U.S. Department of Health and Human Services: Life table for the white population: United States, 2009. In: National Vital Statistics Reports, Vol. 62, No. 7, 2014, p. 17-20, URL: http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_07.pdf (30.07.2014).

United States Life Tables, 2009

by Elizabeth Arias, Ph.D., Division of Vital Statistics

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 5. Life table for white males: United States, 2009

Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table05.xls.

Age (years)	Probability of dying between ages x and $x + 1$ q_x	Number surviving to age x l_x	Number dying between ages x and $x + 1$ d_x	Person-years lived between ages x and $x + 1$ L_x	Total number of person-years lived above age x T_x	Expectation of life at age x e_x
0–1	0.005773	100,000	577	99,498	7,641,039	76.4
1–2	0.000412	99,423	41	99,402	7,541,541	75.9
2–3	0.000275	99,382	27	99,368	7,442,139	74.9
3–4	0.000218	99,354	22	99,344	7,342,771	73.9
4–5	0.000167	99,333	17	99,325	7,243,427	72.9
5–6	0.000152	99,316	15	99,309	7,144,103	71.9
6–7	0.000136	99,301	14	99,294	7,044,794	70.9
7–8	0.000123	99,288	12	99,282	6,945,500	70.0
8–9	0.000106	99,275	11	99,270	6,846,218	69.0
9–10	0.000088	99,265	9	99,261	6,746,948	68.0
10–11	0.000075	99,256	7	99,252	6,647,688	67.0
11–12	0.000082	99,249	8	99,245	6,548,435	66.0
12–13	0.000126	99,241	12	99,234	6,449,191	65.0
13–14	0.000213	99,228	21	99,218	6,349,956	64.0
14–15	0.000330	99,207	33	99,191	6,250,739	63.0
15–16	0.000450	99,174	45	99,152	6,151,548	62.0
16–17	0.000564	99,130	56	99,102	6,052,396	61.1
17–18	0.000680	99,074	67	99,040	5,953,295	60.1
18–19	0.000799	99,006	79	98,967	5,854,255	59.1
19–20	0.000917	98,927	91	98,882	5,755,288	58.2
20–21	0.001042	98,836	103	98,785	5,656,406	57.2
21–22	0.001157	98,734	114	98,676	5,557,621	56.3
22–23	0.001237	98,619	122	98,558	5,458,945	55.4
23–24	0.001266	98,497	125	98,435	5,360,387	54.4
24–25	0.001258	98,373	124	98,311	5,261,952	53.5
25–26	0.001239	98,249	122	98,188	5,163,641	52.6
26–27	0.001228	98,127	120	98,067	5,065,453	51.6
27–28	0.001223	98,007	120	97,947	4,967,386	50.7
28–29	0.001234	97,887	121	97,826	4,869,439	49.7
29–30	0.001258	97,766	123	97,705	4,771,613	48.8
30–31	0.001289	97,643	126	97,580	4,673,909	47.9
31–32	0.001323	97,517	129	97,453	4,576,328	46.9
32–33	0.001362	97,388	133	97,322	4,478,876	46.0
33–34	0.001408	97,256	137	97,187	4,381,554	45.1
34–35	0.001458	97,119	142	97,048	4,284,367	44.1
35–36	0.001522	96,977	148	96,903	4,187,319	43.2
36–37	0.001603	96,829	155	96,752	4,090,416	42.2
37–38	0.001697	96,674	164	96,592	3,993,664	41.3
38–39	0.001808	96,510	174	96,423	3,897,072	40.4
39–40	0.001940	96,336	187	96,242	3,800,649	39.5
40–41	0.002089	96,149	201	96,048	3,704,407	38.5
41–42	0.002263	95,948	217	95,839	3,608,358	37.6
42–43	0.002475	95,731	237	95,612	3,512,519	36.7
43–44	0.002727	95,494	260	95,364	3,416,907	35.8
44–45	0.003003	95,233	286	95,090	3,321,543	34.9
45–46	0.003281	94,947	312	94,792	3,226,453	34.0
46–47	0.003566	94,636	338	94,467	3,131,661	33.1
47–48	0.003887	94,298	367	94,115	3,037,194	32.2
48–49	0.004259	93,932	400	93,732	2,943,079	31.3
49–50	0.004680	93,532	438	93,313	2,849,347	30.5
50–51	0.005139	93,094	478	92,855	2,756,034	29.6
51–52	0.005610	92,616	520	92,356	2,663,179	28.8
52–53	0.006083	92,096	560	91,816	2,570,824	27.9
53–54	0.006547	91,536	599	91,236	2,479,008	27.1
54–55	0.007015	90,937	638	90,618	2,387,772	26.3
55–56	0.007514	90,299	679	89,959	2,297,154	25.4
56–57	0.008066	89,620	723	89,259	2,207,195	24.6
57–58	0.008664	88,897	770	88,512	2,117,936	23.8
58–59	0.009307	88,127	820	87,717	2,029,424	23.0
59–60	0.009993	87,307	872	86,871	1,941,707	22.2
60–61	0.010723	86,434	927	85,971	1,854,836	21.5
61–62	0.011507	85,508	984	85,016	1,768,865	20.7

See footnote at end of table.

Table 5. Life table for white males: United States, 2009—Con.

Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table05.xls.

Age (years)	Probability of dying between ages x and $x + 1$ q_x	Number surviving to age x l_x	Number dying between ages x and $x + 1$ d_x	Person-years lived between ages x and $x + 1$ L_x	Total number of person-years lived above age x T_x	Expectation of life at age x e_x
62–63	0.012365	84,524	1,045	84,001	1,683,849	19.9
63–64	0.013333	83,479	1,113	82,922	1,599,848	19.2
64–65	0.014442	82,366	1,190	81,771	1,516,926	18.4
65–66	0.015741	81,176	1,278	80,537	1,435,155	17.7
66–67	0.017204	79,898	1,375	79,211	1,354,618	17.0
67–68	0.018761	78,524	1,473	77,787	1,275,407	16.2
68–69	0.020355	77,051	1,568	76,266	1,197,620	15.5
69–70	0.021987	75,482	1,660	74,652	1,121,353	14.9
70–71	0.023814	73,823	1,758	72,944	1,046,701	14.2
71–72	0.025894	72,065	1,866	71,132	973,757	13.5
72–73	0.028246	70,199	1,983	69,207	902,626	12.9
73–74	0.031028	68,216	2,117	67,157	833,419	12.2
74–75	0.034068	66,099	2,252	64,973	766,261	11.6
75–76	0.037198	63,847	2,375	62,660	701,288	11.0
76–77	0.040676	61,472	2,500	60,222	638,628	10.4
77–78	0.044832	58,972	2,644	57,650	578,406	9.8
78–79	0.049554	56,328	2,791	54,932	520,756	9.2
79–80	0.054616	53,537	2,924	52,075	465,824	8.7
80–81	0.060338	50,613	3,054	49,086	413,749	8.2
81–82	0.066513	47,559	3,163	45,977	364,664	7.7
82–83	0.073450	44,396	3,261	42,765	318,686	7.2
83–84	0.081179	41,135	3,339	39,465	275,921	6.7
84–85	0.089905	37,795	3,398	36,096	236,456	6.3
85–86	0.100809	34,397	3,468	32,664	200,360	5.8
86–87	0.112144	30,930	3,469	29,196	167,696	5.4
87–88	0.124473	27,461	3,418	25,752	138,501	5.0
88–89	0.137821	24,043	3,314	22,386	112,749	4.7
89–90	0.152198	20,729	3,155	19,152	90,362	4.4
90–91	0.167600	17,574	2,945	16,102	71,211	4.1
91–92	0.184003	14,629	2,692	13,283	55,109	3.8
92–93	0.201364	11,937	2,404	10,735	41,826	3.5
93–94	0.219617	9,533	2,094	8,487	31,091	3.3
94–95	0.238676	7,440	1,776	6,552	22,604	3.0
95–96	0.258433	5,664	1,464	4,932	16,052	2.8
96–97	0.278760	4,200	1,171	3,615	11,120	2.6
97–98	0.299513	3,029	907	2,576	7,505	2.5
98–99	0.320535	2,122	680	1,782	4,929	2.3
99–100.	0.341658	1,442	493	1,196	3,147	2.2
100 and over	1.000000	949	949	1,952	1,952	2.1

SOURCE: CDC/NCHS, National Vital Statistics System.

Table 6. Life table for white females: United States, 2009

Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table06.xls.

Age (years)	Probability of dying between ages x and $x + 1$ q_x	Number surviving to age x l_x	Number dying between ages x and $x + 1$ d_x	Person-years lived between ages x and $x + 1$ L_x	Total number of person-years lived above age x T_x	Expectation of life at age x e_x
0–1	0.004761	100,000	476	99,584	8,120,055	81.2
1–2	0.000332	99,524	33	99,507	8,020,471	80.6
2–3	0.000228	99,491	23	99,479	7,920,963	79.6
3–4	0.000170	99,468	17	99,460	7,821,484	78.6
4–5	0.000128	99,451	13	99,445	7,722,024	77.6
5–6	0.000120	99,438	12	99,432	7,622,579	76.7
6–7	0.000106	99,427	11	99,421	7,523,147	75.7
7–8	0.000097	99,416	10	99,411	7,423,726	74.7
8–9	0.000089	99,406	9	99,402	7,324,315	73.7
9–10	0.000083	99,397	8	99,393	7,224,913	72.7
10–11	0.000081	99,389	8	99,385	7,125,519	71.7
11–12	0.000087	99,381	9	99,377	7,026,134	70.7
12–13	0.000107	99,373	11	99,367	6,926,757	69.7
13–14	0.000143	99,362	14	99,355	6,827,390	68.7
14–15	0.000189	99,348	19	99,338	6,728,035	67.7
15–16	0.000239	99,329	24	99,317	6,628,697	66.7
16–17	0.000286	99,305	28	99,291	6,529,380	65.8
17–18	0.000324	99,277	32	99,261	6,430,089	64.8
18–19	0.000350	99,245	35	99,227	6,330,828	63.8
19–20	0.000368	99,210	37	99,192	6,231,601	62.8
20–21	0.000385	99,173	38	99,154	6,132,409	61.8
21–22	0.000405	99,135	40	99,115	6,033,255	60.9
22–23	0.000425	99,095	42	99,074	5,934,140	59.9
23–24	0.000446	99,053	44	99,031	5,835,066	58.9
24–25	0.000467	99,009	46	98,986	5,736,035	57.9
25–26	0.000490	98,963	48	98,938	5,637,049	57.0
26–27	0.000513	98,914	51	98,889	5,538,111	56.0
27–28	0.000537	98,863	53	98,837	5,439,222	55.0
28–29	0.000561	98,810	55	98,783	5,340,385	54.0
29–30	0.000588	98,755	58	98,726	5,241,603	53.1
30–31	0.000622	98,697	61	98,666	5,142,877	52.1
31–32	0.000662	98,635	65	98,603	5,044,211	51.1
32–33	0.000704	98,570	69	98,535	4,945,608	50.2
33–34	0.000748	98,501	74	98,464	4,847,073	49.2
34–35	0.000792	98,427	78	98,388	4,748,609	48.2
35–36	0.000843	98,349	83	98,308	4,650,221	47.3
36–37	0.000904	98,266	89	98,222	4,551,913	46.3
37–38	0.000975	98,178	96	98,130	4,453,691	45.4
38–39	0.001058	98,082	104	98,030	4,355,561	44.4
39–40	0.001157	97,978	113	97,921	4,257,531	43.5
40–41	0.001263	97,865	124	97,803	4,159,610	42.5
41–42	0.001383	97,741	135	97,673	4,061,807	41.6
42–43	0.001527	97,606	149	97,531	3,964,133	40.6
43–44	0.001694	97,457	165	97,374	3,866,602	39.7
44–45	0.001873	97,292	182	97,201	3,769,228	38.7
45–46	0.002052	97,109	199	97,010	3,672,027	37.8
46–47	0.002230	96,910	216	96,802	3,575,017	36.9
47–48	0.002418	96,694	234	96,577	3,478,215	36.0
48–49	0.002624	96,460	253	96,334	3,381,638	35.1
49–50	0.002850	96,207	274	96,070	3,285,305	34.1
50–51	0.003100	95,933	297	95,784	3,189,234	33.2
51–52	0.003360	95,636	321	95,475	3,093,450	32.3
52–53	0.003613	95,314	344	95,142	2,997,975	31.5
53–54	0.003852	94,970	366	94,787	2,902,833	30.6
54–55	0.004090	94,604	387	94,410	2,808,046	29.7
55–56	0.004340	94,217	409	94,013	2,713,636	28.8
56–57	0.004633	93,808	435	93,591	2,619,623	27.9
57–58	0.004992	93,374	466	93,141	2,526,033	27.1
58–59	0.005435	92,907	505	92,655	2,432,892	26.2
59–60	0.005950	92,403	550	92,128	2,340,237	25.3
60–61	0.006521	91,853	599	91,553	2,248,109	24.5
61–62	0.007128	91,254	650	90,929	2,156,556	23.6

See footnote at end of table.

Table 6. Life table for white females: United States, 2009—Con.

Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/62_07/Table06.xls.

Age (years)	Probability of dying between ages x and $x + 1$ q_x	Number surviving to age x l_x	Number dying between ages x and $x + 1$ d_x	Person-years lived between ages x and $x + 1$ L_x	Total number of person-years lived above age x T_x	Expectation of life at age x e_x
62–63	0.007771	90,603	704	90,251	2,065,627	22.8
63–64	0.008457	89,899	760	89,519	1,975,376	22.0
64–65	0.009214	89,139	821	88,728	1,885,857	21.2
65–66	0.010099	88,318	892	87,872	1,797,129	20.3
66–67	0.011112	87,426	971	86,940	1,709,257	19.6
67–68	0.012198	86,454	1,055	85,927	1,622,317	18.8
68–69	0.013336	85,400	1,139	84,830	1,536,390	18.0
69–70	0.014535	84,261	1,225	83,648	1,451,559	17.2
70–71	0.015898	83,036	1,320	82,376	1,367,911	16.5
71–72	0.017498	81,716	1,430	81,001	1,285,535	15.7
72–73	0.019253	80,286	1,546	79,513	1,204,534	15.0
73–74	0.021246	78,740	1,673	77,904	1,125,021	14.3
74–75	0.023491	77,067	1,810	76,162	1,047,117	13.6
75–76	0.025776	75,257	1,940	74,287	970,954	12.9
76–77	0.028340	73,317	2,078	72,278	896,667	12.2
77–78	0.031370	71,240	2,235	70,122	824,389	11.6
78–79	0.034871	69,005	2,406	67,802	754,267	10.9
79–80	0.038751	66,598	2,581	65,308	686,465	10.3
80–81	0.042871	64,018	2,745	62,645	621,157	9.7
81–82	0.047353	61,273	2,901	59,822	558,512	9.1
82–83	0.052842	58,372	3,084	56,829	498,689	8.5
83–84	0.059264	55,287	3,277	53,649	441,860	8.0
84–85	0.066393	52,011	3,453	50,284	388,211	7.5
85–86	0.074600	48,557	3,622	46,746	337,927	7.0
86–87	0.083962	44,935	3,773	43,049	291,181	6.5
87–88	0.094104	41,162	3,874	39,225	248,132	6.0
88–89	0.105249	37,289	3,925	35,326	208,907	5.6
89–90	0.117443	33,364	3,918	31,405	173,580	5.2
90–91	0.130721	29,446	3,849	27,521	142,175	4.8
91–92	0.145104	25,597	3,714	23,739	114,654	4.5
92–93	0.160596	21,882	3,514	20,125	90,915	4.2
93–94	0.177179	18,368	3,254	16,741	70,789	3.9
94–95	0.194815	15,114	2,944	13,642	54,048	3.6
95–96	0.213442	12,169	2,597	10,871	40,407	3.3
96–97	0.232970	9,572	2,230	8,457	29,536	3.1
97–98	0.253286	7,342	1,860	6,412	21,079	2.9
98–99	0.274254	5,482	1,504	4,731	14,667	2.7
99–100.	0.295715	3,979	1,177	3,390	9,937	2.5
100 and over	1.000000	2,802	2,802	6,546	6,546	2.3

SOURCE: CDC/NCHS, National Vital Statistics System.