

Disability Newsletter

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Editor's Note

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The current issue of the *Disability Newsletter* has an unusually wide range of articles. Tasha Khan writes about recent trends in the individual disability insurance (IDI) market. Her discussion of results from Milliman's recent IDI Market Survey provides insights into sales trends, including the impact of the COVID-19 pandemic, as well as important shifts in areas of market focus. For example, nearly half of the IDI market now consists of "multilife" business—individual policies sold in an employer-sponsored setting.

Bob Beal discusses recent Society of Actuaries morbidity studies on the IDI market, which show that industry experience has evolved significantly since the 2013 IDI Valuation Table was introduced and adopted by the National Association of Insurance Commissioners (NAIC). The committee has developed a new IDI Experience Table (IDIET) that is based on the most recent claim termination rate experience and will be useful for companies considering the impact of this experience on their pricing and reserves.

Max Berube provides a statistical analysis of reserve margins, including thoughts on how the amount of margin required to achieve a desired level of confidence in reserve adequacy can vary by a number of factors, such as block size and demographics. This is a useful and practical analysis for anyone who works with group or individual disability insurance reserves, as well as having implications for capital management and reinsurance decisions.

Finally, Robert Eaton and Jeff Anderson provide an overview of the 2020 Long-Term Care Cost Guidelines and the key changes from prior versions of this important pricing and reserving tool.

In short, there is something for everyone in the *Disability Newsletter* this month and we hope you enjoy the articles!

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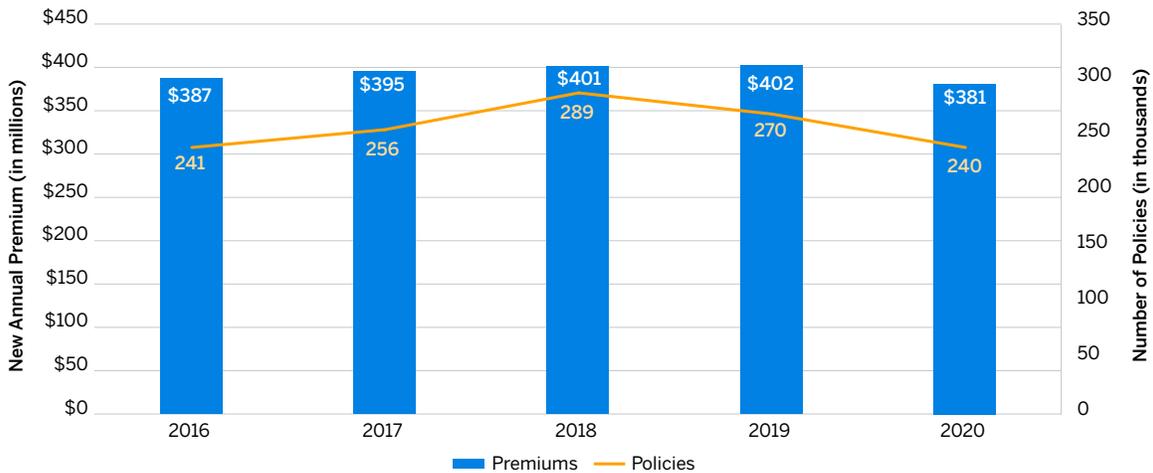
Highlights from Milliman’s 2021 IDI Market Survey

Tasha Khan, FSA, MAAA

Milliman’s 2021 Individual Disability Income (IDI) Market Survey was published and distributed in November 2021.¹ The survey monitors trends in new sales, underwriting, product, and general trends of 15 IDI carriers. This article shares some of the highlights from the 2021 survey pertaining to new IDI sales.

Figure 1 shows the total annualized premium and the number of new policies issued from 2016 through 2020. New annualized premium from the 15 contributors, which in the aggregate represents over 90% of the IDI market, was \$381 million in 2020, a 5.3% drop from the 2019 value of \$402 million.

FIGURE 1: NEW POLICIES AND ANNUALIZED PREMIUM BY ISSUE YEAR



IDI new premium had been growing steadily since 2011, leveling off in 2019 and decreasing in 2020. It is reasonable to assume that the drop in new premium in 2020 is at least partially attributable to the COVID-19 pandemic. When we compare annual growth rates (AGRs) by market, the AGR for individually sold business was -9.2% in 2020, compared to -2.4% for employer-sponsored multi-life business, suggesting that the unique marketing challenges resulting from the pandemic had a disproportionately large impact on individually sold business. The total year-to-date (YTD) annualized premium in 2021 through June 30, decreased by 4.2% over the YTD new premium in 2020, so we saw continued decline in new IDI premium in 2021.

Figure 2 shows the distribution of new premium by market from 2016 through 2020.

FIGURE 2: DISTRIBUTION OF NEW ANNUALIZED IDI PREMIUM BY MARKET

YEAR	INDIVIDUALLY SOLD	EMPLOYER-SPONSORED MULTI-LIFE	ASSOCIATIONS	TOTAL*
2016	52.7%	41.4%	5.9%	100.0%
2017	53.4%	42.3%	4.3%	100.0%
2018	53.4%	42.2%	4.4%	100.0%
2019	52.1%	43.4%	4.5%	100.0%
2020	49.9%	44.7%	5.4%	100.0%
AVERAGE 2016 - 2020	52.9%	42.3%	4.8%	100.0%

* NOTE: Totals may not match due to rounding.

1 <https://us.milliman.com/en/insight/2021-annual-survey-of-the-us-individual-disability-income-insurance-market>.

The distribution of new premium by market continues to shift toward more employer-sponsored multi-life (ESML) business and away from individually sold business.

The ESML market has three categories of underwriting depending upon case size, participation of eligible employees, and other demographic and risk factors:

1. Normal underwriting

Normal underwriting involves traditional medical and financial underwriting. We include simplified underwriting in this category.

2. Guaranteed standard issue (GSI)

GSI underwriting involves issuing policies to employer-sponsored cases on a standard basis for all actively-at-work applicants up to a specified monthly amount limit, with no medical underwriting.

3. Guaranteed to issue (GTI)

GTI underwriting involves traditional medical and financial underwriting of policies in employer-sponsored cases, with a guarantee that policies will be issued to eligible employees, albeit possibly rated and/or with exclusions for certain conditions.

The distribution of new ESML annualized premium by type of underwriting varies between employee pay (i.e., voluntary) and employer pay (i.e., mandatory) as shown in Figure 3, which looks at distributions over the 2016 through 2020 period.

FIGURE 3: DISTRIBUTION OF ESML NEW PREMIUM BY TYPE OF UNDERWRITING (ISSUE YEARS 2016 THROUGH 2020)

ISSUE YEAR	EMPLOYEE PAY			EMPLOYER PAY		
	GSI	GTI	NORMAL AND SIMPLIFIED ISSUE	GSI	GTI	NORMAL AND SIMPLIFIED ISSUE
2016	53.1%	1.2%	45.7%	91.5%	0.8%	7.7%
2017	53.3%	1.2%	45.5%	93.2%	0.6%	6.1%
2018	59.4%	1.1%	39.4%	92.7%	0.6%	6.6%
2019	55.3%	0.8%	43.9%	93.3%	0.5%	6.2%
2020	52.3%	0.0%	47.7%	89.7%	0.2%	10.0%
AVERAGE 2016 - 2020	54.7%	0.9%	44.4%	92.1%	0.6%	7.3%

During these years, GSI business represented 55% of the employee pay ESML new premium and 92% of the employer pay ESML new premium. GSI business had an increasing share of the employer pay ESML new premium through 2018. In 2019 and 2020, we saw a shift away from GSI business back to normal and simplified issue.

Figure 4 shows the distribution of new annualized premium among four distribution channels (career agents, brokers, national accounts, and other) for the last five years.

FIGURE 4: MIX OF NEW PREMIUM BY TYPE OF DISTRIBUTION (2016 THROUGH 2020)

YEAR	CAREER AGENTS	BROKERS	NATIONAL ACCOUNTS	OTHER	TOTAL
2016	42.2%	39.7%	4.3%	13.8%	100.0%
2017	42.1%	37.7%	4.5%	15.7%	100.0%
2018	42.0%	37.6%	4.3%	16.1%	100.0%
2019	40.3%	39.4%	4.1%	16.3%	100.0%
2020	39.5%	39.0%	4.0%	17.4%	100.0%
AVERAGE 2016 - 2020	41.2%	38.7%	4.2%	15.9%	100.0%

The two primary distribution channels are career agents and brokers, comprising nearly 80% of the new premium in 2020. The percentage of new premiums sold by career agents has been dropping slowly from 2016 through 2020.

Figure 5 shows the percentage of new annualized premium from noncancelable policies from 2016 through 2020.

FIGURE 5: PERCENTAGE OF NEW PREMIUM ISSUED ON NONCANCELABLE PRODUCTS (YEARS 2016 THROUGH 2020)

ISSUE YEAR	2016	2017	2018	2019	2020	AVERAGE 2016–2020
TOTAL	82.3%	81.9%	81.5%	82.4%	83.7%	82.3%
BY MARKET						
INDIVIDUAL SALES	71.8%	70.9%	69.4%	70.6%	72.2%	70.9%
ESML	93.6%	94.4%	95.7%	95.5%	94.9%	94.8%
ASSOCIATION	96.2%	95.2%	93.0%	92.6%	96.8%	94.9%
BY OCCUPATION CATEGORY						
DOCTORS AND SURGEONS	91.6%	93.2%	92.9%	93.6%	93.2%	92.9%
DENTISTS	92.5%	93.6%	92.2%	92.8%	93.7%	92.9%
LAWYERS	86.3%	85.7%	88.8%	88.6%	87.3%	87.4%
EXECUTIVES	77.3%	81.2%	80.9%	81.3%	80.8%	80.2%
ACCOUNTANTS	74.7%	74.0%	75.4%	76.3%	85.1%	77.4%
OTHER OCCUPATIONS	73.3%	71.8%	71.4%	71.5%	74.7%	72.5%
BY DISTRIBUTION CHANNEL						
CAREER AGENTS	70.0%	69.1%	67.6%	68.2%	69.7%	68.9%
BROKERS	89.9%	89.3%	90.0%	90.9%	92.1%	90.5%
NATIONAL ACCOUNTS	92.6%	92.9%	93.7%	92.9%	92.1%	92.9%
OTHER	94.5%	95.0%	94.9%	94.5%	94.4%	94.7%

The overall percentage averages 82%, with little variation from year to year. However, it is noticeably different for key segments of the IDI market. Noncancelable policies are more popular in the ESML and association markets and with doctors, surgeons, and dentists. In this study, it is important to note that the association business includes coverage written by traditional IDI writers—it excludes a large part of the association market consisting of coverage written by group or specialty insurers, much of which is written on a guaranteed renewable or conditionally renewable basis.

Conclusions

New sales decreased by more than 5% from 2019 to 2020, likely driven by the COVID-19 pandemic. Sales figures for the first half of 2021 show that new sales continued to decline. The individually sold market has been hit especially hard.

For the 2016 through 2020 period, GSI business represented 55% of the employee pay ESML new premium and 92% of the employer pay ESML new premium. The percentage of new premiums sold by career agents has been dropping slowly from 2016 through 2020. The proportion of noncancelable business has been steady in recent years, and represents roughly 84% of total new premium in 2020, and 93–94% of new premium for doctors, surgeons, and dentists.

The complete report of Milliman's 2021 IDI Market Survey discusses trends in underwriting, products, and the outlook for the IDI industry in addition to new sales. This report is free and distributed widely. The 2022 IDI Market Survey, with full-year results for 2021, will be available in late 2022.

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The Impact of Evolving IDI Claim Termination Experience on Claim Reserves

Robert W. Beal, FSA, MAAA

Claim experience for individual disability income (IDI) policies continues to evolve. The current statutory minimum reserve basis for IDI policies and claims, the 2013 IDI Valuation Table (2013 IDIVT), was recognized as an official IDI claim incidence and termination table in 2013, and was based on industry experience from 1990 through 2007. It takes many years to develop an industry table and many more years to adopt it as a statutory minimum reserve basis. In the meantime, ever-evolving claim experience could be undermining the appropriateness of the current statutory minimum reserve basis. This article explores potential issues facing the 2013 IDIVT claim termination experience relative to more recent industry claim experience and their potential impacts on claim reserves.

The 2013 IDIVT was adopted by the National Association of Insurance Commissioners (NAIC) in 2015 to replace the 1985 Commissioner's Individual Disability Table A (1985 CIDA) as the statutory minimum reserve basis. Companies were required to implement the new table no later than December 31, 2020 for new claims incurred and new policies issued. Many years have passed since 2007, the last experience year on which the 2013 IDIVT was based. Does the 2013 IDIVT still provide a good proxy for industry experience? This question is important for several reasons:

- First, there is a reasonable expectation that the statutory minimum reserve basis should produce adequate reserves for most companies. Claim reserves based on the 1985 CIDA were largely viewed as inadequate, even after some adjustments to the table's claim termination rates were adopted by the NAIC in 1999. Claim reserves based on the 2013 IDIVT were significantly higher than those based on the 1985 CIDA. However, the 2013 IDIVT claim termination rates could be out of line with evolving experience.
- Second, although companies typically use their own experience to measure the adequacy of their claim reserves, it is common for companies to blend their experience with industry experience using credibility formulas. Thus, the 2013 IDIVT, to some extent, may be reflected in many companies' realistic valuation assumptions. Should the 2013 IDIVT no longer be an appropriate representation of current industry claim experience, then realistic valuation assumptions developed by many companies for claim reserve adequacy testing may not be appropriate.

In 2019, the Individual Disability Experience Committee (IDEC) of the Society of Actuaries released a study¹ of industry IDI claim termination experience from 2006 through 2014 relative to the 2013 IDIVT. This comprehensive analysis highlighted many of the claim trends emerging during those years. Earlier this year, the IDEC released a follow-up study² in which it developed an experience-based table of claim termination rates representing industry experience from 2006 through 2014. It is the hope of the IDEC that this experience-based table, referred to as the 2006-2014 IDIVT, could be used by companies, if they so choose, to represent more recent industry claim termination experience for the purpose of validating the adequacy of their claim reserves. This article discusses key claim termination trends observed during the 2006–2014 study period, the formulation of the 2006–2014 IDI Experience Table (IDIET) and how claim reserves based on this new experience-based table compare to those based on the 2013 IDIVT.

1 <https://www.soa.org/globalassets/assets/files/resources/experience-studies/2021/analysis-claim-termination-report.pdf>

2 <https://www.soa.org/resources/experience-studies/2021/2006-14-idi-et-report/>.

Claim Termination Experience from 2006 through 2014

The following are some of the major observations from the IDEC 2006–2014 Claim Termination Experience Report, which mainly focused on actual-to-expected (A/E) claim termination ratios where E is the 2013 IDIVT:

- The A/E claim termination ratios generally declined by claim duration during the first 10 claim years (i.e., the “select” claim years). The A/E ratios were over 100% in the first claim year. The decline was modest and not steady during the first 24 claim months but, subsequently, the A/E ratios decreased steadily, reaching 63% of the 2013 IDIVT for years 6 through 10.
- The A/E claim termination ratios for the 2006–2014 study period decreased steadily as the monthly indemnity per claim record increased.
- The A/E claim termination ratios in claim years 11 and higher, (i.e., the “ultimate claim years”) of the 2006–2014 IDEC study were considerably lower than those observed in the prior IDEC study (1990–2007).
- The A/E termination ratios in the ultimate claim durations were consistently higher for non-lifetime benefit periods than for lifetime benefit periods.
- As observed in the select claim durations, the A/E claim termination ratios in the ultimate durations for the 2006–2014 study period decreased steadily as the monthly indemnity per claim increased.

The 2006–2014 IDIET Claim Termination Rates

This new experience-based table does not replace the 2013 IDIVT as the statutory minimum reserve basis for IDI claims. As stated above, the 2006–2014 IDIET was developed by the IDEC for the purpose of analyzing the potential impact of evolving IDI claim termination experience on claim reserves relative to those based on the 2013 IDIVT, and to provide companies with a claim termination rate table that better represents more recent industry experience as they evaluate the adequacy of their reserves.

The IDEC wanted to produce an experience-based table that was not significantly different from the structure of the 2013 IDIVT, making it reasonably easy to implement. A high-level description of the adjustments to the 2013 IDIVT used to get the 2006–2014 IDIET claim termination rates is described below. Readers are encouraged to read the full report.

The 2013 IDIVT claim termination rates in the select claim years are derived by multiplying 2013 IDIVT “base” claim termination rates by 2013 IDIVT claim termination modifiers. The 2006–2014 IDIET claim termination rates in the select claim years are derived by multiplying the 2013 IDIVT termination rates (after the application of the 2013 IDIVT claim termination modifiers) by five sets of factors that vary by the following items:

1. Onset age and gender
2. Occupation class
3. Diagnosis risk mapping
4. Benefit period and the presence of a cost-of-living adjustment rider
5. Indemnity amount

All sets of factors, except #4, also vary by claim duration. The addition of indemnity amount as a variable in the derivation of claim termination rates is new. Claim termination rates decrease as the indemnity amount increases. The 2013 IDIVT claim termination rates do not vary by indemnity amount.

For the ultimate claim durations, the 2013 IDIVT claim termination rates were replaced by new experience-based termination rates, rather than using adjustment factors to the 2013 IDIVT rates. Like the 2013 IDIVT ultimate termination rates, the 2006–2014 IDIET ultimate termination rates vary by attained age, gender, and occupation class (M versus non-M). In addition, the new rates vary by benefit period (lifetime versus non-lifetime) and indemnity amount. Lifetime claims in general have materially lower claim termination rates than non-lifetime claims. As in the select claim durations, ultimate claim termination rates decrease as the indemnity amount increases.

The ultimate claim termination rates of the 2013 IDIET are presented in terms of recovery rates and mortality rates. Users will need to add the recovery rates and mortality rates to get the claim termination rates. The IDEC database for the 2006–2014 study period is the first time that an IDEC study has split IDI claim terminations between recoveries and deaths. Comparison of recovery and mortality rates show that recoveries are much fewer than deaths in the ultimate claim durations and effectively disappear for attained ages 70 and older.

Table 1 compares the weighted-average ultimate claim termination rates for the 2013 IDIVT and the 2006–2014 IDIET, where the weights are based on attained age exposures from the study.

TABLE 1: WEIGHTED AVERAGE RATIOS OF 2006–2014 IDIET ULTIMATE BASE CTRS TO 2013 IDIVT ULTIMATE CTRS WEIGHTED BY 2006–2014 EXPOSURE (BY COUNT)

BENEFIT PERIOD	OCCUPATION CLASS	ATTAINED AGES UNDER 65		ATTAINED AGES 65 & OVER		ALL ATTAINED AGES COMBINED	
		MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
Non-lifetime	M	75%	85%	78%	78%	75%	84%
Non-lifetime	Non-M	79%	86%	94%	94%	81%	86%
Lifetime	M	60%	71%	57%	57%	58%	63%
Lifetime	Non-M	59%	67%	78%	78%	72%	65%

The weighted average ratio of 2006–2014 IDIET ultimate claim termination rates to 2013 IDIVT ultimate for all attained ages combined ranges from 49% to 94%.

The Impact of the 2006–2014 IDIET Claim Termination Rates on Claim Reserves

The IDEC modified the 2013 IDIVT workbook in order to calculate claim reserves based on the 2006–2014 IDIET and compare them to claim reserves based on the 2013 IDIVT. Such comparisons often get bogged down in detail while trying to identify differences by onset age, occupation class, gender, benefit period, etc. With this in mind, the IDEC developed a model office of IDI claims open as of December 31, 2014, from the 2006–2014 IDEC claim database. The model office approximates industry distributions of open claims by these many variables. Comparisons are simpler, but readers should realize that they reflect average industry claim distributions, which may or may not be consistent with their own claim distributions.

The interest rate on all claim reserves was kept at 3.00% regardless of the year of incurral. In this way, differences in claim reserves by basis could be attributable to the differences in claim termination rates rather than interest rates that vary by calendar year of incurral. Other assumptions were incorporated in the derivation of the claims reserves, which are described in the IDEC report. Table 2 compares the model office claim reserves by benefit period (short-term, to age 65–70, and lifetime) under the two bases.

TABLE 2: MODEL OFFICE CLAIM RESERVES – 2013 IDIVT VERSUS 2006–2014 IDIET (\$ MILLIONS)

BENEFIT PERIOD	2013 IDIVT	2006–2014 IDIET	INCREASE IN CLAIM RESERVES	% OF INCREASE
Short-term	295	298	3	1.1%
To Age 65-70	3,950	4,167	217	5.5%
Lifetime	6,329	7,706	1,377	21.8%
Total	10,574	12,171	1,597	15.1%

The 2006–2014 IDIET claim termination rates have the biggest impact on claim reserves for lifetime claims due to the much lower ultimate termination rates. Overall, the 2006–2014 IDIET termination rates increased the reserves for all claims by 15%, but most of the increase was in the reserves for lifetime claims (22%). Although fewer new claims have lifetime benefit periods than in the past, open lifetime claims still comprise a substantial portion of the IDI claim liability for many companies. For these companies, adopting lower ultimate claim termination rates like those of the 2006–2014 IDIET could lead to a substantial hike in claim reserves.

The potential impact of the 2006–2014 IDIET on reserves for claims with age 65–70 benefit periods are significantly more moderate (6%) and almost negligible for short-term claim reserves.

Conclusions

This IDEC analysis and the resulting experience table demonstrates that evolving claim termination experience could be undermining the 2013 IDIVT as an appropriate representation of industry claim experience. Companies that currently use the 2013 IDIVT to represent industry claim termination experience may want to consider using the 2006–2014 IDIET as a more appropriate representation.

The issue of whether the 2013 IDIVT should be replaced as the IDI statutory minimum reserve basis is beyond the scope of the IDEC study and this article. The IDEC has recently released a related analysis on evolving claim incidence experience and studied the potential impact of recent claim incidence and termination rates on claim costs and policy reserves.³ These results will be reported in a later issue of the *Disability Newsletter*.

The debate over whether a new IDI statutory minimum reserve basis is needed will probably happen after the analysis of the next IDEC data call, which will mostly likely be scheduled for 2023. Even if the resulting analysis and the debate should support changing the statutory minimum reserve basis, adoption of a new basis by the NAIC will be many years from now, if the past is any indicator. For now, the IDEC analysis of years 2006 through 2014 is providing us with a much better understanding of the overall direction that the IDI claim experience and its potential impact on claim liabilities.

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3 <https://www.soa.org/resources/research-reports/2022/2005-15-idi-et/>.

Illustrating Volatility: A Monte Carlo Approach to Long-Term Disability Reserving

Max Berube, FSA, MAAA

Determining the appropriate level of margin for a block of disability claims can be tricky. Two key variables that may influence the volatility of a block are the number of claimants and the duration of those claimants' disabilities. This article uses a Monte Carlo approach to quantify some of this variation for a sample block with given claim termination probabilities based on the 2012 GLTD Valuation tables and the 2013 IDI Valuation tables. The results, which vary by claim counts and claim durations, show the required explicit margin for a reserve to be adequate at a given percentile of possible outcomes.

Methodology

The 2013 IDI Valuation tables (without margin) and the 2012 GLTD Valuation tables (with margin) were used as a basis for the claim termination rates. A model was developed to simulate how experience would unfold for a given set of claims. The model used a random number generator to produce a value between zero and one. It then compared this value to a survivorship curve developed from one of the tables mentioned above to determine when the claim terminated. The process was repeated for each claim, and the total expected claim cost was tabulated over the life of the block at 3% interest. This process was repeated 1,000 times, each representing a possible runout scenario.

The metric used to measure volatility is the k^{th} percentile of the present value of total simulated payments, divided by the mean payments of all trials. This metric will be referred to as the Margin Factor. All else equal, this is the multiple that would need to be applied to the mean to ensure that the reserve is adequate in k percent of possible future scenarios. It is assumed that this mean will be approximately equal to the reserve calculated using traditional (deterministic) methods.

The focus of this approach was to measure how the Margin Factor varied by claim duration and by number of claimants. Seven separate block sizes were examined (100, 500, 1,000, 1,500, 2,500, 5,000 and 10,000). In one set of runs, each block consisted of replications of an identical claimant with the following characteristics:

- Sex: Male
- Age at disability: 35 years
- Monthly benefit amount: \$2,500
- Elimination period: 90 Days
- Benefit period: To age 65

We repeated this process for claim durations of 90 days (short), three years (medium), and 10 years (long). Durations represent the end of the period, for example, 10 years means that 10 full years have passed, and that the claimant is now beginning the eleventh year.

The Margin Factor for each block size and mix was calculated for the 85th, 95th, and 99th percentiles.

In a second set of runs we kept all assumptions the same, except we used a mix of claimants with varying ages at disability. The mix of claimants was based on incidence and claim termination rates from the 2013 IDI tables for selected ages. The age at disability makeup by scenario is shown below:

TABLE 1: ASSUMED DISTRIBUTION OF CLAIMANTS BY AGE AT DISABILITY

TABLE	AGE AT DISABILITY	DURATION		
		SHORT	MEDIUM	LONG
2013 IDI	30	10%	10%	10%
2013 IDI	35	10%	10%	10%
2013 IDI	45	20%	20%	40%
2013 IDI	50	20%	20%	40%
2013 IDI	55	40%	40%	0%

Results

TABLE 2A: MARGIN FACTORS BY BLOCK SIZE, DURATION, PERCENTILE, AND TERMINATION RATES – IDENTICAL CLAIMANTS

PERCENTILE	TABLE	DURATION	BLOCK SIZE (# CLAIMS)						
			100	500	1,000	1,500	2,500	5,000	10,000
85TH PERCENTILE	2013 IDI	Short Duration	113%	106%	104%	103%	103%	102%	101%
		Medium Duration	107%	103%	102%	102%	101%	101%	101%
		Long Duration	104%	102%	101%	101%	101%	101%	100%
	2012 GLTD	Short Duration	117%	107%	105%	104%	103%	102%	102%
		Medium Duration	107%	103%	102%	102%	101%	101%	101%
		Long Duration	105%	102%	101%	101%	101%	101%	100%
95TH PERCENTILE	2013 IDI	Short Duration	121%	110%	107%	106%	104%	103%	102%
		Medium Duration	111%	105%	103%	103%	102%	101%	101%
		Long Duration	106%	103%	102%	102%	101%	101%	101%
	2012 GLTD	Short Duration	127%	113%	108%	107%	105%	104%	103%
		Medium Duration	111%	105%	104%	103%	102%	102%	101%
		Long Duration	107%	103%	102%	102%	101%	101%	101%
99TH PERCENTILE	2013 IDI	Short Duration	131%	114%	110%	108%	106%	104%	103%
		Medium Duration	116%	107%	105%	104%	103%	102%	101%
		Long Duration	109%	104%	103%	102%	102%	101%	101%
	2012 GLTD	Short Duration	136%	117%	113%	110%	107%	105%	104%
		Medium Duration	116%	107%	105%	104%	103%	102%	102%
		Long Duration	109%	105%	104%	103%	102%	101%	101%

TABLE 2B: MARGIN FACTORS BY CASE SIZE, DURATION, PERCENTILE, AND TERMINATION RATES – MIX OF CLAIMANTS

PERCENTILE	TABLE	DURATION	CASE SIZE						
			100	500	1,000	1,500	2,500	5,000	10,000
85TH PERCENTILE	2013 IDI	Short Duration	111%	105%	103%	103%	102%	102%	101%
		Medium Duration	107%	103%	102%	102%	101%	101%	101%
		Long Duration	105%	102%	101%	101%	101%	101%	100%
	2012 GLTD	Short Duration	107%	103%	102%	102%	101%	101%	101%
		Medium Duration	106%	103%	102%	102%	101%	101%	101%
		Long Duration	106%	103%	102%	101%	101%	101%	101%
95TH PERCENTILE	2013 IDI	Short Duration	118%	108%	105%	105%	103%	103%	102%
		Medium Duration	110%	104%	103%	103%	102%	101%	101%
		Long Duration	107%	103%	102%	102%	101%	101%	101%
	2012 GLTD	Short Duration	112%	105%	104%	103%	102%	102%	101%
		Medium Duration	110%	104%	103%	103%	102%	101%	101%
		Long Duration	109%	104%	103%	102%	102%	101%	101%
99TH PERCENTILE	2013 IDI	Short Duration	124%	111%	108%	107%	105%	104%	103%
		Medium Duration	114%	106%	104%	103%	103%	102%	101%
		Long Duration	109%	104%	103%	103%	102%	101%	101%
	2012 GLTD	Short Duration	116%	108%	105%	104%	103%	103%	102%
		Medium Duration	115%	106%	104%	103%	103%	102%	101%
		Long Duration	111%	105%	104%	103%	102%	102%	101%

As one might expect, the results show that smaller blocks have significant volatility. Blocks with only 100 claims often require a substantial load to be able to cover adverse scenarios. Even block sizes as large as 10,000 claims are not completely immune. There is also evidence that the duration has an impact on the Margin Factor, with older blocks requiring less margin than newer ones.

It is important to remember that the margin factors above only apply to the risk of claims terminating more or less rapidly than expected. There are many other sources of risk that are not captured and, therefore, the margins above are not a complete picture of the risk (for example, Risk-based capital formulas often try to account for many of the other risks, such as asset risk). It is also important to remember that this is an illustrative result for a specific mix of claims as described above. Results would be different for different claim mixes and this table should not be interpreted as a representation of all possible claim blocks.

Conclusion

Many types of volatility affect claim costs, including asset and expense risk. This analysis examined only that due to case size, and assumed that expected claim termination rates were known and fixed and that risks were independent. In reality, claim termination rates may be difficult to assess even for a snapshot in time. This is especially true for small blocks, and there is no guarantee that they will remain fixed over time due to changes in technology, the economy, and other factors.

Nevertheless, as this analysis shows, the reserves required to cover a block of claims confidently can vary significantly by claim size and duration. Risk-based capital formulas for disability typically require an additional 5% reserve margin, however, this does not vary by the number of claims in the block nor the average duration of the block, which may be significant. Therefore, it may be prudent to perform such studies exploring the potential volatility of a block to provide insight into the adequacy of reserves and surplus. The inherent volatility in a block is dependent on its unique demographic makeup, so the illustrative results contained herein will not be appropriate for all blocks. Actuaries should be cognizant of the needs and limitations of their own data when performing such a study.

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Milliman 2020 LTC Guidelines Update

Jeff Anderson, FSA, MAAA | Robert Eaton, FSA, MAAA

Introduction to the LTC Guidelines

Milliman devotes significant resources to the research and development of the Milliman *LTC Guidelines (Guidelines)*, including spending time each year studying various areas of LTC morbidity in detail. There have been eight editions of the *Guidelines*, starting in 1992, up to the most recent edition of 2020. The 2020 edition of the *Guidelines* is based primarily on claims from around 2008 to 2017. The final product is based on observed data and incorporates the collective judgment of Milliman LTC actuaries on future morbidity. Each update of the *Guidelines* considers recent claim data, along with past analysis and research.

The *Guidelines* provide a flexible but consistent basis to determine morbidity assumptions for a wide variety of LTC benefit packages. Various first principles LTC morbidity assumptions are developed as part of the *Guidelines*, including incidence selection, ultimate incidence, disabled mortality, claim recovery, and claim transfer rates. The *Guidelines* also include a claim cost model that can synthesize the first principles assumptions into claim cost streams tailored to specific benefit plan and demographic characteristics.

Milliman clients and consultants use the *Guidelines* for a wide array of projects. For instance, consultants apply the *Guidelines'* rating structures in evaluating past experience, estimating expected future claim levels, and establishing inter-relationships between different LTC benefits. As such, Milliman consultants employ the *Guidelines* to support new business pricing, re-rating, actuarial appraisals, reserve calculations, asset adequacy testing, and a wide variety of additional analyses.

What is new in the 2020 Guidelines?

As part of the 2020 update, we expanded the use of industry data and analyzed experience from 15 of the top 20 LTC carriers based on in-force lives, while also expanding our use of predictive analytics to additional analyses. Disabled life mortality and claim recovery rates were studied separately as part of the claim termination analysis. We also performed detailed analyses of rate increase adverse selection and historical incidence improvement.

Compared to the 2017 edition of the *Guidelines*, we observed a steepening of the incidence curve, with shifts from skilled nursing facilities to assisted living facilities and home health care. We also observed increases in the average length of stay.

What is in store for future editions of the *Guidelines*?

Using the data underlying the 2020 *Guidelines*, we are also studying LTC claim utilization, or the amount of contractual benefit maximums that policyholders claim. We expect findings from this analysis to be available this year. We are also collecting and processing updated experience data that will be used to support the next edition of the *Guidelines*.

As part of the next edition, we are planning to begin preliminary studies of the impact of the COVID-19 pandemic on industry experience. Anecdotal evidence suggests that during COVID-19, disabled mortality increased and many claimants shifted from facility settings to home care settings. It is too soon to know which of these may be long-term shifts in expected experience vs. one-time impacts. However, we plan to begin the analysis and refine it in future iterations of the *Guidelines* as additional experience emerges.

As we expand our underlying industry dataset, we also anticipate refining and expanding the predictive analytics techniques we use to analyze the data. Predictive analytics techniques were first used in the development of the 2017 *Guidelines* and expanded during the development of the 2020 *Guidelines*.

Subject to the availability of suitable industry data, we may also expand the *Guidelines*' assumption set. Potential expansions include variability by diagnosis (e.g., cognitive vs. non-cognitive claims), and non-morbidity assumptions such as active life mortality.

How can I learn more or contribute data?

Please reach out to the authors or your Milliman LTC consultant if you have any questions or if you are interested in contributing data to support our research for the next edition of the *Guidelines*. Also, watch for additional information that we plan to publish on the Milliman website.

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