

12 MORTALITY AND LIFE EXPECTANCY

U.S. mortality rates and life expectancies have improved dramatically over the long term. The aggregate, age-adjusted death rate (per 1,000 population) has fallen from 17.9 in 1940 to 8.5 in 2002 (Table 12.1). The death rate among males dropped from 19.8 to 10.1 over this period, and among females, from 16 to 7.2.

Life expectancy at age 25 is currently 51.0 years for males and 55.8 years for females (Table 12.2). A man who retired in 2002 at age 65 could expect to live 16.6 years more on average, while a 65-year-old woman could expect to live another 19.5 years.

Examining trend data for life expectancy over the past century yields startling contrasts. A 25-year-old during 1900–02 could expect to live 39.1 years more vs. 53.5 additional years for a 25-year-old in 2002.

Because of increased longevity, the last four years shown in Table 12.2 have been extended to include life expectancy for men and women at age 100. This is consistent with the 2001 Commissioners Standard Ordinary (CSO) Mortality Table. The 2001 CSO mortality table was introduced by the Society of Actuaries and adopted by the National Association of Insurance Commissioners for life insurers to use in underwriting insurance (Table 12.3). It is the prevailing mortality table and has been adopted by most states.

Table 12.1 **Death Rates in the United States**

Year	Age-adjusted rate per 1,000 population ¹		
	Male	Female	Total
1940	19.8	16.0	17.9
1950	16.7	12.4	14.5
1960	16.1	11.1	13.4
1970	15.4	9.7	12.2
1975	14.2	8.6	10.9
1980	13.5	8.2	10.4
1985	12.8	7.8	9.9
1986	12.6	7.8	9.8
1987	12.5	7.7	9.7
1988	12.5	7.8	9.8
1989	12.2	7.6	9.5
1990	12.0	7.5	9.4
1991	11.8	7.4	9.3
1992	11.6	7.3	9.1
1993	11.8	7.5	9.3
1994	11.6	7.5	9.2
1995	11.5	7.5	9.2
1996	11.2	7.4	9.0
1997	10.9	7.4	8.9
1998	10.6	7.3	8.8
1999	10.6	7.4	8.8
2000	10.5	7.3	8.7
2001	10.3	7.2	8.6
2002	10.1	7.2	8.5

Source: U.S. Department of Health and Human Services' National Center for Health Statistics

¹Based on population estimates from the 2000 census, which were modified for consistency with Office of Management and Budget racial categories as of 1977. All death rates have been revised, and may differ from previously published rates that were based on 1990 population estimates, which were based on 1990 population estimates.

Table 12.2 Life Expectancy by Age and Gender, 1900-2002

1900-02	Age	Male	Female	Total
	Newborn	47.9	50.7	49.4
	1	54.4	56.1	55.2
	5	54.2	55.8	55.0
	15	46.1	47.6	46.8
	25	38.4	39.9	39.1
	35	31.2	32.7	31.9
	45	24.1	25.4	24.8
	55	17.4	18.4	17.9
	65	11.5	12.2	11.9
	75	6.8	7.3	7.1
	85	3.8	4.1	4.0
1909-11	Age	Male	Female	Total
	Newborn	49.9	53.2	51.5
	1	56.0	58.4	57.1
	5	55.1	57.4	56.2
	15	49.1	48.9	47.7
	25	38.4	40.7	39.6
	35	31.2	33.0	31.9
	45	24.2	25.4	24.5
	55	17.4	18.4	17.6
	65	11.5	12.0	11.6
	75	6.8	7.2	7.0
	85	3.8	4.1	4.0
1919-21	Age	Male	Female	Total
	Newborn	55.0	57.4	56.4
	1	59.5	60.5	59.9
	5	57.6	58.4	58.0
	15	49.1	49.7	49.4
	25	41.1	41.9	41.5
	35	33.4	34.4	33.9
	45	25.8	26.7	26.3
	55	18.5	19.3	18.9
	65	12.2	12.7	12.5
	75	7.3	7.7	7.5
	85	4.1	4.3	4.2

Continued

Table 12.2 **Continued**

1929-31	Age	Male	Female	Total
	Newborn	57.5	60.9	59.2
	1	60.8	65.4	61.9
	5	58.1	60.7	59.3
	15	49.2	51.5	50.3
	25	40.8	43.1	41.9
	35	32.7	34.9	33.7
	45	24.9	26.9	25.8
	55	17.8	19.4	18.5
	65	11.7	12.8	12.2
	75	7.0	7.6	7.3
	85	4.0	4.3	4.2
1939-41	Age	Male	Female	Total
	Newborn	61.6	65.9	63.6
	1	64.0	67.7	65.8
	5	60.8	64.4	62.5
	15	51.4	55.0	53.1
	25	42.5	45.9	44.1
	35	33.8	37.0	35.3
	45	25.5	28.5	26.9
	55	18.2	20.5	19.3
	65	12.1	13.6	12.8
	75	7.2	8.0	7.6
	85	4.1	4.5	4.3
1949-51	Age	Male	Female	Total
	Newborn	65.5	71.0	68.1
	1	66.7	71.8	69.2
	5	63.1	68.2	65.5
	15	53.6	53.7	55.9
	25	44.4	49.0	46.6
	35	35.2	39.6	37.3
	45	26.6	30.6	28.5
	55	19.0	22.3	20.6
	65	12.7	15.0	13.8
	75	7.8	8.9	8.4
	85	4.4	4.9	4.7

Continued

Table 12.2 **Continued**

1959-61	Age	Male	Female	Total
	Newborn	66.8	73.2	70.8
	1	67.8	73.9	71.2
	5	64.1	70.2	67.0
	15	54.4	55.6	57.3
	25	45.2	50.8	47.9
	35	35.9	41.3	38.5
	45	27.1	32.1	29.5
	55	19.3	23.5	21.4
	65	13.0	15.8	14.4
	75	8.0	9.3	8.7
	85	4.4	4.7	4.6
1969-71	Age	Male	Female	Total
	Newborn	67.0	74.6	70.8
	1	67.6	75.0	71.2
	5	63.8	71.2	67.4
	15	54.1	61.4	57.7
	25	45.1	51.8	48.4
	35	36.0	42.3	39.1
	45	27.2	33.1	30.1
	55	19.4	24.6	22.0
	65	13.0	16.8	15.0
	75	8.1	10.3	9.3
	85	4.7	5.6	5.3
1979-81	Age	Male	Female	Total
	Newborn	70.1	77.6	73.9
	1	70.1	77.5	73.8
	5	66.3	73.7	70.0
	15	56.5	63.8	60.2
	25	47.4	54.2	50.8
	35	38.2	44.5	41.4
	45	29.2	35.2	32.3
	55	21.1	26.4	23.9
	65	14.2	18.4	16.5
	75	8.9	11.6	10.5
	85	5.1	6.4	6.0

Continued

Table 12.2 **Continued**

1989-91	Age	Male	Female	Total
	Newborn	71.8	78.8	75.4
	1	71.6	78.5	75.1
	5	67.7	74.6	71.2
	15	57.9	64.7	61.4
	25	48.7	55.0	51.9
	35	39.6	45.4	42.6
	45	30.7	36.0	33.4
	55	22.3	27.1	24.8
	65	15.1	19.0	17.3
	75	9.4	12.1	11.0
	85	5.3	6.7	6.2
1998	Age	Male	Female	Total
	Newborn	73.8	79.5	76.7
	1	73.4	79.0	76.3
	5	69.5	75.1	72.4
	15	59.7	65.2	62.5
	25	50.3	55.5	53.0
	35	41.0	45.8	43.5
	45	31.9	36.4	34.3
	55	23.5	27.4	25.5
	65	16.0	19.2	17.8
	75	10.0	12.2	11.3
	85	5.5	6.7	6.3
	100	2.3	2.7	2.6
1999	Age	Male	Female	Total
	Newborn	73.9	79.4	76.7
	1	73.5	78.9	76.3
	5	69.6	75.0	72.4
	15	59.7	65.1	62.5
	25	50.4	55.4	53.0
	35	41.0	45.7	43.5
	45	32.0	36.3	34.2
	55	23.5	27.3	25.5
	65	16.0	19.1	17.7
	75	9.9	12.1	11.2
	85	5.5	6.6	6.2
	100	2.4	2.6	2.6

Continued

Table 12.2 Continued

2000	Age	Male	Female	Total
	Newborn	74.3	79.7	77.0
	1	73.8	79.2	76.6
	5	69.9	75.3	72.7
	15	60.1	65.4	62.8
	25	50.7	55.6	53.2
	35	41.3	46.0	43.7
	45	32.3	36.5	34.5
	55	23.8	27.5	25.8
	65	16.2	19.3	18.0
	75	10.1	12.3	11.4
	85	5.6	6.8	6.4
	100	2.4	2.8	2.7
2001	Age	Male	Female	Total
	Newborn	74.4	79.8	77.2
	1	74.0	79.3	76.7
	5	70.1	75.4	72.8
	15	60.2	65.5	62.9
	25	50.9	55.7	53.4
	35	41.5	46.0	43.9
	45	32.5	36.6	34.7
	55	24.0	27.7	26.0
	65	16.4	19.4	18.1
	75	10.2	12.3	11.5
	85	5.7	6.9	6.5
	100	2.5	2.8	2.7
2002	Age	Male	Female	Total
	Newborn	74.5	79.9	77.3
	1	74.1	79.4	76.8
	5	70.2	75.4	72.9
	15	60.3	65.5	63.0
	25	51.0	55.8	53.5
	35	41.6	46.1	44.0
	45	32.6	36.7	34.8
	55	24.1	27.7	26.1
	65	16.6	19.5	18.2
	75	10.3	12.4	11.5
	85	5.7	6.9	6.5
	100	2.5	2.8	2.7

Source: U.S. Department of Health and Human Services' National Center for Health Statistics

Notes: Alaska and Hawaii are included as of 1959. For decennial periods prior to 1929-31, data represent death registration states only; 1900-02 and 1909-11, 10 states and the District of Columbia; 1919-21, 34 states and the District of Columbia. Beginning with 1970, data exclude deaths of nonresidents of the United States.

Table 12.3 Mortality Tables

Age	2001 CSO Table				Individual Annuity 2000 Table ¹			
	Male		Female		Male		Female	
	Deaths per 1,000	Life expectancy (years)	Deaths per 1,000	Life expectancy (years)	Deaths per 1,000	Life expectancy (years)	Deaths per 1,000	Life expectancy (years)
Newborn	1.0	76.6	0.5	80.8	—	—	—	—
1	0.6	75.7	0.4	79.9	—	—	—	—
2	0.4	74.7	0.3	78.9	—	—	—	—
3	0.3	73.8	0.2	77.9	—	—	—	—
4	0.2	72.8	0.2	76.9	—	—	—	—
5	0.2	71.8	0.2	76.0	0.3	76.6	0.2	80.7
6	0.2	70.8	0.2	75.0	0.3	75.6	0.1	79.7
7	0.2	69.8	0.2	74.0	0.3	74.7	0.1	78.7
8	0.2	68.8	0.2	73.0	0.3	73.7	0.1	77.7
9	0.2	67.9	0.2	72.0	0.3	72.7	0.1	76.7
10	0.2	66.9	0.2	71.0	0.4	71.7	0.1	75.7
11	0.3	65.9	0.2	70.0	0.4	70.8	0.1	74.7
12	0.3	64.9	0.3	69.1	0.4	69.8	0.1	73.7
13	0.4	63.9	0.3	68.1	0.4	68.8	0.2	72.8
14	0.5	63.0	0.3	67.1	0.4	67.8	0.2	71.8
15	0.6	62.0	0.4	66.1	0.4	66.9	0.2	70.8
16	0.7	61.0	0.4	65.1	0.4	65.9	0.2	69.8
17	0.9	60.1	0.4	64.2	0.4	64.9	0.2	68.8
18	0.9	59.1	0.4	63.2	0.5	63.9	0.2	67.8
19	1.0	58.2	0.5	62.2	0.5	63.0	0.2	66.8
20	1.0	57.2	0.5	61.3	0.5	62.0	0.3	65.9
21	1.0	56.3	0.5	60.3	0.5	61.0	0.3	64.9
22	1.0	55.3	0.5	59.3	0.5	60.1	0.3	63.9
23	1.0	54.4	0.5	58.3	0.6	59.1	0.3	62.9
24	1.1	53.5	0.5	57.4	0.6	58.1	0.3	61.9
25	1.1	52.5	0.5	56.4	0.6	57.2	0.3	60.9
26	1.1	51.6	0.6	55.4	0.6	56.2	0.3	60.0
27	1.2	50.6	0.6	54.5	0.7	55.2	0.4	59.0
28	1.2	49.7	0.6	53.5	0.7	54.3	0.4	58.0
29	1.2	48.7	0.7	52.5	0.7	53.3	0.4	57.0
30	1.1	47.8	0.7	51.6	0.7	52.3	0.4	56.0
31	1.1	46.8	0.7	50.6	0.7	51.4	0.4	55.1
32	1.1	45.9	0.8	49.6	0.7	50.4	0.4	54.1
33	1.2	45.0	0.8	48.7	0.7	49.5	0.4	53.1
34	1.2	44.0	0.9	47.7	0.7	48.5	0.4	52.1
35	1.2	43.1	1.0	46.8	0.7	47.5	0.5	51.2
36	1.3	42.1	1.0	45.8	0.7	46.6	0.5	50.2
37	1.3	41.2	1.1	44.8	0.7	45.6	0.5	49.2
38	1.4	40.2	1.2	43.9	0.8	44.6	0.5	48.2
39	1.5	39.3	1.2	42.9	0.9	43.7	0.6	47.3

Continued

Table 12.3 Continued

Age	2001 CSO Table				Individual Annuity 2000 Table ¹			
	Male		Female		Male		Female	
	Deaths per 1,000	Life expectancy (years)	Deaths per 1,000	Life expectancy (years)	Deaths per 1,000	Life expectancy (years)	Deaths per 1,000	Life expectancy (years)
40	1.7	38.3	1.3	42.0	1.0	42.7	0.6	46.3
41	1.8	37.4	1.4	41.1	1.1	41.7	0.7	45.3
42	2.0	36.5	1.5	40.1	1.2	40.8	0.7	44.3
43	2.2	35.5	1.6	39.2	1.4	39.8	0.8	43.4
44	2.4	34.6	1.7	38.2	1.5	38.9	0.9	42.4
45	2.7	33.7	1.9	37.3	1.8	37.9	0.9	41.4
46	2.9	32.8	2.1	36.4	2.0	37.0	1.0	40.5
47	3.2	31.9	2.3	35.4	2.2	36.1	1.1	39.5
48	3.3	31.0	2.5	34.5	2.5	35.2	1.3	38.6
49	3.5	30.1	2.8	33.6	2.7	34.2	1.4	37.6
50	3.8	29.2	3.1	32.7	3.0	33.3	1.5	36.7
51	4.1	28.3	3.4	31.8	3.3	32.4	1.7	35.7
52	4.5	27.4	3.8	30.9	3.6	31.5	1.9	34.8
53	4.9	26.5	4.2	30.0	3.9	30.7	2.0	33.8
54	5.5	25.6	4.6	29.1	4.2	29.8	2.2	32.9
55	6.2	24.8	5.1	28.3	4.5	28.9	2.5	32.0
56	6.9	23.9	5.6	27.4	4.9	28.0	2.7	31.1
57	7.6	23.1	6.2	26.6	5.2	27.2	2.9	30.1
58	8.3	22.3	6.8	25.7	5.6	26.3	3.2	29.2
59	9.0	21.5	7.4	24.9	6.0	25.4	3.5	28.3
60	9.9	20.6	8.0	24.1	6.4	24.6	3.9	27.4
61	10.9	19.8	8.7	23.3	6.9	23.7	4.2	26.5
62	12.3	19.1	9.4	22.5	7.5	22.9	4.7	25.6
63	13.7	18.3	10.1	21.7	8.2	22.1	5.1	24.8
64	15.2	17.5	11.0	20.9	9.0	21.3	5.7	23.9
65	16.9	16.8	11.9	20.1	9.9	20.4	6.3	23.0
66	18.5	16.1	12.8	19.4	11.0	19.6	6.9	22.2
67	20.1	15.4	13.9	18.6	12.3	18.9	7.6	21.3
68	21.9	14.7	15.1	17.9	13.7	18.1	8.3	20.5
69	23.6	14.0	16.4	17.1	15.2	17.3	9.1	19.6
70	25.8	13.3	17.8	16.4	17.0	16.6	10.0	18.8
71	28.2	12.7	19.5	15.7	18.9	15.9	11.1	18.0
72	31.3	12.0	21.3	15.0	21.0	15.2	12.4	17.2
73	34.6	11.4	23.3	14.3	23.2	14.5	13.9	16.4
74	38.1	10.8	25.5	13.6	25.6	13.8	15.6	15.6
75	41.9	10.2	27.9	13.0	28.3	13.2	17.6	14.9
76	46.1	9.6	30.5	12.3	31.2	12.5	19.8	14.1
77	50.9	9.0	33.4	11.7	34.4	11.9	22.3	13.4
78	56.6	8.5	36.6	11.1	37.9	11.3	25.2	12.7
79	63.1	8.0	40.1	10.5	41.8	10.8	28.3	12.0

Continued

Table 12.3 Continued

Age	2001 CSO Table				Individual Annuity 2000 Table ¹			
	Male		Female		Male		Female	
	Deaths per 1,000	Life expectancy (years)	Deaths per 1,000	Life expectancy (years)	Deaths per 1,000	Life expectancy (years)	Deaths per 1,000	Life expectancy (years)
80	70.1	7.5	43.9	9.9	46.0	10.2	31.9	11.3
81	78.2	7.0	49.1	9.3	50.6	9.7	36.0	10.7
82	86.5	6.6	55.0	8.8	55.7	9.2	40.6	10.1
83	95.5	6.1	60.8	8.3	61.1	8.7	45.7	9.5
84	105.4	5.7	67.3	7.8	66.9	8.2	51.5	8.9
85	116.6	5.4	74.5	7.3	73.3	7.8	57.9	8.4
86	128.9	5.0	81.0	6.9	80.1	7.3	65.1	7.9
87	142.4	4.7	90.8	6.4	87.4	6.9	73.1	7.4
88	156.7	4.4	101.1	6.0	95.2	6.5	82.0	6.9
89	171.9	4.1	112.0	5.6	103.5	6.2	91.6	6.5
90	187.7	3.8	121.9	5.3	112.2	5.8	101.8	6.1
91	202.4	3.6	126.9	5.0	121.4	5.5	112.4	5.7
92	217.8	3.4	136.9	4.6	131.0	5.2	123.3	5.4
93	234.0	3.1	151.6	4.3	141.0	4.9	134.5	5.1
94	251.1	3.0	170.3	3.9	151.4	4.6	145.7	4.8
95	269.2	2.8	193.7	3.6	162.2	4.3	156.8	4.5
96	285.6	2.6	215.7	3.4	173.3	4.1	167.8	4.2
97	303.2	2.5	238.5	3.2	184.7	3.8	178.6	4.0
98	321.9	2.3	242.2	3.0	196.9	3.6	189.6	3.8
99	341.9	2.2	255.2	2.8	210.5	3.4	201.6	3.5
100	363.2	2.1	275.7	2.6	225.8	3.1	215.0	3.3
101	380.1	2.0	297.8	2.4	243.4	2.9	230.6	3.0
102	398.1	1.9	322.2	2.2	263.7	2.7	248.8	2.8
103	417.2	1.8	349.1	2.1	287.3	2.4	270.3	2.6
104	437.6	1.7	378.6	1.9	314.6	2.2	295.7	2.3
105	459.2	1.6	410.6	1.7	346.2	2.0	325.6	2.1
106	482.2	1.5	443.3	1.6	382.4	1.8	360.5	1.9
107	506.7	1.4	476.9	1.5	423.8	1.6	401.1	1.7
108	532.7	1.3	510.7	1.4	470.9	1.4	447.9	1.5
109	560.3	1.2	545.8	1.3	524.1	1.3	501.5	1.3
110	589.6	1.1	581.8	1.2	584.0	1.1	562.6	1.2
111	620.8	1.1	616.3	1.1	651.0	1.0	631.6	1.0
112	653.8	1.0	649.9	1.0	725.6	0.8	709.3	0.9
113	688.9	0.9	680.4	0.9	808.3	0.7	796.2	0.7
114	726.2	0.9	723.4	0.9	899.6	0.6	892.9	0.6
115	765.7	0.8	763.4	0.8	1000.0	0.5	1000.0	0.5
116	807.6	0.7	804.9	0.7				
117	852.1	0.7	850.4	0.7				
118	899.2	0.6	892.4	0.6				
119	949.2	0.6	935.1	0.6				
120	1000.0	0.5	1000.0	0.5				

Source: National Association of Insurance Commissioners

¹Projected to 2000. Mortality rates are conservative in relation to the actual and projected experience on which they are based.