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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 11. Life table for Hispanic males: United States, 2009**Spreadsheet version available from: [ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Publications/NVSR/62\\_07/Table11.xls](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table11.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	0.005652	100,000	565	99,506	7,870,375	78.7
1-2	0.000366	99,435	36	99,417	7,770,869	78.2
2-3	0.000275	99,398	27	99,385	7,671,453	77.2
3-4	0.000184	99,371	18	99,362	7,572,068	76.2
4-5	0.000143	99,353	14	99,346	7,472,706	75.2
5-6	0.000141	99,339	14	99,332	7,373,360	74.2
6-7	0.000129	99,325	13	99,318	7,274,029	73.2
7-8	0.000118	99,312	12	99,306	7,174,711	72.2
8-9	0.000105	99,300	10	99,295	7,075,405	71.3
9-10	0.000090	99,290	9	99,285	6,976,110	70.3
10-11	0.000080	99,281	8	99,277	6,876,825	69.3
11-12	0.000088	99,273	9	99,268	6,777,548	68.3
12-13	0.000134	99,264	13	99,257	6,678,280	67.3
13-14	0.000227	99,251	23	99,239	6,579,023	66.3
14-15	0.000352	99,228	35	99,211	6,479,783	65.3
15-16	0.000484	99,193	48	99,169	6,380,573	64.3
16-17	0.000609	99,145	60	99,115	6,281,404	63.4
17-18	0.000727	99,085	72	99,049	6,182,289	62.4
18-19	0.000838	99,013	83	98,971	6,083,240	61.4
19-20	0.000940	98,930	93	98,883	5,984,269	60.5
20-21	0.001048	98,837	104	98,785	5,885,385	59.5
21-22	0.001147	98,733	113	98,677	5,786,600	58.6
22-23	0.001206	98,620	119	98,561	5,687,924	57.7
23-24	0.001213	98,501	119	98,441	5,589,363	56.7
24-25	0.001181	98,382	116	98,323	5,490,922	55.8
25-26	0.001139	98,265	112	98,209	5,392,598	54.9
26-27	0.001104	98,153	108	98,099	5,294,389	53.9
27-28	0.001078	98,045	106	97,992	5,196,290	53.0
28-29	0.001067	97,939	104	97,887	5,098,297	52.1
29-30	0.001067	97,835	104	97,783	5,000,410	51.1
30-31	0.001069	97,730	105	97,678	4,902,628	50.2
31-32	0.001073	97,626	105	97,574	4,804,949	49.2
32-33	0.001074	97,521	105	97,469	4,707,376	48.3
33-34	0.001120	97,416	109	97,362	4,609,907	47.3
34-35	0.001167	97,307	114	97,251	4,512,545	46.4
35-36	0.001224	97,194	119	97,134	4,415,295	45.4
36-37	0.001289	97,075	125	97,012	4,318,160	44.5
37-38	0.001369	96,950	133	96,883	4,221,148	43.5
38-39	0.001464	96,817	142	96,746	4,124,265	42.6
39-40	0.001574	96,675	152	96,599	4,027,518	41.7
40-41	0.001701	96,523	164	96,441	3,930,919	40.7
41-42	0.001843	96,359	178	96,270	3,834,478	39.8
42-43	0.001999	96,181	192	96,085	3,738,208	38.9
43-44	0.002165	95,989	208	95,885	3,642,123	37.9
44-45	0.002342	95,781	224	95,669	3,546,238	37.0
45-46	0.002528	95,557	242	95,436	3,450,568	36.1
46-47	0.002733	95,315	261	95,185	3,355,132	35.2
47-48	0.002978	95,055	283	94,913	3,259,947	34.3
48-49	0.003277	94,772	311	94,617	3,165,034	33.4
49-50	0.003633	94,461	343	94,290	3,070,417	32.5
50-51	0.004040	94,118	380	93,928	2,976,128	31.6
51-52	0.004475	93,738	419	93,528	2,882,200	30.7
52-53	0.004916	93,318	459	93,089	2,788,671	29.9
53-54	0.005337	92,860	496	92,612	2,695,582	29.0
54-55	0.005743	92,364	530	92,099	2,602,971	28.2
55-56	0.006177	91,834	567	91,550	2,510,872	27.3
56-57	0.006662	91,266	608	90,962	2,419,322	26.5
57-58	0.007174	90,658	650	90,333	2,328,359	25.7
58-59	0.007710	90,008	694	89,661	2,238,026	24.9
59-60	0.008274	89,314	739	88,945	2,148,365	24.1
60-61	0.008870	88,575	786	88,182	2,059,421	23.3
61-62	0.009517	87,789	836	87,372	1,971,238	22.5

See footnote at end of table.

**Table 11. Life table for Hispanic males: United States, 2009—Con.**

Spreadsheet version available from: [ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Publications/NVSR/62\\_07/Table11.xls](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table11.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	0.010239	86,954	890	86,509	1,883,867	21.7
63-64	0.011068	86,064	953	85,587	1,797,358	20.9
64-65	0.012027	85,111	1,024	84,599	1,711,771	20.1
65-66	0.013120	84,087	1,103	83,536	1,627,172	19.4
66-67	0.014341	82,984	1,190	82,389	1,543,636	18.6
67-68	0.015682	81,794	1,283	81,153	1,461,247	17.9
68-69	0.017083	80,511	1,375	79,824	1,380,094	17.1
69-70	0.018513	79,136	1,465	78,403	1,300,270	16.4
70-71	0.019988	77,671	1,552	76,895	1,221,867	15.7
71-72	0.021559	76,118	1,641	75,298	1,144,972	15.0
72-73	0.023242	74,477	1,731	73,612	1,069,674	14.4
73-74	0.025102	72,746	1,826	71,833	996,062	13.7
74-75	0.027167	70,920	1,927	69,957	924,229	13.0
75-76	0.029305	68,994	2,022	67,983	854,272	12.4
76-77	0.031731	66,972	2,125	65,909	786,290	11.7
77-78	0.034765	64,847	2,254	63,719	720,380	11.1
78-79	0.038532	62,592	2,412	61,386	656,661	10.5
79-80	0.042879	60,180	2,580	58,890	595,275	9.9
80-81	0.047899	57,600	2,759	56,220	536,385	9.3
81-82	0.053532	54,841	2,936	53,373	480,164	8.8
82-83	0.059159	51,905	3,071	50,370	426,791	8.2
83-84	0.065459	48,834	3,197	47,236	376,421	7.7
84-85	0.072602	45,638	3,313	43,981	329,185	7.2
85-86	0.081605	42,324	3,454	40,597	285,204	6.7
86-87	0.090915	38,871	3,534	37,104	244,607	6.3
87-88	0.101085	35,337	3,572	33,551	207,503	5.9
88-89	0.112146	31,765	3,562	29,984	173,952	5.5
89-90	0.124124	28,202	3,501	26,452	143,969	5.1
90-91	0.137029	24,702	3,385	23,009	117,517	4.8
91-92	0.150859	21,317	3,216	19,709	94,507	4.4
92-93	0.165596	18,101	2,997	16,602	74,798	4.1
93-94	0.181205	15,104	2,737	13,735	58,196	3.9
94-95	0.197631	12,367	2,444	11,145	44,461	3.6
95-96	0.214801	9,923	2,131	8,857	33,316	3.4
96-97	0.232620	7,791	1,812	6,885	24,459	3.1
97-98	0.250978	5,979	1,501	5,229	17,574	2.9
98-99	0.269749	4,478	1,208	3,874	12,346	2.8
99-100	0.288794	3,270	944	2,798	8,471	2.6
100 and over	1.000000	2,326	2,326	5,673	5,673	2.4

SOURCE: CDC/NCHS, National Vital Statistics System.

**Table 12. Life table for Hispanic females: United States, 2009**Spreadsheet version available from: [ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Publications/NVSR/62\\_07/Table12.xls](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table12.xls).

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	$q_x$	$l_x$	$d_x$	$L_x$	$T_x$	$e_x$
0-1	0.004852	100,000	485	99,577	8,351,451	83.5
1-2	0.000352	99,515	35	99,497	8,251,874	82.9
2-3	0.000232	99,480	23	99,468	8,152,376	82.0
3-4	0.000171	99,457	17	99,448	8,052,908	81.0
4-5	0.000114	99,440	11	99,434	7,953,460	80.0
5-6	0.000130	99,428	13	99,422	7,854,026	79.0
6-7	0.000118	99,415	12	99,409	7,754,604	78.0
7-8	0.000110	99,404	11	99,398	7,655,195	77.0
8-9	0.000104	99,393	10	99,387	7,555,797	76.0
9-10	0.000101	99,382	10	99,377	7,456,409	75.0
10-11	0.000101	99,372	10	99,367	7,357,032	74.0
11-12	0.000107	99,362	11	99,357	7,257,665	73.0
12-13	0.000122	99,352	12	99,346	7,158,308	72.1
13-14	0.000146	99,339	15	99,332	7,058,963	71.1
14-15	0.000177	99,325	18	99,316	6,959,630	70.1
15-16	0.000211	99,307	21	99,297	6,860,314	69.1
16-17	0.000244	99,286	24	99,274	6,761,017	68.1
17-18	0.000271	99,262	27	99,249	6,661,743	67.1
18-19	0.000288	99,235	29	99,221	6,562,494	66.1
19-20	0.000298	99,207	30	99,192	6,463,273	65.1
20-21	0.000307	99,177	30	99,162	6,364,081	64.2
21-22	0.000318	99,147	32	99,131	6,264,919	63.2
22-23	0.000329	99,115	33	99,099	6,165,788	62.2
23-24	0.000342	99,083	34	99,066	6,066,689	61.2
24-25	0.000356	99,049	35	99,031	5,967,624	60.2
25-26	0.000371	99,013	37	98,995	5,868,593	59.3
26-27	0.000385	98,977	38	98,958	5,769,598	58.3
27-28	0.000396	98,939	39	98,919	5,670,640	57.3
28-29	0.000402	98,899	40	98,880	5,571,721	56.3
29-30	0.000407	98,860	40	98,840	5,472,841	55.4
30-31	0.000412	98,819	41	98,799	5,374,002	54.4
31-32	0.000422	98,779	42	98,758	5,275,203	53.4
32-33	0.000443	98,737	44	98,715	5,176,445	52.4
33-34	0.000483	98,693	48	98,670	5,077,730	51.4
34-35	0.000534	98,646	53	98,619	4,979,060	50.5
35-36	0.000594	98,593	59	98,564	4,880,441	49.5
36-37	0.000657	98,534	65	98,502	4,781,877	48.5
37-38	0.000721	98,470	71	98,434	4,683,375	47.6
38-39	0.000785	98,399	77	98,360	4,584,941	46.6
39-40	0.000853	98,321	84	98,279	4,486,581	45.6
40-41	0.000924	98,238	91	98,192	4,388,301	44.7
41-42	0.001008	98,147	99	98,097	4,290,109	43.7
42-43	0.001119	98,048	110	97,993	4,192,012	42.8
43-44	0.001263	97,938	124	97,876	4,094,019	41.8
44-45	0.001431	97,814	140	97,745	3,996,142	40.9
45-46	0.001613	97,675	158	97,596	3,898,398	39.9
46-47	0.001794	97,517	175	97,430	3,800,802	39.0
47-48	0.001968	97,342	192	97,246	3,703,373	38.0
48-49	0.002132	97,150	207	97,047	3,606,126	37.1
49-50	0.002292	96,943	222	96,832	3,509,079	36.2
50-51	0.002467	96,721	239	96,602	3,412,247	35.3
51-52	0.002659	96,483	257	96,354	3,315,645	34.4
52-53	0.002853	96,226	274	96,089	3,219,291	33.5
53-54	0.003042	95,951	292	95,806	3,123,202	32.5
54-55	0.003232	95,660	309	95,505	3,027,397	31.6
55-56	0.003433	95,350	327	95,187	2,931,892	30.7
56-57	0.003662	95,023	348	94,849	2,836,705	29.9
57-58	0.003927	94,675	372	94,489	2,741,856	29.0
58-59	0.004242	94,303	400	94,103	2,647,367	28.1
59-60	0.004608	93,903	433	93,687	2,553,264	27.2
60-61	0.005013	93,471	469	93,236	2,459,577	26.3
61-62	0.005461	93,002	508	92,748	2,366,341	25.4

See footnote at end of table.

**Table 12. Life table for Hispanic females: United States, 2009—Con.**Spreadsheet version available from: [ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Publications/NVSR/62\\_07/Table12.xls](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table12.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	0.005976	92,494	553	92,218	2,273,593	24.6
63-64	0.006578	91,941	605	91,639	2,181,375	23.7
64-65	0.007276	91,337	665	91,004	2,089,736	22.9
65-66	0.008098	90,672	734	90,305	1,998,731	22.0
66-67	0.009020	89,938	811	89,532	1,908,427	21.2
67-68	0.009973	89,127	889	88,682	1,818,894	20.4
68-69	0.010888	88,238	961	87,757	1,730,212	19.6
69-70	0.011779	87,277	1,028	86,763	1,642,455	18.8
70-71	0.012683	86,249	1,094	85,702	1,555,692	18.0
71-72	0.013719	85,155	1,168	84,571	1,469,990	17.3
72-73	0.014986	83,987	1,259	83,357	1,385,419	16.5
73-74	0.016594	82,728	1,373	82,042	1,302,061	15.7
74-75	0.018528	81,355	1,507	80,602	1,220,020	15.0
75-76	0.020615	79,848	1,646	79,025	1,139,418	14.3
76-77	0.022778	78,202	1,781	77,311	1,060,393	13.6
77-78	0.025213	76,421	1,927	75,457	983,082	12.9
78-79	0.027999	74,494	2,086	73,451	907,624	12.2
79-80	0.031098	72,408	2,252	71,282	834,173	11.5
80-81	0.034400	70,156	2,413	68,950	762,891	10.9
81-82	0.037997	67,743	2,574	66,456	693,941	10.2
82-83	0.042470	65,169	2,768	63,785	627,485	9.6
83-84	0.047738	62,401	2,979	60,912	563,700	9.0
84-85	0.053614	59,422	3,186	57,829	502,789	8.5
85-86	0.060397	56,236	3,397	54,538	444,959	7.9
86-87	0.068130	52,840	3,600	51,040	390,421	7.4
87-88	0.076565	49,240	3,770	47,355	339,381	6.9
88-89	0.085879	45,470	3,905	43,517	292,026	6.4
89-90	0.096126	41,565	3,995	39,567	248,509	6.0
90-91	0.107347	37,570	4,033	35,553	208,942	5.6
91-92	0.119577	33,537	4,010	31,531	173,389	5.2
92-93	0.132837	29,526	3,922	27,565	141,857	4.8
93-94	0.147132	25,604	3,767	23,721	114,292	4.5
94-95	0.162450	21,837	3,547	20,063	90,571	4.1
95-96	0.178756	18,290	3,269	16,655	70,508	3.9
96-97	0.195994	15,020	2,944	13,548	53,853	3.6
97-98	0.214084	12,076	2,585	10,784	40,305	3.3
98-99	0.232921	9,491	2,211	8,386	29,521	3.1
99-100	0.252380	7,280	1,837	6,362	21,136	2.9
100 and over	1.000000	5,443	5,443	14,774	14,774	2.7

SOURCE: CDC/NCHS, National Vital Statistics System.