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United States Life Tables, 2010

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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 2010.

Methods—Data used to prepare the 2010 life tables are 2010 final mortality statistics; April 1, 2010 population estimates based on the 2010 decennial census; and 2010 Medicare data for persons aged 66-99. The methodology used to estimate the 2010 life tables was first implemented with data year 2008. 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 2010, the overall expectation of life at birth was 78.7 years. Between 2009 and 2010, life expectancy at birth increased for all groups considered. Life expectancy increased for both males (from 76.0 to 76.2) and females (80.9 to 81.0) and for the white population (78.8 to 78.9), the black population (74.7 to 75.1), the Hispanic population (81.1 to 81.4), the non-Hispanic white population (78.7 to 78.8), and the non-Hispanic black population (74.4 to 74.7).

Keywords: life expectancy, survival, death rates, race, Hispanic origin

Introduction

There are two types of 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 2010 assumes a hypothetical cohort that is subject throughout its lifetime to the age-specific death rates prevailing for the actual population in 2010. The period life table may thus be characterized as rendering a “snapshot” of current mortality experience and shows 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 the [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. The life tables by Hispanic origin are based on death rates that were adjusted for Hispanic origin misclassification (See [Technical Notes](#) for a detailed description of the methodology used to estimate Hispanic origin life tables).

Data and Methods

The data used to prepare the U.S. life tables for 2010 are final numbers of deaths for the year 2010, April 1, 2010 population estimates based on the 2010 decennial census, and age-specific death and population counts for Medicare beneficiaries aged 66-99 for the year 2010 from the Centers for Medicare & Medicaid Services (CMS). 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 8. Life table for black males: United States, 2010Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/63_07/Table08.xlsx

Age	Probability of dying between ages x to x+1	Number surviving to age x	Number dying between ages x to x+1	Person-years lived between ages x to 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	0.012655	100,000	1,266	98,904	7,184,652	71.8
1-2	0.000679	98,734	67	98,701	7,085,748	71.8
2-3	0.000494	98,668	49	98,643	6,987,047	70.8
3-4	0.000314	98,619	31	98,603	6,888,404	69.8
4-5	0.000250	98,588	25	98,575	6,789,800	68.9
5-6	0.000226	98,563	22	98,552	6,691,225	67.9
6-7	0.000199	98,541	20	98,531	6,592,673	66.9
7-8	0.000174	98,521	17	98,513	6,494,142	65.9
8-9	0.000142	98,504	14	98,497	6,395,629	64.9
9-10	0.000104	98,490	10	98,485	6,297,132	63.9
10-11	0.000076	98,480	7	98,476	6,198,647	62.9
11-12	0.000082	98,472	8	98,468	6,100,171	61.9
12-13	0.000151	98,464	15	98,457	6,001,702	61.0
13-14	0.000294	98,449	29	98,435	5,903,246	60.0
14-15	0.000483	98,420	48	98,397	5,804,811	59.0
15-16	0.000674	98,373	66	98,340	5,706,414	58.0
16-17	0.000848	98,307	83	98,265	5,608,074	57.0
17-18	0.001021	98,223	100	98,173	5,509,809	56.1
18-19	0.001198	98,123	118	98,064	5,411,636	55.2
19-20	0.001384	98,005	136	97,938	5,313,572	54.2
20-21	0.001596	97,870	156	97,792	5,215,634	53.3
21-22	0.001810	97,714	177	97,625	5,117,843	52.4
22-23	0.001973	97,537	192	97,441	5,020,217	51.5
23-24	0.002050	97,344	200	97,245	4,922,777	50.6
24-25	0.002057	97,145	200	97,045	4,825,532	49.7
25-26	0.002038	96,945	198	96,846	4,728,487	48.8
26-27	0.002031	96,747	196	96,649	4,631,641	47.9
27-28	0.002035	96,551	196	96,453	4,534,992	47.0
28-29	0.002068	96,354	199	96,255	4,438,540	46.1
29-30	0.002123	96,155	204	96,053	4,342,285	45.2
30-31	0.002184	95,951	210	95,846	4,246,232	44.3
31-32	0.002237	95,742	214	95,634	4,150,385	43.3
32-33	0.002286	95,527	218	95,418	4,054,751	42.4
33-34	0.002330	95,309	222	95,198	3,959,333	41.5
34-35	0.002375	95,087	226	94,974	3,864,135	40.6
35-36	0.002436	94,861	231	94,745	3,769,161	39.7
36-37	0.002517	94,630	238	94,511	3,674,415	38.8
37-38	0.002612	94,392	247	94,268	3,579,905	37.9
38-39	0.002720	94,145	256	94,017	3,485,636	37.0
39-40	0.002850	93,889	268	93,755	3,391,619	36.1
40-41	0.003002	93,621	281	93,481	3,297,864	35.2
41-42	0.003191	93,340	298	93,192	3,204,383	34.3
42-43	0.003439	93,043	320	92,883	3,111,191	33.4
43-44	0.003752	92,723	348	92,549	3,018,309	32.6
44-45	0.004120	92,375	381	92,184	2,925,760	31.7
45-46	0.004504	91,994	414	91,787	2,833,576	30.8
46-47	0.004913	91,580	450	91,355	2,741,789	29.9
47-48	0.005395	91,130	492	90,884	2,650,434	29.1
48-49	0.005970	90,638	541	90,368	2,559,550	28.2
49-50	0.006628	90,097	597	89,799	2,469,182	27.4
50-51	0.007319	89,500	655	89,172	2,379,384	26.6
51-52	0.008035	88,845	714	88,488	2,290,211	25.8
52-53	0.008832	88,131	778	87,742	2,201,723	25.0
53-54	0.009743	87,353	851	86,927	2,113,982	24.2
54-55	0.010771	86,502	932	86,036	2,027,054	23.4
55-56	0.011936	85,570	1,021	85,059	1,941,019	22.7
56-57	0.013175	84,549	1,114	83,992	1,855,959	22.0
57-58	0.014384	83,435	1,200	82,835	1,771,968	21.2
58-59	0.015463	82,235	1,272	81,599	1,689,133	20.5
59-60	0.016430	80,963	1,330	80,298	1,607,535	19.9
60-61	0.017422	79,633	1,387	78,939	1,527,237	19.2
61-62	0.018523	78,245	1,449	77,521	1,448,298	18.5

Table 8. Life table for black males: United States, 2010—Con.Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/63_07/Table08.xlsx

Age	Probability of dying between ages x to x+1	Number surviving to age x	Number dying between ages x to x+1	Person-years lived between ages x to 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	0.019671	76,796	1,511	76,041	1,370,777	17.8
63-64	0.020903	75,285	1,574	74,498	1,294,737	17.2
64-65	0.022255	73,712	1,640	72,891	1,220,238	16.6
65-66	0.023760	72,071	1,712	71,215	1,147,347	15.9
66-67	0.025476	70,359	1,792	69,463	1,076,132	15.3
67-68	0.027324	68,566	1,873	67,630	1,006,669	14.7
68-69	0.029295	66,693	1,954	65,716	939,040	14.1
69-70	0.031403	64,739	2,033	63,723	873,324	13.5
70-71	0.033552	62,706	2,104	61,654	809,601	12.9
71-72	0.035779	60,602	2,168	59,518	747,947	12.3
72-73	0.038461	58,434	2,247	57,310	688,429	11.8
73-74	0.041567	56,187	2,336	55,019	631,119	11.2
74-75	0.044855	53,851	2,415	52,643	576,100	10.7
75-76	0.048612	51,436	2,500	50,185	523,457	10.2
76-77	0.052922	48,935	2,590	47,640	473,271	9.7
77-78	0.057086	46,345	2,646	45,023	425,631	9.2
78-79	0.061352	43,700	2,681	42,359	380,608	8.7
79-80	0.067074	41,019	2,751	39,643	338,249	8.2
80-81	0.073701	38,267	2,820	36,857	298,606	7.8
81-82	0.079605	35,447	2,822	34,036	261,749	7.4
82-83	0.087127	32,625	2,843	31,204	227,713	7.0
83-84	0.094508	29,783	2,815	28,375	196,509	6.6
84-85	0.102404	26,968	2,762	25,587	168,134	6.2
85-86	0.110831	24,206	2,683	22,865	142,547	5.9
86-87	0.119805	21,524	2,579	20,234	119,682	5.6
87-88	0.129336	18,945	2,450	17,720	99,447	5.2
88-89	0.139432	16,495	2,300	15,345	81,727	5.0
89-90	0.150096	14,195	2,131	13,129	66,383	4.7
90-91	0.161327	12,064	1,946	11,091	53,253	4.4
91-92	0.173115	10,118	1,752	9,242	42,162	4.2
92-93	0.185450	8,366	1,552	7,591	32,920	3.9
93-94	0.198310	6,815	1,351	6,139	25,329	3.7
94-95	0.211669	5,463	1,156	4,885	19,190	3.5
95-96	0.225495	4,307	971	3,821	14,305	3.3
96-97	0.239748	3,336	800	2,936	10,484	3.1
97-98	0.254383	2,536	645	2,213	7,548	3.0
98-99	0.269348	1,891	509	1,636	5,334	2.8
99-100	0.284585	1,382	393	1,185	3,698	2.7
100 and over	1.000000	988	988	2,513	2,513	2.5

Table 9. Life table for black females: United States, 2010Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/63_07/Table09.xlsx

Age	Probability of dying between ages x to x+1	Number surviving to age x	Number dying between ages x to x+1	Person-years lived between ages x to 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	0.010472	100,000	1,047	99,075	7,799,627	78.0
1-2	0.000596	98,953	59	98,923	7,700,551	77.8
2-3	0.000339	98,894	34	98,877	7,601,628	76.9
3-4	0.000222	98,860	22	98,849	7,502,751	75.9
4-5	0.000183	98,838	18	98,829	7,403,902	74.9
5-6	0.000165	98,820	16	98,812	7,305,072	73.9
6-7	0.000138	98,804	14	98,797	7,206,260	72.9
7-8	0.000121	98,790	12	98,784	7,107,463	71.9
8-9	0.000113	98,778	11	98,773	7,008,679	71.0
9-10	0.000114	98,767	11	98,762	6,909,906	70.0
10-11	0.000121	98,756	12	98,750	6,811,145	69.0
11-12	0.000136	98,744	13	98,737	6,712,395	68.0
12-13	0.000155	98,730	15	98,723	6,613,657	67.0
13-14	0.000178	98,715	18	98,706	6,514,935	66.0
14-15	0.000204	98,698	20	98,687	6,416,228	65.0
15-16	0.000230	98,677	23	98,666	6,317,541	64.0
16-17	0.000259	98,655	26	98,642	6,218,875	63.0
17-18	0.000295	98,629	29	98,615	6,120,233	62.1
18-19	0.000341	98,600	34	98,583	6,021,618	61.1
19-20	0.000397	98,566	39	98,547	5,923,035	60.1
20-21	0.000461	98,527	45	98,505	5,824,488	59.1
21-22	0.000527	98,482	52	98,456	5,725,984	58.1
22-23	0.000586	98,430	58	98,401	5,627,528	57.2
23-24	0.000632	98,372	62	98,341	5,529,126	56.2
24-25	0.000669	98,310	66	98,277	5,430,785	55.2
25-26	0.000707	98,244	69	98,210	5,332,508	54.3
26-27	0.000752	98,175	74	98,138	5,234,298	53.3
27-28	0.000796	98,101	78	98,062	5,136,160	52.4
28-29	0.000839	98,023	82	97,982	5,038,098	51.4
29-30	0.000884	97,941	87	97,898	4,940,116	50.4
30-31	0.000931	97,854	91	97,809	4,842,218	49.5
31-32	0.000987	97,763	96	97,715	4,744,410	48.5
32-33	0.001055	97,667	103	97,615	4,646,695	47.6
33-34	0.001141	97,564	111	97,508	4,549,080	46.6
34-35	0.001242	97,452	121	97,392	4,451,572	45.7
35-36	0.001359	97,331	132	97,265	4,354,180	44.7
36-37	0.001484	97,199	144	97,127	4,256,915	43.8
37-38	0.001607	97,055	156	96,977	4,159,788	42.9
38-39	0.001725	96,899	167	96,815	4,062,811	41.9
39-40	0.001847	96,732	179	96,642	3,965,996	41.0
40-41	0.001978	96,553	191	96,458	3,869,353	40.1
41-42	0.002135	96,362	206	96,259	3,772,896	39.2
42-43	0.002330	96,156	224	96,044	3,676,636	38.2
43-44	0.002570	95,932	247	95,809	3,580,592	37.3
44-45	0.002842	95,686	272	95,550	3,484,783	36.4
45-46	0.003113	95,414	297	95,265	3,389,233	35.5
46-47	0.003392	95,117	323	94,955	3,293,968	34.6
47-48	0.003715	94,794	352	94,618	3,199,012	33.7
48-49	0.004097	94,442	387	94,249	3,104,394	32.9
49-50	0.004528	94,055	426	93,842	3,010,146	32.0
50-51	0.004989	93,629	467	93,396	2,916,304	31.1
51-52	0.005451	93,162	508	92,908	2,822,908	30.3
52-53	0.005906	92,654	547	92,381	2,730,000	29.5
53-54	0.006347	92,107	585	91,815	2,637,620	28.6
54-55	0.006790	91,522	621	91,212	2,545,805	27.8
55-56	0.007269	90,901	661	90,571	2,454,593	27.0
56-57	0.007793	90,240	703	89,889	2,364,023	26.2
57-58	0.008335	89,537	746	89,164	2,274,134	25.4
58-59	0.008884	88,791	789	88,396	2,184,970	24.6
59-60	0.009446	88,002	831	87,586	2,096,574	23.8
60-61	0.010047	87,171	876	86,733	2,008,988	23.0
61-62	0.010710	86,295	924	85,833	1,922,255	22.3

Table 9. Life table for black females: United States, 2010—Con.Spreadsheet version available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/63_07/Table09.xlsx

Age	Probability of dying between ages x to x+1	Number surviving to age x	Number dying between ages x to x+1	Person-years lived between ages x to 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	0.011448	85,371	977	84,882	1,836,422	21.5
63-64	0.012289	84,393	1,037	83,875	1,751,540	20.8
64-65	0.013250	83,356	1,104	82,804	1,667,665	20.0
65-66	0.014358	82,252	1,181	81,661	1,584,861	19.3
66-67	0.015610	81,071	1,266	80,438	1,503,200	18.5
67-68	0.016948	79,805	1,353	79,129	1,422,762	17.8
68-69	0.018307	78,453	1,436	77,735	1,343,633	17.1
69-70	0.019685	77,017	1,516	76,259	1,265,898	16.4
70-71	0.021149	75,501	1,597	74,702	1,189,639	15.8
71-72	0.022737	73,904	1,680	73,064	1,114,937	15.1
72-73	0.024563	72,223	1,774	71,336	1,041,873	14.4
73-74	0.026710	70,449	1,882	69,509	970,537	13.8
74-75	0.028773	68,568	1,973	67,581	901,028	13.1
75-76	0.031179	66,595	2,076	65,557	833,447	12.5
76-77	0.033867	64,519	2,185	63,426	767,890	11.9
77-78	0.037005	62,333	2,307	61,180	704,464	11.3
78-79	0.040523	60,027	2,432	58,811	643,284	10.7
79-80	0.044423	57,594	2,559	56,315	584,474	10.1
80-81	0.049445	55,036	2,721	53,675	528,158	9.6
81-82	0.054073	52,315	2,829	50,900	474,483	9.1
82-83	0.058814	49,486	2,910	48,031	423,583	8.6
83-84	0.064888	46,575	3,022	45,064	375,552	8.1
84-85	0.072357	43,553	3,151	41,978	330,488	7.6
85-86	0.080202	40,402	3,240	38,782	288,510	7.1
86-87	0.087942	37,162	3,268	35,528	249,729	6.7
87-88	0.096306	33,893	3,264	32,261	214,201	6.3
88-89	0.105320	30,629	3,226	29,016	181,940	5.9
89-90	0.115009	27,403	3,152	25,828	152,923	5.6
90-91	0.125389	24,252	3,041	22,731	127,096	5.2
91-92	0.136475	21,211	2,895	19,764	104,364	4.9
92-93	0.148272	18,316	2,716	16,958	84,601	4.6
93-94	0.160779	15,600	2,508	14,346	67,643	4.3
94-95	0.173988	13,092	2,278	11,953	53,296	4.1
95-96	0.187879	10,814	2,032	9,798	41,343	3.8
96-97	0.202423	8,783	1,778	7,894	31,545	3.6
97-98	0.217581	7,005	1,524	6,243	23,651	3.4
98-99	0.233304	5,481	1,279	4,841	17,408	3.2
99-100	0.249532	4,202	1,049	3,678	12,567	3.0
100 and over	1.000000	3,153	3,153	8,889	8,889	2.8