

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1991-92 REPORTS**

III. 1982-1988 INDIVIDUAL ORDINARY MORTALITY TABLE*

This mortality table was constructed by the Committee on Expected Experience of the Canadian Institute of Actuaries. The Canadian Institute of Actuaries has given the Society of Actuaries permission to reproduce this table as part of the Society's expansion of its experience studies. Discussions of this table as well as of any experience study are encouraged. The Canadian Institute and the Society intend to cooperate in producing experience studies to benefit actuaries in both Canada and the United States.

INTRODUCTION

The purpose of this report is to provide the details of the construction of a new mortality table based on experience over the period 1982 to 1988. This new table was produced by Harry H. Panjer and Giuseppe Russo at the University of Waterloo under the direction and guidance of the Committee on Expected Experience of the Canadian Institute of Actuaries. Separate tables are produced for males and females and for smokers and nonsmokers. The table uses a 15-year select period similar to the previous CIA table based on 1969-1975 experience.

Preliminary development was published in the paper "Parametric Graduation of Canadian Individual Insurance Mortality Experience—1982-1988" by Harry H. Panjer and Giuseppe Russo, which was distributed to members in November 1991 and will be published in the *Proceedings* of the Canadian Institute of Actuaries.

Modifications to the smoker/nonsmoker rate were made to reflect certain intercompany differences. A set of proposed mortality tables was included in a memorandum dated April 27, 1992, which was sent to members from the Committee on Expected Experience. The proposed tables were discussed at meetings of the CIA in March and June 1992.

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THE DATA

The data were collected by the Committee on Expected Experience and reported annually in the Canadian Standard Ordinary Life Experience Reports published each year by the CIA. They are based on age last birthday.

The data cover policy years 1982 to 1988 and include almost 200,000 death claims. The data were available by numbers and by amount and were classified by sex, smoking status, and type of policy. Companies contributing to the 1987-1988 report and their respective exposures are given in Table 1. Tables 2 and 3 provide death claim and exposure information. Table 4 gives smoker-nonsmoker exposures by duration and shows that there is little data beyond the sixth duration. Only 18 percent of death claims indicated smoking status.

CONSTRUCTION AND FIT OF THE MODEL

The ultimate column was graduated first for males and females separately but with all other factors combined. Initial graduation was done using Whittaker-Henderson smoothing techniques. Final graduation at all but the youngest ages was done by fitting Makeham's Second Law using the method of weighted least squares. A cubic curve was fitted at the higher ages to fix a terminal age at 105. The fit of the graduation by quinquennial age groups is given in Table 5. A comparison of the graduated rates (age last birthday) to the CIA 1969-75 Table (age nearest birthday) is given in Table 6.

The ratio of first year to ultimate mortality was graduated using a linear-logistic curve declining from 1 at age 16 to about 26 percent for males and 21 percent for females at age 70. This curve measures the selection effect of the underwriting process in aggregate.

The rate of decay of the selection effect was modeled using a simple power function (approximately a square root function). It was found that the rate of decay of the percentage selection effect did not vary significantly by age or sex, although the amount of selection is greater at higher ages. Table 7 gives actual-to-expected ratios by duration for quinquennial age groups using triennial duration bands.

The aggregate tables in this report are those produced in the Panjer and Russo paper.

Tables 8 and 9 give ratios of smoker and nonsmoker deaths to expected deaths based on the aggregate table. In order to produce smoker and nonsmoker tables for all durations (almost no data were available beyond duration seven), Panjer and Russo developed simple beta-type models for the

ratio of smoker to aggregate mortality. It was assumed that the ratio depends on attained age and not on duration. The model also assumed that smoker-to-aggregate and nonsmoker-to-aggregate ratios are 100 percent at the youngest and the highest ages. Due to limited female data, it was further assumed that the same model could be used for both sexes. Until more data are available, the assumptions are not easily testable. Details of the graduation process can be found in the Panjer and Russo paper.

Although the Panjer and Russo model fit the data well, changes to the smoker and nonsmoker tables were recommended by the Committee on Expected Experience. While some companies provided data that were split by smoking status, a significant proportion of the data was not split. The results in the Panjer and Russo paper were based on those companies that contributed data that were split in relation to all companies in aggregate. The companies that provided split data had overall mortality experience that was 87 percent of the aggregate for all companies. In order to produce a table more representative of overall industry experience, the parametric models used for the smoker-to-aggregate and nonsmoker-to-aggregate ratios were modified, so that actual-to-expected ratios are 87 percent based on the revised smoker and nonsmoker tables but retain the general shape as in the Panjer and Russo paper. This was done by modifying the parameters of the model. The revised parameters for the model described in Section 4 of the Panjer and Russo paper are $a = b = 3.5$ for smokers and $a = b = 3.0$ for nonsmokers. The parameter k is chosen so that the actual-to-expected ratio is 87 percent, resulting in $k = 6.22168E - 13$ for smokers and $k = 1.04510E - 11$ for nonsmokers. This results in the smoker-to-nonsmoker mortality ratios given in Table 10.

TABLE 1
CONTRIBUTING COMPANIES

Contributor	Exposures
Canada Life	4.40%
Confederation Life	3.40
Crown Life	3.22
Equitable Life	0.67
Great-West Life	5.48
Imperial Life	1.81
Industrial-Alliance	12.27
London Life	17.29
Manufacturers Life	3.84
Metropolitan Life	4.77
Mutual Life	15.32
North American Life	4.70
North-West Life	0.69
Prudential Assurance	1.73
Sun Life	12.73
Transamerica	7.68
Total Exposures	100.00%

TABLE 2
DEATH CLAIMS AND EXPOSURES BY CALENDAR YEAR
(AMOUNTS IN \$1,000 UNITS)

Policy Year	By Number		By Amounts	
	Death Claims	Exposures	Death Claims	Exposures
1982-1983	30,497	6,186,874	\$209,276	\$108,294,868
1983-1984	31,374	6,298,707	214,373	118,601,589
1984-1985	31,459	6,517,652	260,212	133,534,383
1985-1986	36,296	6,942,570	285,830	158,094,377
1986-1987	35,901	6,929,713	285,047	164,875,777
1987-1988	33,144	6,163,896	283,049	170,782,585

TABLE 3
DEATH CLAIMS AND EXPOSURES BY AMOUNTS
(AMOUNTS IN \$1,000 UNITS)

Split	Select		Ultimate	
	Death Claims	Exposures	Death Claims	Exposures
Males				
Permanent	363,189	\$281,759,746	539,451	\$54,654,088
Term	272,097	201,538,424	14,082	3,001,934
Others	68,540	65,318,812	39,133	5,323,838
Nonsmokers	137,864	150,653,771	—	—
Smokers	86,925	61,721,932	—	—
Indeterminates	479,037	336,241,303	592,666	62,979,859
Total	703,826	\$548,617,006	592,666	\$62,979,859
Females				
Permanent	70,830	\$172,664,800	34,163	\$8,195,429
Term	29,284	47,649,981	263	229,089
Others	9,855	23,320,589	2,117	740,990
Nonsmokers	22,940	56,065,907	—	—
Smokers	14,706	25,071,254	—	—
Indeterminates	72,324	117,498,215	36,543	9,165,508
Total	109,970	\$198,635,376	36,543	\$9,165,508

TABLE 4
EXPOSURES BY AMOUNTS FOR SMOKERS AND NONSMOKERS
(AMOUNTS IN \$1,000,000 UNITS)

Issue Age	Policy Year					Total
	1-3	4-6	7-9	10-12	13-15	
Female Nonsmokers						
0-9	\$ 1,217.5	\$ 442.8	\$ 25.3	\$ 2.8	\$ 1.9	\$ 1,690.3
10-19	1,778.5	484.0	32.0	2.3	1.2	2,297.8
20-29	16,619.4	4,149.1	223.9	12.5	5.7	21,010.6
30-39	16,657.0	4,679.2	262.1	13.1	3.1	21,614.6
40-49	5,468.2	1,531.1	86.7	5.8	1.5	7,093.2
50-59	1,476.6	411.2	20.4	1.4	0.4	1,910.0
60-69	334.4	80.1	3.1	0.2	0.1	417.9
70+	27.9	3.5	0.0	0.0	0.0	31.4
Total	\$43,579.5	\$11,781.0	\$653.5	\$38.0	\$13.9	\$56,065.9
Female Smokers						
0-9	\$ 1,206.2	\$ 560.8	\$ 80.5	\$12.5	\$ 8.0	\$ 1,867.9
10-19	1,173.2	508.1	71.3	8.4	3.9	1,764.8
20-29	8,105.2	2,246.3	274.3	29.8	14.7	10,670.4
30-39	5,939.5	1,681.5	219.3	19.7	8.5	7,868.4
40-49	1,664.9	522.0	67.2	7.2	4.9	2,266.1
50-59	392.4	122.8	12.7	1.7	1.8	531.5
60-69	75.6	19.3	1.2	0.3	0.5	96.9
70+	4.5	0.7	0.1	0.0	0.0	5.3
Total	\$18,561.5	\$5,661.4	\$726.5	\$79.6	\$42.3	\$25,071.2
Male Nonsmokers						
0-9	\$ 1,318.2	\$ 495.9	\$ 31.8	\$ 4.9	\$ 4.1	\$ 1,854.9
10-19	2,443.0	755.8	70.7	9.2	5.3	3,284.1
20-29	28,052.0	8,129.6	594.9	84.0	47.6	36,908.5
30-39	44,080.3	14,876.9	1,248.7	136.0	40.3	60,382.2
40-49	24,418.4	8,466.5	660.0	63.0	19.2	33,627.1
50-59	9,348.5	3,173.2	234.4	11.3	2.5	12,770.0
60-69	1,328.4	385.4	17.1	0.7	0.2	1,731.9
70+	75.5	19.0	0.4	0.0	0.0	94.9
Total	\$111,064.7	\$36,302.4	\$2,858.1	\$309.3	\$119.2	\$150,653.7
Male Smokers						
0-9	\$ 1,381.0	\$ 638.6	\$ 99.5	\$ 20.7	\$ 16.1	\$ 2,155.8
10-19	1,295.2	674.0	125.1	29.6	18.9	2,142.8
20-29	12,746.2	4,386.2	787.0	196.8	102.2	18,218.4
30-39	17,871.2	5,847.9	990.6	168.1	80.6	24,958.3
40-49	7,602.9	2,703.3	515.5	75.8	44.8	10,942.2
50-59	2,062.7	714.3	119.8	14.7	7.6	2,919.1
60-69	267.0	86.8	12.8	1.6	1.4	369.7
70+	11.7	3.8	0.0	0.0	0.0	15.6
Total	\$43,237.8	\$15,054.8	\$2,650.3	\$507.4	\$271.6	\$61,721.9

TABLE 5
FIT OF ULTIMATE DATA

Range of Attained Age	Actual Death Claims by Amounts (\$1,000 Units)	Males Ratio of Actual to Tabular	Actual Death Claims by Numbers	Females Ratio of Actual to Tabular
15-19	\$ 1,552	0.98	93	1.05
20-24	2,572	1.04	104	1.11
25-29	2,049	1.11	85	0.93
30-34	2,746	1.24	142	1.28
35-39	6,341	1.02	246	0.92
40-44	14,302	1.03	377	0.89
45-49	23,589	0.97	624	1.06
50-54	44,317	1.00	1,070	1.07
55-59	70,574	0.99	1,698	1.02
60-64	99,463	1.07	2,426	0.96
65-69	85,362	1.00	2,721	0.97
70-74	82,828	0.99	3,250	1.00
75-79	70,017	1.00	3,173	0.99
80-84	48,279	1.00	2,698	1.02
85-89	25,655	1.07	1,237	1.01
90-94	10,358	1.01	607	1.09
95-99	2,663	0.93	159	0.82
15-99	\$592,666	1.01	20,708	1.00

TABLE 6
COMPARISON OF CIA 1969-75 AND CIA 1982-88
AGGREGATE MORTALITY IN THE ULTIMATE DURATION

Age	Males		Females		Females/Males	
	CIA 1969-75	CIA 1982-88	CIA 1969-75	CIA 1982-88	CIA 1969-75	CIA 1982-88
0	2.27	0.86	1.62	0.82	0.71	0.95
5	0.46	0.20	0.27	0.14	0.59	0.70
10	0.32	0.17	0.21	0.12	0.66	0.71
15	0.71	0.51	0.36	0.24	0.51	0.47
20	1.49	1.16	0.57	0.31	0.38	0.27
25	1.37	0.94	0.50	0.36	0.36	0.38
30	1.22	0.93	0.67	0.50	0.55	0.54
35	1.37	1.01	0.86	0.74	0.63	0.73
40	1.96	1.37	1.41	1.13	0.72	0.82
45	3.16	2.25	2.24	1.77	0.71	0.79
50	5.32	3.90	3.48	2.82	0.65	0.72
55	9.15	6.75	4.79	4.52	0.52	0.67
60	14.32	11.43	8.52	7.28	0.59	0.64
65	24.05	18.87	12.90	11.75	0.54	0.62
70	36.97	30.46	19.33	18.96	0.52	0.62
75	56.09	48.26	32.85	30.53	0.59	0.63
80	83.61	75.17	57.75	49.02	0.69	0.65
85	129.92	115.17	99.12	78.25	0.76	0.68
90	187.41	173.29	154.23	123.74	0.82	0.71
95	256.86	255.10	218.82	192.79	0.85	0.76

Note: CIA 1969-75 is age nearest and CIA 1982-88 is age last birthday.

TABLE 7
RATIOS OF ACTUAL TO EXPECTED
BASED ON THE SELECT PORTION OF THE CIA 1982-88 AGGREGATE TABLE

Issue Age	Policy Year					Overall 1-15
	1-3	4-6	7-9	10-12	13-15	
Males						
0-4	0.94	1.31	1.00	1.16	1.19	1.06
5-9	0.88	1.15	0.94	1.28	0.90	1.02
10-14	0.87	0.91	1.09	1.19	0.90	0.98
15-19	1.16	1.25	1.09	1.00	0.91	1.13
20-24	0.89	0.93	0.86	0.88	0.91	0.89
25-29	0.83	0.81	0.99	1.02	1.10	0.89
30-34	0.97	1.06	1.31	1.03	0.99	1.05
35-39	1.08	1.10	1.05	1.03	0.97	1.17
40-44	0.87	0.97	1.13	0.92	1.01	0.96
45-49	1.19	1.01	0.98	1.03	1.12	1.08
50-54	0.82	0.71	0.86	0.94	1.00	0.81
55-59	1.00	0.80	1.28	0.99	1.08	0.97
60-64	0.94	1.07	1.35	1.08	1.10	1.04
65-69	0.93	1.10	4.20	0.97	0.86	1.35
0-69	0.96	0.95	1.11	0.99	1.03	0.99
Actual Death Claims by Amounts (\$1,000 Units)						
0-4	\$ 3,462	\$ 1,395	\$ 707	\$ 625	\$ 843	\$ 7,033
5-9	589	388	334	604	388	2,303
10-14	859	940	937	730	329	3,795
15-19	6,151	4,329	2,402	1,559	1,005	15,447
20-24	16,061	9,133	5,596	4,330	3,543	38,663
25-29	25,097	13,654	9,569	7,210	6,102	61,633
30-34	35,624	24,212	16,444	8,935	6,705	91,921
35-39	41,902	29,941	15,072	10,024	8,279	105,216
40-44	31,458	26,988	16,965	9,960	10,117	95,488
45-49	39,801	28,487	14,970	10,840	10,361	104,460
50-54	27,081	19,497	10,965	6,949	5,894	70,387
55-59	26,204	15,302	9,057	3,464	3,338	57,365
60-64	12,152	9,142	4,050	1,956	1,861	29,161
65-69	4,705	3,565	5,149	647	533	14,597
0-69	\$271,156	\$186,974	\$112,217	\$67,833	\$59,301	\$697,467

TABLE 7—Continued

Issue Age	Policy Year					Overall 1-15
	1-3	4-6	7-9	10-12	13-15	
Females						
0-4	0.88	1.26	0.90	0.85	0.99	0.94
5-9	1.10	0.41	1.11	0.98	1.52	0.98
10-14	0.78	1.16	1.27	1.31	1.39	1.03
15-19	0.76	0.88	0.97	0.55	0.83	0.80
20-24	1.01	0.94	0.86	0.87	0.79	0.94
25-29	0.97	1.10	0.92	1.00	1.04	1.01
30-34	0.98	0.96	1.10	1.21	0.95	1.01
35-39	0.91	1.17	1.14	1.06	0.90	1.03
40-44	0.96	1.24	1.45	0.81	1.04	1.10
45-49	1.02	0.94	1.23	1.75	0.89	1.09
50-54	1.02	1.20	1.37	0.86	0.92	1.10
55-59	0.91	0.87	0.79	0.78	0.83	0.87
60-64	0.99	1.05	0.75	0.56	0.58	0.91
65-69	1.12	1.37	0.51	0.57	1.46	1.11
0-69	0.96	1.07	1.09	1.02	0.93	1.01
Actual Death Claims by Amounts (\$1,000 Units)						
0-4	\$ 3,134	\$ 885	\$ 316	\$ 204	\$ 232	\$ 4,771
5-9	485	349	198	113	68	951
10-14	362	349	198	113	68	1,090
15-19	942	556	376	145	147	2,166
20-24	4,306	2,118	1,159	774	468	8,826
25-29	6,359	4,154	1,883	1,254	727	14,376
30-34	7,138	4,749	2,782	1,661	715	17,045
35-39	6,141	5,506	2,473	1,277	706	16,103
40-44	4,728	4,416	2,555	960	888	13,546
45-49	3,587	2,612	1,753	1,695	753	10,399
50-54	2,939	2,811	1,587	658	615	8,611
55-59	2,183	1,589	607	351	400	5,129
60-64	1,616	1,129	286	155	201	3,386
65-69	1,247	937	136	102	267	2,689
0-69	\$45,167	\$31,886	\$16,254	\$9,456	\$6,287	\$109,051

TABLE 8
RATIO OF SMOKER AND NONSMOKER ACTUAL DEATH CLAIMS
TO EXPECTED AGGREGATE TABULAR DEATH CLAIMS

Policy Year	Males		Females	
	Smoker to Tabular	Nonsmoker to Tabular	Smoker to Tabular	Nonsmoker to Tabular
1	1.76	0.73	1.35	0.81
2	1.41	0.65	1.47	0.80
3	1.24	0.62	1.18	0.64
4	1.15	0.85	1.33	0.93
5	1.18	0.85	1.37	0.97
6	1.18	0.61	1.21	0.90
7	1.14	0.61	1.84	0.74
8	0.81	1.42	1.42	0.04
9	1.43	0.78	0.37	0.11
10	0.50	0.33	0.38	0.49
11	0.44	0.11	0.17	0.20
12	0.69	0.37	0.60	0.00
13	0.62	0.45	0.00	3.02
14	0.58	1.11	0.37	2.96
15	1.10	0.65	0.25	2.23
Overall Ratio	1.3228	0.7100	1.3271	0.8062
Actual Number of Deaths by Amounts (\$1,000 Units)				
1	\$22,753	\$ 26,753	\$ 3,138	\$ 4,728
2	19,104	28,070	3,653	5,533
3	14,566	24,021	2,438	3,788
4	10,498	24,818	2,028	4,038
5	7,993	17,227	1,522	2,773
6	4,978	7,171	819	1,339
7	3,283	2,992	698	401
8	1,196	1,428	196	3
9	886	424	21	5
10	236	121	15	15
11	161	26	5	3
12	226	75	18	0
13	199	65	0	30
14	173	133	13	29
15	356	75	9	23
Total	\$86,607	\$133,398	\$14,574	\$22,706

TABLE 9
 RATIO OF SMOKER AND NONSMOKER DEATH CLAIMS
 TO EXPECTED AGGREGATE TABULAR DEATH CLAIMS

Issue Age	Durations			
	0-2	3-5	0-2	3-5
	Male Smokers		Female Smokers	
20-24	1.27	1.08	1.52	1.34
25-29	1.13	1.09	1.16	1.05
30-34	1.10	1.14	0.74	0.95
35-39	1.55	1.31	1.34	1.42
40-44	1.60	1.53	1.86	1.77
45-49	1.39	1.29	1.42	1.20
50-54	1.66	0.90	1.94	1.14
55-59	1.58	0.97	1.88	1.49
60-64	3.57	0.69	1.19	1.89
65-69	1.80	0.97	2.43	2.23
	Male Nonsmokers		Female Nonsmokers	
20-24	0.83	0.76	0.81	0.65
25-29	0.75	0.80	0.90	1.27
30-34	0.82	0.61	0.80	0.84
35-39	0.86	0.90	0.64	1.03
40-44	0.62	0.75	0.72	0.99
45-49	0.62	0.84	0.79	0.74
50-54	0.53	0.64	0.68	1.17
55-59	0.50	0.86	0.63	0.48
60-64	0.61	1.21	0.72	0.49
65-69	0.67	0.98	0.84	2.07

TABLE 10
 SMOKER-TO-NONSMOKER TABULAR MORTALITY RATIOS

Attained Age	Ratio	Attained Age	Ratio
20	119%	60	206%
25	133	65	191
30	152	70	172
35	172	75	152
40	191	80	133
45	206	85	119
50	214	90	108
55	214	95	103

MALE AGGREGATE MORTALITY

Issue Age	Policy Year															Ult.	Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
0	0.86	0.49	0.29	0.23	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.22	0.28	0.38	0.51	15
1	0.49	0.29	0.23	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.22	0.28	0.38	0.51	0.65	16
2	0.29	0.23	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.22	0.28	0.38	0.51	0.65	0.81	17
3	0.23	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.22	0.28	0.38	0.51	0.65	0.81	0.97	18
4	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.22	0.28	0.38	0.51	0.65	0.81	0.97	1.09	19
5	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.22	0.28	0.38	0.51	0.65	0.81	0.96	1.09	1.16	20
6	0.20	0.19	0.18	0.17	0.17	0.18	0.22	0.28	0.38	0.51	0.65	0.81	0.96	1.08	1.15	1.17	21
7	0.19	0.18	0.17	0.17	0.18	0.22	0.28	0.38	0.51	0.65	0.81	0.96	1.08	1.14	1.16	1.12	22
8	0.18	0.17	0.17	0.18	0.22	0.28	0.38	0.51	0.65	0.81	0.96	1.07	1.13	1.14	1.10	1.04	23
9	0.17	0.17	0.18	0.22	0.28	0.38	0.51	0.65	0.81	0.95	1.06	1.12	1.13	1.09	1.03	0.97	24
10	0.17	0.18	0.22	0.28	0.38	0.51	0.65	0.81	0.95	1.06	1.11	1.11	1.07	1.01	0.96	0.94	25
11	0.18	0.22	0.28	0.38	0.51	0.65	0.81	0.95	1.05	1.10	1.10	1.05	0.99	0.94	0.92	0.92	26
12	0.22	0.28	0.38	0.51	0.65	0.81	0.94	1.04	1.09	1.08	1.04	0.97	0.92	0.91	0.91	0.92	27
13	0.28	0.38	0.51	0.65	0.81	0.94	1.04	1.08	1.06	1.02	0.95	0.90	0.89	0.89	0.90	0.92	28
14	0.38	0.51	0.65	0.80	0.94	1.03	1.06	1.05	1.00	0.93	0.89	0.87	0.87	0.89	0.91	0.92	29
15	0.51	0.65	0.80	0.93	1.02	1.05	1.03	0.97	0.91	0.87	0.85	0.86	0.87	0.89	0.91	0.93	30
16	0.65	0.80	0.93	1.01	1.03	1.00	0.95	0.89	0.85	0.84	0.84	0.85	0.87	0.89	0.91	0.93	31
17	0.80	0.92	1.00	1.01	0.98	0.93	0.87	0.82	0.82	0.82	0.83	0.86	0.88	0.90	0.91	0.94	32
18	0.91	0.98	0.99	0.96	0.90	0.84	0.80	0.79	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.95	33
19	0.95	0.96	0.93	0.87	0.82	0.78	0.77	0.78	0.80	0.82	0.84	0.86	0.88	0.91	0.94	0.97	34
20	0.90	0.89	0.84	0.78	0.75	0.75	0.75	0.77	0.80	0.82	0.84	0.86	0.89	0.92	0.96	1.01	35
21	0.80	0.79	0.75	0.72	0.72	0.73	0.75	0.78	0.80	0.82	0.84	0.87	0.90	0.94	0.99	1.05	36
22	0.69	0.70	0.68	0.69	0.70	0.73	0.75	0.78	0.80	0.83	0.85	0.88	0.92	0.97	1.03	1.10	37
23	0.60	0.64	0.65	0.67	0.70	0.73	0.76	0.78	0.81	0.83	0.86	0.90	0.95	1.01	1.08	1.17	38
24	0.54	0.61	0.64	0.67	0.70	0.73	0.76	0.78	0.81	0.84	0.88	0.93	0.99	1.06	1.15	1.26	39
25	0.51	0.59	0.64	0.67	0.70	0.73	0.76	0.79	0.82	0.86	0.91	0.97	1.04	1.13	1.24	1.37	40
26	0.50	0.59	0.64	0.67	0.71	0.74	0.77	0.80	0.84	0.89	0.95	1.02	1.11	1.21	1.34	1.50	41
27	0.49	0.59	0.64	0.68	0.71	0.74	0.78	0.82	0.87	0.93	1.00	1.08	1.19	1.32	1.47	1.66	42
28	0.49	0.59	0.64	0.68	0.71	0.75	0.80	0.85	0.90	0.97	1.06	1.16	1.29	1.44	1.63	1.83	43
29	0.49	0.60	0.64	0.68	0.73	0.77	0.82	0.88	0.95	1.03	1.13	1.26	1.41	1.59	1.80	2.03	44

MALE AGGREGATE MORTALITY—Continued

Issue Age	Policy Year																Ult.	Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
30	0.50	0.60	0.65	0.69	0.74	0.80	0.85	0.92	1.01	1.11	1.23	1.38	1.56	1.76	1.99	2.25	45	
31	0.50	0.60	0.66	0.71	0.77	0.82	0.89	0.98	1.08	1.20	1.35	1.52	1.72	1.95	2.21	2.51	46	
32	0.50	0.61	0.67	0.73	0.79	0.86	0.95	1.05	1.17	1.31	1.49	1.68	1.91	2.16	2.46	2.80	47	
33	0.51	0.63	0.69	0.76	0.83	0.91	1.01	1.13	1.28	1.45	1.64	1.86	2.11	2.41	2.74	3.13	48	
34	0.52	0.65	0.72	0.79	0.88	0.98	1.10	1.24	1.41	1.60	1.81	2.06	2.35	2.68	3.06	3.49	49	
35	0.54	0.67	0.75	0.84	0.94	1.06	1.20	1.37	1.55	1.77	2.01	2.30	2.62	2.99	3.42	3.90	50	
36	0.55	0.69	0.79	0.89	1.01	1.16	1.32	1.50	1.72	1.96	2.24	2.56	2.92	3.34	3.82	4.36	51	
37	0.57	0.73	0.84	0.97	1.11	1.27	1.45	1.66	1.90	2.18	2.49	2.85	3.26	3.73	4.27	4.87	52	
38	0.60	0.78	0.91	1.05	1.22	1.40	1.60	1.84	2.11	2.42	2.78	3.18	3.64	4.17	4.76	5.43	53	
39	0.63	0.84	0.99	1.16	1.34	1.54	1.77	2.04	2.35	2.70	3.10	3.55	4.07	4.65	5.31	6.06	54	
40	0.68	0.91	1.08	1.27	1.47	1.70	1.97	2.27	2.62	3.01	3.46	3.96	4.54	5.19	5.92	6.75	55	
41	0.73	0.99	1.19	1.40	1.63	1.89	2.19	2.53	2.91	3.35	3.85	4.42	5.06	5.78	6.60	7.52	56	
42	0.80	1.09	1.31	1.54	1.80	2.10	2.43	2.81	3.25	3.74	4.30	4.93	5.64	6.44	7.34	8.36	57	
43	0.87	1.19	1.44	1.71	2.00	2.33	2.71	3.13	3.62	4.17	4.79	5.49	6.28	7.16	8.16	9.29	58	
44	0.94	1.31	1.59	1.89	2.22	2.59	3.01	3.49	4.03	4.64	5.33	6.10	6.98	7.96	9.07	10.31	59	
45	1.03	1.45	1.76	2.10	2.47	2.88	3.35	3.89	4.49	5.16	5.93	6.79	7.75	8.84	10.06	11.43	60	
46	1.13	1.60	1.95	2.33	2.74	3.21	3.73	4.32	4.99	5.74	6.59	7.54	8.61	9.81	11.15	12.66	61	
47	1.24	1.76	2.16	2.58	3.05	3.57	4.15	4.80	5.54	6.38	7.31	8.36	9.54	10.87	12.35	14.01	62	
48	1.36	1.95	2.40	2.87	3.38	3.96	4.61	5.34	6.15	7.07	8.11	9.27	10.57	12.03	13.66	15.48	63	
49	1.49	2.16	2.65	3.18	3.75	4.40	5.11	5.92	6.83	7.84	8.98	10.26	11.70	13.30	15.09	17.10	64	
50	1.64	2.38	2.94	3.52	4.16	4.87	5.67	6.56	7.56	8.68	9.94	11.35	12.93	14.69	16.67	18.87	65	
51	1.79	2.63	3.25	3.90	4.61	5.40	6.28	7.27	8.37	9.61	10.99	12.54	14.28	16.22	18.38	20.80	66	
52	1.96	2.91	3.59	4.32	5.10	5.98	6.95	8.04	9.25	10.62	12.14	13.85	15.75	17.88	20.26	22.91	67	
53	2.15	3.20	3.97	4.77	5.64	6.61	7.68	8.88	10.22	11.72	13.40	15.27	17.37	19.70	22.31	25.21	68	
54	2.35	3.53	4.38	5.27	6.23	7.30	8.48	9.80	11.28	12.93	14.77	16.83	19.13	21.69	24.54	27.72	69	
55	2.57	3.89	4.83	5.81	6.87	8.05	9.35	10.81	12.43	14.25	16.27	18.53	21.05	23.86	26.98	30.46	70	
56	2.80	4.27	5.32	6.40	7.58	8.87	10.31	11.91	13.69	15.68	17.90	20.38	23.14	26.22	29.64	33.45	71	
57	3.05	4.69	5.85	7.05	8.34	9.77	11.35	13.11	15.07	17.25	19.69	22.40	25.42	28.79	32.53	36.70	72	
58	3.32	5.14	6.43	7.75	9.18	10.74	12.48	14.41	16.56	18.96	21.63	24.60	27.91	31.59	35.68	40.23	73	
59	3.60	5.64	7.05	8.51	10.08	11.81	13.72	15.83	18.19	20.82	23.74	26.99	30.61	34.64	39.11	44.08	74	

MALE AGGREGATE MORTALITY—Continued

Issued Age	Policy Year															Ult.	Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
60	3.91	6.17	7.73	9.34	11.07	12.96	15.06	17.38	19.97	22.84	26.04	29.60	33.55	37.95	42.84	48.26	75
61	4.23	6.74	8.47	10.24	12.14	14.22	16.52	19.06	21.89	25.04	28.54	32.43	36.75	41.56	46.89	52.80	76
62	4.57	7.36	9.26	11.21	13.30	15.58	18.10	20.89	23.99	27.43	31.26	35.51	40.23	45.47	51.29	57.73	77
63	4.93	8.03	10.12	12.26	14.56	17.06	19.82	22.87	26.26	30.03	34.21	38.85	44.00	49.72	56.06	63.08	78
64	5.32	8.74	11.05	13.40	15.92	18.66	21.69	25.03	28.73	32.85	37.41	42.47	48.10	54.33	61.24	68.89	79
65	5.72	9.52	12.06	14.64	17.40	20.40	23.71	27.36	31.41	35.90	40.88	46.41	52.54	59.33	66.85	75.17	80
66	6.14	10.34	13.14	15.97	18.99	22.29	25.90	29.90	34.32	39.22	44.65	50.67	57.35	64.74	72.93	81.98	81
67	6.59	11.24	14.31	17.41	20.72	24.32	28.28	32.64	37.47	42.81	48.73	55.29	62.56	70.61	79.50	89.34	82
68	7.06	12.19	15.57	18.97	22.59	26.53	30.85	35.61	40.87	46.70	53.15	60.30	68.20	76.95	86.62	97.30	83
69	7.55	13.21	16.92	20.65	24.61	28.91	33.63	38.82	44.56	50.91	57.94	65.71	74.31	83.81	94.31	105.89	84
70	8.06	14.31	18.38	22.46	26.79	31.49	36.63	42.30	48.55	55.46	63.11	71.56	80.90	91.22	102.61	115.17	85
																125.16	86
																135.93	87
																147.51	88
																159.95	89
																173.29	90
																187.58	91
																202.87	92
																219.20	93
																236.59	94
																255.10	95
																274.74	96
																295.53	97
																317.50	98
																340.63	99
																371.88	100
																415.12	101
																486.79	102
																599.66	103
																766.48	104
																1,000.00	105

MALE SMOKER MORTALITY

Issue Age	Policy Year																Ult. Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Ult.	
0	0.86	0.49	0.29	0.23	0.21	0.20	0.20	0.19	0.18	0.18	0.17	0.19	0.22	0.29	0.40	0.53	15
1	0.49	0.29	0.23	0.21	0.20	0.20	0.19	0.18	0.18	0.17	0.19	0.22	0.29	0.40	0.53	0.70	16
2	0.29	0.23	0.21	0.20	0.20	0.19	0.18	0.18	0.17	0.19	0.22	0.29	0.40	0.53	0.70	0.88	17
3	0.23	0.21	0.20	0.20	0.19	0.18	0.18	0.17	0.19	0.22	0.29	0.40	0.53	0.70	0.88	1.06	18
4	0.21	0.20	0.20	0.19	0.18	0.18	0.17	0.19	0.22	0.29	0.40	0.53	0.70	0.88	1.06	1.21	19
5	0.20	0.20	0.19	0.18	0.18	0.17	0.19	0.22	0.29	0.40	0.53	0.70	0.88	1.05	1.21	1.31	20
6	0.20	0.19	0.18	0.18	0.17	0.19	0.22	0.29	0.40	0.53	0.70	0.88	1.05	1.20	1.30	1.34	21
7	0.19	0.18	0.18	0.17	0.19	0.22	0.29	0.40	0.53	0.70	0.88	1.05	1.19	1.29	1.32	1.30	22
8	0.18	0.18	0.17	0.19	0.22	0.29	0.40	0.53	0.70	0.88	1.05	1.19	1.28	1.31	1.28	1.23	23
9	0.18	0.17	0.19	0.22	0.29	0.40	0.53	0.70	0.87	1.04	1.18	1.26	1.29	1.26	1.21	1.17	24
10	0.17	0.19	0.22	0.29	0.40	0.53	0.70	0.87	1.04	1.17	1.25	1.27	1.24	1.19	1.15	1.15	25
11	0.19	0.22	0.29	0.40	0.53	0.70	0.87	1.04	1.17	1.24	1.25	1.22	1.17	1.13	1.13	1.15	26
12	0.22	0.29	0.40	0.53	0.70	0.87	1.03	1.16	1.23	1.24	1.20	1.15	1.11	1.11	1.13	1.16	27
13	0.29	0.40	0.53	0.70	0.87	1.03	1.15	1.21	1.22	1.18	1.13	1.09	1.09	1.11	1.14	1.19	28
14	0.40	0.53	0.70	0.87	1.02	1.14	1.20	1.20	1.16	1.10	1.06	1.07	1.09	1.12	1.17	1.21	29
15	0.53	0.70	0.87	1.02	1.13	1.18	1.17	1.13	1.08	1.04	1.04	1.06	1.10	1.15	1.19	1.24	30
16	0.70	0.87	1.01	1.12	1.16	1.15	1.11	1.05	1.02	1.02	1.04	1.08	1.13	1.17	1.22	1.27	31
17	0.86	1.01	1.11	1.14	1.12	1.08	1.03	0.99	1.00	1.02	1.06	1.10	1.15	1.20	1.24	1.30	32
18	0.99	1.09	1.12	1.09	1.05	1.00	0.96	0.97	0.99	1.03	1.08	1.13	1.17	1.22	1.27	1.34	33
19	1.05	1.08	1.06	1.01	0.96	0.93	0.94	0.97	1.01	1.05	1.10	1.15	1.20	1.25	1.32	1.39	34
20	1.02	1.01	0.97	0.93	0.90	0.91	0.94	0.98	1.03	1.08	1.13	1.17	1.23	1.29	1.37	1.46	35
21	0.92	0.92	0.88	0.86	0.88	0.91	0.95	1.00	1.05	1.10	1.15	1.20	1.27	1.34	1.44	1.54	36
22	0.80	0.83	0.82	0.84	0.88	0.92	0.97	1.02	1.07	1.12	1.18	1.24	1.32	1.41	1.52	1.65	37
23	0.71	0.77	0.80	0.84	0.89	0.94	0.99	1.04	1.09	1.15	1.22	1.29	1.38	1.49	1.62	1.78	38
24	0.65	0.74	0.79	0.85	0.91	0.96	1.01	1.07	1.12	1.19	1.26	1.36	1.46	1.59	1.75	1.94	39
25	0.62	0.74	0.80	0.87	0.93	0.98	1.03	1.09	1.16	1.24	1.33	1.43	1.56	1.71	1.90	2.13	40
26	0.62	0.75	0.82	0.89	0.94	1.00	1.06	1.13	1.21	1.30	1.40	1.53	1.68	1.86	2.09	2.36	41
27	0.62	0.76	0.84	0.90	0.96	1.03	1.09	1.17	1.26	1.37	1.49	1.64	1.83	2.05	2.32	2.64	42
28	0.64	0.78	0.86	0.92	0.99	1.06	1.14	1.23	1.33	1.46	1.61	1.79	2.01	2.27	2.59	2.95	43
29	0.65	0.80	0.87	0.95	1.02	1.10	1.19	1.30	1.42	1.57	1.75	1.96	2.23	2.54	2.89	3.29	44

MALE SMOKER MORTALITY—Continued

Issue Age	Policy Year																Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Ult.	
30	0.66	0.81	0.90	0.98	1.06	1.16	1.26	1.38	1.53	1.70	1.92	2.18	2.48	2.83	3.23	3.69	45
31	0.68	0.83	0.92	1.02	1.11	1.22	1.34	1.48	1.66	1.87	2.13	2.43	2.77	3.16	3.61	4.14	46
32	0.69	0.86	0.96	1.06	1.17	1.29	1.44	1.61	1.82	2.07	2.37	2.71	3.09	3.54	4.05	4.64	47
33	0.72	0.89	1.01	1.12	1.24	1.39	1.56	1.77	2.02	2.31	2.64	3.02	3.46	3.97	4.55	5.21	48
34	0.74	0.94	1.06	1.19	1.33	1.50	1.71	1.95	2.24	2.57	2.95	3.38	3.88	4.45	5.10	5.85	49
35	0.78	0.98	1.12	1.27	1.44	1.65	1.89	2.17	2.50	2.87	3.29	3.78	4.35	4.99	5.72	6.55	50
36	0.81	1.04	1.20	1.38	1.58	1.82	2.10	2.42	2.78	3.20	3.69	4.24	4.87	5.59	6.41	7.33	51
37	0.86	1.11	1.30	1.50	1.75	2.02	2.34	2.70	3.11	3.59	4.13	4.75	5.46	6.27	7.18	8.20	52
38	0.91	1.20	1.42	1.66	1.94	2.25	2.60	3.01	3.48	4.02	4.63	5.33	6.12	7.01	8.02	9.15	53
39	0.97	1.30	1.56	1.84	2.15	2.50	2.90	3.37	3.89	4.50	5.18	5.96	6.84	7.83	8.95	10.19	54
40	1.06	1.43	1.73	2.04	2.39	2.79	3.24	3.76	4.36	5.03	5.80	6.67	7.64	8.74	9.96	11.34	55
41	1.15	1.58	1.91	2.27	2.66	3.11	3.63	4.21	4.88	5.63	6.48	7.44	8.52	9.73	11.08	12.58	56
42	1.27	1.75	2.12	2.52	2.97	3.48	4.06	4.71	5.45	6.29	7.23	8.29	9.48	10.81	12.29	13.93	57
43	1.39	1.94	2.36	2.81	3.32	3.89	4.53	5.26	6.09	7.02	8.06	9.23	10.53	11.99	13.61	15.40	58
44	1.53	2.15	2.62	3.13	3.70	4.34	5.06	5.87	6.79	7.81	8.96	10.25	11.68	13.27	15.03	16.99	59
45	1.69	2.38	2.92	3.49	4.13	4.84	5.64	6.54	7.55	8.68	9.95	11.36	12.92	14.66	16.58	18.70	60
46	1.86	2.65	3.25	3.89	4.60	5.40	6.28	7.28	8.39	9.63	11.02	12.56	14.27	16.16	18.25	20.55	61
47	2.05	2.94	3.62	4.33	5.12	6.00	6.98	8.08	9.30	10.67	12.18	13.87	15.73	17.78	20.04	22.53	62
48	2.26	3.26	4.02	4.82	5.70	6.67	7.75	8.96	10.30	11.79	13.44	15.27	17.30	19.52	21.97	24.66	63
49	2.49	3.62	4.46	5.35	6.32	7.39	8.58	9.91	11.37	13.00	14.80	16.79	18.99	21.40	24.04	26.94	64
50	2.74	4.01	4.95	5.93	7.00	8.18	9.49	10.93	12.54	14.31	16.27	18.43	20.80	23.41	26.26	29.39	65
51	3.02	4.43	5.47	6.56	7.74	9.03	10.47	12.05	13.79	15.72	17.84	20.18	22.74	25.56	28.63	31.99	66
52	3.31	4.89	6.05	7.24	8.54	9.96	11.52	13.24	15.14	17.23	19.53	22.06	24.83	27.86	31.17	34.78	67
53	3.62	5.39	6.66	7.98	9.40	10.95	12.66	14.53	16.59	18.86	21.34	24.07	27.05	30.31	33.87	37.74	68
54	3.96	5.93	7.33	8.78	10.33	12.02	13.88	15.91	18.14	20.59	23.28	26.21	29.42	32.93	36.74	40.90	69
55	4.31	6.50	8.05	9.63	11.33	13.17	15.18	17.39	19.80	22.45	25.34	28.50	31.95	35.71	39.81	44.26	70
56	4.69	7.12	8.82	10.55	12.40	14.40	16.58	18.97	21.58	24.43	27.54	30.94	34.64	38.68	43.06	47.83	71
57	5.08	7.78	9.64	11.53	13.54	15.71	18.08	20.65	23.47	26.54	29.88	33.53	37.51	41.83	46.52	51.63	72
58	5.50	8.48	10.51	12.58	14.76	17.11	19.67	22.45	25.48	28.78	32.38	36.29	40.55	45.17	50.20	55.66	73
59	5.94	9.22	11.45	13.69	16.06	18.61	21.36	24.36	27.62	31.16	35.02	39.22	43.78	48.73	54.10	59.94	74

MALE SMOKER MORTALITY—Continued

Issue Age	Policy Year															Ult.	Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
60	6.39	10.01	12.44	14.87	17.44	20.19	23.16	26.39	29.89	33.69	37.83	42.32	47.20	52.50	58.25	64.48	75
61	6.86	10.84	13.49	16.13	18.90	21.87	25.07	28.54	32.30	36.38	40.81	45.62	50.84	56.51	62.65	69.32	76
62	7.35	11.72	14.60	17.46	20.45	23.65	27.10	30.82	34.85	39.23	43.97	49.12	54.70	60.76	67.32	74.45	77
63	7.86	12.65	15.77	18.86	22.10	25.54	29.24	33.23	37.56	42.24	47.32	52.82	58.79	65.27	72.29	79.91	78
64	8.38	13.62	17.01	20.35	23.83	27.53	31.51	35.79	40.42	45.44	50.87	56.75	63.14	70.06	77.57	85.72	79
65	8.91	14.64	18.31	21.91	25.66	29.64	33.90	38.50	43.45	48.82	54.63	60.92	67.75	75.15	83.18	91.90	80
66	9.45	15.70	19.67	23.56	27.60	31.87	36.44	41.36	46.66	52.40	58.61	65.35	72.64	80.56	89.16	98.50	81
67	10.01	16.82	21.11	25.30	29.64	34.22	39.12	44.38	50.06	56.20	62.84	70.04	77.85	86.32	95.53	105.53	82
68	10.57	17.98	22.62	27.13	31.78	36.70	41.94	47.58	53.66	60.22	67.33	75.03	83.39	92.46	102.32	113.05	83
69	11.14	19.20	24.20	29.05	34.04	39.31	44.93	50.96	57.46	64.49	72.09	80.34	89.28	99.00	109.57	121.08	84
70	11.71	20.46	25.85	31.07	36.43	42.07	48.09	54.54	61.50	69.02	77.15	85.98	95.57	105.99	117.33	129.68	85
																138.90	86
																148.78	87
																159.39	88
																170.79	89
																183.04	90
																196.20	91
																210.34	92
																225.53	93
																241.83	94
																259.29	95
																277.98	96
																297.93	97
																319.17	98
																341.71	99
																372.53	100
																415.46	101
																486.95	102
																599.71	103
																766.48	104
																1,000.00	105

MALE NONSMOKER MORTALITY

Issue Age	Policy Year																Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Ult.	
0	0.86	0.49	0.29	0.23	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.21	0.28	0.37	0.49	15
1	0.49	0.29	0.23	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.21	0.28	0.37	0.49	0.63	16
2	0.29	0.23	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.21	0.28	0.37	0.49	0.63	0.79	17
3	0.23	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.21	0.28	0.37	0.49	0.63	0.79	0.93	18
4	0.21	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.21	0.28	0.37	0.49	0.63	0.78	0.93	1.04	19
5	0.20	0.20	0.19	0.18	0.17	0.17	0.18	0.21	0.28	0.37	0.49	0.63	0.78	0.92	1.04	1.10	20
6	0.20	0.19	0.18	0.17	0.17	0.18	0.21	0.28	0.37	0.49	0.63	0.78	0.92	1.03	1.09	1.10	21
7	0.19	0.18	0.17	0.17	0.18	0.21	0.28	0.37	0.49	0.63	0.78	0.92	1.03	1.08	1.09	1.05	22
8	0.18	0.17	0.17	0.18	0.21	0.28	0.37	0.49	0.63	0.78	0.92	1.02	1.08	1.08	1.03	0.97	23
9	0.17	0.17	0.18	0.21	0.28	0.37	0.49	0.63	0.78	0.91	1.01	1.07	1.06	1.02	0.95	0.90	24
10	0.17	0.18	0.21	0.28	0.37	0.49	0.63	0.78	0.91	1.01	1.05	1.05	1.00	0.94	0.88	0.86	25
11	0.18	0.21	0.28	0.37	0.49	0.63	0.78	0.91	1.00	1.04	1.03	0.99	0.92	0.87	0.85	0.84	26
12	0.21	0.28	0.37	0.49	0.63	0.78	0.91	1.00	1.03	1.02	0.97	0.90	0.85	0.83	0.82	0.83	27
13	0.28	0.37	0.49	0.63	0.78	0.90	0.99	1.02	1.00	0.95	0.89	0.84	0.82	0.81	0.81	0.82	28
14	0.37	0.49	0.63	0.78	0.90	0.98	1.01	0.99	0.93	0.87	0.82	0.80	0.79	0.80	0.81	0.82	29
15	0.49	0.63	0.77	0.89	0.97	0.99	0.97	0.91	0.85	0.80	0.78	0.78	0.78	0.80	0.81	0.82	30
16	0.63	0.77	0.89	0.96	0.98	0.95	0.89	0.83	0.78	0.77	0.76	0.77	0.78	0.79	0.80	0.81	31
17	0.77	0.88	0.95	0.96	0.93	0.87	0.81	0.76	0.75	0.74	0.75	0.77	0.78	0.79	0.80	0.81	32
18	0.87	0.94	0.94	0.90	0.84	0.78	0.74	0.73	0.73	0.74	0.75	0.76	0.77	0.78	0.80	0.82	33
19	0.90	0.91	0.87	0.82	0.76	0.72	0.71	0.71	0.72	0.73	0.75	0.76	0.77	0.78	0.80	0.83	34
20	0.86	0.84	0.78	0.73	0.69	0.68	0.69	0.70	0.71	0.73	0.74	0.75	0.77	0.79	0.82	0.85	35
21	0.76	0.74	0.70	0.66	0.66	0.66	0.68	0.70	0.71	0.72	0.74	0.75	0.78	0.80	0.84	0.88	36
22	0.65	0.65	0.63	0.63	0.64	0.66	0.67	0.69	0.71	0.72	0.74	0.76	0.79	0.82	0.86	0.92	37
23	0.56	0.59	0.60	0.61	0.63	0.65	0.67	0.69	0.70	0.72	0.74	0.77	0.81	0.85	0.90	0.97	38
24	0.50	0.56	0.58	0.60	0.63	0.65	0.67	0.68	0.70	0.73	0.75	0.79	0.83	0.89	0.95	1.03	39
25	0.47	0.54	0.57	0.60	0.63	0.65	0.66	0.68	0.71	0.74	0.77	0.82	0.87	0.93	1.02	1.12	40
26	0.45	0.53	0.57	0.60	0.62	0.64	0.66	0.69	0.72	0.76	0.80	0.85	0.91	1.00	1.10	1.22	41
27	0.44	0.53	0.57	0.60	0.62	0.64	0.67	0.70	0.74	0.78	0.83	0.90	0.98	1.07	1.19	1.34	42
28	0.44	0.53	0.56	0.59	0.62	0.65	0.68	0.72	0.76	0.81	0.88	0.95	1.05	1.17	1.31	1.47	43
29	0.44	0.52	0.56	0.59	0.62	0.66	0.70	0.74	0.79	0.85	0.93	1.03	1.15	1.28	1.44	1.62	44

MALE NONSMOKER MORTALITY—Continued

Issue Age	Policy Year																Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Ult.	
30	0.44	0.52	0.56	0.60	0.63	0.67	0.72	0.77	0.83	0.91	1.01	1.12	1.26	1.41	1.59	1.79	45
31	0.43	0.52	0.57	0.61	0.65	0.69	0.75	0.81	0.89	0.98	1.09	1.23	1.38	1.55	1.75	1.99	46
32	0.43	0.53	0.57	0.62	0.67	0.72	0.78	0.86	0.95	1.07	1.20	1.35	1.52	1.72	1.95	2.21	47
33	0.44	0.53	0.59	0.64	0.69	0.76	0.83	0.93	1.04	1.17	1.32	1.48	1.68	1.90	2.16	2.46	48
34	0.44	0.55	0.60	0.66	0.73	0.80	0.90	1.01	1.14	1.28	1.45	1.64	1.86	2.12	2.41	2.74	49
35	0.45	0.56	0.62	0.69	0.77	0.86	0.97	1.10	1.25	1.41	1.60	1.82	2.07	2.35	2.68	3.05	50
36	0.46	0.58	0.65	0.74	0.83	0.94	1.06	1.21	1.37	1.56	1.77	2.02	2.30	2.62	2.99	3.41	51
37	0.48	0.60	0.69	0.79	0.90	1.02	1.17	1.33	1.51	1.72	1.96	2.24	2.56	2.92	3.34	3.80	52
38	0.50	0.64	0.74	0.85	0.98	1.12	1.28	1.46	1.67	1.91	2.18	2.50	2.85	3.26	3.72	4.25	53
39	0.52	0.68	0.80	0.93	1.07	1.23	1.41	1.62	1.85	2.12	2.43	2.78	3.18	3.63	4.15	4.74	54
40	0.55	0.74	0.87	1.02	1.18	1.35	1.56	1.79	2.06	2.36	2.70	3.10	3.55	4.05	4.63	5.29	55
41	0.59	0.80	0.95	1.11	1.29	1.49	1.72	1.99	2.28	2.63	3.01	3.45	3.95	4.52	5.16	5.89	56
42	0.64	0.87	1.04	1.22	1.43	1.65	1.91	2.21	2.54	2.92	3.36	3.85	4.41	5.04	5.76	6.57	57
43	0.69	0.95	1.14	1.35	1.58	1.83	2.12	2.45	2.83	3.25	3.74	4.29	4.91	5.62	6.42	7.32	58
44	0.75	1.04	1.26	1.49	1.75	2.03	2.36	2.73	3.15	3.62	4.17	4.78	5.47	6.26	7.15	8.15	59
45	0.82	1.14	1.39	1.65	1.93	2.26	2.62	3.04	3.50	4.04	4.64	5.32	6.09	6.97	7.96	9.08	60
46	0.89	1.26	1.53	1.82	2.15	2.51	2.92	3.38	3.90	4.49	5.16	5.92	6.78	7.76	8.86	10.10	61
47	0.98	1.39	1.69	2.02	2.38	2.79	3.24	3.76	4.34	5.00	5.75	6.59	7.55	8.63	9.85	11.23	62
48	1.07	1.53	1.87	2.24	2.64	3.09	3.60	4.18	4.83	5.56	6.39	7.33	8.40	9.60	10.95	12.48	63
49	1.17	1.69	2.07	2.48	2.93	3.44	4.00	4.64	5.36	6.18	7.11	8.15	9.33	10.67	12.17	13.87	64
50	1.28	1.86	2.30	2.75	3.25	3.81	4.45	5.16	5.96	6.87	7.90	9.06	10.37	11.85	13.52	15.40	65
51	1.40	2.06	2.54	3.05	3.61	4.23	4.94	5.73	6.62	7.63	8.77	10.06	11.51	13.16	15.01	17.09	66
52	1.53	2.27	2.81	3.38	4.00	4.70	5.48	6.36	7.35	8.47	9.74	11.17	12.78	14.60	16.65	18.96	67
53	1.68	2.51	3.11	3.74	4.43	5.21	6.08	7.05	8.16	9.40	10.80	12.39	14.18	16.19	18.46	21.01	68
54	1.84	2.76	3.44	4.14	4.91	5.77	6.74	7.82	9.04	10.42	11.98	13.74	15.72	17.95	20.46	23.28	69
55	2.01	3.05	3.80	4.58	5.44	6.39	7.46	8.67	10.03	11.56	13.28	15.23	17.42	19.88	22.66	25.78	70
56	2.20	3.36	4.19	5.06	6.02	7.08	8.27	9.60	11.11	12.80	14.71	16.87	19.29	22.02	25.08	28.53	71
57	2.40	3.70	4.63	5.60	6.66	7.83	9.15	10.63	12.30	14.18	16.29	18.67	21.35	24.36	27.75	31.55	72
58	2.61	4.07	5.10	6.18	7.36	8.66	10.13	11.77	13.61	15.69	18.03	20.66	23.62	26.95	30.68	34.87	73
59	2.85	4.48	5.63	6.82	8.13	9.58	11.20	13.01	15.05	17.35	19.94	22.84	26.11	29.78	33.90	38.52	74

MALE NONSMOKER MORTALITY—Continued

Issue Age	Policy Year															Ult.	Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
60	3.10	4.92	6.20	7.53	8.98	10.58	12.37	14.38	16.64	19.18	22.04	25.25	28.85	32.90	37.43	42.52	75
61	3.37	5.41	6.83	8.30	9.91	11.68	13.67	15.89	18.39	21.19	24.34	27.88	31.86	36.31	41.31	46.90	76
62	3.66	5.93	7.51	9.15	10.93	12.89	15.09	17.54	20.30	23.40	26.87	30.78	35.15	40.06	45.55	51.69	77
63	3.98	6.51	8.26	10.08	12.04	14.22	16.65	19.36	22.40	25.82	29.65	33.95	38.76	44.16	50.19	56.93	78
64	4.31	7.14	9.08	11.09	13.27	15.67	18.35	21.35	24.71	28.47	32.69	37.42	42.71	48.64	55.26	62.65	79
65	4.67	7.82	9.98	12.20	14.61	17.27	20.22	23.53	27.23	31.37	36.02	41.22	47.03	53.54	60.79	68.89	80
66	5.05	8.56	10.95	13.41	16.08	19.01	22.27	25.91	29.99	34.55	39.66	45.37	51.75	58.88	66.83	75.68	81
67	5.45	9.36	12.02	14.74	17.68	20.91	24.51	28.52	33.01	38.02	43.63	49.90	56.90	64.70	73.40	83.07	82
68	5.88	10.24	13.17	16.18	19.43	22.99	26.95	31.37	36.30	41.81	47.96	54.84	62.50	71.04	80.55	91.11	83
69	6.34	11.18	14.43	17.75	21.33	25.26	29.62	34.48	39.89	45.94	52.69	60.22	68.60	77.93	88.31	99.82	84
70	6.82	12.21	15.80	19.47	23.41	27.74	32.53	37.87	43.81	50.44	57.83	66.07	75.23	85.42	96.72	109.25	85
																119.46	86
																130.47	87
																142.35	88
																155.12	89
																168.83	90
																183.53	91
																199.25	92
																216.01	93
																233.86	94
																252.81	95
																272.89	96
																294.09	97
																316.42	98
																339.88	99
																371.40	100
																414.83	101
																486.65	102
																599.61	103
																766.47	104
																1,000.00	105

FEMALE AGGREGATE MORTALITY

Issue Age	Policy Year																Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Ult.	
0	0.82	0.54	0.34	0.23	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	15
1	0.54	0.34	0.23	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	16
2	0.34	0.23	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.31	17
3	0.23	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.31	0.32	18
4	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.31	0.32	0.32	19
5	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.31	0.32	0.32	0.31	20
6	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.31	0.32	0.32	0.31	0.31	21
7	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.31	0.32	0.32	0.31	0.31	0.31	22
8	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.31	0.32	0.31	0.31	0.30	0.31	0.33	23
9	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.31	0.31	0.31	0.30	0.30	0.30	0.32	0.34	24
10	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.30	0.31	0.31	0.30	0.30	0.30	0.32	0.34	0.36	25
11	0.12	0.14	0.16	0.20	0.24	0.28	0.30	0.31	0.31	0.30	0.29	0.30	0.31	0.33	0.36	0.39	26
12	0.14	0.16	0.20	0.24	0.28	0.30	0.31	0.30	0.29	0.29	0.29	0.31	0.33	0.35	0.38	0.41	27
13	0.16	0.20	0.24	0.28	0.30	0.31	0.30	0.29	0.29	0.29	0.30	0.32	0.35	0.37	0.40	0.44	28
14	0.20	0.24	0.28	0.30	0.30	0.30	0.29	0.28	0.28	0.30	0.32	0.34	0.37	0.40	0.43	0.47	29
15	0.24	0.28	0.30	0.30	0.29	0.28	0.28	0.28	0.29	0.31	0.33	0.36	0.39	0.42	0.46	0.50	30
16	0.27	0.29	0.30	0.29	0.28	0.27	0.27	0.29	0.31	0.33	0.35	0.38	0.41	0.45	0.49	0.54	31
17	0.29	0.29	0.29	0.28	0.27	0.27	0.28	0.30	0.32	0.35	0.37	0.41	0.44	0.48	0.53	0.59	32
18	0.28	0.28	0.27	0.26	0.26	0.28	0.29	0.31	0.34	0.36	0.40	0.43	0.47	0.52	0.57	0.63	33
19	0.27	0.26	0.26	0.26	0.27	0.29	0.31	0.33	0.36	0.39	0.42	0.46	0.51	0.56	0.62	0.68	34
20	0.25	0.25	0.25	0.26	0.28	0.30	0.32	0.35	0.38	0.41	0.45	0.50	0.55	0.60	0.67	0.74	35
21	0.23	0.24	0.25	0.27	0.29	0.31	0.34	0.37	0.40	0.44	0.48	0.53	0.59	0.65	0.72	0.80	36
22	0.21	0.24	0.26	0.28	0.30	0.32	0.35	0.39	0.43	0.47	0.52	0.57	0.64	0.71	0.79	0.87	37
23	0.21	0.24	0.26	0.29	0.31	0.34	0.37	0.41	0.45	0.50	0.56	0.62	0.69	0.77	0.85	0.95	38
24	0.21	0.25	0.27	0.30	0.33	0.36	0.40	0.44	0.49	0.54	0.60	0.67	0.75	0.83	0.93	1.04	39
25	0.21	0.25	0.28	0.31	0.34	0.38	0.42	0.47	0.52	0.58	0.65	0.73	0.81	0.91	1.01	1.13	40
26	0.21	0.26	0.29	0.33	0.36	0.41	0.45	0.50	0.56	0.63	0.70	0.79	0.88	0.99	1.10	1.24	41
27	0.21	0.27	0.31	0.34	0.39	0.43	0.48	0.54	0.61	0.68	0.76	0.86	0.96	1.08	1.21	1.35	42
28	0.21	0.28	0.32	0.36	0.41	0.46	0.52	0.59	0.66	0.74	0.83	0.93	1.05	1.17	1.32	1.48	43
29	0.22	0.29	0.34	0.39	0.44	0.50	0.56	0.63	0.71	0.80	0.90	1.02	1.14	1.28	1.44	1.62	44

FEMALE AGGREGATE MORTALITY—Continued

Issue Age	Policy Year															Ult.	Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
30	0.22	0.30	0.36	0.41	0.47	0.53	0.61	0.69	0.77	0.87	0.98	1.11	1.25	1.40	1.58	1.77	45
31	0.23	0.32	0.38	0.44	0.51	0.58	0.66	0.74	0.84	0.95	1.07	1.21	1.36	1.54	1.73	1.94	46
32	0.24	0.34	0.41	0.47	0.54	0.62	0.71	0.81	0.92	1.04	1.17	1.32	1.49	1.68	1.89	2.13	47
33	0.25	0.36	0.43	0.51	0.59	0.67	0.77	0.88	1.00	1.13	1.28	1.45	1.63	1.84	2.08	2.34	48
34	0.26	0.38	0.47	0.55	0.64	0.73	0.84	0.96	1.09	1.24	1.40	1.59	1.79	2.02	2.28	2.57	49
35	0.27	0.41	0.50	0.59	0.69	0.80	0.91	1.04	1.19	1.35	1.53	1.74	1.96	2.22	2.50	2.82	50
36	0.28	0.44	0.54	0.64	0.75	0.87	0.99	1.14	1.30	1.48	1.68	1.90	2.15	2.43	2.75	3.10	51
37	0.30	0.47	0.58	0.69	0.81	0.94	1.09	1.24	1.42	1.62	1.84	2.09	2.36	2.67	3.02	3.40	52
38	0.32	0.51	0.63	0.75	0.88	1.03	1.19	1.36	1.56	1.77	2.02	2.29	2.59	2.93	3.31	3.74	53
39	0.34	0.55	0.68	0.82	0.96	1.12	1.30	1.49	1.70	1.94	2.21	2.51	2.85	3.22	3.64	4.11	54
40	0.36	0.59	0.74	0.89	1.05	1.22	1.42	1.63	1.87	2.13	2.43	2.76	3.13	3.54	4.00	4.52	55
41	0.39	0.64	0.81	0.97	1.15	1.34	1.55	1.78	2.05	2.34	2.66	3.03	3.44	3.89	4.40	4.97	56
42	0.42	0.70	0.88	1.06	1.25	1.46	1.70	1.96	2.24	2.57	2.92	3.33	3.78	4.28	4.84	5.47	57
43	0.45	0.76	0.96	1.16	1.37	1.60	1.86	2.14	2.46	2.82	3.21	3.65	4.15	4.70	5.32	6.02	58
44	0.48	0.82	1.04	1.26	1.50	1.75	2.04	2.35	2.70	3.09	3.53	4.02	4.56	5.17	5.86	6.62	59
45	0.52	0.90	1.14	1.38	1.64	1.92	2.23	2.58	2.97	3.40	3.88	4.41	5.02	5.69	6.44	7.28	60
46	0.56	0.98	1.24	1.51	1.79	2.11	2.45	2.83	3.26	3.73	4.26	4.85	5.52	6.26	7.09	8.01	61
47	0.61	1.06	1.36	1.65	1.97	2.31	2.69	3.11	3.58	4.10	4.68	5.33	6.07	6.88	7.80	8.82	62
48	0.66	1.16	1.48	1.81	2.15	2.53	2.95	3.41	3.93	4.50	5.15	5.87	6.67	7.57	8.58	9.70	63
49	0.71	1.26	1.62	1.98	2.36	2.78	3.24	3.75	4.31	4.95	5.66	6.45	7.34	8.33	9.44	10.68	64
50	0.77	1.38	1.77	2.17	2.59	3.05	3.55	4.11	4.74	5.44	6.22	7.09	8.07	9.16	10.38	11.75	65
51	0.83	1.51	1.94	2.37	2.84	3.34	3.90	4.52	5.21	5.98	6.84	7.80	8.88	10.08	11.43	12.93	66
52	0.90	1.65	2.12	2.60	3.11	3.67	4.28	4.97	5.72	6.57	7.52	8.58	9.76	11.09	12.57	14.23	67
53	0.98	1.80	2.32	2.85	3.41	4.03	4.70	5.45	6.29	7.23	8.27	9.44	10.74	12.20	13.83	15.66	68
54	1.06	1.97	2.54	3.13	3.74	4.42	5.17	5.99	6.91	7.94	9.09	10.38	11.81	13.42	15.22	17.23	69
55	1.15	2.15	2.79	3.43	4.11	4.85	5.67	6.59	7.60	8.73	10.00	11.41	13.00	14.77	16.74	18.96	70
56	1.25	2.35	3.05	3.76	4.51	5.33	6.23	7.24	8.35	9.60	10.99	12.55	14.29	16.24	18.42	20.86	71
57	1.36	2.57	3.34	4.12	4.95	5.85	6.85	7.95	9.18	10.56	12.09	13.81	15.72	17.87	20.27	22.95	72
58	1.47	2.81	3.66	4.52	5.43	6.42	7.52	8.74	10.09	11.60	13.29	15.18	17.29	19.65	22.29	25.24	73
59	1.60	3.07	4.01	4.95	5.96	7.05	8.26	9.60	11.09	12.76	14.62	16.70	19.02	21.62	24.52	27.76	74

FEMALE AGGREGATE MORTALITY—Continued

Issue Age	Policy Year															Attained Age	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		Ult.
60	1.73	3.36	4.40	5.43	6.54	7.74	9.07	10.55	12.19	14.02	16.07	18.36	20.92	23.77	26.97	30.53	75
61	1.88	3.68	4.82	5.96	7.18	8.50	9.97	11.59	13.40	15.42	17.67	20.19	23.00	26.14	29.65	33.58	76
62	2.04	4.02	5.28	6.54	7.88	9.34	10.95	12.74	14.73	16.95	19.42	22.19	25.29	28.74	32.61	36.92	77
63	2.21	4.40	5.78	7.17	8.64	10.25	12.03	13.99	16.18	18.63	21.35	24.40	27.80	31.60	35.85	40.58	78
64	2.40	4.81	6.34	7.86	9.49	11.26	13.21	15.37	17.78	20.47	23.47	26.82	30.56	34.74	39.40	44.61	79
65	2.60	5.26	6.94	8.62	10.41	12.36	14.51	16.89	19.54	22.49	25.79	29.47	33.59	38.18	43.30	49.02	80
66	2.82	5.76	7.61	9.46	11.42	13.57	15.93	18.55	21.47	24.72	28.34	32.39	36.91	41.95	47.58	53.85	81
67	3.06	6.30	8.33	10.37	12.54	14.90	17.49	20.38	23.58	27.15	31.14	35.59	40.55	46.09	52.27	59.15	82
68	3.31	6.89	9.13	11.37	13.75	16.35	19.21	22.38	25.90	29.83	34.21	39.09	44.54	50.62	57.40	64.95	83
69	3.59	7.53	10.00	12.47	15.09	17.94	21.09	24.57	28.45	32.76	37.57	42.93	48.92	55.59	63.02	71.30	84
70	3.89	8.24	10.95	13.67	16.55	19.69	23.15	26.98	31.23	35.97	41.25	47.14	53.71	61.03	69.18	78.25	85
																85.83	86
																94.12	87
																103.16	88
																113.01	89
																123.74	90
																135.41	91
																148.08	92
																161.82	93
																176.70	94
																192.79	95
																210.14	96
																228.83	97
																248.91	98
																270.42	99
																295.90	100
																338.70	101
																414.66	102
																539.63	103
																729.46	104
																1,000.00	105

FEMALE SMOKER MORTALITY

Issue Age	Policy Year															Ult. Age	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
0	0.82	0.54	0.34	0.23	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.15
1	0.54	0.34	0.23	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.16
2	0.34	0.23	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.34	0.17
3	0.23	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.34	0.35	0.18
4	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.34	0.35	0.36	0.19
5	0.14	0.14	0.14	0.13	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.33	0.35	0.36	0.35	0.20
6	0.14	0.14	0.13	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.33	0.35	0.35	0.35	0.35	0.21
7	0.14	0.13	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.33	0.35	0.35	0.35	0.35	0.36	0.22
8	0.13	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.33	0.35	0.35	0.35	0.35	0.36	0.38	0.23
9	0.13	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.33	0.34	0.35	0.34	0.34	0.35	0.38	0.41	0.24
10	0.12	0.13	0.14	0.17	0.21	0.26	0.30	0.33	0.34	0.34	0.34	0.34	0.35	0.37	0.41	0.44	0.25
11	0.13	0.14	0.17	0.21	0.26	0.30	0.33	0.34	0.34	0.34	0.33	0.34	0.37	0.40	0.44	0.48	0.26
12	0.14	0.17	0.21	0.26	0.30	0.33	0.34	0.34	0.33	0.33	0.34	0.36	0.40	0.43	0.47	0.52	0.27
13	0.17	0.21	0.26	0.30	0.32	0.33	0.33	0.33	0.33	0.33	0.36	0.39	0.42	0.47	0.51	0.57	0.28
14	0.21	0.26	0.30	0.32	0.33	0.33	0.32	0.32	0.33	0.35	0.38	0.42	0.46	0.50	0.56	0.62	0.29
15	0.26	0.29	0.32	0.33	0.33	0.32	0.32	0.32	0.35	0.38	0.41	0.45	0.49	0.55	0.61	0.67	0.30
16	0.29	0.32	0.33	0.32	0.32	0.31	0.32	0.34	0.37	0.40	0.44	0.48	0.53	0.59	0.66	0.74	0.31
17	0.31	0.32	0.32	0.31	0.31	0.31	0.33	0.36	0.39	0.43	0.47	0.52	0.58	0.65	0.72	0.81	0.32
18	0.31	0.31	0.30	0.30	0.30	0.33	0.35	0.38	0.42	0.46	0.51	0.57	0.63	0.71	0.79	0.89	0.33
19	0.30	0.30	0.29	0.30	0.32	0.34	0.37	0.41	0.45	0.50	0.55	0.62	0.69	0.77	0.87	0.98	0.34
20	0.28	0.28	0.29	0.31	0.33	0.36	0.40	0.44	0.49	0.54	0.60	0.67	0.76	0.85	0.96	1.08	0.35
21	0.26	0.28	0.30	0.32	0.35	0.39	0.42	0.47	0.52	0.59	0.66	0.74	0.83	0.93	1.05	1.19	0.36
22	0.25	0.28	0.31	0.34	0.37	0.41	0.46	0.51	0.57	0.64	0.72	0.81	0.91	1.03	1.16	1.31	0.37
23	0.25	0.29	0.32	0.36	0.39	0.44	0.49	0.55	0.62	0.70	0.78	0.89	1.00	1.13	1.28	1.44	0.38
24	0.25	0.30	0.34	0.38	0.42	0.47	0.53	0.60	0.67	0.76	0.86	0.97	1.10	1.25	1.41	1.60	0.39
25	0.26	0.32	0.36	0.40	0.45	0.51	0.58	0.65	0.74	0.83	0.95	1.07	1.21	1.38	1.56	1.76	0.40
26	0.26	0.33	0.38	0.43	0.49	0.55	0.63	0.71	0.81	0.92	1.04	1.18	1.34	1.52	1.72	1.95	0.41
27	0.27	0.35	0.40	0.46	0.52	0.60	0.68	0.78	0.88	1.01	1.14	1.30	1.48	1.68	1.90	2.15	0.42
28	0.28	0.37	0.43	0.49	0.57	0.65	0.74	0.85	0.97	1.11	1.26	1.43	1.63	1.85	2.10	2.38	0.43
29	0.29	0.39	0.46	0.53	0.62	0.71	0.82	0.93	1.07	1.22	1.39	1.58	1.80	2.04	2.32	2.63	0.44

FEMALE SMOKER MORTALITY—Continued

Issue Age	Policy Year															Ult. Age	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
30	0.30	0.41	0.50	0.58	0.67	0.78	0.89	1.03	1.18	1.34	1.53	1.75	1.99	2.26	2.56	2.90	45
31	0.31	0.44	0.53	0.63	0.73	0.85	0.98	1.13	1.29	1.48	1.69	1.93	2.20	2.49	2.83	3.20	46
32	0.33	0.48	0.58	0.69	0.80	0.93	1.08	1.24	1.43	1.63	1.87	2.13	2.42	2.75	3.12	3.53	47
33	0.35	0.52	0.63	0.75	0.88	1.02	1.19	1.37	1.57	1.80	2.06	2.35	2.68	3.04	3.44	3.90	48
34	0.37	0.56	0.69	0.82	0.96	1.13	1.31	1.51	1.73	1.99	2.27	2.59	2.95	3.35	3.80	4.30	49
35	0.39	0.60	0.75	0.90	1.06	1.24	1.44	1.66	1.91	2.19	2.51	2.86	3.26	3.70	4.19	4.73	50
36	0.42	0.66	0.82	0.98	1.16	1.36	1.58	1.83	2.11	2.42	2.77	3.16	3.59	4.07	4.61	5.21	51
37	0.45	0.72	0.90	1.08	1.28	1.50	1.75	2.02	2.33	2.67	3.05	3.48	3.95	4.48	5.07	5.73	52
38	0.48	0.78	0.98	1.19	1.41	1.65	1.92	2.23	2.56	2.94	3.36	3.83	4.35	4.93	5.58	6.30	53
39	0.52	0.86	1.08	1.30	1.55	1.82	2.12	2.45	2.82	3.24	3.70	4.22	4.79	5.43	6.13	6.92	54
40	0.57	0.94	1.18	1.43	1.71	2.00	2.33	2.70	3.11	3.57	4.07	4.64	5.27	5.96	6.74	7.59	55
41	0.61	1.02	1.30	1.58	1.88	2.21	2.57	2.97	3.42	3.92	4.48	5.10	5.79	6.55	7.39	8.32	56
42	0.66	1.12	1.42	1.73	2.06	2.43	2.83	3.27	3.77	4.32	4.92	5.60	6.35	7.18	8.10	9.12	57
43	0.72	1.23	1.56	1.91	2.27	2.67	3.11	3.60	4.14	4.74	5.41	6.15	6.97	7.87	8.87	9.98	58
44	0.78	1.35	1.72	2.09	2.50	2.94	3.42	3.96	4.55	5.21	5.93	6.74	7.63	8.62	9.71	10.91	59
45	0.85	1.48	1.89	2.30	2.74	3.23	3.76	4.34	4.99	5.71	6.51	7.39	8.36	9.43	10.61	11.92	60
46	0.93	1.62	2.07	2.53	3.01	3.54	4.12	4.77	5.48	6.26	7.13	8.09	9.14	10.31	11.60	13.01	61
47	1.01	1.77	2.27	2.77	3.31	3.89	4.53	5.23	6.00	6.86	7.80	8.85	10.00	11.26	12.65	14.19	62
48	1.09	1.94	2.49	3.04	3.63	4.26	4.96	5.73	6.57	7.51	8.53	9.67	10.91	12.29	13.80	15.46	63
49	1.19	2.12	2.73	3.33	3.97	4.67	5.43	6.27	7.19	8.21	9.32	10.55	11.91	13.40	15.03	16.83	64
50	1.29	2.32	2.98	3.65	4.35	5.11	5.95	6.86	7.86	8.96	10.18	11.51	12.98	14.59	16.36	18.30	65
51	1.40	2.54	3.27	3.99	4.76	5.59	6.50	7.49	8.58	9.78	11.10	12.55	14.14	15.88	17.80	19.89	66
52	1.52	2.77	3.57	4.37	5.21	6.11	7.10	8.18	9.37	10.67	12.10	13.67	15.39	17.27	19.34	21.60	67
53	1.65	3.03	3.90	4.77	5.69	6.68	7.75	8.93	10.21	11.62	13.17	14.87	16.73	18.77	21.00	23.44	68
54	1.79	3.30	4.26	5.21	6.21	7.28	8.45	9.73	11.12	12.65	14.33	16.16	18.17	20.38	22.78	25.42	69
55	1.93	3.60	4.64	5.68	6.77	7.94	9.21	10.59	12.11	13.76	15.57	17.56	19.73	22.10	24.70	27.54	70
56	2.09	3.92	5.06	6.19	7.38	8.65	10.03	11.53	13.16	14.95	16.91	19.06	21.40	23.96	26.76	29.83	71
57	2.26	4.26	5.51	6.74	8.03	9.41	10.90	12.53	14.30	16.24	18.35	20.67	23.20	25.96	28.98	32.28	72
58	2.44	4.63	5.99	7.33	8.73	10.23	11.85	13.61	15.53	17.62	19.90	22.40	25.13	28.10	31.36	34.92	73
59	2.63	5.03	6.51	7.97	9.49	11.11	12.87	14.77	16.84	19.10	21.56	24.26	27.20	30.41	33.92	37.75	74

FEMALE SMOKER MORTALITY—Continued

Issue Age	Policy Year															Ult. Age	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
60	2.83	5.46	7.07	8.66	10.30	12.06	13.96	16.02	18.25	20.69	23.35	26.25	29.42	32.89	36.67	40.80	75
61	3.05	5.92	7.67	9.39	11.18	13.08	15.13	17.35	19.77	22.40	25.27	28.40	31.81	35.55	39.62	44.08	76
62	3.28	6.41	8.32	10.18	12.12	14.18	16.39	18.79	21.40	24.23	27.33	30.70	34.38	38.41	42.80	47.61	77
63	3.52	6.93	9.01	11.03	13.12	15.35	17.74	20.33	23.14	26.20	29.54	33.17	37.15	41.48	46.22	51.41	78
64	3.78	7.50	9.75	11.94	14.20	16.61	19.19	21.99	25.02	28.32	31.91	35.83	40.11	44.79	49.91	55.51	79
65	4.05	8.10	10.54	12.91	15.36	17.96	20.75	23.76	27.03	30.59	34.46	38.69	43.31	48.36	53.88	59.93	80
66	4.34	8.74	11.39	13.95	16.60	19.40	22.41	25.66	29.19	33.02	37.20	41.77	46.75	52.20	58.17	64.71	81
67	4.64	9.43	12.29	15.07	17.93	20.95	24.20	27.71	31.51	35.65	40.15	45.08	50.46	56.35	62.80	69.87	82
68	4.96	10.16	13.26	16.26	19.35	22.62	26.12	29.90	34.00	38.46	43.33	48.64	54.46	60.82	67.81	75.47	83
69	5.29	10.94	14.30	17.54	20.87	24.40	28.18	32.26	36.68	41.50	46.75	52.49	58.78	65.66	73.22	81.53	84
70	5.65	11.78	15.41	18.91	22.51	26.31	30.39	34.79	39.56	44.76	50.44	56.64	63.44	70.90	79.10	88.11	85
																95.25	86
																103.02	87
																111.47	88
																120.67	89
																130.70	90
																141.62	91
																153.53	92
																166.49	93
																180.61	94
																195.96	95
																212.62	96
																230.69	97
																250.22	98
																271.28	99
																296.42	100
																338.98	101
																414.79	102
																539.67	103
																729.47	104
																1,000.00	105

FEMALE NONSMOKER MORTALITY

Issue Age	Policy Year																Ult. Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Ult.	
0	0.82	0.54	0.34	0.22	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	15
1	0.54	0.34	0.22	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	16
2	0.34	0.22	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.30	17
3	0.22	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.28	0.30	0.31	18
4	0.17	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.27	0.30	0.31	0.31	19
5	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.27	0.30	0.31	0.31	0.30	20
6	0.14	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.27	0.30	0.31	0.30	0.30	0.29	21
7	0.14	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.27	0.30	0.31	0.30	0.29	0.29	0.29	22
8	0.13	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.27	0.30	0.30	0.30	0.29	0.29	0.29	0.30	23
9	0.13	0.12	0.12	0.14	0.16	0.20	0.24	0.27	0.29	0.30	0.30	0.29	0.28	0.28	0.30	0.32	24
10	0.12	0.12	0.14	0.16	0.20	0.24	0.27	0.29	0.30	0.29	0.29	0.28	0.28	0.30	0.31	0.33	25
11	0.12	0.14	0.16	0.20	0.24	0.27	0.29	0.30	0.29	0.28	0.28	0.28	0.29	0.31	0.33	0.35	26
12	0.14	0.16	0.20	0.24	0.27	0.29	0.30	0.29	0.28	0.27	0.27	0.29	0.30	0.32	0.35	0.37	27
13	0.16	0.20	0.24	0.27	0.29	0.29	0.29	0.28	0.27	0.27	0.28	0.30	0.32	0.34	0.36	0.39	28
14	0.20	0.24	0.27	0.29	0.29	0.28	0.27	0.27	0.26	0.28	0.29	0.31	0.33	0.36	0.39	0.42	29
15	0.24	0.27	0.29	0.29	0.28	0.27	0.26	0.26	0.27	0.29	0.31	0.33	0.35	0.38	0.41	0.44	30
16	0.26	0.28	0.29	0.28	0.27	0.26	0.26	0.27	0.28	0.30	0.32	0.34	0.37	0.40	0.44	0.47	31
17	0.28	0.28	0.27	0.26	0.25	0.25	0.26	0.28	0.29	0.31	0.34	0.36	0.39	0.43	0.46	0.51	32
18	0.27	0.27	0.26	0.25	0.25	0.26	0.27	0.29	0.31	0.33	0.35	0.38	0.42	0.45	0.50	0.54	33
19	0.25	0.25	0.24	0.24	0.25	0.26	0.28	0.30	0.32	0.35	0.37	0.41	0.44	0.49	0.53	0.58	34
20	0.23	0.23	0.23	0.24	0.26	0.27	0.29	0.31	0.34	0.37	0.40	0.43	0.47	0.52	0.57	0.63	35
21	0.21	0.22	0.23	0.25	0.26	0.28	0.30	0.33	0.35	0.39	0.42	0.46	0.51	0.56	0.61	0.68	36
22	0.20	0.22	0.24	0.25	0.27	0.29	0.32	0.34	0.37	0.41	0.45	0.49	0.54	0.60	0.66	0.73	37
23	0.20	0.22	0.24	0.26	0.28	0.31	0.33	0.36	0.40	0.44	0.48	0.53	0.58	0.64	0.71	0.79	38
24	0.19	0.23	0.25	0.27	0.29	0.32	0.35	0.38	0.42	0.47	0.51	0.57	0.63	0.69	0.77	0.85	39
25	0.19	0.23	0.25	0.28	0.31	0.34	0.37	0.41	0.45	0.50	0.55	0.61	0.68	0.75	0.83	0.92	40
26	0.19	0.23	0.26	0.29	0.32	0.35	0.39	0.43	0.48	0.53	0.59	0.66	0.73	0.81	0.90	1.00	41
27	0.19	0.24	0.27	0.30	0.34	0.37	0.42	0.46	0.52	0.57	0.64	0.71	0.79	0.88	0.98	1.09	42
28	0.19	0.25	0.28	0.32	0.36	0.40	0.44	0.50	0.55	0.62	0.69	0.77	0.85	0.95	1.06	1.19	43
29	0.19	0.26	0.30	0.34	0.38	0.42	0.47	0.53	0.59	0.66	0.74	0.83	0.93	1.04	1.16	1.29	44

FEMALE NONSMOKER MORTALITY—Continued

Issue Age	Policy Year																Ult.	Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
30	0.20	0.27	0.31	0.35	0.40	0.45	0.51	0.57	0.64	0.72	0.80	0.90	1.01	1.13	1.26	1.41	45	
31	0.20	0.28	0.33	0.38	0.43	0.48	0.55	0.62	0.69	0.78	0.87	0.98	1.09	1.23	1.37	1.54	46	
32	0.21	0.29	0.35	0.40	0.46	0.52	0.59	0.66	0.75	0.84	0.95	1.06	1.19	1.34	1.50	1.68	47	
33	0.21	0.31	0.37	0.43	0.49	0.56	0.63	0.72	0.81	0.91	1.03	1.16	1.30	1.46	1.64	1.84	48	
34	0.22	0.32	0.39	0.46	0.53	0.60	0.68	0.78	0.88	0.99	1.12	1.26	1.42	1.59	1.79	2.01	49	
35	0.23	0.34	0.42	0.49	0.57	0.65	0.74	0.84	0.95	1.08	1.22	1.37	1.55	1.74	1.96	2.21	50	
36	0.24	0.37	0.45	0.53	0.61	0.70	0.80	0.91	1.04	1.17	1.33	1.50	1.69	1.91	2.15	2.42	51	
37	0.25	0.39	0.48	0.57	0.66	0.76	0.87	0.99	1.13	1.28	1.45	1.64	1.85	2.09	2.36	2.66	52	
38	0.26	0.42	0.51	0.61	0.71	0.82	0.95	1.08	1.23	1.40	1.59	1.79	2.03	2.29	2.59	2.92	53	
39	0.28	0.45	0.55	0.66	0.77	0.89	1.03	1.18	1.34	1.53	1.73	1.97	2.23	2.52	2.85	3.21	54	
40	0.30	0.48	0.60	0.71	0.84	0.97	1.12	1.28	1.47	1.67	1.90	2.16	2.44	2.77	3.13	3.54	55	
41	0.32	0.52	0.65	0.77	0.91	1.06	1.22	1.40	1.60	1.83	2.08	2.37	2.68	3.04	3.45	3.90	56	
42	0.34	0.56	0.70	0.84	0.99	1.15	1.33	1.53	1.76	2.01	2.28	2.60	2.95	3.35	3.80	4.30	57	
43	0.36	0.60	0.76	0.91	1.08	1.26	1.46	1.68	1.92	2.20	2.51	2.86	3.25	3.69	4.18	4.74	58	
44	0.38	0.65	0.82	1.00	1.18	1.38	1.59	1.84	2.11	2.42	2.76	3.14	3.58	4.07	4.62	5.24	59	
45	0.41	0.71	0.90	1.08	1.29	1.50	1.75	2.02	2.32	2.65	3.03	3.46	3.94	4.48	5.10	5.78	60	
46	0.44	0.77	0.98	1.18	1.40	1.65	1.91	2.21	2.55	2.92	3.34	3.81	4.35	4.95	5.63	6.39	61	
47	0.48	0.84	1.06	1.29	1.54	1.80	2.10	2.43	2.80	3.21	3.68	4.21	4.80	5.47	6.22	7.07	62	
48	0.52	0.91	1.16	1.41	1.68	1.98	2.31	2.67	3.08	3.54	4.06	4.64	5.30	6.04	6.88	7.82	63	
49	0.56	0.99	1.27	1.55	1.84	2.17	2.53	2.94	3.39	3.90	4.48	5.12	5.85	6.68	7.61	8.66	64	
50	0.60	1.08	1.38	1.69	2.02	2.38	2.79	3.23	3.74	4.30	4.94	5.66	6.47	7.39	8.42	9.59	65	
51	0.65	1.18	1.52	1.86	2.22	2.62	3.07	3.56	4.12	4.75	5.46	6.26	7.16	8.18	9.33	10.63	66	
52	0.71	1.29	1.66	2.04	2.44	2.88	3.38	3.93	4.55	5.24	6.03	6.92	7.92	9.05	10.33	11.77	67	
53	0.76	1.41	1.82	2.24	2.68	3.17	3.72	4.33	5.02	5.79	6.67	7.65	8.77	10.03	11.45	13.05	68	
54	0.83	1.54	1.99	2.46	2.95	3.50	4.10	4.78	5.55	6.41	7.38	8.47	9.71	11.11	12.69	14.47	69	
55	0.99	1.69	2.19	2.70	3.25	3.85	4.53	5.28	6.13	7.08	8.16	9.38	10.75	12.31	14.06	16.04	70	
56	0.98	1.85	2.41	2.97	3.58	4.25	5.00	5.83	6.78	7.84	9.04	10.39	11.92	13.64	15.59	17.79	71	
57	1.07	2.03	2.64	3.27	3.95	4.69	5.52	6.45	7.50	8.67	10.00	11.51	13.20	15.12	17.29	19.73	72	
58	1.16	2.22	2.91	3.60	4.35	5.18	6.10	7.13	8.29	9.60	11.08	12.75	14.64	16.76	19.17	21.88	73	
59	1.26	2.44	3.20	3.97	4.80	5.72	6.74	7.89	9.18	10.63	12.28	14.13	16.22	18.59	21.25	24.26	74	

FEMALE NONSMOKER MORTALITY—Continued

Issue Age	Policy Year															Ult.	Attained Age
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
60	1.38	2.68	3.53	4.38	5.30	6.32	7.46	8.73	10.16	11.78	13.60	15.66	17.98	20.61	23.56	26.90	75
61	1.50	2.95	3.88	4.83	5.86	6.99	8.25	9.66	11.25	13.05	15.07	17.36	19.93	22.84	26.12	29.82	76
62	1.63	3.24	4.28	5.34	6.47	7.73	9.13	10.70	12.46	14.45	16.70	19.24	22.10	25.32	28.96	33.05	77
63	1.78	3.57	4.72	5.89	7.15	8.55	10.10	11.84	13.80	16.01	18.51	21.32	24.49	28.07	32.09	36.62	78
64	1.95	3.93	5.21	6.51	7.91	9.45	11.18	13.11	15.29	17.74	20.51	23.63	27.14	31.10	35.56	40.57	79
65	2.12	4.33	5.74	7.19	8.74	10.46	12.37	14.52	16.94	19.66	22.72	26.18	30.07	34.45	39.38	44.92	80
66	2.32	4.77	6.34	7.94	9.67	11.57	13.70	16.08	18.76	21.77	25.17	29.00	33.30	38.15	43.60	49.72	81
67	2.53	5.25	7.00	8.78	10.69	12.81	15.16	17.81	20.77	24.12	27.88	32.11	36.88	42.24	48.25	55.01	82
68	2.76	5.78	7.73	9.70	11.83	14.17	16.79	19.71	23.00	26.70	30.87	35.55	40.82	46.74	53.38	60.82	83
69	3.01	6.37	8.53	10.72	13.08	15.68	18.58	21.82	25.47	29.56	34.17	39.34	45.16	51.69	59.01	67.21	84
70	3.29	7.02	9.42	11.85	14.46	17.35	20.56	24.15	28.18	32.71	37.81	43.52	49.94	57.14	65.21	74.23	85
																81.92	86
																90.34	87
																99.55	88
																109.60	89
																120.56	90
																132.48	91
																145.43	92
																159.47	93
																174.66	94
																191.06	95
																208.73	96
																227.72	97
																248.07	98
																269.83	99
																295.51	100
																338.47	101
																414.53	102
																539.58	103
																729.45	104
																1,000.00	105

