SOCIETY OF ACTUARIES®

2019 Group Long-Term Disability

Experience Study Preliminary Report

September 2020

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Section 1: Purpose of the Study

The Group Long-Term Disability (GLTD) Experience Committee issued a data request in October 2018 for a claim termination study. Twenty-two contributors submitted data on approximately two million claims, making it the largest LTD study to date. The data covers claim terminations from 2009 - 2017. The main goal of the study was to make recent data on LTD claim termination trends available to companies. The study was designed to reduce or eliminate many of the most time-consuming steps in the prior study, thereby reducing the work required by contributors, the SOA, and the vendor. We believe that from most perspectives, these objectives were achieved; we also understand the costs of this study were lower than the prior study.

At the same time, we believe the 2019 study provides more than just new information to users. It includes a significantly greater volume of data based on more complete submissions from contributors than the prior study. It also includes important new data related to Social Security awards.

One significant change in objectives from the prior study is that the primary deliverable is a Consolidated Database (CDB) that contains a large amount of detail using 46 segmentation variables. For the previous study, pivot tables were the primary deliverables, although we also supplied a CDB later in that process. Based on feedback from users, we believe that the CDB format is the most useful, as companies want to be able to decide for themselves how they will use the data. The current deliverables still include some pivot tables, containing summarized data for more immediate use, as well as for casual analyses.

As the study proceeded, the committee made another major decision that diverged from the 2016 Study process. The 2019 CDB contains one record for each month of exposure for each claim (maximum of 108 months of duration for any one claim). This was possible because the claims are no longer weighted to dampen the impact of large companies. (The Committee believed that, because of industry consolidation and other industry trends, dampening is no longer necessary.) The decision to use unweighted data allowed us to structure the CDB to be much more efficient and flexible. For instance, we have been able to include both single values and grouped data for variables that the 2016 Study required to be grouped.

The current CDB contains 47,647,772 records.

This report is intended to facilitate users' ability to access and analyze the data from the study. In order to deliver the data to users as quickly as possible, we have performed only a limited amount of analysis so far; primarily to confirm the general accuracy of the data and to perform some initial trend analyses. We anticipate performing additional analyses in the upcoming months.

A second major objective of this report is to document key processes and decisions we made, which will help us design future LTD studies to be faster and more accurate. During this study, we found that maintaining the learnings from prior studies will be critical to maximizing the efficiency and turn-around time of future studies.

Section 2: Overview

2.1 BACKGROUND

In February – July 2018, the GLTD Experience Committee collected and reviewed options for future studies. These options included:

- An enhanced benefit offset study (i.e., an update to the 2012 Offset Study with some additions)
- An LTD Incidence Study
- An update to the 2005 - 2012 LTD claim termination study, with a focus on getting recent trend data back to contributors on a more timely basis

2.2 SCOPE

The consensus of the committee was that the third option was of highest interest to the industry. However, there was also great interest in obtaining some basic information on the impact of Social Security awards on claim termination experience, and it was decided to add a limited request for Social Security data to the scope.

Over the next few months, the committee developed an implementation plan containing the following key objectives and processes:

- The main objective would be to complete the full cycle (from data request to delivery of results) within one year;
- The Data Request would be identical to the prior study, except for two new items (Current SS Status and SS Award Date);
- The contributor submission process would be the as close to the prior study process as possible;
- The intent was for a smoother submission process, with fewer interactions required between carriers and MIB. Since the intent was for contributors to largely just be updating their final data submissions from the 2016 study, we felt a single round of data submissions should be sufficient;
- We designed a more robust set of self-audit tests to reduce potential issues on the front end;
- The primary deliverable would be a Consolidated Database (CDB); and
- The study would serve as proof-of-concept for future LTD claim termination studies concerning both timeline and budget.

A data request was sent in October 2018, with a target submission date of year end. The target date to deliver the CDB and report was originally set for July 31, 2019. Although we achieved our timing goal with regard to the data submission phase of the study, we ran into unexpected issues with the data processing phase. As a result, the target delivery date was missed. However, we believe that those data processing issues were largely the result of inadequate documentation of 2016 Study processes and problems with the vendor. We believe that those issues will be entirely fixable in future studies through better documentation (which this report is part of) and better coordination with the vendor. As a result, we feel the current study established its secondary objective of confirming that future updates can be turned around in less than a year and with a much lower budget than the 2016 study.

Section 3: Study Definitions

3.1 DATA SUBMISSION

Companies were asked to submit data on all fully insured group long-term disability ("LTD") claims that were open at any time from 2009 – 2017, and that also had at least one benefit payment. In order to ensure confidentiality of individual company data, an external vendor, MIB, was utilized to collect and sort the data.

In the data request, companies were asked to assign claim terminations to one of five categories:

1. Recovery
2. Death
3. Contractual maximum benefit period being reached ("Max-Out")
4. Expiration due to internal benefit period limit ("Limit")
5. Settlement

The "Recovery" category refers to any claim termination that is not otherwise identified by the other four categories; thus, it includes many terminations that are not due strictly to a recovery from the disability. For example, terminations due to the change in definition from own-occupation to any-occupation are counted as recoveries.

Some companies appeared to have issues around their coding of Max-Outs or Limits. As a result, we sometimes made edits to their submitted data (this is described below under Study Process). We note that the process we used is consistent with the prior study and affected a significantly smaller proportion of the data than the prior study.

The primary objective of this study is to provide accurate and recent data on Recoveries and Deaths. We did not examine the data submitted on Settlements, Max-Outs, and Limits in detail, but did look at it for general reasonableness.

Certain claims were excluded from the study, including full or partial administrative services only ("ASO") claims, claims from reserve buy-outs, international claims, and claims with extended elimination periods (greater than 15 months). Zero-day elimination period ("EP") claims are excluded from all analyses.

3.2 SEGMENTATION VARIABLES

The 2016 LTD Study provided a CDB containing 24 segmentation variables (most, but not all, of these variables were also provided in Pivot Tables A - E). The 24 variables included 15 single-value variables and nine range-grouped variables. A single-value variable was one where the field represented the exact value, e.g., gender. A range-grouped variable was one where the values were grouped into ranges. For example, the segmentation variable Case Size was grouped into seven size ranges in the 2016 Study.

The 2019 Study contains each of these 24 variables using the same or equivalent formats and definitions (e.g., same range groups) as the 2016 Study. We also added new segmentation variables related to Social Security.

Because we based the 2019 Study on unweighted claim records, the 2019 CDB can support single value data fields in addition to the previously grouped fields for each of the nine range grouped variables in the 2016 CDB. Also, the new format can support more data fields than the 2016 format, so we included additional range groupings for several of the variables for user convenience. The result is that 46 segmentation variable fields (plus three Record ID fields) are included in the 2019 CDB. These 49 fields are summarized below, along with brief descriptions. Additional details on descriptions, definitions and range groupings are included in Appendix 3.

Table 3.1

SEGMENTATION VARIABLES IN THE 2019 GLTD EXPERIENCE STUDY

#	Segmentation Variable	Description
1	Study ID	Unique Claim Identifier
2	Record Sequence	Unique Row Identifier
3	Record ID	Combined Prior Two Identifiers
4	Company Size	Based on Exposures Submitted (S, M, L)
5	Elimination Period	In Months
6	Elimination Period Group	Grouping for Pivot Tables (7 Groups)
7	Calendar Year	Calendar Year of Start of Exposure Month
8	Year Group	Calendar Year Grouping for Pivot Tables
9	Calendar Month	Calendar Month of Start of Exposure Month
10	Annual Duration	Monthly durations grouped into yearly durations
11	Duration Annual	Annual Duration Grouping for Pivot Tables
12	Duration Month	Duration since Disability date in months
13	Duration Qtr	Duration Grouping for Pivot Tables (quarterly for 12 quarters)
14	Duration Group	Duration Grouping for Pivot Tables (monthly for 2-12)
15	Age at Disability	In Years (integers)
16	Age at Disability Group	Grouping for Pivot Tables (12 bands)
17	Age at Disability Broad Group	Grouping for Pivot Tables (4 bands)
18	Original Diagnosis Code	Submitted Icd9 or Icd10 Code
19	Original ICD Type	1 = Icd9, 2 = Icd10 (calculated)
20	Diagnosis Category	14 Categories used for GLTD2008 Table (Unknown allowed)
21	Limited Own Occupation Period	Months since start of benefits
22	Limited Own Occupation Period Group	Grouping for Pivot Tables (6 groups)
23	Own Occ to Any Transition	Months relative to test change
24	Gender	M/F
25	Attained Age	Age at Duration in Years
26	Attained Age Group	Grouping for Pivot Tables (17 Groups)
27	Mental & Nervous Period	Limit Period in Months since start of benefits
28	Mental & Nervous Period Group	Grouping for Pivot Tables (6 groups)
29	M&N Limit Transition	Months relative to M&N Limit (5 values + Other)
30	Gross Indexed Benefit Amount	Rounded to obscure detailed gross
31	Gross Indexed Benefit Amount Group	Grouping for Pivot Tables (9 Groups)
32	SIC Code	as Reported: 0 = Missing
33	Industry	Grouping for Pivot Tables (25 ranges)
34	Indexed Monthly Salary	Rounded to obscure detailed salary
35	Indexed Monthly Salary Group	Grouping for Pivot Tables (11 Groups)
36	Taxability of Benefits	as Reported (N, P, T, U)
37	Integration with STD	as Reported (Y, N, U)
38	Case Size	as Reported: 0 = Missing
39	Case Size Group	Grouping for Pivot Tables (6 groups + 0 = Missing)
40	Residence State	as Reported
41	Region	Grouping for Pivot Tables (7 regions + Missing)
42	COLA Indicator	as Reported
43	Benefit Max Limit Proxy	as Reported
44	Benefit Duration Grouped	Grouping for Pivot Tables (Limited, Life, To Age)
45	Replacement Ratio	Calculated from Gross and Salary
46	Replacement Ratio Group	Grouping for Pivot Tables (12 groups)
47	Original Social Security Award Status	Status for claim at duration as submitted
48	Updated Social Security Award Status	Status of SS at Duration as calculated
49	Social Security Award Date	Date when SS Award is first reported

3.3 ACTUAL-TO-EXPECTED CALCULATIONS

Specifications for each of the components used to calculate Actual and Expected claims are defined the same as in the 2016 study (which had been, in turn, based on the 2008 Study). Definitions include Exposure Basis, Duration, Effective Elimination Period (EP), and Expected Basis.

Summaries of how these have been defined are provided below. Detailed formulas and/or descriptions are provided in Appendix 4.

3.3.1 EFFECTIVE ELIMINATION PERIOD (EEP)

The Elimination Period (EP) that is used in the study is an "effective" elimination period, which may differ from the contractual elimination period, i.e., it is based on the benefit commencement date minus the date of disability. For example, the effective elimination period can differ due to a temporary return to work during the elimination period. The elimination period is converted to months by dividing by 30 and rounding to the nearest integer.

3.3.2 EXPOSURE BASIS

The exposure ends with the earlier of the claim termination date or the end of the study period. If a claim is open as of the study valuation date (September 30, 2018 or has a termination date after the study end date, December 31, 2017, then it is exposed to the study end date). All claims are given a full month of exposure for each month in which they are at least partially exposed, with the following specific exceptions:

1. Claims that are receiving benefits when the study begins may get a fractional month exposure in the first month of the study.

2. Claims that are receiving benefits when the study ends may get a fractional month exposure in the last month of the study. Claims that last until the end of the contractual benefit period may get a fractional month exposure in the last month of benefits.

3. Fractional exposures are determined by dividing the number of days exposed by 30 and capping at 100%.

3.3.3 CLAIM DURATION

Claim durations are always defined by calendar months from the from the date of disability. The actual calculation is based on the Benefit Commencement Date, with the number of months in the elimination period added on to produce the normal claim duration. If a claim begins during the study period, then the first month of exposure is a whole month. If the claim begins prior to the study period, then the first month of exposure may be less than one, to bring the claim from the study begin date to the monthly anniversary of the Benefit Commencement Date.

3.3.4 EXPECTED TERMINATION CALCULATIONS

Expected terminations (Recoveries and Deaths) are based on the GLTD2008 Experience Table, which is the same expected basis as for the 2016 study. The 2008 Table sets termination expectations for recoveries using seven sub-tables derived using eight "core" variables. The 2008 Table sets expected deaths using fewer sub-tables and a subset of the same core variables.

Expected termination rates were not developed for max-outs, limits, and settlements. Also, claims that closed due to max-outs, limits or settlements were not counted as terminations in the study.

The Expected calculation formulas are complex and are described in detail in Appendix 4.

Section 4: Study Process

4.1 DATA SUBMISSION

A Data Request was sent to all significant writers of LTD in the U.S. In addition, a self-audit guide was provided that identified several specific data integrity checks that should be performed before submitting the data. Twenty-two contributors responded to the request. Copies of the Data Request and Self-Audit Guide are provided in Appendices 1 and 2.

4.2 LOGIC AND SYNTAX TESTING

After the data was submitted, MIB created a more extensive list of data validation reports (logic and syntax tests) than the self-audit. These additional tests were reviewed and finalized by a work group of the experience committee. Even though the data as submitted by the contributors were remarkably clean percentage-wise, the logic and syntax tests that MIB subsequently applied to the submissions showed a material number of potential issues that needed to be addressed.

One of the major objectives of the 2019 study was to produce results on a timely and efficient basis. Accordingly, instead of going back to the contributors to address these potential issues, the work group devised work-arounds to correct, modify, ignore, or delete fields that failed the audits. MIB implemented these work-arounds; some of these involved MIB performing simple calculations on the data.

Examples of situations that arose included:

- The carrier did not follow Data Request instructions, but it was clear what they meant to do. In those cases, we adjusted the data to be consistent with the instructions.
- Benefit commencement date – usually, the benefit commencement date was equal to the date of disability + elimination period, but occasionally it was blank or obviously incorrect. In those cases, we set it equal to the date of disability + elimination period.
- Claims that terminated within 45 days of the submitted maximum benefit duration date were reclassified as Max-outs.

We noted that eight "core" variables are required to calculate the Expected claim terminations. If those fields cannot be populated successfully, the claim record had to be discarded. The eight core variables include Gender, Age at Disability, Duration, Effective Elimination Period, Diagnosis, Gross Indexed Monthly Benefit Amount, Limited Own-Occ Period, and Own-Occ To Any Transition Month.

We think the process worked quite well; only about 900 claim records were ultimately deleted (out of 2.0 million).

Generally, the carriers were not informed of the data changes as they were made. However, each company's submitted data (including any data that was revised) will be sent back to the contributors along with their company-specific version of the CDB, so they will be able to see what data was used.

We intend to document the tests and the work-arounds, as well as our reasoning for those, in Appendix 5. We believe this documentation can significantly improve the efficiency of future study updates. In particular, we believe most of the need for work-arounds could be more efficiently addressed by giving clearer instructions in the Data Request, expanding the Self-Audit, and/or clarifying the Self-Audit instructions regarding potential work-arounds.

4.3 DATA VALIDATION

Four types of reviews were performed to further validate the data:

1. One large company performed an independent calculation of its exposures and A/E results and matched those against MIB's calculations to confirm that MIB's calculations were performed correctly.

2. The Committee reviewed an array of reports comparing A/E's by contributor across a range of variables. The reports were constructed by MIB and the data was presented by MIB in a manner which precluded individual company identification. Any potential issues identified by the Committee were addressed through MIB back to the contributing companies. Decisions were then made on a case-by-case basis as to whether there was an issue to address and how.

   We selected variables to analyze based, in part, on what we thought would provide a good general review and, in part, on problem areas identified in the prior study. These included:

   a. Exposure Duration
   b. Claim Duration
   c. Gross Benefit Amount
   d. Taxability Status
   e. STD integration
   f. Gender
   g. Attained Age
   h. Calendar Year
   i. Calendar Year of Disability
   j. Age at Disability
   k. Case Size
   l. Gender
   m. COLA
   n. Diagnosis Termination Rate (by count) by Termination Type
   o. Percent of Claims with SS by Annual Duration (defined as the exposure with SS Status = "Yes" divided by the total exposure)

3. The work group reviewed the data for reasonableness by analyzing A/E experience trends across selected key variables and did not note any material concerns. Results for some of these analyses are shown below under 'Preliminary Observations on Trend'.

The work group compared the (4-year) overlap period to the prior study and did not note any material concerns. Results of this analysis are discussed below under 'Preliminary Observations on Trend'.

4.3 DATA BASE CONSTRUCTION

A significant change from the 2016 study is the structure of the database. The 2019 database contains one record for each month of exposure for each claim (maximum of 108 months per claim). This was possible because the claim records in the 2019 Study were not weighted to dampen the impact of large companies. The Committee believed that, because of industry consolidation and other industry trends, dampening is no longer necessary. This new structure has allowed the CDB to be much more efficient and flexible.

Because this is a new structure, it was subjected to rigorous review to ensure that Personal Identifiable Information (PII) would be properly protected. This review was conducted by the SOA staff and MIB. All PII was removed from the database. The actual Gross Indexed Benefit and Indexed Monthly Salary amounts were grouped and assigned the midpoint values. From 0 to 5,000 this was grouped by 250. Beyond this it was by 1,000.

Section 5: Study Deliverables

Deliverables with this report include an aggregate CDB, specifications for which are summarized below, with additional details provided in Appendix 3. The CDB is quite large, so the Committee also developed several pivot tables that can be used to perform basic analyses.

5.1 CDB FORMAT

The primary deliverable for this study is the CDB, which will be publicly available. It contains one record for each month of exposure for each claim (maximum of 108 months per claim). The CDB includes all the variables that were included in the CDB from the 2016 study, plus new variables related to Social Security Award Status.

A significant change from the 2016 study's CDB is that the claims are not weighted to dampen the impact of large companies. The Committee believed that, because of industry consolidation and other industry trends, dampening is no longer necessary. In addition, using unweighted data allowed us to structure the CDB to be much more efficient and flexible. For instance, we have been able to include both the single values and grouped data for some variables that previously needed to be grouped. Also, the new format can support more data fields than the 2016 format, so we included additional range groupings for several of the variables for user convenience.

The CDB contains 47,647,772 records.

Detailed documentation for field definitions, groupings, mappings and specifications for calculated variables is included in Appendix 3.

5.2 PIVOT TABLE FORMATS

The Committee has developed several pivot tables that companies can use to perform basic analyses without having to use the CDB (which is quite large).

Pivot Table Specifications

We provide five different pivot tables by selecting different segment variables to consider. All five pivot tables display total monthly exposures, average gross benefit, actual and expected recoveries and deaths, and actual termination rates for settlements, limit terminations, and max-outs. The following table shows the additional segmentation variables for each pivot table:

Table 5.1

SEGMENTATION VARIABLES IN THE PIVOT TABLES

Pivot A	Pivot B	Pivot C
Company_Size	Company_Size	Company_Size
Duration_Qtr	Duration_Qtr	Calendar_Year
Age_at_Disability_Group (AgeBand)	Age_at_Disability_Group (AgeBand)	Age_at_Disability_Broad_Group (AgeGroup)
Calendar_Year	Calendar_Year	Duration_Annual
Diagnosis_Category (Diagnosis)	Gender	COLA_Indicator (COLA)
Elimination_Period_Group (Elim_Period_Grouped)	Diagnosis_Category (Diagnosis)	Limited_Own_Occupation_Period_Group (OwnOccPeriod)
Limited_Own_Occupation_Period_Group (OwnOccPeriod)	Attained_Age_Group as AttainedAge	OwnOcctoAnyTransition
OwnOcctoAnyTransition	Duration_Annual	Industry
Updated_Social_Security_Award_Status (SS_Status)	Elimination_Period_Group (Elim_Period_Grouped)	Indexed_Monthly_Salary_Group (Indexed_Monthly_Salary)
Replacement_Ratio_Group (Replacement_Ratio)	Mental_and_Nervous_Period_Group (M_N_Period)	Gross_Indexed_Benefit_Amount_Group (Indexed_Gross_Benefit)
	M_N_Limit_Transition (M_N_Transition)	Updated_Social_Security_Award_Status (SS_Status)
Pivot D	**Pivot E**	
Company_Size	Year_Group	
Calendar_Year	Company_Size	
Age_at_Disability_Broad_Group (AgeGroup)	Age_at_Disability_Broad_Group (AgeGroup)	
Duration_Group	Duration_Annual	
Diagnosis_Category (Diagnosis)	Diagnosis_Category (Diagnosis)	
Elimination_Period_Group (Elim_Period_Grouped)	Elimination_Period_Group (Elim_Period_Grouped)	
Integration_with_STD	Case_Size_Group	
Taxability_of_Benefits (Taxability_Benefits)	Region	
Indexed_Monthly_Salary_Group (Indexed_Monthly_Salary)	Industry	
Gross_Indexed_Benefit_Amount_Group (Indexed_Gross_Benefit)		

Section 6: Preliminary Observations on Experience

The following analyses document work done by the Committee to validate the data through reasonableness analysis of various slices of experience. We note that some minor changes were made to the CDB after that stage of the Committee's work. We believe that those data changes would have negligible impact on the results shown below.

6.1 PRELIMINARY OBSERVATIONS ON TREND

Table 6.1 below shows study results by calendar year. The A/E recovery ratios increased every year from 105.9% in 2009 to 141.0% in 2017, and the overall ratio for the experience period was 125.2%. The A/E death ratios continue to show trends in mortality improvement, decreasing almost every year (except for 2014) from 89.4% in 2009 to 82.5% in 2017.

Table 6.1

A/E RATIOS BY CALENDAR YEAR

Calendar Year	A/E Recovery	A/E Death
2009	105.9%	89.4%
2010	110.5%	87.6%
2011	117.6%	87.4%
2012	123.0%	86.7%
2013	128.4%	86.0%
2014	130.0%	87.1%
2015	132.8%	85.3%
2016	139.4%	84.8%
2017	141.0%	82.5%
Total	**125.2%**	**86.2%**

Table 6.2 shows A/E recovery ratios by integration type and claim duration. Not surprisingly, the ratios are significantly higher for integrated claims in early durations. One explanation for this could be that there tend to be more marginal claims that terminate relatively quickly in the integrated segment.

Table 6.2

A/E RECOVERY RATIOS BY INTEGRATION TYPE AND CLAIM DURATION

Claim Duration	Integrated with STD	Non-Integrated
Month 2	81.1%	87.3%
Month 3	140.1%	113.1%
Month 4	135.9%	80.1%
Month 5	130.5%	93.6%
Month 6	124.9%	93.5%
Month 7	134.7%	101.1%
Month 8	130.7%	104.8%
Month 9	128.9%	105.0%
Month 10	123.1%	101.6%
Month 11	124.8%	105.5%
Month 12	145.5%	122.7%
Year 2	149.0%	131.9%
Year 3	167.2%	171.4%
Year 4	127.5%	126.3%
Year 5	112.3%	114.2%
Years 6-10	121.5%	114.0%
Over 10 Years	145.9%	105.2%

Tables 6.3a and 6.3b show A/E recovery ratios by diagnosis category and calendar year. All of the diagnosis categories, except for 'Maternity,' have seen significant improvements in recovery experience since the 2008 Study. The A/E ratios for maternity claims were relatively stable, and relatively close to 100%, throughout the experience period.

Table 6.3a

A/E RECOVERY RATIOS BY DIAGNOSIS AND CALENDAR YEAR

Calendar Year	Back	Cancer	Circulatory	Diabetes	Digestive	Ill-defined & Misc. Conditions	Injury other than back
2009	97.9%	108.0%	101.8%	127.5%	111.3%	101.5%	107.7%
2010	104.4%	107.1%	108.8%	125.0%	106.4%	111.4%	112.8%
2011	114.9%	111.2%	119.8%	169.2%	112.2%	117.4%	120.6%
2012	121.4%	114.7%	127.1%	184.3%	120.0%	124.8%	123.1%
2013	128.7%	116.9%	131.1%	189.8%	121.5%	128.0%	126.0%
2014	134.0%	116.3%	133.6%	202.7%	122.2%	125.5%	126.9%
2015	137.7%	116.7%	138.7%	194.5%	119.3%	131.7%	128.4%
2016	148.6%	121.0%	145.7%	199.2%	129.6%	133.0%	130.6%
2017	153.0%	119.2%	148.3%	221.1%	139.4%	138.1%	129.4%
Total	**125.5%**	**114.7%**	**128.3%**	**178.4%**	**120.0%**	**122.6%**	**123.0%**

Table 6.3b

A/E RECOVERY RATIOS BY DIAGNOSIS AND CALENDAR YEAR

Calendar Year	Maternity	Mental and Nervous	Nervous System	Other	Other Musculoskeletal	Respiratory	Unknown
2009	97.5%	109.0%	93.8%	107.1%	120.5%	109.9%	263.5%
2010	97.5%	114.0%	103.9%	116.2%	124.3%	124.7%	218.5%
2011	97.1%	124.8%	109.2%	121.1%	132.3%	130.1%	177.8%
2012	95.9%	132.8%	116.5%	130.3%	139.3%	131.9%	209.8%
2013	96.4%	142.3%	125.9%	134.7%	148.4%	143.7%	199.3%
2014	95.6%	138.0%	123.7%	138.1%	152.1%	151.1%	158.4%
2015	94.4%	149.1%	128.8%	134.3%	157.5%	148.2%	212.6%
2016	96.4%	151.9%	144.4%	137.1%	167.3%	174.2%	265.7%
2017	95.9%	154.7%	149.4%	136.2%	171.0%	168.0%	318.3%
Total	**96.4%**	**134.2%**	**121.9%**	**128.2%**	**146.1%**	**141.7%**	**271.1%**

Tables 6.4a and 6.4b show A/E death ratios by diagnosis category and calendar year. Significant improvements in mortality occurred in the 'Cancer' and 'Diabetes' diagnosis categories. Note that, although the overall A/E death ratio for the study period is 86.2%, the ratios are greater than 100% for many diagnosis categories. Also note that the results for 'Unknown' diagnoses are not credible due to limited exposure in this segment.

Table 6.4a

A/E DEATH RATIOS BY DIAGNOSIS AND CALENDAR YEAR

Calendar Year	Back	Cancer	Circulatory	Diabetes	Digestive	Ill-defined & Misc. Conditions	Injury other than back
2009	80.2%	86.4%	88.5%	87.1%	104.5%	111.0%	117.2%
2010	84.6%	83.2%	90.9%	78.3%	101.7%	133.6%	109.6%
2011	78.4%	83.2%	92.5%	73.0%	106.3%	117.9%	118.2%
2012	85.0%	82.8%	90.8%	76.3%	105.5%	112.3%	113.1%
2013	75.7%	82.1%	93.4%	76.3%	101.9%	102.5%	122.6%
2014	82.1%	82.0%	89.7%	72.8%	108.7%	111.7%	114.2%
2015	82.4%	79.5%	93.1%	76.3%	102.6%	108.7%	117.9%
2016	78.7%	78.4%	97.1%	78.0%	99.4%	101.9%	126.2%
2017	80.6%	76.0%	91.2%	67.6%	105.0%	103.0%	129.0%
Total	**80.8%**	**81.4%**	**91.9%**	**76.3%**	**103.9%**	**111.4%**	**118.9%**

Table 6.4b

A/E DEATH RATIOS BY DIAGNOSIS AND CALENDAR YEAR

Calendar Year	Maternity	Mental and Nervous	Nervous System	Other	Other Musculoskeletal	Respiratory	Unknown
2009	140.4%	126.0%	88.5%	83.8%	104.6%	99.6%	316.6%
2010	92.4%	116.3%	89.2%	81.4%	103.2%	102.0%	356.1%
2011	109.3%	109.1%	89.7%	84.5%	101.3%	97.8%	181.1%
2012	122.7%	119.4%	92.4%	81.6%	88.8%	96.2%	154.4%
2013	96.9%	121.2%	85.4%	81.9%	99.2%	97.8%	142.3%
2014	179.6%	132.8%	87.5%	87.7%	105.7%	103.1%	77.6%
2015	149.5%	132.4%	86.6%	83.7%	104.6%	98.5%	159.6%
2016	176.9%	136.2%	89.6%	83.8%	99.9%	99.3%	18.5%
2017	64.7%	129.9%	88.4%	81.8%	105.6%	95.1%	25.2%
Total	**125.5%**	**124.7%**	**88.5%**	**83.4%**	**101.4%**	**98.8%**	**86.6%**

Table 6.5 shows results by case size. Generally speaking, the A/E recovery ratios increase with increasing case size. This may be driven, in part, by workplace accommodations at larger employer groups that are intended to facilitate returning to work. It may also reflect differences in the severity of claims incurred at larger groups (possibly more marginal) versus smaller groups (possibly more severe). For example, industry surveys indicate that larger groups tend to have higher incidence rates (possibly driven by a higher proportion of business integrated with STD). These extra claims tend to be more marginal in nature and terminate sooner than more severe LTD claims.

The A/E death ratios are slightly decreasing with increasing case size.

Table 6.5

A/E RATIOS BY CASE SIZE

Case Size	A/E Recovery	A/E Death
1-99	106.1%	89.2%
100-249	110.6%	87.6%
250-999	116.0%	87.4%
1000-4999	123.1%	86.9%
5000-9999	127.4%	85.1%
10000+	140.7%	85.9%
Total	**125.2%**	**86.2%**

Tables 6.6a and 6.6b show A/E recovery ratios by claim duration and calendar year. Generally speaking, the A/E recovery ratios increased between 2009 and 2017 in every duration group.

Table 6.6a

A/E RECOVERY RATIOS BY DURATION AND CALENDAR YEAR

Calendar Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
2009	105.0%	112.2%	119.1%	92.4%	77.7%	79.3%
2010	106.9%	121.1%	126.3%	95.8%	79.5%	95.3%
2011	111.0%	132.6%	142.4%	111.6%	100.1%	103.0%
2012	113.6%	142.1%	156.4%	118.9%	109.5%	94.7%
2013	117.2%	146.4%	166.5%	132.4%	118.9%	126.8%
2014	117.2%	147.5%	182.0%	137.9%	127.8%	117.2%
2015	119.3%	148.2%	191.7%	144.0%	130.2%	134.3%
2016	122.2%	158.8%	211.9%	158.8%	140.5%	139.0%
2017	122.9%	160.4%	215.9%	157.5%	143.5%	148.4%
Total	**114.9%**	**140.9%**	**167.4%**	**126.5%**	**113.2%**	**114.2%**

Table 6.6b

A/E RECOVERY RATIOS BY DURATION AND CALENDAR YEAR

Calendar Year	Year 7	Year 8	Year 9	Year 10	Over 10 Years	Total
2009	82.2%	78.7%	80.0%	79.2%	83.0%	105.9%
2010	99.2%	94.4%	98.2%	135.0%	123.5%	110.5%
2011	99.8%	105.5%	118.0%	103.1%	98.6%	117.6%
2012	108.8%	121.4%	106.7%	125.4%	103.6%	123.0%
2013	131.0%	138.9%	148.0%	137.7%	120.0%	128.4%
2014	112.1%	133.1%	135.0%	131.1%	117.4%	130.0%
2015	128.1%	122.0%	132.5%	134.1%	123.9%	132.8%
2016	139.7%	138.6%	128.8%	140.7%	139.9%	139.4%
2017	153.5%	147.3%	168.6%	173.1%	145.0%	141.0%
Total	**116.2%**	**119.3%**	**123.4%**	**128.5%**	**118.0%**	**125.2%**

Tables 6.7a and 6.7b show A/E death ratios by claim duration and calendar year. The most significant improvements in mortality occurred in the early durations. For example, in duration 'Year 1', the ratios decreased from 86.8% in 2009 to 76.3% in 2017 and, in duration 'Year 2', the ratios decreased from 88.8% in 2009 to 79.3% in 2017.

Table 6.7a

A/E DEATH RATIOS BY DURATION AND CALENDAR YEAR

Calendar Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
2009	86.8%	88.8%	94.3%	91.2%	87.9%	95.2%
2010	84.2%	87.3%	90.8%	87.5%	93.8%	87.2%
2011	81.5%	86.8%	92.9%	93.2%	94.9%	90.0%
2012	81.1%	85.0%	92.1%	91.9%	94.6%	94.9%
2013	80.8%	85.8%	92.3%	93.6%	91.9%	92.4%
2014	80.4%	86.3%	94.7%	96.0%	99.0%	96.9%
2015	78.4%	83.4%	95.2%	94.5%	96.8%	93.0%
2016	76.6%	82.9%	92.7%	93.8%	94.2%	100.4%
2017	76.3%	79.3%	88.6%	88.6%	90.6%	92.7%
Total	**80.5%**	**84.9%**	**92.6%**	**92.4%**	**93.8%**	**93.7%**

Table 6.7b

A/E DEATH RATIOS BY DURATION AND CALENDAR YEAR

Calendar Year	Year 7	Year 8	Year 9	Year 10	Over 10 Years	Total
2009	88.8%	90.7%	90.2%	94.8%	89.4%	89.4%
2010	95.0%	93.5%	96.1%	91.8%	87.6%	87.6%
2011	89.2%	98.0%	91.4%	91.8%	89.3%	87.4%
2012	92.4%	87.5%	82.9%	93.0%	91.7%	86.7%
2013	87.4%	87.7%	87.9%	89.3%	83.7%	86.0%
2014	92.7%	88.4%	86.2%	91.0%	84.8%	87.1%
2015	86.7%	92.9%	83.4%	86.7%	85.6%	85.3%
2016	98.7%	88.2%	88.0%	93.0%	86.2%	84.8%
2017	91.6%	90.2%	87.0%	93.2%	87.4%	82.5%
Total	**91.4%**	**90.8%**	**88.1%**	**91.6%**	**87.2%**	**86.2%**

Tables 6.8a (recoveries) and 6.8b (deaths) provide results by company size and calendar year. Generally speaking, the A/E recovery and death ratios are higher for larger sized companies.

Table 6.8a

A/E RECOVERY RATIOS BY COMPANY SIZE AND CALENDAR YEAR

Calendar Year	Large	Middle	Small
2009	108.8%	98.6%	89.7%
2010	114.7%	102.6%	87.9%
2011	123.5%	108.2%	84.7%
2012	129.5%	112.4%	90.3%
2013	134.2%	120.7%	91.4%
2014	135.7%	122.7%	92.6%
2015	137.3%	127.7%	96.8%
2016	144.2%	133.9%	102.5%
2017	147.6%	130.7%	106.2%
Total	**130.1%**	**117.9%**	**93.6%**

Table 6.8b

A/E DEATH RATIOS BY COMPANY SIZE AND CALENDAR YEAR

Calendar Year	Large	Middle	Small
2009	91.3%	81.3%	85.2%
2010	89.2%	83.2%	79.0%
2011	88.4%	85.3%	78.4%
2012	87.5%	84.4%	86.2%
2013	87.2%	83.5%	80.0%
2014	88.3%	84.9%	79.1%
2015	86.3%	84.2%	73.1%
2016	86.8%	81.3%	71.3%
2017	83.5%	81.3%	72.8%
Total	**87.6%**	**83.3%**	**78.0%**

6.2 ANALYSIS OF 2016 STUDY AND 2019 STUDY OVERLAP PERIOD

Included in the preliminary analysis of study results is a comparison of results against the 2016 study. We note that there are underlying exposure differences between the studies that will drive differences in results. These include:

- A slightly different mix of participating companies.
- Differences in the approach to dampen exposure. The 2016 study results included adjustments to dampen the impact of larger carriers, while the 2019 study results do not include dampening adjustments.

6.2.1 OVERALL TREND BY CALENDAR YEAR

Table 6.9 and the subsequent charts show A/E Recovery and Death Rates for both studies by calendar year. While overall A/E Recovery and A/E Death rates vary between the two studies, the trend by calendar year is similar, with steady increases in A/E recovery rates by calendar year but steady decreases in A/E death rates by calendar year:

Table 6.9

A/E RECOVERIES AND DEATHS BY CALENDAR YEAR

Year	A/E Recovery		A/E Death	
	2016 Study	2019 Study	2016 Study	2019 Study
2004	99.7%		90.5%	
2005	106.7%		93.1%	
2006	108.6%		92.5%	
2007	113.2%		92.7%	
2008	115.2%		91.9%	
2009	112.0%	105.9%	92.1%	89.4%
2010	114.4%	110.5%	89.0%	87.6%
2011	122.5%	117.6%	88.4%	87.4%
2012	127.3%	123.0%	87.1%	86.7%
2013		128.4%		86.0%
2014		130.0%		87.1%
2015		132.8%		85.3%
2016		139.4%		84.8%
2017		141.0%		82.5%
Overall	113.9%	125.2%	90.6%	86.2%

Figure 6.1
A/E RECOVERIES BY CALENDAR YEAR VS 2008 GLTD TABLE

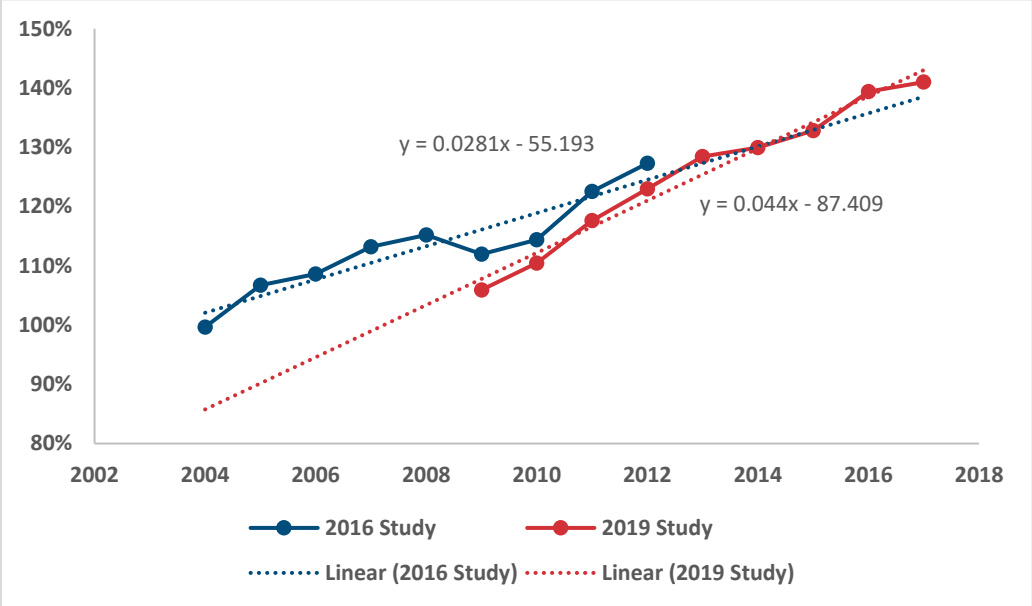
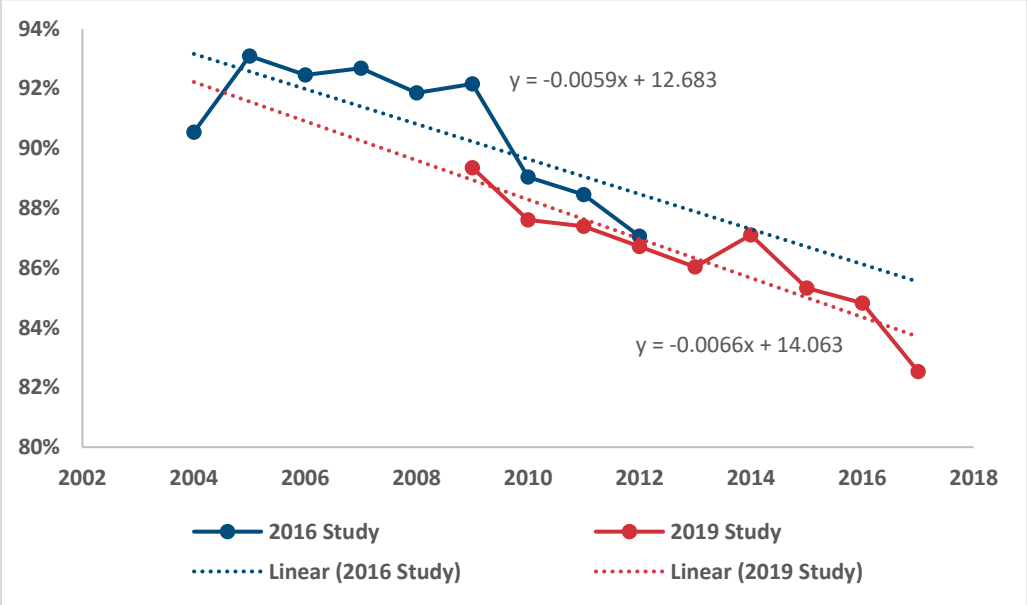


Figure 6.2
A/E DEATHS BY CALENDAR YEAR VS 2008 GLTD TABLE



By fitting lines to the above charts, we observe that the recovery rate slope by calendar year in the 2019 study was greater than observed in the 2016 study (although the overall A/E recovery rate level was lower during the overlap period).

We also observe that the A/E death rate slopes were similar between the two studies (although the overall A/E death rate level was lower during the overlap period).

6.2.2 EXPOSURE DISTRIBUTION DIFFERENCES

Due to differences in participating companies and the lack of dampening, the distribution of exposure between the two studies is moderately different. Differences for some of the variables specific to the overlap period (2009 to 2012) are listed in the tables below:

Table 6.10

COMPARISON OF EXPOSURE DISTRIBUTION BY CONTRIBUTING COMPANY SIZE GROUPING

Size	2016 Study	2019 Study	Change
Large	71.4%	79.1%	10.8%
Middle	24.9%	18.0%	-27.6%
Small	3.7%	2.9%	-21.7%

The above table illustrates the impact of dampening in the 2016 study as opposed to no dampening in the 2019 study. While the exposure in both studies is weighted towards companies in the "large" category, the weighting is approximately 10.8% greater in the 2019 study.

Table 6.11

COMPARISON OF EXPOSURE DISTRIBUTION BY DIAGNOSIS GROUPING

Diagnosis	2016 Study	2019 Study	Change
Back	16.2%	17.5%	7.9%
Cancer	8.2%	8.6%	4.1%
Circulatory	13.0%	13.7%	5.2%
Diabetes	1.4%	1.5%	1.8%
Digestive	2.2%	2.3%	6.5%
Ill-defined and Misc Conditions	2.4%	2.9%	19.2%
Injury other than back	6.2%	6.8%	9.6%
Maternity	0.4%	0.5%	18.0%
Mental and Nervous	6.0%	6.9%	14.6%
Nervous System	11.3%	12.1%	6.3%
Other/Unknown	16.6%	10.5%	-36.8%
Other Musculoskeletal	12.9%	13.6%	5.6%
Respiratory	3.1%	3.3%	6.1%

The above table shows that the distribution of exposure is similar across most diagnosis categories, with the exception that there was a sharp reduction in exposure in the "Other/Unknown" category. Note that one company submitted claim data without diagnosis information in the 2016 study. The "Unknown" diagnosis category was used for these claims in the 2016 study. For the 2019 study, only 0.2% of exposure was missing valid diagnosis information. Diagnosis data is more complete in this new study.

Table 6.12

COMPARISON OF EXPOSURE DISTRIBUTION BY STD INTEGRATION STATUS

Integration Status	2016 Study	2019 Study	Change
Integrated with ASO or Fully-Insured STD	39.0%	45.6%	16.9%
Not Integrated with STD	49.1%	47.8%	-2.6%
Unknown	11.9%	6.6%	-44.8%

The above table shows that the STD integration status data is more complete in this study, with data missing for only 6.6% of exposure. This should improve the ability to analyze the impact of STD on LTD recovery and death rates.

Overlap Period A/E Recovery and Death Rate Comparisons

The tables below compare results for both studies during the overlap period (2009-2012). Table 6.13 compares A/E recovery and death rates by duration from disability date and Table 6.14 compares A/E recovery rates by STD Integration Status.

Table 6.13

COMPARISON OF A/E RECOVERY AND DEATH RATES BY DURATION FROM DISABILITY DATE (DURING OVERLAP PERIOD)

	A/E Recovery			A/E Death		
Year	2016 Study	2019 Study	Change	2016 Study	2019 Study	Change
Year: 1	114.3%	109.2%	-4.5%	85.7%	83.3%	-2.8%
Year: 2	130.8%	127.5%	-2.5%	89.9%	86.9%	-3.4%
Year: 3	146.1%	136.8%	-6.4%	95.6%	92.5%	-3.2%
Year: 4	113.9%	104.7%	-8.1%	94.3%	91.0%	-3.5%
Year: 5	96.0%	91.6%	-4.6%	97.6%	92.8%	-4.9%
Year: 6	98.2%	92.9%	-5.4%	91.1%	91.9%	0.8%
Year: 7	94.0%	97.2%	3.3%	90.8%	91.3%	0.6%
Year: 8	88.6%	99.6%	12.5%	89.8%	92.4%	3.0%
Year: 9	81.9%	101.1%	23.3%	87.9%	90.2%	2.5%
Year: 10	79.1%	111.2%	40.7%	84.2%	92.8%	10.3%
>10 Years	70.5%	102.2%	44.9%	83.1%	89.6%	7.8%

The above shows that A/E recovery rates for the 2019 study do not decline at the older claim durations (as was observed in the 2016 study). This may result from differences in exposure distribution between the two studies.

Table 6.14

COMPARISON OF A/E RECOVERY RATES BY STD INTEGRATION STATUS (DURING OVERLAP PERIOD)

Integration Status	A/E Recovery		
	2016 Study	2019 Study	Change
All Durations of Disability			
Integrated with ASO or Fully-Insured STD	134.6%	125.6%	-6.7%
Not Integrated with STD	102.7%	101.9%	-0.7%
Unknown	116.7%	103.4%	-11.4%
Year 1 of Disability Only			
Integrated with ASO or Fully-Insured STD	132.0%	123.7%	-6.3%
Not Integrated with STD	93.8%	92.5%	-1.3%
Unknown	126.1%	97.1%	-23.0%
Year 2 of Disability Only			
Integrated with ASO or Fully-Insured STD	143.7%	135.6%	-5.6%
Not Integrated with STD	118.1%	119.4%	1.1%
Unknown	104.6%	103.2%	-1.4%
Year 3 of Disability Only			
Integrated with ASO or Fully-Insured STD	151.6%	135.0%	-10.9%
Not Integrated with STD	140.0%	139.6%	-0.3%
Unknown	144.1%	134.8%	-6.4%

While STD Integration still appears to have a material impact on A/E recovery rates, the above table shows that the impact is reduced in the 2019 study as compared to the 2016 study. Note that the proportion of exposures with an STD known status provided is greater in the 2019 study, which may be influencing the above results.

6.3 ANALYSIS OF SOCIAL SECURITY STATUS

The Social Security Award Status of each claim by duration is an element not included in prior studies. The following table summarizes the SS Award Status. Please note that the status "Unknown" is reserved for claims where, we either did not know the status or, if we knew that the claimant did receive SS, we did not know the date when the award was received. If a claimant is known to have received SS, but had not received it yet at the time of the exposure by duration, then the status is listed as "No" for that duration. The table below shows increasing award percentages by duration and, also, that recoveries are much lower for claimants with known SS awards, and deaths are much higher.

Table 6.15

RECOVERY AND DEATH A/Es BY SS AWARD STATUS AND DURATION

Duration	Percent of Exposure		Yes: A to E		No: A to E	
	Unknown	Y / (N + Y)	Recovery	Death	Recovery	Death
Year: 1	19.30%	14.90%	38.70%	98.30%	107.40%	69.40%
Year: 2	15.30%	46.80%	100.80%	95.70%	139.80%	60.50%
Year: 3	12.60%	67.70%	142.00%	96.30%	164.00%	59.90%
Year: 4	10.60%	80.00%	104.90%	91.30%	142.90%	66.70%
Year: 5	10.10%	84.30%	100.60%	91.90%	129.70%	69.90%
Year: 6	9.70%	85.90%	99.80%	92.00%	137.50%	72.60%
Year: 7	9.40%	86.60%	102.50%	90.90%	141.20%	67.70%
Year: 8	9.20%	86.80%	107.00%	90.10%	148.40%	74.40%
Year: 9	9.00%	86.60%	109.90%	86.60%	165.70%	70.40%
Year: 10	8.80%	86.30%	114.30%	89.90%	178.00%	72.60%
Over 10 Years	8.40%	83.90%	105.00%	86.30%	164.30%	71.40%
Total	12.40%	65.20%	100.20%	93.20%	116.60%	66.60%

Section 7: Observations on the Use of Study Data

The primary objective of this study was to deliver accurate and usable data to contributors in a timely fashion. We have strived to achieve those objectives; however, we need to stress that we have not performed the depth of analysis that would be necessary for us the be able to conclusively validate the data or interpret the experience results. Users should be cautious in how they interpret any preliminary indications contained in this report.

We have made the data available for companies to perform their own analyses at their own risk.

The following are some items that the user should bear in mind when contemplating the study pivot tables.

7.1 A/E RECOVERY RATIOS THROUGH THE OWN-OCCUPATION/ANY-OCCUPATION TRANSITION PERIOD

The last three LTD termination studies have shown significant variations in the impact of the definition of disability in the months immediately after the change in definition. The GLTD2008 expectations show a large increase in recoveries in the month of the change, and then elevated, but declining expectations in the eight months after the change. In reality, the pattern varies by carrier due to differences in their claim and data processing, as well as differences in the reasons associated with the terminations. Near the change in definition, we see elevated recoveries, limit terminations, and max-outs.

In evaluating A/E ratios through the transition period, it may be best to use combined results over the entire transition period, or at least the month of transition and the subsequent month.

7.2 TERMINATION CATEGORY FOR CLAIMS WITH INTERNAL LIMITS

An evaluation of A/E ratios with internal limits on the benefit period for a subset of claims is subject to the integrity of the categorization of claim terminations between recoveries, claims reaching the end of their contractual maximum benefit period (max-outs), and claims closed due to the internal limit. This is especially important in examining results for Mental & Nervous claims.

In the 1997 - 2006 experience study, it was noted that, in addition to claims closing due to the internal limit, there was an increase in max-outs and recoveries in the limit month and the next several months. Therefore, it was decided to analyze total terminations, excluding deaths, within three months of the limit date. The 2008 GLTD Experience Table was constructed using this methodology.

The Committee has observed the same phenomenon in the 2004 - 2012 experience study, and in the current (2009 - 2017) study, and recommends that Mental & Nervous claims be evaluated using total terminations, excluding deaths, for the period within three months of the limit date.

7.3 TAXABILITY OF BENEFITS

(Full Taxable, Partially Taxable, Not Taxable, and Unknown): In the prior study, we observed unusual results by the taxability of the benefits, with the highest A to E in the unknown category, and a lower A to E for claims with taxable benefits. This did not match our expectations and we were left speculating that there may have been data submission issues with this field. In the current study, we still see a high A to E for the unknown category, but now the relationships, when known, conform with our expectations.

Table 7.1

RECOVERY A/Es BY BENEFIT TAXABILITY (IN AGGREGATE)

Benefit Taxability	Percent Exposed	A to E Recoveries
N: Non-Taxable	18.19%	107.60%
P: Partial Taxable	4.85%	111.30%
T: 100% Taxable	42.42%	122.90%
U: Unknown/Invalid	34.54%	138.9%

Section 8: Reliance and Limitations

The primary objective of this study was to deliver usable data in a timely fashion so that users could perform their own analyses and draw their own conclusions using relatively recent data. As such, this report and the accompanying data is subject to material reliances and limitations.

We have relied on the contributing companies as to the accuracy and completeness of the data submitted. We performed a number of tests for reasonableness as described in the report. When we identified anomalies, we interpreted them as best we could and adjusted the data if we thought it could still provide useful information.

Although the report describes various "audit tests" we performed, these were not audit tests in the accounting sense. In the interest of contributor confidentiality, we did not examine any contributor's data directly and no formal audits were performed.

In the interest of providing data on a timely basis, we performed a relatively cursory review of experience. More in-depth reviews of experience may reveal anomalies that would indicate potential issues with one or more of the data fields.

Users of the data should understand these limitations and recognize they use the data at their own risk.

Section 9: Next Steps

The committee intends to perform additional analysis in future months, including:

- Develop recommendations to make future iterations of the study more efficient. (We believe the next iteration could be completed in nine months and at a significantly lower cost.)
- Make more pivot tables available
- Conduct in-depth studies of the data and their potential implications, especially Social Security Award Status.

Section 10: Acknowledgments

The Society of Actuaries (SOA) would like to thank the members of the Group Long-Term Disability Experience Committee (GLTDEC) and SOA staff for their work on this study.

Group Long-Term Disability Experience Committee

Roger Martin, FSA, MAAA (Chair)
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Paul Correia, FSA, MAAA, CERA
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At the Society of Actuaries:

Pete Miller, ASA, MAAA, SOA Experience Study Actuary
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Section 11: List of Participating Companies

American Fidelity
Anthem
Boston Mutual
CIGNA
Dearborn National
Disability RMS
Guardian
Liberty Mutual
Lincoln Financial
MetLife
Mutual of Omaha
Northwestern Mutual
OneAmerica
Principal Financial Group
Prudential
Reliance Standard Life
Standard Insurance
The Hartford Group
United Healthcare
UNUM
Voya Financial

Appendices

A list of appendices is provided below. These include the documents used in the study process, as well as documentation of the various aspects of the process. The documentation and documents themselves are in a variety of formats for effectiveness or presentation, so we have the link to the SOA website where they are located (as opposed to trying to force them into this Word document format). Please note that some of the links may not be yet active (some appendices may still be in progress).

Link: https://www.soa.org/resources/experience-studies/2019/group-ltd-experience-study/

- Appendix 1. Data Request
- Appendix 2. Self-Audit Guide
- Appendix 3. Segmentation Variable Descriptions
- Appendix 4. Specifications for Exposure and Actual-to-Expected Calculations
- Appendix 5. Logic and Syntax tests used by MIB and Resulting Work-arounds Implemented
- Appendix 6. Recommendations for next study

About The Society of Actuaries

With roots dating back to 1889, the Society of Actuaries (SOA) is the world's largest actuarial professional organization with more than 31,000 members. Through research and education, the SOA's mission is to advance actuarial knowledge and to enhance the ability of actuaries to provide expert advice and relevant solutions for financial, business and societal challenges. The SOA's vision is for actuaries to be the leading professionals in the measurement and management of risk.

The SOA supports actuaries and advances knowledge through research and education. As part of its work, the SOA seeks to inform public policy development and public understanding through research. The SOA aspires to be a trusted source of objective, data-driven research and analysis with an actuarial perspective for its members, industry, policymakers and the public. This distinct perspective comes from the SOA as an association of actuaries, who have a rigorous formal education and direct experience as practitioners as they perform applied research. The SOA also welcomes the opportunity to partner with other organizations in our work where appropriate.

The SOA has a history of working with public policymakers and regulators in developing historical experience studies and projection techniques as well as individual reports on health care, retirement and other topics. The SOA's research is intended to aid the work of policymakers and regulators and follow certain core principles:

Objectivity: The SOA's research informs and provides analysis that can be relied upon by other individuals or organizations involved in public policy discussions. The SOA does not take advocacy positions or lobby specific policy proposals.

Quality: The SOA aspires to the highest ethical and quality standards in all of its research and analysis. Our research process is overseen by experienced actuaries and nonactuaries from a range of industry sectors and organizations. A rigorous peer-review process ensures the quality and integrity of our work.

Relevance: The SOA provides timely research on public policy issues. Our research advances actuarial knowledge while providing critical insights on key policy issues, and thereby provides value to stakeholders and decision makers.

Quantification: The SOA leverages the diverse skill sets of actuaries to provide research and findings that are driven by the best available data and methods. Actuaries use detailed modeling to analyze financial risk and provide distinct insight and quantification. Further, actuarial standards require transparency and the disclosure of the assumptions and analytic approach underlying the work.

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