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## United States Life Tables, 2009

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### Abstract

**Objectives**—This report presents complete period life tables for the United States by race, Hispanic origin, and sex based on age-specific death rates in 2009.

**Methods**—Data used to prepare the 2009 life tables are 2009 final mortality statistics; July 1, 2009, population estimates based on the 2000 decennial census; and 2009 Medicare data for persons aged 66–99. The methodology used to estimate the 2009 life tables is the same as that used for data year 2008, which was revised from that used for data years 2000–2007. The methodology used to estimate the life tables for the Hispanic population remains unchanged from that developed for the publication of life tables by Hispanic origin for data year 2006.

**Results**—In 2009, the overall expectation of life at birth was 78.5 years. Between 2008 and 2009, life expectancy at birth increased for all groups considered. Life expectancy increased for both males (from 75.6 to 76.0) and females (80.6 to 80.9) and for the white population (78.5 to 78.8), the black population (74.0 to 74.5), the Hispanic population (81.0 to 81.2), the non-Hispanic white population (78.4 to 78.7), and the non-Hispanic black population (73.7 to 74.2).

**Keywords:** life expectancy • survival • death rates • race

### Introduction

There are two types of U.S. life tables: the cohort (or generation) life table and the period (or current) life table. The cohort life table presents the mortality experience of a particular birth cohort—all persons born in the year 1900, for example—from the moment of birth through consecutive ages in successive calendar years. Based on age-specific death rates observed through consecutive calendar years, the cohort life table reflects the mortality experience of an actual cohort from birth until no lives remain in the group. To prepare just a single complete cohort life table requires data over many years. It is usually not feasible to construct cohort life tables entirely on the basis of observed data for real cohorts due to data unavailability or incompleteness (1). For example, a life table representation of the

mortality experience of a cohort of persons born in 1970 would require the use of data projection techniques to estimate deaths into the future (2,3).

Unlike the cohort life table, the period life table does not represent the mortality experience of an actual birth cohort. Rather, the period life table presents what would happen to a hypothetical cohort if it experienced throughout its entire life the mortality conditions of a particular period in time. For example, a period life table for 2009 assumes a hypothetical cohort that is subject throughout its lifetime to the age-specific death rates prevailing for the actual population in 2009. The period life table may thus be characterized as rendering a “snapshot” of current mortality experience and showing the long-range implications of a set of age-specific death rates that prevailed in a given year. In this report, the term “life table” refers only to the period life table and not to the cohort life table.

Life tables can be classified in two ways according to the length of the age interval in which data are presented. A complete life table contains data for every single year of age. An abridged life table typically contains data by 5- or 10-year age intervals. A complete life table, of course, can easily be aggregated into 5- or 10-year age groups (refer to [Technical Notes](#) at the end of this report for instructions). Other than the decennial life tables, U.S. life tables based on data prior to 1997 are abridged life tables constructed by reference to a standard table (4). This report presents complete period life tables by race, Hispanic origin, race for the non-Hispanic population, and sex.

### Data and Methods

The data used to prepare the U.S. life tables for 2009 are final numbers of deaths for the year 2009, postcensal population estimates for the year 2009, and age-specific death and population counts for Medicare beneficiaries aged 66–99 for the year 2009 from the Centers for Medicare & Medicaid Services. Data from the Medicare program are used to supplement vital statistics and census data for ages 66 and over. (See [Technical Notes](#) for a detailed description of the data sets used.)



**Table 14. Life table for non-Hispanic white males: United States, 2009**Spreadsheet version available from: [ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Publications/NVSR/62\\_07/Table14.xls](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table14.xls).

Age (years)	Probability of dying between ages $x$ and $x + 1$	Number surviving to age $x$	Number dying between ages $x$ and $x + 1$	Person-years lived between ages $x$ and $x + 1$	Total number of person-years lived above age $x$	Expectation of life at age $x$
	$q_x$	$l_x$	$d_x$	$L_x$	$T_x$	$e_x$
0-1	0.005824	100,000	582	99,495	7,628,853	76.3
1-2	0.000365	99,418	41	99,397	7,529,358	75.7
2-3	0.000265	99,377	26	99,363	7,429,961	74.8
3-4	0.000224	99,350	22	99,339	7,330,598	73.8
4-5	0.000173	99,328	17	99,319	7,231,258	72.8
5-6	0.000152	99,311	15	99,303	7,131,939	71.8
6-7	0.000136	99,296	14	99,289	7,032,636	70.8
7-8	0.000122	99,282	12	99,276	6,933,347	69.8
8-9	0.000104	99,270	10	99,265	6,834,070	68.8
9-10	0.000084	99,260	8	99,256	6,734,806	67.9
10-11	0.000070	99,251	7	99,248	6,635,550	66.9
11-12	0.000076	99,245	8	99,241	6,536,302	65.9
12-13	0.000118	99,237	12	99,231	6,437,061	64.9
13-14	0.000202	99,225	20	99,215	6,337,830	63.9
14-15	0.000314	99,205	31	99,190	6,238,615	62.9
15-16	0.000429	99,174	43	99,153	6,139,425	61.9
16-17	0.000538	99,132	53	99,105	6,040,272	60.9
17-18	0.000651	99,078	65	99,046	5,941,167	60.0
18-19	0.000770	99,014	76	98,976	5,842,121	59.0
19-20	0.000890	98,937	88	98,893	5,743,146	58.0
20-21	0.001017	98,849	101	98,799	5,644,252	57.1
21-22	0.001135	98,749	112	98,693	5,545,453	56.2
22-23	0.001219	98,637	120	98,577	5,446,760	55.2
23-24	0.001256	98,517	124	98,455	5,348,184	54.3
24-25	0.001258	98,393	124	98,331	5,249,729	53.4
25-26	0.001250	98,269	123	98,208	5,151,398	52.4
26-27	0.001250	98,146	123	98,085	5,053,190	51.5
27-28	0.001255	98,023	123	97,962	4,955,106	50.6
28-29	0.001274	97,900	125	97,838	4,857,144	49.6
29-30	0.001306	97,776	128	97,712	4,759,306	48.7
30-31	0.001347	97,648	132	97,582	4,661,594	47.7
31-32	0.001393	97,516	136	97,449	4,564,011	46.8
32-33	0.001447	97,381	141	97,310	4,466,563	45.9
33-34	0.001491	97,240	145	97,167	4,369,253	44.9
34-35	0.001542	97,095	150	97,020	4,272,085	44.0
35-36	0.001607	96,945	156	96,867	4,175,065	43.1
36-37	0.001689	96,789	164	96,708	4,078,198	42.1
37-38	0.001784	96,626	172	96,540	3,981,491	41.2
38-39	0.001894	96,453	183	96,362	3,884,951	40.3
39-40	0.002026	96,271	195	96,173	3,788,589	39.4
40-41	0.002173	96,076	209	95,971	3,692,416	38.4
41-42	0.002346	95,867	225	95,754	3,596,445	37.5
42-43	0.002562	95,642	245	95,519	3,500,690	36.6
43-44	0.002820	95,397	269	95,262	3,405,171	35.7
44-45	0.003104	95,128	295	94,980	3,309,908	34.8
45-46	0.003385	94,833	321	94,672	3,214,928	33.9
46-47	0.003669	94,512	347	94,338	3,120,256	33.0
47-48	0.003989	94,165	376	93,977	3,025,918	32.1
48-49	0.004361	93,789	409	93,585	2,931,941	31.3
49-50	0.004781	93,380	446	93,157	2,838,356	30.4
50-51	0.005237	92,934	487	92,690	2,745,199	29.5
51-52	0.005701	92,447	527	92,184	2,652,508	28.7
52-53	0.006166	91,920	567	91,637	2,560,325	27.9
53-54	0.006621	91,353	605	91,051	2,468,688	27.0
54-55	0.007081	90,748	643	90,427	2,377,637	26.2
55-56	0.007573	90,106	682	89,765	2,287,210	25.4
56-57	0.008118	89,424	726	89,061	2,197,445	24.6
57-58	0.008709	88,698	772	88,311	2,108,385	23.8
58-59	0.009347	87,925	822	87,514	2,020,073	23.0
59-60	0.010029	87,103	874	86,666	1,932,559	22.2
60-61	0.010754	86,230	927	85,766	1,845,893	21.4
61-62	0.011534	85,302	984	84,810	1,760,127	20.6

See footnote at end of table.

**Table 14. Life table for non-Hispanic white males: United States, 2009—Con.**Spreadsheet version available from: [ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Publications/NVSR/62\\_07/Table14.xls](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table14.xls).

Age (years)	Probability of dying between ages $x$ and $x + 1$	Number surviving to age $x$	Number dying between ages $x$ and $x + 1$	Person-years lived between ages $x$ and $x + 1$	Total number of person-years lived above age $x$	Expectation of life at age $x$
	$q_x$	$l_x$	$d_x$	$L_x$	$T_x$	$e_x$
62-63	0.012396	84,319	1,045	83,796	1,675,316	19.9
63-64	0.013380	83,273	1,114	82,716	1,591,520	19.1
64-65	0.014516	82,159	1,193	81,563	1,508,804	18.4
65-66	0.015853	80,966	1,284	80,325	1,427,241	17.6
66-67	0.017352	79,683	1,383	78,991	1,346,917	16.9
67-68	0.018936	78,300	1,483	77,559	1,267,925	16.2
68-69	0.020541	76,817	1,578	76,029	1,190,366	15.5
69-70	0.022174	75,240	1,668	74,405	1,114,338	14.8
70-71	0.024008	73,571	1,766	72,688	1,039,932	14.1
71-72	0.026106	71,805	1,875	70,868	967,244	13.5
72-73	0.028483	69,930	1,992	68,934	896,377	12.8
73-74	0.031290	67,939	2,126	66,876	827,442	12.2
74-75	0.034352	65,813	2,261	64,682	760,567	11.6
75-76	0.037497	63,552	2,383	62,360	695,884	10.9
76-77	0.040988	61,169	2,507	59,915	633,524	10.4
77-78	0.045162	58,662	2,649	57,337	573,609	9.8
78-79	0.049908	56,012	2,795	54,615	516,271	9.2
79-80	0.054996	53,217	2,927	51,754	461,657	8.7
80-81	0.060733	50,290	3,054	48,763	409,903	8.2
81-82	0.066914	47,236	3,161	45,656	361,140	7.6
82-83	0.073865	44,075	3,256	42,447	315,484	7.2
83-84	0.081625	40,820	3,332	39,154	273,037	6.7
84-85	0.090396	37,488	3,389	35,793	233,883	6.2
85-86	0.101406	34,099	3,458	32,370	198,090	5.8
86-87	0.112743	30,641	3,455	28,914	165,720	5.4
87-88	0.125066	27,187	3,400	25,486	136,806	5.0
88-89	0.138399	23,786	3,292	22,140	111,320	4.7
89-90	0.152753	20,494	3,131	18,929	89,179	4.4
90-91	0.168122	17,364	2,919	15,904	70,250	4.0
91-92	0.184482	14,445	2,665	13,112	54,346	3.8
92-93	0.201790	11,780	2,377	10,591	41,234	3.5
93-94	0.219980	9,403	2,068	8,369	30,642	3.3
94-95	0.238968	7,334	1,753	6,458	22,274	3.0
95-96	0.258646	5,582	1,444	4,860	15,816	2.8
96-97	0.278887	4,138	1,154	3,561	10,956	2.6
97-98	0.299549	2,984	894	2,537	7,395	2.5
98-99	0.320478	2,090	670	1,755	4,858	2.3
99-100	0.341508	1,420	485	1,178	3,103	2.2
100 and over	1.000000	935	935	1,925	1,925	2.1

SOURCE: CDC/NCHS, National Vital Statistics System.

**Table 15. Life table for non-Hispanic white females: United States, 2009**Spreadsheet version available from: [ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Publications/NVSR/62\\_07/Table15.xls](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table15.xls).

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	$q_x$	$l_x$	$d_x$	$L_x$	$T_x$	$e_x$
0-1	0.004769	100,000	477	99,582	8,105,843	81.1
1-2	0.000315	99,523	31	99,507	8,006,261	80.4
2-3	0.000224	99,492	22	99,481	7,906,754	79.5
3-4	0.000162	99,470	16	99,461	7,906,754	78.5
4-5	0.000132	99,453	13	99,447	7,707,811	77.5
5-6	0.000113	99,440	11	99,435	7,608,365	76.5
6-7	0.000099	99,429	10	99,424	7,508,930	75.5
7-8	0.000090	99,419	9	99,415	7,409,506	74.5
8-9	0.000082	99,410	8	99,406	7,310,091	73.5
9-10	0.000075	99,402	7	99,398	7,210,685	72.5
10-11	0.000072	99,395	7	99,391	7,111,287	71.5
11-12	0.000079	99,387	8	99,384	7,011,896	70.6
12-13	0.000100	99,380	10	99,375	6,912,512	69.6
13-14	0.000139	99,370	14	99,363	6,813,138	68.6
14-15	0.000187	99,356	19	99,347	6,713,775	67.6
15-16	0.000241	99,337	24	99,325	6,614,428	66.6
16-17	0.000290	99,313	29	99,299	6,515,103	65.6
17-18	0.000330	99,285	33	99,268	6,415,804	64.6
18-19	0.000357	99,252	35	99,234	6,316,536	63.6
19-20	0.000376	99,216	37	99,198	6,217,302	62.7
20-21	0.000393	99,179	39	99,160	6,118,104	61.7
21-22	0.000414	99,140	41	99,120	6,018,945	60.7
22-23	0.000436	99,099	43	99,077	5,919,825	59.7
23-24	0.000460	99,056	46	99,033	5,820,748	58.8
24-25	0.000486	99,010	48	98,986	5,721,715	57.8
25-26	0.000513	98,962	51	98,937	5,622,729	56.8
26-27	0.000541	98,911	54	98,884	5,523,792	55.8
27-28	0.000570	98,858	56	98,830	5,424,908	54.9
28-29	0.000600	98,801	59	98,772	5,326,078	53.9
29-30	0.000635	98,742	63	98,711	5,227,306	52.9
30-31	0.000678	98,679	67	98,646	5,128,596	52.0
31-32	0.000728	98,613	72	98,577	5,029,950	51.0
32-33	0.000777	98,541	77	98,503	4,931,373	50.0
33-34	0.000821	98,464	81	98,424	4,832,870	49.1
34-35	0.000862	98,383	85	98,341	4,734,447	48.1
35-36	0.000909	98,299	89	98,254	4,636,106	47.2
36-37	0.000968	98,209	95	98,162	4,537,852	46.2
37-38	0.001038	98,114	102	98,063	4,439,690	45.3
38-39	0.001124	98,012	110	97,957	4,341,626	44.3
39-40	0.001226	97,902	120	97,842	4,243,669	43.3
40-41	0.001337	97,782	131	97,717	4,145,826	42.4
41-42	0.001461	97,652	143	97,580	4,048,110	41.5
42-43	0.001607	97,509	157	97,431	3,950,529	40.5
43-44	0.001773	97,352	173	97,266	3,853,099	39.6
44-45	0.001950	97,180	190	97,085	3,755,833	38.6
45-46	0.002124	96,990	206	96,887	3,658,748	37.7
46-47	0.002297	96,784	222	96,673	3,561,861	36.8
47-48	0.002483	96,562	240	96,442	3,465,188	35.9
48-49	0.002692	96,322	259	96,192	3,368,746	35.0
49-50	0.002923	96,063	281	95,922	3,272,554	34.1
50-51	0.003179	95,782	305	95,630	3,176,631	33.2
51-52	0.003443	95,478	329	95,313	3,081,001	32.3
52-53	0.003698	95,149	352	94,973	2,985,688	31.4
53-54	0.003935	94,797	373	94,610	2,890,716	30.5
54-55	0.004169	94,424	394	94,227	2,796,105	29.6
55-56	0.004416	94,030	415	93,823	2,701,878	28.7
56-57	0.004706	93,615	441	93,395	2,608,055	27.9
57-58	0.005067	93,174	472	92,938	2,514,661	27.0
58-59	0.005516	92,702	511	92,447	2,421,722	26.1
59-60	0.006039	92,191	557	91,913	2,329,276	25.3
60-61	0.006619	91,634	607	91,331	2,237,363	24.4
61-62	0.007234	91,028	658	90,698	2,146,032	23.6

See footnote at end of table.

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	$q_x$	$l_x$	$d_x$	$L_x$	$T_x$	$e_x$
62-63	0.007882	90,369	712	90,013	2,055,333	22.7
63-64	0.008572	89,657	768	89,273	1,965,320	21.9
64-65	0.009330	88,888	829	88,474	1,876,048	21.1
65-66	0.010219	88,059	900	87,609	1,787,574	20.3
66-67	0.011234	87,159	979	86,670	1,699,965	19.5
67-68	0.012325	86,180	1,062	85,649	1,613,295	18.7
68-69	0.013471	85,118	1,147	84,545	1,527,646	17.9
69-70	0.014683	83,971	1,233	83,355	1,443,102	17.2
70-71	0.016066	82,738	1,329	82,074	1,359,747	16.4
71-72	0.017691	81,409	1,440	80,689	1,277,674	15.7
72-73	0.019469	79,969	1,557	79,190	1,196,985	15.0
73-74	0.021474	78,412	1,684	77,570	1,117,795	14.3
74-75	0.023722	76,728	1,820	75,818	1,040,225	13.6
75-76	0.026006	74,908	1,948	73,934	964,407	12.9
76-77	0.028573	72,960	2,085	71,918	890,473	12.2
77-78	0.031607	70,875	2,240	69,755	818,555	11.5
78-79	0.035113	68,635	2,410	67,430	748,800	10.9
79-80	0.038996	66,225	2,583	64,934	681,370	10.3
80-81	0.043106	63,643	2,743	62,271	616,436	9.7
81-82	0.047575	60,899	2,897	59,450	554,165	9.1
82-83	0.053067	58,002	3,078	56,463	494,715	8.5
83-84	0.059512	54,924	3,269	53,290	438,252	8.0
84-85	0.066675	51,655	3,444	49,933	384,963	7.5
85-86	0.074910	48,211	3,611	46,405	335,029	6.9
86-87	0.084255	44,600	3,758	42,721	288,624	6.5
87-88	0.094397	40,842	3,855	38,914	245,903	6.0
88-89	0.105539	36,987	3,904	35,035	206,989	5.6
89-90	0.117726	33,083	3,895	31,136	171,954	5.2
90-91	0.130991	29,188	3,823	27,277	140,819	4.8
91-92	0.145355	25,365	3,687	23,521	113,542	4.5
92-93	0.160821	21,678	3,486	19,935	90,021	4.2
93-94	0.177373	18,192	3,227	16,578	70,086	3.9
94-95	0.194972	14,965	2,918	13,506	53,507	3.6
95-96	0.213555	12,047	2,573	10,761	40,001	3.3
96-97	0.233034	9,475	2,208	8,371	29,240	3.1
97-98	0.253296	7,267	1,841	6,346	20,870	2.9
98-99	0.274207	5,426	1,488	4,682	14,524	2.7
99-100	0.295609	3,938	1,164	3,356	9,841	2.5
100 and over	1.000000	2,774	2,774	6,485	6,485	2.3

SOURCE: CDC/NCHS, National Vital Statistics System.