

**Worklife Expectancies of Railroad Workers
Based on the Twenty-Third Actuarial Valuation**

Gary R. Skoog, Ph.D.
Department of Economics
DePaul University
and
Legal Econometrics, Inc.
www.legaleconometrics.com
(847) 729-6154
and
Spectrum Economics, Inc.

James E. Ciecka, Ph.D.
Department of Economics
DePaul University
and
Spectrum Economics, Inc.

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Preface

The Bureau of the Actuary of U.S. Railroad Retirement Board issued the *Twenty-Third Actuarial Valuation* in October, 2006. This valuation met three legal requirements. (1) The Railroad Retirement Board must estimate liabilities at least every three years under Section 15(g) of the Railroad Retirement Act of 1974. (2) Each year the Railroad Retirement Board must submit, to the President and Congress, five year projections of revenues and payments from the Railroad Retirement Account under Section 22 of the 1974 Act. (3) A report on the actuarial status of the railroad retirement system must be submitted to Congress each year under the Railroad Retirement Solvency Act of 1983. The Railroad Retirement Board endorsed the *Twenty-Third Actuarial Valuation* as a fair picture of the financial condition of the railroad retirement system.

The statement of the independent Actuarial Advisory Committee indicates that it was consulted in the planning and the execution stages of the preparation of the *Twenty-Third Actuarial Valuation*; and it was consulted on the structure, scope, content, actuarial assumptions, and actuarial methodology. As with the Railroad Retirement Board, The Actuarial Advisory Committee believes the *Twenty-Third Actuarial Valuation* to be a fair picture of the financial condition of the railroad retirement system. This includes the valuation of future contributions, investment income from the assets of the system, future expenses and benefit payouts to participants. The latter particularly is affected by mortality experience of railroad workers (Table S-4 in the *Twenty-Third Actuarial Valuation*), age retirements (Table S-10), disability retirements (Table S-11), and other withdrawals (Table S-12). The information in the foregoing tables provides the fundamental data set for the worklife expectancies and standard deviations calculated in this monograph.

A dozen years have elapsed since the Association of American Railroads last sponsored research on railroad worklife expectancies. In the intervening years, the law changed in December, 2001 when railroad workers were permitted to retire with unreduced pensions if they have 30 years of service at age 60. The tables we present would be a valuable addition to understanding railroad retirements even if they only updated previous worklife tables. Perhaps more importantly, these new tables represent a significant methodological improvement over past work, and thereby go much beyond timeliness. For the first time, worklife expectancies are based on a four decrement competing risks formulation. These risks include death, age retirement and disability retirement (as included in previous tables), but now other withdrawals (including terminations) from railroad work are included as a risk factor. The latter risk is particularly important for young railroad workers with little service or seniority. Standard deviations also are reported for the first time – information that may be very important in regard to accuracy and bound of error considerations. Markov model worklife expectancies and standard deviations also are derived after fully integrating economy-wide transition probabilities with mortality and age/service related retirement transition probabilities of railroad workers.

I. Introduction

This monograph describes years of activity in railroad work by utilizing data from the *Twenty-Third Actuarial Valuation* (2006), specifically Table S-4 (mortality rates), Table S-10 (age retirement probabilities), Table S-11 (disability retirement probabilities), and Table S-12 (final withdrawal probabilities). The main tabular results show the average number of years of railroad activity (*i.e.*, worklife expectancy) and the standard deviation of years devoted to railroad work for each exact (integer) age from 17 to 75 and for exact years of service. Competing risks, or the multiple decrement model, and the Markov/Increment-Decrement model provide the theoretical bases for these results. The competing risks model contains four decrements¹ – mortality, age retirement, disability retirement, and other final withdrawals taken from Tables S-4, S-10, S-11, and S-12, all reprinted here in Appendix A. The Markov process model results utilize economy wide transition probabilities (adjusted for the mortality experience of railroad workers from Table S-4) and Table S-10, and has been the standard model for general worklife expectancy since proposed in 1982 and implemented in 1986 by the U.S. Bureau of Labor Statistics.

The familiar concept of life expectancy measures the average number of additional years of life for people in a particular group or cohort. Worklife expectancy is analogous to life expectancy, but worklife refers to the average number of additional years in labor market activity (*i.e.*, working or looking for work). The concept refers to time spent in the labor force; and, in this case, the average, or mean, amount of time spent in railroad activity. Regarding life expectancy, we note that although everyone in a particular group possesses the same life expectancy, not everyone in that group will live the same number of years. In other words, variation around life expectancy occurs. Similarly, variation occurs around the mean years devoted to railroad work; we report this variation in the standard deviation columns of our tables. We also display a few probability mass functions (pmf's) for additional years of railroad activity in Appendix B in order to illustrate this variation. A final table in Appendix B illustrates competing risks probabilities and their accumulation to worklife.

In Section II we explain the competing risks/multiple decrement and Markov/Increment-Decrement models in some detail (Skoog and Ciecka, 2007). This section is proffered in the spirit of completeness and to enable anyone with an understanding of the underlying mathematics to replicate our results. However, one could skip Section II and go directly to Section III which contains a discussion of the tables and interpolation procedure for non-integer ages and non-integer years of service. We provide concluding remarks in Section IV. The main tabular results follow Section IV and appear on pages 10-55. The extended table on these pages contains worklife expectancies and standard deviations at exact ages and years of service based on the four decrement competing risks model and the Markov model.

¹ Earlier worklife expectancies prepared for the Association of American Railroads were based on a three decrement model that included mortality, age retirements, and disability retirements; but the effects of withdrawals and terminations were not considered nor were standard deviations calculated.

II. Mathematical Specification of Competing Risks and Markov Process Models

We use the following notation in our competing risks/multiple decrement formulation:

x denotes exact age, $x = 17, \dots, 75$;

ω denotes the youngest age for which the probability of being active in the railroad industry is zero, $\omega = 95$;

s denotes years of railroad service, $s = 0, \dots, x - 17$;

$q_x^{(1)}$ denotes the mortality rate of railroad employees between age x and $x+1$;

$q_{x,s}^{(2)}$ denotes the probability of a railroad age retirement between x and $x+1$ given s years of service;

$q_{x,s}^{(3)}$ denotes the probability of a railroad disability retirement between x and $x+1$ given s years of service;

$q_{x,s}^{(4)}$ denotes the probability of withdrawal from railroad work (for reasons other than death, age retirement, or disability retirement) between x and $x+1$ given s years of service;

$q_x^{(1)} = q_x'^{(1)} [1 - .5(q_{x,s}^{(2)} + q_{x,s}^{(3)} + q_{x,s}^{(4)})]$, $q_x^{(1)}$ denotes mortality probability, since $q_x'^{(1)}$ measures the net rate of mortality; this formula transforms $q_x'^{(1)}$ into $q_x^{(1)}$;

$WLE_{x,s}^{CR}$ denotes competing risks railroad worklife expectancy for an individual at age x with s years of railroad service under the assumption of mortality, age retirement, disability retirement, and withdrawal as competing risks.

As the notation suggests, in the *Twenty-Third Actuarial Valuation* the mortality rate $q_x^{(1)}$ (and therefore the transformed $q_x^{(1)}$ probability) is invariant to years of service; age retirement probability $q_{x,s}^{(2)}$ is zero prior to age 60 and it depends upon both x and s at age 60 and beyond; disability retirement probability $q_{x,s}^{(3)}$ depends on both age and years of service; and the withdrawal probability $q_{x,s}^{(4)}$ is a function of both age and years of service. Age and service retirements, disability retirements and withdrawals are reported as probabilities; but mortality is given as a net rate in the *Twenty-Third Actuarial Valuation*, requiring a conversion to a probability.

Consider a person who is in the railroad industry at age x and has s years of service. Then the probability of that individual remaining in the railroad industry at age $x+1$ is

$$(1) \quad {}_1p_{x,s} = 1 - (q_x^{(1)} + q_{x,s}^{(2)} + q_{x,s}^{(3)} + q_{x,s}^{(4)}).$$

The probability of continuing as a railroad worker is defined recursively by

$$(2) \quad {}_{i+1}p_{x,s} = {}_i p_{x,s} [1 - (q_{x+i}^{(1)} + q_{x+i,s+i}^{(2)} + q_{x+i,s+i}^{(3)} + q_{x+i,s+i}^{(4)})]$$

where $i = 1, \dots, \omega - x - 1$ and ${}_{\omega-x}p_{x,s} = 0$. The worklife expectancy in railroad service at exact age x for an individual with s years of railroad service is

$$(3) \quad WLE_{x,s}^{CR} = .5(1 + {}_1p_{x,s}) + .5({}_1p_{x,s} + {}_2p_{x,s}) + \dots + .5({}_{\omega-x-1}p_{x,s} + {}_{\omega-x}p_{x,s})$$

$$= .5 + \sum_{i=1}^{\omega-x-1} {}_i p_{x,s}$$

where each term on the right hand side of (3) reflects the usual averaging of beginning and ending period probabilities (*i.e.*, assuming mid-period transitions) typically used in expectancy calculations, such as average years of life calculations (Bowers, 1987 and Jordan, 1991).

Formulae (1) and (2) induce probability mass functions (pmf's) on years of railroad activity (See Appendix B for illustrations of pmf's.) . Here we think of additional years of railroad work $YA_{x,s}^{CR}$ as a random variable with pmf $p_{YA}^{CR}(x, s, y)$, which denotes the probability that a railroad worker age x with s service years will accumulate y additional years of railroad service. This pmf at age x and s service years consists of the boundary condition and a main recursion in (4).

$$(4) \quad \begin{aligned} \text{Boundary Condition: } & p_{YA}^{CR}(x, s, .5) = 1 - {}_1p_{x,s} \\ \text{Main Recursion: } & p_{YA}^{CR}(x, s, y) = {}_{y-.5}p_{x,s} - {}_{y+.5}p_{x,s} \quad y = 1.5, 2.5, \dots, \omega - x - .5 \end{aligned}$$

Of course, $E(YA_{x,s}^{CR}) = WLE_{x,s}^{CR}$ as previously calculated in (3).² The pmf's defined in (4) capture entire probability distributions of time spent in railroad activity; and therefore one can compute any parameter of interest, such as standard deviations which are computed as

$$(5) \quad SD(YA_{x,s}^{CR}) = \sqrt{\sum_{y=.5}^{\omega-x-.5} (y - WLE_{x,s}^{CR})^2 p_{YA}^{CR}(x, s, y)}.$$

The competing risks columns in the extended table on pages 10-55 contain railroad worklife expectancies and standard deviations computed with formulae (1) – (5).

² Since $E(YA_{x,s}^{CR}) = .5(1 - {}_1p_{x,s}) + 1.5({}_1p_{x,s} - {}_2p_{x,s}) + 2.5({}_2p_{x,s} - {}_3p_{x,s}) + \dots + (\omega - x - .5)({}_{\omega-x-1}p_{x,s} - {}_{\omega-x}p_{x,s})$, we have after collecting terms,
 $E(YA_{x,s}^{CR}) = .5 + {}_1p_{x,s} + {}_2p_{x,s} + {}_3p_{x,s} + \dots + {}_{\omega-x-1}p_{x,s} = WLE_{x,s}^{CR}$

The Markov/Increment-Decrement (ID) model produces the last two columns in the extended table on pages 10-55. In (6) $YA_{x,s}^{ID}$ denotes the random variable measuring additional time spent in railroad activity. Transitions from a (active) and i (inactive) occur at the midpoint of any year using economy-wide transition probabilities until a worker qualifies for railroad age retirement; at that point railroad transition probabilities from Table S-10 govern transitions to inactivity (See Skoog and Ciecka, 1998, 2001a, 2001b, 2002, 2004, 2006 and 2007 for background on the Markov model in this context and previous work.).³ We use $p_{YA}^{ID}(x, s, y)$ to denote the probability that a railroad worker age x with s service years will accumulate y additional years of railroad service, and ${}^m p_x^n$ denotes the transition probability from state m (active or inactive) to state n (active, inactive, or death) at age x . The boundary conditions and recursions in (6) define pmf's for beginning age $BA = 17$ to age 110 where everyone is assumed to be dead at truncation age $TA = 111$.

Boundary Conditions:

$$p_{YA}^{ID}(x, a, 0) = 0$$

$$p_{YA}^{ID}(x, a, .5) = {}^a p_x^d + {}^a p_x^i p_{YA}^{ID}(x+1, i, 0)$$

$$p_{YA}^{ID}(x, i, 0) = {}^i p_x^d + {}^i p_x^i p_{YA}^{ID}(x+1, i, 0), \text{ for } x = BA, \dots, TA - 1$$

(6)

Main Recursions:

$$p_{YA}^{ID}(x, a, y) = {}^a p_x^a p_{YA}^{ID}(x+1, a, y-1) + {}^a p_x^i p_{YA}^{ID}(x+1, i, y-.5),$$

$$y = 1.5, 2.5, 3.5, \dots, TA - x - .5$$

$$p_{YA}^{ID}(x, i, y) = {}^i p_x^a p_{YA}^{ID}(x+1, a, y-.5) + {}^i p_x^i p_{YA}^{ID}(x+1, i, y),$$

$$y = 1, 2, 3, \dots, TA - x - .5 \text{ and for } x = BA, \dots, TA - 1$$

³ The Markov calculations also utilize data from the *Twenty-Third Actuarial Valuation* for mortality probabilities and retirement probabilities. Transition probabilities for all males in the US population prior to age 60 are from Krueger (2004). Transition probabilities are scaled to the mortality experience of railroad workers, and we set active-to-inactive transition probabilities equal to retirement probabilities (adjusted for mortality) of railroad workers for ages 60 and above if they have sufficient service credits to retire within railroad pension rules. Active-to-active transition probabilities are thereby also determined. For example, consider a 45 year old with 16 years of service. In 15 years, at age 60, such a person will have accumulated approximately an additional 13 years of service, on average; reaching a total service accumulation of 29 years but insufficient for railroad retirement at age 60. This person would be eligible for railroad retirement in approximately one year; and, at that point, Table S-10, "30 & Over" probabilities are used. However, a 45-year-old with 10 years of service will have accumulated service of approximately 23 years at age 60; and, at age 62, would still have less than 30 years of service. This person would qualify for railroad retirement at age 62, but we then use the "5-29" years of service column probabilities in Table S-10, noting that this person will never accumulate 30 years of service since worklife expectancy for such a person is only 16 years. We assume that inactive-to-active transition probabilities are zero once a person qualifies for retirement; this can occur at age 60 at the earliest. However, it may occur later, as indicated in the above examples. In the case of a 45 year old with 10 service years, early retirement can occur at age 62 and active-to-active and inactive-to active transition probabilities are the economy wide probabilities for ages 60 and 61; inactive-to active probabilities are zero for age 62 and beyond and active-to-inactive probabilities are taken from Table S-10.

Worklife expectancies and standard deviations are computed in the usual manner specified in (7) and (8).

$$(7) \quad WLE_{x,s}^{ID} = E(YA_{x,s}^{ID}) = \sum_{y=5}^{TA-x-5} y P_{YA}^{ID}(x, a, y)$$

$$(8) \quad SD(YA_{x,s}^{ID}) = \sqrt{\sum_{y=5}^{TA-x-5} (y - WLE_{x,s}^{ID})^2 P_{YA}^{ID}(x, s, y)} .$$

III. Using the Competing Risks and Markov Tables

The extended table on pages 10-55 contains worklife expectancies and standard deviations computed with the formulae in Section II. Table entries are at exact ages and years of service. For example, a railroad worker age 26.0 with 3.0 years of service has a worklife expectancy of 18.75 years, with a standard deviation of 13.21 years based on the four competing risks of mortality, age retirement, disability, and other final withdrawals. Formulae (1) – (5) generate these results. The Markov/Increment-Decrement (ID) worklife and standard deviation are 30.22 and 5.92, respectively. Formulae (6) – (8) produce these values. The competing risks and Markov worklife expectancies often differ significantly, especially at young ages and little service when the Markov expectancy can be more than double the competing risks expectancy.⁴ What accounts for this? The most important factors are disability retirements and other final withdrawals from railroad work which are incorporated into the competing risks expectancy calculations; these departures from railroad activity are viewed as final and irreversible like death and age retirements. In the Markov model, death and age retirement are final as well; but other transitions to inactivity are based on economy-wide probabilities (not the disability probabilities in Table S-11 nor the final withdrawal probabilities from railroad work in Table S-12) and transitions from inactivity back to activity also occur prior to qualifying for railroad age retirement.

The four decrement competing risks and Markov models give reasonable lower and upper bounds to worklife with the Markov expectancies typically exceeding their four decrement counterparts. As noted above, the range is greatest at young ages and little service; but it narrows with age and years of service. For example, at age 20 and no service, the four decrement and Markov expectancies are 15.08 and 35.02 years, respectively. By age 50 with 25 years of service, the four decrement and Markov expectancies are 8.41 and 9.25 years. These are sensible ranges. The 20 year old with no railroad service has not displayed a commitment to railroad work and, when subjected to all causes that lead to egress from railroad work, has a railroad worklife of only 15.08

⁴ Worklife expectancies differ less at older ages and large amounts of service. Competing risks expectancies at older ages can exceed Markov expectancies, especially when service years are small. Standard deviations from the competing risks model exceed Markov standard deviations at younger ages; the former are more than double the latter until approximately age 30. Markov standard deviations are slightly bigger than competing risks standard deviation after approximately age 53.

years. This is typically what we would expect for a 20 year old with no service, and it would be a better estimate of railroad worklife than the Markov expectancy. This 20 year old would then have a residual worklife expectancy in non-railroad work – a first approximation of the residual worklife being the difference between the Markov expectancy of 35.02 years and 15.08 years; or, alternatively, the difference between worklives for people in the general population (Skoog and Ciecka, 2001b) and 15.08 years.

When neither age nor service years is an integer, a double interpolation must be made. For example, consider a railroad worker who is age 26.7 and who has 3.2 years of service credit. The four decrement competing risk model shows the following worklife expectancies at ages 26.0 and 27.0 with 3.0 and 4.0 years of service.

Age	Service Years	WLE
26.0	3.0	18.75
26.0	4.0	19.46
27.0	3.0	18.41
27.0	4.0	19.10

First, interpolate relative to age with 3.0 years of service:

$$18.75 - .7(18.75 - 18.41) = 18.512$$

which is the worklife expectancy at age 26.7 and exactly 3.0 years of service. Interpolating relative to age once again but for 4.0 years of service gives the worklife expectancy at age 26.7 with 4.0 service years

$$19.46 - .7(19.46 - 19.10) = 19.208.$$

Finally, interpolating across service years yields

$$18.512 - .2(18.512 - 19.208) = 18.65$$

as the worklife expectancy for a person age 26.7 with 3.2 years of service. Interpolating across age yields two intermediate worklife expectancies and then a final interpolation across service years occurs. Of course, the final interpolated worklife must be the same number if one were to first interpolate relative to service years and then across age as shown below.

Interpolation across service years at age 26.0: $18.75 - .2(18.75 - 19.46) = 18.892$

Interpolation across service years at age 27.0: $18.41 - .2(18.41 - 19.10) = 18.548$

Final interpolation across age yields the worklife: $18.892 - .7(18.892 - 18.548) = 18.65$

In general, consider a person who is age $x + \alpha$ with $s + \beta$ years of service, where x and s are integers. Assume that the extended table in this section shows a worklife of A

at age x with s service years, a worklife of B at age x with $s+1$ service years, a worklife of C at age $x+1$ with s service years, and a worklife of D at age $x+1$ with $s+1$ years of service. Then, interpolating across age with s service years yields $A - \alpha(A - C)$; and interpolating across age with $s+1$ service years yields $B - \alpha(B - D)$. Combining these results across service years yields

$$(9) \quad \begin{aligned} & A - \alpha(A - C) - \beta\{[A - \alpha(A - C)] - [B - \alpha(B - D)]\} = \\ & (1 - \alpha)(1 - \beta)A + (1 - \alpha)\beta B + \alpha(1 - \beta)C + \alpha\beta D. \end{aligned}$$

Applying (9) to the above example also gives us the final interpolated worklife

expectancy of 18.65 years. In that example $\alpha = .7$, $\beta = .2$ and $A = 18.75$, $B = 19.46$, $C = 18.41$, and $D = 19.10$. Substituting into formula (9) gives us

$$(1 - .7)(1 - .2)18.75 + (1 - .7)(.2)19.46 + (.7)(1 - .2)18.41 + (.7)(.2)19.10 = 18.65.$$

IV. Conclusion

The extended table contained in this monograph is unique and timely. It is unique in regard to the four decrement competing risks model. For the first time mortality, age retirement, disability retirement, and other final withdrawals are incorporated into a comprehensive multiple decrement treatment of time spent in railroad activity. Standard deviations also are reported for the first time in the four decrement setting. The Markov model worklife expectancies and standard deviations are derived after fully integrating economy-wide transition probabilities with mortality and age/service related retirement transition probabilities of railroad workers. The worklife expectancies and standard deviations reported utilize the technical supplement to the *Twenty-Third Actuarial Valuation*, published in October, 2006, which contains the most recently available data.

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**Worklife Expectancies and Standard Deviations from Competing Risks
Model Using Four Decrements from Tables S-4, S-10, S-11, and S-12
and Markov Model Using Tables S-4 and S-10**

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
17	0	15.71	16.49	36.70	7.00
18	0	15.51	16.16	36.20	6.87
18	1	18.16	16.41	36.20	6.87
19	0	15.30	15.83	35.65	6.73
19	1	17.90	16.06	35.65	6.73
19	2	19.91	15.97	35.65	6.73
20	0	15.08	15.50	35.02	6.60
20	1	17.64	15.70	35.02	6.60
20	2	19.62	15.61	35.02	6.60
20	3	20.74	15.50	35.02	6.60
21	0	14.86	15.16	34.31	6.47
21	1	17.38	15.35	34.31	6.47
21	2	19.32	15.24	34.31	6.47
21	3	20.42	15.13	34.31	6.47
21	4	21.24	15.02	34.31	6.47
22	0	14.65	14.82	33.56	6.35
22	1	17.11	14.98	33.56	6.35
22	2	19.01	14.87	33.56	6.35
22	3	20.09	14.75	33.56	6.35
22	4	20.89	14.64	33.56	6.35
22	5	21.56	14.52	33.56	6.35
23	0	14.57	14.50	32.76	6.24
23	1	16.85	14.62	32.76	6.24
23	2	18.70	14.49	32.76	6.24
23	3	19.76	14.37	32.76	6.24
23	4	20.54	14.26	32.76	6.24
23	5	21.19	14.13	32.76	6.24
23	6	21.75	14.01	32.76	6.24
24	0	15.24	14.17	31.93	6.12
24	1	16.75	14.24	31.93	6.12
24	2	18.40	14.11	31.93	6.12
24	3	19.42	13.98	31.93	6.12
24	4	20.19	13.87	31.93	6.12

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
24	5	20.82	13.75	31.93	6.12
24	6	21.36	13.62	31.93	6.12
24	7	21.83	13.50	31.93	6.12
25	0	15.40	13.80	31.08	6.02
25	1	16.98	13.80	31.08	6.02
25	2	18.18	13.71	31.08	6.02
25	3	19.09	13.60	31.08	6.02
25	4	19.82	13.48	31.08	6.02
25	5	20.44	13.36	31.08	6.02
25	6	20.97	13.23	31.08	6.02
25	7	21.42	13.11	31.08	6.02
25	8	21.82	12.98	31.08	6.02
26	0	15.16	13.45	30.22	5.92
26	1	16.69	13.43	30.22	5.92
26	2	17.87	13.33	30.22	5.92
26	3	18.75	13.21	30.22	5.92
26	4	19.46	13.08	30.22	5.92
26	5	20.05	12.96	30.22	5.92
26	6	20.57	12.83	30.22	5.92
26	7	21.01	12.71	30.22	5.92
26	8	21.40	12.59	30.22	5.92
26	9	21.74	12.46	30.22	5.92
27	0	14.92	13.10	30.17	6.17
27	1	16.41	13.06	29.35	5.81
27	2	17.56	12.94	29.35	5.81
27	3	18.41	12.82	29.35	5.81
27	4	19.10	12.69	29.35	5.81
27	5	19.67	12.56	29.35	5.81
27	6	20.15	12.43	29.35	5.81
27	7	20.59	12.31	29.35	5.81
27	8	20.96	12.19	29.35	5.81
27	9	21.30	12.07	29.35	5.81
27	10	21.60	11.94	29.35	5.81
28	0	14.68	12.75	29.88	6.33
28	1	16.14	12.69	29.31	6.07
28	2	17.25	12.56	28.49	5.71

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
28	3	18.07	12.42	28.49	5.71
28	4	18.73	12.28	28.49	5.71
28	5	19.29	12.15	28.49	5.71
28	6	19.75	12.03	28.49	5.71
28	7	20.15	11.91	28.49	5.71
28	8	20.52	11.79	28.49	5.71
28	9	20.85	11.67	28.49	5.71
28	10	21.14	11.54	28.49	5.71
28	11	21.41	11.41	28.49	5.71
29	0	14.44	12.39	29.39	6.46
29	1	15.86	12.32	29.00	6.23
29	2	16.94	12.18	28.43	5.98
29	3	17.73	12.03	27.60	5.61
29	4	18.37	11.88	27.60	5.61
29	5	18.90	11.75	27.60	5.61
29	6	19.35	11.62	27.60	5.61
29	7	19.74	11.50	27.60	5.61
29	8	20.07	11.38	27.60	5.61
29	9	20.39	11.27	27.60	5.61
29	10	20.67	11.14	27.60	5.61
29	11	20.94	11.02	27.60	5.61
29	12	21.17	10.89	27.60	5.61
30	0	14.21	12.03	28.81	6.58
30	1	15.59	11.95	28.49	6.37
30	2	16.63	11.80	28.10	6.14
30	3	17.40	11.64	27.53	5.88
30	4	18.01	11.48	26.71	5.52
30	5	18.51	11.34	26.71	5.52
30	6	18.94	11.21	26.71	5.52
30	7	19.31	11.09	26.71	5.52
30	8	19.63	10.97	26.71	5.52
30	9	19.92	10.86	26.71	5.52
30	10	20.20	10.74	26.71	5.52
30	11	20.45	10.62	26.71	5.52
30	12	20.68	10.49	26.71	5.52
30	13	20.88	10.37	26.71	5.52
31	0	14.31	12.09	28.22	6.74

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
31	1	15.33	11.56	27.92	6.50
31	2	16.32	11.40	27.60	6.28
31	3	17.06	11.24	27.21	6.05
31	4	17.65	11.08	26.64	5.79
31	5	18.12	10.93	25.81	5.42
31	6	18.53	10.79	25.81	5.42
31	7	18.88	10.67	25.81	5.42
31	8	19.19	10.55	25.81	5.42
31	9	19.46	10.44	25.81	5.42
31	10	19.71	10.33	25.81	5.42
31	11	19.96	10.21	25.81	5.42
31	12	20.17	10.09	25.81	5.42
31	13	20.37	9.97	25.81	5.42
31	14	20.53	9.86	25.81	5.42
32	0	14.39	12.05	27.36	6.68
32	1	15.44	11.61	27.33	6.65
32	2	16.03	11.00	27.03	6.41
32	3	16.73	10.83	26.71	6.19
32	4	17.28	10.68	26.32	5.96
32	5	17.74	10.52	25.75	5.70
32	6	18.12	10.38	24.92	5.33
32	7	18.45	10.25	24.92	5.33
32	8	18.73	10.13	24.92	5.33
32	9	19.00	10.02	24.92	5.33
32	10	19.23	9.91	24.92	5.33
32	11	19.44	9.81	24.92	5.33
32	12	19.66	9.69	24.92	5.33
32	13	19.85	9.57	24.92	5.33
32	14	20.00	9.47	24.92	5.33
32	15	20.13	9.37	24.92	5.33
33	0	14.32	11.85	26.50	6.61
33	1	15.53	11.54	26.48	6.59
33	2	16.16	11.03	26.45	6.56
33	3	16.41	10.41	26.15	6.32
33	4	16.93	10.25	25.83	6.10
33	5	17.36	10.11	25.44	5.87
33	6	17.72	9.96	24.86	5.61
33	7	18.02	9.83	24.04	5.23

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
33	8	18.28	9.70	24.04	5.23
33	9	18.53	9.60	24.04	5.23
33	10	18.75	9.49	24.04	5.23
33	11	18.95	9.38	24.04	5.23
33	12	19.13	9.28	24.04	5.23
33	13	19.32	9.17	24.04	5.23
33	14	19.47	9.07	24.04	5.23
33	15	19.59	8.98	24.04	5.23
33	16	19.68	8.90	24.04	5.23
34	0	14.12	11.64	25.39	6.61
34	1	15.46	11.32	25.61	6.53
34	2	16.26	10.94	25.59	6.51
34	3	16.55	10.43	25.56	6.48
34	4	16.59	9.81	25.26	6.23
34	5	16.98	9.67	24.94	6.01
34	6	17.31	9.54	24.54	5.78
34	7	17.60	9.40	23.97	5.51
34	8	17.84	9.28	23.14	5.13
34	9	18.05	9.16	23.14	5.13
34	10	18.26	9.06	23.14	5.13
34	11	18.45	8.96	23.14	5.13
34	12	18.62	8.86	23.14	5.13
34	13	18.77	8.76	23.14	5.13
34	14	18.92	8.66	23.14	5.13
34	15	19.04	8.58	23.14	5.13
34	16	19.12	8.51	23.14	5.13
34	17	19.17	8.46	23.14	5.13
35	0	13.68	11.46	24.49	6.53
35	1	15.21	11.11	24.71	6.45
35	2	16.09	10.73	24.69	6.42
35	3	16.54	10.37	24.66	6.39
35	4	16.65	9.87	24.36	6.15
35	5	16.55	9.26	24.04	5.92
35	6	16.85	9.13	23.64	5.69
35	7	17.12	9.01	23.07	5.42
35	8	17.34	8.89	22.24	5.04
35	9	17.54	8.77	22.24	5.04
35	10	17.72	8.67	22.24	5.04

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
35	11	17.89	8.57	22.24	5.04
35	12	18.05	8.47	22.24	5.04
35	13	18.19	8.39	22.24	5.04
35	14	18.31	8.30	22.24	5.04
35	15	18.43	8.22	22.24	5.04
35	16	18.51	8.16	22.24	5.04
35	17	18.55	8.11	22.24	5.04
35	18	18.58	8.09	22.24	5.04
36	0	13.39	11.13	23.87	6.44
36	1	14.96	10.90	23.59	6.45
36	2	15.82	10.53	23.81	6.36
36	3	16.28	10.20	23.80	6.34
36	4	16.53	9.87	23.77	6.31
36	5	16.53	9.37	23.46	6.06
36	6	16.34	8.76	23.14	5.84
36	7	16.58	8.64	22.75	5.60
36	8	16.79	8.53	22.17	5.33
36	9	16.98	8.42	21.35	4.95
36	10	17.13	8.32	21.35	4.95
36	11	17.28	8.22	21.35	4.95
36	12	17.42	8.13	21.35	4.95
36	13	17.55	8.05	21.35	4.95
36	14	17.67	7.97	21.35	4.95
36	15	17.76	7.90	21.35	4.95
36	16	17.84	7.84	21.35	4.95
36	17	17.89	7.81	21.35	4.95
36	18	17.91	7.79	21.35	4.95
36	19	17.90	7.79	21.35	4.95
37	0	13.10	10.81	23.00	6.37
37	1	14.63	10.57	22.98	6.35
37	2	15.54	10.32	22.71	6.37
37	3	15.99	10.00	22.93	6.27
37	4	16.26	9.71	22.91	6.25
37	5	16.41	9.38	22.88	6.22
37	6	16.33	8.88	22.58	5.97
37	7	16.05	8.27	22.26	5.74
37	8	16.24	8.16	21.86	5.51
37	9	16.41	8.07	21.29	5.23

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
37	10	16.56	7.97	20.46	4.85
37	11	16.68	7.88	20.46	4.85
37	12	16.80	7.79	20.46	4.85
37	13	16.91	7.72	20.46	4.85
37	14	17.02	7.65	20.46	4.85
37	15	17.11	7.58	20.46	4.85
37	16	17.17	7.53	20.46	4.85
37	17	17.22	7.50	20.46	4.85
37	18	17.23	7.48	20.46	4.85
37	19	17.23	7.49	20.46	4.85
37	20	17.25	7.46	20.46	4.85
38	0	12.81	10.48	22.12	6.28
38	1	14.30	10.23	22.12	6.28
38	2	15.18	9.98	22.10	6.26
38	3	15.70	9.80	21.83	6.28
38	4	15.96	9.50	22.05	6.18
38	5	16.13	9.22	22.03	6.16
38	6	16.20	8.89	22.00	6.13
38	7	16.04	8.40	21.70	5.88
38	8	15.70	7.79	21.38	5.65
38	9	15.85	7.70	20.98	5.41
38	10	15.98	7.62	20.41	5.13
38	11	16.10	7.53	19.57	4.74
38	12	16.19	7.45	19.57	4.74
38	13	16.28	7.38	19.57	4.74
38	14	16.36	7.32	19.57	4.74
38	15	16.45	7.26	19.57	4.74
38	16	16.51	7.21	19.57	4.74
38	17	16.54	7.19	19.57	4.74
38	18	16.56	7.18	19.57	4.74
38	19	16.55	7.19	19.57	4.74
38	20	16.57	7.17	19.57	4.74
38	21	16.62	7.11	19.57	4.74
39	0	12.51	10.15	21.23	6.19
39	1	13.96	9.90	21.23	6.19
39	2	14.83	9.64	21.23	6.19
39	3	15.32	9.46	21.22	6.17
39	4	15.66	9.30	20.95	6.19

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
39	5	15.82	9.02	21.17	6.09
39	6	15.91	8.74	21.15	6.07
39	7	15.92	8.42	21.12	6.04
39	8	15.70	7.93	20.81	5.79
39	9	15.29	7.33	20.49	5.55
39	10	15.40	7.26	20.10	5.31
39	11	15.51	7.18	19.52	5.03
39	12	15.59	7.11	18.69	4.64
39	13	15.66	7.05	18.69	4.64
39	14	15.72	6.98	18.69	4.64
39	15	15.79	6.93	18.69	4.64
39	16	15.84	6.90	18.69	4.64
39	17	15.86	6.88	18.69	4.64
39	18	15.87	6.88	18.69	4.64
39	19	15.87	6.89	18.69	4.64
39	20	15.89	6.87	18.69	4.64
39	21	15.94	6.82	18.69	4.64
39	22	15.96	6.78	18.69	4.64
40	0	12.18	9.81	20.35	6.10
40	1	13.63	9.56	20.35	6.10
40	2	14.46	9.30	20.35	6.10
40	3	14.95	9.11	20.35	6.10
40	4	15.27	8.96	20.34	6.08
40	5	15.52	8.82	20.06	6.10
40	6	15.60	8.54	20.28	6.00
40	7	15.63	8.26	20.27	5.98
40	8	15.58	7.96	20.24	5.95
40	9	15.30	7.48	19.93	5.69
40	10	14.83	6.89	19.61	5.45
40	11	14.92	6.82	19.21	5.21
40	12	15.00	6.76	18.63	4.93
40	13	15.05	6.70	17.80	4.53
40	14	15.09	6.65	17.80	4.53
40	15	15.13	6.60	17.80	4.53
40	16	15.17	6.58	17.80	4.53
40	17	15.19	6.57	17.80	4.53
40	18	15.19	6.57	17.80	4.53
40	19	15.18	6.59	17.80	4.53
40	20	15.21	6.57	17.80	4.53

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
40	21	15.26	6.52	17.80	4.53
40	22	15.28	6.49	17.80	4.53
40	23	15.29	6.47	17.80	4.53
41	0	11.83	9.45	19.47	6.01
41	1	13.25	9.22	19.47	6.01
41	2	14.10	8.96	19.47	6.01
41	3	14.56	8.76	19.47	6.01
41	4	14.88	8.61	19.47	6.01
41	5	15.11	8.47	19.46	5.99
41	6	15.29	8.34	19.19	6.01
41	7	15.31	8.07	19.41	5.91
41	8	15.29	7.80	19.39	5.89
41	9	15.19	7.51	19.36	5.85
41	10	14.85	7.04	19.05	5.59
41	11	14.34	6.45	18.73	5.35
41	12	14.40	6.40	18.33	5.10
41	13	14.44	6.36	17.75	4.82
41	14	14.48	6.31	16.92	4.42
41	15	14.50	6.28	16.92	4.42
41	16	14.51	6.25	16.92	4.42
41	17	14.52	6.25	16.92	4.42
41	18	14.51	6.26	16.92	4.42
41	19	14.49	6.29	16.92	4.42
41	20	14.51	6.28	16.92	4.42
41	21	14.57	6.23	16.92	4.42
41	22	14.60	6.19	16.92	4.42
41	23	14.61	6.17	16.92	4.42
41	24	14.60	6.16	16.92	4.42
42	0	11.42	9.09	18.61	5.91
42	1	12.84	8.86	18.61	5.91
42	2	13.69	8.61	18.61	5.91
42	3	14.18	8.42	18.61	5.91
42	4	14.48	8.25	18.61	5.91
42	5	14.71	8.10	18.61	5.91
42	6	14.88	7.98	18.59	5.89
42	7	15.00	7.87	18.32	5.91
42	8	14.97	7.61	18.54	5.81
42	9	14.89	7.36	18.52	5.78

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
42	10	14.75	7.07	18.49	5.75
42	11	14.37	6.61	18.19	5.49
42	12	13.80	6.03	17.86	5.24
42	13	13.84	5.99	17.47	4.99
42	14	13.86	5.96	16.88	4.71
42	15	13.88	5.94	16.05	4.29
42	16	13.87	5.93	16.05	4.29
42	17	13.85	5.93	16.05	4.29
42	18	13.83	5.95	16.05	4.29
42	19	13.81	5.99	16.05	4.29
42	20	13.82	5.98	16.05	4.29
42	21	13.88	5.93	16.05	4.29
42	22	13.92	5.89	16.05	4.29
42	23	13.93	5.87	16.05	4.29
42	24	13.93	5.86	16.05	4.29
42	25	13.91	5.86	16.05	4.29
43	0	11.06	8.72	17.75	5.80
43	1	12.38	8.50	17.75	5.80
43	2	13.24	8.26	17.75	5.80
43	3	13.75	8.07	17.75	5.80
43	4	14.08	7.90	17.75	5.80
43	5	14.30	7.74	17.75	5.80
43	6	14.47	7.61	17.75	5.80
43	7	14.58	7.50	17.74	5.78
43	8	14.65	7.40	17.47	5.80
43	9	14.57	7.15	17.69	5.70
43	10	14.45	6.92	17.67	5.67
43	11	14.27	6.64	17.64	5.64
43	12	13.85	6.19	17.33	5.37
43	13	13.24	5.62	17.01	5.12
43	14	13.25	5.60	16.61	4.87
43	15	13.25	5.59	16.03	4.58
43	16	13.24	5.59	15.19	4.16
43	17	13.20	5.61	15.19	4.16
43	18	13.16	5.63	15.19	4.16
43	19	13.13	5.68	15.19	4.16
43	20	13.14	5.67	15.19	4.16
43	21	13.19	5.63	15.19	4.16
43	22	13.22	5.60	15.19	4.16

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
43	23	13.25	5.57	15.19	4.16
43	24	13.25	5.56	15.19	4.16
43	25	13.24	5.56	15.19	4.16
43	26	13.22	5.56	15.19	4.16
44	0	10.73	8.34	16.91	5.68
44	1	11.96	8.14	16.91	5.68
44	2	12.74	7.91	16.91	5.68
44	3	13.28	7.71	16.91	5.68
44	4	13.63	7.55	16.91	5.68
44	5	13.89	7.38	16.91	5.68
44	6	14.04	7.24	16.91	5.68
44	7	14.16	7.11	16.89	5.66
44	8	14.22	7.03	16.62	5.69
44	9	14.25	6.95	16.84	5.58
44	10	14.13	6.71	16.82	5.56
44	11	13.98	6.49	16.79	5.52
44	12	13.76	6.22	16.48	5.25
44	13	13.29	5.78	16.16	5.00
44	14	12.64	5.22	15.76	4.74
44	15	12.63	5.22	15.18	4.44
44	16	12.61	5.24	14.34	4.02
44	17	12.57	5.26	14.34	4.02
44	18	12.51	5.31	14.34	4.02
44	19	12.45	5.36	14.34	4.02
44	20	12.45	5.37	14.34	4.02
44	21	12.50	5.33	14.34	4.02
44	22	12.53	5.30	14.34	4.02
44	23	12.55	5.28	14.34	4.02
44	24	12.57	5.26	14.34	4.02
44	25	12.56	5.25	14.34	4.02
44	26	12.54	5.26	14.34	4.02
44	27	12.51	5.27	14.34	4.02
45	0	10.10	7.99	16.07	5.56
45	1	11.52	7.77	16.07	5.56
45	2	12.25	7.57	16.07	5.56
45	3	12.74	7.38	16.07	5.56
45	4	13.11	7.21	16.07	5.56
45	5	13.38	7.06	16.07	5.56

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
45	6	13.55	6.92	16.07	5.56
45	7	13.65	6.79	16.07	5.56
45	8	13.72	6.69	16.06	5.54
45	9	13.74	6.62	15.78	5.57
45	10	13.75	6.56	16.00	5.45
45	11	13.59	6.33	15.99	5.43
45	12	13.42	6.11	15.95	5.40
45	13	13.17	5.86	15.65	5.12
45	14	12.67	5.43	15.32	4.86
45	15	11.99	4.87	14.92	4.60
45	16	11.96	4.90	14.34	4.30
45	17	11.92	4.93	13.49	3.86
45	18	11.86	4.98	13.49	3.86
45	19	11.79	5.04	13.49	3.86
45	20	11.77	5.06	13.49	3.86
45	21	11.81	5.03	13.49	3.86
45	22	11.85	5.00	13.49	3.86
45	23	11.87	4.98	13.49	3.86
45	24	11.88	4.96	13.49	3.86
45	25	11.88	4.95	13.49	3.86
45	26	11.87	4.95	13.49	3.86
45	27	11.84	4.96	13.49	3.86
45	28	11.81	4.99	13.49	3.86
46	0	9.61	7.59	15.22	5.44
46	1	11.00	7.41	15.22	5.44
46	2	11.72	7.23	15.22	5.44
46	3	12.20	7.07	15.22	5.44
46	4	12.55	6.90	15.22	5.44
46	5	12.80	6.76	15.22	5.44
46	6	12.98	6.64	15.22	5.44
46	7	13.09	6.53	15.22	5.44
46	8	13.13	6.42	15.22	5.44
46	9	13.15	6.35	15.21	5.42
46	10	13.16	6.28	14.94	5.45
46	11	13.15	6.23	15.16	5.34
46	12	12.98	6.00	15.14	5.31
46	13	12.78	5.79	15.11	5.28
46	14	12.52	5.55	14.80	4.99
46	15	11.99	5.12	14.47	4.73

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
46	16	11.28	4.57	14.07	4.46
46	17	11.24	4.62	13.49	4.16
46	18	11.18	4.67	12.64	3.72
46	19	11.11	4.73	12.64	3.72
46	20	11.10	4.75	12.64	3.72
46	21	11.12	4.72	12.64	3.72
46	22	11.15	4.69	12.64	3.72
46	23	11.18	4.67	12.64	3.72
46	24	11.19	4.66	12.64	3.72
46	25	11.20	4.64	12.64	3.72
46	26	11.19	4.64	12.64	3.72
46	27	11.17	4.65	12.64	3.72
46	28	11.14	4.67	12.64	3.72
46	29	11.09	4.71	12.64	3.72
47	0	9.10	7.16	14.37	5.34
47	1	10.43	7.03	14.37	5.34
47	2	11.15	6.89	14.37	5.34
47	3	11.63	6.75	14.37	5.34
47	4	11.98	6.60	14.37	5.34
47	5	12.23	6.46	14.37	5.34
47	6	12.39	6.35	14.37	5.34
47	7	12.50	6.26	14.37	5.34
47	8	12.56	6.17	14.37	5.34
47	9	12.57	6.08	14.37	5.34
47	10	12.57	6.02	14.36	5.31
47	11	12.56	5.96	14.08	5.34
47	12	12.54	5.91	14.30	5.23
47	13	12.35	5.69	14.28	5.20
47	14	12.13	5.48	14.25	5.17
47	15	11.85	5.25	13.94	4.88
47	16	11.29	4.83	13.61	4.61
47	17	10.55	4.29	13.21	4.34
47	18	10.50	4.35	12.62	4.03
47	19	10.44	4.42	11.77	3.58
47	20	10.42	4.44	11.77	3.58
47	21	10.45	4.41	11.77	3.58
47	22	10.46	4.39	11.77	3.58
47	23	10.48	4.37	11.77	3.58
47	24	10.50	4.35	11.77	3.58

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
47	25	10.51	4.34	11.77	3.58
47	26	10.50	4.34	11.77	3.58
47	27	10.49	4.34	11.77	3.58
47	28	10.46	4.36	11.77	3.58
47	29	10.42	4.39	11.77	3.58
47	30	10.39	4.42	11.77	3.58
48	0	8.56	6.74	13.53	5.22
48	1	9.83	6.63	13.53	5.22
48	2	10.54	6.53	13.53	5.22
48	3	11.03	6.43	13.53	5.22
48	4	11.39	6.30	13.53	5.22
48	5	11.64	6.17	13.53	5.22
48	6	11.80	6.06	13.53	5.22
48	7	11.91	5.97	13.53	5.22
48	8	11.97	5.90	13.53	5.22
48	9	11.99	5.84	13.53	5.22
48	10	11.98	5.76	13.53	5.22
48	11	11.97	5.70	13.52	5.19
48	12	11.95	5.64	13.24	5.22
48	13	11.91	5.60	13.46	5.10
48	14	11.70	5.38	13.44	5.08
48	15	11.47	5.19	13.41	5.04
48	16	11.16	4.96	13.10	4.75
48	17	10.58	4.56	12.77	4.48
48	18	9.81	4.03	12.37	4.20
48	19	9.75	4.11	11.78	3.89
48	20	9.74	4.13	10.92	3.43
48	21	9.76	4.10	10.92	3.43
48	22	9.78	4.08	10.92	3.43
48	23	9.79	4.07	10.92	3.43
48	24	9.80	4.05	10.92	3.43
48	25	9.82	4.04	10.92	3.43
48	26	9.81	4.03	10.92	3.43
48	27	9.80	4.03	10.92	3.43
48	28	9.78	4.04	10.92	3.43
48	29	9.75	4.08	10.92	3.43
48	30	9.72	4.10	10.92	3.43
48	31	9.72	4.10	10.92	3.43

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
49	0	8.00	6.31	12.70	5.10
49	1	9.20	6.23	12.70	5.10
49	2	9.89	6.16	12.70	5.10
49	3	10.38	6.09	12.70	5.10
49	4	10.77	6.00	12.70	5.10
49	5	11.03	5.88	12.70	5.10
49	6	11.20	5.78	12.70	5.10
49	7	11.31	5.69	12.70	5.10
49	8	11.37	5.63	12.70	5.10
49	9	11.40	5.58	12.70	5.10
49	10	11.40	5.52	12.70	5.10
49	11	11.37	5.44	12.70	5.10
49	12	11.35	5.38	12.69	5.07
49	13	11.32	5.34	12.42	5.10
49	14	11.27	5.31	12.63	4.98
49	15	11.04	5.10	12.61	4.95
49	16	10.79	4.91	12.58	4.92
49	17	10.46	4.69	12.27	4.62
49	18	9.85	4.30	11.94	4.35
49	19	9.05	3.79	11.53	4.06
49	20	9.04	3.82	10.94	3.74
49	21	9.08	3.80	10.08	3.27
49	22	9.10	3.78	10.08	3.27
49	23	9.10	3.76	10.08	3.27
49	24	9.10	3.75	10.08	3.27
49	25	9.12	3.73	10.08	3.27
49	26	9.12	3.73	10.08	3.27
49	27	9.11	3.73	10.08	3.27
49	28	9.10	3.73	10.08	3.27
49	29	9.07	3.76	10.08	3.27
49	30	9.05	3.78	10.08	3.27
49	31	9.05	3.78	10.08	3.27
49	32	9.05	3.78	10.08	3.27
50	0	7.44	5.88	11.88	4.97
50	1	8.55	5.84	11.88	4.97
50	2	9.20	5.80	11.88	4.97
50	3	9.69	5.75	11.88	4.97
50	4	10.09	5.68	11.88	4.97
50	5	10.39	5.60	11.88	4.97

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
50	6	10.58	5.50	11.88	4.97
50	7	10.70	5.42	11.88	4.97
50	8	10.76	5.35	11.88	4.97
50	9	10.79	5.30	11.88	4.97
50	10	10.80	5.26	11.88	4.97
50	11	10.79	5.21	11.88	4.97
50	12	10.75	5.13	11.87	4.94
50	13	10.72	5.08	11.60	4.97
50	14	10.67	5.05	11.81	4.85
50	15	10.61	5.03	11.80	4.82
50	16	10.36	4.82	11.76	4.79
50	17	10.09	4.64	11.45	4.48
50	18	9.74	4.44	11.11	4.20
50	19	9.12	4.06	10.71	3.91
50	20	8.34	3.50	10.11	3.59
50	21	8.38	3.49	9.25	3.11
50	22	8.41	3.47	9.25	3.11
50	23	8.42	3.46	9.25	3.11
50	24	8.42	3.44	9.25	3.11
50	25	8.41	3.43	9.25	3.11
50	26	8.42	3.42	9.25	3.11
50	27	8.42	3.42	9.25	3.11
50	28	8.41	3.43	9.25	3.11
50	29	8.38	3.45	9.25	3.11
50	30	8.36	3.46	9.25	3.11
50	31	8.36	3.46	9.25	3.11
50	32	8.36	3.46	9.25	3.11
50	33	8.36	3.46	9.25	3.11
51	0	6.87	5.47	11.09	4.82
51	1	7.89	5.46	11.09	4.82
51	2	8.49	5.45	11.09	4.82
51	3	8.97	5.42	11.09	4.82
51	4	9.37	5.37	11.09	4.82
51	5	9.69	5.31	11.09	4.82
51	6	9.93	5.24	11.09	4.82
51	7	10.07	5.16	11.09	4.82
51	8	10.15	5.09	11.09	4.82
51	9	10.18	5.03	11.09	4.82
51	10	10.19	4.99	11.09	4.82

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
51	11	10.19	4.96	11.09	4.82
51	12	10.17	4.91	11.09	4.82
51	13	10.12	4.84	11.08	4.80
51	14	10.07	4.80	10.82	4.82
51	15	10.01	4.77	11.03	4.70
51	16	9.94	4.76	11.01	4.67
51	17	9.67	4.56	10.98	4.64
51	18	9.38	4.40	10.66	4.33
51	19	9.02	4.21	10.32	4.04
51	20	8.43	3.78	9.91	3.75
51	21	7.67	3.17	9.31	3.42
51	22	7.70	3.16	8.44	2.92
51	23	7.72	3.15	8.44	2.92
51	24	7.73	3.14	8.44	2.92
51	25	7.72	3.13	8.44	2.92
51	26	7.71	3.13	8.44	2.92
51	27	7.71	3.12	8.44	2.92
51	28	7.71	3.13	8.44	2.92
51	29	7.69	3.14	8.44	2.92
51	30	7.67	3.16	8.44	2.92
51	31	7.67	3.16	8.44	2.92
51	32	7.67	3.16	8.44	2.92
51	33	7.67	3.16	8.44	2.92
51	34	7.67	3.16	8.44	2.92
52	0	6.31	5.08	10.32	4.67
52	1	7.22	5.09	10.32	4.67
52	2	7.77	5.11	10.32	4.67
52	3	8.22	5.10	10.32	4.67
52	4	8.61	5.07	10.32	4.67
52	5	8.94	5.03	10.32	4.67
52	6	9.21	4.97	10.32	4.67
52	7	9.40	4.91	10.32	4.67
52	8	9.51	4.84	10.32	4.67
52	9	9.56	4.78	10.32	4.67
52	10	9.57	4.73	10.32	4.67
52	11	9.58	4.69	10.32	4.67
52	12	9.57	4.66	10.32	4.67
52	13	9.53	4.62	10.32	4.67
52	14	9.47	4.56	10.31	4.65

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
52	15	9.41	4.52	10.04	4.67
52	16	9.34	4.51	10.25	4.55
52	17	9.25	4.51	10.23	4.52
52	18	8.97	4.32	10.20	4.48
52	19	8.67	4.17	9.88	4.16
52	20	8.34	3.94	9.54	3.87
52	21	7.78	3.47	9.12	3.57
52	22	6.98	2.86	8.51	3.24
52	23	7.00	2.85	7.64	2.73
52	24	7.02	2.84	7.64	2.73
52	25	7.02	2.83	7.64	2.73
52	26	7.01	2.83	7.64	2.73
52	27	7.00	2.83	7.64	2.73
52	28	6.99	2.83	7.64	2.73
52	29	6.98	2.84	7.64	2.73
52	30	6.97	2.85	7.64	2.73
52	31	6.97	2.85	7.64	2.73
52	32	6.97	2.85	7.64	2.73
52	33	6.97	2.85	7.64	2.73
52	34	6.97	2.85	7.64	2.73
52	35	6.97	2.85	7.64	2.73
53	0	5.79	4.72	9.54	4.53
53	1	6.56	4.76	9.54	4.53
53	2	7.04	4.79	9.54	4.53
53	3	7.45	4.81	9.54	4.53
53	4	7.82	4.81	9.54	4.53
53	5	8.16	4.77	9.54	4.53
53	6	8.44	4.73	9.54	4.53
53	7	8.67	4.67	9.54	4.53
53	8	8.83	4.62	9.54	4.53
53	9	8.91	4.55	9.54	4.53
53	10	8.95	4.49	9.54	4.53
53	11	8.96	4.44	9.54	4.53
53	12	8.95	4.41	9.54	4.53
53	13	8.93	4.38	9.54	4.53
53	14	8.88	4.34	9.54	4.53
53	15	8.81	4.29	9.53	4.50
53	16	8.74	4.26	9.27	4.53
53	17	8.65	4.26	9.47	4.40

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
53	18	8.55	4.28	9.45	4.37
53	19	8.26	4.10	9.42	4.33
53	20	8.00	3.90	9.09	4.01
53	21	7.72	3.63	8.75	3.71
53	22	7.12	3.17	8.33	3.41
53	23	6.27	2.56	7.71	3.06
53	24	6.30	2.55	6.83	2.55
53	25	6.31	2.55	6.83	2.55
53	26	6.30	2.54	6.83	2.55
53	27	6.29	2.54	6.83	2.55
53	28	6.27	2.55	6.83	2.55
53	29	6.26	2.56	6.83	2.55
53	30	6.25	2.57	6.83	2.55
53	31	6.25	2.57	6.83	2.55
53	32	6.25	2.57	6.83	2.55
53	33	6.25	2.57	6.83	2.55
53	34	6.25	2.57	6.83	2.55
53	35	6.25	2.57	6.83	2.55
53	36	6.25	2.57	6.83	2.55
54	0	5.40	4.38	8.80	4.38
54	1	5.95	4.44	8.80	4.38
54	2	6.32	4.50	8.80	4.38
54	3	6.67	4.55	8.80	4.38
54	4	7.01	4.56	8.80	4.38
54	5	7.33	4.55	8.80	4.38
54	6	7.63	4.51	8.80	4.38
54	7	7.88	4.46	8.80	4.38
54	8	8.08	4.41	8.80	4.38
54	9	8.23	4.34	8.80	4.38
54	10	8.30	4.28	8.80	4.38
54	11	8.33	4.21	8.80	4.38
54	12	8.32	4.16	8.80	4.38
54	13	8.31	4.13	8.80	4.38
54	14	8.28	4.11	8.80	4.38
54	15	8.22	4.08	8.80	4.38
54	16	8.14	4.04	8.78	4.35
54	17	8.05	4.02	8.53	4.36
54	18	7.96	4.03	8.73	4.24
54	19	7.85	4.06	8.71	4.21

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
54	20	7.60	3.84	8.67	4.17
54	21	7.38	3.60	8.34	3.84
54	22	7.07	3.33	7.99	3.53
54	23	6.44	2.88	7.56	3.22
54	24	5.55	2.28	6.94	2.88
54	25	5.57	2.27	6.04	2.36
54	26	5.58	2.27	6.04	2.36
54	27	5.57	2.27	6.04	2.36
54	28	5.55	2.27	6.04	2.36
54	29	5.52	2.29	6.04	2.36
54	30	5.52	2.30	6.04	2.36
54	31	5.52	2.30	6.04	2.36
54	32	5.52	2.30	6.04	2.36
54	33	5.52	2.30	6.04	2.36
54	34	5.52	2.30	6.04	2.36
54	35	5.52	2.30	6.04	2.36
54	36	5.52	2.30	6.04	2.36
54	37	5.52	2.30	6.04	2.36
55	0	4.89	4.05	8.09	4.20
55	1	5.53	4.10	8.09	4.20
55	2	5.78	4.19	8.09	4.20
55	3	6.06	4.24	8.09	4.20
55	4	6.35	4.27	8.09	4.20
55	5	6.64	4.28	8.09	4.20
55	6	6.92	4.25	8.09	4.20
55	7	7.16	4.21	8.09	4.20
55	8	7.37	4.16	8.09	4.20
55	9	7.54	4.11	8.09	4.20
55	10	7.65	4.06	8.09	4.20
55	11	7.69	3.99	8.09	4.20
55	12	7.70	3.94	8.09	4.20
55	13	7.68	3.89	8.09	4.20
55	14	7.66	3.87	8.09	4.20
55	15	7.62	3.86	8.09	4.20
55	16	7.55	3.83	8.07	4.17
55	17	7.46	3.80	7.84	4.18
55	18	7.36	3.79	8.01	4.06
55	19	7.26	3.82	7.99	4.03
55	20	7.20	3.81	7.96	3.99

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
55	21	6.99	3.55	7.62	3.65
55	22	6.76	3.31	7.26	3.34
55	23	6.43	3.04	6.83	3.02
55	24	5.75	2.60	6.19	2.67
55	25	4.81	2.01	5.27	2.15
55	26	4.83	2.01	5.27	2.15
55	27	4.84	2.00	5.27	2.15
55	28	4.82	2.01	5.27	2.15
55	29	4.80	2.02	5.27	2.15
55	30	4.79	2.04	5.27	2.15
55	31	4.79	2.04	5.27	2.15
55	32	4.79	2.04	5.27	2.15
55	33	4.79	2.04	5.27	2.15
55	34	4.79	2.04	5.27	2.15
55	35	4.79	2.04	5.27	2.15
55	36	4.79	2.04	5.27	2.15
55	37	4.79	2.04	5.27	2.15
55	38	4.79	2.04	5.27	2.15
56	0	4.55	3.72	7.39	4.03
56	1	5.14	3.77	7.39	4.03
56	2	5.35	3.85	7.39	4.03
56	3	5.59	3.91	7.39	4.03
56	4	5.85	3.94	7.39	4.03
56	5	6.11	3.95	7.39	4.03
56	6	6.35	3.94	7.39	4.03
56	7	6.57	3.91	7.39	4.03
56	8	6.76	3.87	7.39	4.03
56	9	6.91	3.84	7.39	4.03
56	10	7.01	3.80	7.39	4.03
56	11	7.08	3.77	7.39	4.03
56	12	7.09	3.71	7.39	4.03
56	13	7.08	3.67	7.39	4.03
56	14	7.04	3.64	7.39	4.03
56	15	7.00	3.62	7.39	4.03
56	16	6.95	3.62	7.39	4.03
56	17	6.88	3.60	7.38	4.00
56	18	6.78	3.57	7.15	4.00
56	19	6.67	3.58	7.31	3.89
56	20	6.62	3.57	7.29	3.86

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
56	21	6.62	3.53	7.26	3.81
56	22	6.39	3.26	6.91	3.46
56	23	6.14	3.01	6.54	3.15
56	24	5.78	2.75	6.09	2.83
56	25	5.06	2.33	5.44	2.48
56	26	4.06	1.77	4.49	1.95
56	27	4.08	1.77	4.49	1.95
56	28	4.08	1.77	4.49	1.95
56	29	4.06	1.78	4.49	1.95
56	30	4.05	1.79	4.49	1.95
56	31	4.05	1.79	4.49	1.95
56	32	4.05	1.79	4.49	1.95
56	33	4.05	1.79	4.49	1.95
56	34	4.05	1.79	4.49	1.95
56	35	4.05	1.79	4.49	1.95
56	36	4.05	1.79	4.49	1.95
56	37	4.05	1.79	4.49	1.95
56	38	4.05	1.79	4.49	1.95
56	39	4.05	1.79	4.49	1.95
57	0	4.20	3.40	6.72	3.86
57	1	4.73	3.44	6.72	3.86
57	2	4.91	3.52	6.72	3.86
57	3	5.12	3.58	6.72	3.86
57	4	5.35	3.62	6.72	3.86
57	5	5.57	3.64	6.72	3.86
57	6	5.78	3.64	6.72	3.86
57	7	5.98	3.63	6.72	3.86
57	8	6.14	3.60	6.72	3.86
57	9	6.27	3.58	6.72	3.86
57	10	6.36	3.55	6.72	3.86
57	11	6.43	3.54	6.72	3.86
57	12	6.47	3.51	6.72	3.86
57	13	6.46	3.47	6.72	3.86
57	14	6.42	3.43	6.72	3.86
57	15	6.38	3.40	6.72	3.86
57	16	6.33	3.40	6.72	3.86
57	17	6.27	3.40	6.72	3.86
57	18	6.19	3.39	6.71	3.82
57	19	6.09	3.37	6.51	3.81

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
57	20	6.03	3.35	6.64	3.70
57	21	6.02	3.31	6.62	3.67
57	22	6.01	3.27	6.59	3.63
57	23	5.77	2.99	6.23	3.27
57	24	5.50	2.74	5.84	2.95
57	25	5.11	2.48	5.38	2.63
57	26	4.34	2.10	4.71	2.28
57	27	3.28	1.59	3.72	1.77
57	28	3.29	1.58	3.72	1.77
57	29	3.29	1.59	3.72	1.77
57	30	3.28	1.59	3.72	1.77
57	31	3.28	1.59	3.72	1.77
57	32	3.28	1.59	3.72	1.77
57	33	3.28	1.59	3.72	1.77
57	34	3.28	1.59	3.72	1.77
57	35	3.28	1.59	3.72	1.77
57	36	3.28	1.59	3.72	1.77
57	37	3.28	1.59	3.72	1.77
57	38	3.28	1.59	3.72	1.77
57	39	3.28	1.59	3.72	1.77
57	40	3.28	1.59	3.72	1.77
58	0	4.09	3.28	6.11	3.65
58	1	4.30	3.13	6.08	3.68
58	2	4.45	3.21	6.08	3.68
58	3	4.63	3.27	6.08	3.68
58	4	4.82	3.32	6.08	3.68
58	5	5.02	3.35	6.08	3.68
58	6	5.20	3.37	6.08	3.68
58	7	5.37	3.36	6.08	3.68
58	8	5.51	3.35	6.08	3.68
58	9	5.62	3.34	6.08	3.68
58	10	5.70	3.32	6.08	3.68
58	11	5.76	3.32	6.08	3.68
58	12	5.80	3.31	6.08	3.68
58	13	5.82	3.29	6.08	3.68
58	14	5.79	3.25	6.08	3.68
58	15	5.75	3.22	6.08	3.68
58	16	5.70	3.20	6.08	3.68
58	17	5.65	3.20	6.08	3.68

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
58	18	5.58	3.21	6.08	3.68
58	19	5.49	3.21	6.06	3.65
58	20	5.43	3.16	5.89	3.62
58	21	5.42	3.11	6.00	3.52
58	22	5.41	3.07	5.97	3.48
58	23	5.40	3.03	5.93	3.44
58	24	5.13	2.74	5.56	3.07
58	25	4.83	2.49	5.16	2.75
58	26	4.42	2.25	4.67	2.43
58	27	3.59	1.91	3.97	2.10
58	28	2.46	1.46	2.94	1.62
58	29	2.47	1.46	2.94	1.62
58	30	2.47	1.46	2.94	1.62
58	31	2.47	1.46	2.94	1.62
58	32	2.47	1.46	2.94	1.62
58	33	2.47	1.46	2.94	1.62
58	34	2.47	1.46	2.94	1.62
58	35	2.47	1.46	2.94	1.62
58	36	2.47	1.46	2.94	1.62
58	37	2.47	1.46	2.94	1.62
58	38	2.47	1.46	2.94	1.62
58	39	2.47	1.46	2.94	1.62
58	40	2.47	1.46	2.94	1.62
58	41	2.47	1.46	2.94	1.62
59	0	3.92	3.12	5.46	3.44
59	1	4.18	3.01	5.46	3.49
59	2	3.97	2.92	5.44	3.52
59	3	4.12	2.99	5.44	3.52
59	4	4.28	3.05	5.44	3.52
59	5	4.44	3.09	5.44	3.52
59	6	4.60	3.12	5.44	3.52
59	7	4.74	3.13	5.44	3.52
59	8	4.86	3.13	5.44	3.52
59	9	4.96	3.13	5.44	3.52
59	10	5.03	3.13	5.44	3.52
59	11	5.08	3.12	5.44	3.52
59	12	5.12	3.12	5.44	3.52
59	13	5.14	3.12	5.44	3.52
59	14	5.14	3.11	5.44	3.52

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
59	15	5.11	3.07	5.44	3.52
59	16	5.06	3.04	5.44	3.52
59	17	5.00	3.03	5.44	3.52
59	18	4.94	3.03	5.44	3.52
59	19	4.87	3.05	5.44	3.52
59	20	4.82	3.03	5.42	3.48
59	21	4.80	2.96	5.29	3.43
59	22	4.79	2.91	5.35	3.34
59	23	4.78	2.86	5.33	3.31
59	24	4.76	2.82	5.29	3.26
59	25	4.47	2.53	4.89	2.89
59	26	4.14	2.28	4.47	2.57
59	27	3.69	2.07	3.95	2.26
59	28	2.80	1.79	3.22	1.96
59	29	1.59	1.42	2.12	1.53
59	30	1.60	1.42	2.12	1.53
59	31	1.60	1.42	2.12	1.53
59	32	1.60	1.42	2.12	1.53
59	33	1.60	1.42	2.12	1.53
59	34	1.60	1.42	2.12	1.53
59	35	1.60	1.42	2.12	1.53
59	36	1.60	1.42	2.12	1.53
59	37	1.60	1.42	2.12	1.53
59	38	1.60	1.42	2.12	1.53
59	39	1.60	1.42	2.12	1.53
59	40	1.60	1.42	2.12	1.53
59	41	1.60	1.42	2.12	1.53
59	42	1.60	1.42	2.12	1.53
60	0	3.67	2.91	4.75	3.19
60	1	3.98	2.84	4.82	3.29
60	2	3.86	2.79	4.83	3.34
60	3	3.58	2.74	4.83	3.36
60	4	3.71	2.81	4.83	3.36
60	5	3.85	2.87	4.83	3.36
60	6	3.98	2.91	4.83	3.36
60	7	4.10	2.94	4.83	3.36
60	8	4.20	2.95	4.83	3.36
60	9	4.28	2.96	4.83	3.36
60	10	4.34	2.97	4.83	3.36

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
60	11	4.38	2.97	4.83	3.36
60	12	4.41	2.97	4.83	3.36
60	13	4.43	2.98	4.83	3.36
60	14	4.44	2.98	4.83	3.36
60	15	4.44	2.97	4.83	3.36
60	16	4.40	2.93	4.83	3.36
60	17	4.34	2.91	4.83	3.36
60	18	4.28	2.90	4.83	3.36
60	19	4.21	2.91	4.83	3.36
60	20	4.18	2.92	4.83	3.36
60	21	4.18	2.88	4.82	3.32
60	22	4.15	2.80	4.74	3.24
60	23	4.13	2.74	4.74	3.18
60	24	4.12	2.70	4.71	3.14
60	25	4.09	2.65	4.67	3.09
60	26	3.77	2.36	4.24	2.72
60	27	3.42	2.13	3.79	2.41
60	28	2.94	1.94	3.23	2.12
60	29	1.98	1.74	2.46	1.86
60	30	1.35	1.53	1.27	1.51
60	31	1.35	1.53	1.27	1.51
60	32	1.35	1.53	1.27	1.51
60	33	1.35	1.53	1.27	1.51
60	34	1.35	1.53	1.27	1.51
60	35	1.35	1.53	1.27	1.51
60	36	1.35	1.53	1.27	1.51
60	37	1.35	1.53	1.27	1.51
60	38	1.35	1.53	1.27	1.51
60	39	1.35	1.53	1.27	1.51
60	40	1.35	1.53	1.27	1.51
60	41	1.35	1.53	1.27	1.51
60	42	1.35	1.53	1.27	1.51
60	43	1.35	1.53	1.27	1.51
61	0	3.90	3.18	4.59	3.44
61	1	3.68	2.65	4.13	3.07
61	2	3.64	2.63	4.21	3.17
61	3	3.46	2.61	4.24	3.21
61	4	3.10	2.63	4.27	3.22
61	5	3.21	2.70	4.27	3.22

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
61	6	3.32	2.75	4.27	3.22
61	7	3.42	2.79	4.27	3.22
61	8	3.50	2.82	4.27	3.22
61	9	3.57	2.84	4.27	3.22
61	10	3.62	2.86	4.27	3.22
61	11	3.66	2.87	4.27	3.22
61	12	3.68	2.87	4.27	3.22
61	13	3.70	2.88	4.27	3.22
61	14	3.71	2.88	4.27	3.22
61	15	3.72	2.89	4.27	3.22
61	16	3.71	2.88	4.27	3.22
61	17	3.66	2.84	4.27	3.22
61	18	3.60	2.82	4.27	3.22
61	19	3.53	2.82	4.27	3.22
61	20	3.50	2.82	4.27	3.22
61	21	3.51	2.82	4.27	3.22
61	22	3.50	2.78	4.25	3.18
61	23	3.47	2.69	4.20	3.08
61	24	3.44	2.63	4.17	3.02
61	25	3.42	2.59	4.14	2.98
61	26	3.39	2.54	4.09	2.93
61	27	3.04	2.25	3.62	2.57
61	28	2.66	2.03	3.12	2.28
61	29	2.13	1.88	2.51	2.04
61	30	1.63	1.75	1.67	1.84
61	31	1.63	1.75	1.67	1.84
61	32	1.63	1.75	1.67	1.84
61	33	1.63	1.75	1.67	1.84
61	34	1.63	1.75	1.67	1.84
61	35	1.63	1.75	1.67	1.84
61	36	1.63	1.75	1.67	1.84
61	37	1.63	1.75	1.67	1.84
61	38	1.63	1.75	1.67	1.84
61	39	1.63	1.75	1.67	1.84
61	40	1.63	1.75	1.67	1.84
61	41	1.63	1.75	1.67	1.84
61	42	1.63	1.75	1.67	1.84
61	43	1.63	1.75	1.67	1.84
61	44	1.63	1.75	1.67	1.84

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
62	0	4.05	3.30	4.44	3.50
62	1	3.99	2.93	4.15	3.31
62	2	3.30	2.45	3.65	2.94
62	3	3.22	2.45	3.77	3.03
62	4	2.98	2.49	3.84	3.06
62	5	2.82	2.54	3.91	3.05
62	6	2.91	2.60	3.91	3.05
62	7	3.00	2.65	3.91	3.05
62	8	3.07	2.68	3.91	3.05
62	9	3.13	2.71	3.91	3.05
62	10	3.17	2.72	3.91	3.05
62	11	3.21	2.74	3.91	3.05
62	12	3.23	2.74	3.91	3.05
62	13	3.24	2.75	3.91	3.05
62	14	3.25	2.76	3.91	3.05
62	15	3.26	2.76	3.91	3.05
62	16	3.26	2.77	3.91	3.05
62	17	3.25	2.75	3.91	3.05
62	18	3.20	2.73	3.91	3.05
62	19	3.12	2.72	3.91	3.05
62	20	3.09	2.72	3.91	3.05
62	21	3.09	2.71	3.91	3.05
62	22	3.10	2.71	3.91	3.05
62	23	3.09	2.67	3.89	3.00
62	24	3.04	2.56	3.83	2.89
62	25	3.01	2.49	3.79	2.83
62	26	2.98	2.44	3.76	2.79
62	27	2.94	2.40	3.70	2.74
62	28	2.52	2.13	3.15	2.41
62	29	2.05	1.96	2.57	2.17
62	30	1.78	1.88	1.85	2.01
62	31	1.78	1.88	1.85	2.01
62	32	1.78	1.88	1.85	2.01
62	33	1.78	1.88	1.85	2.01
62	34	1.78	1.88	1.85	2.01
62	35	1.78	1.88	1.85	2.01
62	36	1.78	1.88	1.85	2.01
62	37	1.78	1.88	1.85	2.01
62	38	1.78	1.88	1.85	2.01
62	39	1.78	1.88	1.85	2.01

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
62	40	1.78	1.88	1.85	2.01
62	41	1.78	1.88	1.85	2.01
62	42	1.78	1.88	1.85	2.01
62	43	1.78	1.88	1.85	2.01
62	44	1.78	1.88	1.85	2.01
62	45	1.78	1.88	1.85	2.01
63	0	4.24	3.37	4.41	3.52
63	1	4.20	3.02	4.15	3.35
63	2	3.67	2.72	3.85	3.17
63	3	2.82	2.32	3.28	2.83
63	4	2.69	2.35	3.46	2.90
63	5	2.59	2.41	3.60	2.89
63	6	2.68	2.47	3.60	2.89
63	7	2.76	2.52	3.60	2.89
63	8	2.83	2.56	3.60	2.89
63	9	2.88	2.59	3.60	2.89
63	10	2.92	2.61	3.60	2.89
63	11	2.95	2.63	3.60	2.89
63	12	2.97	2.64	3.60	2.89
63	13	2.98	2.64	3.60	2.89
63	14	2.99	2.65	3.60	2.89
63	15	3.00	2.66	3.60	2.89
63	16	3.00	2.66	3.60	2.89
63	17	3.01	2.67	3.60	2.89
63	18	2.99	2.65	3.60	2.89
63	19	2.92	2.64	3.60	2.89
63	20	2.88	2.64	3.60	2.89
63	21	2.89	2.64	3.60	2.89
63	22	2.89	2.63	3.60	2.89
63	23	2.89	2.63	3.60	2.89
63	24	2.87	2.57	3.57	2.84
63	25	2.82	2.45	3.50	2.71
63	26	2.77	2.37	3.45	2.64
63	27	2.73	2.32	3.41	2.60
63	28	2.67	2.27	3.35	2.55
63	29	2.12	2.08	2.68	2.29
63	30	1.85	2.00	1.98	2.15
63	31	1.85	2.00	1.98	2.15
63	32	1.85	2.00	1.98	2.15

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
63	33	1.85	2.00	1.98	2.15
63	34	1.85	2.00	1.98	2.15
63	35	1.85	2.00	1.98	2.15
63	36	1.85	2.00	1.98	2.15
63	37	1.85	2.00	1.98	2.15
63	38	1.85	2.00	1.98	2.15
63	39	1.85	2.00	1.98	2.15
63	40	1.85	2.00	1.98	2.15
63	41	1.85	2.00	1.98	2.15
63	42	1.85	2.00	1.98	2.15
63	43	1.85	2.00	1.98	2.15
63	44	1.85	2.00	1.98	2.15
63	45	1.85	2.00	1.98	2.15
63	46	1.85	2.00	1.98	2.15
64	0	4.35	3.34	4.21	3.45
64	1	4.39	3.06	4.08	3.39
64	2	3.87	2.80	3.81	3.24
64	3	3.22	2.58	3.49	3.07
64	4	2.20	2.30	2.85	2.78
64	5	2.16	2.34	3.09	2.82
64	6	2.23	2.41	3.09	2.82
64	7	2.30	2.47	3.09	2.82
64	8	2.36	2.52	3.09	2.82
64	9	2.41	2.56	3.09	2.82
64	10	2.45	2.58	3.09	2.82
64	11	2.48	2.60	3.09	2.82
64	12	2.50	2.61	3.09	2.82
64	13	2.51	2.62	3.09	2.82
64	14	2.51	2.63	3.09	2.82
64	15	2.52	2.63	3.09	2.82
64	16	2.53	2.64	3.09	2.82
64	17	2.53	2.64	3.09	2.82
64	18	2.54	2.65	3.09	2.82
64	19	2.51	2.64	3.09	2.82
64	20	2.48	2.63	3.09	2.82
64	21	2.48	2.63	3.09	2.82
64	22	2.49	2.63	3.09	2.82
64	23	2.49	2.63	3.09	2.82
64	24	2.49	2.62	3.06	2.76

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
64	25	2.46	2.55	2.98	2.62
64	26	2.39	2.42	2.93	2.55
64	27	2.33	2.33	2.88	2.50
64	28	2.27	2.28	2.88	2.50
64	29	2.20	2.24	2.80	2.46
64	30	1.89	2.14	2.04	2.28
64	31	1.89	2.14	2.04	2.28
64	32	1.89	2.14	2.04	2.28
64	33	1.89	2.14	2.04	2.28
64	34	1.89	2.14	2.04	2.28
64	35	1.89	2.14	2.04	2.28
64	36	1.89	2.14	2.04	2.28
64	37	1.89	2.14	2.04	2.28
64	38	1.89	2.14	2.04	2.28
64	39	1.89	2.14	2.04	2.28
64	40	1.89	2.14	2.04	2.28
64	41	1.89	2.14	2.04	2.28
64	42	1.89	2.14	2.04	2.28
64	43	1.89	2.14	2.04	2.28
64	44	1.89	2.14	2.04	2.28
64	45	1.89	2.14	2.04	2.28
64	46	1.89	2.14	2.04	2.28
64	47	1.89	2.14	2.04	2.28
65	0	4.39	3.31	4.03	3.38
65	1	4.43	3.02	3.93	3.34
65	2	4.02	2.83	3.80	3.28
65	3	3.38	2.66	3.51	3.15
65	4	2.61	2.53	3.16	3.02
65	5	2.09	2.44	2.41	2.82
65	6	2.17	2.51	2.41	2.82
65	7	2.24	2.57	2.41	2.82
65	8	2.30	2.62	2.41	2.82
65	9	2.35	2.66	2.41	2.82
65	10	2.39	2.68	2.41	2.82
65	11	2.42	2.70	2.41	2.82
65	12	2.43	2.71	2.41	2.82
65	13	2.45	2.72	2.41	2.82
65	14	2.45	2.73	2.41	2.82
65	15	2.46	2.74	2.41	2.82

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
65	16	2.47	2.74	2.41	2.82
65	17	2.47	2.75	2.41	2.82
65	18	2.48	2.75	2.41	2.82
65	19	2.48	2.76	2.41	2.82
65	20	2.47	2.75	2.41	2.82
65	21	2.48	2.75	2.41	2.82
65	22	2.48	2.75	2.41	2.82
65	23	2.49	2.75	2.41	2.82
65	24	2.49	2.74	2.41	2.82
65	25	2.49	2.73	2.41	2.82
65	26	2.44	2.65	2.38	2.76
65	27	2.31	2.49	2.29	2.62
65	28	2.22	2.40	2.23	2.55
65	29	2.13	2.35	2.17	2.50
65	30	2.09	2.34	2.09	2.46
65	31	2.09	2.34	2.09	2.46
65	32	2.09	2.34	2.09	2.46
65	33	2.09	2.34	2.09	2.46
65	34	2.09	2.34	2.09	2.46
65	35	2.09	2.34	2.09	2.46
65	36	2.09	2.34	2.09	2.46
65	37	2.09	2.34	2.09	2.46
65	38	2.09	2.34	2.09	2.46
65	39	2.09	2.34	2.09	2.46
65	40	2.09	2.34	2.09	2.46
65	41	2.09	2.34	2.09	2.46
65	42	2.09	2.34	2.09	2.46
65	43	2.09	2.34	2.09	2.46
65	44	2.09	2.34	2.09	2.46
65	45	2.09	2.34	2.09	2.46
65	46	2.09	2.34	2.09	2.46
65	47	2.09	2.34	2.09	2.46
65	48	2.09	2.34	2.09	2.46
66	0	4.37	3.27	3.93	3.33
66	1	4.42	2.99	3.81	3.27
66	2	4.00	2.80	3.71	3.23
66	3	3.50	2.69	3.59	3.19
66	4	2.75	2.60	3.28	3.09
66	5	2.37	2.58	2.89	3.02

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
66	6	2.46	2.64	2.89	3.02
66	7	2.54	2.70	2.89	3.02
66	8	2.60	2.75	2.89	3.02
66	9	2.66	2.78	2.89	3.02
66	10	2.70	2.80	2.89	3.02
66	11	2.73	2.82	2.89	3.02
66	12	2.75	2.83	2.89	3.02
66	13	2.76	2.84	2.89	3.02
66	14	2.77	2.85	2.89	3.02
66	15	2.78	2.85	2.89	3.02
66	16	2.78	2.86	2.89	3.02
66	17	2.79	2.86	2.89	3.02
66	18	2.80	2.87	2.89	3.02
66	19	2.80	2.87	2.89	3.02
66	20	2.81	2.87	2.89	3.02
66	21	2.82	2.87	2.89	3.02
66	22	2.82	2.87	2.89	3.02
66	23	2.82	2.87	2.89	3.02
66	24	2.83	2.86	2.89	3.02
66	25	2.82	2.85	2.89	3.02
66	26	2.81	2.83	2.89	3.02
66	27	2.73	2.74	2.83	2.95
66	28	2.53	2.58	2.67	2.79
66	29	2.37	2.51	2.56	2.72
66	30	2.31	2.49	2.47	2.69
66	31	2.31	2.49	2.47	2.69
66	32	2.31	2.49	2.47	2.69
66	33	2.31	2.49	2.47	2.69
66	34	2.31	2.49	2.47	2.69
66	35	2.31	2.49	2.47	2.69
66	36	2.31	2.49	2.47	2.69
66	37	2.31	2.49	2.47	2.69
66	38	2.31	2.49	2.47	2.69
66	39	2.31	2.49	2.47	2.69
66	40	2.31	2.49	2.47	2.69
66	41	2.31	2.49	2.47	2.69
66	42	2.31	2.49	2.47	2.69
66	43	2.31	2.49	2.47	2.69
66	44	2.31	2.49	2.47	2.69
66	45	2.31	2.49	2.47	2.69

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
66	46	2.31	2.49	2.47	2.69
66	47	2.31	2.49	2.47	2.69
66	48	2.31	2.49	2.47	2.69
66	49	2.31	2.49	2.47	2.69
67	0	4.33	3.24	3.81	3.26
67	1	4.38	2.95	3.72	3.22
67	2	3.97	2.77	3.60	3.17
67	3	3.48	2.65	3.51	3.14
67	4	2.87	2.62	3.40	3.11
67	5	2.51	2.61	3.07	3.07
67	6	2.60	2.68	3.07	3.07
67	7	2.68	2.73	3.07	3.07
67	8	2.75	2.78	3.07	3.07
67	9	2.81	2.81	3.07	3.07
67	10	2.85	2.83	3.07	3.07
67	11	2.88	2.84	3.07	3.07
67	12	2.90	2.85	3.07	3.07
67	13	2.92	2.86	3.07	3.07
67	14	2.93	2.87	3.07	3.07
67	15	2.93	2.87	3.07	3.07
67	16	2.94	2.88	3.07	3.07
67	17	2.95	2.89	3.07	3.07
67	18	2.95	2.89	3.07	3.07
67	19	2.96	2.89	3.07	3.07
67	20	2.97	2.90	3.07	3.07
67	21	2.97	2.90	3.07	3.07
67	22	2.98	2.89	3.07	3.07
67	23	2.98	2.89	3.07	3.07
67	24	2.98	2.88	3.07	3.07
67	25	2.98	2.87	3.07	3.07
67	26	2.97	2.85	3.07	3.07
67	27	2.96	2.83	3.07	3.07
67	28	2.83	2.75	2.98	2.99
67	29	2.52	2.63	2.74	2.86
67	30	2.43	2.61	2.58	2.81
67	31	2.43	2.61	2.58	2.81
67	32	2.43	2.61	2.58	2.81
67	33	2.43	2.61	2.58	2.81
67	34	2.43	2.61	2.58	2.81

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
67	35	2.43	2.61	2.58	2.81
67	36	2.43	2.61	2.58	2.81
67	37	2.43	2.61	2.58	2.81
67	38	2.43	2.61	2.58	2.81
67	39	2.43	2.61	2.58	2.81
67	40	2.43	2.61	2.58	2.81
67	41	2.43	2.61	2.58	2.81
67	42	2.43	2.61	2.58	2.81
67	43	2.43	2.61	2.58	2.81
67	44	2.43	2.61	2.58	2.81
67	45	2.43	2.61	2.58	2.81
67	46	2.43	2.61	2.58	2.81
67	47	2.43	2.61	2.58	2.81
67	48	2.43	2.61	2.58	2.81
67	49	2.43	2.61	2.58	2.81
67	50	2.43	2.61	2.58	2.81
68	0	4.29	3.20	3.64	3.18
68	1	4.34	2.92	3.59	3.17
68	2	3.94	2.74	3.51	3.13
68	3	3.45	2.62	3.40	3.09
68	4	2.85	2.58	3.32	3.07
68	5	2.57	2.60	3.22	3.06
68	6	2.66	2.66	3.22	3.06
68	7	2.74	2.72	3.22	3.06
68	8	2.81	2.76	3.22	3.06
68	9	2.87	2.79	3.22	3.06
68	10	2.91	2.81	3.22	3.06
68	11	2.94	2.82	3.22	3.06
68	12	2.96	2.83	3.22	3.06
68	13	2.98	2.84	3.22	3.06
68	14	2.99	2.84	3.22	3.06
68	15	2.99	2.85	3.22	3.06
68	16	3.00	2.86	3.22	3.06
68	17	3.01	2.86	3.22	3.06
68	18	3.01	2.87	3.22	3.06
68	19	3.02	2.87	3.22	3.06
68	20	3.03	2.87	3.22	3.06
68	21	3.03	2.87	3.22	3.06
68	22	3.04	2.87	3.22	3.06

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
68	23	3.04	2.86	3.22	3.06
68	24	3.05	2.85	3.22	3.06
68	25	3.04	2.84	3.22	3.06
68	26	3.03	2.83	3.22	3.06
68	27	3.02	2.81	3.22	3.06
68	28	2.99	2.79	3.22	3.06
68	29	2.81	2.74	2.74	2.93
68	30	2.62	2.70	2.74	2.93
68	31	2.62	2.70	2.74	2.93
68	32	2.62	2.70	2.74	2.93
68	33	2.62	2.70	2.74	2.93
68	34	2.62	2.70	2.74	2.93
68	35	2.62	2.70	2.74	2.93
68	36	2.62	2.70	2.74	2.93
68	37	2.62	2.70	2.74	2.93
68	38	2.62	2.70	2.74	2.93
68	39	2.62	2.70	2.74	2.93
68	40	2.62	2.70	2.74	2.93
68	41	2.62	2.70	2.74	2.93
68	42	2.62	2.70	2.74	2.93
68	43	2.62	2.70	2.74	2.93
68	44	2.62	2.70	2.74	2.93
68	45	2.62	2.70	2.74	2.93
68	46	2.62	2.70	2.74	2.93
68	47	2.62	2.70	2.74	2.93
68	48	2.62	2.70	2.74	2.93
68	49	2.62	2.70	2.74	2.93
68	50	2.62	2.70	2.74	2.93
68	51	2.62	2.70	2.74	2.93
69	0	4.24	3.16	3.50	3.08
69	1	4.29	2.88	3.47	3.08
69	2	3.90	2.70	3.43	3.08
69	3	3.42	2.58	3.35	3.05
69	4	2.83	2.55	3.25	3.02
69	5	2.54	2.56	3.19	3.02
69	6	2.63	2.62	3.19	3.02
69	7	2.71	2.68	3.19	3.02
69	8	2.79	2.72	3.19	3.02
69	9	2.84	2.74	3.19	3.02

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
69	10	2.88	2.77	3.19	3.02
69	11	2.91	2.78	3.19	3.02
69	12	2.93	2.79	3.19	3.02
69	13	2.95	2.80	3.19	3.02
69	14	2.96	2.80	3.19	3.02
69	15	2.96	2.81	3.19	3.02
69	16	2.97	2.81	3.19	3.02
69	17	2.98	2.82	3.19	3.02
69	18	2.98	2.82	3.19	3.02
69	19	2.99	2.83	3.19	3.02
69	20	3.00	2.83	3.19	3.02
69	21	3.00	2.83	3.19	3.02
69	22	3.01	2.83	3.19	3.02
69	23	3.01	2.82	3.19	3.02
69	24	3.01	2.81	3.19	3.02
69	25	3.01	2.80	3.19	3.02
69	26	3.00	2.79	3.19	3.02
69	27	2.99	2.77	3.19	3.02
69	28	2.96	2.75	3.19	3.02
69	29	2.92	2.74	3.19	3.02
69	30	2.82	2.73	3.01	2.99
69	31	2.82	2.73	3.01	2.99
69	32	2.82	2.73	3.01	2.99
69	33	2.82	2.73	3.01	2.99
69	34	2.82	2.73	3.01	2.99
69	35	2.82	2.73	3.01	2.99
69	36	2.82	2.73	3.01	2.99
69	37	2.82	2.73	3.01	2.99
69	38	2.82	2.73	3.01	2.99
69	39	2.82	2.73	3.01	2.99
69	40	2.82	2.73	3.01	2.99
69	41	2.82	2.73	3.01	2.99
69	42	2.82	2.73	3.01	2.99
69	43	2.82	2.73	3.01	2.99
69	44	2.82	2.73	3.01	2.99
69	45	2.82	2.73	3.01	2.99
69	46	2.82	2.73	3.01	2.99
69	47	2.82	2.73	3.01	2.99
69	48	2.82	2.73	3.01	2.99
69	49	2.82	2.73	3.01	2.99

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
69	50	2.82	2.73	3.01	2.99
69	51	2.82	2.73	3.01	2.99
69	52	2.82	2.73	3.01	2.99
70	0	4.18	3.12	3.38	2.98
70	1	4.24	2.84	3.35	2.99
70	2	3.86	2.66	3.33	3.00
70	3	3.38	2.54	3.31	3.00
70	4	2.80	2.51	3.24	2.98
70	5	2.52	2.52	3.16	2.97
70	6	2.60	2.58	3.16	2.97
70	7	2.68	2.63	3.16	2.97
70	8	2.75	2.67	3.16	2.97
70	9	2.81	2.70	3.16	2.97
70	10	2.85	2.72	3.16	2.97
70	11	2.88	2.73	3.16	2.97
70	12	2.90	2.74	3.16	2.97
70	13	2.91	2.75	3.16	2.97
70	14	2.92	2.76	3.16	2.97
70	15	2.93	2.76	3.16	2.97
70	16	2.94	2.77	3.16	2.97
70	17	2.94	2.77	3.16	2.97
70	18	2.95	2.78	3.16	2.97
70	19	2.96	2.78	3.16	2.97
70	20	2.96	2.78	3.16	2.97
70	21	2.97	2.78	3.16	2.97
70	22	2.97	2.78	3.16	2.97
70	23	2.98	2.78	3.16	2.97
70	24	2.98	2.77	3.16	2.97
70	25	2.98	2.76	3.16	2.97
70	26	2.97	2.74	3.16	2.97
70	27	2.95	2.72	3.16	2.97
70	28	2.93	2.71	3.16	2.97
70	29	2.89	2.70	3.16	2.97
70	30	2.87	2.69	3.16	2.97
70	31	2.87	2.69	3.16	2.97
70	32	2.87	2.69	3.16	2.97
70	33	2.87	2.69	3.16	2.97
70	34	2.87	2.69	3.16	2.97
70	35	2.87	2.69	3.16	2.97

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
70	36	2.87	2.69	3.16	2.97
70	37	2.87	2.69	3.16	2.97
70	38	2.87	2.69	3.16	2.97
70	39	2.87	2.69	3.16	2.97
70	40	2.87	2.69	3.16	2.97
70	41	2.87	2.69	3.16	2.97
70	42	2.87	2.69	3.16	2.97
70	43	2.87	2.69	3.16	2.97
70	44	2.87	2.69	3.16	2.97
70	45	2.87	2.69	3.16	2.97
70	46	2.87	2.69	3.16	2.97
70	47	2.87	2.69	3.16	2.97
70	48	2.87	2.69	3.16	2.97
70	49	2.87	2.69	3.16	2.97
70	50	2.87	2.69	3.16	2.97
70	51	2.87	2.69	3.16	2.97
70	52	2.87	2.69	3.16	2.97
70	53	2.87	2.69	3.16	2.97
71	0	4.12	3.07	3.25	2.93
71	1	4.18	2.79	3.20	2.90
71	2	3.81	2.61	3.18	2.91
71	3	3.34	2.50	3.18	2.93
71	4	2.76	2.46	3.17	2.93
71	5	2.49	2.48	3.12	2.93
71	6	2.57	2.54	3.12	2.93
71	7	2.65	2.58	3.12	2.93
71	8	2.72	2.62	3.12	2.93
71	9	2.77	2.65	3.12	2.93
71	10	2.81	2.67	3.12	2.93
71	11	2.84	2.68	3.12	2.93
71	12	2.86	2.69	3.12	2.93
71	13	2.88	2.70	3.12	2.93
71	14	2.88	2.71	3.12	2.93
71	15	2.89	2.71	3.12	2.93
71	16	2.90	2.72	3.12	2.93
71	17	2.90	2.72	3.12	2.93
71	18	2.91	2.73	3.12	2.93
71	19	2.92	2.73	3.12	2.93
71	20	2.92	2.73	3.12	2.93

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
71	21	2.93	2.73	3.12	2.93
71	22	2.93	2.73	3.12	2.93
71	23	2.94	2.73	3.12	2.93
71	24	2.94	2.72	3.12	2.93
71	25	2.94	2.71	3.12	2.93
71	26	2.93	2.69	3.12	2.93
71	27	2.91	2.68	3.12	2.93
71	28	2.89	2.66	3.12	2.93
71	29	2.85	2.65	3.12	2.93
71	30	2.83	2.65	3.12	2.93
71	31	2.83	2.65	3.12	2.93
71	32	2.83	2.65	3.12	2.93
71	33	2.83	2.65	3.12	2.93
71	34	2.83	2.65	3.12	2.93
71	35	2.83	2.65	3.12	2.93
71	36	2.83	2.65	3.12	2.93
71	37	2.83	2.65	3.12	2.93
71	38	2.83	2.65	3.12	2.93
71	39	2.83	2.65	3.12	2.93
71	40	2.83	2.65	3.12	2.93
71	41	2.83	2.65	3.12	2.93
71	42	2.83	2.65	3.12	2.93
71	43	2.83	2.65	3.12	2.93
71	44	2.83	2.65	3.12	2.93
71	45	2.83	2.65	3.12	2.93
71	46	2.83	2.65	3.12	2.93
71	47	2.83	2.65	3.12	2.93
71	48	2.83	2.65	3.12	2.93
71	49	2.83	2.65	3.12	2.93
71	50	2.83	2.65	3.12	2.93
71	51	2.83	2.65	3.12	2.93
71	52	2.83	2.65	3.12	2.93
71	53	2.83	2.65	3.12	2.93
71	54	2.83	2.65	3.12	2.93
72	0	4.04	3.02	3.06	2.80
72	1	4.11	2.74	3.08	2.87
72	2	3.75	2.56	3.03	2.84
72	3	3.29	2.45	3.03	2.86
72	4	2.73	2.41	3.06	2.88

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
72	5	2.45	2.43	3.07	2.88
72	6	2.53	2.48	3.07	2.88
72	7	2.61	2.53	3.07	2.88
72	8	2.68	2.57	3.07	2.88
72	9	2.73	2.60	3.07	2.88
72	10	2.77	2.62	3.07	2.88
72	11	2.80	2.63	3.07	2.88
72	12	2.82	2.64	3.07	2.88
72	13	2.83	2.65	3.07	2.88
72	14	2.84	2.65	3.07	2.88
72	15	2.85	2.66	3.07	2.88
72	16	2.85	2.66	3.07	2.88
72	17	2.86	2.67	3.07	2.88
72	18	2.86	2.67	3.07	2.88
72	19	2.87	2.67	3.07	2.88
72	20	2.88	2.68	3.07	2.88
72	21	2.88	2.68	3.07	2.88
72	22	2.89	2.68	3.07	2.88
72	23	2.89	2.67	3.07	2.88
72	24	2.89	2.67	3.07	2.88
72	25	2.89	2.65	3.07	2.88
72	26	2.88	2.64	3.07	2.88
72	27	2.87	2.62	3.07	2.88
72	28	2.85	2.61	3.07	2.88
72	29	2.81	2.60	3.07	2.88
72	30	2.79	2.60	3.07	2.88
72	31	2.79	2.60	3.07	2.88
72	32	2.79	2.60	3.07	2.88
72	33	2.79	2.60	3.07	2.88
72	34	2.79	2.60	3.07	2.88
72	35	2.79	2.60	3.07	2.88
72	36	2.79	2.60	3.07	2.88
72	37	2.79	2.60	3.07	2.88
72	38	2.79	2.60	3.07	2.88
72	39	2.79	2.60	3.07	2.88
72	40	2.79	2.60	3.07	2.88
72	41	2.79	2.60	3.07	2.88
72	42	2.79	2.60	3.07	2.88
72	43	2.79	2.60	3.07	2.88
72	44	2.79	2.60	3.07	2.88

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
72	45	2.79	2.60	3.07	2.88
72	46	2.79	2.60	3.07	2.88
72	47	2.79	2.60	3.07	2.88
72	48	2.79	2.60	3.07	2.88
72	49	2.79	2.60	3.07	2.88
72	50	2.79	2.60	3.07	2.88
72	51	2.79	2.60	3.07	2.88
72	52	2.79	2.60	3.07	2.88
72	53	2.79	2.60	3.07	2.88
72	54	2.79	2.60	3.07	2.88
72	55	2.79	2.60	3.07	2.88
73	0	3.96	2.96	2.86	2.60
73	1	4.03	2.70	2.93	2.74
73	2	3.68	2.51	2.98	2.82
73	3	3.24	2.39	2.94	2.80
73	4	2.68	2.36	2.96	2.82
73	5	2.41	2.37	3.02	2.83
73	6	2.49	2.43	3.02	2.83
73	7	2.57	2.48	3.02	2.83
73	8	2.63	2.51	3.02	2.83
73	9	2.68	2.54	3.02	2.83
73	10	2.72	2.56	3.02	2.83
73	11	2.75	2.57	3.02	2.83
73	12	2.77	2.58	3.02	2.83
73	13	2.78	2.59	3.02	2.83
73	14	2.79	2.59	3.02	2.83
73	15	2.79	2.60	3.02	2.83
73	16	2.80	2.60	3.02	2.83
73	17	2.81	2.61	3.02	2.83
73	18	2.81	2.61	3.02	2.83
73	19	2.82	2.62	3.02	2.83
73	20	2.83	2.62	3.02	2.83
73	21	2.83	2.62	3.02	2.83
73	22	2.84	2.62	3.02	2.83
73	23	2.84	2.62	3.02	2.83
73	24	2.84	2.61	3.02	2.83
73	25	2.84	2.60	3.02	2.83
73	26	2.83	2.58	3.02	2.83
73	27	2.82	2.57	3.02	2.83

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
73	28	2.80	2.55	3.02	2.83
73	29	2.76	2.54	3.02	2.83
73	30	2.74	2.54	3.02	2.83
73	31	2.74	2.54	3.02	2.83
73	32	2.74	2.54	3.02	2.83
73	33	2.74	2.54	3.02	2.83
73	34	2.74	2.54	3.02	2.83
73	35	2.74	2.54	3.02	2.83
73	36	2.74	2.54	3.02	2.83
73	37	2.74	2.54	3.02	2.83
73	38	2.74	2.54	3.02	2.83
73	39	2.74	2.54	3.02	2.83
73	40	2.74	2.54	3.02	2.83
73	41	2.74	2.54	3.02	2.83
73	42	2.74	2.54	3.02	2.83
73	43	2.74	2.54	3.02	2.83
73	44	2.74	2.54	3.02	2.83
73	45	2.74	2.54	3.02	2.83
73	46	2.74	2.54	3.02	2.83
73	47	2.74	2.54	3.02	2.83
73	48	2.74	2.54	3.02	2.83
73	49	2.74	2.54	3.02	2.83
73	50	2.74	2.54	3.02	2.83
73	51	2.74	2.54	3.02	2.83
73	52	2.74	2.54	3.02	2.83
73	53	2.74	2.54	3.02	2.83
73	54	2.74	2.54	3.02	2.83
73	55	2.74	2.54	3.02	2.83
73	56	2.74	2.54	3.02	2.83
74	0	3.86	2.91	2.65	2.33
74	1	3.94	2.65	2.74	2.53
74	2	3.61	2.47	2.86	2.70
74	3	3.17	2.34	2.94	2.78
74	4	2.63	2.31	2.90	2.77
74	5	2.36	2.32	2.97	2.78
74	6	2.44	2.37	2.97	2.78
74	7	2.51	2.42	2.97	2.78
74	8	2.58	2.46	2.97	2.78
74	9	2.63	2.48	2.97	2.78

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
74	10	2.66	2.50	2.97	2.78
74	11	2.69	2.51	2.97	2.78
74	12	2.71	2.52	2.97	2.78
74	13	2.72	2.53	2.97	2.78
74	14	2.73	2.53	2.97	2.78
74	15	2.73	2.54	2.97	2.78
74	16	2.74	2.54	2.97	2.78
74	17	2.75	2.55	2.97	2.78
74	18	2.75	2.55	2.97	2.78
74	19	2.76	2.56	2.97	2.78
74	20	2.76	2.56	2.97	2.78
74	21	2.77	2.56	2.97	2.78
74	22	2.77	2.56	2.97	2.78
74	23	2.78	2.56	2.97	2.78
74	24	2.78	2.55	2.97	2.78
74	25	2.78	2.54	2.97	2.78
74	26	2.77	2.53	2.97	2.78
74	27	2.76	2.51	2.97	2.78
74	28	2.74	2.50	2.97	2.78
74	29	2.70	2.49	2.97	2.78
74	30	2.68	2.48	2.97	2.78
74	31	2.68	2.48	2.97	2.78
74	32	2.68	2.48	2.97	2.78
74	33	2.68	2.48	2.97	2.78
74	34	2.68	2.48	2.97	2.78
74	35	2.68	2.48	2.97	2.78
74	36	2.68	2.48	2.97	2.78
74	37	2.68	2.48	2.97	2.78
74	38	2.68	2.48	2.97	2.78
74	39	2.68	2.48	2.97	2.78
74	40	2.68	2.48	2.97	2.78
74	41	2.68	2.48	2.97	2.78
74	42	2.68	2.48	2.97	2.78
74	43	2.68	2.48	2.97	2.78
74	44	2.68	2.48	2.97	2.78
74	45	2.68	2.48	2.97	2.78
74	46	2.68	2.48	2.97	2.78
74	47	2.68	2.48	2.97	2.78
74	48	2.68	2.48	2.97	2.78
74	49	2.68	2.48	2.97	2.78

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
74	50	2.68	2.48	2.97	2.78
74	51	2.68	2.48	2.97	2.78
74	52	2.68	2.48	2.97	2.78
74	53	2.68	2.48	2.97	2.78
74	54	2.68	2.48	2.97	2.78
74	55	2.68	2.48	2.97	2.78
74	56	2.68	2.48	2.97	2.78
74	57	2.68	2.48	2.97	2.78
75	0	3.75	2.87	2.39	2.04
75	1	3.84	2.62	2.48	2.25
75	2	3.52	2.43	2.61	2.48
75	3	3.10	2.30	2.79	2.66
75	4	2.57	2.26	2.93	2.74
75	5	2.31	2.27	2.90	2.73
75	6	2.38	2.32	2.90	2.73
75	7	2.45	2.37	2.90	2.73
75	8	2.51	2.40	2.90	2.73
75	9	2.56	2.43	2.90	2.73
75	10	2.60	2.44	2.90	2.73
75	11	2.62	2.46	2.90	2.73
75	12	2.64	2.47	2.90	2.73
75	13	2.65	2.47	2.90	2.73
75	14	2.66	2.48	2.90	2.73
75	15	2.66	2.48	2.90	2.73
75	16	2.67	2.49	2.90	2.73
75	17	2.67	2.49	2.90	2.73
75	18	2.68	2.50	2.90	2.73
75	19	2.69	2.50	2.90	2.73
75	20	2.69	2.50	2.90	2.73
75	21	2.70	2.50	2.90	2.73
75	22	2.70	2.50	2.90	2.73
75	23	2.71	2.50	2.90	2.73
75	24	2.71	2.49	2.90	2.73
75	25	2.71	2.49	2.90	2.73
75	26	2.70	2.47	2.90	2.73
75	27	2.69	2.46	2.90	2.73
75	28	2.67	2.44	2.90	2.73
75	29	2.63	2.43	2.90	2.73
75	30	2.61	2.43	2.90	2.73

Worklife Expectancies and Standard Deviations with Competing Risks Using Four Decrements from Tables S-4, S-10, S-11, and S-12 and Markov Model (continued)

Age	Years of Service	<u>Competing Risks</u>		<u>Markov Model</u>	
		Worklife Expectancy	Standard Deviation	Worklife Expectancy	Standard Deviation
75	31	2.61	2.43	2.90	2.73
75	32	2.61	2.43	2.90	2.73
75	33	2.61	2.43	2.90	2.73
75	34	2.61	2.43	2.90	2.73
75	35	2.61	2.43	2.90	2.73
75	36	2.61	2.43	2.90	2.73
75	37	2.61	2.43	2.90	2.73
75	38	2.61	2.43	2.90	2.73
75	39	2.61	2.43	2.90	2.73
75	40	2.61	2.43	2.90	2.73
75	41	2.61	2.43	2.90	2.73
75	42	2.61	2.43	2.90	2.73
75	43	2.61	2.43	2.90	2.73
75	44	2.61	2.43	2.90	2.73
75	45	2.61	2.43	2.90	2.73
75	46	2.61	2.43	2.90	2.73
75	47	2.61	2.43	2.90	2.73
75	48	2.61	2.43	2.90	2.73
75	49	2.61	2.43	2.90	2.73
75	50	2.61	2.43	2.90	2.73
75	51	2.61	2.43	2.90	2.73
75	52	2.61	2.43	2.90	2.73
75	53	2.61	2.43	2.90	2.73
75	54	2.61	2.43	2.90	2.73
75	55	2.61	2.43	2.90	2.73
75	56	2.61	2.43	2.90	2.73
75	57	2.61	2.43	2.90	2.73
75	58	2.61	2.43	2.90	2.73

Appendix A

Tables S-4, S-10, S-11, and S-12

Twenty-Third Actuarial Valuation of Assets and Liabilities Under the Railroad Retirement Acts as of December 31, 2004 with Technical Supplement, US Railroad Retirement Board, Bureau of the Actuary, Chicago, Illinois, 2006.

Table S-4. 1994RRB Active Service Mortality Table^a

Age ^b	$q_{x-1/2}$	Age ^b	$q_{x-1/2}$
17	0.00091	46	0.00189
18	0.00091	47	0.00202
19	0.00092	48	0.00217
20	0.00092	49	0.00233
21	0.00093	50	0.00251
22	0.00094	51	0.00272
23	0.00094	52	0.00295
24	0.00095	53	0.00322
25	0.00096	54	0.00351
26	0.00097	55	0.00385
27	0.00098	56	0.00422
28	0.00100	57	0.00465
29	0.00101	58	0.00512
30	0.00103	59	0.00566
31	0.00105	60	0.00627
32	0.00107	61	0.00695
33	0.00109	62	0.00772
34	0.00112	63	0.00859
35	0.00115	64	0.00957
36	0.00119	65	0.01067
37	0.00122	66	0.01191
38	0.00127	67	0.01331
39	0.00132	68	0.01488
40	0.00137	69	0.01666
41	0.00144	70	0.01866
42	0.00151	71	0.02091
43	0.00159	72	0.02345
44	0.00168	73	0.02631
45	0.00178	74	0.02954
		75	0.03317

^a Deaths in active service are those of employees who last worked in the railroad industry in the year in which death occurred or in the preceding calendar year. The exposures correspond to this definition.

^b Age attained in the calendar year of exposure.

Table S-10. Calendar year rates^a of immediate^b age retirement

Age ^c	Years of Service	
	5-29	30 & over
60		0.64
61		0.50
62	0.16	0.45
63	0.13	0.41
64	0.10	0.40
65	0.43	0.46
66	0.32	0.35
67	0.30	0.35
68	0.25	0.35
69	0.25	0.30
70	0.25	0.25
71	0.25	0.25
72	0.25	0.25
73	0.25	0.25
74	0.25	0.25
75 & over	0.25	0.25

^a Technically probabilities.

^b Immediate retirements are defined as those for which the calendar year of retirement is the same as, or the year following, the calendar year of last employment in the railroad industry.

^c The age interval is from $x - .5$ to $x + .5$, except as indicated below:

<u>Age</u>	<u>Years of service</u>	<u>Interval for</u>	
		<u>Exposure</u>	<u>Retirements</u>
60	30 or more	59.5-60.5	60-60.5
62	5-29	61.5-62.5	62-62.5

Table S-11. Rates^a of immediate^b disability retirement and of eligibility for disability freeze^c

Age ^d	Calendar year rates		
	10-19	20-29	30 or more
	service years	service years	service years
Under 35	0.0010	0.0060	0.0049
35	0.0013	0.0066	0.0053
36	0.0017	0.0072	0.0058
37	0.0020	0.0079	0.0064
38	0.0024	0.0087	0.0070
39	0.0029	0.0095	0.0077
40	0.0034	0.0105	0.0085
41	0.0039	0.0114	0.0092
42	0.0046	0.0125	0.0101
43	0.0052	0.0137	0.0111
44	0.0060	0.0149	0.0121
45	0.0068	0.0163	0.0132
46	0.0078	0.0177	0.0143
47	0.0088	0.0193	0.0156
48	0.0099	0.0210	0.0170
49	0.0112	0.0229	0.0185
50	0.0126	0.0250	0.0202
51	0.0142	0.0272	0.0220
52	0.0159	0.0295	0.0239
53	0.0178	0.0321	0.0260
54	0.0199	0.0350	0.0283
55	0.0223	0.0380	0.0308
56	0.0249	0.0413	0.0334
57	0.0277	0.0449	0.0364
58	0.0309	0.0488	0.0360
59	0.0345	0.0530	0.0329
60	0.0384	0.0576	0.0186
61	0.0423	0.0625	0
62	0.0437	0.0679	0
63	0.0397	0.0685	0
64	0.0242	0.0561	0
65	0.0059	0.0152	0

^a Technically probabilities.

^b Immediate retirements are defined as those for which the calendar year of retirement is the same as, or the year following, the calendar year of last employment in the railroad industry.

^c Qualified under the social security definition of disability.

^d Age attained in the calendar year of exposure.

Table S-12. Calendar year rates^a of final withdrawal

Years of Service ^b	Attained age ^c				
	Under 25	25-34	35-44	45-54	55 & over
0	0.196	0.148	0.177	0.208	0.269
1	0.171	0.116	0.115	0.106	0.116
2	0.097	0.087	0.077	0.072	0.110
3	0.072	0.072	0.059	0.058	0.103
4	0.062	0.062	0.052	0.047	0.093
5	0.054	0.054	0.046	0.039	0.082
6	0.049	0.049	0.042	0.032	0.071
7	0.044	0.044	0.038	0.028	0.060
8	0.041	0.041	0.035	0.024	0.049
9	0.038	0.038	0.032	0.022	0.040
10	0.036	0.036	0.030	0.021	0.032
11	0.034	0.034	0.028	0.020	0.027
12	0.032	0.032	0.026	0.019	0.023
13	0.030	0.03	0.024	0.018	0.020
14	0.028	0.028	0.023	0.017	0.019
15	0.026	0.026	0.021	0.016	0.018
16	0.024	0.024	0.019	0.015	0.017
17	0.022	0.022	0.017	0.014	0.017
18	0.021	0.021	0.016	0.013	0.016
19	0.019	0.019	0.014	0.013	0.016
20	0.017	0.017	0.013	0.012	0.015
21	0.015	0.015	0.011	0.011	0.014
22	0.013	0.013	0.010	0.010	0.014
23	0.011	0.011	0.009	0.009	0.013
24	0.010	0.010	0.008	0.009	0.012
25	0.008	0.008	0.008	0.008	0.011
26	0.007	0.007	0.007	0.007	0.010
27	0.007	0.007	0.007	0.007	0.010
28	0.006	0.006	0.006	0.006	0.009
29	0.006	0.006	0.006	0.005	0.008
30 & over	0.014	0.014	0.014	0.014	0.022

^a Technically probabilities.

^b Rounded to the nearest whole year.

^c Age attained in the calendar year of exposure.

Appendix B

**Probability Mass Functions Calculated with Competing Risks
Formula (4) Assuming Four Decrements – Mortality (S-4), Age
Retirement (S-10), Disability Retirement (S-11), and Withdrawals (S-12)
and Calculation of Worklife Expectancy with Formula (3)**

This appendix illustrates three probability mass functions, each generated by the recursions in (4) and each showing probabilities of additional years of railroad service. For example, Figure 1 captures probabilities of additional years of railroad service for a twenty year old who has no service credit. As we move from left to right in this figure, “dots” represent probabilities of years of railroad service starting with .5 years, then 1.5 years, 2.5 years, and so on. It shows, at the extreme left, the probability is slightly over 18% that such a person will be in railroad work for only .5 of a year. The next dot indicates that the probability is approximately 11% of only 1.5 years of additional time in railroad work. Therefore, from the first two dots in this figure, we know that the probability is 29% (=18% + 11%) that a 20-year-old railroad worker who has zero years of service will spend 1.5 years or less in future railroad work. The average number of years in railroad work for such a person is the worklife expectancy of 15.08 years as reported in the extended table. The dispersion, or standard deviation, in additional years of railroad work is 15.50 years.

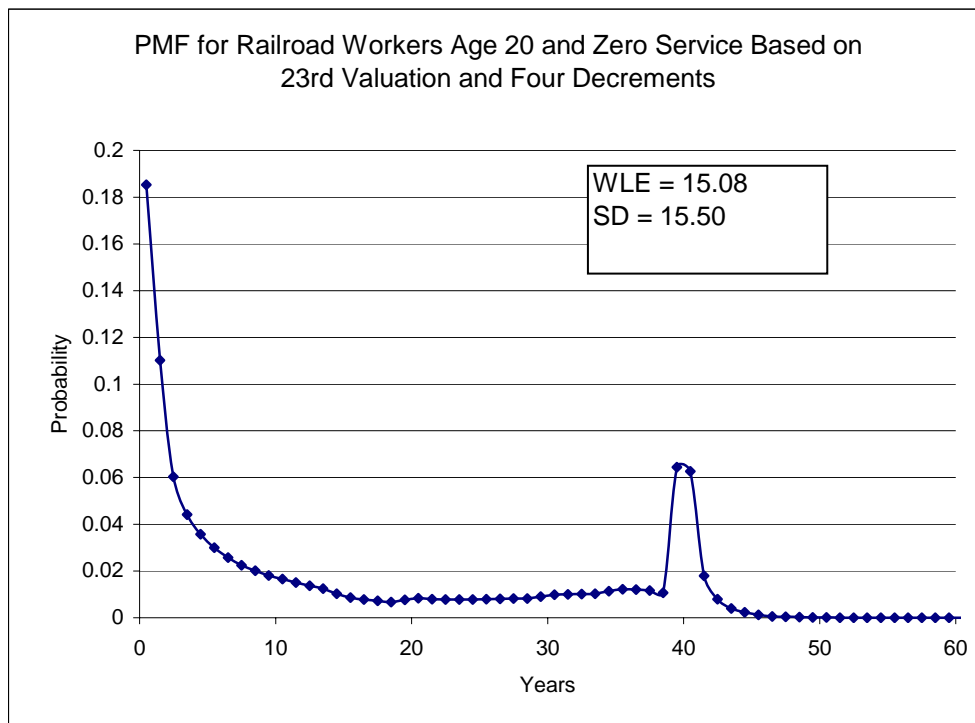


Figure 1. PMF for Railroad Workers Age 20 with Zero Service

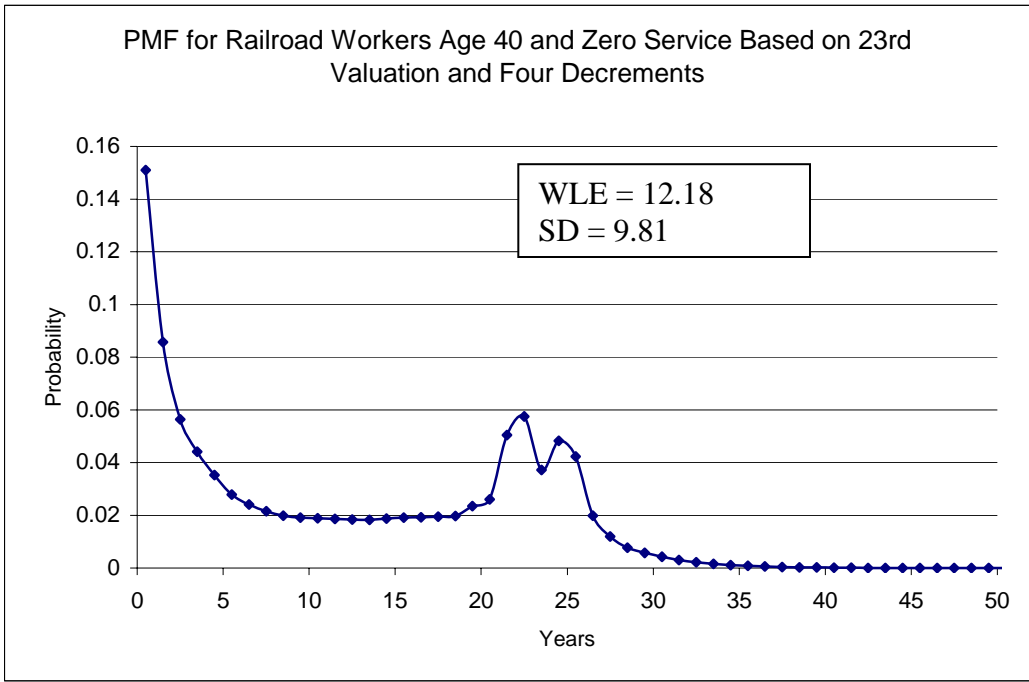


Figure 2. PMF for Railroad Workers Age 40 with Zero Service

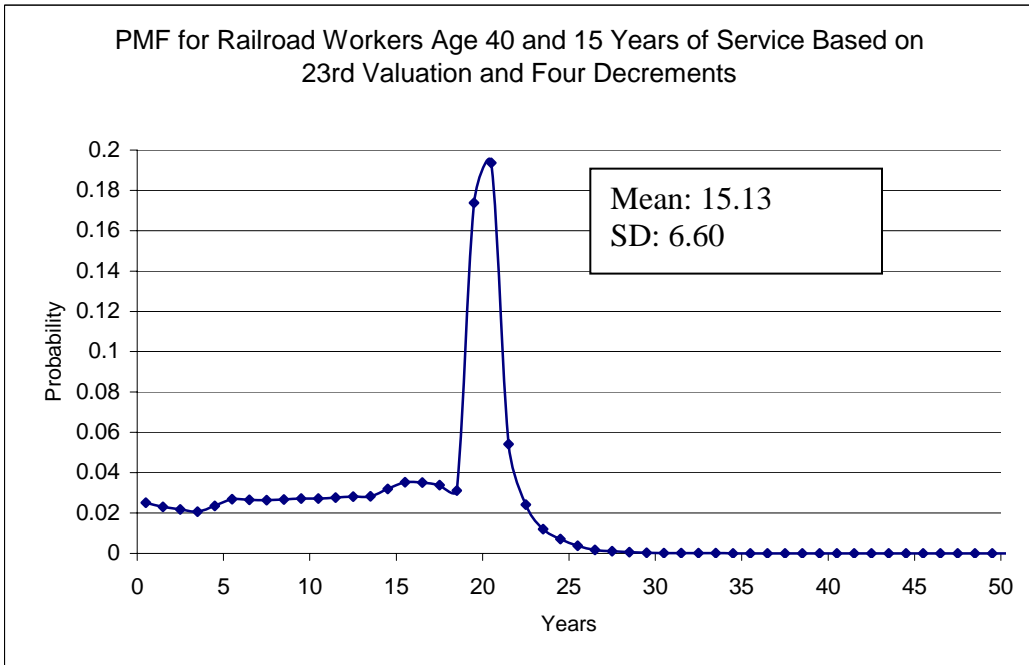


Figure 3. PMF for Railroad Workers Age 40 with 15 Years of Service

Probabilities of Future Years of Railroad Activity at Age 40 and
15 Years of Service Based on the 23rd Valuation and Four Decrements*

Future Years of Railroad Activity	Probability	Cumulative Probability
0.5	0.987	0.987
1.5	0.963	1.951
2.5	0.941	2.892
3.5	0.920	3.812
4.5	0.898	4.709
5.5	0.872	5.582
6.5	0.846	6.427
7.5	0.819	7.246
8.5	0.793	8.039
9.5	0.766	8.805
10.5	0.739	9.543
11.5	0.711	10.254
12.5	0.683	10.938
13.5	0.655	11.593
14.5	0.625	12.218
15.5	0.591	12.809
16.5	0.556	13.365
17.5	0.522	13.886
18.5	0.489	14.375
19.5	0.387	14.762
20.5	0.203	14.965
21.5	0.079	15.044
22.5	0.040	15.084
23.5	0.022	15.105
24.5	0.012	15.117
25.5	0.007	15.124
26.5	0.004	15.128
27.5	0.002	15.130
28.5	0.001	15.132
29.5	0.001	15.133
30.5	0.001	15.133
31.5 and Over	0.000	15.134
WLE	15.134	15.134

*The entries in the middle column of this table are the probability terms appearing on the right-hand-side of formula (3) in Section II. These probabilities sum to worklife expectancy. The probability mass function in formula (4) produces the same worklife as shown in Section II, footnote 2 and illustrated in Figure 3.