



AMERICAN ACADEMY *of* ACTUARIES

American Academy of Actuaries/Society of Actuaries Long-Term Care Valuation Work Group

Report on Long-Term Care Valuation

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Long-Term Care Valuation Work Group

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I. Summary

While long-term care insurance has been sold for more than 35 years, credible experience has been slow to develop due to the long time period from issue to claim, low claim frequency, and evolving coverage. In addition, valuation standards for long-term care insurance have kept pace as the product evolves. Interest, expense, mortality, and voluntary lapse assumptions are now prescribed. However, currently there is no valuation morbidity table for reserving.

At the request of the NAIC Accident and Health Working Group, a joint work group under the direction of the American Academy of Actuaries (Academy) and the Society of Actuaries (SOA) was formed in 2010 to investigate the possibility of developing valuation morbidity tables for long-term care insurance. The intent was to construct a set of morbidity tables reflecting industrywide experience from which valuation standards could be derived.

The work group determined that the intercompany data from the SOA's Long-Term Care Experience Committee was a reasonable option for the source of data. This data source includes experience of 18 insurance companies from 1984 to 2007. The work group assessed data quality from sample insured and claim records, and calculated summary statistics: crude ratios of the number of claims to exposures and average lengths of stay. Due to confidentiality restrictions, the review was a sequential process.

At the completion of the review process, only data from four companies for the comprehensive policy type, eight companies for the nursing facility-only policy type, and five companies for the home health care-only policy type were deemed suitable to use. Consequently, the work group decided that such data was insufficient to represent industrywide experience.

The work group recommended suspending its work until it receives a 2013 intercompany study submission as its new data source. It also recommended increasing efforts to encourage more companies to participate and to engage contributory companies to obtain the most accurate data possible. The 2013 study is expected to be available by the end of 2014.

II. The Charge

Valuation standards have been prescribed for long-term care insurance, except for morbidity. Regulators increasingly are concerned that reserving is being tied too closely to pricing morbidity assumptions and thus creating the potential for reserve inadequacy when pricing is inadequate. Uniform valuation standards can increase consumer confidence in the product by mitigating reserving uncertainty. Industry-representative tables also may provide greater pricing assurance. Moreover, such tables will be useful as a reference tool for the development of principle-based reserving methodology assumptions.

At the 2010 NAIC spring meeting, the Accident and Health Working Group requested the Academy to develop a set of valuation morbidity tables. As the result of the request, a joint work group was created with the SOA to develop the experience tables and recommend appropriate margins for valuation purposes.”

A subgroup of the work group was formed to perform specific tasks while the rest of the work group provided opinion, advice, oversight, and assistance. In a January 2010 letter to the Accident and Health Work Group in January 2010, the work group identified the source of data and outlined its plan to deliver the final tables.

The work group determined that the company submissions for the intercompany experience studies were a reasonable data source. On the surface, the intercompany study data contains all the necessary information for morbidity table construction. A separate call for voluntary data submission for the sole purpose of valuation tables may not have resulted in more or better data since it would take time to scrub and assemble the data and there is no guarantee that a sufficient number of companies would participate.

The work group outlined the following tasks for the project:

1. Assess the quality of the intercompany studies' data;
2. Generate basic experience tables;
3. Determine appropriate margins;
4. Invite companies to compare current reserves to proposed reserves; and
5. Make recommendations to the Accident and Health Working Group.

Any set of tables likely would consist of separate tables for comprehensive, facility-only and home health care-only policies. Tables for comprehensive coverage could be broken down further by care setting: nursing home, assisted living facility, and home health care. The tables of incidence rates and claim-termination rates will vary by factors such as issue age, claim age, policy duration, claim duration, gender, and policy features. Guidance will be provided for utilization assumptions. Utilization refers to the difference between actual claim payments and the daily or monthly benefit maximum. Such difference exists for policies that reimburse actual service charges up to the daily or monthly maximum.

III. Source of data

The Long-Term Care Experience Committee of the SOA has been conducting industrywide experience analysis since 1985. Companies voluntarily submit policy and claim data in accordance with specifications requested by the Experience Committee. Calls for data submission were made and studies done approximately every three years. Not all companies contributed data for every study.

The Experience Committee published experience reports that contained analysis of industrywide statistics such as elected plan features, issue ages, and benefit options. The reports also provided aggregate claim ratios and policy and claim termination rates. It is important to note that, due to confidentiality limitations, the Experience Committee developed statistics on the aggregate dataset and was not privy to individual company data.

As of December 2010, the latest data available was for the study period ending in 2004. This dataset contained experience from all contributing companies that ever participated in the study

for all exposures from date of issue to year-end 2004. Data for a more current study, the 2008 study (with exposures to year-end 2007), were collected but were not available for use. For each study since 1984, companies were asked to provide insured and claim information. Insured data included relevant date information (such as issue date, birth date, and policy termination date), policy features and elected options, marketing, and underwriting characteristics. Claim information included relevant date information (e.g., service beginning date, service ending date, payment date), claim setting, and details for each claim payment.

Since each data submission contained data from inception to the end of the study period, the latest study provided the most current update to all past studies, except for data from companies that no longer participated in the study. SOA retained the Medical Information Bureau (MIB) to prepare the submitted data for analysis. For each contributing company, MIB utilized submitted data for all studies and derived a composite dataset. This dataset reconciled all discrepancies among policy and claim data from all the studies in which the company contributed. It also included summary claim payment information by adding all claim payments for a specific claim. For the purpose of counting the number of claims for a particular policyholder, MIB defined a claim as a group of payments with service dates not separated by more than 180 days.

IV. Data Review

The work group first looked at assessing the quality of the intercompany data. Data submitted by each company were reviewed for completeness, accuracy, and consistency among data fields and consistency among submissions over the years. For the latter, the data itself is auto-corrective because the latest submission contained data from inception of the company's participation. The work group had no data or resource to examine data from the companies for each study. Instead, it evaluated the algorithm MIB used to derive the composite dataset. After careful review and discussions with MIB's staff, the work group concluded that MIB's methodology was reasonable and most likely provided reliable and consistent exposure calculations and summary claim payments for each claim over the entire study period.

With regard to the other attributes, the work group was restricted in its ability to assess each company separately due to confidentiality. MIB's role was solely an assembler of data and had

limited analytical ability. To check for completeness, MIB provided a previously prepared summary table that showed, for each company and for selected data fields, the number of completed entries as a percentage of the total insured record count. From this table, the work group suspected that there was a wide variation in data quality among company submissions. By July 2011, the 2008 data submission (with four more additional experience years than the 2004 dataset) was almost ready for use. The work group decided to wait for the new dataset since it would provide significantly more claims experience than the 2004 dataset. As soon as the 2008 dataset was available, the work group requested MIB to provide, for each company, 200 randomly selected insured records with no claim activities and 200 insured records with claim payment records. These records contained selected relevant data fields in order to assess completeness, accuracy, and consistency among data fields of each company's submission. From the sample data, the work group concluded that five companies should be eliminated. It appeared that two companies had not contributed for the past 10 years and important data fields were missing. Two companies had missing data in a significant number of insured records, and the last one had inconsistent benefit payment data.

The work group also noted the following:

1. The patterns of inflation protection increase were not available (i.e. 5 percent annual compounded increase, 3 percent annual compounded increase, or 5 percent simple increase for 10 years). Without such information, the yearly benefit maximum could not be calculated. Thus, it would not be possible to study utilization experience.
2. Date fields generally were consistent with each other.
3. Critical data fields such as birth date, gender, and benefit maximum appeared to be complete.
4. Tabulation of total payment for a claim appeared to be accurate.

5. Marital status was available in most of the samples, and it would likely be the status at time of issue. Thus, it may have been possible to split the morbidity study by marital status;
6. Elimination period generally appeared to be correct;
7. It appeared that the policy type information (i.e., comprehensive, facility only, and home care only) was correct, except that there were a material number of insured records with an unknown policy type;
8. Eight of the 13 remaining companies provided zip codes, which made it would be possible to investigate claim experience by geographic area; and
9. Claims that had breaks in service dates of over 180 days were identified uniformly as separate claims.

In summary, the work group found that the critical data elements for exposure, claim incurral, and continuance calculations appeared to be usable, provided that more information would be available to the work group to review policy and coverage types as well as claim ratios and average lengths of stay by company.

The next stage was to assemble a complete dataset with sufficient information for experience calculations. The first step was to specify the data formats. Record layouts for the insured and the claim files were proposed. The insured format consisted of dates, policy, and plan information as well as monthly exposures. Two sets of exposures were specified—the first set was appropriate for incidence rate study (i.e., full exposure for the month during which claim is incurred) and the other set was for policy termination study (i.e., exposure to the exact day). The claim format consisted of dates, claim information, and a monthly claim incurral indicator. The intent was to tabulate the records to determine claims and exposures without further calculations. The experience analysis could then be accomplished in database tools such as Access and Excel (using pivot tables).

The specifications of the insured and claim information would have enabled the work group to conduct studies of the following attributes:

1. Gender
2. Worksite/association indicator
3. Underwriting type
4. Issue age group
5. Attained age
6. Issue period (by issue date)
7. Experience period (by policy duration)
8. Marital status
9. Benefit increase code (none, guaranteed purchase option, increase, others)
10. Daily benefit group
11. Policy type (comprehensive, facility only, home care only)
12. Zip code group
13. Unlimited and limited benefit period
14. Elimination period

The second step was to regenerate the 200 sample insured records with the corresponding claim records under the new formats for each of the 13 remaining companies. With detailed information, the work group was able to examine each field in the insured and claim records. Exhibit 1 depicts the findings of completeness of relevant data fields by company.

The work group devised a spreadsheet that produced the claim and exposure results based on issue and claim dates. The spreadsheet was then used to verify the claim incurrals and exposure data on the sample records for a selected number of companies. After a few iterations, the work group was satisfied that the new records have the correct claims and exposure calculation results. The final step was for MIB to generate the complete sets of insured and claim records. The insured record file contained 5.4 million insured records with 29 million exposure years, and the claim file contained 217,000 claim records. The insured file was too large to be loaded into Excel. By aggregating the insured records into quinquennial issue age groups, the resulting file loaded into Excel successfully.

With the complete insured and claim files, the work group was able to analyze the data in great detail. With MIB's help, the work group calculated company-specific summary statistics such as the distribution of policy and benefit types, incidence rates by duration, and claim termination rates.

V. Data Analysis

Once the work group received the updated information that was previously not available, it was apparent that two of the 13 companies had a significant number of insured records with unknown policy type (i.e., not specified as comprehensive, facility only, or home health care only). Moreover, for three other companies, a significant number of comprehensive insured records coded the benefit type as others (i.e., not nursing home, assisted living facility, or home health care). Exhibit 2 is a summary of the tabulations by company.

The work group compared the overall claim ratios (number of claims to number of exposures) by company and concluded that they were within a reasonable range given variations in issue age group distribution and underwriting standards among the companies. Similarly, the average lengths of stay by benefit also appeared to be reasonable (see Exhibit 3). The aggregate average lengths of stay of all companies also were consistent with the corresponding published averages from the 2008 experience report from the SOA Experience Committee.

Excluding companies with questionable data, there now remained four companies with usable data for the comprehensive coverage type, eight companies for the facility-only type, and five companies for the home health care-only type. For the comprehensive coverage type, two of the four companies had significant portions of the total exposures.

While there appeared to be adequate policy and claim records to develop tables, the work group concluded that there were too heavy a concentration on few companies, especially for the comprehensive policy type, which is the largest segment of currently in-force policies.

VI. Work Group's Recommendations

With the data analysis completed, the work group recommended the following:

1. Suspend further work on table construction. While there are adequate claims and exposures, there is potential misrepresentation of industry-wide experience in using data from a limited number of companies, especially for the now popular comprehensive policy type.
2. Direct our efforts to assist the SOA Experience Committee in encouraging more companies to participate and improve data quality for the next experience study. All the data-review processes used in this project can be adapted easily for the new study. The work group believes that the lessons learned may shorten the development time for table construction using the new data. Based on the current status of the Experience Committee, the suspension causes an 18 to 24-month delay to the LTC Valuation Work Group's work.
3. Suggest the SOA revise the published incidence and claim termination rates and identify their limitations. The published incidence rates, for example, included data from companies that the work group has identified as unreliable. The SOA should review the published rates and make the necessary adjustments. Furthermore, the SOA should make available pivot tables for continuance determination.

VII. Exhibits

Exhibit 1

Summary of Data Completeness by Contributing Company

Company	Most Recent Study Year	% without Gender Code	% without Issue Date	% out of force but no Term Date	% without BIO Code	% without Term Cause	% Inforce but no Prem Pay	% without Martial Status	% without Benefit Type	% without EP Type	% without Benefit \$	% without Daily Benefit	% without EP	% without Coverage Type	% without Zip Code	Recommended to be Excluded
C	2001	0%	13%	0%	13%	13%	40%	13%	19%	37%	40%	37%	37%	13%	75%	*
D	2007	0%	6%	0%	6%	6%	0%	6%	6%	6%	40%	6%	6%	6%	6%	
E	2004	0%	2%	0%	2%	5%	2%	2%	2%	2%	10%	2%	2%	2%	2%	
F	2003	0%	0%	0%	0%	0%	1%	0%	0%	0%	33%	4%	0%	0%	6%	
G	2007	0%	0%	0%	0%	0%	0%	0%	2%	1%	42%	1%	1%	0%	0%	
H	2007	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	0%	0%	0%	100%	
I	2007	0%	5%	0%	100%	5%	1%	5%	7%	5%	16%	5%	5%	5%	100%	
J	2007	0%	3%	0%	3%	3%	73%	99%	3%	3%	3%	3%	3%	3%	3%	
K	1995	0%	0%	0%	0%	1%	68%	0%	0%	0%	36%	0%	0%	0%	0%	*
M	2005	0%	6%	0%	6%	6%	12%	13%	6%	6%	18%	6%	6%	6%	100%	
O	2004	0%	1%	0%	1%	1%	70%	1%	1%	89%	1%	89%	0%	1%	100%	
S	2007	0%	0%	0%	18%	0%	27%	18%	0%	1%	13%	13%	1%	0%	17%	
T	2007	0%	0%	0%	8%	0%	20%	8%	0%	0%	5%	3%	0%	0%	9%	
U	2007	0%	25%	0%	100%	25%	30%	34%	67%	67%	67%	67%	67%	25%	99%	*
V	1991	0%	0%	0%	0%	0%	58%	0%	0%	0%	2%	100%	0%	0%	100%	*
Z	2007	0%	5%	5%	100%	5%	50%	5%	65%	65%	77%	65%	65%	5%	99%	*
zd	2007	0%	0%	0%	0%	0%	0%	0%	0%	0%	47%	0%	0%	0%	0%	
zf	2007	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	0%	0%	0%	100%	

Source: Medical Information Bureau

Exhibit 2

Claims by Policy Types

Distribution of Claims					
Company	Total	Compre- hensive	NH Only	HHC Only	Unknown
D			81		52,202
E		20,151	16,716	7,319	85
F		35	685	6,765	
G					1,451
H		16,354	2,985		3
I		6,740	2,462	1,200	520
J		4,055			
M			59	1,352	
O					1,645
S			8,017		1,016
T			3,644		139
zd		771	1,006		
zf			27,642	21,121	10,753
Total	216,974	48,106	63,297	37,757	67,814
# Selected Claims	148,985	48,071	63,157	37,757	
% Selected	69%				

Excluded from consideration

Source: Medical Information Bureau:

Exhibit 3

Average Length of Stay by Policy and Coverage Types

Company	Average Length of Stay											
	Comprehensive				Nursing Home Only				Home Health Care Only			
	Nursing Home	ALF	Home Care	Others	Nursing Home	ALF	Home Care	Others	Nursing Home	ALF	Home Care	Others
1	847	913	821	382	536	536	358	493				
2												
3												
4	467	494	444	219	405	387		464				
5	693	1,272	911	136	215				722	975	236	
6				313	658	1,280	428	653				
7					1,615	597	324		974	1,312	1,114	278
8					431	583		594				
9					561	681	352	427	531	740	412	182
10	529	678	523	391	474	551	692	603	353	439	339	273
11	822		860	579	893	473	421	352	779	911	675	217
12					470	581	638					
13	858	-	934									
Composite	665	855	782	313	485	633	385	432	748	826	469	186

Source: Medical Information Bureau