6 4 10	10 4 4 8	90
2,392 16 26 42	6,732 47 63 110	5,827 52 78 130	6,691 69 75 144	5,254 72 86 153	3,774 62 91 153	1,802 36 51 94	1,170 36 24 60	294 9 16 25	51 3 2 5	16 1 1 1	1 1 1 1	3 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	91
4,786 60 69 129	3,942 43 65 108	3,413 37 41 78	3,079 23 35 58	1,917 17 19 36	1,072 8 18 26	454 5 3 7	157 5 3 8	41 5 3 8	5 3 3 8	4 2 2 8	2 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	92

¹ The 12 cities included in "large cities" for Negroes are Boston, Buffalo, Detroit, Chicago, St. Louis, New Orleans, Cleveland, Pittsburgh, Philadelphia, New York, Baltimore, and Washington.

² The original registration states include New England states, New York, New Jersey, District of Columbia, Indiana, and Michigan.

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- life table values for white—
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- Negro population of, included in life tables for Negroes in states with more than 5 per cent Negro population, section 3, p. 8.
- original statistics for life tables for white in:
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- white population of, included in life tables for aggregate white, section 3, p. 8.

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- life table values for white—
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- Negro population of, included in life tables for Negroes in states with less than 4 per cent Negro population, section 3, p. 8.
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$$1/n = \sum_x^{x=14} u_x, \text{ section 10, p. 34.}$$

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