Health Care Cost Trends

2023 Credit Disability Study Report – An Update of the 2014 SOA Study

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2023 Credit Disability Study Report

An Update of the 2014 SOA Study

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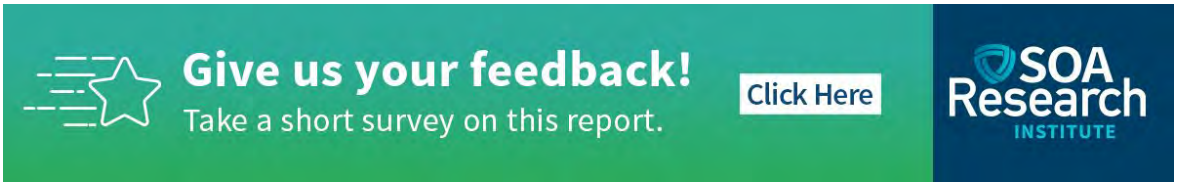

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2023 Credit Disability Study Report

An Update to the 2014 SOA Study

Section 1: Introduction

This study was undertaken to ensure the ongoing adequacy of the modified 1985 CIDA table as specified in Valuation Manual Section VM-26 for single premium credit disability insurance. In addition, the shift in the distribution of sales by term between contracts issued in previous study periods to 2017 and 2021 was analyzed.

In 1998, the Actuarial Committee of the Consumer Credit Insurance Association (CCIA) decided the industry needed a credit disability morbidity table that could be used for valuation and pricing. The result of the effort was the NAIC adoption of a modified version of the 1985 CIDA table as a valuation standard for single premium credit disability active life reserves. The NAIC adopted changes to SSAP 59, the Model A&H Valuation Regulation and Appendix A-010 in the Accounting Practices and Procedures Manual to implement the new standard.

As a part of the Principle-Based Reserve (PBR) effort by the NAIC, the section of the Valuation Manual dealing with credit insurance reserves (VM-26) contains a standard that single premium credit disability reserves will be based on a modified version of the 1985 CIDA table.

The evaluation of adequacy of the modified 1985 CIDA table within this report is in respect to morbidity experience only. VM-26 contains a requirement to hold an additional liability equal to the excess of the net refund liability for all credit life and credit disability contracts in aggregate over the recorded contract reserve. Actuarial opinions as to reserve adequacy consider both the contractual obligations and related expenses of the company. It is outside the scope of this study to ascertain or estimate whether the modified 1985 CIDA table provides adequate margins for the refund of unearned premium or ongoing expenses of an individual company.

Eight company groups representing over 90% of the single premium credit disability premium written in 2021 provided data for this study. Over $10 billion of initial insured indebtedness was included in this study.

Section 2: Executive Summary

The results of the current study indicate that:

- in aggregate, the valuation standards contained in the Valuation Manual continue to provide a very conservative basis for the valuation of single premium credit disability active life reserves. As shown in the current study (section 5.2), the expected claims represent approximately 38% of the modified 1985 CIDA that is currently the minimum standard required by Valuation Manual Section VM-26,

- the aggregate claim costs as a percentage of the minimum standard continue to decline from previous studies. The 2004 Credit Disability Study generated an aggregate ratio of 64.8%, the 2014 Study showed an aggregate ratio of 51.3% and the current study shows an aggregate ratio of 38.1% (table 7 in section 5.2),

- the average term of coverage in months fluctuated over the term of the study, from 49 in 2013, down to 43 in 2017 and then increased to 47 in 2021. There is also significant variation by plan of coverage (see tables 2 and 8 below). These shifts in terms of coverage were reflected in the study by distribution of term by coverage, which was used in developing the weighted average claim cost and weighted average prima facie rate, and

- the average age is relatively stable at approximately 44 (see table 9 below).

Section 3: Background

3.1 THE ORIGINAL 1998 STUDY

In 1998, the Actuarial Committee of the Consumer Credit Insurance Association (CCIA) sponsored the development of a credit disability morbidity table that could be used for valuation and pricing. A subcommittee of CCIA's Actuarial Committee consisting of Robert Butler (Chairman), Christopher Hause, Steve Ostlund and Craig Squier was formed to develop the new table.

The only existing tables at the time of credit disability experience were the NAIC's (National Association of Insurance Commissioners) 1968 and 1974 credit disability tables. Both the 1968 and the 1974 tables were created with all ages and genders combined.

Prior to the 1998 study, single premium credit disability active life reserves were nearly universally based on the unearned premium. The unearned premium methods in common use were the "Rule of 78" (sum of the digits) and the "Mean" (average of the Rule of 78 and Pro-rata) methods. While the Mean method was considered to represent a reserve that more closely matched the pattern of losses, both methods produced reserves that were heavily redundant and not sensitive to the underlying age distribution of the insured population.

The result of the 1998 effort was a recommendation to the NAIC to adopt a modified version of the 1985 CIDA table as a valuation standard for single premium credit disability active life reserves. The NAIC adopted changes to SSAP 59, the Model A&H Valuation Regulation and Appendix A-010 in the Accounting Practices and Procedures Manual (APPM) to implement the new standard. Subsequently, the sections of the APPM pertaining to credit insurance reserves were consolidated into VM-26 of the Valuation Manual.

The use of the modified 1985 CIDA table as a tool for pricing basic, full benefit, and prima facie equivalency demonstrations of alternative disability benefits has been adopted by the states on an ad hoc basis only, rather than as an accepted national standard.

3.2 UPDATED STUDY IN 2004

In 2004, the Credit Insurance Experience Committee of the Society of Actuaries, consisting of Jeanne Meeker Daharsh, Lawrence Fisher, Chris Hause (Chairperson), Jay Jaffe, Jonathan Jannarone, Gerard Lunemann, Steven Ostlund, Barry Owens, Elaine Pelletier, and Harvey Waite, released an updated study.

Some states had existing specific laws and regulations pertaining to credit disability that generally required a gross unearned premium reserve. As states began to adopt the new morbidity-based standard via law or regulation, concern was expressed whether the table remained adequate.

In addition, the enactment in 2001 of the Home Ownership and Equity Protection Act (HOEPA) curtailed the writing of single premium credit disability insurance on loans secured by real estate. The Committee took advantage of the opportunity to examine the shift in the distribution of sales by terms between contracts issued in 2000 and contracts issued in 2003. The 2004 study showed two items of note in the term distribution. First, the 72-month term showed increases in the percentage of initial insured indebtedness, at the apparent expense of the 36-month term, suggested by the lengthening term of automobile loans. Secondly, the 120-month percentage increased from 1997 to 2000, and decreased sharply with the 2003 data, presumably as a result of HOEPA and industry reaction to this and other restrictions on the sale of single premium credit disability on home equity secured loans.

3.3 UPDATED STUDY IN 2014

In 2014, the Credit Insurance Experience Committee of the Society of Actuaries, consisting of Mark A. Frie, Lester Garcia-Casariego, Chris Hause (Chairperson), Jay Jaffe, Gary S. Lange (Vice-chair), David McKay, Elaine Pelletier, and Candace Richter, released an updated study.

The results of the 2014 study showed a shift in the age and term distributions, and an increasing level of conservatism in the valuation standard contained in the Model A&H Valuation Regulation.

3.4 REASONS FOR AN UPDATED STUDY

As a part of the Principle-Based Reserve (PBR) effort by the NAIC, the section of the Valuation Manual dealing with credit insurance reserves (VM-26) contains a standard that single premium credit disability reserves will be based on a modified version of the 1985 CIDA table. It is important to ensure the VM-26 standard remains appropriate. The study results show a considerable amount of conservatism in the current NAIC standard as demonstrated by section 5.2 “Adequacy of the Valuation Table.”

The Committee used the submitted data to examine the shift in the distribution of sales by term between contracts issued in previous studies to 2017 and 2021. A table comparing the various exposures by term is shown in table 8 “Comparison of Term Distribution.”

Section 4: How the Study Was Carried Out

The basic approach to the study was the same as the previous studies. A data request was sent to all companies writing significant amounts of single premium credit disability insurance in the format shown in appendices A and B. Companies representing over 90% of the single premium credit disability premium written in 2021 submitted data. From this data, a distribution of exposure by elimination period was constructed. The 2017 distribution by elimination period, age, and term of coverage is shown in appendix C.

An actual-to-expected ratio was determined as follows:

The "actual" claim cost for each plan is derived by calculating a loss cost for each state based on the prima facie loss ratio, for each year 2013 - 2021. The prima facie loss ratio is reported annually on the Credit Insurance Experience Exhibit (CIEE). The CIEE data are reported by each company writing credit insurance for each state. For credit disability, the experience is separated by Single Premium, Closed-End Monthly Outstanding Balance, and Open-End Monthly Outstanding Balance. For each premium type, the data are further split by the waiting period for benefits. For this study, we are concerned only with the Single Premium experience.

Examples of the calculation of "actual" claim costs are shown in table 1 below. For instance, the total prima facie earned premium for the 7-day retroactive benefit for calendar years 2018-2021 was $349,721,848 and the Incurred Claims over the same period were $93,334,343, producing a 26.7% loss ratio. This 26.7% loss ratio was multiplied by the weighted average (across all states and terms of coverage) prima facie rate of $4.53 to produce an "actual" claim cost of $1.21 per $100 of initial insured indebtedness.

Table 1

WEIGHTED PRIMA FACIE RATE AND IMPLIED CLAIM COST FOR ALL TERMS COMBINED

7-Day Retroactive				Per $100 of Initial Indebtedness	
Year	Earned Premium	Incurred Claims	Loss Ratio	Weighted Rate	Implied Claim Cost
2018	85,302,112	24,337,829	28.5%	4.57	1.30
2019	86,531,722	25,782,592	29.8%	4.53	1.35
2020	89,268,040	22,653,944	25.4%	4.53	1.15
2021	88,619,974	20,559,978	23.2%	4.50	1.04
2018-2021	349,721,848	93,334,343	26.7%	4.53	1.21

14-Day Retroactive				Per $100 of Initial Indebtedness	
Year	Earned Premium	Incurred Claims	Loss Ratio	Weighted Rate	Implied Claim Cost
2018	192,011,022	67,492,140	35.2%	3.65	1.28
2019	203,549,359	62,050,370	30.5%	3.63	1.11
2020	192,726,712	60,904,468	31.6%	3.62	1.14
2021	193,749,403	56,532,057	29.2%	3.63	1.06
2018-2021	782,036,496	246,979,035	31.6%	3.63	1.15

14-Day Elimination				Per $100 of Initial Indebtedness	
Year	Earned Premium	Incurred Claims	Loss Ratio	Weighted Rate	Implied Claim Cost
2018	3,352,514	2,103,348	62.7%	2.93	1.84
2019	2,246,416	1,073,460	47.8%	3.00	1.43
2020	1,703,803	654,364	38.4%	2.97	1.14
2021	1,355,353	491,478	36.3%	2.99	1.08
2018-2021	8,658,086	4,322,650	49.9%	2.96	1.48

30-Day Retroactive				Per $100 of Initial Indebtedness	
Year	Earned Premium	Incurred Claims	Loss Ratio	Weighted Rate	Implied Claim Cost
2018	10,298,098	4,133,228	40.1%	3.63	1.46
2019	7,784,716	2,977,275	38.2%	3.71	1.42
2020	5,933,952	1,679,914	28.3%	3.76	1.06
2021	4,384,744	1,122,609	25.6%	3.87	0.99
2018-2021	28,401,510	9,913,026	34.9%	3.72	1.30

30-Day Elimination				Per $100 of Initial Indebtedness	
Year	Earned Premium	Incurred Claims	Loss Ratio	Weighted Rate	Implied Claim Cost
2018	4,210,112	2,871,517	68.2%	2.62	1.78
2019	3,608,715	1,844,638	51.1%	2.62	1.34
2020	3,137,071	1,428,899	45.5%	2.61	1.19
2021	2,688,041	1,310,066	48.7%	2.60	1.27
2018-2021	13,643,939	7,455,120	54.6%	2.61	1.43

Table 2 compares the calculated claim cost per $100 of initial insured indebtedness for each plan based on three separate grouped time periods. The decision was made to use the years 2018 – 2021 for the study period after carefully examining the loss costs from 2013 – 2021. Ultimately, the decision was made to use 2018 – 2021 because it was the most recent data available.

Table 2
AGGREGATE CLAIM COST PER $100 INITIAL INSURED INDEBTEDNESS BY EXPERIENCE YEARS

Plan	2013-2017	2018-2021	2013-2021
7-Day Retroactive	1.34	1.21	1.28
14-Day Retroactive	1.19	1.15	1.17
14-Day Elimination	1.76	1.48	1.68
30-Day Retroactive	1.46	1.30	1.42
30-Day Elimination	1.53	1.43	1.50
Total	**1.26**	**1.18**	**1.23**

The "expected" claim cost is based on the 1985 CIDA table, weighted by age and term for each plan. The age and term weightings came from the data submitted by the participating companies. We used the company data for age and term distribution from contracts issued during calendar year 2017 because this is the midpoint of the company data collected.

There is some evidence that experience during the COVID pandemic was lower than previous periods. It has been theorized that this is because of reduced worksite accidents and recreational activities during the pandemic. Similar reductions in incidence rates have been observed in other disability programs, including Social Security (see "The Long-Range Disability Assumptions for the 2022 Trustees Report" from the Office

of the Chief Actuary, Social Security Administration, dated June 2, 2022). Available credit insurance data from 2022 and through the date of this report indicate that this low loss experience is persisting.

As previously mentioned, the "expected" table was the 1985 CIDA. Since the 1985 table is separated by gender, a gender mix was sought. However, since the gender mix was demonstrated in the 1998 study to have limited effect on the Actual to Expected (A/E) ratio, we used the same gender mix from the 1998 study – which was also used in the 2004 and 2014 studies. Also, since the 1985 CIDA is separated by four occupation classes, as in the previous studies, the proportions were determined using Department of Labor statistics (BLS Current Populations Survey - Household Data – Annual Averages – Employed persons by occupation, sex, and age).

4.1 GATHERING THE PLAN/AGE/TERM COMPANY DATA

In 2022, the Credit Insurance Experience Committee (CIEC) asked companies to submit their new credit disability single premium business written in 2017 and 2021 gross of any refunds. The data were collected for each of the elimination periods, original term of coverage in months, age last birthday at issue (or date of birth and issue date) and, where available, gender.

Collected premiums and original amount of insurance (insured monthly indemnity times the number of months insured) were provided. Business that is summary processed was to be excluded. Copies of the survey form and instructions are provided in appendices A and B.

Companies representing approximately 90% of the single premium credit disability market contributed their data. A list of the names of companies or company groups that contributed data can be found in section 8. The data submitted for each company were reviewed by term, age, and plan.

Some companies use a default age when the certificate is received without age. Where the data were heaped at a particular age, it was smoothed out by comparing it to the exposure at surrounding ages. The data were then grouped by the original terms in months (6, 12, 18, 24, 30, 36, 48, 60, 72, 84, 96, 108, and 120). The resulting distribution of 2017 new business is presented in appendix C. A description of the process used to collect and compile data is contained in appendix D.

Table 3 shows the average weighted term and age by plan from the survey for issue year 2017.

Table 3
AVERAGE WEIGHTED AGE AND TERM BY PLAN

Plan	Average Term in Months	Average Age
7-Day Retroactive	41.0	44.6
14-Day Retroactive	44.0	44.3
14-Day Elimination	54.8	44.4
30-Day Retroactive	58.1	42.6
30-Day Elimination	57.8	44.9
Unknown	12.2	43.4
Total	**42.5**	**44.3**

As in previous studies, there does not appear to be a significant difference in the age distribution by plan. The 30-day retroactive plan, which comprises 1.6% of total exposure, exhibited the only notable deviation from the aggregate age distribution. Thus, only the total age distribution was used throughout the study. There are more pronounced differences in the distribution of original term in months by plan so each plan's unique distribution by term was used throughout the study.

4.2 GATHERING THE "ACTUAL" LOSS COSTS FROM THE CREDIT INSURANCE EXPERIENCE EXHIBIT

Each year, all companies writing credit insurance complete the Credit Insurance Experience Exhibit as part of their annual statement filing. This exhibit is prepared for each state's own experience. The data are provided for credit life, disability, unemployment, and property insurance. The experience is also separated between single premium and monthly business. The credit disability business experience is further split into six elimination periods; 7-day retroactive, 14-day retroactive, 14-day elimination, 30-day retroactive, 30-day elimination and "All Other." Earned premiums and incurred losses are reported. Actual earned premiums are reported, as well as what the earned premiums for the state would be if all business were written at the state's prima facie rates in force at the end of the year. The data for all states are submitted electronically to the NAIC.

The single premium data for years 2018 through 2021 were selected for development of the actual loss costs. The primary purpose of the study is the validation of the use of the 1985 CIDA as a valuation table for single premium credit disability active life reserves. For this reason, the experience of monthly business was not considered. Further complicating the potential for inclusion of monthly premium business is the fact that a large percentage of monthly outstanding balance business is "bulk processed" so no age or term information is available.

Prima facie rates in force at each year end by state, plan and for the selected original terms of coverage in months (6, 12, 18, 24, 30, 36, 48, 60, 72, 84, 96, 108, and 120) were gathered and recorded.

Most states' prima facie rates allow a company to exclude pre-existing condition during the first six months of coverage if the condition resulted in treatment or medical advice during the six months prior to the effective date of coverage (6/6 pre-existing condition exclusion). A few states also allow the coverage to be written at higher rates if there is no exclusion of pre-existing conditions. Where this alternative exists, the rates for the 6/6 pre-existing exclusion coverage were selected. It is generally assumed that the rate differential for the two forms of pre-existing coverages is appropriate. The study, therefore, represents the net single premiums for credit disability insurance written with a 6/6 pre-existing exclusion.

Weighted single premium rates per $100 of initial insured indebtedness were determined for the U.S. and Puerto Rico combined for each of the nine experience years in the study. This was done separately for each of the five elimination periods and 13 original terms in months. The total earned premium at prima facie rates for each plan by state was used for the weighting.

Concern has been expressed in the past that not all companies properly adjust their actual earned premium to what the earned premium would be if prima facie rates were charged. For credit disability, the prima facie rates have been very stable as can be seen in table 1 above. Thus, we believe that a few companies' failure to accurately adjust actual earned premium to prima facie earned premium is not a significant source of error in this or the previous studies. The following summarizes the experience for the five plans. Shown is the weighted prima facie rate for all terms combined and the implied weighted claim cost. The distribution of the companies' 2017 new business by term within plan was used to get the weighted single rate.

As in previous studies, there were anomalies in the actual experience. It was decided in these previous studies not to pursue analyzing these anomalies since this is the nature of the business. For additional information on the explanation for these anomalies, refer to the report from the 1998 study. However, the fact that the 30-day plans exhibit a higher-than-expected claim level prompted the NAIC to adopt the use of the 14-day table for use in valuing 30-day plans. While some of the higher A/E ratio is likely because of the higher average term (see table 3), it cannot be entirely explained by term alone.

4.3 DERIVATION OF THE "EXPECTED" CLAIM COSTS

The 1985 CIDA has separate tables (incidence and termination rates) for males and females and four occupation classes. These tables also vary based on the elimination period, which are either 7 days, 14 days, 30 days, or 90 days (plus 0-day accident).

Using an assumed gender mix and occupational class distribution, three aggregate disability tables were constructed for the 7-day elimination, 14-day elimination and 30-day elimination periods. Disabled lives per 100,000 lives exposed by claim duration were computed for ages 22, 27, 32, 37, 42, 47, 52, 57, 62 and 67. The 5-point LaGrange formula that was recommended in the 1985 Transactions of the Society of Actuaries was used to compute the values for these ages. The 7-day elimination table was used to compute rates for the 7-day retroactive period plans. The 14-day elimination table was used for 14-day elimination and 14-day retroactive period plans and, likewise, for the 30-day elimination table.

No company recorded occupation in the data provided. These data are not routinely kept by the credit insurance industry. To establish an assumed distribution of occupational classes, the study used the distribution of the U.S. workforce determined from the Bureau of Labor Statistics published by the U.S. Department of Labor (BLS Current Populations Survey - Household Data – Annual Averages – Employed persons by occupation, sex and age).

A few of the companies captured gender in their databases, but most did not. For those that reported gender in 1997, 65% of their new business was males by count and 69% was males by exposure. Many of those that do not capture gender in their databases did run samplings of their new business by name to determine gender. The results of these samplings were very similar to the other data. Sensitivity testing of the male-female mix that was performed and documented in the 1998 study report showed a less than 5% difference in the weighted net single premium between the 70% male assumption and a 50% male assumption. Based on the limited data received and sensitivity test, the aggregate 1985 CIDA table used in the study assumes the in-force credit disability business is 70% male.

The occupational distribution by gender for each of the three years examined in the study is as follows:

Table 4
OCCUPATION CLASS BY YEAR AND GENDER

2013 Occupation Class	Male	Female
Class 1	34.8%	41.6%
Class 2	16.6%	30.4%
Class 3	22.6%	25.1%
Class 4	26.0%	2.9%

2017 Occupation Class	Male	Female
Class 1	36.2%	43.7%
Class 2	15.9%	28.6%
Class 3	21.7%	24.4%
Class 4	26.2%	3.3%

2021 Occupation Class	Male	Female
Class 1	38.5%	46.9%
Class 2	14.4%	25.9%
Class 3	19.8%	22.7%
Class 4	27.3%	4.5%

It is expected that the credit insurance distribution by occupation mirrors the workforce. It has been argued that the lower occupation risks are more likely to purchase credit insurance. It can also be argued that the professional and white-collar occupation classes (1 and 2) take out larger loans than occupation classes involving some or heavy manual duties (3 and 4) and that when they purchase credit insurance, the larger loan offsets the lower acceptance rate.

Section 5: Study Results

5.1 COMPARISON TO THE BLENDED 1985 CIDA

For each elimination period, there are eight tables containing the number of disabled lives by age at disablement and duration of claim through 20 years (two sexes and four occupation classes). Using each distribution by occupation in table 4 above and assuming 70% males, a composite table was produced. From this composite table, net single premiums were computed for each of the five elimination period plans of insurance. Net single premiums were computed for each age at disablement. Under this calculation, the resulting net single premiums assume the insured remains the same age throughout the period of coverage (labeled "No Aging" in table 5 below). From these net single premiums, a second set of net single premiums was created where the insured age increases throughout the period of coverage ("Aging" in table 5 below). The cost for each yearly advance in age was linearly interpolated between the central ages in each five-year age bracket.

Using the net single premiums thus computed, a net single premium was determined by weighting all ages and all terms using the distribution of the 2017 data submissions. We then compared this to the weighted claim cost of the industry experience for calendar years 2018 through 2021 combined.

The CIDA Net Single Premiums were calculated based on two separate bases. The "No Aging" basis is calculated based on the attained age remaining the same throughout the term of coverage and is presented solely for comparison to prior studies and for comparison purposes. The "Aging" basis is consistent with the manner in which companies apply the table in calculating reserves and assumes that the attained age increases each year during the term of the coverage.

Table 5

COMPARISON BASED ON 2013 OCCUPATION CLASS DISTRIBUTION

Plan	Prima Facie Premium Distribution	1985 CIDA Net Single Premiums Assuming		2018-2021 Experience Claim Cost	Actual to Expected w/Aging
		No Aging	Aging		
7-Day Retroactive	29.6%	2.88	2.98	1.21	40.6%
14-Day Retroactive	66.1%	2.60	2.72	1.15	42.3%
14-Day Elimination	0.7%	2.56	2.73	1.48	54.3%
30-Day Retroactive	2.4%	2.13	2.30	1.30	56.5%
30-Day Elimination	1.2%	1.75	1.90	1.43	75.3%
Total	**100.0%**	**2.66**	**2.78**	**1.18**	**42.3%**

COMPARISON BASED ON 2017 OCCUPATION CLASS DISTRIBUTION

Plan	Prima Facie Premium Distribution	1985 CIDA Net Single Premiums Assuming		2018-2021 Experience Claim Cost	Actual to Expected w/Aging
		No Aging	Aging		
7-Day Retroactive	29.6%	2.86	2.96	1.21	40.8%
14-Day Retroactive	66.1%	2.58	2.70	1.15	42.6%
14-Day Elimination	0.7%	2.54	2.71	1.48	54.6%
30-Day Retroactive	2.4%	2.11	2.28	1.30	57.0%
30-Day Elimination	1.2%	1.74	1.88	1.43	75.9%
Total	**100.0%**	**2.64**	**2.76**	**1.18**	**42.6%**

COMPARISON BASED ON 2021 OCCUPATION CLASS DISTRIBUTION

Plan	Prima Facie Premium Distribution	1985 CIDA Net Single Premiums Assuming		2018-2021 Experience Claim Cost	Actual to Expected w/Aging
		No Aging	Aging		
7-Day Retroactive	29.6%	2.84	2.94	1.21	41.1%
14-Day Retroactive	66.1%	2.56	2.68	1.15	42.9%
14-Day Elimination	0.7%	2.52	2.69	1.48	55.1%
30-Day Retroactive	2.4%	2.09	2.26	1.30	57.6%
30-Day Elimination	1.2%	1.72	1.86	1.43	76.7%
Total	**100.0%**	**2.62**	**2.74**	**1.18**	**43.0%**

5.2 ADEQUACY OF THE VALUATION TABLE

The Valuation Table is defined in Valuation Manual Section VM-26 as the 1985 CIDA, using 112% of the incidence rates and using the 14-day table for 30-day elimination and retroactive plans. To confirm the appropriateness of the use of the Valuation Table, we compared the table 5 results with Aging to the VM-26 standard.

Table 6

COMPARISON BASED ON 2013 OCCUPATION CLASS DISTRIBUTION

Plan	Prima Facie Premium Distribution	Val Table Net Single Premiums Assuming		2018-2021 Experience Claim Cost	Actual to Expected w/Aging
		No Aging	Aging		
7-Day Retroactive	29.6%	3.22	3.34	1.21	36.2%
14-Day Retroactive	66.1%	2.91	3.04	1.15	37.8%
14-Day Elimination	0.7%	2.87	3.05	1.48	48.5%
30-Day Retroactive	2.4%	3.19	3.42	1.30	38.0%
30-Day Elimination	1.2%	2.56	2.77	1.43	51.6%
Total	**100.0%**	**3.00**	**3.13**	**1.18**	**37.6%**

COMPARISON BASED ON 2017 OCCUPATION CLASS DISTRIBUTION

Plan	Prima Facie Premium Distribution	Val Table Net Single Premiums Assuming		2018-2021 Experience Claim Cost	Actual to Expected w/Aging
		No Aging	Aging		
7-Day Retroactive	29.6%	3.21	3.32	1.21	36.4%
14-Day Retroactive	66.1%	2.89	3.03	1.15	38.0%
14-Day Elimination	0.7%	2.85	3.03	1.48	48.8%
30-Day Retroactive	2.4%	3.18	3.39	1.30	38.3%
30-Day Elimination	1.2%	2.54	2.74	1.43	52.2%
Total	**100.0%**	**2.99**	**3.12**	**1.18**	**37.7%**

COMPARISON BASED ON 2021 OCCUPATION CLASS DISTRIBUTION

Plan	Prima Facie Premium Distribution	Val Table Net Single Premiums Assuming		2018-2021 Experience Claim Cost	Actual to Expected w/Aging
		No Aging	Aging		
7-Day Retroactive	29.6%	3.18	3.29	1.21	36.8%
14-Day Retroactive	66.1%	2.87	3.00	1.15	38.3%
14-Day Elimination	0.7%	2.82	3.01	1.48	49.2%
30-Day Retroactive	2.4%	3.15	3.37	1.30	38.6%
30-Day Elimination	1.2%	2.52	2.72	1.43	52.6%
Total	**100.0%**	**2.96**	**3.09**	**1.18**	**38.1%**

The overall Actual to Expected ratios of 37.6%, 37.7% and 38.1% (lower right value in each table immediately above) infer that the reserves held under the current statutory standard are approximately 250% of the expected claims. This confirms the adequacy in aggregate – if not excessive redundancy – in the VM-26 minimum standard table, based on all the occupation class distributions studied. The fact that each individual plan's A/E ratio is less than 100% (the highest being 52.6%) reinforces the adequacy by plan, as well. The Committee recognizes that these A/E ratios currently include a significant amount of redundancy and will continue to monitor the redundancy in future analyses.

The Actual to Expected ratios by benefit type and in aggregate continue to decline, indicating an increase in the redundancy of the minimum reserve basis. The table below shows a steady decline in A/E ratios in aggregate and for all benefit types.

Table 7

COMPARISON TO PREVIOUS STUDIES' ACTUAL TO EXPECTED RATIOS

Plan	2004 Study Actual to Expected w/Aging	2014 Study Actual to Expected w/Aging	2023 Study Actual to Expected w/Aging
7-Day Retroactive	58.1%	50.8%	36.8%
14-Day Retroactive	63.7%	49.5%	38.3%
14-Day Elimination	98.8%	63.8%	49.2%
30-Day Retroactive	74.9%	58.3%	38.6%
30-Day Elimination	81.6%	71.1%	52.6%
Total	**64.8%**	**51.3%**	**38.1%**

5.3 TERM DISTRIBUTIONS AND AVERAGE AGE

Table 8 compares the term distribution of business over the period 2013 to 2021. The data are noteworthy for two reasons.

First, the high concentration at the 60-month term in 2013 moved downward in 2017 but increased markedly in 2021. Secondly, the 36-month term percentage was cut nearly in half by 2021, moving a high concentration of issues into the 48- to 60-month coverage. Whether the 2021 movement in terms of coverage represents a COVID-related distortion or a more permanent shift will be examined in later studies.

Table 8
COMPARISON OF TERM DISTRIBUTION – 2013 TO 2017 TO 2021

Term in Months	2013 Distribution	2017 Distribution	2021 Distribution
6	1.0	2.6	2.0
12	1.7	6.1	3.9
18	2.0	5.8	4.7
24	6.0	10.3	7.3
30	3.7	3.6	3.1
36	22.7	17.3	13.2
48	13.9	24.9	19.3
60	34.8	20.6	41.1
72	13.0	7.5	3.8
84	1.4	1.2	1.4
96	0.0	0.0	0.0
108	0.0	0.0	0.0
120	0.0	0.1	0.1
Total	**100.0**	**100.0**	**100.0**
Average	**49.41**	**42.47**	**46.85**

As shown in table 9 below, the overall average age increase has slowed and slightly reversed for the time periods contained in the current study.

Table 9
OVERALL AVERAGE AGE BY STUDY YEAR

Year	Average Age
1997	39.14
2000	40.73
2003	41.48
2008	43.01
2013	44.62
2017	44.29
2021	43.89

The data and trends in the two tables above are provided primarily for informational purposes, and do not affect the study results.

Section 6: Reliance and Limitations

No assessment has been made concerning the applicability of this experience to other purposes. In developing this report, the SOA Research Institute relied upon data and information supplied by the participating company contributors. For each contributing company, this information includes, but is not limited to, the data submission for certificates issued in the years requested and the responses to follow-up questions. The SOA Research Institute also relied on the NAIC for the data reported in the Credit Insurance Experience Exhibit.

The collection of data and the production of the claim costs and other results were performed by Hause Actuarial Solutions, Inc. under contract with the Society of Actuaries. All data and calculations comply with applicable professional standards and contributor confidentiality requirements.

The results in this report are technical in nature and are dependent on certain assumptions and methods. No party should rely upon these results without a thorough understanding of those assumptions and methods. Such an understanding may require consultation with qualified professionals. This report should be distributed and reviewed only in its entirety.

Section 7: Acknowledgments

The SOA Research Institute would like to extend its thanks to all participating companies for making this project a success. Without your support, such research projects would not be possible.

A list of the participating companies and company groups is included in section 8.

We would also like to thank the SOA Research Institute's Credit Insurance Experience Committee for its support, guidance, direction and feedback throughout the project.

The members of the Credit Insurance Experience Committee are:

- Christopher H. Hause, FSA, MAAA (Chair)
- Kent S. Barchers, FSA, MAAA
- Jay M. Jaffe, FSA, MAAA
- Donald (Zach) Kellar, FSA, MAAA
- Elaine N. Pelletier, FSA, MAAA
- Sally J. Smith, FSA, MAAA
- Jacob C. Wiederholt, ASA, MAAA

The Committee would like to thank Cynthia MacDonald, FSA, MAAA and Korrel Crawford from the SOA Research Institute for their leadership and coordination of the project.

Section 8: Participating Companies and Company Groups

American National Insurance Company
Central States Insurance Company of Omaha
CMFG Life Insurance Company (CUNA)
Fortegra Insurance Group
Kentucky Home and Mountain Life Insurance Companies
OneMain Financial Group
Pekin Life Insurance Company
Securian Financial Group

These contributing companies and company groups represent over 90% of the single premium credit disability premium written in 2021.

Appendix A: Credit Disability Data Request

New Business Writings Only (Refunds Excluded)

Company Name: _____

Company's 2017 Credit Disability Single Premium Direct Writings: _____

Company's 2021 Credit Disability Single Premium Direct Writings: _____

Amount and Percentage of Direct Business on Which Detail Data Provided: _____(2017)

_____(2021)

Period Covered by Detail Data:	2017 Data	2021 Data
Beginning Month and Year:	_____	_____
Ending Month and Year:	_____	_____

Contact: Name: _____

Address: _____

_____

Phone: _____

Email: _____

Appendix B: Data Request Layout

Description	Field Position	Comments
Company Name or ID (if confidential)*	1 to 20	
Age Last Birthday Low*	21 to 23	
Age Last Birthday High	24 to 26	Can be same as low
Original Term in Months*	27 to 29	Insert 000's if not available
Elimination Period:* 1 = 7 Retro 2 = 14 Retro 3 = 14 Elim 4 = 30 Retro 5 = 30 Elim 6 = Other 0 = Not Available	30	
Sex: 1 = Male 2 = Female 0 = Not Available	31	
Original Single Premium	32 to 43	Dollars and cents
Original Amount of Insurance Issued (Note: this equals monthly indemnity times term in months)	44 to 50	Dollars only
Monthly Indemnity*	51 to 57	Dollars and cents
Source of Business: 1 = Auto 2 = Financial Institution 3 = Finance Company 4 = Other 0 = Not Available	58	
Underwritten: 1 = Yes 2 = No 0 = Not Available	59	

Description	Field Position	Comments
Joint/Single: 1 = Single 2 = Joint 0 = Not Available	60	
Pre-ex Indicator: 1 = Pre-ex Applies 2 = No Pre-ex 0 = Not Available	61	
Critical Period Indicator 1 = Full Benefit 2 = Critical Period 0 = Not Available	62	
Real Estate Backed Loan 1 = Yes 2 = No 0 = Not Available	63	
Year of Issue* 17 = 2017 21 = 2021	64 to 65	

Appendix C: Distribution of Exposures by Age, Term and Plan

Distribution Of Credit Disability Exposure By Issue Age, Term in Months and Plan
Exposure Is Gross Insured Indebtedness Issued In 2017 (in '000)

I. 7 Day Retroactive Elimination Period

Term	Age 22	Age 27	Age 32	Age 37	Age 42	Age 47	Age 52	Age 57	Age 62	Age 67	Total	Distribution
6	2,836	2,920	2,922	2,889	2,439	2,341	2,210	1,798	1,100	252	21,707	0.7%
12	11,224	14,822	16,472	18,075	16,732	16,716	15,435	12,462	7,785	1,240	130,963	4.2%
18	11,912	18,745	22,397	24,932	24,587	26,165	24,554	19,832	11,688	1,561	186,373	6.0%
24	23,289	39,265	46,803	54,867	57,443	64,381	61,875	51,271	29,577	4,403	433,174	14.0%
30	6,542	10,949	14,466	17,911	19,347	22,964	22,049	19,964	11,237	1,204	146,633	4.7%
36	26,952	47,789	60,703	69,082	73,506	87,380	85,840	71,296	39,497	3,124	565,169	18.2%
48	26,261	62,001	83,368	101,805	117,220	142,178	143,286	121,323	71,452	3,555	872,449	28.2%
60	14,768	39,436	55,409	76,234	87,086	113,296	123,922	115,189	71,122	5,227	701,689	22.7%
72	3,088	3,391	3,533	3,731	4,007	3,205	4,787	4,483	2,533	194	32,952	1.1%
84	314	501	727	579	624	492	770	850	453	0	5,310	0.2%
96	0	0	0	0	109	0	0	0	27	0	136	0.0%
108	0	0	0	0	0	0	0	0	0	0	0	0.0%
120	0	76	76	32	299	68	46	0	0	0	597	0.0%
Total	127,186	239,895	306,876	370,137	403,399	479,186	484,774	418,468	246,471	20,760	3,097,152	100.0%
Distribution	4.1%	7.7%	9.9%	12.0%	13.0%	15.5%	15.7%	13.5%	8.0%	0.7%	100.0%	

Distribution Of Credit Disability Exposure By Issue Age, Term in Months and Plan
Exposure Is Gross Insured Indebtedness Issued In 2017 (in '000)

II. 14 Day Retroactive Elimination Period

Term	Age 22	Age 27	Age 32	Age 37	Age 42	Age 47	Age 52	Age 57	Age 62	Age 67	Total	Distribution
6	13,491	14,805	13,196	12,754	11,336	11,208	10,254	8,299	4,732	1,110	101,185	1.5%
12	29,454	42,380	45,381	50,225	49,233	51,442	47,120	37,211	22,161	2,992	377,599	5.5%
18	21,213	34,171	41,845	47,481	49,266	53,776	50,352	40,590	23,067	2,950	364,711	5.3%
24	38,305	60,118	68,776	79,603	86,633	95,047	92,051	76,584	42,332	5,441	644,890	9.3%
30	11,111	17,959	22,931	29,294	32,850	38,895	37,683	31,757	18,582	2,379	243,441	3.5%
36	66,294	106,436	129,448	151,604	172,058	193,769	186,235	161,730	87,680	8,587	1,263,841	18.3%
48	67,671	123,676	170,997	207,088	239,480	279,117	287,673	250,271	138,859	8,272	1,773,104	25.6%
60	53,939	89,096	119,377	148,724	176,497	221,038	235,259	228,490	123,620	8,704	1,404,744	20.3%
72	51,587	56,200	59,345	64,380	73,101	87,536	94,798	93,840	62,110	5,994	648,891	9.4%
84	4,672	6,974	9,285	8,250	10,010	13,545	15,608	14,828	9,854	820	93,846	1.4%
96	0	20	0	91	0	93	26	303	58	0	591	0.0%
108	17	0	0	0	0	100	0	91	0	0	208	0.0%
120	267	243	187	363	518	440	780	576	138	19	3,531	0.1%
Total	358,021	552,078	680,768	799,857	900,982	1,046,006	1,057,839	944,570	533,193	47,268	6,920,582	100.0%
Distribution	5.2%	8.0%	9.8%	11.6%	13.0%	15.1%	15.3%	13.6%	7.7%	0.7%	100.0%	

Distribution Of Credit Disability Exposure By Issue Age, Term in Months and Plan
Exposure Is Gross Insured Indebtedness Issued In 2017 (in '000)

III. 14 Day Elimination Period

Term	Age 22	Age 27	Age 32	Age 37	Age 42	Age 47	Age 52	Age 57	Age 62	Age 67	Total	Distribution
6	28	29	31	29	34	31	29	33	14	52	310	0.2%
12	158	187	256	298	368	294	326	218	167	69	2,341	1.8%
18	70	63	96	98	165	152	191	115	162	22	1,134	0.9%
24	304	373	345	407	436	709	654	593	379	27	4,227	3.3%
30	68	78	109	91	178	107	168	116	142	11	1,068	0.8%
36	992	1,172	1,384	1,402	1,833	1,946	2,346	1,916	1,150	107	14,248	11.0%
48	1,435	2,253	3,000	3,627	4,397	5,289	5,998	5,125	3,020	151	34,295	26.5%
60	2,623	3,715	3,980	4,600	4,447	6,512	7,527	6,435	2,986	405	43,230	33.4%
72	1,596	1,984	2,399	2,329	2,986	2,926	3,053	3,587	1,379	56	22,295	17.2%
84	310	562	641	553	875	953	936	671	274	32	5,807	4.5%
96	0	0	0	0	0	0	0	0	71	0	71	0.1%
108	0	0	0	0	0	0	14	0	0	0	14	0.0%
120	0	105	0	36	131	99	16	96	56	0	539	0.4%
Total	7,584	10,521	12,241	13,470	15,850	19,018	21,258	18,905	9,800	932	129,579	100.0%
Distribution	5.9%	8.1%	9.4%	10.4%	12.2%	14.7%	16.4%	14.6%	7.6%	0.7%	100.0%	

Distribution Of Credit Disability Exposure By Issue Age, Term in Months and Plan
Exposure Is Gross Insured Indebtedness Issued In 2017 (in '000)

IV. 30 Day Retroactive Elimination Period

Term	Age 22	Age 27	Age 32	Age 37	Age 42	Age 47	Age 52	Age 57	Age 62	Age 67	Total	Distribution
6	51	49	57	57	54	103	80	101	68	58	678	0.4%
12	231	313	322	425	418	544	637	549	370	66	3,875	2.2%
18	254	194	315	298	378	472	521	450	341	31	3,254	1.8%
24	860	724	691	810	641	885	1,105	982	828	127	7,653	4.3%
30	291	282	157	202	240	191	323	211	252	53	2,202	1.2%
36	2,039	1,922	1,217	1,733	1,864	2,172	1,978	2,195	1,327	143	16,590	9.4%
48	2,040	2,331	1,753	2,046	1,665	2,724	2,687	2,624	1,092	301	19,263	10.9%
60	6,638	4,998	7,196	6,293	4,750	6,291	6,541	6,401	4,101	370	53,579	30.2%
72	5,775	6,476	5,052	6,517	6,348	7,419	8,541	8,157	4,435	654	59,374	33.5%
84	519	651	840	1,500	1,075	1,078	1,988	1,435	973	0	10,059	5.7%
96	0	0	0	27	0	76	22	0	0	0	125	0.1%
108	68	7	22	15	22	43	0	79	0	0	256	0.1%
120	24	0	14	27	142	0	63	0	0	0	270	0.2%
Total	18,790	17,947	17,636	19,950	17,597	21,998	24,486	23,184	13,787	1,803	177,178	100.0%
Distribution	10.6%	10.1%	10.0%	11.3%	9.9%	12.4%	13.8%	13.1%	7.8%	1.0%	100.0%	

Distribution Of Credit Disability Exposure By Issue Age, Term in Months and Plan
Exposure Is Gross Insured Indebtedness Issued In 2017 (in '000)

V. 30 Day Elimination Period

Term	Age 22	Age 27	Age 32	Age 37	Age 42	Age 47	Age 52	Age 57	Age 62	Age 67	Total	Distribution
6	22	47	45	87	85	169	129	125	55	192	956	0.6%
12	114	225	433	639	596	860	784	1,016	426	62	5,155	3.2%
18	54	102	189	264	247	440	378	392	263	81	2,410	1.5%
24	244	383	607	630	760	1,017	1,065	973	666	51	6,396	4.0%
30	55	106	97	93	215	307	244	212	262	10	1,601	1.0%
36	753	1,355	1,431	1,980	2,114	2,947	3,159	2,964	1,489	94	18,286	11.4%
48	1,040	1,460	1,986	2,450	2,835	3,180	3,250	2,887	1,429	70	20,587	12.8%
60	1,945	2,666	3,516	3,693	4,858	6,628	6,238	5,834	3,720	336	39,434	24.6%
72	3,607	4,371	4,730	5,019	6,260	7,003	6,462	7,551	3,895	367	49,265	30.7%
84	771	1,334	1,454	1,128	1,521	2,512	2,881	2,139	1,324	137	15,201	9.5%
96	47	0	30	69	21	40	0	0	0	0	207	0.1%
108	0	0	0	0	0	0	0	0	0	0	0	0.0%
120	184	11	28	22	132	0	231	170	0	0	778	0.5%
Total	8,836	12,060	14,546	16,074	19,644	25,103	24,821	24,263	13,529	1,400	160,276	100.0%
Distribution	5.5%	7.5%	9.1%	10.0%	12.3%	15.7%	15.5%	15.1%	8.4%	0.9%	100.0%	

Distribution Of Credit Disability Exposure By Issue Age, Term in Months and Plan
Exposure Is Gross Insured Indebtedness Issued In 2017 (in '000)

VI. Plan is Unknown

Term	Age 22	Age 27	Age 32	Age 37	Age 42	Age 47	Age 52	Age 57	Age 62	Age 67	Total	Distribution
6	12,581	19,619	20,406	20,963	18,674	19,228	17,430	15,497	11,791	7,801	163,990	38.3%
12	8,148	14,211	15,994	18,041	18,390	20,261	20,220	16,703	10,563	4,462	146,993	34.3%
18	3,523	6,715	8,363	9,523	9,882	11,006	11,865	9,128	5,302	1,867	77,174	18.0%
24	1,076	2,289	3,018	3,749	4,263	4,789	4,738	4,208	2,171	695	30,996	7.2%
30	71	215	266	211	286	254	278	261	154	55	2,051	0.5%
36	383	660	785	790	681	837	804	642	256	16	5,854	1.4%
48	12	36	0	0	0	36	0	0	0	48	132	0.0%
60	0	0	80	40	17	30	0	0	0	0	167	0.0%
72	41	88	103	39	48	78	100	33	74	25	629	0.1%
84	0	0	0	0	84	0	0	0	0	0	84	0.0%
96	0	0	0	0	0	0	0	0	0	0	0	0.0%
108	0	0	0	0	0	0	0	0	0	0	0	0.0%
120	0	0	0	0	0	0	0	0	0	0	0	0.0%
Total	25,835	43,833	49,015	53,356	52,325	56,519	55,435	46,472	30,311	14,969	428,070	100.0%
Distribution	6.0%	10.2%	11.5%	12.5%	12.2%	13.2%	12.9%	10.9%	7.1%	3.5%	100.0%	

Distribution Of Credit Disability Exposure By Issue Age, Term in Months and Plan
Exposure Is Gross Insured Indebtedness Issued In 2017 (in '000)

VII. Grand Total of All Plans Combined

Term	Age 22	Age 27	Age 32	Age 37	Age 42	Age 47	Age 52	Age 57	Age 62	Age 67	Total	Distribution
6	29,009	37,469	36,657	36,779	32,622	33,080	30,132	25,853	17,760	9,465	288,826	2.6%
12	49,329	72,138	78,858	87,703	85,737	90,117	84,522	68,159	41,472	8,891	666,926	6.1%
18	37,026	59,990	73,205	82,596	84,525	92,011	87,861	70,507	40,823	6,512	635,056	5.8%
24	64,078	103,152	120,240	140,066	150,176	166,828	161,488	134,611	75,953	10,744	1,127,336	10.3%
30	18,138	29,589	38,026	47,802	53,116	62,718	60,745	52,521	30,629	3,712	396,996	3.6%
36	97,413	159,334	194,968	226,591	252,056	289,051	280,362	240,743	131,399	12,071	1,883,988	17.3%
48	98,459	191,757	261,104	317,016	365,597	432,524	442,894	382,230	215,852	12,397	2,719,830	24.9%
60	79,913	139,911	189,558	239,584	277,655	353,795	379,487	362,349	205,549	15,042	2,242,843	20.6%
72	65,694	72,510	75,162	82,015	92,750	108,167	117,741	117,651	74,426	7,290	813,406	7.5%
84	6,586	10,022	12,947	12,010	14,189	18,580	22,183	19,923	12,878	989	130,307	1.2%
96	47	20	30	187	130	209	48	303	156	0	1,130	0.0%
108	85	7	22	15	22	143	14	170	0	0	478	0.0%
120	475	435	305	480	1,222	607	1,136	842	194	19	5,715	0.1%
Total	546,252	876,334	1,081,082	1,272,844	1,409,797	1,647,830	1,668,613	1,475,862	847,091	87,132	10,912,837	100.0%
Distribution	5.0%	8.0%	9.9%	11.7%	12.9%	15.1%	15.3%	13.5%	7.8%	0.8%	100.0%	

Appendix D: Data Collection and Manipulation Documentation

I) Gather data from companies and import into an Access Database Table.

II) Table Structure/Field Names as follows:

a. CompanyName
b. AgeLastBirthday_Low – Use this age for data manipulation
c. AgeLastBirthday_High
d. OriginalTerm_InMonths
e. EliminationPeriod (This translates to the benefit type as follows)
    i. 1 = 7 Retro
    ii. 2 = 14 Retro
    iii. 3 = 14 Elim
    iv. 4 = 30 Retro
    v. 5 = 30 Elim
    vi. 6 = Other
    vii. 0 = Not Available
f. Sex
    i. 1 = Male
    ii. 2 = Female
    iii. 0 = Not Available
g. OriginalSinglePremium
h. OriginalAmountOfInsuranceIssued (This is the field used for calculations)
i. MonthlyIndemnity
j. SourceOfBusiness
    i. 1 = Auto
    ii. 2 = Financial Institution
    iii. 3 = Finance Company
    iv. 4 = Other
    v. 0 = Not Available
k. Underwritten
    i. 1 = Yes
    ii. 2 = No
    iii. 0 = Not Available
l. Joint_Or_Single
    i. 1 = Single
    ii. 2 = Joint
    iii. 0 = Not Available
m. PreExIndicator
    i. 1 = Pre-Existing applies
    ii. 2 = No Pre-Existing
    iii. 0 = Not Available
n. CriticalPeriodIndicator
    i. 1 = Full Benefit
    ii. 2 = Critical Period
    iii. 0 = Not Available

III) Use VB utility to graph detail by Benefit to visually identify age bumps by Benefit.

a. Line Graph is utilized to graphically identify spikes.
b. Each line on the graph indicates an Elimination Period (7R, 14R, etc.).
c. Total line sums all Elimination Periods.
d. Age Bumps are defined as default ages. Unusual spikes indicate the use of a default age.

IV) Smooth Bumps

a. For all Identified Bumps (example ages 34 and 45)

For Each Benefit Type (14R, 7R, 30R, 14E, etc.)

For Each Term (DB Field OriginalTermInMonths)

Find terms on either side of bump. In this example ages 33 and 35, and ages 44 and 46

Average amounts from age 33 and 35 and assign to age 34. Average amounts from age 44 and 46 and assign to age 45

b. NOTE - If either side of age to be "smoothed" is zero, no smoothing occurs.

V) After data has been smoothed, create separate tables for each Elimination Period.

VI) Compress Months Data into the following categories:

a. This is done by company, and by Elimination Period.

b. DB Field -- Original Term In Months

i. 6 Months = Months 1 – 9
ii. 12 Months = Months 10 – 15
iii. 18 Months = Months 16 – 21
iv. 24 Months = Months 22 – 27
v. 30 Months = Months 28 – 33
vi. 36 Months = Months 34 – 42
vii. 48 Months = Months 43 – 54
viii. 60 Months = Months 55 – 66
ix. 72 Months = Months 67 – 78
x. 84 Months = Months 79 – 90
xi. 96 Months = Months 91 – 102
xii. 108 Months = Months 103 – 114
xiii. 120 Months = Months 115 – 126
xiv. Eliminate (or ignore) all terms >=127 Months

VII) Compress Age Data into following categories:

a. This is done by company, and by Elimination Period.

b. DB Field -- AgeLastBirthday_Low

i. Eliminate (or ignore) all ages <=14
ii. Age 22 = Ages 15 – 24
iii. Age 27 = Ages 25 – 29
iv. Age 32 = Ages 30 – 34
v. Age 37 = Ages 35 – 39
vi. Age 42 = Ages 40 – 44
vii. Age 47 = Ages 45 – 49
viii. Age 52 = Ages 50 – 54
ix. Age 57 = Ages 55 – 59
x. Age 62 = Ages 60 – 64
xi. Age 67 = Ages 65 – 69
xii. Eliminate (or ignore) all ages >=70

VIII) Combine totals of all the companies' data into a separate database containing totals tables for each elimination period. This combination process uses the "smooth" data before age and benefit month data are compressed at the single company level.

a. 7 Day Retro Totals Table
b. 14 Day Retro Totals Table
c. 14 Day Elim Totals Table

d. 30 Day Retro Totals Table
e. 30 Day Elim Totals Table
f. Other Totals Table
g. Not Available Totals Table

IX) Compress Totals for all companies' Months Data into the following categories. This combination process uses the "smooth" data before age and benefit month data are compressed at the single company level.

a. DB Field -- Original Term In Months
    i. 6 Months = Months 1 – 9
    ii. 12 Months = Months 10 – 15
    iii. 18 Months = Months 16 – 21
    iv. 24 Months = Months 22 – 27
    v. 30 Months = Months 28 – 33
    vi. 36 Months = Months 34 – 42
    vii. 48 Months = Months 43 – 54
    viii. 60 Months = Months 55 – 66
    ix. 72 Months = Months 67 – 78
    x. 84 Months = Months 79 – 90
    xi. 96 Months = Months 91 – 102
    xii. 108 Months = Months 103 – 114
    xiii. 120 Months = Months 115 – 126
    xiv. Eliminate (or ignore) all terms >=127 Months

X) Compress Totals for all companies' Age Data into following categories:

a. DB Field -- AgeLastBirthday_Low
    i. Eliminate (or ignore) all ages <=14
    ii. Age 22 = Ages 15 – 24
    iii. Age 27 = Ages 25 – 29
    iv. Age 32 = Ages 30 – 34
    v. Age 37 = Ages 35 – 39
    vi. Age 42 = Ages 40 – 44
    vii. Age 47 = Ages 45 – 49
    viii. Age 52 = Ages 50 – 54
    ix. Age 57 = Ages 55 – 59
    x. Age 62 = Ages 60 – 64
    xi. Age 67 = Ages 65 – 69
    xii. Eliminate (or ignore) all ages >=70

XI) Copy grid from cross tab query created in Access into Excel for utilization in the final study documents.

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.

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