2023 Group Term Life Waiver Experience Table Report

JUNE | 2023

Mortality and Longevity

Group Term Life Waiver Experience Table Report

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Group Term Life Waiver Experience Table Report

Section 1: Introduction and Background

Interest in an industry study of Group Term Life Waiver (waiver) experience has been increasing in recent years. The current valuation table (2005 Table) is based on experience that is over 20 years old. Many companies are reporting that their experience is materially different than that implied by the 2005 Table. Industry changes affecting waiver claims include an increase in proactively identifying waiver claims and an increased emphasis on managing waiver claims.

The Society of Actuaries Research Institute convened a committee (the Committee) to gather and analyze industry data as the basis for an updated experience table. U.S. group life companies were surveyed, resulting in the 2000-2015 Group Life Waiver Experience Study (the Study), which is the largest dataset of waiver experience ever collected. This report documents the construction of the 2023 Group Life Waiver (GLW) Experience Table, which is based on years 2006-2015 of the Study.

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Section 2: Objectives of the Experience Table Construction Process

The overarching objective established by the Committee was to create an updated experience-based table which would be used to create a new waiver valuation table. The goals established to complete this objective are:

- Obtain an updated view of waiver experience since 2005;
- Add attributes to the table as supported by the data to increase precision;
- Use the experience table as a basis for a new statutory table; and
- Update actuarial guidelines to cover the use of company experience, credibility, and margin.

The first step was getting an updated view of the experience. Since the release of the 2005 Table, recovery and mortality experience have changed materially. The primary reasons for this are the subject of debate, but the leading argument for the change in experience is the desire for greater customer service on packaged sales by reducing the requirements for multiple claim forms for the same disability. This occurs when a company writes disability and group life policies for the same employer. In many companies, this has led to a proactive approach in establishing waiver claims when an LTD claim form has already been submitted. The natural extension of this is a more coordinated claims management approach between disability claims and waiver claims, leading to an increase in recovery rates. The impact on mortality rates is less clear since there have been multiple forces in play since 2005.

Figure 2.1
RECOVERY AND DEATH COUNTS AND RATES BY STUDY YEAR - ALL PARTICIPANTS
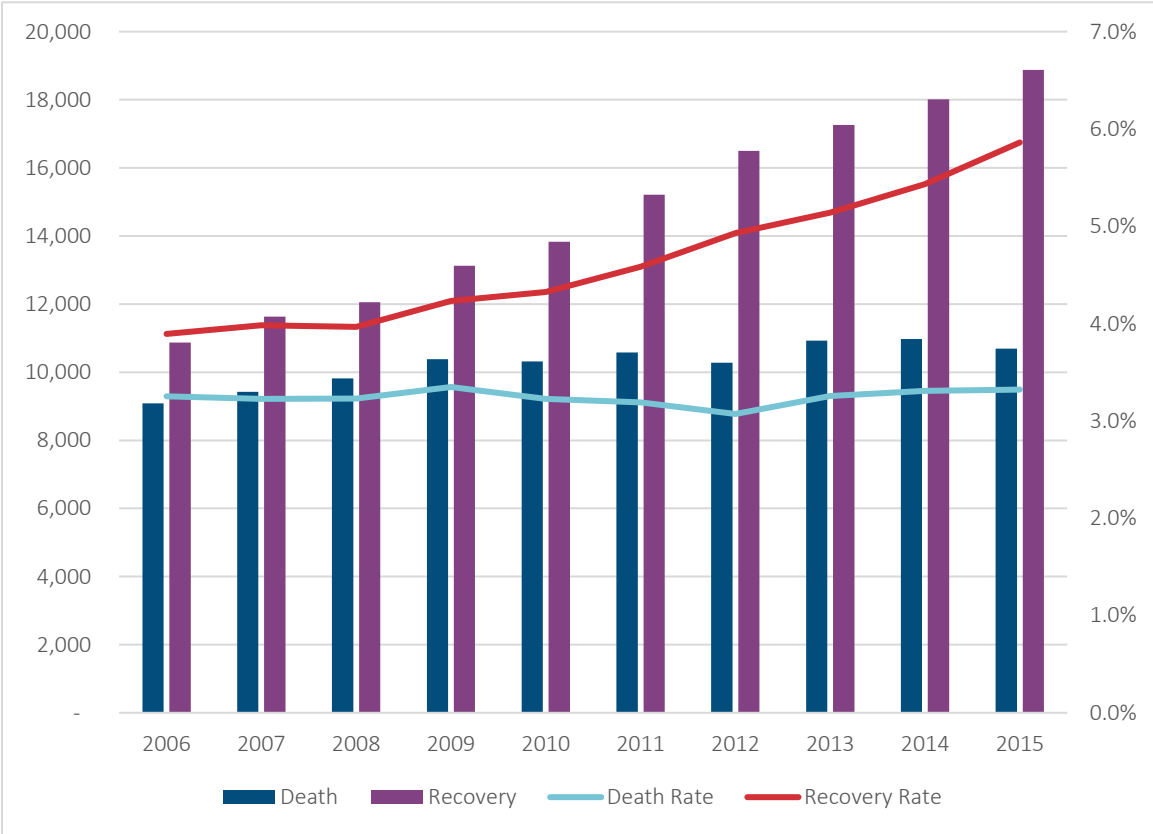
Another goal was to incorporate additional attributes to the 2005 Table, as supported by the data, which would add precision to the calculation of waiver reserves. Concerns for usability of the table and overfitting were considered, which led to adding only one new parameter – diagnosis. The modeling work showed that diagnosis had the greatest predictive power for both recovery and mortality. Other attributes which showed some predictive potential, but are not included in the 2023 Table, are LTD coverage, face amount and salary.

Usefulness as a statutory valuation table was also fundamental to the Committee's work. *Actuarial Guideline XLIV* (AG44) was re-drafted to spell out the use of credibility for inclusion of individual company experience in the calculation of statutory reserves and to provide guidance on reserve margin. AG44 was subsequently approved by the National Association of Insurance Commissioners (NAIC). The 2023 Group Life Waiver Valuation Table is the 2023 Experience Table, along with the credibility and margins as outlined in AG44.

The development process for an experience table was set to align with the stated objectives. The goals of the table development process were:

- Find appropriate balance between maximizing the amount of data in the table development and ensuring the data is current and relevant. This led to the 10-year period of 2006-2015 as the basis for the 2023 GLW Table;
- Consider consistency with the 2005 Table, such as rates defined as age last birthday;
- Consider ease of use in determining additional parameters; and
- Use graduation and regression techniques to avoid inconsistencies across ages, e.g., maintaining monotonically increasing mortality rates by age.

The basic structure of the 2005 Table has been kept in the 2023 Table. There are select mortality and recovery rates by age, claim duration and sex for 10 years, with ultimate rates by age and sex thereafter. In both the 2005 and 2023 Tables, age is defined as age last birthday. The slope of the 2005 rates by age and duration was considered in the graduation of the 2005 Table.

Internal consistency, such as monotonically increasing mortality rates by age, was addressed using the GLM method of regression.

Section 3: Development of Table

3.1 OVERVIEW

The Committee's objective was to produce an experience table that reflected more recent experience and more relevant claim termination parameters than the prior industry table. The large amount of records and additional claim characteristics gathered as documented in the 2019 Group Life Wavier of Premium Report[1] (GLWP Report) enabled the achievement of these goals. The following criteria were used in constructing the Table:
- It should include only the parameters that have a material impact on termination rates.
- It should include only parameters that have sufficient and reliable data to make credible estimates of termination rates.
- It should provide a good overall fit to the underlying experience.
- It should be practical to use.
- It should allow for use on claims that are missing information on certain parameters.

These criteria can conflict with one another; significant analysis was performed over three years that balanced these considerations to develop the published Table.

3.2 SOURCE DATA

The data used was the same set analyzed in the 2019 GLWP Report. The Committee assessed that the most recent 10 years of the data, 2006-2015, provided the most relevant and credible data to determine termination rates at the time of table creation. The Committee was provided aggregated data summarized by the following variables:
- Age at Disability
- Attained Age
- Benefit Period (Fixed Years, To Age XX, Lifetime)
- Calendar Year
- Carrier Size (three categories)
- Case Size (three categories)
- Definition of Disability (three categories)
- Diagnosis (13 categories)
- Duration – months since incurral date
- Elimination Period (EP) – in months
- Sex
- Insured Face Amount Bands (11 bands)
- LTD Coverage (four categories)
- Own Occupation Period

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[1] 2019 Group Life Waiver of Premium Report | SOA, https://www.soa.org/resources/experience-studies/2019/group-life-waiver/

3.3 ADJUSTMENTS TO SOURCE DATA

The source data had very few adjustments applied before table development. No exposure weighting was applied to large carriers as no one carrier had more than 30% of claims in the data. Data records that had durations exposed within their indicated elimination period or after their indicated benefit period were excluded. Calendar year was not separated as a variable. Finally, some variables were grouped into fewer categories during the analysis and construction process to enhance credibility and group categories with similar terminations rates (e.g., diagnosis grouped from 13 to 3, disabled ages grouped to quinquennial ages).

3.4 CREDIBILITY OF DATA

The Committee decided that observation cells with at least 300 observed claim terminations were deemed fully credible and used for the core graduation of rates in the table. The actual variable groupings were selected so that over 80% of the observation cells had this credible number of terminations, and the relatively small number of cells with few terminations did not have a significant impact on the final expectations.

3.5 TABLE CONSTRUCTION

A Generalized Linear Model (GLM) with log link was used to produce the core recovery and mortality termination rates of the table. Extensive documentation of this process is provided in the white paper produced by R. Jerome Holman FSA, MAAA, titled, "Graduation of Group Life Waiver of Premium Disability Experience Rates."[2]

For parameter selection, significant GLM analysis was carried out. In the end, only a diagnosis group parameter was added to the 2005 Table structure. Three variables were strongly considered but not incorporated into the Table: elimination period, LTD coverage, and face amount. Questions and concerns about the accuracy of the data, the materiality of the adjustment, and model complexity/over-fitting ultimately resulted in the exclusion of these variables from the Table. The Committee notes that it may be valuable for the prudent actuary to study the impact these variables have on the waiver termination rate experience at their own company.

3.6 SPECIAL ADJUSTMENTS AND EXTENSION OF TABLE

The GLM model provided core rates for most of the Table as published.

For the select period tables, rates for disabled ages 27 through 62 were provided from the GLM model. Some small adjustments were made to smooth the durational slope of termination rates in ages 27-32 and 57-62. The Table was extended to disabled ages 17 and 72 by using the termination rate relationships of the 2005 Table. For example, the termination rate for a given duration for disabled age 22 was determined by multiplying the termination rate for age 27 by the ratio of the 2005 Table's 22 and 27 termination rates for that same duration.

For the ultimate period tables, rates for attained ages 37 to 70 were provided from the GLM model. Modest adjustments were made to ensure a smooth progression of termination rates across attained ages, as well as ensure smooth transition from the select table to the ultimate table. The ultimate recovery table was extended back to age 27 by increasing rates by 1%-1.25% for each age prior to age 37. The recovery rates beyond age 70 were extended down to 0 by attained age 80, consistent with the underlying data. The ultimate mortality table was extended back to age 27 by using the mortality rate slope from the 2005 Table as was done for the select period. To extend mortality rates beyond age 100 to age 120, the sex-specific rates from 2017 Unloaded CSO Composite Mortality

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[2] https://content.naic.org/sites/default/files/inline-files/GLWP%20Report%20Final.pdf

Table were used. The mortality rates between ages 70 and 100 were interpolated to ensure an appropriate and smooth exponential rate curve for those 30 ages.

The 13 diagnosis groups were condensed into three termination rate groups, High/Medium/Low, with separate groupings for recovery and death. This approach grouped termination rate diagnosis categories with similar termination levels and patterns together to increase credibility of the estimate and avoid over-fitting the model.

The diagnosis adjustments for the select period were determined by duration. An analysis of a sex-based diagnosis adjustment was explored, but the Committee found the differences between the two sexes' termination rates by diagnosis group were not material enough to warrant the additional model complexity. Similar to the base rate tables, small adjustments were made to the GLM factors to ensure smooth and reasonable termination rate patterns across durations.

The diagnosis adjustments for the ultimate period were determined by attained age. The diagnosis adjustments were extended from age 37 back to age 27 by setting the adjustment equal to the age 37 adjustment. For diagnosis adjustments beyond age 70, the recovery adjustment was set equal to the age 70 recovery adjustment; the mortality adjustment was graded to 100% by age 100 as the Committee deemed that diagnosis has no meaningful mortality impact beyond age 100.

Section 4: Application and Description of Experience Termination Rate Tables

4.1 OVERVIEW OF TERMINATION RATES

The Experience Table consists of separate recovery and death rates. These rates are calculated by the multiplicative application of various parameters (Adjustment Tables) to the Base Termination Rate (Recovery and Death) Tables. Key notes for using the Base Termination Rate and Adjustment Tables:

- Unless otherwise noted, duration is measured from the claimant's date of disability.
- Age at disability is defined by the exact age at the last birthday before the date of loss. The tables use quinquennial ages (20-24, 25-29, etc.). Any age less than 20 should use the first age group and any age greater than or equal to 75 should use the last age group.
- References to sex in this table/data equate to biological sex at birth, as this is what most companies have provided. If only personal gender identification is available on the claim system, that may be used. For non-binary individuals, it is recommended to use the male decrements for conservatism, as they almost always produce a higher reserve than comparable female decrements.
- Diagnosis group mappings to the appropriate decrement grouping are listed in Table 4.1. If diagnosis is not available, use no adjustment (100%). ICD mappings to the diagnosis groups are provided in Appendix B.

Table 4.1
RECOVERY AND MORTALITY GROUPINGS FOR DIAGNOSIS CATEGORIES

Diagnosis Category	Recovery Grouping	Mortality Grouping
Back	Medium	Low Non-Cancer
Cancer	Medium	Cancer
Circulatory	Low	Low Non-Cancer
Diabetes	Low	High Non-Cancer
Diagnosis not provided	Unclassified	Unclassified
Digestive	Medium	High Non-Cancer
Ill-defined and Misc. Conditions	Low	Low Non-Cancer
Injury other than back	High	Low Non-Cancer
Invalid	Unclassified	Unclassified
Maternity	High	Low Non-Cancer
Mental and Nervous	High	Low Non-Cancer
Nervous System	Low	Low Non-Cancer
Other	Low	High Non-Cancer
Other Musculoskeletal	High	Low Non-Cancer
Respiratory	Low	High Non-Cancer
Unknown	Unclassified	Unclassified

4.2 APPLICATION OF THE TABLES

Calculation of the Experience Table termination rates starts with Base Termination Rate Tables, which contain separate recovery and death rates. These are subsequently adjusted using a diagnosis adjustment table. A diagnosis group may be mapped to a different level of termination rates for mortality and recovery. For example, cancer has the highest mortality group adjustment, but is in the middle recovery group adjustment. All rates in the first two years of disability are quarterly. Rates in duration years 3+ and in the ultimate attained age period are annual rates.

The following chart provides an overview of the Base Termination Rate and the Diagnosis Adjustment Table that were applied to develop the 2023 GLW Experience Table.

Figure 4.1
OVERVIEW OF DEVELOPMENT OF 2023 GLW EXPERIENCE TABLE
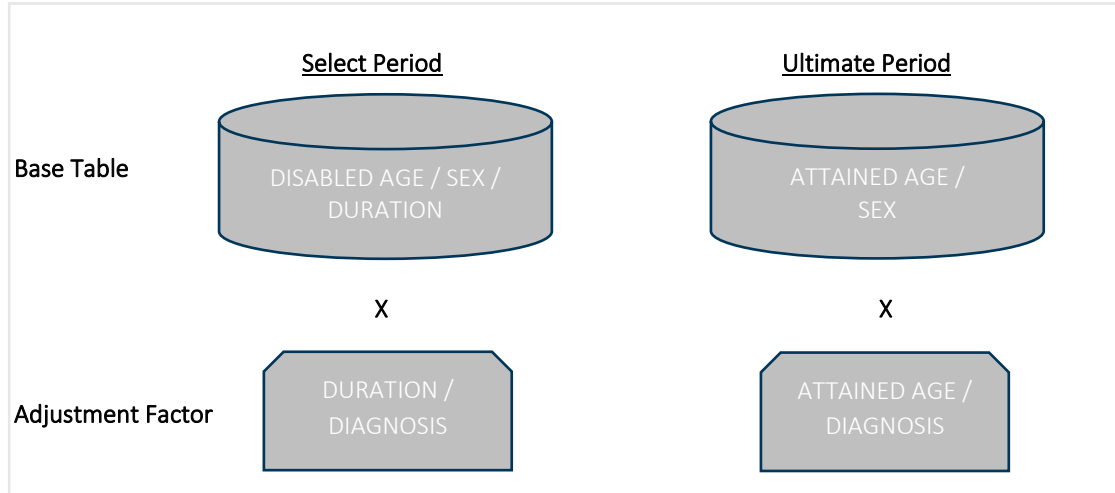
4.3 CONSIDERATIONS FOR USE OF THE 2023 GLW EXPERIENCE TABLE

There are many considerations when determining the appropriate application of an experience table. The 2023 GLW Experience Table is intended to produce a detailed replication of results from the Study dataset for years 2006-2015. Users should consider the following:

Availability of Data

Many pieces of data are needed to fully use the Table. For example, while the Table does not require use of diagnosis, use of diagnosis could materially affect termination rates for a specific claim. The distinctions may be more important for some applications than others.

Intended Purpose

There are many potential applications for an experience table including financial reporting, experience analysis and pricing. Given the derivation of the 2023 GLW Experience Table, users should first study and understand their actual results in relation to the Experience Study before determining the appropriate usage of the Table for any of these purposes.

Claims Management Practices

Variation in claims practices could have a material impact on the application of these tables. In addition, the Study would capture only those practices in place during the Study period, averaged across multiple carriers. Any significant differences between a specific company's own claim practices and the industry average could affect the practical application of this Experience Table.

Provision for Adverse Deviation

Typically, a provision for adverse deviation is considered when using experience tables. A user should first understand their company's results in relation to the 2023 GLW Experience Study, and then determine what level of conservatism may be appropriate to apply for the specific application. Considerations might include block size or potential volatility in claim size.

Handling Disability Ages Past the End of the Table

The disability age categories extend through quinquennial age 72, or disabled ages 70-74. For disabled ages beyond these values, the Committee recommends using the age 72 decrements and apply the appropriate ultimate table rates thereafter. For example, for a claim disabled at age 80, a practitioner would use the age 72 decrement rates for the first 10 years. Then, at duration 11 when the claim has reached age 90, the attained age 90+ decrement rates should be applied.

Section 5: Comparison of 2023 Experience Table Values to Prior Industry Tables

To benchmark the changes being brought by the 2023 GLW Table, the Committee compared its expectations to a set of baseline expectations based on the Society of Actuaries 2005 Group Term Life Waiver Reserve Table. Specifically, the tables chosen as a basis to create this baseline are those in exhibits 4, 5 and 6 of the report found here: https://www.soa.org/resources/experience-studies/2005-2009/hlth-2005-group-term-life-mortality-and-morbidity-study/. These baseline tables have no valuation margin.

The 2006-2015 experience study data is used to compute expectations under the 2023 Table and expectations under the 2005 Table by applying exposure counts in the study to the rates in both tables, respectively. These expectations are compared to each other below.

Figure 5.1
EXPECTED DEATH COUNTS AND RATIOS BY YEAR OF DISABILITY
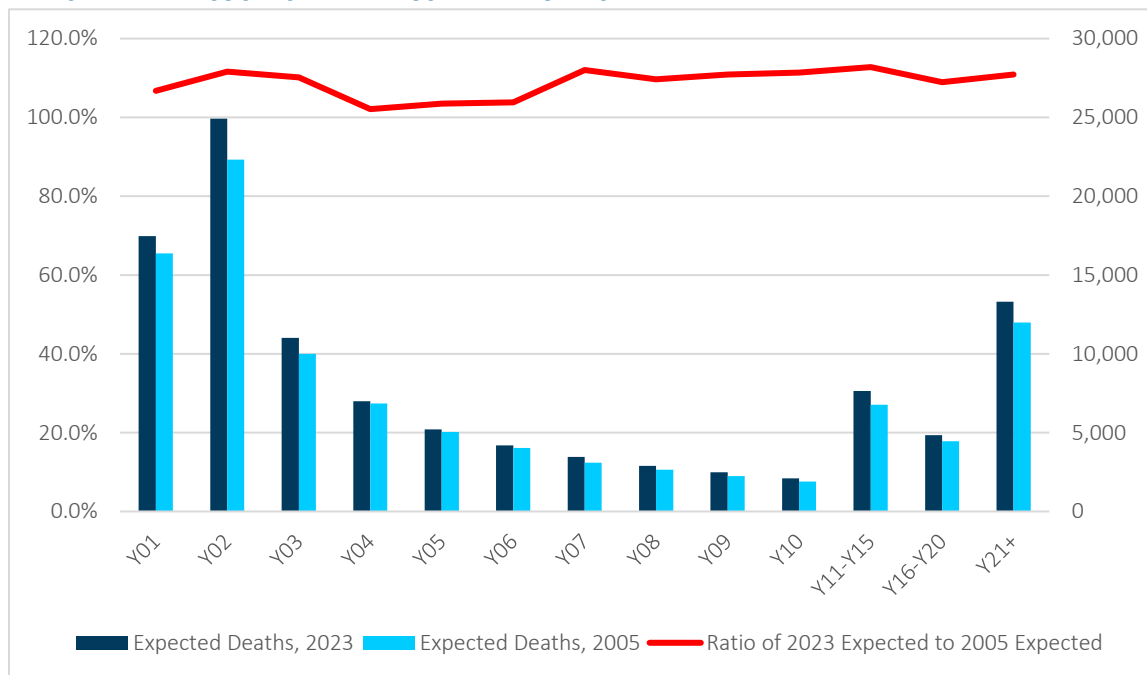
Overall expected mortality is up 9% in the 2023 Table compared to the 2005 Table. Expected mortality is up 2%-13% depending on duration since disability.

Figure 5.2

EXPECTED DEATH COUNTS AND RATIOS BY DISABILITY AGE GROUP
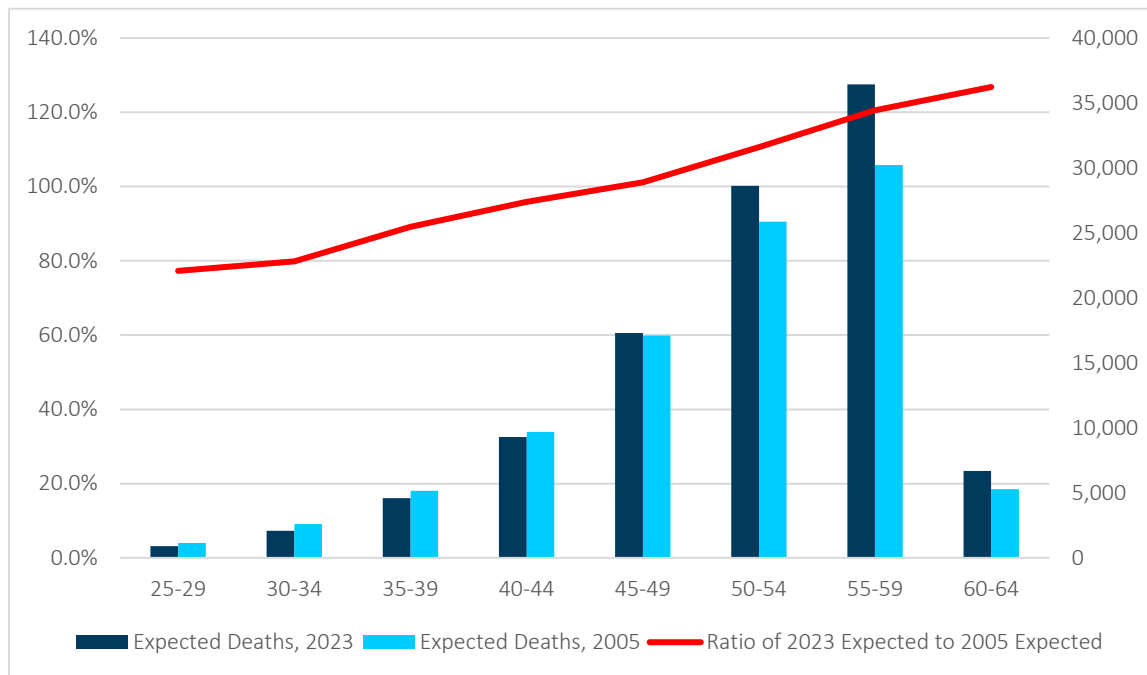
Overall expected mortality is lower in the 2023 Table for disability ages under 45 compared to the 2005 Table and higher for disability ages 45+.

Figure 5.3

EXPECTED DEATH COUNTS AND RATIOS BY STUDY YEAR
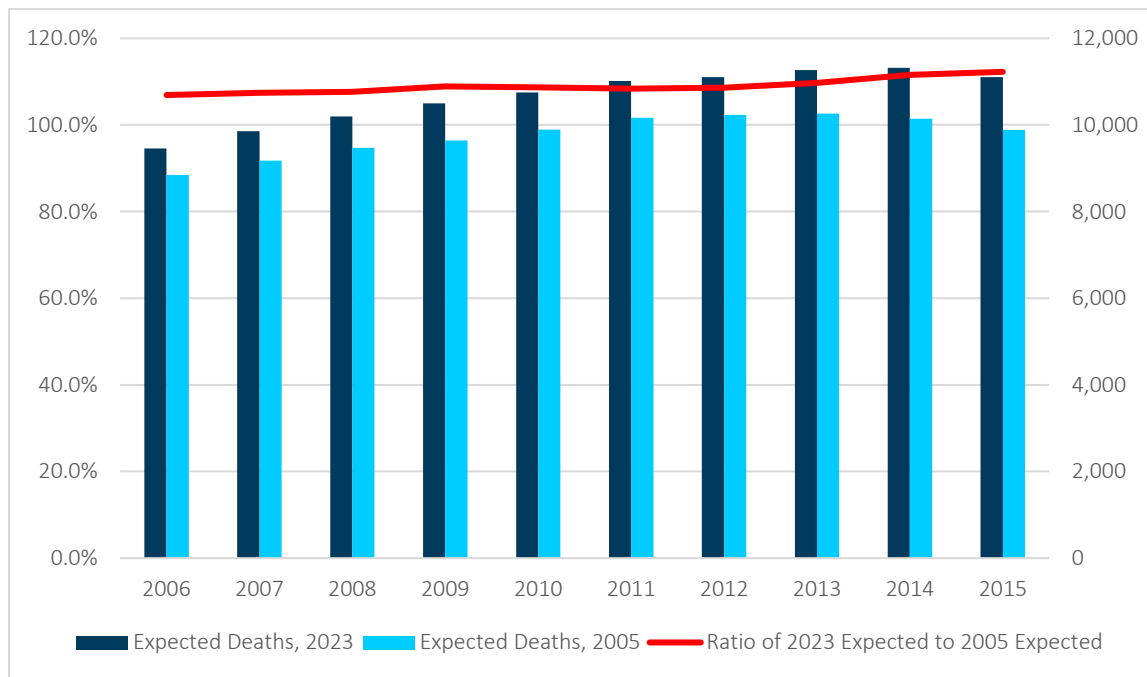
The ratio of 2023 Table expected death counts to 2005 Table expected death counts is slowly drifting upward across study years.

Figure 5.4
EXPECTED DEATH COUNTS AND RATIOS BY DIAGNOSIS GROUP
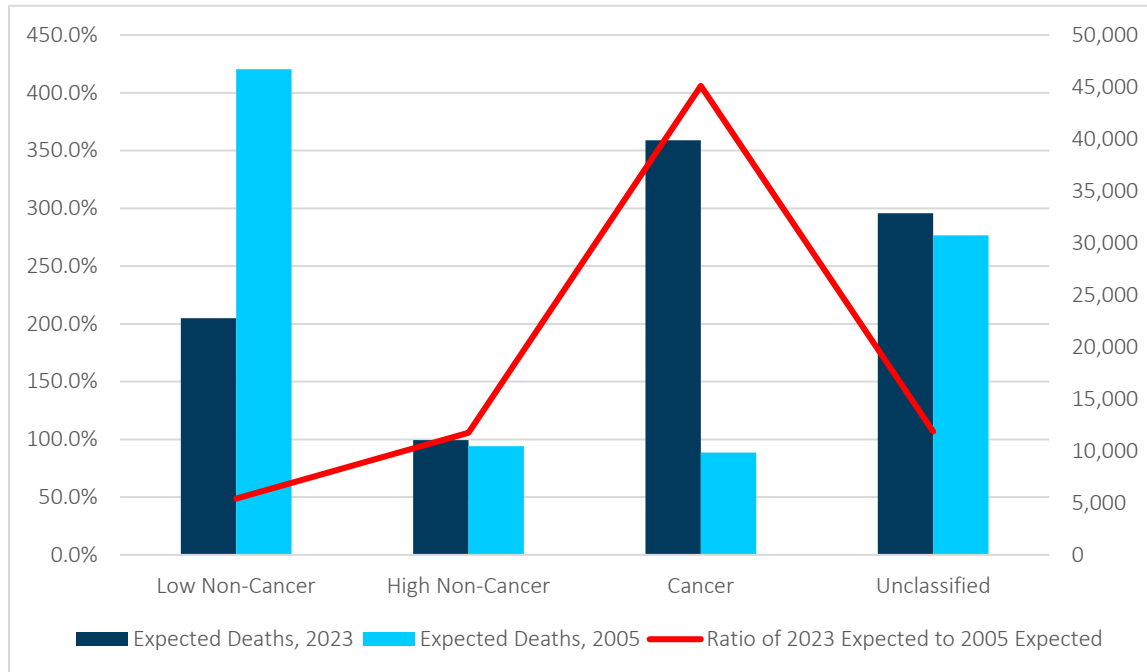
For the Cancer mortality diagnosis category, expected mortality under the 2023 Table is more than 400% of the 2005 Table. For the Low Non-Cancer mortality diagnosis category, expected mortality under the 2023 Table is less than 50% of the 2005 Table. For the High Non-Cancer mortality diagnosis category, expected mortality under the 2023 Table is about 6% above the 2005 Table.

Figure 5.5
EXPECTED DEATH COUNTS AND RATIOS BY INITIAL FACE AMOUNT
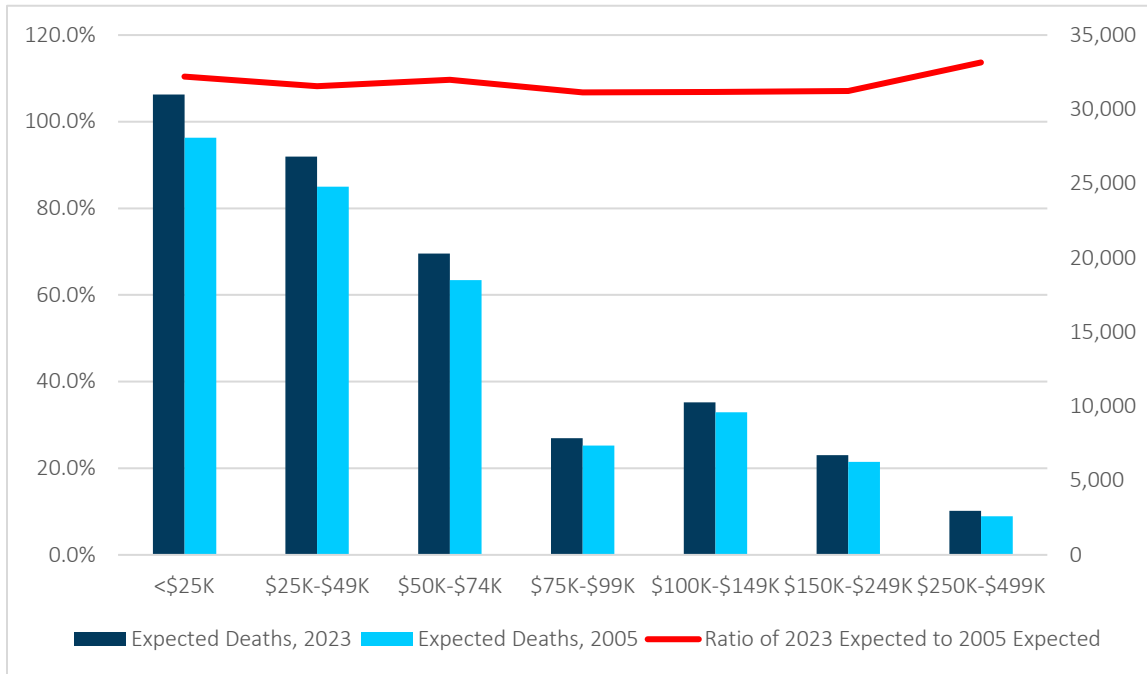
Face amount was not introduced as a dimension in the 2023 Table. The change in expectations is consistent across this segment.

Figure 5.6
EXPECTED DEATH COUNTS AND RATIOS BY LTD COVERAGE STATUS
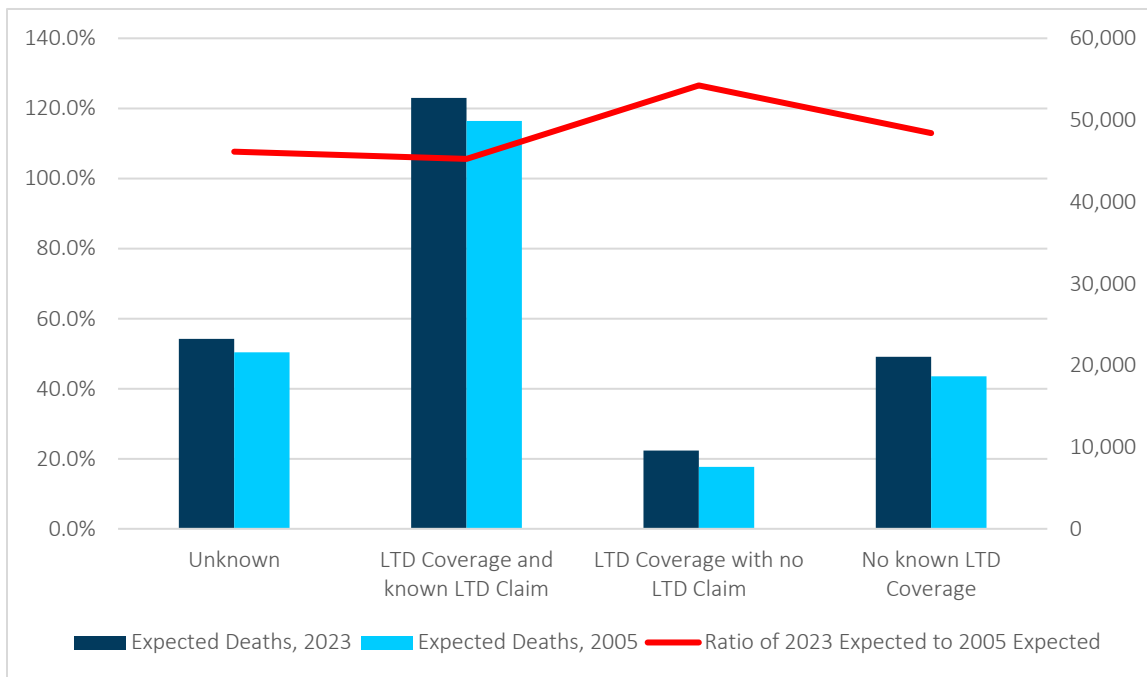
Presence of LTD coverage and/or LTD claim was studied, but it was not introduced as a dimension in the 2023 Table.

Figure 5.7

EXPECTED RECOVERY COUNTS AND RATIOS BY YEAR OF DISABILITY

Overall expected recovery is up significantly with rates being 230% of the 2005 Table. Most of the increase is occurring in the early disability durations, but all durations show an increase.

Figure 5.8

EXPECTED RECOVERY COUNTS AND RATIOS BY DISABILITY AGE GROUP

Most of the increase in expected recovery is occurring in disability ages 50+.

Figure 5.9
EXPECTED RECOVERY COUNTS AND RATIOS BY STUDY YEAR
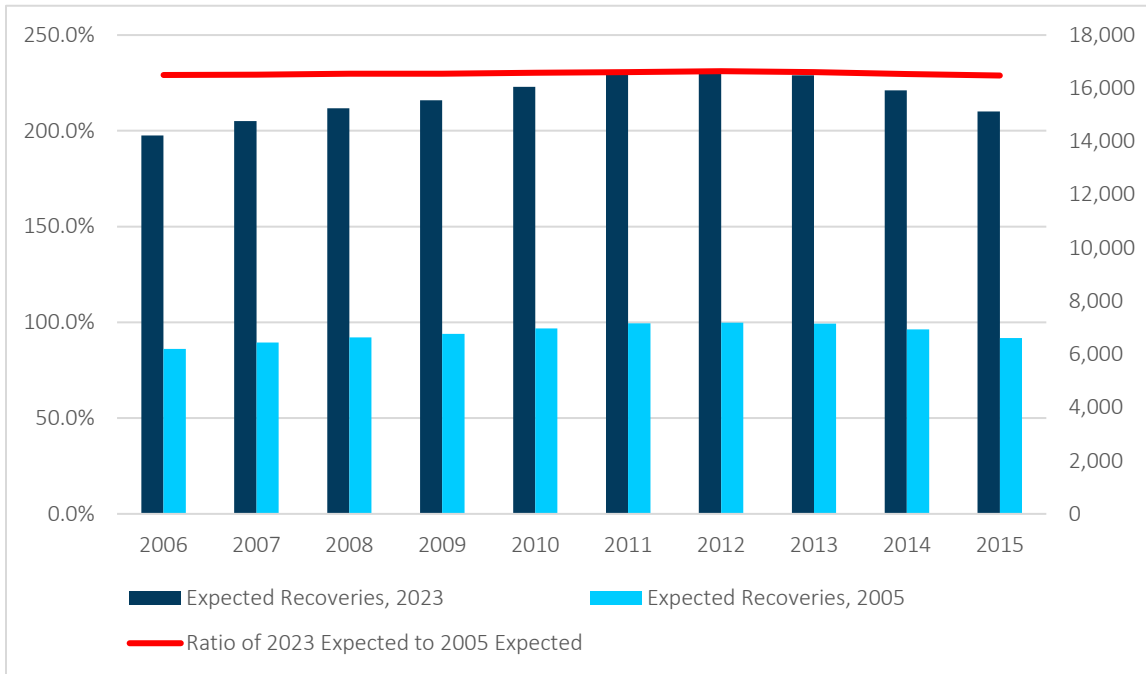
The relationship of 2023 expectations to 2005 expectations remains relatively constant across the years.

Figure 5.10
EXPECTED RECOVERY COUNTS AND RATIOS BY DIAGNOSIS GROUP
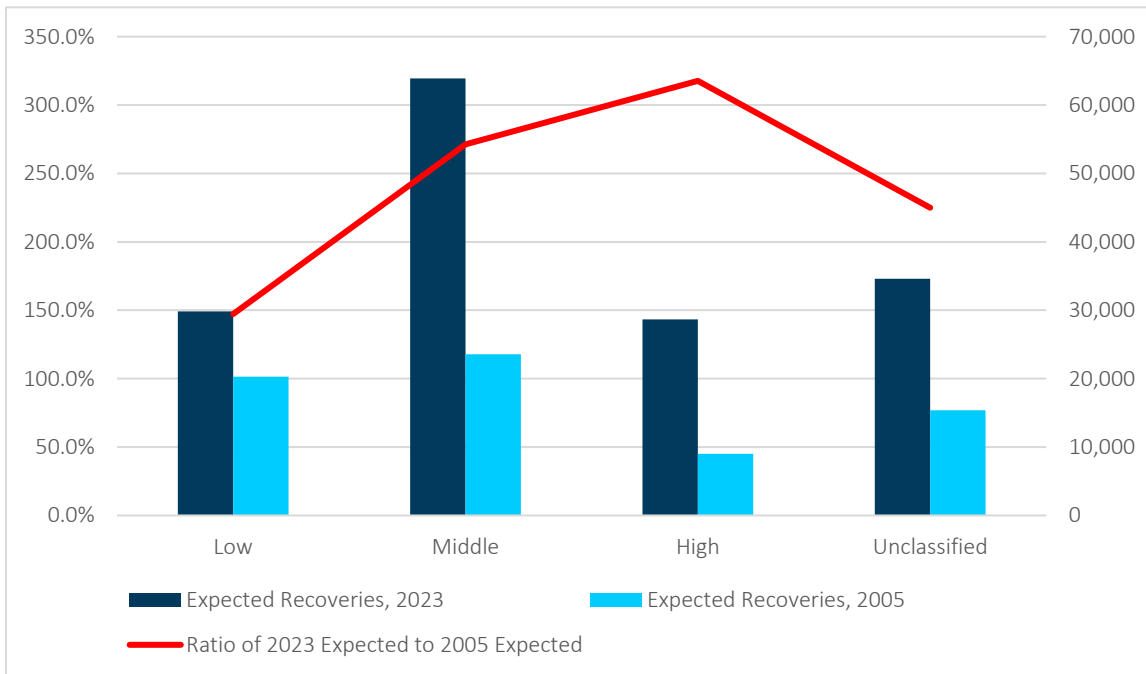
Even for the recovery diagnosis category with the lowest rates, expected recoveries are up almost 150% compared to the 2005 Table. For the middle and highest recovery rate diagnosis categories, expected recoveries are up over 270% and 315%, respectively, compared to the 2005 Table.

Figure 5.11

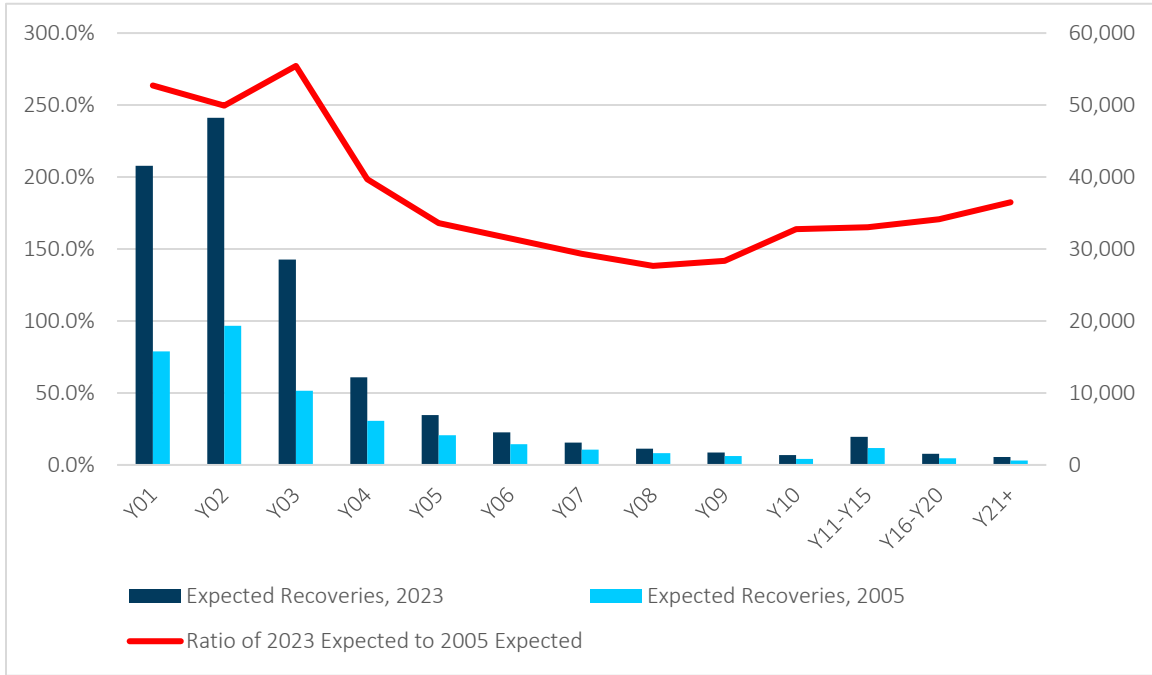EXPECTED RECOVERY COUNTS AND RATIOS BY INITIAL FACE AMOUNT
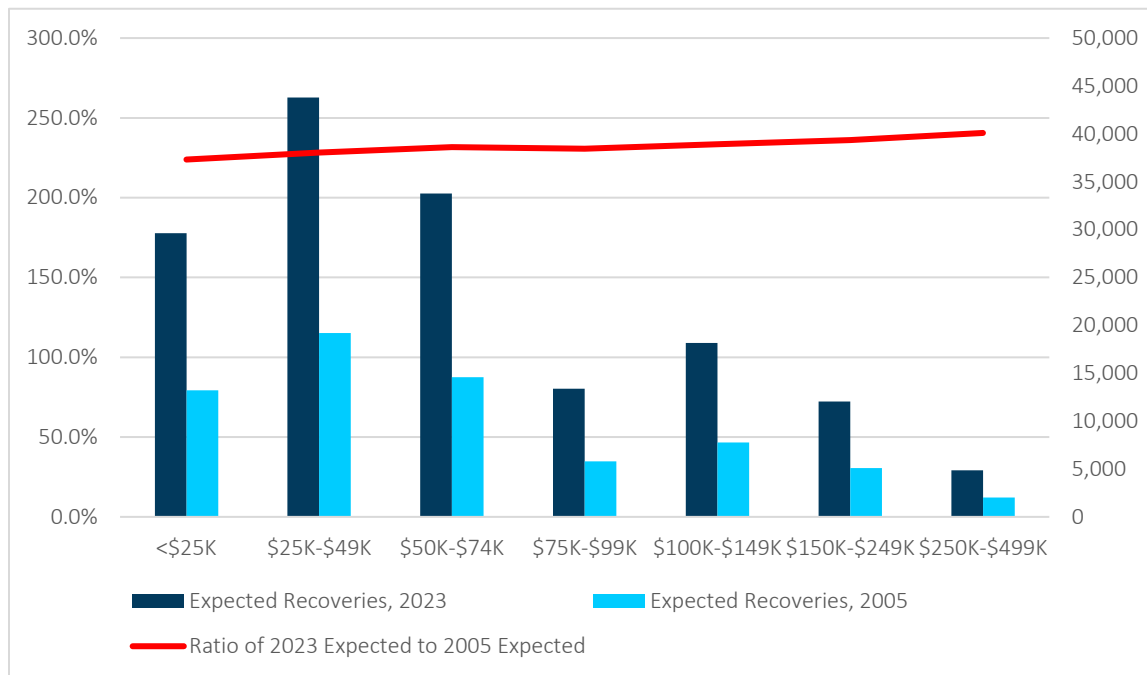
Face amount was not introduced as a dimension in the 2023 Table. The change in expectations is consistent across this segment.

Figure 5.12

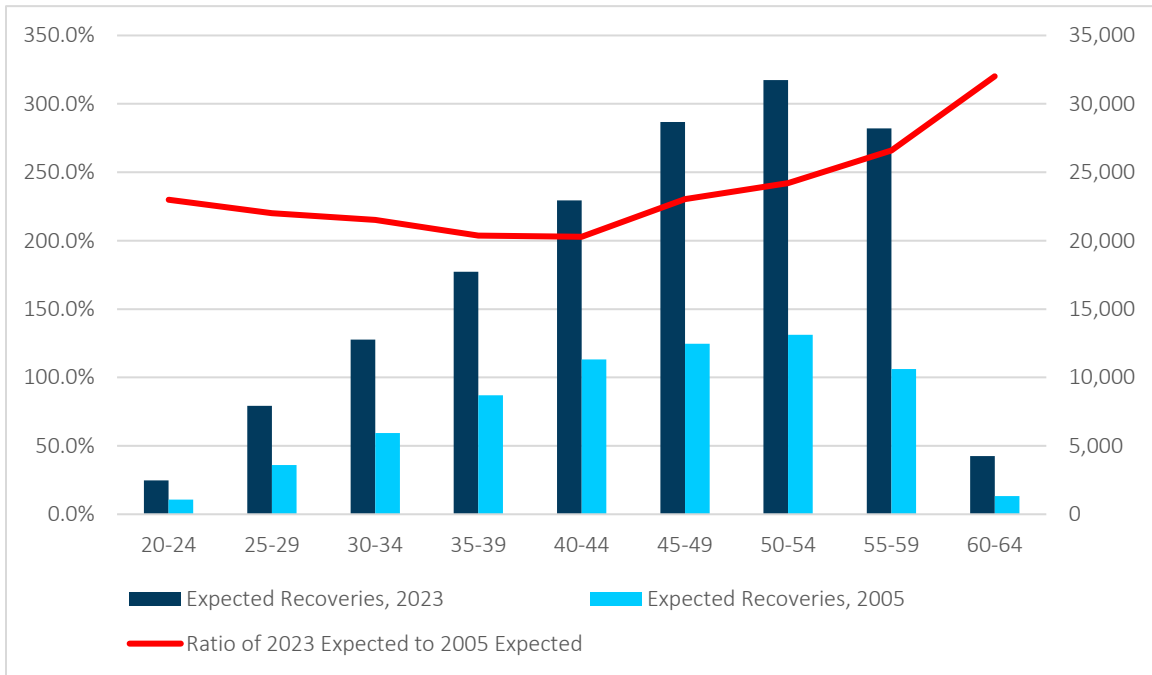EXPECTED RECOVERY COUNTS AND RATIOS BY LTD COVERAGE STATUS
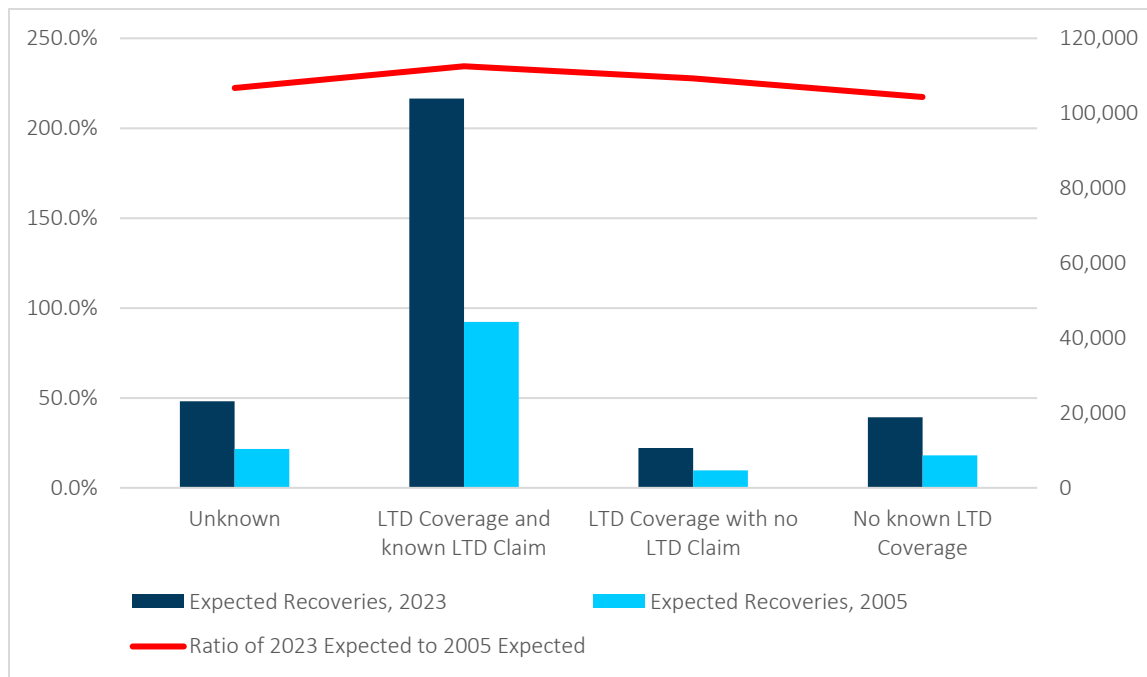
Presence of LTD coverage and/or LTD claim was not introduced as a dimension in the 2023 table. The change in expectations is consistent across this segment.

Section 6: Illustrative Reserve Comparisons

As discussed in previous sections, the updated experience period and inclusion of a diagnosis adjustment have materially changed the termination rate curves for the 2023 Group Life Waiver Experience Table compared to the 2005 Table. In addition, there have been significant reductions made to reserve margin requirements in AG44, as well as changes to the credibility formulas applied to allow for company experience blending with the termination rate tables. Given these changes, reserve value comparisons will be presented in two ways:

- comparing the 2023 Experience Table to the 2005 Experience table (no margins)
- comparing various segments within the 2023 Experience Table to each other

The Committee views that providing comparisons on an experience table basis will be more illustrative than providing valuation table basis (tables with margin) comparisons given all the AG44 changes made. The Committee encourages practitioners to read AG44 and assess the impact on statutory reserves for their respective companies. For all reserve calculations presented, a 3.25% discount rate was used, and no diagnosis adjustment was used for the 2023 Experience Table illustrations.

6.1 2023 TO 2005 EXPERIENCE TABLE RESERVE COMPARISONS

To Age 65 Benefit Period

For To Age 65 benefits, the initial reserve value on the 2023 Experience Table basis is less than or equal to the initial reserve value on the 2005 Experience Table basis, except for disabled ages over 60. For disabled central age 32, the 2023 Experience Table reserve is 40%-50% lower (depending on sex). For disabled central age 62, the 2023 Experience Table reserve is 22% higher. The interim disabled age reserve differences generally grade linearly between central disabled ages 32 and 62. In later yearly durations (between 3 and 10, depending on disabled age), the 2023 Experience Table reserves are higher than the 2005 Experience Table reserves by about 5%-10%, driven by a higher mortality rate. Also note that the 2023 Experience Table reserve after year two increases due to substantially lower recovery rates compared to the first two years' recovery rates. Finally, the male to female initial reserve value differential ranges from 10%-40% for the 2023 Experience Table compared to 10%-65% for the 2005 Experience Table.

It is worth noting that these reserve values are relatively in line with what was provided in the 2019 Group Life Wavier of Premium Report[3]. For example, on page 20 of that report, a male with central disabled age 42 at duration year 1 with To Age 65 coverage had a reserve value 20%-30% lower than the 2005 Experience Table calculated. The 2023 Experience Table produces a reserve that is 27% lower than the 2005 Table with the same characteristics. For that same claim advanced to duration 10, the 2019 Report estimated a 5% increase in reserve based on the new experience relative to the 2005 Table. The 2023 Experience Table calculates a reserve that is 6% higher than the 2005 Table (no diagnosis adjustments applied).

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[3] 2019 Group Life Waiver of Premium Report | SOA, https://www.soa.org/resources/experience-studies/2019/group-life-waiver/

Figure 6.1
TO AGE 65 - FEMALE - RESERVE PER 1,000 BY DURATION YEAR

Figure 6.2
TO AGE 65 - MALE - RESERVE PER 1,000 BY DURATION YEAR

Lifetime Benefit Period

For lifetime benefits, the initial reserve value on the 2023 Experience Table basis is less than or equal to the initial reserve value on the 2005 Experience Table basis for all disabled ages, and most durations. For disabled central age 32, the 2023 Experience Table reserve is 45%-50% lower (depending on sex). For disabled central age 62, the 2023 Experience Table reserve is 15% lower. In durations 10+ for the disabled ages over 60, the 2023 Experience Table reserves are nominally higher than the 2005 Experience Table reserves (1%-5% depending on attained age). Also note that the 2023 Experience Table reserve after year two increases due to substantially lower recovery rates as compared to the first two years' recovery rates. Finally, the male to female initial reserve value differentials range from 10%-35% for the 2023 Experience Table, compared to 10%-55% for the 2005 Experience Table.

The Committee notes that the starting reserve value using the 2023 Table for disabled central age 62 with a lifetime benefit period is below that of the corresponding reserve value using the 2005 Table; for the To Age 65 benefit period, both tables produce a very similar reserve. This is mostly due to the large impact of higher recovery rates in the 2023 Table that result in lower total projected deaths for lifetime benefits. Although the higher recovery rates are present for a To Age 65 benefit period as well, the shorter projection period drives an offsetting impact between both higher mortality and recovery rates in the 2023 Table compared to the 2005 Table.

Figure 6.3
LIFETIME – FEMALE – RESERVE PER 1,000 BY DURATION YEAR
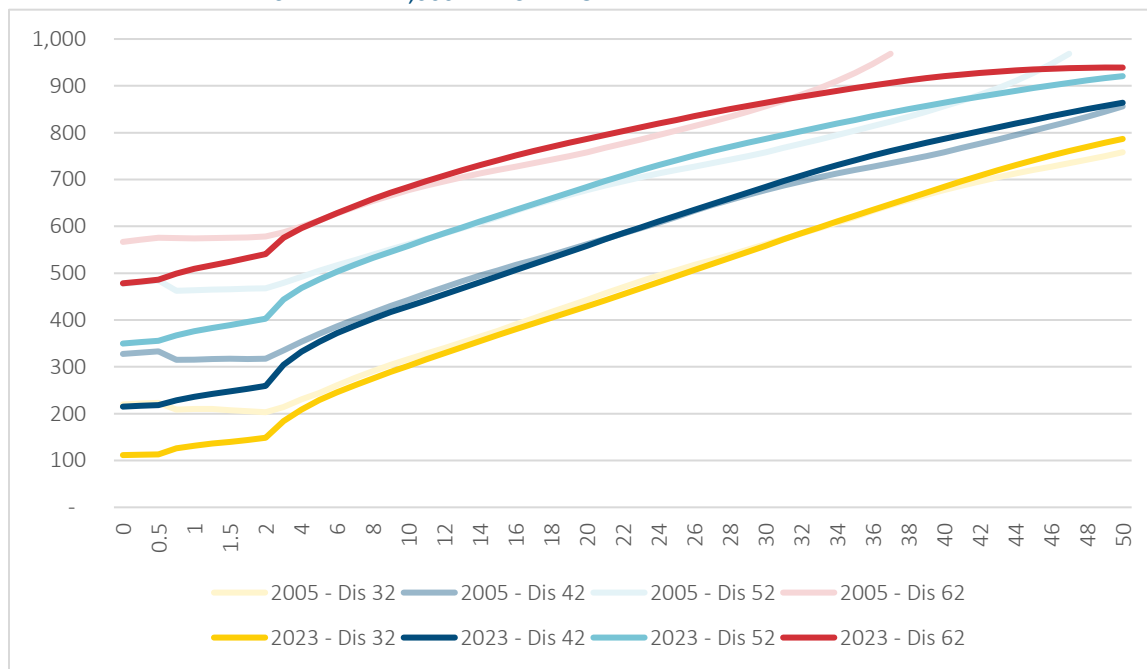
Figure 6.4
LIFETIME – MALE – RESERVE PER 1,000 BY DURATION YEAR
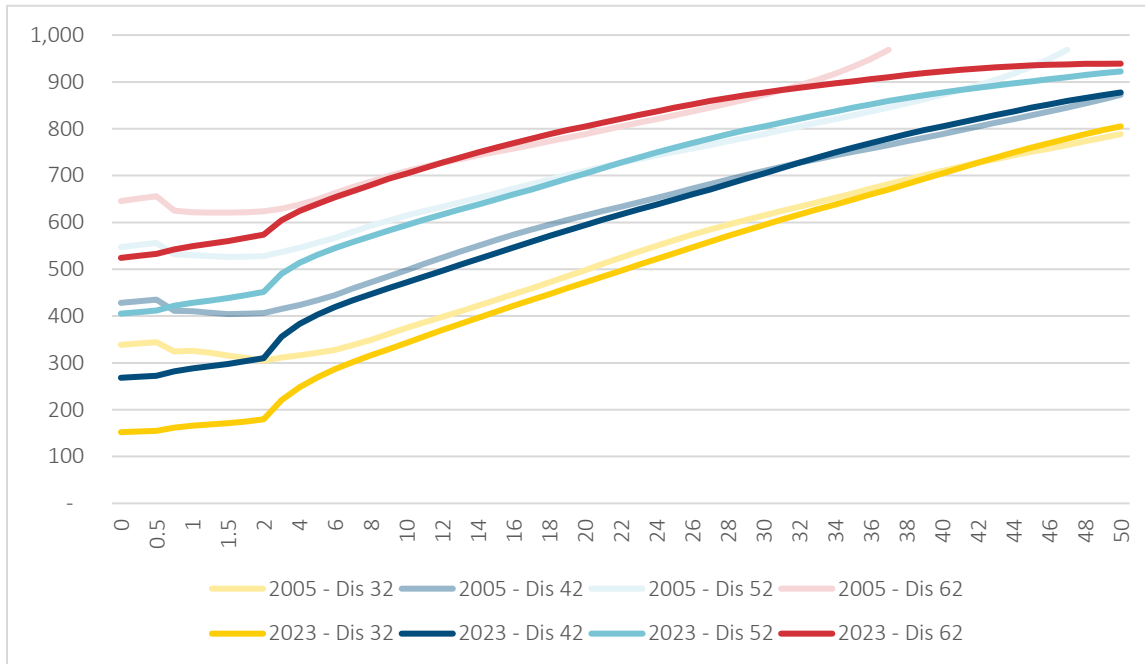
6.2 2023 SEGMENT RESERVE COMPARISONS

This section will compare reserve values using age 65 benefit periods. The "To Age" plan designs represented over 85% of the claim data received for the 2019 Experience Study used to create the 2023 Experience Table, and is, therefore, viewed as the most relevant benefit period for the industry.

<u>Sex</u>

Males have 10%-40% higher reserves relative to females on the 2023 Experience Table, driven by both lower select period recovery rates (average 10%-20% lower across disabled age and duration cells) and mortality (average 20%-30% higher across disabled age and duration cells). The reserve differentials generally decrease as disabled age increases, but higher attained ages result in the reserve differentials approaching 40% due to higher male mortality (30%-40%) in the ultimate periods.

Figure 6.5

TO AGE 65 - MALE VS. FEMALE - 2023 RESERVE COMPARISON
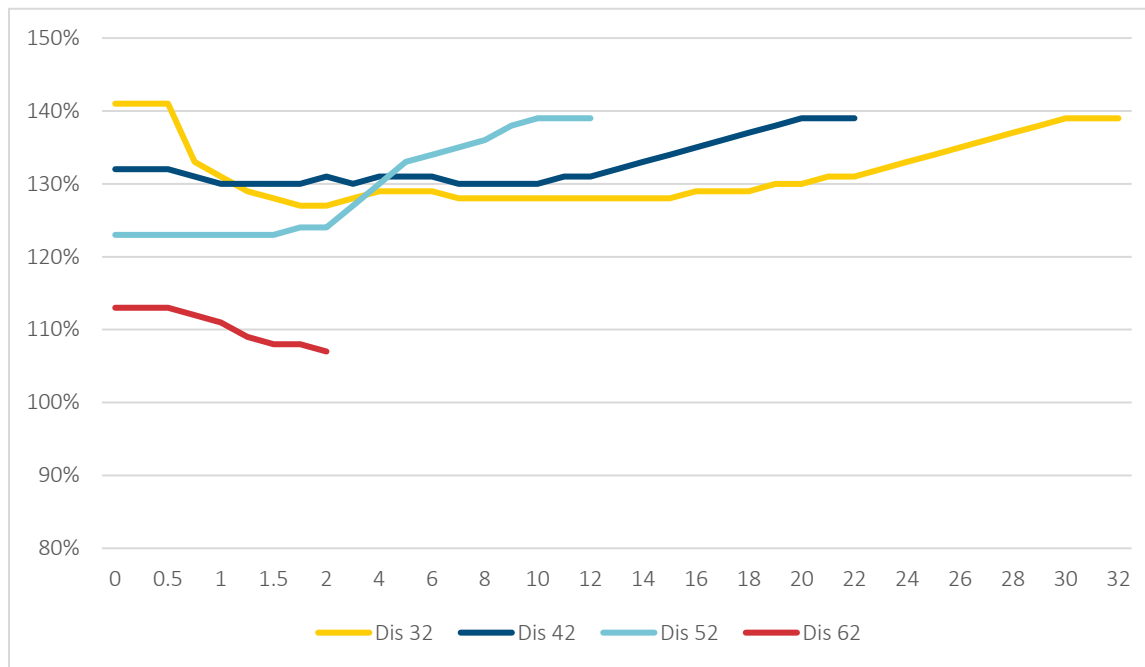
Diagnosis Groups

As noted earlier, the diagnosis categories are condensed into three buckets for both recovery and death decrements, effectively a high/medium/low termination rate group. However, a diagnosis category can have a different level bucket for death and recovery. Cancer, for example, is the highest death rate group, but is in the medium recovery rate group. Given this framework, there are seven combinations of recovery and death diagnosis categories. This includes the "Unknown" group (1.0 factors, no adjustment to rates), which is recommended for use by valuation actuaries if no diagnosis code is available on the claim record.

Table 6.1

COMBINATIONS OF RECOVERY AND DEATH DIAGNOSIS CATEGORIES

Diagnosis Category	Recovery Grouping	Mortality Grouping
Circulatory	Low	Low Non-Cancer
Back	Medium	Low Non-Cancer
Mental & Nervous	High	Low Non-Cancer
Diabetes	Low	High Non-Cancer
Digestive	Medium	High Non-Cancer
Cancer	Medium	Cancer
Invalid	Unknown	Unknown

The following illustrations are presented by disability age, with the seven combinations of death and recovery diagnosis buckets in each of the graphs. As with the sex comparisons, these illustrations use an age 65 benefit period. The female reserve values are provided in the illustrations; the male relative reserve values are virtually the same.

For disabled ages under 60, the Cancer diagnosis group has an initial reserve value that is six times greater than the lowest diagnosis group's initial reserve value; this relationship grades down to two times in later durations due to a narrowing of the expected mortality rates. For disabled ages over age 59, the cancer reserve value is 11 times greater than the lowest diagnosis group, driven by very high early duration mortality and a short benefit duration (terminates at age 65). For most cells, regardless of age and duration, the relative reserve value order of diagnosis buckets does not change materially.

Figure 6.6
TO AGE 65 - FEMALE - DIS AGE 32 - 2023 RESERVE COMPARISON
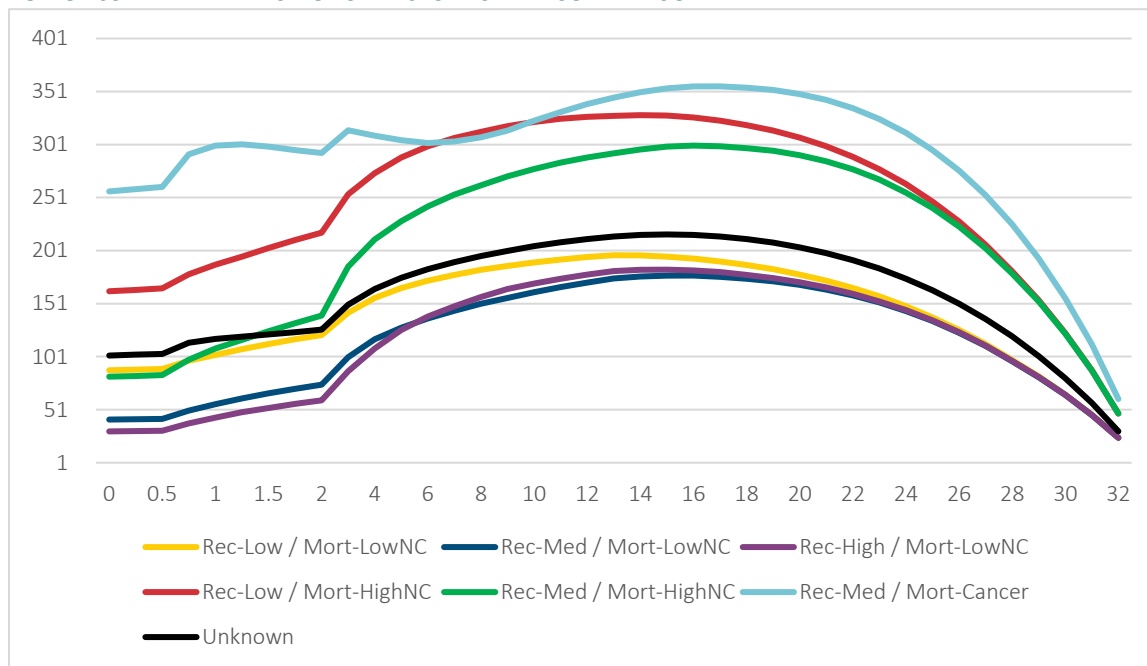
Figure 6.7
TO AGE 65 - FEMALE - DIS AGE 42 - 2023 RESERVE COMPARISON
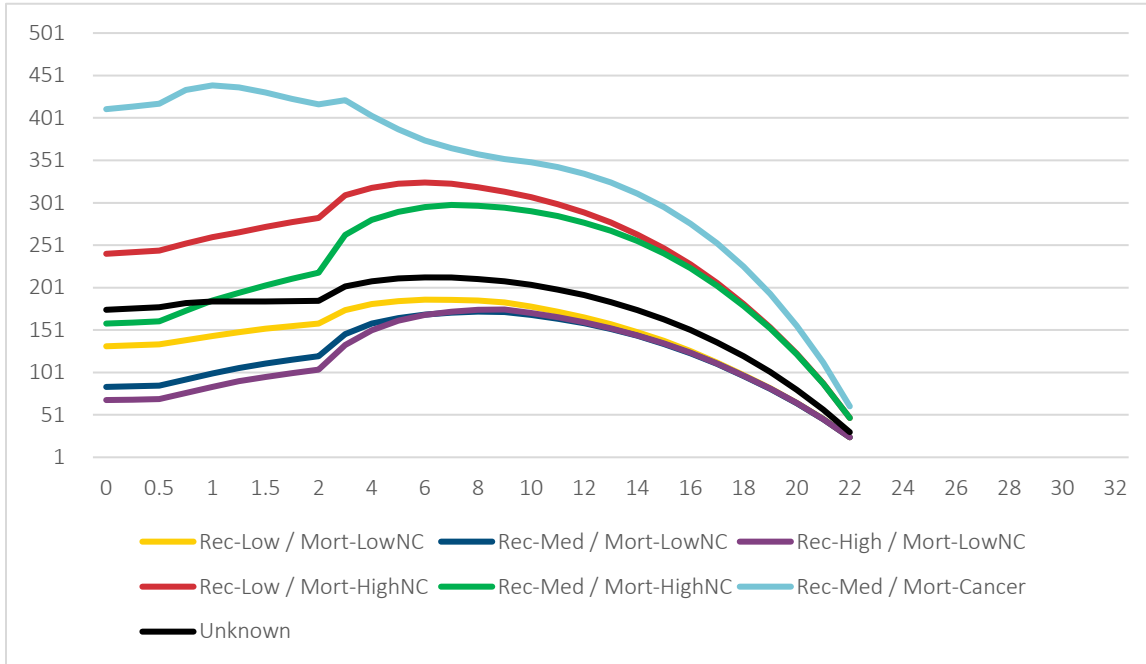
Figure 6.8
TO AGE 65 - FEMALE - DIS AGE 52 - 2023 RESERVE COMPARISON
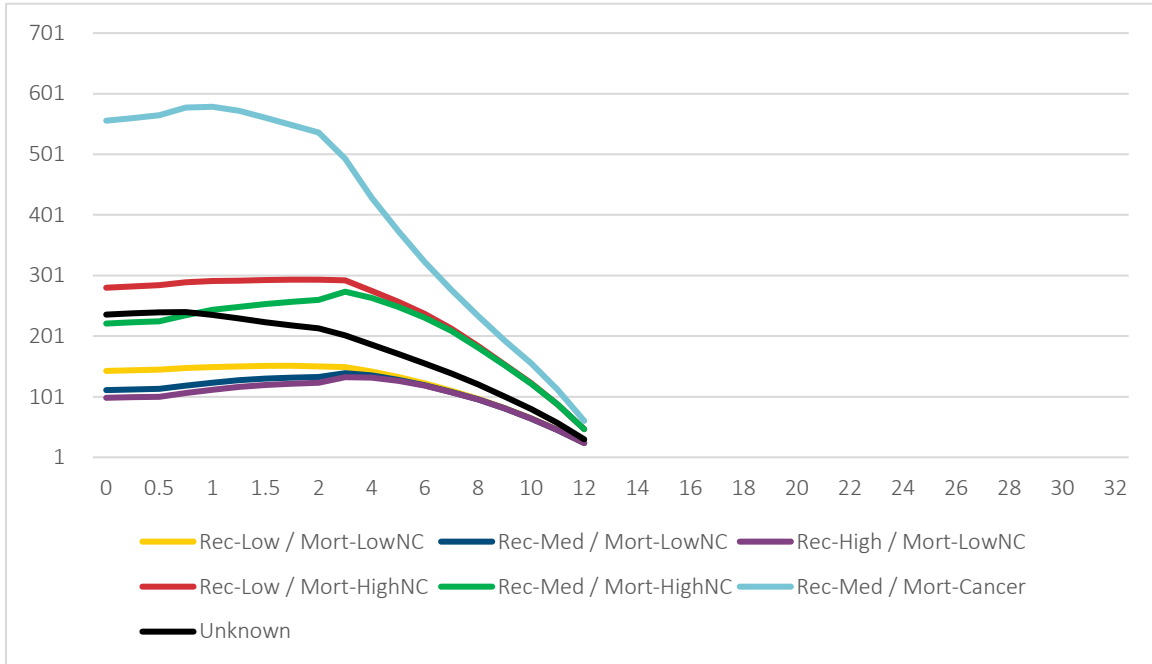
Figure 6.9
TO AGE 65 - FEMALE - DIS AGE 62 - 2023 RESERVE COMPARISON
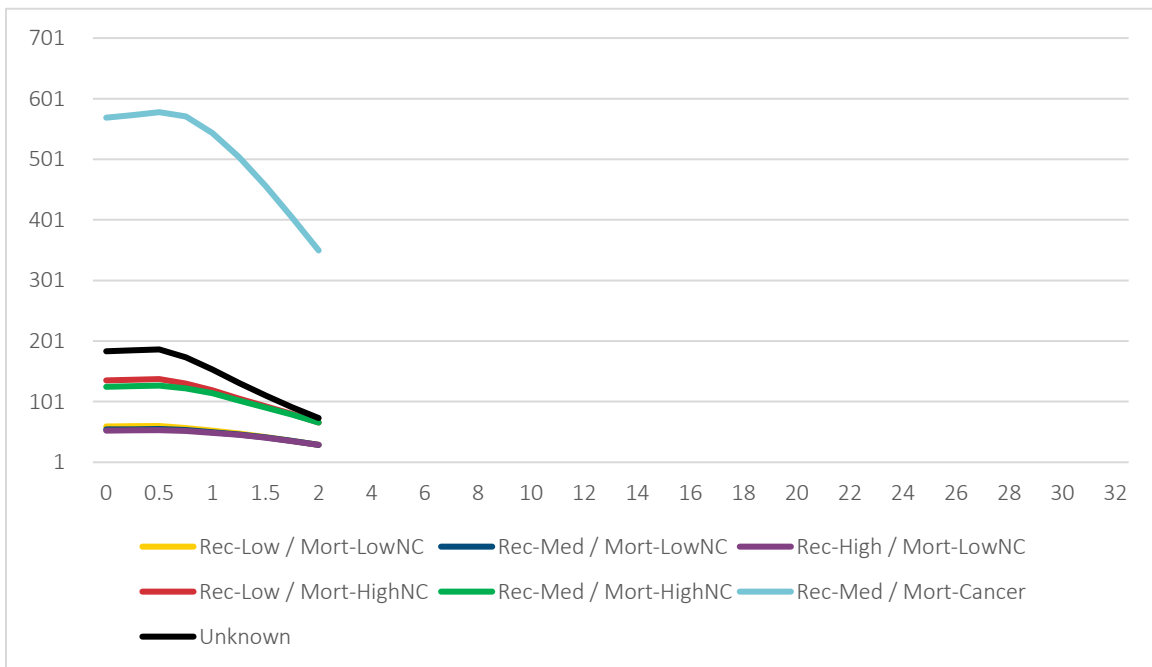
Section 7: Acknowledgments

The 2023 Group Term Life Waiver Experience Table is built upon extensive work over several years (2019-2022). The Committee would like to thank the 2018 Group Life Experience Committee members who set the foundation for the realization of a new Table.

Finally, the Committee also would like to recognize the participation and efforts of participating companies, who were critical to the success of the Study.

Participating Companies

Aetna
Cigna
Dearborn National
Guardian
Legacy-Assurant Employee Benefits
Liberty Mutual
Lincoln Financial Group
Mutual of Omaha
OneAmerica
Principal Financial Group
Prudential
Reliance Standard
Securian Financial Group (Minnesota Life)
Standard
Sun Life Financial
Symetra
The Hartford Insurance
United Health Care
Unum
Voya Financial

Appendix A: 2023 Group Life Waiver Study Table Components

The Table is based on a 2006-2015 experience period and generates expected quarterly and annual recovery and death rates. Each of the recovery and death calculations starts with the Base Termination Rate Tables of the quarterly/annual recovery and death rates in a 10-year select period, followed by an ultimate decrement table for attained ages 28 through 120. For both the select and ultimate tables, a diagnosis adjustment table modifies the base rates. There are factors in the diagnosis adjustment tables that can be used when diagnosis is not available. Using the no-diagnosis factors will produce the same average rates if the diagnosis distributions match the Study data.

Experience Tables

Figure A.1
BASE SELECT TABLE: MALES - PROBABILITY OF RECOVERY (1,000Q[X]+T)

Year of Disability	Central Age											
	17	22	27	32	37	42	47	52	57	62	67	72
1 (3rd qtr.)	166.9	166.9	136.8	112.3	92.0	75.4	61.8	50.7	41.7	35.9	26.9	22.4
1 (4th qtr.)	165.3	165.3	135.5	111.2	91.2	74.7	61.2	50.2	41.3	35.5	26.6	22.2
2 (1st qtr.)	140.8	140.8	116.5	95.6	78.4	64.2	52.6	43.2	35.5	30.5	26.7	19.1
2 (2nd qtr.)	125.9	125.9	102.1	83.8	68.7	56.3	46.1	37.9	31.1	26.8	23.0	19.1
2 (3rd qtr.)	113.2	113.2	92.4	75.9	62.2	50.9	41.8	34.3	28.1	24.2	20.2	16.2
2 (4th qtr.)	102.5	102.5	85.8	70.4	57.7	47.3	38.8	31.8	26.1	22.5	18.0	13.5
2 (annual)	402.2	402.2	341.8	288.2	241.5	201.5	167.6	139.3	115.5	100.1	85.1	66.2
3	434.4	434.4	353.1	290.2	244.2	186.7	142.9	115.2	89.6	72.6	54.4	49.9
4	259.0	259.0	195.1	163.0	129.8	99.2	76.8	58.9	45.1	35.7	23.0	20.4
5	189.1	189.1	139.1	113.7	86.2	65.5	51.6	38.0	28.8	22.7	16.5	14.4
6	135.8	135.8	116.1	87.4	64.7	49.2	38.3	28.4	21.0	16.4	11.5	9.8
7	107.5	107.5	96.7	71.2	52.2	39.7	30.7	22.5	16.7	13.0	8.1	6.5
8	91.6	91.6	83.0	60.7	45.0	34.2	25.6	18.9	13.8	10.9	5.4	3.6
9	78.0	78.0	74.4	53.8	39.9	30.2	22.5	16.5	12.0	9.5	3.8	1.9
10	74.0	74.0	68.2	49.3	37.0	27.3	20.3	14.7	10.7	8.4	4.2	-

Figure A.2
BASE SELECT TABLE: MALES - PROBABILITY OF DEATH (1,000Q[X]+T)

Year of Disability	Central Age											
	17	22	27	32	37	42	47	52	57	62	67	72
1 (3rd qtr.)	11.3	13.3	13.3	15.2	17.5	20.1	23.1	26.5	30.3	31.9	29.3	26.7
1 (4th qtr.)	14.4	16.9	16.9	19.4	22.3	25.6	29.4	33.7	38.7	40.6	37.3	34.0
2 (1st qtr.)	13.4	15.8	15.8	18.1	20.8	23.9	27.4	31.4	36.0	37.9	34.8	31.7
2 (2nd qtr.)	12.0	13.2	13.8	15.8	18.1	20.8	23.9	27.4	31.4	33.0	29.7	26.4
2 (3rd qtr.)	11.0	11.9	11.9	13.7	15.7	18.1	20.7	23.8	27.3	28.6	27.6	24.4
2 (4th qtr.)	9.7	10.5	10.5	12.0	13.8	15.9	18.2	20.9	23.9	25.1	25.1	21.9
2 (annual)	45.3	50.4	51.0	58.3	66.7	76.4	87.3	99.6	113.6	119.0	112.2	100.4
3	28.7	32.9	31.8	36.7	42.2	48.4	55.7	64.1	73.3	81.3	81.3	81.3
4	12.7	19.1	23.3	26.9	30.9	35.5	40.8	47.0	53.7	59.5	61.3	64.9
5	7.8	11.3	20.9	24.0	27.7	31.8	36.6	42.0	48.1	53.3	55.2	58.0
6	7.2	10.8	19.9	22.9	26.3	30.2	34.8	40.0	45.8	50.7	56.1	59.4
7	7.8	11.6	19.4	22.3	25.7	29.5	34.0	39.0	44.6	49.5	63.3	70.2
8	10.4	15.6	19.1	22.0	25.3	29.1	33.5	38.5	45.1	50.0	67.9	75.0
9	11.4	17.1	19.0	21.8	25.1	28.8	33.2	38.2	45.8	50.8	68.5	75.1
10	12.6	18.9	18.9	21.7	25.0	28.7	33.0	38.0	46.7	51.7	70.1	80.8

Figure A.3
BASE SELECT TABLE: FEMALES - PROBABILITY OF RECOVERY (1,000Q[X]+T)

Year of Disability	Central Age											
	17	22	27	32	37	42	47	52	57	62	67	72
1 (3rd qtr.)	244.3	244.3	200.2	167.8	105.3	87.6	72.8	60.8	50.7	44.1	33.9	27.1
1 (4th qtr.)	183.9	183.9	150.6	126.2	105.2	87.5	72.7	60.7	50.6	44.0	33.9	27.1
2 (1st qtr.)	152.2	152.2	126.5	106.0	88.3	73.5	61.1	51.0	42.5	37.0	31.3	25.6
2 (2nd qtr.)	133.4	133.4	108.5	91.0	75.8	63.0	52.4	43.8	36.5	31.7	26.0	20.2
2 (3rd qtr.)	116.3	116.3	96.6	80.9	67.4	56.1	46.6	38.9	32.4	28.2	22.0	18.8
2 (4th qtr.)	107.2	107.2	88.5	74.2	61.8	51.4	42.7	35.7	29.7	25.9	21.6	17.3
2 (annual)	420.4	420.4	358.8	308.6	262.8	222.7	188.1	159.0	133.9	117.3	97.1	79.4
3	429.7	429.7	349.8	295.0	275.8	213.5	174.5	134.9	106.5	86.1	66.5	58.7
4	285.7	285.7	214.6	187.4	151.6	117.4	94.2	70.4	54.3	42.4	25.9	21.2
5	201.1	201.1	147.1	125.5	99.8	75.9	59.9	44.7	32.7	25.4	19.1	15.9
6	143.5	143.5	122.2	93.4	72.9	55.5	42.3	31.6	22.7	17.4	11.6	9.3
7	114.2	114.2	102.0	75.3	57.1	43.2	32.0	24.0	17.3	13.2	8.8	6.6
8	95.9	95.9	86.7	63.5	47.4	35.6	25.8	19.2	13.8	10.7	6.0	3.6
9	81.5	81.5	76.5	55.1	40.6	30.4	22.0	16.2	11.7	9.1	3.9	1.3
10	76.3	76.3	69.0	49.8	36.2	27.1	19.8	14.2	10.1	7.9	4.7	-

Figure A.4
BASE SELECT TABLE: FEMALES - PROBABILITY OF DEATH (1,000Q[X]+T)

Year of Disability	Central Age											
	17	22	27	32	37	42	47	52	57	62	67	72
1 (3rd qtr.)	5.9	7.0	9.4	11.1	13.1	15.6	18.6	22.1	26.2	27.4	25.7	24.0
1 (4th qtr.)	7.4	8.9	11.9	14.1	16.7	19.9	23.7	28.1	33.3	34.9	32.7	30.5
2 (1st qtr.)	7.0	8.5	11.3	13.3	15.8	18.8	22.4	26.5	31.5	33.0	30.9	28.9
2 (2nd qtr.)	6.4	7.9	10.0	11.8	14.0	16.7	19.9	23.5	28.0	29.3	26.2	23.2
2 (3rd qtr.)	5.7	6.9	8.8	10.4	12.4	14.7	17.5	20.7	24.6	25.8	24.8	21.8
2 (4th qtr.)	4.8	6.0	7.8	9.2	11.0	13.1	15.6	18.4	21.9	22.9	22.9	19.8
2 (annual)	23.7	28.9	37.4	44.0	52.1	61.8	73.2	86.3	101.9	106.5	100.9	90.5
3	18.5	20.8	27.7	29.1	34.4	40.8	48.3	57.0	67.1	76.2	76.2	76.2
4	12.5	19.1	24.1	25.3	26.3	31.2	36.9	43.6	51.3	58.2	65.8	69.0
5	11.6	16.4	19.3	20.3	21.1	25.0	29.5	34.9	41.1	46.6	52.8	55.9
6	7.2	13.5	17.0	17.9	18.6	22.0	26.1	30.8	36.3	41.1	45.2	47.2
7	9.2	14.9	16.0	16.8	17.5	20.7	24.5	29.0	35.8	38.7	47.6	49.6
8	10.2	14.0	15.2	16.0	17.1	20.2	23.9	28.3	34.9	39.6	50.5	52.5
9	9.9	13.6	14.8	15.5	17.0	20.1	23.8	28.2	35.8	41.3	55.5	57.5
10	9.4	11.8	14.1	14.8	17.1	20.3	24.0	28.4	36.0	42.6	59.8	62.9

Figure A.5
SELECT TABLE DEATH DIAGNOSIS ADJUSTMENT

Year of Disability	Unclassified	Low Non-Cancer	High Non-Cancer	Cancer
1 (3rd qtr.)	100%	20%	50%	365%
1 (4th qtr.)	100%	20%	50%	395%
2 (1st qtr.)	100%	20%	60%	420%
2 (2nd qtr.)	100%	25%	60%	450%
2 (3rd qtr.)	100%	30%	65%	470%
2 (4th qtr.)	100%	35%	75%	473%
3	100%	40%	90%	475%
4	100%	50%	125%	460%
5	100%	60%	135%	400%
6	100%	65%	145%	360%
7	100%	70%	155%	305%
8	100%	70%	165%	265%
9	100%	75%	160%	230%
10	100%	75%	157%	215%

Figure A.6
SELECT TABLE RECOVERY DIAGNOSIS ADJUSTMENT

Year of Disability	Unclassified	Low Non-Cancer	High Non-Cancer	Cancer
1 (3rd qtr.)	100%	55%	115%	140%
1 (4th qtr.)	100%	55%	115%	140%
2 (1st qtr.)	100%	60%	115%	140%
2 (2nd qtr.)	100%	65%	115%	135%
2 (3rd qtr.)	100%	65%	115%	135%
2 (4th qtr.)	100%	65%	115%	138%
3	100%	65%	115%	140%
4	100%	68%	113%	148%
5	100%	70%	110%	155%
6	100%	70%	115%	145%
7	100%	70%	120%	135%
8	100%	70%	120%	135%
9	100%	70%	120%	135%
10	100%	70%	120%	125%

Figure A.7
BASE ULTIMATE TABLE – MALES

Attained Age	Recovery Rate	Death Rate	Attained Age	Recovery Rate	Death Rate
27	71.13	16.00	75	3.63	63.65
28	70.43	16.00	76	2.93	67.65
29	69.73	16.00	77	2.26	71.65
30	69.04	17.61	78	1.65	75.65
31	68.36	17.61	79	1.10	79.65
32	67.68	17.61	80	0.64	84.65
33	67.01	17.61	81	0.00	92.27
34	66.35	17.61	82	0.00	97.04
35	65.69	19.21	83	0.00	102.62
36	65.04	19.21	84	0.00	109.26
37	64.40	19.21	85	0.00	116.89
38	60.30	19.72	86	0.00	125.65
39	56.46	20.24	87	0.00	135.62
40	52.86	20.78	88	0.00	146.80
41	49.49	21.34	89	0.00	158.99
42	46.34	21.91	90	0.00	171.91
43	43.39	22.49	91	0.00	185.27
44	40.56	23.09	92	0.00	198.68
45	37.85	23.71	93	0.00	211.89
46	35.26	24.34	94	0.00	224.58
47	32.79	24.99	95	0.00	236.17
48	30.45	25.66	96	0.00	248.39
49	28.87	26.35	97	0.00	262.85
50	27.35	27.05	98	0.00	278.54
51	25.87	27.77	99	0.00	295.57
52	24.44	28.51	100	0.00	315.52
53	23.06	29.27	101	0.00	336.99
54	21.74	30.06	102	0.00	358.54
55	20.46	30.86	103	0.00	379.81
56	19.23	31.68	104	0.00	400.44
57	18.06	32.53	105	0.00	420.09
58	16.94	33.92	106	0.00	438.40
59	15.86	35.40	107	0.00	455.01
60	14.84	36.96	108	0.00	469.56
61	13.86	38.59	109	0.00	481.70
62	12.94	40.25	110	0.00	491.07
63	12.06	41.92	111	0.00	497.31
64	11.22	43.56	112	0.00	500.00
65	10.43	45.15	113	0.00	500.00
66	9.69	46.63	114	0.00	500.00
67	8.98	47.97	115	0.00	500.00
68	8.32	49.12	116	0.00	500.00
69	7.70	50.03	117	0.00	500.00
70	7.11	50.65	118	0.00	500.00
71	6.47	52.65	119	0.00	500.00
72	5.79	54.65	120	0.00	500.00
73	5.07	57.65	121	0.00	1000.00
74	4.35	60.65			

Figure A.8
BASE ULTIMATE TABLE – FEMALES

Attained Age	Recovery Rate	Death Rate	Attained Age	Recovery Rate	Death Rate
27	73.02	10.57	75	2.77	53.26
28	72.12	10.57	76	2.12	57.26
29	71.23	10.57	77	1.52	61.26
30	70.35	11.89	78	0.99	65.26
31	69.48	11.89	79	0.55	69.26
32	68.62	11.89	80	0.20	74.26
33	67.78	11.89	81	0.00	80.74
34	66.94	11.89	82	0.00	84.85
35	66.11	13.21	83	0.00	89.51
36	65.30	13.21	84	0.00	94.83
37	64.49	13.21	85	0.00	100.94
38	59.78	13.62	86	0.00	107.93
39	55.42	14.04	87	0.00	115.71
40	51.37	14.47	88	0.00	124.22
41	47.62	14.92	89	0.00	133.56
42	44.15	15.38	90	0.00	143.73
43	41.36	15.86	91	0.00	154.54
44	38.57	16.35	92	0.00	165.99
45	35.80	16.85	93	0.00	178.20
46	33.07	17.37	94	0.00	190.73
47	30.39	17.91	95	0.00	203.52
48	27.78	18.46	96	0.00	218.16
49	26.70	19.04	97	0.00	235.17
50	25.60	19.62	98	0.00	253.55
51	24.47	20.23	99	0.00	273.15
52	23.34	20.86	100	0.00	299.21
53	22.19	21.50	101	0.00	323.14
54	21.05	22.17	102	0.00	346.98
55	19.91	22.85	103	0.00	370.36
56	18.78	23.56	104	0.00	392.92
57	17.67	24.29	105	0.00	414.30
58	16.58	25.04	106	0.00	434.13
59	15.51	25.81	107	0.00	452.05
60	14.47	26.61	108	0.00	467.69
61	13.47	27.44	109	0.00	480.68
62	12.50	28.28	110	0.00	490.65
63	11.57	29.82	111	0.00	497.23
64	10.68	31.41	112	0.00	500.00
65	9.84	33.01	113	0.00	500.00
66	9.03	34.60	114	0.00	500.00
67	8.27	36.16	115	0.00	500.00
68	7.55	37.65	116	0.00	500.00
69	6.88	39.03	117	0.00	500.00
70	6.25	40.26	118	0.00	500.00
71	5.58	42.26	119	0.00	500.00
72	4.88	44.26	120	0.00	500.00
73	4.16	47.26	121	0.00	1000.00
74	3.46	50.26			

Figure A.9
ULTIMATE TABLE DEATH DIAGNOSIS ADJUSTMENT

Attained Age	Unclassified	Low Non-Cancer	High Non-Cancer	Cancer
0-44	100%	75%	170%	200%
45-59	100%	85%	160%	200%
60-64	100%	80%	155%	200%
65-69	100%	75%	155%	200%
70	100%	75%	155%	200%
71	100%	76%	153%	197%
72	100%	77%	151%	193%
73	100%	78%	150%	190%
74	100%	78%	148%	187%
75	100%	79%	146%	183%
76	100%	80%	144%	180%
77	100%	81%	142%	177%
78	100%	82%	140%	173%
79	100%	83%	139%	170%
80	100%	83%	137%	167%
81	100%	84%	135%	163%
82	100%	85%	133%	160%
83	100%	86%	131%	157%
84	100%	87%	129%	153%
85	100%	88%	128%	150%
86	100%	88%	126%	147%
87	100%	89%	124%	143%
88	100%	90%	122%	140%
89	100%	91%	120%	137%
90	100%	92%	118%	133%
91	100%	92%	117%	130%
92	100%	93%	115%	127%
93	100%	94%	113%	123%
94	100%	95%	111%	120%
95	100%	96%	109%	117%
96	100%	97%	107%	113%
97	100%	97%	106%	110%
98	100%	98%	104%	107%
99	100%	99%	102%	103%
100+	100%	100%	100%	100%

Figure A.10
ULTIMATE TABLE RECOVERY DIAGNOSIS ADJUSTMENT

Attained Age	Unclassified	Low Non-Cancer	High Non-Cancer	Cancer
0-44	100%	70%	125%	110%
45-49	100%	70%	125%	105%
50-54	100%	75%	130%	110%
55-59	100%	75%	125%	120%
60-64	100%	77%	120%	105%
65+	100%	80%	120%	120%

Appendix B: ICD Codes and Diagnosis Groupings

Table B.1

ICD-9 AND ICD-10 CODE MAPPINGS

ICD-9 Code Mappings			ICD-10 Code Mappings		
Begin	End	Diagnosis Category	Begin	End	Diagnosis Category
001	139	Other	A00	B99	Other
140	209	Cancer	C00	D09	Cancer
210	229	Other	D10	D36	Other
230	239	Cancer	D37	D49	Cancer
240	249	Other	D50	D77	Circulatory
250	250	Diabetes	D78	D89	Other
251	279	Other	E00	E07	Other
280	289	Circulatory	E08	E13	Diabetes
290	319	Mental and Nervous	E15	E89	Other
320	359	Nervous System	F01	F09	Mental and Nervous
360	389	Other	F10	F19	Mental and Nervous
390	459	Circulatory	F20	F99	Mental and Nervous
460	519	Respiratory	G00	G44	Nervous System
520	579	Digestive	G45	G46	Circulatory
580	629	Other	G47	G99	Nervous System
630	679	Maternity	H00	H95	Other
680	709	Other	I00	I99	Circulatory
710	719	Other Musculoskeletal	J00	J99	Respiratory
720	724	Back	K00	K95	Digestive
725	736	Other Musculoskeletal	L00	L99	Other
737	737	Back	M00	M36	Other Musculoskeletal
738	739	Other Musculoskeletal	M40	M41	Back
740	759	Other	M42	M42	Other Musculoskeletal
760	779	Maternity	M43	M54	Back
780	799	Ill-defined and Misc Conditions	M60	M95	Other Musculoskeletal
800	846	Injury other than back	M96	M98	Other
847	847	Back	M99	M99	Other Musculoskeletal
848	979	Injury other than back	N00	N99	Other
980	999	Other	O00	P96	Maternity
E00	E80	Other	Q00	Q99	Other
E81	E97	Injury other than back	R00	R99	Ill-defined and Misc Conditions
V01	V09	Other	S00	T50	Injury other than back
V10	V19	Other	T51	T88	Other
V20	V39	Maternity	V00	Y99	Injury other than back
V40	V40	Mental and Nervous	Z00	Z29	Other
V41	V86	Other	Z30	Z39	Maternity
V87	V91	Other	Z40	Z99	Other

About The Society of Actuaries Research Institute

Serving as the research arm of the Society of Actuaries (SOA), the SOA Research Institute provides objective, data-driven research bringing together tried and true practices and future-focused approaches to address societal challenges and your business needs. The Institute provides trusted knowledge, extensive experience and new technologies to help effectively identify, predict and manage risks.

Representing the thousands of actuaries who help conduct critical research, the SOA Research Institute provides clarity and solutions on risks and societal challenges. The Institute connects actuaries, academics, employers, the insurance industry, regulators, research partners, foundations and research institutions, sponsors and non-governmental organizations, building an effective network which provides support, knowledge and expertise regarding the management of risk to benefit the industry and the public.

Managed by experienced actuaries and research experts from a broad range of industries, the SOA Research Institute creates, funds, develops and distributes research to elevate actuaries as leaders in measuring and managing risk. These efforts include studies, essay collections, webcasts, research papers, survey reports, and original research on topics impacting society.

Harnessing its peer-reviewed research, leading-edge technologies, new data tools and innovative practices, the Institute seeks to understand the underlying causes of risk and the possible outcomes. The Institute develops objective research spanning a variety of topics with its strategic research programs: aging and retirement; actuarial innovation and technology; mortality and longevity; diversity, equity and inclusion; health care cost trends; and catastrophe and climate risk. The Institute has a large volume of topical research available, including an expanding collection of international and market-specific research, experience studies, models and timely research.

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