Individual Disability Valuation Standard
Report of the
Joint American Academy of Actuaries/Society of Actuaries
Individual Disability Tables Work Group

Presented to the National Association of Insurance Commissioners' Health Actuarial Task Force

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EXECUTIVE SUMMARY

A) Background and Purpose

Individual disability income (IDI) insurers hold reserves for future obligations. These include the following:

1. Active life reserves (ALRs)—for claims that have not yet been incurred. Key morbidity assumptions are claim incidence rates (probability of becoming disabled) and claim termination rates (probability of recovering or dying). ALRs are held for contracts when net premiums prefund future claim costs. This occurs when premiums are level and claim costs are non-level, but also may occur with other premium structures.
2. Disabled life reserve (DLRs)—for claims that have been incurred. The key morbidity assumption is claim termination rates. DLRs are held to recognize the full present value of the expected claim payments for claims that have been incurred.

Both of these reserves are typically calculated on a seriatim basis using assumptions that include measurement of the expected number of monthly payments and payment amounts.

The purpose of this report is to recommend a new statutory valuation standard basis for morbidity—specifically, claim incidence and termination rates for use in calculating statutory ALRs and DLRs. The current statutory morbidity basis is the 1985 Commissioners Individual Disability Table A (85CIDA) for ALRs and the 1985 Commissioners Individual Disability Table C (85CIDC) for DLRs.

In 2012, the Society of Actuaries' Individual Disability Experience Committee (SOA IDEC) completed a study regarding claim experience for 1990-2007 (2006 for incidence). The study captured experience from 17 companies, representing 90 percent of 2011 sales (source: LIMRA – Disability Income Sales – 2011 Annual Sales). One company's data represented approximately 50 percent of total exposure and was scaled back to 40 percent; resulting in a study of about 300,000 claims on a weighted basis (No data was excluded. Factors were applied to lower the weighting of this company's data). The SOA IDEC used the study results to build new experience tables—i.e., the 2012 IDEC Claim Incidence and Termination Tables. The SOA IDEC report was published in March 2013.

In December 2012, the SOA IDEC presented a new experience study to the Health Actuarial Task Force (HATF) of the National Association of Insurance Commissioners (NAIC). The objective was to initiate a project that would incorporate the new tables into IDI valuation standards. HATF asked the American Academy of Actuaries (Academy) to form a work group, the joint Academy/Society of Actuaries Individual Disability Tables Work Group (IDTWG), which was charged with revising the valuation standard to replace the 85CIDA and 85CIDC tables.

This report describes the work group's proposal to amend the current NAIC Model Regulation by introducing the 2013 IDI Valuation Table and proposing a new actuarial

guideline applicable to IDI tabular reserves. The work group believes that the use of an actuarial guideline is appropriate to handle the multiple segments of the 2013 IDI Valuation Table, the computations of a company's own experience and the application of credibility, which normally are not found in model regulations.

This report documents the processes and deliberations the IDTWG used to arrive at its proposal. A draft of a revised model regulation is shown in Appendix 1. The report includes a draft of the new proposed actuarial guideline in Appendix 3.

B) Influences and Scope

The IDTWG identified the following as key elements to consider in the effort to update the IDI valuation standard.

- The proposal will focus on ALRs and DLRs;
  - Other liabilities, such as incurred but not reported (IBNR) reserves will not be covered.
- The proposal will focus only on incidence and termination assumptions;
  - Social Security and other benefit offset assumptions that affect projected payment amounts will not be addressed.
- The proposal will introduce credibility to balance use of the 2013 IDI Valuation Table versus use of company experience as the morbidity basis;
- The IDTWG's deliberations will consider theories and techniques applied in the development of other valuation standards; in particular, for the 2005 Group Life Waiver of Premium Valuation Table, the proposed 2012 Group Long-Term Disability Table, and proposed principle-based reserve material; and
- Though not part of the proposal, it also may be appropriate to include in the report a section discussing other aspects of reserving that could be useful to both valuation actuaries and state regulators.

With the above high-level guidance, subgroups were formed to develop a proposal regarding:

- Utilization of the 2012 IDEC Claim Incidence and Termination Tables as a starting point;
- Development of the 2013 IDI Base Table, which consists of table basic incidence and termination rates, multiplied by factors reflecting multiple parameters;
- Determination of margins to be applied the 2013 IDI Base Table to derive the 2013 IDI Valuation Table;
- Computation and use of an insurer's own experience in the calculation of DLRs;
- Determination of margins applicable to an insurer's own experience in the calculation of DLRs;
- Credibility formulas used to define the maximum allowed use of own experience; in the calculation of DLRs; and
- Floor reserves or other limits on minimum DLRs.

C) Summary of Recommendations

This section summarizes our recommendations for changes in the valuation standards; proposed wording for the relevant model regulations, actuarial guidelines, and manuals to implement those; and implementation procedures.

Changes in valuation standards include:

1. Use of the 2013 IDI Valuation Table as the basis for claim incidence and termination rates for ALR and DLR calculations. The table includes an appropriate level of margin; and
2. Established parameters for the use of company specific experience for DLRs, including subjecting it to a reserve floor.

The report has included appendices that recommend wording for both the Health Insurance Reserves Model Regulation and actuarial guidelines that would affect the changes noted above.

We also recommend exposing this report and the 2013 IDI Valuation Table to the industry for a six-month period and allowing for a transition period of at least two years to implement the new table and methodology.

The remaining sections of this report address each key aspect of the work conducted by the work group, as outlined in the following table.

Aspect	Report Sections
1. Valuation Table Development	
a. 2013 IDI Base Table	D
b. Base Table Margin	E
c. Mortality Improvement	F
2. Company Specific Experience – Disabled Life Reserves	
a. Duration Bands	G
b. Own Experience Measurement	H
c. Own Experience Measurement Exemption	I
d. Credibility	J
e. Own Experience Measurement	K
3. Floor Reserves	L
4. Mental And Nervous or Other Limitations	M
5. Implementation Recommendations	
a. New Valuation Standard Application and Transition Rules	N
b. NAIC Adoption	O

DEVELOPMENT OF RECOMMENDATIONS REGARDING STANDARD

D) Valuation Table Development – 2013 IDI Base Table

The 2013 IDI Base Table represents aggregate industry experience from 1990 to 2006 for claim incidence and 1990 to 2007 for claim terminations. Studies were performed separately for two study periods, 1990-99 and 2000-07, and the results were combined for the purpose of constructing the 2013 IDI Base Table.

The following table lists the contributors to the studies

1990s and 2000s	2000s Only
Ameritas Life Insurance Corporation	Connecticut Mutual Life Insurance Company
Berkshire Life Insurance Company of America	Guardian Life Insurance Company
Illinois Mutual Life Insurance Company	Mutual of Omaha Insurance Company
Massachusetts Casualty	RiverSource Life Insurance Company
Massachusetts Mutual Life Insurance Company	Standard Life Insurance Company
Monarch Life Insurance Company / Penn Mutual	
Northwestern Mutual Life Insurance Company	
Paul Revere Life Insurance Company	
Principal Financial Group	
Provident Life & Accident	
Union Central Life Insurance Company	
Unum Life Insurance Company	

Note that, of the 17 contributors listed earlier, some companies have merged, leaving a current total of 12 companies.

The following table shows the total exposure years and total claims measured in terms of policy count and monthly indemnity for the claim incidence study, and the total monthly claim exposure and terminations measured in terms of claim count and monthly indemnity for the claim termination study. Submitted data is at the policy and claim level, and not at the insured and claimant level.

Claim Incidence	
Exposure - by Count	31,176,637
Exposure - by Monthly Indemnity	72,286,704,431
Incidence - by Count	281,124
Incidence - by Monthly Indemnity	488,992,473
Claim Terminations	
Monthly Exposure - by Count	9,071,303
Terminations - by Count	290,131
Monthly Exposure - by Monthly Indemnity	22,980,391,261
Terminations - by Monthly Indemnity	597,908,180

Structure of the 2013 IDI Base Table

The 2013 IDI Base Table has five occupation classes:

Class M	All medical occupations - doctors, surgeons, dentists, nurses, podiatrists, veterinarians, psychologists, psychiatrists, pharmacists, etc.
Class 1	All other white collar and professional occupations
Class 2	Skilled labor occupations and most sales related occupations
Class 3	Blue collar occupations with light manual duties
Class 4	Blue collar occupations with heavy manual duties

The 85CIDA and 85CIDC tables only had occupation classes 1through 4, with the medical occupation classes typically included in class 1 and 2. The following table compares the structures of the 2013 IDI Base Table and the 85CIDA and 85CIDC tables.

Claim Incidence	**2013 IDI Base Table**	**85CIDA**
Elimination Periods (Days)	0, 7, 14, 30, 60, 90, 180, 360, 720	0, 7, 14, 30, 90 (Incidence rates for other EP's were derived incidence and termination rates for the 0, 30 and 90-day EP's.)
Occupation Classes	M, 1, 2, 3 and 4	1, 2, 3 and 4
Gender	Female, Male	Female, Male
Attained Ages	20 to 70	20 to 65
Cause	Accident and Sickness	Accident and Sickness
Claim Terminations - Select Durations	**2013 IDI Base Table**	**85CIDA and 85CIDC**
Select Claim Durations	Months 1-60, Years 6-10	Weeks 1-13, Months 4-24, Years 3-10
Elimination Periods (Days)	0, 7, 14, 30, 60, 90, 180, 360, 720	0, 7, 14, 30, 90 (Termination rates for other EP's were derived from the termination rates for 0, 30 and 90-day EP's.)
Occupation Classes	M, 1, 2, 3 and 4	1, 2, 3 and 4
Gender	Female, Male	Female, Male
Attained Ages	20 to 70	20 to 65
Cause	Accident CTR's obtained by applying termination rate modifiers by diagnosis (Other Injury)	Accident and Sickness
Claim Terminations - Ultimate Durations	**2013 IDI Base Table**	**85CIDA and 85CIDC**
Ultimate Claim Durations	Years 11+	Years 11+
Occupation Classes	Medical and Non-Medical	No distinction
Gender	Female, Male	Female, Male
Attained Ages	32 to 119	32 to 99
Cause	No distinction	No distinction

The base incidence and termination rates of the 2013 IDI Base Table are adjusted by a set of claim incidence and termination rate modifiers that reflect experience differences among key policy and claim segments.

Claim Incidence Modifiers

Claim Incidence Modifiers are described below and are multiplicative. The claim incidence modifiers were derived to reflect the underlying differences by segment but not to materially affect the overall actual-to-expected (A/E).

- *Claim Incidence Modifier for Overhead Expense Policies*

  The 2013 IDI Base Table claim incidence rates were derived from the experience of accident and sickness (AS) policies only, which represent personal DI policies rather than business policies. Experience from business policies such as overhead expense (OE), disability buy-out (DBO), and key person (KP) policies were excluded.

  The table below shows the incidence modifier to be applied to OE policies. The incidence modifiers for AS policies were set at 1.00 because the base incidence rates were developed using AS policies only. Because of the low volume exposure from DBO and KP policies, similar claim incidence modifiers could not be developed and ALR for these policies should be based on 100 percent of the 2013 IDI Base Table claim incidence rates.

  Claim Incidence Modifiers by Contract Type

Contract Type	
AS, KP, DBO	100.0%
OE	66.9%

- *Claim Incidence Modifiers by Smoking Status*

  2013 IDI Base Table claim incidence rates for all policies should be adjusted for smoker status, if known. Claim incidence modifiers by smoker status vary by occupation class, gender, and elimination period as provided in the following table.

Claim Incidence Modifiers by Smoking Status

Occupation Class	Gender	Elimination Period (Days)	Smoking Status	
			Nonsmoker	Smoker
M	**F**	**30 and Under**	98.6%	135.2%
		60	99.0%	125.8%
		90 and Over	98.8%	134.0%
	M	**30 and Under**	99.4%	120.5%
		60	98.2%	154.8%
		90 and Over	98.1%	166.4%
1	**F**	**30 and Under**	99.3%	108.3%
		60	99.0%	111.2%
		90 and Over	96.8%	135.5%
	M	**30 and Under**	97.9%	131.9%
		60	96.3%	155.4%
		90 and Over	96.2%	152.5%
2	**F**	**All**	98.4%	113.9%
	M	**30 and Under**	99.0%	114.7%
		60	97.2%	132.4%
		90 and Over	95.7%	149.4%
3-4	**M & F**	**All**	98.4%	113.9%

The smoking status claim incidence modifiers must be used whenever the company charges higher premiums to all policyholders who use tobacco. For policies in which the smoking status is unknown, the 2013 IDI Base Table claim incidence rates should not be modified.

- *Claim Incidence Modifiers by State of Issue*

  California, Florida, and New York stood out from other states with respect to the volume of their exposure and their higher-than-average incidence. As a result, the 2013 IDI Base Table claim incidence rates should be adjusted by the following claim incidence modifiers:

Claim Incidence Modifiers by State of Issue

State of Issue	
California	129%
Florida	117%
New York	115%
All Other	92%

- *Benefit Period Modifiers for AS Policies Only*

  Claim incidence rates vary by benefit period; policies with longer benefit periods have higher incidence rates. The benefit periods are grouped as lifetime, to Age 65-70, and short term for the purpose of classifying the claim incidence modifiers. These claim incidence modifiers also vary by occupation class and elimination period.

Claim Incidence Modifiers by Benefit Period (AS Policies Only)

Occupation Class	Elimination Period (Days)	Benefit Period		
		Lifetime	To Age 65-70	Short Term
M	30 and Under	103.2%	101.3%	95.1%
	60	104.8%	100.9%	90.0%
	90 and Over	118.9%	97.3%	88.7%
1	30 and Under	106.7%	103.9%	92.7%
	60	115.8%	100.3%	90.2%
	90 and Over	141.6%	96.2%	95.6%
2	All	117.2%	98.6%	98.7%
3-4	All	100.0%	100.0%	100.0%

Claim incidence modifiers by benefit period do not apply to non-AS policies.

- *Market Modifiers for AS Policies Only*

  Two separate markets for IDI policies have emerged over the years. One market is the employer-sponsored market in which an employer will endorse an insurer's IDI policies for its employees and typically set up a group or list bill for the payment of premiums. The employer may pay all, a portion, or none of the premiums. The terms of coverage available to employees under these arrangements typically are restricted by an agreement between the insurer and the employer. Underwriting for employer-sponsored plans may range from traditional individual underwriting to guaranteed issue when appropriate group underwriting rules are applied. Policies issued under these employer-sponsored arrangements typically will receive a premium discount (e.g., 15 percent, and require the participation of three or more lives at issue).

  The other market is the individual-bill market in which the insured purchases an IDI policy that is not sponsored by his or her employer. Typically, traditional individual underwriting is used on these policies, although some may be issued as the result of exercising options under future guaranteed insurability riders. Policies issued under endorsements by professional associations for their membership are classified as individual-bill policies, although the endorsement may provide a premium discount for members.

Claim incidence rates for employer-sponsored policies generally have been lower than individual-bill policies because of the reduced level of anti-selection due to the group nature of the sale and the reduced selection of plan options available to employees.

Claim Incidence Modifiers by Market

Market	
Employer Sponsored	79.9%
Individual Bill & Associations	105.3%

The claim incidence modifiers by market are not applicable to non-AS policies.

Claim Termination Modifiers

Claim termination modifiers are described below. They vary by claim duration and are not applied in the ultimate durations (i.e., Years 11+). Claim termination modifiers are multiplicative.

- *Claim Termination Modifiers by Contract Type*

  Claim termination rates were derived from AS experience only. OE contracts have significantly higher termination rates after the first year on claim, which may reflect business dynamics, such as the selling of claimants' businesses, that are not present in typical AS claims.

Claim Termination Modifiers by Contract Type

	Contract Type Adjustment	
Claim Duration	**OE**	**All Other**
Months 1-12	94.2%	100.0%
Months 13-24	264.3%	100.0%
Months 25-60	264.3%	100.0%
Years 6-10	264.3%	100.0%

- *Claim Termination Modifiers by Benefit Type and Cost of Living Adjustment (COLA)*

  Claim termination rates vary by benefit period; longer benefit periods have lower termination rates. As with incidence modifiers, benefit periods are grouped into lifetime, "To Age 65-70, and short-term. COLA reduces the "To Age 65-70 claim termination rates. The impact of COLA on lifetime termination rates is observable, but the work group determined that the impact was not significant enough to be reflected in the termination modifiers. The claim termination modifiers by benefit type and COLA are not applicable to non-AS policies.

Claim Termination Modifiers by Benefit Type and COLA

Claim Duration	Without COLA Benefits		
	Lifetime	**To Age 65-70**	**Short Term**
Months 1-12	79.1%	100.0%	118.1%
Months 13-24	79.1%	100.0%	118.1%
Months 25-60	79.1%	100.0%	118.1%
Years 6-10	79.1%	100.0%	118.1%
Claim Duration	**With COLA Benefits**		
	Lifetime	**To Age 65-70**	**Short Term**
Months 1-12	79.1%	83.7%	118.1%
Months 13-24	79.1%	83.7%	118.1%
Months 25-60	79.1%	83.7%	118.1%
Years 6-10	79.1%	83.7%	118.1%

- *Claim Termination Modifiers by State of Issue*

  The claim termination rates of the various states of issue were studied, and only Florida had experiences significantly different than the others.

Claim Duration	Issue State Adjustment	
	Florida	**All Other**
Months 1-12	79.4%	101.6%
Months 13-24	79.4%	101.6%
Months 25-60	79.4%	101.6%
Years 6-10	79.4%	101.6%

- *Claim Termination Rate Modifiers by Diagnosis (for DLR Only)*

  Claim termination rates vary significantly by the claim diagnosis. Diagnoses have been grouped and then mapped to five sets of claim termination modifiers: 1) very high, 2) high, 3) mid, 4) low, and 5) very low. The claim termination modifiers by diagnosis are utilized only in the calculation of DLRs. ALRs generally take into account incurred claims from all diagnoses in the aggregate, and thus claim termination rate modifiers by diagnosis are not appropriate. An exception is in the case of accident-only policies for which claim termination modifiers for *other injury*

should be used. A detailed description of the diagnosis groupings by ICD9 code is provided in the SOA_IDTWG Tables Workbook

The following table shows the mapping of the diagnosis groupings.

Mapping of Claim Diagnoses

Mapping	Diagnosis Grouping
Very High	Cancer
	Complications of Pregnancy
	Digestive
	Genitourinary
High	Alcohol and Drug
	Other Injury
	Other Unspecied External Cause
	Respiratory
	Toxicity
Mid	Diseases of Blood
	Congenital - Perinatal
	Circulatory
	Other Musculoskeletal
	Ill-Defined
Low	Back
	Endocrine, Nutrional & Metabolic
	Other Infectious Diseases
	Diseases of Skin
Very Low	Chronic Fatique
	Carpal Tunnel Syndrome
	Immunodeficiency
	Mental Disorder
	Nervous System

The following table shows the claim termination modifiers for each of the diagnosis mappings.

Claim Termination Modifiers by Diagnosis

	Diagnosis Mapping				
Claim Duration	**Very Low**	**Low**	**Mid**	**High**	**Very High**
Months 1-12	44.0%	87.7%	112.4%	112.3%	135.6%
Months 13-24	70.5%	94.9%	94.1%	122.3%	215.5%
Months 25-60	86.9%	85.6%	92.9%	170.3%	212.7%
Years 6-10	108.6%	94.2%	94.3%	158.6%	183.3%

For the purpose of calculating DLR for claims on accident-only policies, the diagnosis mapping high should be used.

- *Change in Definition of Disability*

The SOA IDEC was not able to capture the definition of disability consistently among all contributors to the study, as the information typically was not stored electronically by companies in their policy and claim databases. As a result, the work group has not been able to measure the effect of the definition of disability on either incidence or terminations. In contrast, the group LTD study provides claim termination rate adjustments to reflect the differences between "own occupation" and "any occupation" definitions, and the increase in the claim termination rates at the time the definition of disability changes.

The 2013 IDI Base Table claim termination rates reflect the distribution of the various definitions of disability represented in the exposure. As a result of graduation, increases in claim termination rates due to changes in the definition of disability have been smoothed out for the most part. The SOA IDEC plans to request better information on the definition of disability in future studies.

E) Valuation Table Development - Base Table Margin

Derived from a long study period, the 2013 IDI Base Table reflects experience variations across a range of economic cycles. Because of the large exposure, the 2013 IDI Base Table can be considered the mean of a wide range of economic scenarios changing industry norms.

Due to differences in policy provisions, markets, marketing methods, underwriting methods, and administrative practices, a specific insurer's expected experience will differ from the industry mean.

Margins are added to the mean experience so that resulting claim incidence rate and claim termination rate assumptions will be adequate for most companies. In this context, the work

group has recommended margins sufficient to cover 10 of the 12 participating companies over the total study period.

For this purpose, sufficiency was defined by comparing each contributing company's experience (A) to the 2013 IDI Valuation Table (2013 IDI Base Table with margins) rates (E) such that:

- Claim incidence A/E over the study period is less than 100 percent, and
- Claim termination A/E over the study period is greater than 100 percent.

Incidence Rates

Based on the range of companies' experience over the study period, the work group determined that a 5 percent level margin applied to the 2013 IDI Base Table claim incidence rates would be appropriate to cover the targeted proportion of contributors. The result is shown in the table below. Claim incidence experience by company (A) is compared to the 2013 IDI Base Table claim incidence rates with the 5 percent margin (E) below. In the aggregate, ten of the 12 companies exhibit sufficiency; the two companies that do not meet the aggregate sufficiency criteria are highlighted in bold italics in the total column. Thus, the claim incidence rates from the 2013 IDI Base Table with the 5 percent margin were selected as the claim incidence rates for the 2013 IDI Valuation Table.

Analyzing the table below, it appears that the new proposed valuation standard is inadequate for the 1990-1999 study period, particularly in the first half of that time frame (cells highlighted in bold italics). As described in the *Report of the Individual Disability Experience Disability Committee, Analysis of Experience from 1990 to 2007* (Society of Actuaries, March 2013), the data used to derive the 2013 IDI Base Table covers two eras in the U.S. IDI industry. The first era occurred during the first part of the 1990s when IDI insurers in total suffered historically high statutory financial losses. The second era was a result of actions taken by IDI insurers and a favorable economic environment. Positive statutory profits for the industry started to re-emerge during the last few years of the 1990s and for the 2000s. The first era was particularly dramatic for the industry, resulting in many insurers exiting the product line altogether. Those insurers that continued actively marketing IDI took appropriate risk management actions and the resulting experience in the 2000s is indicative of future experience. As such, this is appropriate as a valuation basis.

Company Incidence Experience as a Percent of the 2013 IDI Valuation Table					
Company	**1990-94**	**1995-99**	**2000-03**	**2004-06**	**Total**
1	***108.4%***	84.0%	79.8%	76.6%	85.6%
2	74.5%	76.5%	***100.3%***	91.4%	86.0%
3	***101.8%***	73.4%		71.0%	84.7%
4	***110.8%***	***100.7%***	94.0%	77.8%	96.5%
5	***131.2%***	***105.7%***			***121.1%***
6	***118.4%***	***104.4%***	***109.4%***	87.6%	***105.1%***
7			99.5%	99.4%	99.4%
8	91.1%	***144.3%***	82.2%	66.4%	99.1%
9			61.3%	40.5%	51.0%
10	87.1%	77.8%	87.0%	74.5%	81.1%
11	***104.4%***	88.1%	83.9%	73.8%	86.3%
12			77.8%	68.6%	73.3%
Grand Total	**110.6%**	**98.6%**	**92.8%**	**77.5%**	**95.1%**

Claim Termination Rates

A similar approach was used to develop claim termination rate margins as was used to develop the claim incidence margin. However, the analysis is somewhat more complex because adequacy needs to be evaluated by company within specific claim duration groupings.

Claim termination experience by company is compared to the 2013 IDI Base Table claim termination rates below. In this context, the numerator (A) represents company experienced claim termination rates and the denominator (E) represents 2013 IDI Base Table claim termination rates. In bold italics is the "margin target," which is the ratio that needs to be greater than 100 percent for the 2013 IDI Valuation Table to meet the sufficiency definition described above. The margin table underneath the experience table indicates the margins needed by duration segment so that each segment exhibits sufficiency.

Company Claim Termination Experience as Percent of Modified Base Table by Claim Duration						
Company	**Year 1**	**Year 2**	**Years 3-5**	**Years 6-10**	**Years 11+**	**Total**
1	***86.3%***	100.7%	***79.1%***	123.3%	***93.8%***	***88.3%***
2	***99.4%***	***84.8%***	134.4%	230.8%		102.5%
3	128.0%	***92.2%***	***87.1%***	104.6%		121.7%
4	100.5%	100.7%	103.3%	107.4%	131.9%	101.8%
5	102.1%	110.2%	***87.6%***	***75.4%***	117.1%	101.7%
6	119.0%	122.5%	***94.7%***	102.3%	124.7%	116.4%
7	112.8%	***88.7%***	***93.9%***	89.4%	133.2%	***93.0%***
8	***99.9%***	***98.3%***	***71.3%***	148.4%	341.7%	***98.5%***
9	103.8%	***94.3%***	***99.1%***	***67.6%***		***95.7%***
10	100.7%	***88.3%***	101.8%	140.4%	113.9%	***98.8%***
11	***97.6%***	***90.3%***	***91.1%***	***90.4%***	101.7%	***94.8%***
12	124.3%	***86.9%***	***82.7%***	138.6%	133.2%	109.3%
Grand Total	**100.5%**	**97.0%**	**96.5%**	**98.8%**	**115.8%**	**99.6%**

Margin	0.6%	13.3%	20.9%	11.8%	0.0%	***5.5%***

Based on the previous table, a 6 percent level margin applied to the 2013 IDI Base Table termination rates would generate sufficiency in 10 of the 12 participating companies for all claim durations combined. However, due to concerns that a flat margin results in too many companies having an A/E below 100 percent in years 2-10, a margin of 5 percent in year one and 15 percent in years 2+ is applied to the 2013 IDI Base Table claim termination rates. The claim termination rates from the 2013 IDI Base Table with the 5 percent margin in claim duration 1 and a 15 percent margin in claim durations 2+ will be the claim termination rates for the 2013 IDI Valuation Table.

Company Claim Termination Experience as a Percent of the 2013 IDI Valuation Table by Claim Duration						
Company	**Yr 1**	**Yr 2**	**Yrs 3-5**	**Yrs 6-10**	**Yrs 11+**	**Total**
1	***90.8%***	118.4%	***93.1%***	145.3%	106.9%	***95.8%***
2	104.6%	***99.8%***	158.1%	271.5%		109.2%
3	134.7%	108.5%	102.5%	123.1%		130.8%
4	105.7%	118.4%	121.5%	126.4%	132.3%	111.3%
5	107.5%	129.6%	103.0%	***88.7%***	117.5%	109.6%
6	125.2%	144.1%	111.4%	120.4%	133.4%	126.5%
7	118.7%	104.4%	110.6%	105.2%	137.9%	109.4%
8	105.1%	115.7%	***83.9%***	174.6%	333.4%	106.7%
9	109.3%	110.9%	116.6%	***79.5%***		106.1%
10	106.0%	103.9%	119.8%	165.2%	124.6%	108.6%
11	102.7%	106.2%	107.1%	106.4%	109.6%	104.4%
12	130.9%	102.2%	***97.4%***	163.1%	148.9%	117.3%
Grand Total	105.9%	114.2%	113.5%	116.3%	121.4%	108.9%

The final result is that 11 of 12 companies have positive margins overall using the 2013 IDI Valuation Table, and at least nine of 12 companies have positive margins in each of the durational groupings studied. The higher margins in years 11+ were discounted in this analysis since the data is relatively thin and many claim terminations occurring after age 65 due to the end of the benefit period may not have been thoroughly netted out of the company experience shown here.

The following table highlights the claim termination experience as a percent of the 2013 IDI Valuation Table by study period.

Company Claim Termination Experience as Percent of 2013 IDI Valuation Table by Study Period					
Company	**1990-94**	**1995-99**	**2000-03**	**2003-07**	**Grand Total**
1	117.1%	***91.9%***	***98.4%***	***93.9%***	***95.8%***
2	109.9%	108.6%	110.2%	107.5%	109.2%
3	132.8%	128.4%	115.6%	124.2%	130.8%
4	119.4%	111.8%	103.5%	109.7%	111.3%
5	115.1%	101.3%	104.1%	105.2%	109.6%
6	128.4%	124.9%	120.3%	118.1%	126.5%
7	112.2%	114.3%	103.0%	***99.7%***	109.4%
8	***62.9%***	133.1%	100.1%	104.3%	106.7%
9	112.0%	100.6%	105.9%	103.6%	106.1%
10	118.2%	102.8%	***99.9%***	101.7%	108.6%
11	***94.3%***	103.9%	107.6%	102.0%	104.4%
12	150.0%	101.9%	112.9%	100.8%	117.3%
Grand Total	116.1%	111.6%	106.2%	104.5%	108.9%

The final result highlights that at least 10 of 12 companies have margins in any study period using the 2013 IDI Valuation Table. There is a downward trend in claim termination rates over the study period. Even though the most recent study period still meets the definition of adequacy (and the data still may be somewhat incomplete due to reporting lags), the downward trend suggest erosion in the margins. Therefore, the committee recommends that industry data be gathered and analyzed by the SOA IDEC every three to five years so that adjustments to the 2013 IDI Valuation Table can be recommended when appropriate.

F) Valuation Table Development - Mortality Improvement

The industry experience data did not differentiate between claim terminations from recovery and claim terminations from death. Although no IDI industry data is available to support this conclusion, the work group members state that claim terminations by death account for the vast majority of the claim terminations in claim durations 11+, based on their own companies' experience. (This is also evident in the 2008 LTD Experience Study). Therefore, the later duration data was used as a proxy for measuring mortality improvement, if any.

The following tables highlight the claim terminations count and A/E for claim durations 11+. Since 70 percent of the claim terminations in durations 11+ occurred in the 2000-2007 study period, the work group decided to focus its analysis of potential mortality improvement over the 2000-07 period for stability purposes since the 1990s results were too volatile.

As can be observed, the 2000-2007 study period data does not exhibit any discernible mortality improvement. Applying four years of 1 percent annual mortality improvement from the middle of the exposure period of 2000-03 to the middle of 2004-07 would yield an A/E of 88 percent for 2004-07. As can be seen in the next table, the A/E for 2004-07 is only 0.1 percent lower than the 2000-03 A/E.

One potential explanation for the lack of noticeable mortality improvement in the disabled population compared to mortality improvement measured using general population, insured (life, LTD, etc.), or annuitant data is that the IDI market is dominated by white-collar professionals, especially doctors, which may have an impact on the mortality improvement dynamic. Mortality improvement in general population data has been attributed to the decline in risk factors associated with smoking and obesity. For medical and other professionals, these risk dynamics may be different.

Attained Age	A/E Claim Termination - Duration 11+ E = Base Table				
	1990-94	1995-99	2000-03	2004-07	Total
Under 40	182.1%	326.5%	1.0%	0.0%	51.7%
40-44	98.0%	154.1%	76.5%	160.6%	126.5%
45-49	233.0%	170.5%	89.3%	116.8%	115.8%
50-54	209.4%	167.7%	83.5%	95.3%	100.2%
55-59	203.6%	142.8%	94.3%	77.0%	89.8%
60-64	242.3%	133.6%	101.9%	99.3%	105.7%
70-74	90.2%	118.4%	108.0%	78.6%	88.2%
75-79	0.0%	217.7%	75.1%	34.4%	50.7%
80+		0.0%	4.6%	62.8%	45.2%
Total	209.8%	152.2%	91.6%	91.5%	99.0%

Attained Age	Number of Terminations - Duration 11+ E = Base Table				
	1990-94	1995-99	2000-03	2004-07	Total
Under 40	18	23	1	0	42
40-44	27	67	60	78	232
45-49	80	146	171	135	532
50-54	94	194	257	243	787
55-59	88	207	355	372	1,023
60-64	145	188	467	621	1,421
70-74	5	39	43	131	218
75-79	0	9	33	41	83
80+		0	3	11	14
Total	457	874	1,390	1,632	4,352

	Attained Ages 65-69 (Excluded from Study)*				
	1990-94	1995-99	2000-03	2004-07	Total
A/E	517.8%	221.3%	234.0%	76.3%	138.3%
# Terminations	80	109	310	248	747

** Excluded due to claim expirations identified as terminations by some contributing companies.*

Since the available experience study data does not support mortality improvement, the work group decided not to build in any mortality improvement in the 2013 IDI Valuation Table. Instead, as mentioned in the previous section, the work group recommends that industry data be gathered and analyzed by the SOA IDEC every three to five years so that adjustments to the 2013 IDI Valuation Table are recommended when appropriate. These additional industry data calls could request identification of terminations from mortality and recovery separately, allowing for emerging

mortality improvement or other trends observed in subsequent experience studies to be reflected in the minimum valuation standard.

G) Company Specific Experience – Disabled Life Reserves

The work group considered applying credibility theory to both ALRs and DLRs. Applying credibility to active life reserves presents additional challenges with the two decrements of incidence and claim termination that can result in unintended consequences to the ALRs. For example, company experience that is worse than the 2013 IDI Valuation Table for both incidence and claim termination can result in ALR decreases because of the impact the own company experience modification may have on the slope of the claim costs. In addition, the 2013 IDI Base Table modifiers for both incidence and claim termination rates will allow company appointed actuaries to better reflect their unique mix of business in the calculation of the ALR's.

To meet the disabled life reserve standard, a company will be expected to use a credibility weighted combination of its own termination experience and the 2013 IDI Valuation Table to create its own company-specific blended table. This blending process shall be computed separately for each of five duration groupings using the formula T x S, in which:

1) T is computed as $T = [Z \times (F \times (1-M)) + (1 - Z)]$;

2) Z is a credibility weighting factor, between 0 and 1, as defined in section J. Small companies may be exempt from their own experience measurement, in which case they would set Z equal to 0.00;

3) F is the ratio, for the period defined in Section H, of the company's actual claim termination experience to the expected claim termination experience according to the 2013 IDI Valuation Table with margin (by disability duration grouping);

4) M is the margin percentage specified in section K, applicable to the company's own experience according to its expected number of terminations based on its exposure applied to the 2013 IDI Valuation Table (by disability duration grouping); and

5) S is the termination rates in the 2013 IDI Valuation Table.

The minimum floor to the above recommended calculated company-specific blended table requires that the company will not use termination rates that produce total reserves for claims disabled for more than two years that are less than the reserves produced for these claims by computing T as $T = 1.30$.

Henceforth, the value T shall be referred to as the valuation table modification factor.

Duration Bands

Accurately reflecting the experience adjustment of termination rates by duration is considered critical for valuation purposes. For example, an insurer with more successful

claim management in the early durations might have actual termination rates higher than the 2013 IDI Valuation Table in early durations and termination rates lower than the 2013 IDI Valuation Table in later durations. A single adjustment factor across all durations therefore would produce inadequate reserves for claims in the later durations.

Duration is measured from the disablement date. The selected duration bands make it possible to recognize different A/E termination patterns observed among insurers in the 2013 IDI study of experience in the 1990-2007 period, while keeping the overall approach simple. For example, differences in definition of disability often alter the pattern of termination rates. The work group designed the duration bands to reflect enough variation to capture any meaningful changes resulting from the disability definition effect on termination rates for a specific insurer.

The measurement of own experience, the credibility formula, and the development of own experience margins will be determined separately for each of the duration bands. The work group aggregated claim duration for these purposes as follows:

- Year 1 (months one to 12 following disability)
- Year 2 (months 13 to 24)
- Years 3 to 5 (months 25 to 60)
- Years 6 to 10 (months 61 to 120)
- Years 11+ (months 121+)

First 12 Months and Months 13 to 24

These durations represent the initial stage of claims management. It is typical for IDI policies to have 90-day or 180-day elimination periods, but there also are individual disability policies with 60-day, 30-day, or even shorter elimination periods. The termination rates, before application of modifiers, are usually highest at three months' duration and generally decrease monotonically through 60 months (except for any intervening change in definition of disability).

Months 13 to 24 represent the second stage of claims management. Initial determination of liability acceptance takes place in the first year for claims that are not reported late, with the second year representing the first year of ongoing claims management. The definition of disability for some IDI policies may change after the first, second, or fifth year of disability, or not change at all over the coverage period of the policy.

Months 25 to 60

These durations represent the next stage of claim management. Nearly all the changes in definition of disability (CIDD) occur within this duration band. The average termination rates are significantly higher around the CIDD duration with a significant drop in termination rates in the months following such duration. The level of claim management success in the one to 24 month duration band may have a significant impact on this duration band.

Months 61 to 120 and 121+

These durations represent the final stage of claim management and are dominated by claimants with permanent disabilities. These durations also have the largest portion of claimants that terminate as a result of death, especially in the later durations. Overall termination rates generally fall after the CIDD and then increase toward the end of the benefit period (e.g., age 65, age 67, or lifetime).

These durations were split into two bands (61 to 120 and 121+) to recognize that the first band may not reflect the experience of the second band, which might have little to no experience for some insurers, and which typically is dominated more by deaths.

H) Company Specific Experience - Own Experience Measurement

State insurance commissioners should expect insurers and their appointed actuaries to develop and maintain appropriate own experience measurements on a timely basis. It is recommended that the Appointed Actuary also review at least once every year the company's claim termination experience applicable to the DLR calculation. This review can range from a detailed experience study to a high-level analysis.

The work group recommends that company experience analyses:

(I) Be reviewed and, if necessary, updated at least once a year;

(II) Be segmented into any major subgroups that the appointed actuary believes may produce significantly different results (e.g., market niches, risk management practices, unique benefit designs, etc.);

(III) Be experience specific to each company. It is often appropriate to combine affiliated entities or assumed reinsurance in cases in which claims management is under a common structure. It also may be appropriate to calculate separate A/E ratios in cases in which separate blocks of company business have distinct risk management practices or significantly different risk characteristics;

(IV) Include all relevant experience the company is capable of providing for as many of the last five years (not including the lag period described below) as is appropriate. Exclude experience that is not in the most recent five years unless the inclusion (no more than five additional years) results in reserves that are:

i. deemed by the appointed actuary to be more appropriate, and
ii. result in equal or higher total reserves;

(V) Include a suitable lag period. Some claims may close retroactively and others initially thought to be closed may reopen retroactively. Therefore, based on company experience, a suitable lag period is needed. The appointed actuary may use a lag period of up to 12 months if company experience shows it is appropriate. The five-year period mentioned above does not include the lag period;

(VI) Measure A/E based on monthly indemnity consistent with the development of the 2013 IDI Valuation Table. The A/E ratio is defined as the ratio of actual claim termination experience to the expected claim termination experience, according to the 2013 IDI Valuation Table (by disability duration grouping). The A/E ratio is referred to as the variable F in section G.

For companies that can develop A/E studies only based on claim termination counts, an adjustment factor of 0.962 should be multiplied by the respective A/E ratio for each claim duration to convert it to an indemnity basis. The 0.962 factor was developed based on the relationship of the indemnity-based A/E to count-based A/E for the industry table;

(VII) Assign credibility based on claimant termination counts, and not monthly indemnity terminated counts. Companies should use claimant termination counts and not claim termination counts in determining the number of terminations for their own company experience credibility.

Each company will need to make appropriate adjustments based on its average number of claims per claimant if it is not able to determine claimant termination counts directly and can only directly measure claim termination counts. For example, on average, if a company has 1.5 open claims per claimant and if it had 100 claim terminations in a duration segment over its five-year study period, then it would divide 100 by 1.5 and use 67 claimant terminations when determining credibility;

(VIII) Update at least once every five years. Termination assumptions also must be adjusted whenever the company's own annual experience study produces credibility weighted results that would decrease the 2013 IDI Valuation Table modification factor by more than 10 percent (in absolute value) for any of the standard duration groups;

(IX) Be used to derive A/E data to construct a valuation basis that is a credibility weighted modification of the 2013 IDI Valuation Table. It is not to be used to construct any unique 2013 IDI Valuation Table based on company experience. When appropriate, the valuation actuary may take advantage of any flexibility built into the 2013 IDI Valuation Table, such as not utilizing diagnosis specific termination rates. Such flexibility is designed in recognition that there will be some situations in which the data is unknown or the actuary is not confident in the accuracy of the underlying data. There is no flexibility in using the 2013 IDI Valuation Table structure of age, gender, duration, or elimination period. Notwithstanding these restrictions, it should always be possible for the actuary to obtain written permission from the domiciliary commissioner to produce some unique company-specific modifications based on actuarial principles, credible experience, and sufficient margins;

(X) Not include as terminations those claims that closed due to settlement (i.e., a lump sum replacing a series of potential future payments); reach the end of the maximum benefit duration; or are closed due to a contractual limit, such as a mental and nervous limit. Terminations of residual or partial disability claims count as total disability

terminations. Changes in the definition of disability do not count as a termination unless the claim actually terminates. If a claim closes when the definition of disability changes, that is counted as a claim termination;

(XI) Otherwise be relevant, in accordance with the professional judgment of the appointed actuary; and

(XII) Not be deemed inappropriate or likely to produce significantly inadequate reserves by the commissioner.

I) Company Specific Experience – Own Experience Measurement Exemption

For companies with a small claim portfolio, the measurement of own experience may be irrelevant because of lack of credibility. The work group elected to create a threshold defining when the computation of own experience measurement would be optional.

The minimum claim threshold is based on open claimants as of the time of the valuation, since this is easier to define and to evaluate. The recommendation is that an insurer count current open claimants in two duration categories—durations less than two years and durations greater than two years. If either the first number is greater than 50 or the second number is greater than 200, then the insurer must compute an own experience measurement. This report notes that, based on modeling, this threshold equates to approximately 10 percent credibility in each claim segment.

J) Company Specific Experience – Credibility

The work group elected to define credibility using what is called the Limited Fluctuation Credibility (LFC) model. For reference, see the Academy practice note on credibility: Practice Note on Applying Credibility Theory (July, 2008).

This model uses two different parameters to determine the level of credibility: the confidence factor and the allowable error. The assumption is that the percentage variance of the observed outcomes diminishes as the number of expected observations increases. One hundred percent credibility is defined as when the number of expected observations is sufficiently large that there is an X percent probability (confidence interval) that the observed outcomes will be within plus or minus Y percent (allowable error) of the expected outcome.

The work group selected a confidence factor of 85 percent and an allowable error of 5 percent. However, the work group also noted that one of the key assumptions underlying the LFC model is independent of the event being measured. The work group noted that IDI claim terminations are not completely independent events. Actuarial and statistical literature is essentially silent on how to address variables that are not independent. Therefore, the work group followed the approach developed by the GLTDWG to address this. The GLTDWG's approach included conservatism it felt was sufficient to address the potential additional variability caused by this lack of independence. While the true distribution of outcomes is likely not strictly normal, and also not measured by the study, the work group expects that the deviations from normal more likely will affect the shape of the distributions for less

probable outcomes. Since the work group's selected allowable error is fairly large, it has assumed that the normal distribution will be reasonably representative within its selected interval.

However, the work group did make a subjective adjustment to increase the expected variance of the outcomes. A purely random assumption would result in percent standard deviation equal to one divided by the square root of the expected outcomes. In reality, the work group expects greater variability than the purely random case due to the lack of independence. In any study period, the work group would expect additional variances could be caused by:

1. Claims management or operational change;
2. Economic or other external factors;
3. Business portfolio changes; and
4. Other unexpected changes.

The work group decided to represent this additional variance by adding selected variance factors that vary for the five durational groups. The selected variance factor is a margin (multiplier) that is applied to the strictly random process variances to reflect that actual claims are not strictly independent variables. The selected variance factors diminish as we move from low to high duration, representing that claim dynamics are more volatile in the early durations, and that in the later durations, the terminations are dominated more by deaths, which are less sensitive to external influences.

The following table shows the selected variance factors for each duration group.

Duration Group (Months)	Selected Variance Factor
1 to 12	4.0
13 to 24	4.0
25 to 60	3.0
61 to 120	2.5
> 120	2.0

The actual expected variance is equal to the strictly random process variance times the selected variance factor.

The number of expected terminations needed to achieve 100 percent credibility can be found by determining the variance of the adjusted distribution, such that there is an 85 percent chance that the observed outcome would be within plus or minus 5 percent of the expected outcome. A review of the normal distribution shows that 85 percent of expected outcomes fall between plus or minus 1.44 times the standard deviation, so 5 percent should equal 1.44 times the expected standard deviation. If N is the number of expected terminations, this value is defined by the relationship:

$$5\% = 1.44 * \sqrt{K/N}$$

Full credibility is therefore achieved when the expected terminations (N) are greater than or equal to the 100 percent credibility values (M) given in the following table. For example, for duration group one to 24 months, the selected variance factor (K) equals 4, and full credibility is reached when $5\% \geq 1.44 * \sqrt{4/N}$. This is achieved when $N \geq 3{,}316$.

100% Credibility Values			
Duration Group (Months)	**Raw (M)**	**Selected (M)**	**Approx. Life Years Claimant Exposure***
1 to 12	3,316	3,300	6,000
13 to 24	3,316	3,300	6,000
25 to 60	2,487	2,500	18,000
61 to 120	2,022	2,100	40,000
> 120	1,658	1,700	40,000

*Approximate exposure required to general required level of expected terminations.

If the number of expected terminations falls below the 100 percent credibility value, then credibility is defined as the square root of the ratio of the expected terminations to the selected target. Hence, the resulting credibility formula is defined as follows:

$$Credibility = Minimum\left(100\%, \sqrt{N/M}\right)$$

N is the number of *expected* terminations for the same period used in performing the own experience measurement, and M is the 100 percent credibility value selected from the previous table. Note that limited fluctuation theory specifies that the credibility be determined from the expected terminations and not the actual terminations. For purposes of simplicity, the work group considered modifying the formula to use the actual terminations, but since that approach would give increased credibility when experience was good and reduced credibility when experience was poor, decided that modification would produce a less conservative approach.

K) Company Specific - Own Experience Margin

The margin that should be added to each insurer's own experience before blending with the 2013 IDI Valuation Table is based on similar assumptions the work group used for setting the credibility. As in the case of the margin included in the 2013 IDI Valuation Table, when margin is added according to a fixed percent, it means that the termination expectation is reduced by that same percent. To select the margin, the work group assumed that, for each insurer, the distribution of observed terminations will be normally distributed around the true expectation, with a percentage standard deviation equal to the square root of the product of the selected variance factor (*K)* and the number of expected terminations. The work group first set a base margin so that there would be a 95 percent probability that the true expected terminations would be greater than the adjusted observed results. To capture any additional unexpected deviations, the work group added an additional margin (3 percent) that is independent of the number of terminations. The final margin is equal to the base margin plus

the additional margin, the total of which is then capped using a lower limit of 5 percent and an upper limit of 15 percent.

The calculation works as follows: For a normal distribution, 95 percent of observations fall below 1.65 standard deviations above the mean. This means that the needed margin will be 1.65 times the square root of the selected variance factor (K) divided by the number of expected terminations. The work group modified the formula to replace expected with actual observed terminations (C) so that low actual terminations will produce additional margin. The resulting own experience margin formula is as follows:

$$Own\ Experience\ Margin = Min\left(15\%, Max\left(5\%, 3\% + 1.65 * \sqrt{K/C}\right)\right)$$

The following table shows sample indicated margins for the different duration groups and different numbers of actual terminations.

Own Experience Margin by Duration Group					
Duration	**<=== Actual Terminations (C) ===>**				
Group	**100**	**500**	**1,000**	**5,000**	**10,000**
1 to 12 Mo	5%	5%	5%	5%	5%
13 to 24 Mo	15%	15%	13%	8%	6%
25 to 60 Mo	15%	15%	12%	7%	5%
61 to 120 Mo	15%	15%	11%	7%	6%
> 120 Mo	15%	13%	10%	6%	5%

The 2013 IDI Valuation Table has a margin of 5 percent for yearly duration 1 (months up to the first 12 months) claim termination rates and 15 percent for yearly durations 2+ (months 24+). For the first 12 months claim duration, an own company margin of 5 percent would be used, regardless of the number of actual terminations. This is the same margin as the 2013 IDI Valuation Table for the duration one to 12 months claim termination rates. We will use the own experience margin formula shown above for durations 2+. The margin for durations 2+ is capped at 15 percent so that the own experience margin does not exceed the 2013 IDI Valuation Table margin. If the own experience margin is larger than the 2013 IDI Valuation Table margin, a company could have experience that is better than the 2013 IDI Valuation Table, but be required to use an own-experience adjustment that produces higher reserves. The floor was set to 5 percent, based on the work group's judgment for prudence.

L) Floor Reserves

A company should be allowed to reflect its more favorable experience but in a manner that assures the regulator that a reasonable relationship to the 2013 IDI Valuation Table is retained. The work group recommends a maximum reserve termination assumption of 130 percent of the 2013 IDI Valuation Table for claims disabled after two years. Under this constraint, a company will be allowed to reflect its favorable experience, but the use will be limited to termination rate assumptions that are capped at 30 percent above the industry 2013 IDI Valuation Table. The first two years are explicitly excluded from this floor, since insurer practices can produce ongoing and credible termination results in excess of this ratio.

Furthermore, the current valuation standards allow the use of own experience without constraint for claims in these durations. As such, an imposition of this floor would penalize insurers with good termination results. We note that the proposed standard provides for explicitly required margin, while the prior standard made no explicit reference to margin.

M) Mental and Nervous or Other Limitation - Related Terminations

The 2013 IDI valuation table does not provide for explicit handling of terminations related to the application of contractual benefit duration limit for mental and nervous claims or the application of similar contractual limitations for other claims categories such as subjective disability or special conditions. Therefore, the formula prescribed in this document explicitly excludes such terminations in the computation of actual claim termination count.

In the 1990-2007 Experience Study, on which the proposed 2013 IDI Valuation Table is based, the submitting companies were asked to identify both the terminations due to these limits and the limit termination date, as applicable. When developing the recovery and death expectations, these limit terminations were explicitly excluded, along with all non-death terminations that occurred at the limit date.

Since there is significant variation in valuation practice within the industry on the handling of these limit terminations, the work group decided not to prescribe how the SOA IDEC 2012 tables should be used. Instead, the work group recommends that the resolution of claims identified as subject to a contractual limit be an item of consideration in setting non-recovery and non-death valuation assumptions. The work group also recommends that the SOA IDEC 2012 tables be contemplated as part of that consideration.

NEXT STEPS

N) New Valuation Standard Application and Transition Rules

The new valuation standard will be required for claims incurred after the effective date of the new standard. Under prescribed rules discussed in Appendix 1, the new valuation standard also may be applied to prior claim incurrals. The new valuation standard will be required for new policies issued after the effective date of the new standard. Under the prescribed rules of Appendix 1, the new valuation standard also may be applied for prior years' issues.
Since the new standard creates company-specific valuation assumptions for DLRs based on the combination of credible company experience and the 2013 IDI Valuation Table, this could possibly be interpreted to mean an additional valuation basis is created each time the company updates its termination rates. It is not the work group's intent to have each termination rate update act as a "new valuation basis" strictly applicable to a specific cohort of claims. Instead, reserves for claims subject to the new standard will use the latest set of assumptions based on the combination of credible company experience and the 2013 IDI Valuation Table regardless of their incurral year (i.e., the valuation basis will not be "frozen" by year of incurral). The work group's proposal provides details on how the assumption set is monitored and when it needs to be updated.

The 2013 IDI Valuation Table is based on the first comprehensive industry study of the IDI risk in more than 20 years. The analysis supporting this table shows the extent to which the past statutory morbidity bases (e.g., 85CIDA, 85CIDC, 64CDT) no longer accurately represent the IDI business. Consequently, it makes theoretical and practical sense to allow companies to use the 2013 IDI Valuation Table as the basis for statutory minimum reserves for all IDI business, regardless of the year of issue of policies or the year of incurral for claims.

The work group is recommending that companies have the option to move to the new standard for DLRs for all incurral years and ALRs for all issue years any time after its introduction, as long as the following conditions are met:

- DLRs related to claims incurred before the new standard effective date may be computed under the new standard if an insurer chooses to do so, subject to:
    - The election to move prior incurral years to the new standard can be made any time after the new standard effective date;
    - The election applies to all DLRs related to claims incurred prior to the effective date; and
    - The transition to the new basis is final (no option to move back).
- Companies also may choose to use the new standard for ALRs, but only in conjunction with using the new standards for DLRs, and can do so only if:
    - They are also moving to the new standard for DLRs, so that all business is on the new standard;
    - The election to move prior issue years to the new standard can be made any time after the new standard effective date, but at the same time they are moving DLRs to the new standard;
    - The election applies to all ALRs related to policies issued prior to the effective date; and
    - The transition to the new basis is final (no option to move back).

Appendix 1 shows the proposed revision to the current model regulation amended to introduce the new standard and the proposed transition rules. The work group has provided proposed revisions but recommends the model regulation be more thoroughly revised. The work group notes that the exact timing of the transition depends on the timing of adoption of the model regulation by the states. As such, timing is not specified here.

With respect to timing, the work group recommends the following:

1. This report and the 2013 IDI Valuation Table be exposed to the industry for a period of six months (Jan.1, 2014 to June 30, 2014); and
2. There be a transition period of at least two years to implement the 2013 IDI Valuation Table after the effective date to allow time for companies and software vendors to modify their systems to handle the additional complexity of the new tables.

O) NAIC Adoption

The work group recommends that the NAIC model regulation be revised, which involves following certain NAIC processes. The IDTWG will help move the process forward by identifying issues and drafting documents to present to HATF as requested.

As a result of this revision to the NAIC model regulation, both the NAIC Health Insurance Reserve Model Regulation and the Accounting Practices & Procedures Manual Appendix A-010 will need to be updated. The basic requirements of the new valuation process would be in these documents, with the actual table maintained on a website. Sufficient detail must be provided for companies to know about the need to combine company experience with the approved table values. The work group recommends that calculation details, including credibility rules, be incorporated into a new actuarial guideline rather than the model regulation. The actuarial guideline also would identify the location of the 2013 IDI Valuation Table. The actuarial guideline could be updated by the NAIC as appropriate (including the 2013 Valuation Table), without requiring state-by-state adoption of revised regulations. A proposed actuarial guideline is in Appendix 3.

Appendix 1 - Proposed Revision to Health Insurance Reserves Model Regulation

This appendix contains proposed wording changes to two sections of the Health Insurance Reserves Model Regulation. The two sections are Section 2 (Claim Reserves) and Appendix A

Section 2. B. (1) Claim Reserves

Current Wording

(i) For individual disability income claims incurred on or after [January 1, 2005], assumptions regarding claim termination rates for the period less than two (2) years from the date of disablement may be based on the insurer's experience, if such experience is considered credible, or upon other assumptions designed to place a sound value on the liabilities.

(ii) [*section (ii) applies to group long-term disability and is excluded from here*]

(iii) For disability income claims incurred prior to [January 1, 2005] each insurer may elect which of the following to use as the minimum morbidity standard for claim reserves:

(I) The minimum morbidity standard in effect for claim reserves as of the date the claim was incurred, or

(II) The standards as defined in Items (i) and (ii), applied to all open claims. Once an insurer elects to calculate reserves for all open claims on the standard defined in Items (i) and (ii), all future valuations must be on that basis.

Proposed Changes - Context

- [Date 1] refers to the date the model regulation was initially adopted (January 1, 2005 in the current wording);
- [Date 2] refers to the date the 2013 IDI Valuation Table is adopted;
- Section (i) now covers claims incurred prior to [Date 1] for completeness;
- Section (ii) is the current Section (i), but covers up until the 2013 IDI Valuation Table is adopted;
- Section (iii) covers the period after the 2013 IDI Valuation Table is adopted;
- Section (iv) allows the insurer to apply (iii) retrospectively; and
- Actuarial guideline [XX] refers to the draft actuarial guideline in Appendix 3

Proposed Changes - Wording

(i) For individual disability income claims incurred prior to [Date 1], each insurer may elect which of the following to use as the minimum morbidity standard for claim reserves:

a. The minimum morbidity standard in effect for claim reserves as of the date the claim was incurred

(ii) For individual disability income claims incurred on or after [Date 1], but before [Date 2], the minimum standards with respect to morbidity are those specified in Appendix A, except that, at the option of the insurer, assumptions regarding claim termination rates for the period less than two (2) years from the date of disablement may be based on the insurer's experience.

(iii) For individual disability income claims incurred on or after [Date 2], the minimum standards with respect to morbidity are those specified in Appendix A, except that the insurer may do the following:
   a. Use the insurer's own experience computed in accordance with Actuarial Guidelines [XX], and
   b. Make an adjustment to include an own experience measurement margin derived in accordance with Actuarial Guidelines [XX] and,
   c. Apply a credibility factor derived in accordance with Actuarial Guidelines [XX]

(iv) At any point in time, the insurer may elect to apply (iii) above for all claims incurred prior to [Date 2]. This can be done if the following conditions are met:
   a. The insurer must apply (iii) to all open claims;
   b. Once an insurer elects to calculate reserves for all open claims based on (iii), all future valuations must be on that basis.

Appendix A – Morbidity section

Proposed changes are **bolded**

- Year 1 refers to what was the effective date of this amendment (presumably to adopt the 85CIDC)
- Year 2 refers to date of adoption of the 2013 IDI Valuation Table

I. MORBIDITY

A. Minimum morbidity standards for valuation of specified individual contract health insurance benefits are as follows:

(1) Disability Income Benefits Due to Accident or Sickness.

(a) Contract Reserves:

Contracts issued on or after January 1, 1965 and prior to January 1, [YEAR]:

The 1964 Commissioners Disability Table (64 CDT).

Contracts issued on or after January 1, [YEAR] **and prior to January 1, [YEAR 2]**:

The 1985 Commissioners Individual Disability Tables A (85CIDA); or

The 1985 Commissioners Individual Disability Tables B (85CIDB).

Contracts issued during [YEAR or YEARS]:

Optional use of either the 1964 Table or the 1985 Tables.

Each insurer shall elect, with respect to all individual contracts issued in any one statement year, whether it will use Tables A or Tables B as the minimum standard. The insurer may, however, elect to use the other tables with respect to any subsequent statement year.

Contracts issued on or after January 1, [YEAR 2]

The 2013 IDI Valuation Table

At any point in time, the insurer may elect to apply the current morbidity standards for all policies issued prior to [YEAR 2]. This can be done if the following conditions are met:

a. The insurer must apply the morbidity standard to all inforce policies;

b. Once an insurer elects to calculate reserves for all inforce policies based on the current morbidity standard, all future valuations must be on that basis.

(b) Claim Reserves:

(i) For claims incurred on or after [**~~effective date of this amendment~~YEAR 1**] **and prior to [YEAR 2]:**
The 1985 Commissioners Individual Disability Table A (85CIDA) with claim termination rates multiplied by the following adjustment factors: [TABLE EXCLUDED]
The 85CIDA table so adjusted for the computation of claim reserves shall be known as 85CIDC (The 1985 Commissioners Individual Disability Table C).

(ii) For claims incurred on or after [YEAR 2]
Use the 2013 IDI Valuation Table

(iii)For claims incurred prior to **[~~effective date of this amendment~~YEAR 1**]:
Each insurer may elect which of the following to use as the minimum standard for claims incurred prior to [effective date of this amendment]:

(I) The minimum morbidity standard in effect for contract reserves on currently issued contracts, as of the date the claim is incurred, or

(II) The standard as defined in Item (i), applied to all open claims. Once an insurer elects to calculate reserves for all open claims on the standard defined in Item (i), all future valuations must be on that basis.

Appendix 2 - Additional Background Information

Purpose:

The work group believes its observations on several issues related to IDI reserving that were not within the scope of the work group's assignment could be useful to valuation actuaries and regulators. The first issue is IDI benefit offsets and why they were excluded from the scope. The second issue is an explanation of the importance of retrospective claim reserve adequacy testing.

Benefit Offsets:

IDI covers potential lost income if a person is physically or mentally incapacitated and unable to work. One key to keeping IDI affordable is benefit offsets. The contract is designed as an umbrella coverage that coordinates with other sources of disability income to ensure that one would be paid a certain total amount of income. These other sources may pay using different definitions of disability and eligibility. To calculate the IDI benefits at any one time, the amounts received from these other resources are subtracted from the total insured (i.e., "offset"). If offsets are greater than the gross benefit, there is often a stated minimum IDI benefit. Offsets lower the price of the product by lowering the net amount paid.

Any single claim may have no offsets, a partial offset, or even a 100 percent offset (subject to any minimum benefit being available). Since often there are significant delays in the awarding of offsets, it is can be necessary for the valuation actuary to estimate the available offsets and the frequencies with which they are awarded to the claimants.

Potential offsets include, but are not limited to, Social Security, Workers' Compensation, State Teachers Retirement System, Public Employees Retirement System, Railroad Retirement, other group or IDI disability coverage, state cash sickness disability plans, salary continuance or fully paid sick leave plans, disability income from automobile accidents, and income received from rehabilitative work or part-time employment. Several of these are not common and therefore may be introduced only in the DLR calculation when they are received or specifically anticipated on a given claim.

For example, Social Security award probabilities will vary materially based on company-specific claim administration practice. Offset frequencies and amounts will vary significantly for each underlying state teachers or public employee group insured. Workers' compensation award rates will vary significantly among employer groups, especially across states. The IDTWG reached the conclusion that it is not practical to develop standardized valuation assumptions regarding offsets. The GLTDWG reached the same conclusion.

It should be noted that benefit offsets are more prevalent with group LTD. The GLTDWG also did not include benefit offsets in its scope.

Retrospective Claim Reserve Adequacy Studies:

Although standardized assumptions for offsets are not available, there is a standard test for measuring the adequacy of aggregate reserves held as of prior points in time. A retrospective claim reserve adequacy study tests the overall adequacy of the combination of all the morbidity assumptions used in reserving, including those for offsets. (Any interest margins or inadequacies would be addressed through cash flow testing.)

The general method is to recalculate the DLR for claims open as of a prior date (the valuation date), using all of the current assumptions for termination rates and offsets. Then, the past claim payments subsequent to the valuation date up to present are identified. Each payment is discounted back to the past valuation date at the valuation rate of interest. Next, the DLR as of study end date for claims that remain active is calculated with the same assumptions; this is also discounted back to the valuation date. If the sum of discounted claim payments and discounted current DLR is less than the recalculated DLR as of the valuation date, then the past DLR was adequate (there should be an excess that reflects margins in the reserve morbidity assumptions).

The reserve adequacy study is often designed to test how margins emerge over different claim durations. This may be done by breaking up a multiple year study into yearly stages. In a test of Dec. 31, 2008 DLR as of Dec. 31, 2012, the test could first be run as of Dec. 31, 2009, then as of Dec. 31, 2010, and then as of Dec. 31, 2011. Similarly, the analysis is often broken down by incurral year within the observation year; this allows evaluation of adequacy at the later claim durations.

The margins in the Dec. 31, 2008 reserves should continue to emerge each year; however, there are acceptable situations in which that may not happen. For instance, when analysis is broken into sub-groups, credibility decreases and one or two large claims can have a disproportionate impact. Generally, overall patterns of inadequacy should indicate to the actuary to the need for potential assumptions changes. However, any inadequacies should be examined and explained to the actuary's satisfaction.

Appendix 3 - Draft Actuarial Guideline

A. Background

The 2013 IDI Valuation Table as included in the Health Insurance Reserves Model Regulation is the valuation standard to replace the 1985 Commissioner's Individual Disability Tables (85CIDA/85CIDC).

An actuarial guideline is more appropriate to handle the multiple segments of the 2013 IDI Valuation Table, the computations of own experience, the application of credibility, and successor updates to the table, which are not normally found in model regulations.

B. Purpose

The purpose of this actuarial guideline is to provide instructions for the use of the 2013 IDI Valuation Table that is referenced in the Health Insurance Reserves Model Regulation. This guideline pertains to IDI claims consistent with the conditions defined in the model regulation, and governs the selection of claim termination rates for the purpose of calculating IDI claim reserves. This guideline does not address reserve adequacy, which remains the concern of the insurer according to the terms expressed in the model regulation.

Although the various detailed formulas in this guideline do not address or define reserve adequacy directly, it is assumed that appropriate adequacy tests will be made periodically. Such adequacy testing is considered to be an additional tool for the actuary to make appropriate choices in cases in which leeway from any prescription made herein is allowed (A/E calculation, margin, etc.) so that the calculation of the reserve generally will be adequate and the actuary does not need to continually rely on other measures to achieve adequacy. In addition to the instances in which leeway from prescription is mentioned below, nothing in this guideline should be assumed to prohibit the actuary from building a case and requesting permission from the state insurance commissioner for other appropriate variations. Many such situations, because they would apply to fully credible blocks of business and are intended for continual use, should be considered for approval by the commissioner for a period tied to the updates required by section C.vi. and not approved on an annual basis.

When the insurer follows the instructions provided in this guideline, the selected claim termination rates meet the minimum valuation standard defined in the model regulation.

C. Valuation Table Modifications

If not invoking the small company exception specified in Section E, a company must use a credibility weighted combination of its own claim termination experience with the 2013 IDI Valuation Table to create its specific valuation table for the purpose of calculating disabled life reserve DLRs.

For claims in duration group 1 (months one to 12 following disability incurral) or greater, the valuation termination rates are computed using the termination rates from the 2013 IDI

Valuation Table (*S*) multiplied by experience adjustment factors (*T*) that are calculated separately for four different duration groups.

Valuation Termination Rate = *T* x *S*

The duration groups are defined as follows:

Group 1: duration 1 to 12 months
Group 2: duration > 12 months and duration <= 24 months
Group 3 duration > 24 months and duration <= 60 months
Group 4: duration > 60 months and duration <= 120 months
Group 5: duration > 120 months

S is the claim termination rates from the 2013 IDI Valuation Table; and

T is computed as $T = [Z \times F * (1\text{-}M) + (1 - Z)]$.

Z is a credibility weighting factor, between 0 and 1, developed for each duration group according to the following specifications:

Group 2-5: $Z = Min\left(\sqrt{N/K}, 1\right)$ *N* is the number of expected claimant termination counts from the 2013 IDI Valuation Table.

K is a set of constants defined by duration group as follows:

Group 1 and 2: *K* = 3,300
Group 3: *K* = 2,500
Group 4: *K* = 2,100
Group 5: *K* = 1,700

F is the ratio of the company's actual total of termination counts to the expected termination counts for the 2013 IDI Valuation Table for each duration group specified above;

The A/E ratio (F) is to be determined based on monthly indemnity. If the actuary has reserve adequacy or other significant analysis that demonstrates that some other weighting of claims (claim or claimant counts, gross benefit, net benefit, etc.) is appropriate for measuring A/E, and also is expected to produce reserves not less than those produced by using a monthly indemnity measurement, such alternative measurement is deemed appropriate. If the actuary cannot produce A/E ratios based on monthly indemnity and only based on claim count or claimant count, an adjustment factor on 0.962 should be multiplied by the A/E ratios in each duration segment to convert them to an indemnity basis. The 0.962 factor is based on the observed relationship for indemnity- versus count-based claim termination experience in the IDI Valuation Table.

M is the company experience margin, determined for each duration group 2 or greater according to the following formula:

$$M = Min\left(15\%, Max\left(5\%, 3\% + 1.65 * \sqrt{A/C}\right)\right)$$

This is the minimum value for the definition of M prior to any reserve adequacy analysis. Adequacy tests and analysis of experience (sharpness of fluctuations, trends over the period of the termination rate study, changing claims practices, etc.) may indicate that a larger value of M may be more appropriate. If so, such a value is deemed appropriate. For duration group 1 (one to 12 months), M is 5 percent, the same as the 2013 IDI Valuation Table margin for duration 1.

A is a set of constants defined by duration group as follows:

Group 1 and 2: $A = 4.0$
Group 3: $A = 3.0$
Group 4: $A = 2.5$
Group 5: $A = 2.0$

C is the company's actual number of total claimant termination counts by duration group. If an actuary cannot directly determine claimant termination counts, he or she may approximate it using the average number of claims per claimant for their block of claims.

The company should not use termination rates that produce total reserves for claims disabled for more than two years that are less than the reserves produced for these claims by computing T as T = 1.30.

D. Company Specific Experience – Own Company Experience Measurement

In computing values F and S to comply with section B above, the appointed actuary should:

1. Segment the company claim termination experience into any major subgroups that may produce significantly different results (e.g., market niches, risk management practices, unique benefit designs, etc.);

2. Combine affiliated statutory entities and assumed reinsurance, in which claim management is under a common structure, when considering company experience. It also is appropriate to evaluate experience separately when specific blocks of company business have distinct risk management practices or significantly different risk characteristics;

3. Include all relevant experience the company is capable of providing for as many of the last five years (not including the lag period described below) as is appropriate. Exclude experience that is not in the most recent five years unless the inclusion of additional years (no more than five) results in reserves that: are deemed by the appointed actuary to be more appropriate and result in equal or higher total reserves;

4. Include a suitable lag period. Some claims may close retroactively, and others initially thought to be closed may reopen retroactively. Therefore, based on company experience, a suitable lag period is needed. The appointed actuary may use a lag period of up to 12

months if company experience shows it is appropriate. The five-year period mentioned above does not include the lag period;

5. Measure A/E based on monthly indemnity consistent with the development of the 2013 IDI Valuation Table. The A/E ratio is defined as the ratio of actual claim termination experience to the expected claim termination experience, according to the 2013 IDI Valuation Table with margin (by disability duration grouping). The A/E ratio is referred to as the variable F in section B, paragraph 4 of this actuarial guideline. For companies that can develop A/E studies only based on claim termination counts, an adjustment factor of 0.962 should be multiplied by their A/E ratio for each claim duration to convert it to an indemnity basis. The 0.962 factor was developed based on the relationship of the indemnity-based A/E to count-based A/E for the industry table;

6. Assign credibility based on claimant termination counts, and not monthly indemnity terminated. Companies should use claimant termination counts and not claim termination counts in determining the number of terminations for their own company experience credibility. Each company will need to make appropriate adjustments based on their average number of claims per claimant if they are not able to determine claimant termination counts directly and can only directly measure claim termination counts. For example, on average, if a company has1.5 open claims per claimant and if they had 100 claim terminations in a duration segment over its five-year study period, it would divide 100 by 1.5 and use 67 claimant terminations when determining credibility;

7. Update the minimum valuation basis in accordance with section B above at least once every five years. In addition, the valuation basis also must be updated whenever the company's annual own experience study produces, in accordance with section B, a value T that changes by more than 10 percent from the one used in the current valuation basis for any of the five duration groups;

8. Recognize, as appropriate, any flexibility built into the 2013 IDI Valuation Table, such as not utilizing diagnosis-specific termination rates when the information is deemed unreliable;

9. Do not count as terminations those claims that are closed due to settlement (i.e., a lump sum replacing a series of potential future payments); that have reached the end of the maximum benefit duration; or that are closed due to a contractual limit, such as a mental and nervous limit. For this purpose a termination due to a change in definition of disability is not considered a termination due to reaching the maximum benefit duration. Terminations of residual or partial disability claims count as total disability terminations. Changes in the definition of disability do not count as a termination unless the claim actually terminates. If a claim closes when the definition of disability changes, that is counted as a claim termination;

10. Use experience that is otherwise relevant in accordance with the professional judgment of the appointed actuary;

11. Do not use experience that the commissioner has deemed inappropriate or likely to produce significantly inadequate reserves; and

12. In the above paragraphs, the term "company" refers to a single company or a group of legally-related companies subject to the same claim management.

E. Own Experience Measurement Exemption

If, at the time of valuation, a company has fewer than 50 open claimants disabled within two years of the effective date of the valuation, and fewer than 200 open claimants disabled more than two years prior to the effective date of the valuation, the insurer is exempt from the requirement that the 2013 IDI Valuation Table be modified by the company's own experience. Said company should/would use 100 percent of the 2013 IDI Valuation Table for calculating claims termination rates in order to comply with the minimum valuation standard.