



Individual Disability Claim Incidence Trends, 1990–2006, Relative to the 2013 IDI Valuation Base Table





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SPONSOR

Health Section

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Individual Disability Claim Incidence Trends, 1990–2006, Relative to the 2013 IDI Valuation Base Table

The Society of Actuaries (SOA) Health Section engaged Milliman Inc., to analyze industry Individual Disability Income (IDI) claim incidence and termination experience trends relative to the 2013 IDI Valuation Table (2013 IDIVT) base incidence and termination rates. This report is intended for the benefit of the Society of Actuaries. This report discusses claim incidence trends. Claim termination trends will be covered in a separate report. Although the author understands that these reports will be made widely available to third parties, Milliman does not assume any duty or liability to such third parties with its work. In particular, the results in this report are technical in nature and are dependent on certain assumptions and methods. No party should rely upon these results without a thorough understanding of those assumptions and methods. Such an understanding may require consultation with qualified professionals. This report should be distributed and reviewed only in its entirety.

Section 1: Introduction

1.1 Background

In March 2013, the Individual Disability Experience Committee (IDEC) of the Society of Actuaries published a report analyzing the industry IDI claim incidence and termination experience trends relative to the 1985 Commissioner’s Individual Disability Tables A and C (CIDA, CIDC).¹ The claim incidence database developed by the IDEC for this report covered the years 1990 to 2006. The claim termination database covered the years 1990 to 2007. The IDEC claim incidence and termination databases served as the data sources for industry experience for the development of the 2013 IDIVT, which was approved by the National Association of Insurance Commissioners (NAIC) in August 2016 to replace the 1985 CIDA and CIDC tables as statutory minimum reserve morbidity bases for IDI. The Individual Tables Working Group (IDTWG), which was a joint working group sponsored by the Society of Actuaries and the American Academy of Actuaries, developed the 2013 IDIVT. The 2013 IDIVT is described in the December 2015 IDTWG Report.² The IDTWG also prepared a workbook that calculates IDI claim costs, net premiums, active life reserves, and disabled life reserves using the 2013 IDIVT and compares these values to those based CIDA and CIDC.³

1.2 Scope and Purpose

This report studies industry IDI claim incidence trends relative to the 2013 IDIVT base incidence rates, i.e., the “expected” basis, before the application of claim incidence modifiers and margins. The 2013 IDIVT is a graduated model of average industry experience from 1990 through 2006. The overall ratio of actual to expected incidence is 99.5 percent. The purpose of this analysis is to quantify how experience varies from the expected basis for key subsets of the business, as well as how experience has changed over time. Although some of this type of analysis was performed when the 2013 IDIVT was constructed, this report provides more comprehensive analysis. The results of the analysis provide insight into the nature of the IDI risk and the underlying trends.

The 2013 IDIVT base incidence rates vary by elimination period, occupation class, issue age, and gender. By definition, they do not include company margins. Also not included are certain claim incidence modifiers (described in the December 2015 IDTWG Report), which are adjustments to the 2013 IDIVT base incidence rates that reflect differences by contract type, smoker status, benefit period and market/underwriting type for the purpose of valuing statutory

¹ *Report of the Individual Disability Experience Committee Analysis of Experience from 1990 to 2007*, Society of Actuaries (SOA), March 2013, <http://research-1990-2007-indiv-analysis-experience.pdf>.

² *Individual Disability Valuation Standard Report of the Individual Disability Tables Work Group of the Academy of Actuaries and the SOA*, American Academy of Actuaries, December 2015, http://actuary.org/files/IDTWG_Table_Report_121915_0.pdf.

³ *2013 IDI Valuation Table Workbook*, Version 1.3, American Academy of Actuaries, 2016, <http://www.actuary.org/content/2013-idi-valuation-table-workbook-version-13>.

minimum active life reserves. In creating these modifiers, the IDTWG balanced the need to reflect significant experience differences with the need to keep the modifications as simple as possible, since companies will need to incorporate them into their valuation systems. By comparing industry experience with the 2013 IDIVT base incidence rates before the noted modifiers are applied, we are able to observe significant differences in experience more easily than when the claim incidence modifiers are included.

The 2013 IDEC Report provides similar analyses regarding the 1990–2006 industry claim incidence experience, but relative to the 1985 CIDA table. The 1985 CIDA table is based on industry experience in the late 1970s and thus does not capture many of the changes in marketing, underwriting, products and claim management that have emerged since 1990. The 2013 IDIVT, in contrast, represents industry experience from 1990 to 2006; it also introduces a new occupation class for all medical-related occupations that was not in the 1985 CIDA table. Appendix A compares the 2013 IDIVT claim incidence rates by gender at quinquennial attained ages for the 30-day and 90-day elimination periods. By measuring claim incidence trends relative to the 2013 IDIVT, we observe differences in experience among key subsets of the business with less concern that the results may be distorted by changes in the distribution of the exposure by occupation class, age, gender or elimination period since the prior study.

This report comprises the following sections:

Section 1 Introduction

Section 2 Highlights of Claim Incidence Trends

This section summarizes the more significant claim incidence trends discussed in Sections 3 and 4, illustrated by graphs.

Section 3 Claim Incidence Trends by Study Period

This section discusses how claim incidence has changed during three study periods, 1990–1994, 1995–1999 and 2000–2006. Claim incidence trends are studied by contract, occupation class, gender, market, elimination period, attained age, benefit period and state of issue. The 2013 IDIVT was based only on the experience of accident and sickness policies and claims, because these contracts make up a very large majority of the IDEC database. As a result, most of the analysis in this report pertains only to accident and sickness policies. Business policies such as overhead expense, disability buy-out and key person and related claims have been excluded from this study except where specifically noted.

Section 4 Claim Incidence Trends by Issue Year

This section discusses how claim incidence has changed over time among four issue year groups, pre-1990, 1990–1994, 1995–1999 and 2000–2006. Most of the analysis pertains only to accident and sickness policies, i.e., excluding the three types of business policies.

Appendix A 2013 IDI Valuation Table Claim Incidence Rate Comparison for Occupation Classes M and 1

Appendix A compares the 2013 IDIVT claim incidence rates for occupation class M and 1 by gender at quinquennial attained ages for the 30-, 60-, 90- and 180-day elimination periods.

Appendix B Policy and Claim Data by State of Issue

Appendix B provides exposure and claim incidence results by state of issue.

Appendix C A/E and Relative Claim Incidence Ratios by State of Issue

Appendix C provides the actual-to-expected (A/E) and relative claim incidence ratios for all of the states by study period and issue year grouping.

1.3 Qualifications

I, Robert W. Beal, am a consulting actuary for Milliman Inc. This report provides an opinion regarding trends in IDI claims incidence rates. I am a member of the American Academy of Actuaries and meet its qualification standards for rendering this opinion.

1.4 Acknowledgments

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Section 2: Highlights of A/E Claim Incidence Trends

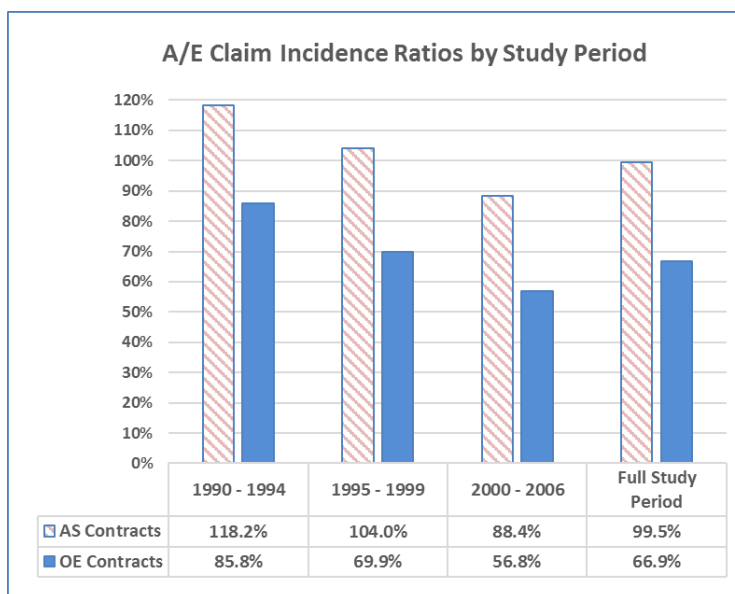
This section highlights some of the more significant claim incidence trends (discussed in more detail in Sections 3 and 4) and discusses their implications with respect to changes in the nature of the IDI risk over time. Results are presented in terms of actual-to-expected (A/E) claim incidence ratios where the expected incidence basis is the 2013 IDIVT base incidence table (before the application of claim incidence modifiers).

2.1 A/E Claim Incidence Trends by Type of Contract

The claim incidence rates of the 2013 IDIVT were based on the experience of accident and sickness (AS) policies. Other types of business policies in the database—namely, overhead expense (OE), disability buy-out (DBO) and key person (KP)—had significantly less exposure than the AS contracts and were excluded from the database used to derive the 2013 IDIVT. The claim incidence relative to the 2013 IDIVT for these business contracts is significantly lower than for AS contracts. For example, the claim incidence relative to the 2013 IDIVT for overhead expense contracts is 66.9 percent of the 2013 IDIVT incidence. The remainder of this analysis applies only to the experience of AS contracts.

Figure 1 illustrates how the A/E claim incidence ratios decreased over time from a very high level incurred in the early 1990s, when IDI carriers experienced significant financial losses. Most key segments of the IDI business experienced similar reductions in A/E claim incidence ratios.

Figure 1



A number of factors contributed to the decrease in claim incidence ratios since the early 1990s. Underwriting practices and contractual provisions on new policies were tightened in the late 1990s. Claim management practices acquired more tools for evaluating claims and excluding those that did not qualify contractually. The period of economic expansion following the recession of the early 1990s most likely was another contributing factor. Although it is difficult to quantify the impact of each of these factors on lowering incidence, their combined impact is that overall A/E claim incidence ratios decreased steadily for most key segments of the IDI business.

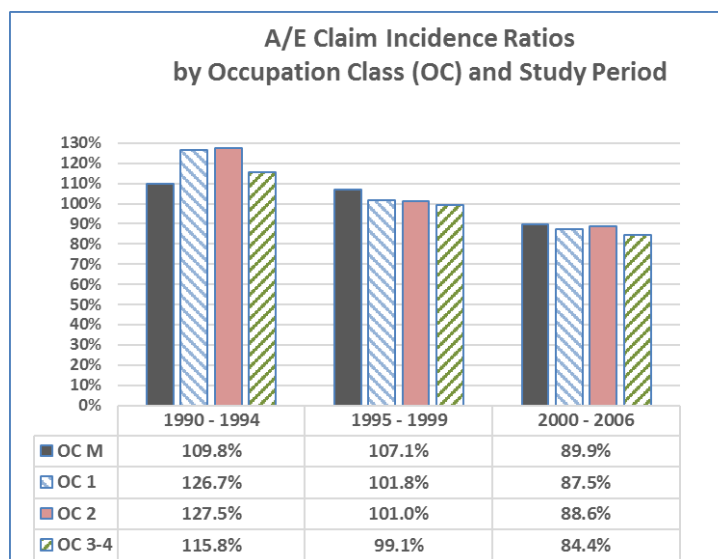
The IDEC is currently compiling industry data for the 2006–2015 study period. The new study may or may not confirm that the lower claim incidence experience of the 2000–2006 period has continued through 2015. In the meantime,

analysis of the underlying claim incidence trends from 1990 through 2006, as discussed in this report, should provide considerable insight into how the nature of the IDI risk has changed over time.

2.2 A/E Claim Incidence Trends by Occupation Class

The 2013 IDIVT introduced a new occupation class M comprising all medical occupations. As can be observed in Appendix A, claim incidence rates for occupation class M are significantly higher than for occupation class 1, which contains nonmedical professional and white-collar occupations. Figure 2 shows the A/E ratios for the three study periods by occupation class for AS contracts. Occupation classes 3 and 4—i.e., the blue-collar occupation classes—have been combined because of their low volume of data.

Figure 2



All occupation classes experienced higher A/E claim incidence ratios during the 1990–1994 period. Since the 1990–1994 period, the A/E claim incidence ratios for all occupation classes have declined, ranging from 84 to 90 percent of the 2013 IDIVT incidence rates in the 2000–2006 period.

Prior to 1990, doctors and surgeons were the preferred occupations for many IDI companies. They were charged the lowest premium rates and offered the most liberal contracts, along with the highest amounts of coverage. However, in the early 1990s, the net income of these occupations incurred significant reductions due to a movement toward managed care and higher malpractice premiums. Along with reduced incomes, professional satisfaction of doctors and surgeons began to wane. Concurrently, IDI claim experience of the medical occupations jumped. Because of the prominence of doctors and surgeons in the IDI market, many narratives attribute the overall deterioration of IDI industry claim experience to doctors and surgeons, although Figure 2 shows that the A/E claim incidence ratios of the nonmedical occupations were higher than the A/E ratio for occupation class M during the 1990–1994 study period.

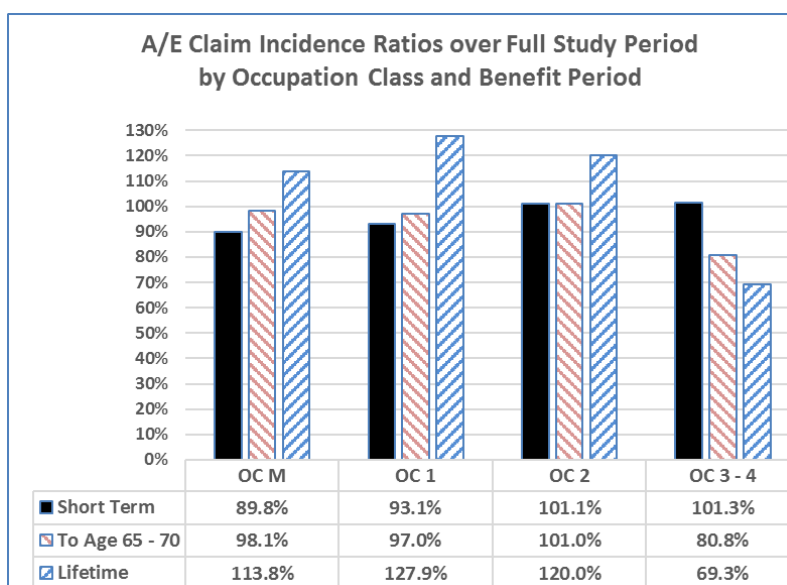
Unfortunately, there are no comparable industry studies for IDI experience in the 1980s. As a result, we do not know if the preferred occupation status for doctors and surgeons at that time was based on actual favorable claim experience or only market perceptions. The relative differences in the incidence rates among the occupation classes in the 2013 IDIVT have largely continued throughout the full study period, even in recent years, when incidence rates for all occupation classes have been 10 to 16 percent lower than the 2013 IDIVT incidence rates.

2.3 A/E Claim Incidence Trends by Benefit Period

Claim incidence rates vary by benefit period. Claim incidence rates for occupation classes M, 1 and 2 are significantly higher for policies with a lifetime benefit period than for shorter benefit periods. The presence of rich disability benefits, such as a lifetime benefit period, may affect the motivation of policyholders to file a claim, as well as the propensity of claimants to return to work after they have started receiving disability benefits.

Figure 3 illustrates differences in A/E claim incidence ratios by benefit period for the various occupation classes. Although the 2013 IDIVT has claim incidence modifiers that vary by benefit period, the expected basis is prior to the application of these modifiers. For occupation classes 1 and 2, the incidence rates for policies with a lifetime benefit period run at least 20 percent higher than for those with benefit periods to age 65–70. This difference is less for occupation class M, but still significant. The pattern of incidence rates by benefit period for occupation class 3–4 is opposite from the other occupation classes, but it should be noted that most of the policies in this occupation class have short-term benefit periods and very few have a lifetime benefit period.

Figure 3

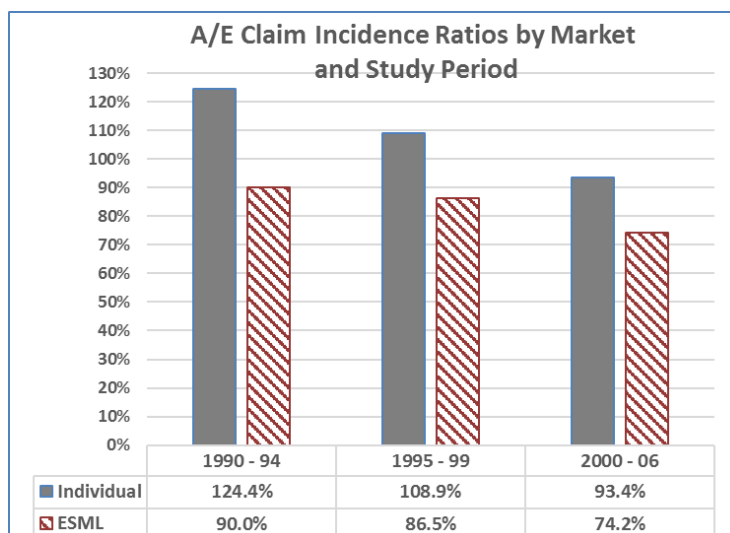


Most companies no longer offer a lifetime benefit period as an option, or if they do, they have increased premium rates to take into account the higher claim incidence rates, as well as lower claim termination rates, which will be discussed in the Claim Termination Rate Trend Report.

2.4 A/E Claim Incidence Trends by Market

It is well known that A/E claim incidence ratios for policies issued in the employer-sponsored (ESML) market have been lower than incidence rates for business issued in the individual market. Figure 4 compares the A/E claim incidence ratios by market relative to the 2013 IDIVT over the three study periods.

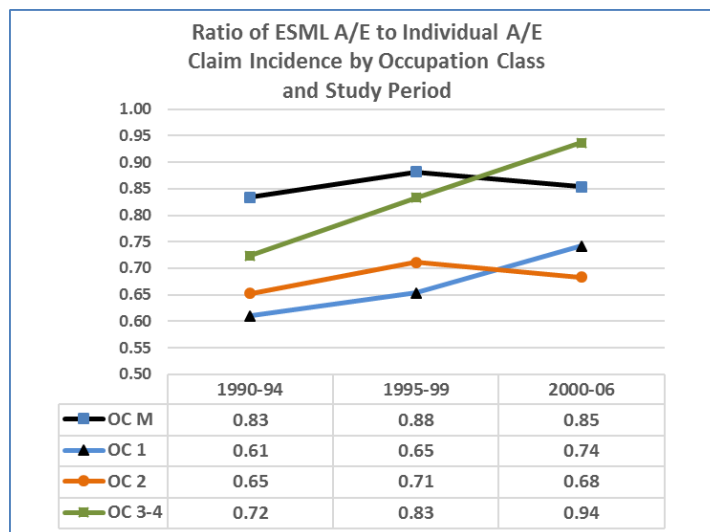
Figure 4



On average, the ESML A/E incidence ratio was 73 percent (90.0/124.4) of the Individual A/E incidence ratio in the 1990–1994 period, increasing to 79 percent (74.2/93.4) after 1994, as the A/E incidence ratios in the individual market decreased at a faster rate than the ESML incidence. This may be due to the impact of tighter underwriting controls implemented in the Individual market in the second half of the 1990s on claim incidence while underwriting standards in the ESML market were evolving.

Figure 5 compares the ratios of ESML incidence with Individual incidence over time by occupation class.

Figure 5

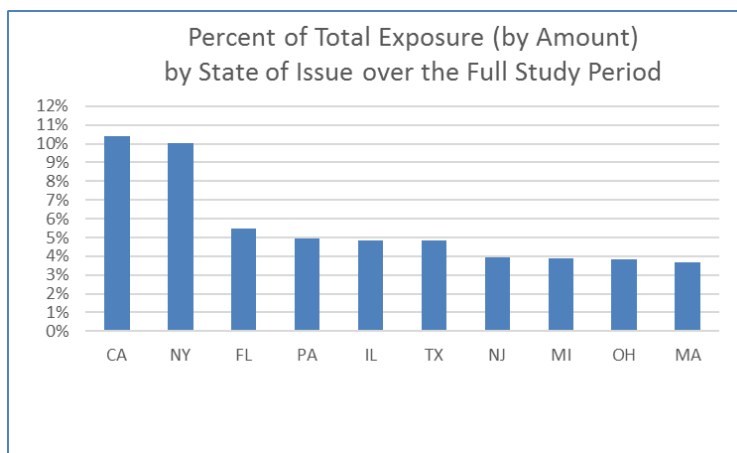


The primary occupation classes in the ESML market are M and 1. The average ESML A/E incidence ratio for occupation class 1 has been lower than for occupation class M, but the respective ratios have moved closer over time.

2.5 A/E Claim Incidence Trends by State of Issue

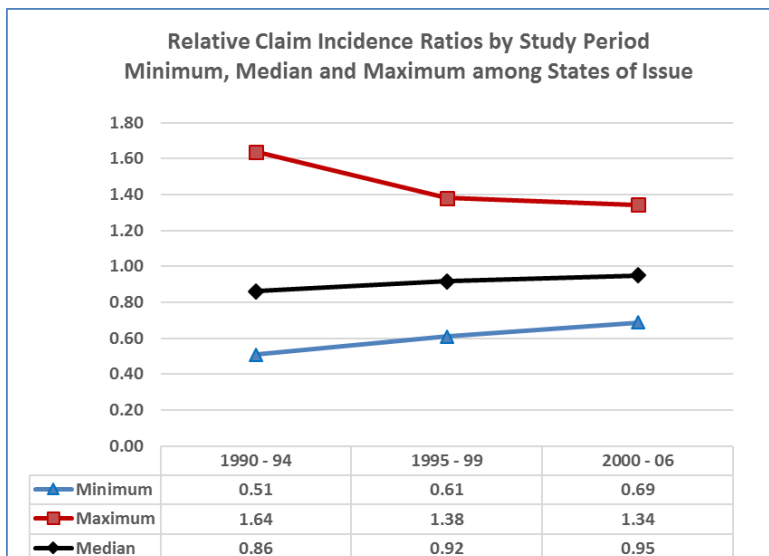
The volume of exposure and claim incidence rates vary considerably among the states of issue. Figure 6 shows their “relative” claim incidence ratio for the 10 states with the highest exposure over the full study period. The states are ordered by the volume of their exposure over the full study period with California having the largest exposure. The relative claim incidence ratio for each state is the A/E claim incidence ratio for the state divided by the A/E claim incidence ratio for all 50 states combined. The relative claim incidence ratio measures the extent that the A/E claim incidence ratio in each state is different from the A/E claim incidence ratio for all states combined. The 10 states included in Figure 6 make up 56 percent of the total IDI exposure by amount.

Figure 6



Appendix B provides detail of the exposure, volume of claims and A/E claim incidence ratios for all states of issue in the IDEC database. Figure 7 shows the minimum, median and maximum relative claim incidence ratios across all states for the three study periods.

Figure 7

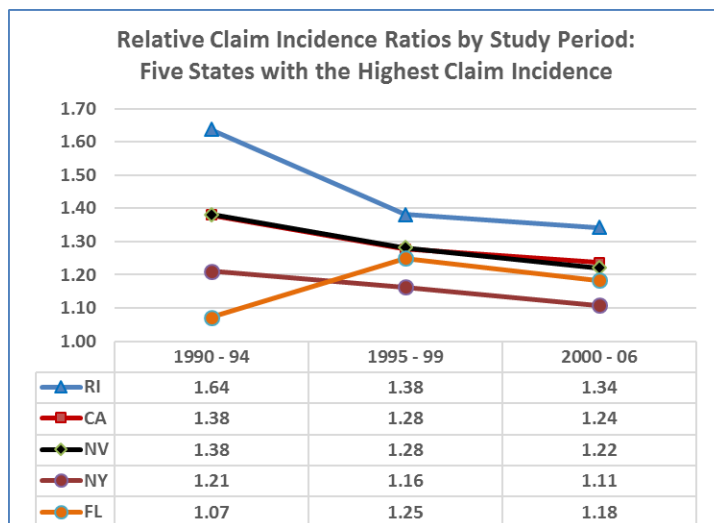


The range of relative claim incidence ratios has narrowed over time, but significant differences remain among the states. Initially, the IDTWG recommended separate claim incidence modifiers for California, Florida and New York in light of their higher incidence rates and their high portion of total exposure. However, the Health Actuarial Task Force

(HATF) decided not to establish a precedent by varying statutory minimum morbidity bases by state of issue, even if such differences could be justified statistically.

Figure 8 tracks the relative claim incidence ratios over time for the five states with the highest relative claim incidence ratios over the full study period.

Figure 8



Rhode Island and Nevada have small exposures compared with most other states but ranked consistently first and third among all of the states with respect to the highest relative A/E claim incidence ratios. California, which has the largest exposure among all of the states, consistently ranked second. Interestingly, the relative A/E claim incidence ratios for California and Nevada remained very close in each of the three study periods. It should be noted that California, New York and Rhode Island are three of the five states (Hawaii and New Jersey being the other two states) that have state-mandated short-term disability plans, under which most employees in these states are covered.

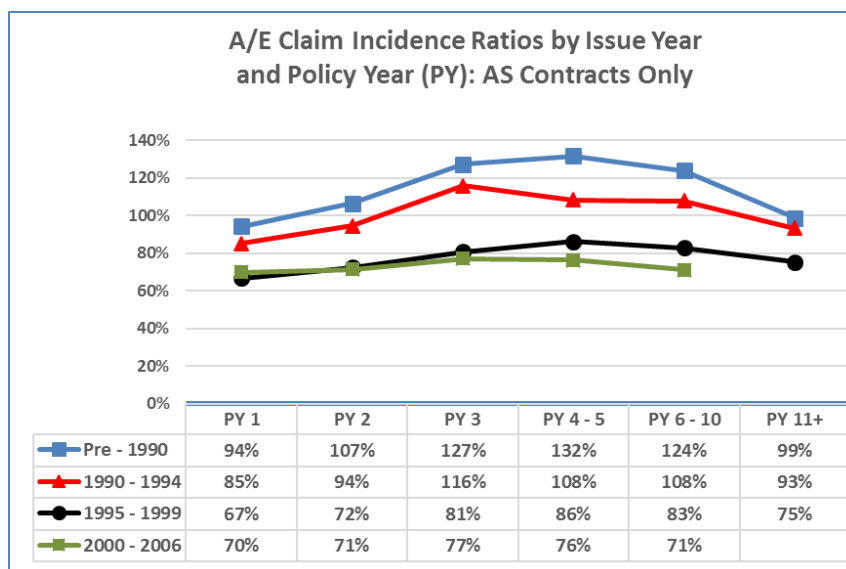
2.6 A/E Claim Incidence Trends by Issue Year

Companies have changed their underwriting practices and policies over the years in response to emerging risk issues and marketing pressures. Comparing experience by issue year provides significant insight into the impact of these changes on claim incidence. However, to study experience by issue year on an apples-to-apples basis, it is necessary to break the experience down by policy year, i.e., the period since a policy was issued.

For this study, issue years were placed into four groups: pre-1990, 1990–1994, 1995–1999 and 2000–2006. Pre-1990 includes policies issued at a time before the financial turmoil in the IDI business began to emerge. During the 1990–1994 period, many companies began to experience financial problems in their IDI blocks and decided to exit the business. During the 1995–1999 period, more companies exited the IDI business, while remaining companies in general tightened their underwriting practices and the offered products. During the 2000–2006 period, profitability began to return to many of the companies still in the IDI business.

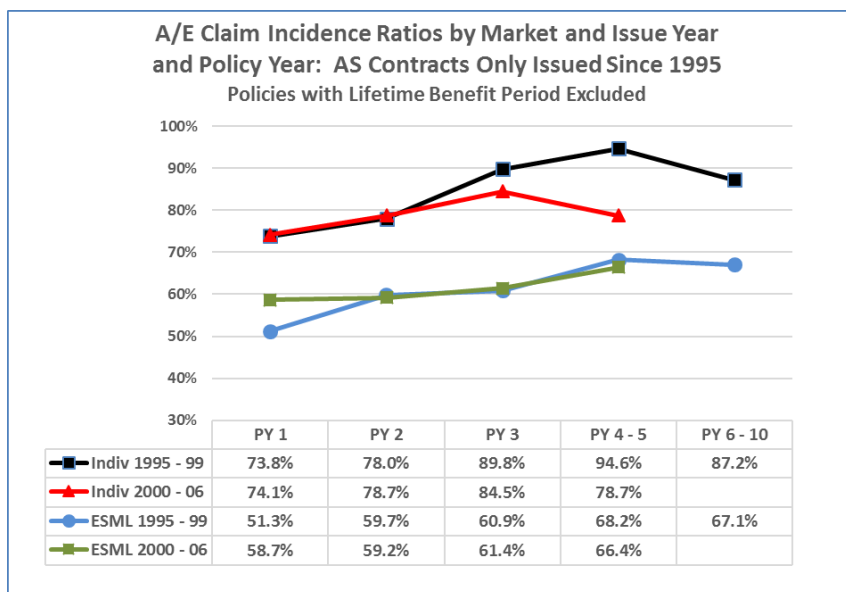
Figure 9 compares the A/E claim incidence ratios for AS contracts by policy year for the four issue year groupings. Business issued since 1995 has had much lower A/E claim incidence ratios in all policy years than business issued prior to 1995, most likely reflecting the impact of tighter underwriting and more restrictive policy provisions implemented by many companies.

Figure 9



Many companies introduced tighter underwriting practices and revised contracts on new business in the mid-1990s, whereas business issued prior to 1995 reflects less stringent risk management practices and is not as pertinent to more current industry practices. Figure 10 compares the A/E claim incidence ratios of the individual and ESML markets for issue year groups 1995–1999 and 2000–2006. Policies issued with lifetime benefits were excluded in Figure 10, since most companies no longer offer this option on new business.

Figure 10



The Individual business issued in 2000–2006 has essentially the same A/E incidence ratios in the first two policy years as Individual business issued in 1995–1996. In policy years 4–5, the more recent Individual business shows an improved A/E incidence ratio.

The more favorable claim incidence experience associated with the ESML market relative to the 2013 IDIVT can be observed in both issue year groupings. The A/E claim incidence ratios in policy years 2 through 5 for the ESML business did not change materially between the two issue year groupings. The A/E incidence ratio in the first policy year jumped

for ESML business issued in 2000–2006, which could be attributable to a higher portion of the ESML business using voluntary guaranteed standard issue (GSI) issued since 2000.

GSI is a growing share of the ESML market. Figure 11 shows the distribution of ESML exposure by amount by issue year group and underwriting type. GSI underwritten policies represented 62 percent of all ESML business issued in 2000–2006, measured by exposure. Medically underwritten ESML business represented 38 percent. The IDEC database does not separate GSI underwritten business between voluntary and mandatory, which is an issue that the next IDEC study should correct. However, a separate intercompany study conducted by the IDTWG showed that the claim incidence of ESML policies issued using voluntary GSI underwriting has been 70 percent higher in recent years than the claim incidence of ESML policies issued using mandatory GSI underwriting.

Figure 11

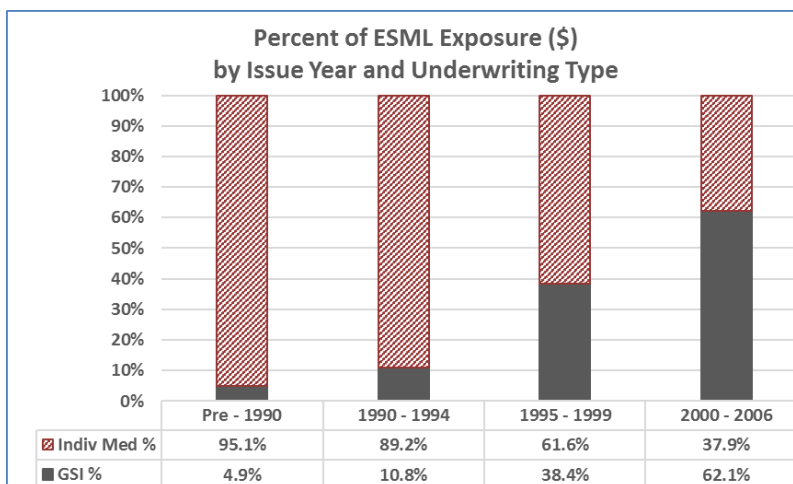
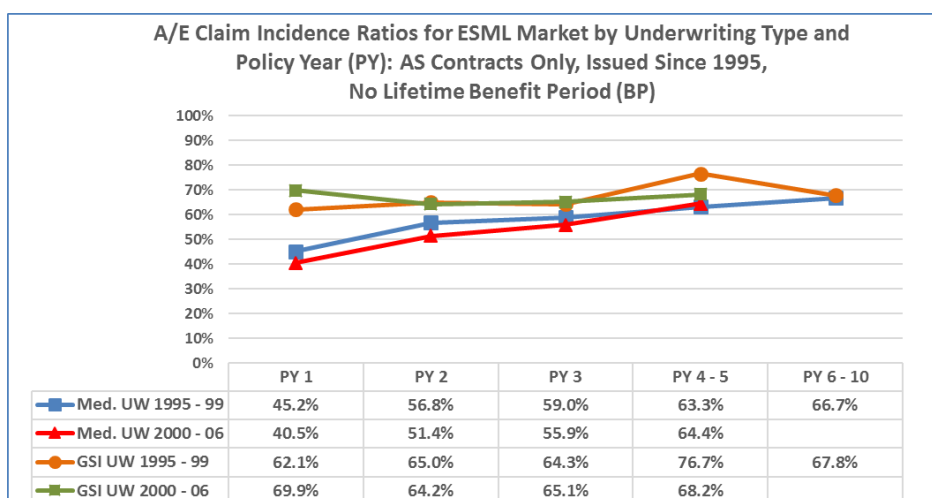


Figure 12 compares the claim incidence of the ESML business for medically underwriting and GSI policies.

Figure 12



A/E claim incidence ratios for the ESML business issued using medical underwriting methods improved slightly for business issued in 2000–2006 compared with the business issued in 1995–1999, although the A/E incidence ratios appear to be converging after policy year 3. The higher A/E claim incidence ratio in the first policy year observed in the ESML business issued 2000–2006 is most likely attributable to the higher portion of GSI underwritten business issued in this period. It is notable that the higher A/E claim incidence ratio vanished after the first policy year, which may

indicate that significant differences in A/E claim incidence ratios between voluntary and mandatory may largely disappear after the first policy year.

2.7 Key Observations and Conclusions

The following are key observations and conclusions from this study:

1. The IDI A/E claim incidence ratios have declined significantly since the early 1990s in almost all key segments, including policies issued prior to 1990.
2. All occupation classes experienced a decline in A/E incidence ratios since the early 1990s, with the experience during the 2000–2006 period ranging from 84 to 90 percent of the 2013 IDIVT base incidence rates.
3. A/E claim incidence ratios for occupation class M were significantly higher than incidence rates for occupation class 1 throughout the full study period. The relative differences in A/E claim incidence ratios between occupation classes M and 1 have not decreased materially over time.
4. The A/E claim incidence ratios of business issued in certain states have remained higher than most other states consistently over time. The states with the highest relative claim incidence ratios vary in size from California, which has the largest volume of business of all states, to Rhode Island and Nevada, which have some of the smallest volumes of business among all of the states.
5. The ESML market has experienced A/E claim incidence ratios that have been less than 80 percent of those of the individual market throughout the full study period. The ESML experience combines the experience of both GSI and individual medical underwritten policies.
6. GSI underwritten business represents an increasing segment of the ESML market, reaching 62 percent of all ESML business issued 2000 to 2006. Although the A/E claim incidence ratios for GSI business are higher than those of ESML business issued using individual medical underwriting, claim incidence for GSI business appears stable relative to the 2013 IDIVT for business issued since 1995.
7. The upcoming IDEC study, which studies IDI experience from 2006 through 2015, should allow us to observe whether the trend in A/E claim incidence ratios observed from 1990 through 2006 has continued, leveled off or worsened.

Section 3: A/E Claim Incidence Trends by Study Period

This section examines actual-to-expected (A/E) IDI claim incidence trends by study period. The full study period is 1990 through 2006. For the purpose of understanding how claim incidence has changed over time, the full study period is separated into the following three study periods:

- 1990–1994
- 1995–1999
- 2000–2006

These three study periods represent significantly different periods of profitability for the IDI business.⁴ IDI carriers experienced substantial losses during the early 1990s, peaking around 1994–1995. Financial losses decreased during the second half of the 1990s and were close to breakeven in 1999 for the industry in total. Since 2000, the IDI industry has experienced positive profitability.

3.1 A/E Claim Incidence by Contract Type

The IDEC has separated IDI contracts into the following types:

- Accident and sickness (AS)—Personal IDI policies that make up the large majority of the IDI experience. Elimination periods range from 0 days to 2 years, and benefit periods range from short term (e.g., 24 months) to a specific age (e.g., 65 or lifetime).
- Overhead expense (OE)—IDI policies that reimburse business owners for overhead expenses incurred while they are disabled. These policies typically have short elimination periods (e.g., 30 days or less) and short benefit periods (e.g., 24 months or less).
- Disability buy-out (DBO)—IDI policies that typically provide lump-sum benefits at the end of long elimination periods (e.g., at least one year) to business owners for buying out the business share of a disabled partner.
- Key person (KP)—IDI policies that provide monthly benefits to a business to compensate for losses resulting from a key person being disabled. Like OE policies, KP policies typically have short elimination periods and benefit periods.

Table 3.1 shows the exposure, claims and A/E claim incidence ratios by contract type for the full study period, 1990–2006. Exposure represents the number of policy years during the specific study period for all included policies. Claims represent the number of claims incurred during the study period. To be included, a claim must have a date of disability during the study period that resulted in a contractual benefit payment. The expected claims are determined by multiplying the exposure by the 2013 IDIVT base incidence rates. Results are measured by claim count and amount, which is the result of multiplying exposure and claims by count by the indemnity amount of the policy. The indemnity amount for AS, OE and KP contracts is in terms of monthly benefit (e.g., \$2,500) and for DBO policies is the full lump-sum indemnity amount (e.g., \$250,000).

⁴ Robert W. Beal, “Individual Disability Insurance in the U.S.,” Society of Actuaries, 2006.

Table 3.1 Exposure, Claims and A/E Claim Incidence Ratio by Contract Type Study Period: 1990–2006						
Contract Type	Exposure		Claims		A/E Claim Incidence Ratio	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
AS	31,176,637	72,286,704	280,865	488,434	96.3%	99.5%
OE	1,843,031	10,196,740	20,891	104,392	66.5%	66.9%
DBO	218,323	22,741,096	263	21,365	52.3%	55.5%
KP	6,572	40,184	19	130	33.7%	35.4%

AS contracts provide 94 percent of the total exposure in the database by count. The 2013 IDIVT was developed using only the experience of AS contracts by amount. As a result, the A/E claim incidence ratio by amount for AS contracts is very close to 100 percent. OE contracts represent the next most prevalent contract type, with exposure by count that is only 6 percent of the AS exposure. The DBO and KP exposures are too small to provide further credible analysis. The claim experience of these three business contracts with applications typically have lower anti-selection than AS contracts and, thus, lower A/E claim incidence ratios.

In the remainder of this report, A/E claim incidence ratios, unless otherwise indicated, are by amount, not count.

Table 3.2 shows the A/E claim incidence ratios for AS and OE contracts over three study periods, 1990–1994, 1995–1999 and 2000–2006, as well as the full study period. In the lower part of the table, the A/E ratios for each of the three study periods are “normalized” relative to the A/E ratios for the full study period in order to observe how claim incidence relative to the 2013 IDIVT has changed over time relative to the average experience over the full study period.

Table 3.2 A/E Claim Incidence Ratios (by Amount) by Study Period: AS and OE Contracts				
Contract Type	A/E Claim Incidence Ratios			
	1990–1994	1995–1999	2000–2006	Full Study Period
AS	118.2%	104.0%	88.4%	99.5%
OE	85.8%	69.9%	56.8%	66.9%
Normalized A/E Ratios Relative to Full Study Period (1990–2006)				
AS	119%	105%	89%	100%
OE	128%	104%	85%	100%

Both AS and OE contracts experienced significant decreases in A/E claim incidence ratios over the three study periods. The normalized A/E ratios for the two contract types fell below 90 percent in the most recent study period, 2000–2006. The high normalized A/E ratios observed in the 1990–1994 study period are not surprising, given the historical financial losses that many IDI carriers suffered. In the second half of the 1990s, IDI carriers initiated significant changes in the contractual language of new products and underwriting practices, which contributed to the lower A/E claim incidence ratios during the 1995–1999 and 2000–2006 study periods. However, the reduction in the A/E claim incidence ratios over the full study period is not solely attributable to changes in new products and underwriting practices. This can be observed in Table 3.3, which focuses only on A/E claim incidence trends for policies issued prior to 1990, certainly well before the product and underwriting changes were implemented in the latter half of the 1990s.

Table 3.3 A/E Claim Incidence Ratios (by Amount) by Study Period: AS and OE Contracts Issued Prior to 1990				
Contract Type	A/E Claim Incidence Ratios			
	1990–1994	1995–1999	2000–2006	Full Study Period
AS	110.8%	102.7%	93.1%	98.5%
OE	84.6%	75.5%	63.5%	69.3%
Normalized A/E Ratios Relative to Full Study Period (1990–2006)				
AS	112%	104%	94%	100%
OE	122%	109%	92%	100%

Table 3.3 shows that policies issued prior to 1990 experienced overall reductions in A/E claim incidence ratios similar to that of all issue years combined, although the decline is slightly flatter. Changes in products and underwriting practices that were implemented in the second half of the 1990s had no impact on the claim incidence of business issued prior to 1990. The claim incidence reduction observed in the late 1990s and extending into the 2000s could be attributable in part to improved claim management practices initiated during the 1990s that affected the review and approval of newly reported claims. However, economic and other factors could have had a material impact on these claim incidence trends, as well. During the early 1990s, there was a global recession, and in the United States a savings and loan crisis affected millions of people. This period was followed by a general economic expansion that lasted into the late 2000s. The impact of the 2008 recession should be observed in the next IDEC study, which will cover years 2006 to 2015.

The remainder of this section explores A/E claim incidence trends with respect to occupation class, gender, market, elimination period, attained age, benefit period and state of issue. This analysis is limited to AS policies only.

3.2 A/E Claim Incidence Ratios by Occupation Class

The 2013 IDIVT has five occupation classes:

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

Table 3.4 provides the exposure, claims and A/E claim incidence ratios for AS contracts by occupation class for the full study period, 1990–2006. Since the expected incidence basis—i.e., the 2013 IDIVT base incidence rates—varies by occupation class, the aggregate A/E for each should be close to 1.00. The analysis combines results from occupation classes 3 and 4 because of their small volume of exposure.

Table 3.4 Exposure, Claims and A/E Claim Incidence Ratios by Occupation Class: AS Contracts Only Study Period: 1990–2006						
Occupation Class	Exposure		Claims		A/E Claim Incidence Ratios	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
M	8,016,612	24,731,836	76,775	212,409	95.5%	99.5%
1	16,413,130	38,212,469	93,699	177,532	96.6%	99.1%
2	4,096,339	6,854,842	46,795	55,654	97.8%	102.4%
3–4	2,650,557	2,487,557	63,597	42,840	95.8%	97.6%
Total	31,176,637	72,286,704	280,865	488,434	96.3%	99.5%

For the full study period, the A/E claim incidence ratios by amount are close to 100%, particularly for occupation classes M and 1. The experience for occupation classes 2, 3 and 4 shows larger variances from the expected incidence, due to the smaller volume of data contributed by these occupation classes and steps taken during the development of the 2013 IDIVT to maintain certain traditional relationships among the occupation classes. Table 3.5 shows the distribution of the exposure and the average indemnity amounts per policy by occupation class.

Table 3.5 Distribution of Exposure and Average Indemnity Amount per Policy by Occupation Class, 1990–2006: AS Contracts Only			
Occupation Class	Exposure Percent		Average Amount per Policy
	By Count	By Amount	
M	26%	34%	\$3,085
1	53%	53%	2,328
2	13%	9%	1,673
3–4	9%	3%	939
Total	100%	100%	\$2,319

Occupation classes M and 1 make up 87 percent of the total exposure by amount. Occupation class M comprises 34 percent, and occupation class 1 53 percent.

Table 3.6 shows the actual and normalized A/E claim incidence ratios by amount for AS contracts by occupation class for the three study periods, 1990–1994, 1995–1999 and 2000–2006.

Table 3.6 A/E Claim Incidence Ratios (by Amount) by Occupation Class and Study Period: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
M	109.8%	107.1%	89.9%	99.5%
1	126.7%	101.8%	87.5%	99.1%
2	127.5%	101.0%	88.6%	102.4%
3–4	115.8%	99.1%	84.4%	97.6%
Total	118.2%	104.0%	88.4%	99.5%
Normalized A/E Ratios Relative to Full Study Period (1990–2006)				
M	110%	108%	90%	100%
1	128%	103%	88%	100%
2	125%	99%	86%	100%
3–4	119%	102%	86%	100%
Total	119%	105%	89%	100%

All occupation classes experienced decreasing A/E claim incidence ratios over the three study periods. The normalized A/E claim incidence ratios for the various occupation classes range from 86 to 90 percent in the 2000–2006 period. During the 1990–1994 period, which experienced the highest claim incidence relative to the 2013 IDIVT, occupation class M had the lowest normalized A/E (110 percent). These results may suggest that economic conditions had a bigger impact on the claim incidence of nonmedical than of medical occupations.

Table 3.7 shows the distribution of exposure (by amount) by occupation class within each study period and by study period within each occupation class.

Table 3.7 Distribution of Exposure (by Amount) by Occupation Class and Study Period: AS Contracts Only				
Distribution by Occupation Class within Study Period				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
M	38%	39%	30%	34%
1	48%	48%	57%	53%
2	10%	10%	9%	9%
3–4	4%	3%	3%	3%
Total	100%	100%	100%	100%
Distribution by Study Period within Occupation Class				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
M	24%	28%	48%	100%
1	20%	22%	58%	100%
2	24%	25%	51%	100%
3–4	26%	23%	51%	100%
Total	22%	24%	54%	100%

The share of total exposure attributable to occupation class 1 jumped from 48 percent for 1990–1999 to 57 percent during the 2000–2006 study period. The share of total exposure attributable to occupation class M dropped from 38 and 39 percent in the 1990s to 30 percent for 2000–2006, reflecting in large part the general restricting of available IDI product offerings to doctors and surgeons in the second half of the 1990s. It should be noted that the 2000–2006 IDEC study had a few more contributors than the 1990–1999 study, which could have affected the distributions shown in Table 3.7.

During the development of the 2013 IDIVT, some concern was expressed that the data were too heavily represented by the experience of the early 1990s with its high claim incidence. Table 3.7 shows that the 1990–1994 study period represented only 22 percent of the total exposure by amount, whereas the most recent study period, 2000–2006, represented 54 percent of the total exposure.

3.3 A/E Claim Incidence Ratios by Gender

Table 3.8 shows the exposure, claims and actual-to-expected (A/E) incidence ratios for AS contracts only by occupation class and gender for the full study period, 1990–2006. Since the expected incidence basis—i.e., the 2013 IDIVT base incidence rates—varies by gender and occupation class, the aggregate A/E for each should be close to 1.00.

Table 3.8 Exposure, Claims and A/E Claim Incidence Ratio by Occupation Class and Gender: AS Contracts Only Study Period: 1990–2006						
Males						
Occupation Class	Exposure		Claims		A/E	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
M	6,119,741	20,131,521	51,065	157,669	93.0%	99.3%
1	12,759,363	31,618,626	64,665	131,315	96.7%	98.6%
2	3,150,084	5,692,514	34,462	41,978	98.3%	101.5%
3–4	2,358,936	2,228,902	56,457	37,519	96.4%	98.1%
Total	24,388,124	59,671,564	206,649	368,481	95.9%	99.2%
Females						
Occupation Class	Exposure		Claims		A/E	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
M	1,896,871	4,600,315	25,711	54,740	100.9%	100.1%
1	3,653,767	6,593,843	29,034	46,217	96.3%	100.3%
2	946,254	1,162,328	12,332	13,676	96.4%	105.4%
3–4	291,621	258,655	7,139	5,321	90.8%	94.2%
Total	6,788,513	12,615,141	74,216	119,954	97.3%	100.5%

Table 3.9 shows the female percentage share of the exposure within each occupation class and the average indemnity amounts per policy for males and females.

Table 3.9 Female Percentage of Exposure and Average Indemnity Amounts per Policy by Gender: AS Contracts Only Study Period: 1990–2006				
Occupation Class	Female Exposure %		Average Amount per Policy (\$)	
	By Count	By Amount	Male	Female
M	24%	19%	3,290	2,425
1	22%	17%	2,478	1,805
2	23%	17%	1,807	1,228
3–4	11%	10%	945	887
Total	22%	17%	2,447	1,858

Overall, females represented less than 20 percent of the total exposure by amount over the full study period, 1990–2006. The average indemnity amount of female policyholders for all occupation classes combined was 76 percent of the average indemnity amount of male policyholders.

Table 3.10 provides the A/E claim incidence ratios by amount by occupation class and gender for each of the three study periods and the full study period.

Table 3.10 A/E Claim Incidence Ratios (by Amount) by Occupation Class, Gender and Study Period: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
Males				
M	110.1%	109.3%	88.3%	99.3%
1	129.0%	101.2%	86.3%	98.6%
2	129.1%	100.4%	86.3%	101.5%
3–4	117.0%	98.8%	84.9%	98.1%
Total	119.4%	104.6%	87.0%	99.2%
Females				
M	108.9%	100.9%	94.9%	100.1%
1	120.3%	103.6%	91.1%	100.3%
2	122.8%	102.9%	96.1%	105.4%
3–4	107.6%	102.1%	81.0%	94.2%
Total	114.5%	102.1%	92.8%	100.5%

Table 3.11 shows the corresponding normalized A/E claim incidence ratios by occupation class, gender and study period.

Table 3.11 Normalized A/E Claim Incidence Ratios by Occupation Class, Gender and Study Period: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
Males				
M	111%	110%	89%	100%
1	128%	103%	88%	100%
2	126%	99%	85%	100%
3–4	118%	101%	87%	100%
Total	120%	105%	88%	100%
Females				
M	109%	101%	95%	100%
1	126%	103%	91%	100%
2	121%	98%	91%	100%
3–4	123%	108%	86%	100%
Total	114%	102%	92%	100%

Both males and females experienced similar patterns of improved claim incidence over the full study period, although the female pattern is somewhat flatter than the male pattern.

Table 3.12 shows that the female percentage share of the exposure (by amount) within each occupation class has increased slightly over time.

Table 3.12 Female Percent of Exposure (by Amount) by Study Period: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
M	16%	18%	20%	19%
1	15%	16%	18%	17%
2	16%	16%	18%	17%
3–4	10%	9%	11%	10%
Total	15%	17%	19%	17%

3.4 A/E Claim Incidence Ratios by Attained Age

Table 3.13 shows the exposure, claims and actual-to-expected (A/E) incidence ratios for AS contracts by occupation class and attained age for the full study period, 1990–2006. Please note that the age ranges in Table 3.13 are based on attained age, not issue age.

Table 3.13 Exposure, Claims and A/E Claim Incidence Ratio by Occupation Class and Attained Age: AS Contracts Only Study Period: 1990–2006						
Attained Age	Exposure		Claims		A/E	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
Occupation Class M						
Under 30	298,677	643,027	1,315	2,327	74.1%	68.7%
30–34	850,699	2,474,339	5,521	13,276	105.0%	99.5%
35–39	1,390,214	4,489,104	9,376	25,989	104.5%	103.6%
40–44	1,606,933	5,290,146	11,501	34,348	98.3%	101.5%
45–49	1,495,841	4,880,332	12,602	38,138	93.4%	96.8%
50–55	1,157,749	3,628,171	12,982	39,136	92.3%	98.7%
55–59	761,008	2,199,645	12,521	35,244	94.3%	104.3%
60–64	391,497	973,610	9,380	20,566	94.0%	97.9%
65 and over	63,994	153,461	1,576	3,385	82.6%	86.2%
Total	8,016,612	24,731,836	76,775	212,409	95.5%	99.5%
Occupation Class 1						
Under 30	607,735	962,511	1,796	2,677	81.4%	90.2%
30–34	1,492,736	3,268,755	5,058	9,652	101.1%	104.9%
35–39	2,485,405	6,152,352	8,897	19,001	101.8%	108.1%
40–44	3,180,775	7,940,873	12,734	26,909	97.4%	102.2%
45–49	3,257,532	7,945,557	16,120	32,783	95.1%	97.5%
50–55	2,698,358	6,269,392	17,973	34,683	93.9%	95.7%
55–59	1,784,660	3,890,112	17,869	31,452	98.9%	98.9%
60–64	805,417	1,570,518	11,782	17,950	98.1%	97.0%
65 and over	100,505	212,353	1,470	2,424	82.0%	81.9%
Total	16,413,123	38,212,424	93,699	177,532	96.6%	99.1%

Table 3.13 (continued)						
Exposure, Claims and A/E Claim Incidence Ratio by Occupation Class and Attained Age: AS Contracts Only						
Study Period: 1990–2006						
Attained Age	Exposure		Claims		A/E	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
Occupation Class 2						
Under 30	211,947	274,300	1,224	1,461	90.8%	98.6%
30–34	410,975	732,246	2,505	3,745	100.7%	107.5%
35–39	625,115	1,211,705	4,105	6,543	100.9%	109.2%
40–44	748,773	1,417,811	5,832	8,909	99.3%	108.2%
45–49	741,653	1,308,736	7,302	9,817	96.3%	100.9%
50–55	626,519	989,534	8,381	9,804	94.9%	97.8%
55–59	451,295	617,577	9,199	8,998	100.8%	101.4%
60–64	249,792	269,761	7,366	5,714	98.1%	100.1%
65 and over	30,262	33,171	883	665	86.8%	82.4%
Total	4,096,332	6,854,839	46,795	55,654	97.8%	102.4%
Occupation Class 3–4						
Under 30	159,589	151,685	2,107	1,918	92.3%	97.7%
30–34	271,723	296,307	3,773	3,742	99.1%	105.3%
35–39	412,486	458,321	6,158	5,744	98.2%	102.3%
40–44	488,128	518,359	8,542	7,079	97.3%	99.1%
45–49	470,643	453,270	10,199	7,498	95.1%	96.9%
50–55	388,272	325,006	11,618	7,174	97.8%	97.0%
55–59	278,948	191,297	11,675	5,926	98.3%	96.9%
60–64	166,805	86,092	8,863	3,508	89.6%	88.1%
65 and over	13,942	7,204	662	251	72.7%	67.8%
Total	2,650,536	2,487,541	63,597	42,840	95.8%	97.6%
All Occupation Classes Combined						
Under 30	1,277,948	2,031,524	6,442	8,383	84.7%	85.5%
30–34	3,026,134	6,771,647	16,856	30,414	101.8%	102.8%
35–39	4,913,220	12,311,482	28,536	57,277	101.7%	105.5%
40–44	6,024,609	15,167,190	38,608	77,245	97.9%	102.2%
45–49	5,965,668	14,587,894	46,223	88,235	94.8%	97.5%
50–55	4,870,899	11,212,104	50,953	90,797	94.5%	97.3%
55–59	3,275,911	6,898,629	51,264	81,620	97.9%	101.3%
60–64	1,613,511	2,899,980	37,392	47,738	94.9%	97.0%
65 and over	208,702	406,190	4,591	6,726	81.6%	83.4%
Total	31,176,602	72,286,640	280,865	488,434	96.3%	99.5%

In general, the A/E claim incidence ratios remain within a reasonable range around 100 percent, which they should, since the expected incidence rates vary by attained age. The A/E ratio for attained ages under 30 for occupation class M is low (68.7 percent) compared with most other combinations of occupation class and attained age. This is most likely the result of trying to maintain common relationships between the incidence rates for occupation classes M and 1. The low A/E claim incidence ratio for the medical occupations under age 30 could reflect young medical professionals leaving medical school, who are more motivated to begin their practices.

The A/E claim incidence ratio for attained ages 65 and over for all occupation classes combined is 83 percent and generally consistent by occupation class, except for class 3–4, where the volume of data is low. The lower A/E claim incidence ratios for attained ages 65 and over may reflect that most IDI policies after age 65 switched to contingently renewable from noncancellable or guaranteed renewable, requiring insureds to provide evidence of gainful

employment in order to continue renewing the policies beyond age 65. It is reasonable to expect that members over age 65 who are gainfully employed are healthier than the over-65 population in general.

Table 3.14 provides the A/E claim incidence ratios by occupation class and attained age for each of the three study periods and the full study period. The experience of all occupation classes and both genders has been combined.

Table 3.14 A/E Claim Incidence Ratios by Attained Age and Study Period: AS Contracts Only				
Attained Age	1990–1994	1995–1999	2000–2006	Full Study Period
A/E Claim Incidence Ratios (by Amount)				
Under 30	104.2%	72.9%	65.8%	85.5%
30–34	116.4%	101.0%	86.3%	102.8%
35–39	123.3%	103.7%	88.7%	105.5%
40–44	118.9%	105.3%	88.8%	102.2%
45–49	116.3%	104.9%	85.2%	97.5%
50–55	115.3%	104.2%	88.7%	97.3%
55–59	122.5%	107.2%	93.5%	101.3%
60–64	118.9%	104.1%	87.9%	97.0%
65 and over	104.8%	81.0%	81.8%	83.4%
Total	118.2%	104.0%	88.4%	99.5%
Normalized Relative to Full Study Period				
Under 30	122%	85%	77%	100%
30–34	113%	98%	84%	100%
35–39	117%	98%	84%	100%
40–44	116%	103%	87%	100%
45–49	119%	108%	87%	100%
50–55	118%	107%	91%	100%
55–59	121%	106%	92%	100%
60–64	123%	107%	91%	100%
65 and over	126%	97%	98%	100%
Total	119%	105%	89%	100%

All attained age groups have experienced improved claim incidence over the full study period. It is noteworthy that claim incidence relative to the 2013 IDIVT for attained ages 65 and over has remained quite level from 1995 through 2006.

3.5 A/E Claim Incidence Ratios by Elimination Period

The 2013 IDIVT claim incidence rates vary by elimination period (0, 7, 14, 30, 60, 90, 180, 360 and 720 days). For this study, we have combined the elimination periods less than 30 days into one group and the elimination periods of 180 or more days into another group. Table 3.15 shows the exposure, claims and A/E claim incidence ratios for AS contracts only by elimination period for the full study period, 1990–2006.

Table 3.15 Exposure, Claims and A/E Claim Incidence Ratio by Elimination Period: AS Contracts Only Study Period: 1990–2006						
Elimination Period	Exposure		Claims		A/E	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
Under 30 days	672,677	230,733	34,497	11,504	93.2%	95.9%
30 days	3,923,350	4,665,276	93,840	106,530	93.9%	98.7%
60 days	3,284,751	6,370,617	34,514	69,145	93.3%	100.9%
90 days	18,145,258	47,293,169	100,846	263,004	98.8%	100.2%
180+ days	5,150,601	13,726,910	17,168	38,251	109.1%	96.0%
Total	31,176,637	72,286,704	280,865	488,434	96.3%	99.5%

Policies with a 90-day elimination period or longer make up 84 percent of the total exposure by amount. Table 3.16 compares the A/E claim incidence ratios by elimination period and study period for each occupation class. Table 3.17 provides the corresponding normalized A/E claim incidence ratios.

Table 3.16 A/E Claim Incidence Ratios (by Amount) by Elimination Period, Occupation Class and Study Period: AS Contracts Only				
Elimination Period	1990–1994	1995–1999	2000–2006	Full Study Period
Occupation Class M				
Under 30 days	96.1%	95.1%	106.5%	99.5%
30 days	109.9%	92.8%	82.7%	96.3%
60 days	107.4%	106.6%	90.6%	100.7%
90 days	111.2%	111.5%	91.6%	100.5%
180+ days	108.6%	113.7%	83.1%	96.1%
Total	109.8%	107.1%	89.9%	99.5%
Occupation Class 1				
Under 30 days	112.5%	93.9%	89.9%	99.0%
30 days	120.0%	92.7%	82.4%	98.6%
60 days	121.3%	94.1%	89.6%	100.9%
90 days	134.4%	108.9%	88.4%	99.7%
180+ days	129.9%	99.0%	86.5%	94.7%
Total	126.7%	101.8%	87.5%	99.1%
Occupation Class 2				
Under 30 days	117.4%	93.8%	87.2%	101.6%
30 days	118.7%	99.3%	88.2%	103.5%
60 days	129.2%	93.9%	86.1%	103.6%
90 days	139.4%	106.5%	90.2%	102.5%
180+ days	140.9%	100.5%	83.5%	97.2%
Total	127.5%	101.0%	88.6%	102.4%

Table 3.16 (continued)				
A/E Claim Incidence Ratios (by Amount) by Elimination Period, Occupation Class and Study Period: AS Contracts Only				
Elimination Period	1990–1994	1995–1999	2000–2006	Full Study Period
Occupation Class 3-4				
Under 30 days	114.0%	95.3%	60.3%	92.0%
30 days	111.2%	94.7%	91.8%	99.4%
60 days	117.1%	97.2%	82.3%	97.5%
90 days	139.0%	118.8%	83.7%	95.8%
180+ days	154.3%	135.5%	82.8%	112.8%
Total	115.8%	99.1%	84.4%	97.6%
All Occupation Classes Combined				
Under 30 days	112.7%	94.8%	75.9%	95.9%
30 days	114.5%	94.1%	85.3%	98.7%
60 days	115.6%	100.5%	89.1%	100.9%
90 days	122.5%	110.4%	89.8%	100.2%
180+ days	124.0%	106.0%	85.1%	96.0%
Total	118.2%	104.0%	88.4%	99.5%

Table 3.17				
Normalized A/E Claim Incidence Ratios (by Amount) by Elimination Period, Occupation Class and Study Period: AS Contracts Only				
Elimination Period	1990–1994	1995–1999	2000–2006	Full Study Period
Occupation Class M				
Under 30 days	97%	96%	107%	100%
30 days	114%	96%	86%	100%
60 days	107%	106%	90%	100%
90 days	111%	111%	91%	100%
180+ days	113%	118%	87%	100%
Total	110%	108%	90%	100%
Occupation Class 1				
Under 30 days	114%	95%	91%	100%
30 days	122%	94%	84%	100%
60 days	120%	93%	89%	100%
90 days	135%	109%	89%	100%
180+ days	137%	105%	91%	100%
Total	128%	103%	88%	100%
Occupation Class 2				
Under 30 days	116%	92%	86%	100%
30 days	115%	96%	85%	100%
60 days	125%	91%	83%	100%
90 days	136%	104%	88%	100%
180+ days	145%	103%	86%	100%
Total	125%	99%	86%	100%

Table 3.17 (continued) Normalized A/E Claim Incidence Ratios by Elimination Period, Occupation Class and Study Period: AS Contracts Only				
Elimination Period	1990–1994	1995–1999	2000–2006	Full Study Period
Occupation Class 3–4				
Under 30 days	124%	104%	66%	100%
30 days	112%	95%	92%	100%
60 days	120%	100%	84%	100%
90 days	145%	124%	87%	100%
180+ days	137%	120%	73%	100%
Total	119%	102%	86%	100%
All Occupation Classes Combined				
Under 30 days	118%	99%	79%	100%
30 days	116%	95%	86%	100%
60 days	115%	100%	88%	100%
90 days	122%	110%	90%	100%
180+ days	129%	110%	89%	100%
Total	119%	105%	89%	100%

The pattern of normalized A/E claim incidence ratios by study period is generally consistent by elimination period for each occupation class. One exception consists of policies issued to occupation class M with elimination periods less than 30 days, which is a very small segment (representing 0.1 percent of total exposure from occupation class M). Table 3.17 shows that the normalized A/E ratios for the 1990–1994 study period are higher for elimination periods of 90 days and longer.

Table 3.18 shows the distribution of exposure (by amount) by elimination period and study period for each occupation class.

Table 3.18 Distribution of Exposure (by Amount) by Elimination Period and Study Period for Each Occupation Class: AS Contracts Only				
Elimination Period	1990–1994	1995–1999	2000–2006	Full Study Period
Occupation Class M				
Under 30 days	0.2%	0.1%	0.1%	0.1%
30 days	10.6%	6.9%	3.6%	6.2%
60 days	15.9%	11.8%	7.7%	10.9%
90 days	63.3%	69.7%	76.7%	71.4%
180+ days	10.0%	11.5%	12.0%	11.4%
Total	100.0%	100.0%	100.0%	100.0%
Occupation Class 1				
Under 30 days	0.2%	0.1%	0.1%	0.1%
30 days	9.7%	5.9%	2.8%	4.8%
60 days	13.2%	8.7%	4.4%	7.1%
90 days	57.4%	61.3%	66.5%	63.6%
180+ days	19.5%	24.0%	26.3%	24.5%
Total	100.0%	100.0%	100.0%	100.0%

Table 3.18 (continued)				
Distribution of Exposure (by Amount) by Elimination Period and Study Period for Each Occupation Class: AS Contracts Only				
Elimination Period	1990–1994	1995–1999	2000–2006	Full Study Period
Occupation Class 2				
Under 30 days	1.5%	0.9%	0.4%	0.8%
30 days	15.3%	9.8%	4.9%	8.6%
60 days	15.9%	11.1%	5.9%	9.6%
90 days	51.2%	57.8%	67.9%	61.4%
180+ days	16.1%	20.5%	20.9%	19.6%
Total	100.0%	100.0%	100.0%	100.0%
Occupation Class 3–4				
Under 30 days	7.9%	5.6%	2.6%	4.7%
30 days	39.3%	35.1%	19.2%	28.1%
60 days	17.6%	16.1%	9.7%	13.3%
90 days	26.0%	32.8%	60.4%	45.1%
180+ days	9.2%	10.4%	7.9%	8.8%
Total	100.0%	100.0%	100.0%	100.0%
All Occupation Classes Combined				
Under 30 days	0.6%	0.3%	0.2%	0.3%
30 days	11.8%	7.6%	3.7%	6.5%
60 days	14.7%	10.4%	5.7%	8.8%
90 days	57.7%	63.3%	69.5%	65.4%
180+ days	15.1%	18.3%	20.9%	19.0%
Total	100.0%	100.0%	100.0%	100.0%

Prior to the 2000–2006 study period, policies with elimination periods under 90 days are more prevalent among the skilled-labor (occupation class 2) and blue-collar occupation classes (occupation classes 3–4). In the 2000–2006 study period, however, the 90-day elimination period is the most prevalent elimination period for all occupation classes.

3.6 A/E Claim Incidence Ratios by Benefit Period

Table 3.19 shows the exposure, claims and A/E claim incidence ratios of AS policies for the full study period by benefit period categories (short-term, to age 65–70 and lifetime) for each occupation class. Since the expected incidence rates do not vary by benefit period, the A/E claim incidence ratios should not necessarily be close to 100 percent. In fact, policies with the lifetime benefit period have significantly higher A/E claim incidence ratios than the other benefit period categories, while there is only a small difference in the A/E claim incidence ratios between the short-term and to age 65–70 benefit periods when all occupation classes are combined.

Table 3.19 Exposure, Claims and A/E Claim Incidence Ratios by Occupation Class and Benefit Period: AS Contracts Only						
Benefit Period	Exposure		Claims		A/E	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
Occupation Class M						
Short-term	1,621,694	3,439,531	20,449	34,040	93.1%	89.8%
To age 65–70	5,016,187	16,434,817	44,033	133,417	94.9%	98.1%
Lifetime	1,378,731	4,857,488	12,294	44,951	102.0%	113.8%
Total	8,016,612	24,731,836	76,775	212,409	95.5%	99.5%
Occupation Class 1						
Short-term	3,861,677	6,538,529	30,287	38,632	92.9%	93.1%
To age 65–70	11,161,507	28,196,272	54,460	116,764	96.2%	97.0%
Lifetime	1,389,939	3,477,623	8,952	22,136	114.8%	127.9%
Total	16,413,123	38,212,424	93,699	177,532	96.6%	99.1%
Occupation Class 2						
Short-term	1,475,809	1,650,720	25,267	19,786	96.8%	101.1%
To age 65–70	2,358,984	4,625,013	18,531	31,044	96.3%	101.0%
Lifetime	261,538	579,106	2,997	4,824	120.2%	120.0%
Total	4,096,332	6,854,839	46,795	55,654	97.8%	102.4%
Occupation Class 3–4						
Short-term	2,175,738	1,868,882	57,242	36,844	97.5%	101.3%
To age 65–70	449,109	562,098	5,773	5,546	80.2%	80.8%
Lifetime	25,688	56,561	581	451	110.4%	69.3%
Total	2,650,536	2,487,541	63,597	42,840	95.8%	97.6%
All Occupation Classes Combined						
Short-term	9,134,919	13,497,662	133,245	129,301	95.6%	95.5%
To age 65–70	18,985,787	49,818,200	122,797	286,771	94.9%	97.5%
Lifetime	3,055,896	8,970,778	24,823	72,362	108.6%	117.7%
Total	31,176,602	72,286,640	280,865	488,434	96.3%	99.5%

Table 3.20 shows the A/E claim incidence ratios by occupation class, benefit period and study period. Higher claim incidence for policies with the lifetime benefit period occurs in all occupation class groupings, although the differences are most pronounced for occupation class 1. Differences in claim incidence between short-term and to age 65–70 benefit periods are more evident by occupation class. Policies with short-term benefits have noticeably lower A/E claim incidence ratios than policies with to age 65–70 benefit periods for occupation classes M and 1. However, this switches for the occupation classes 3–4, where policies with short-term benefit periods have higher A/E claim incidence ratios than the longer benefit periods.

Table 3.20 A/E Claim Incidence Ratios (by Amount) by Occupation Class, Benefit Period and Study Period: AS Contracts Only				
Benefit Period	1990–1994	1995–1999	2000–2006	Full Study Period
Occupation Class M				
Short-term	100.0%	91.4%	86.5%	89.8%
To age 65–70	109.7%	105.6%	82.4%	98.1%
Lifetime	123.1%	130.1%	107.5%	113.8%
Total	109.8%	107.1%	89.9%	99.5%
Occupation Class 1				
Short-term	114.8%	88.8%	87.7%	93.1%
To age 65–70	127.1%	100.7%	82.2%	97.0%
Lifetime	154.4%	139.3%	117.5%	127.9%
Total	126.7%	101.8%	87.5%	99.1%
Occupation Class 2				
Short-term	117.3%	100.0%	91.4%	101.1%
To age 65–70	133.0%	97.8%	83.4%	101.0%
Lifetime	144.7%	144.2%	106.3%	120.0%
Total	127.5%	101.0%	88.6%	102.4%
Occupation Class 3–4				
Short-term	116.8%	101.0%	90.0%	101.3%
To age 65–70	107.2%	86.8%	64.9%	80.8%
Lifetime	177.3%	124.5%	51.9%	69.3%
Total	115.8%	99.1%	84.4%	97.6%
All Occupation Classes Combined				
Short-term	112.7%	95.6%	88.2%	95.5%
To age 65–70	118.4%	102.8%	81.9%	97.5%
Lifetime	135.2%	133.7%	109.4%	117.7%
Total	118.2%	104.0%	88.4%	99.5%

Table 3.21 shows the corresponding normalized A/E claim incidence ratios by benefit period and study period for each occupation class. The decreasing trend in claim incidence ratios is generally consistent among the three benefit period categories.

Table 3.21 Normalized A/E Claim Incidence Ratios (by Amount) by Occupation Class, Benefit Period and Study Period: AS Contracts Only				
Benefit Period	1990–1994	1995–1999	2000–2006	Full Study Period
Occupation Class M				
Short-term	111%	102%	96%	100%
To age 65–70	112%	108%	84%	100%
Lifetime	108%	114%	94%	100%
Total	110%	108%	90%	100%
Occupation Class 1				
Short-term	123%	95%	94%	100%
To age 65–70	131%	104%	85%	100%
Lifetime	121%	109%	92%	100%
Total	128%	103%	88%	100%
Occupation Class 2				
Short-term	116%	99%	90%	100%
To age 65–70	132%	97%	83%	100%
Lifetime	121%	120%	89%	100%
Total	125%	99%	86%	100%
Occupation Class 3–4				
Short-term	115%	100%	89%	100%
To age 65–70	133%	107%	80%	100%
Lifetime	256%	180%	75%	100%
Total	119%	102%	86%	100%
All Occupation Classes Combined				
Short-term	118%	100%	92%	100%
To age 65–70	121%	105%	84%	100%
Lifetime	115%	114%	93%	100%
Total	119%	105%	89%	100%

3.7 A/E Claim Incidence Ratios by Market

Table 3.22 shows the exposure, claims and A/E claim incidence ratios for AS contracts by occupation class and market for the full study period, 1990–2006. The two market categories are employer-sponsored multi-life (ESML) and individual, which consists mainly of individually issued and billed policies. For this analysis, the individual market also includes individual policies sold via endorsements by professional associations, which is a small segment of the business. Since the expected incidence rates do not vary by market, the A/E claim incidence ratios for each market should not necessarily be close to 100 percent. In fact, all occupation classes experienced lower A/E claim incidence ratios in the ESML market than in the individual market.

Individual Market						
Occupation Class	Exposure		Claims		A/E	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
M	6,270,487	17,836,422	65,091	165,085	98.3%	103.5%
1	12,547,318	25,696,283	80,115	142,833	100.1%	108.5%
2	3,392,890	5,286,971	42,665	48,827	100.4%	109.0%
3–4	2,465,950	2,315,793	60,948	40,942	96.3%	98.5%
Total	24,676,646	51,135,469	248,819	397,686	98.7%	105.3%
ESML Market						
Occupation Class	Exposure		Claims		A/E	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
M	1,746,124	6,895,414	11,684	47,323	82.3%	87.9%
1	3,865,812	12,516,186	13,583	34,699	80.0%	72.9%
2	703,448	1,567,871	4,130	6,827	77.3%	71.5%
3–4	184,607	171,764	2,648	1,899	84.2%	82.4%
Total	6,499,991	21,151,235	32,046	90,748	80.8%	80.1%

Table 3.23 shows the ESML percentage share of the exposure within each occupation class and the average indemnity amounts per policy for the ESML and individual markets. Over the full study period, the ESML market comprised 29 percent of the total exposure. Occupation classes 3–4 represent only 7 percent of the ESML market exposure by count and amount. The average indemnity amount of ESML policies for all occupation classes combined was 57 percent higher than the indemnity amount of individual policies. (Note: Per Table 3.4, the A/E claim incidence ratio by amount was only slightly higher than the A/E ratio by count, implying that the higher average amount for ESML business should not be a significant driver of the difference between the ESML and individual A/E ratios.)

Occupation Class	Percent of ESML Exposure		Average Amount per Policy	
	By Count	By Amount	Individual	ESML
M	21.8%	27.9%	\$2,536	\$4,050
1	23.6%	32.8%	1,783	2,555
2	17.2%	22.9%	1,144	1,653
3–4	7.0%	6.9%	672	717
Total	20.8%	29.3%	\$1,598	\$2,832

Since the 1990s, many IDI carriers shifted their marketing focus to the ESML market as the favorable claims experience offered in this market became more apparent. The biggest increase was in occupation class 1, as seen in Table 3.24.

Table 3.24 ESML Percentage of Exposure (by Amount) by Occupation Class and Study Period: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
M	25%	28%	29%	28%
1	23%	29%	37%	33%
2	16%	22%	26%	23%
3–4	8%	8%	6%	7%
Total	23%	27%	33%	29%

Table 3.25 compares the A/E ratios by amount for the ESML and individual markets by occupation class and study period. Table 3.26 gives the comparable normalized A/E claim incidence ratios.

Table 3.25 A/E Claim Incidence Ratios (by Amount) by Occupation Class, Market and Study Period: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
Individual Market				
M	114.0%	110.4%	93.6%	103.5%
1	137.1%	111.0%	94.9%	108.5%
2	133.2%	105.8%	95.1%	109.0%
3–4	117.7%	100.0%	84.6%	98.5%
Total	124.4%	108.9%	93.4%	105.3%
ESML Market				
M	95.0%	97.3%	80.0%	87.9%
1	83.6%	72.5%	70.4%	72.9%
2	86.8%	75.3%	65.0%	71.5%
3–4	85.2%	83.3%	79.3%	82.4%
Total	90.0%	86.5%	74.2%	80.1%

Table 3.26 Normalized A/E Claim Incidence Ratios (by Amount) by Occupation Class, Market and Study Period: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
Individual Market				
M	110%	107%	91%	100%
1	126%	102%	88%	100%
2	122%	97%	87%	100%
3–4	120%	102%	86%	100%
Total	118%	103%	89%	100%
ESML Market				
M	108%	111%	91%	100%
1	115%	99%	97%	100%
2	121%	105%	91%	100%
3–4	103%	101%	96%	100%
Total	112%	108%	93%	100%

The ESML A/E claim incidence ratios are somewhat flatter by study period than the ratios for the individual market for all occupation classes. This may be due to a higher level of anti-selection reflected in the individual market during the 1990–1994 study period than experienced in the ESML market. Another factor may have been the impact of evolving underwriting standards in the ESML market.

Companies typically offer at least a 15 percent premium discount to policies issued in the ESML market, which raises the question of whether more favorable ESML claim incidence supports the premium discount. Table 3.27 shows the ratios of the A/E claim incidence for the ESML market to A/E claim incidence for the individual market. This ratio was the lowest during the 1990–1994 study period, at 0.723, and increased to 0.794 since 1995. Overall, it appears that the more favorable claim incidence experience in the ESML market helps to justify the premium discounts, although the lower incidence rates in the ESML market may produce lower claim termination rates, which could reduce the favorable impact on overall claim costs from the lower incidence.

Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
M	0.833	0.881	0.854	0.850
1	0.610	0.653	0.742	0.672
2	0.652	0.712	0.683	0.656
3–4	0.724	0.833	0.937	0.837
Total	0.723	0.794	0.794	0.761

Table 3.28 shows the A/E ratios for the ESML and individual markets by occupation class, study period and gender. Table 3.29 provides the corresponding normalized A/E ratios. In general, the subsets by market and gender show A/E claim incidence ratios over time that are consistent with the decreasing results when the genders are combined. One exception is females in the ESML market, where the A/E claim incidence ratios have remained relatively flat over time.

Table 3.28 A/E Claim Incidence Ratios (by Amount) by Market, Occupation Class, Study Period and Gender: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
Individual Market: Male				
M	113.1%	112.0%	90.7%	102.1%
1	138.6%	110.5%	93.8%	107.9%
2	134.8%	105.1%	92.2%	107.8%
3–4	119.0%	99.6%	85.2%	99.0%
Total	124.9%	109.1%	91.4%	104.4%
Individual Market: Female				
M	116.4%	105.9%	102.9%	107.4%
1	133.0%	112.3%	98.5%	110.2%
2	128.2%	108.4%	104.9%	113.0%
3–4	109.8%	103.4%	81.0%	95.2%
Total	123.1%	108.1%	100.1%	108.4%
ESML Market: Male				
M	100.6%	101.5%	81.6%	91.4%
1	88.6%	71.4%	68.2%	72.0%
2	90.0%	75.6%	63.4%	71.6%
3–4	86.5%	83.9%	79.2%	83.0%
Total	95.2%	88.6%	73.7%	81.6%
ESML Market: Female				
M	73.8%	82.6%	75.4%	76.9%
1	71.0%	75.5%	76.3%	75.3%
2	74.2%	74.3%	69.2%	71.1%
3–4	78.3%	78.9%	79.8%	79.1%
Total	72.7%	79.2%	75.4%	75.7%

Table 3.29 Normalized A/E Claim Incidence Ratios (by Amount) by Market, Occupation Class, Study Period and Gender: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
Individual Market: Male				
M	111%	110%	89%	100%
1	128%	102%	87%	100%
2	125%	97%	86%	100%
3–4	120%	101%	86%	100%
Total	120%	105%	88%	100%
Individual Market: Female				
M	108%	99%	96%	100%
1	121%	102%	89%	100%
2	113%	96%	93%	100%
3–4	115%	109%	85%	100%
Total	114%	100%	92%	100%
ESML Market: Male				
M	110%	111%	89%	100%
1	123%	99%	95%	100%
2	126%	106%	89%	100%
3–4	104%	101%	95%	100%
Total	117%	109%	90%	100%
ESML Market: Female				
M	96%	107%	98%	100%
1	94%	100%	101%	100%
2	104%	104%	97%	100%
3–4	99%	100%	101%	100%
Total	96%	105%	100%	100%

Table 3.30 shows the ratios of A/E claim incidence for the ESML market to A/E claim incidence for the individual market by occupation class, gender and study period. In general, it appears that the favorable ESML experience by gender and occupation class helps to support the ESML premium discounts. One exception appears to be males in occupation class M, where the ratios of ESML to Individual A/E claim incidence has been close to 90 percent over the full study period.

Table 3.30 Ratios of ESML to Individual A/E Claim Incidence (by Amount) by Gender, Occupation Class and Study Period: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
Male				
M	0.890	0.906	0.900	0.896
1	0.639	0.646	0.727	0.667
2	0.668	0.720	0.688	0.665
3–4	0.727	0.843	0.930	0.839
Total	0.762	0.812	0.807	0.782
Female				
M	0.634	0.780	0.733	0.716
1	0.534	0.672	0.774	0.683
2	0.579	0.686	0.660	0.629
3–4	0.713	0.762	0.985	0.831
Total	0.591	0.732	0.753	0.699

Table 3.31 shows the percentage of female exposure by market and occupation class for the three study periods. The percentage of female exposure in the individual market has remained relatively constant over time. From 1990 through 1999, the percentage of female exposure in the ESML market was approximately the same as in the individual market. However, in the 2000–2006 study period, the percent of female exposure in the ESML market jumped from 17 percent to 21 percent.

Table 3.31 Percentage of Exposure (by Amount) by Market and Occupation Class Attributable to Policies Issued to Females: AS Contracts Only				
Occupation Class	1990–1994	1995–1999	2000–2006	Full Study Period
Individual Market				
M	16%	19%	19%	18%
1	15%	16%	17%	16%
2	16%	16%	17%	16%
3–4	10%	9%	11%	10%
Total	16%	17%	17%	17%
ESML Market				
M	14%	18%	24%	20%
1	16%	16%	20%	19%
2	13%	17%	21%	19%
3–4	11%	9%	15%	12%
Total	15%	17%	21%	19%

3.8 A/E Claim Incidence Ratios by State of Issue

For many years, companies have observed that IDI claim experience varies by state of issue. Most notable have been California and Florida, where it has been quite common for companies to charge a premium surcharge over what they charge in other states. Some companies have introduced premium surcharges in other states, while other companies have also introduced premium discounts for policies issued in states where claim experience has been significantly more favorable.

Appendix B shows the exposure and A/E claim incidence ratios by amount for individual states, including the District of Columbia, in alphabetical order over the full study period. Note that the IDEC database used for this study had no policies issued in the state of Arkansas. The database detail was not sufficient to explain why no policies issued in Arkansas were included. Since the expected incidence rates do not vary by state of issue, the A/E claim incidence ratios for each state are not necessarily close to 100 percent.

The A/E claim incidence ratios range from 69.7 percent (District of Columbia) to 145.3 percent (Rhode Island). Table 3.32 shows the minimum, maximum, median and average A/E claim incidence ratios for the study periods 1990–1994, 1995–1999 and 2000–2006, as well as the full study period. The relative A/E, shown in the bottom portion of Table 3.32, is derived by dividing a state’s A/E claim incidence ratio by the A/E claim incidence ratio for all states combined.

Table 3.32 A/E Claim Incidence Ratios (by Amount) by State of Issue and Study Period: Minimum, Maximum, Median and Average for AS Contracts Only				
Statistical Measure	1990–1994	1995–1999	2000–2006	Full Study Period
Minimum	60.1%	63.4%	60.8%	69.7%
Maximum	193.6%	143.6%	118.6%	145.3%
Median	101.9%	95.3%	84.0%	89.7%
Average, all states combined	118.2%	104.0%	88.4%	99.5%
Relative A/E				
Minimum	51%	61%	69%	70%
Maximum	164%	138%	134%	146%
Median	86%	92%	95%	90%

Table 3.33 shows the 10 states with the highest A/E claim incidence ratios among all of the states over the full study period. Rhode Island, ranked No. 1, has the highest A/E ratio. Table 3.33 also provides the ranking of these 10 states relative to exposure. California is ranked No. 1 in exposure.

Table 3.33 A/E Claim Incidence Ratios (by Amount) by State of Issue, 1990–2006: AS Contracts Only				
State of Issue	Exposure Ranking	Relative A/E Ranking	A/E	Relative A/E
Rhode Island	35	1	145.3%	146%
California	1	2	129.3%	130%
Nevada	41	3	128.1%	129%
New York	2	4	117.1%	118%
Florida	3	5	117.1%	118%
Louisiana	26	6	114.6%	115%
Arizona	25	7	111.5%	112%
Montana	45	8	110.1%	111%
New Jersey	7	9	106.6%	107%
New Mexico	43	10	105.1%	106%
Average for all other states combined			88.6%	89%
Total			99.5%	100%

The list of states with the 10 highest A/E claim incidence ratios includes some very large states (California, Florida, New Jersey and New York), some very small states (Rhode Island, Montana, New Mexico and Nevada) and two states that fall in the middle with respect to their exposure (Arizona and Louisiana). The A/E ratios by state, even the small states, have reasonable credibility. For example, a 95 percent confidence interval for Rhode Island’s A/E ratio is 141.6 to 149.0 percent.

Table 3.34 shows how the relative A/E claim incidence ratios for the 10 states listed in Table 3.33 have changed over time. Most of the 10 states with the highest A/E claim incidence ratios over the full study period also retained A/E rankings in the top 10 for each of the three smaller study periods. Rhode Island stayed at No. 1 in all three study periods, California ranked No. 2 or 3 in each of the study periods, Nevada was ranked No. 2 or 4, and Louisiana retained the No. 5 ranking in all three study periods.

Table 3.34 Relative A/E Claim Incidence Ratios (by Amount) by Study Period for 10 States of Issue with the Highest A/E Claim Incidence Ratios, 1990–2006: AS Contracts Only				
State	1990–1994	1995–1999	2000–2006	Full Study Period
Rhode Island	164%	138%	134%	146%
California	138%	128%	124%	130%
Nevada	138%	128%	122%	129%
New York	121%	116%	111%	118%
Florida	107%	125%	118%	118%
Louisiana	110%	117%	119%	115%
Arizona	105%	109%	117%	112%
Montana	93%	110%	122%	111%
New Jersey	104%	105%	107%	107%
New Mexico	104%	109%	104%	106%
Average of all other states combined	86%	88%	92%	89%
Total	100%	100%	100%	100%
A/E Ranking				
Rhode Island	1	1	1	1
California	3	3	2	2
Nevada	2	2	4	3
New York	4	6	9	4
Florida	7	4	6	5
Louisiana	5	5	5	6
Arizona	8	9	7	7
Montana	17	8	3	8
New Jersey	9	11	10	9
New Mexico	10	10	13	10

Table 3.35 shows how the relative A/E claim incidence ratios and A/E rankings vary by occupation class for the 10 states with the highest A/E ratios. Rhode Island held the No. 1 A/E ranking in all of the nonmedical occupation classes but drops to No. 9 for occupation class M. California, Louisiana, New York, New Jersey and Nevada maintain high A/E rankings in all occupation classes. Florida maintains high A/E rankings in all occupation classes except occupation classes 3–4 (i.e., the blue-collar occupations), where the A/E ranking drops to No. 41. Montana and New Mexico have high A/E rankings only in occupation class M, with rankings more in the middle of all states for the nonmedical occupation classes. Arizona has high A/E rankings in occupation classes M and 1 and ranks more in the middle for the lower occupation classes.

Table 3.35 Relative A/E Claim Incidence Ratios (by Amount) by Occupation Class for 10 States of Issue with the Highest A/E Claim Incidence Ratios, 1990–2006: AS Contracts Only					
State	Occupation Class M	Occupation Class 1	Occupation Class 2	Occupation Class 3–4	All Occupation Classes Combined
Rhode Island	109%	163%	162%	187%	146%
California	125%	134%	137%	125%	130%
Nevada	141%	113%	120%	123%	129%
New York	113%	117%	128%	125%	118%
Florida	126%	114%	108%	83%	118%
Louisiana	120%	112%	102%	109%	115%
Arizona	123%	107%	87%	96%	112%
Montana	127%	91%	93%	100%	111%
New Jersey	103%	106%	109%	128%	107%
New Mexico	118%	94%	85%	99%	106%
Average of all other states combined	89%	88%	88%	95%	89%
Total	100%	100%	100%	100%	100%
A/E Ranking					
Rhode Island	9	1	1	1	1
California	4	2	2	5	2
Nevada	1	5	4	7	3
New York	8	3	3	6	4
Florida	3	4	7	41	5
Louisiana	6	6	10	12	6
Arizona	5	7	24	26	7
Montana	2	27	20	19	8
New Jersey	10	10	6	3	9
New Mexico	7	24	29	21	10

Section 4: A/E Claim Incidence Ratios by Issue Year

This section compares claim incidence trends with respect to four issue year groups: pre-1990, 1990–1994, 1995–1999 and 2000–2006. Pre-1990 includes policies issued at a time before the financial turmoil facing the IDI business began to emerge. During the 1990–1994 period, many companies began to experience financial problems in their IDI blocks and decided to exit the business. During the 1995–1999 period, more companies exited the IDI business, while remaining companies in general tightened their underwriting practices and offered products. During the 2000–2006 period, profitability began to return to many of the companies still in the IDI business.

For each issue year group, claim incidence is analyzed by policy year, i.e., policy duration, in order to compare differences in underlying experience among the issue year groups on an apples-to-apples basis. Policy year (PY) is the number of years a policy is in force from the issue date. For example, policy year 1 represents experience in the first 12 months following issue. The analysis groups the claim incidence into the following policy years: 1, 2, 3–5, 6–10 and 11+. Cells that have fewer than 10 claims have been labeled NA.

4.1 A/E Claim Incidence Ratios by Contract Type

Table 4.1 shows the A/E claim incidence ratios by issue year and policy year groupings, separately for AS and OE contracts.

Issue Year	PY 1	PY 2	PY 3	PY 4–5	PY 6–10	PY 11+	All Policy Years
AS Contracts							
Pre-1990	94.3%	106.5%	127.1%	131.7%	123.8%	98.5%	108.3%
1990–1994	85.1%	94.4%	115.7%	108.2%	107.8%	93.3%	100.1%
1995–1999	66.8%	72.5%	80.8%	86.2%	82.7%	75.3%	80.5%
2000–2006	70.0%	71.4%	77.0%	76.3%	71.1%		73.1%
Total	77.3%	85.5%	102.7%	106.6%	108.9%	96.8%	99.5%
OE Contracts							
Pre-1990	69.4%	75.7%	82.5%	95.2%	89.2%	69.3%	77.7%
1990–1994	62.8%	70.5%	77.4%	62.5%	63.2%	58.7%	63.1%
1995–1999	33.6%	55.2%	54.3%	58.1%	54.0%	69.9%	54.9%
2000–2006	33.5%	48.2%	40.6%	42.8%	47.4%		41.5%
Total	48.6%	62.3%	66.1%	69.4%	72.6%	66.2%	66.9%

Policies issued since 1995 have experienced much lower A/E claim incidence ratios for each policy year grouping than policies issued before 1995. This most likely is attributable to the overall tightening up of underwriting practices and product offerings. The A/E claim incidence ratios for AS policies generally increase with duration for the first five policy years and then decrease. There is a significant jump in the third policy year, which follows the end of the contestable period, although the relative jump in policy year 3 is lower for policies issued in 1995 and later. OE policies have a similar pattern by policy year, albeit at lower A/E claim incidence ratios than for AS policies. The initial jump in the A/E ratios by policy year for OE contracts occurs in the second policy year, rather than at the end of the two-year contestable period.

Because of the low volume of OE business in the data, the remainder of this section focuses on AS policies only.

4.2 A/E Claim Incidence by Benefit Period

After the mid-1990s, most IDI carriers no longer issued policies with the lifetime benefit period. Table 4.2 shows the A/E claim incidence ratios for AS policies by issue year and policy year groupings separately for three benefit period groupings (short-term, to age 65–70 and lifetime).

Table 4.2 A/E Claim Incidence Ratios (by Amount) by Issue Year, Policy Year and Benefit Period: AS Contracts Only							
Issue Year	PY 1	PY 2	PY 3	PY 4–5	PY 6–10	PY 11+	All Policy Years
Short-Term Benefit Periods							
Pre-1990	104.5%	109.5%	118.9%	123.2%	114.3%	92.3%	99.0%
1990–1994	95.0%	95.6%	102.7%	101.1%	99.7%	89.2%	95.1%
1995–1999	72.8%	72.5%	87.5%	94.7%	92.2%	89.9%	89.2%
2000–2006	85.8%	87.1%	84.2%	82.0%	79.4%		84.4%
Total	88.8%	91.3%	98.3%	102.8%	103.3%	91.7%	95.5%
To Age 65–70 Benefit Periods							
Pre-1990	89.5%	103.5%	129.7%	133.1%	124.1%	98.2%	110.2%
1990–1994	80.2%	92.8%	114.0%	104.3%	105.8%	87.9%	97.1%
1995–1999	63.5%	71.3%	76.6%	81.2%	75.4%	66.2%	74.4%
2000–2006	59.0%	63.2%	70.8%	70.5%	64.7%		65.3%
Total	70.1%	81.5%	100.5%	104.4%	107.6%	95.0%	97.5%
Lifetime Benefit Period							
Pre-1990	96.7%	122.5%	129.7%	142.8%	144.0%	114.3%	121.4%
1990–1994	94.2%	102.7%	152.1%	144.2%	124.3%	108.2%	116.5%
1995–1999	116.2%	101.7%	106.0%	96.3%	102.1%	86.4%	99.1%
2000–2006	118.3%	89.4%	119.3%	123.0%	109.2%		112.4%
Total	102.6%	103.3%	136.3%	136.3%	127.8%	111.7%	117.7%

For the first two policy years, the A/E claim incidence ratios for short-term benefit periods are somewhat higher than those for the benefit periods to age 65–70. Some companies offer policies with shorter benefit periods to individuals with substandard health conditions. This practice could have contributed to the somewhat higher incidence rates on policies with short-term benefit periods in the early policy years.

Policies with a lifetime benefit period have experienced significantly higher A/E claim incidence ratios for all combinations of issue years and policy years. Interestingly, policies with a lifetime benefit period issued in 1995 and later exhibit much higher A/E ratios in policy year 1. Many of the policies with the lifetime benefit periods issued in 1995 and later may be the result of option elections of future insurability riders, which characteristically experience anti-selection in the early policy years.

The remaining analysis in this section excludes policies with lifetime benefits in order to better observe claim incidence trends that are more relevant to IDI business that is more recently issued.

4.3 A/E Claim Incidence Ratios by Occupation Class

Table 4.3 shows A/E claim incidence ratios (by amount) by issue year, policy year and occupation class for AS policies after excluding policies with the Lifetime benefit period. For each issue year group, A/E claim incidence ratios for occupation class M track somewhat lower than those for occupation class 1, although their respective patterns are similar. For business issued in 1995 and later, the A/E claim incidence ratios by policy year for occupation class M and 1 are very close. It is important to bear in mind, when comparing the incidence experience of occupation classes M and 1, that the 2013 IDIVT incidence rates for occupation class M are much higher than the incidence rates for occupation class 1. Please refer to Appendix A for a comparison of claim incidence rates of occupation classes M and 1 from the 2013 IDIVT by occupation class.

Table 4.3 A/E Claim Incidence Ratios (by Amount) by Issue Year, Policy Year and Occupation Class: AS Contracts Only, Excluding Policies with Lifetime Benefit Period							
Issue Year	PY 1	PY 2	PY 3	PY 4–5	PY 6–10	PY 11+	All Policy Years
Occupation Class M							
Pre-1990	73.9%	89.1%	110.3%	125.7%	119.0%	95.1%	104.6%
1990–1994	71.9%	86.1%	104.9%	103.0%	109.3%	86.2%	95.1%
1995–1999	59.2%	69.3%	66.3%	86.3%	79.0%	67.8%	75.7%
2000–2006	59.6%	63.5%	71.7%	69.7%	62.5%		65.3%
Total	66.8%	79.2%	95.4%	105.2%	107.8%	92.4%	96.3%
Occupation Class 1							
Pre-1990	100.9%	114.2%	134.6%	133.5%	126.4%	98.0%	109.1%
1990–1994	85.1%	96.3%	123.2%	104.9%	102.6%	90.2%	98.1%
1995–1999	61.7%	69.6%	81.2%	84.1%	81.0%	74.3%	78.6%
2000–2006	65.5%	68.1%	72.5%	72.2%	67.7%		69.1%
Total	72.6%	81.6%	98.7%	99.9%	105.5%	95.8%	96.0%
Occupation Class 2							
Pre-1990	101.4%	123.1%	152.3%	146.1%	128.4%	96.2%	109.9%
1990–1994	103.8%	105.4%	113.9%	102.7%	92.6%	89.5%	97.0%
1995–1999	69.5%	68.7%	97.9%	87.0%	81.1%	79.4%	81.3%
2000–2006	73.6%	86.5%	77.7%	88.6%	81.9%		81.4%
Total	86.9%	97.1%	112.6%	113.6%	108.1%	94.6%	101.0%
Occupation Class 3–4							
Pre-1990	133.7%	117.3%	139.0%	124.5%	112.6%	91.4%	101.0%
1990–1994	114.8%	107.5%	98.9%	103.4%	95.2%	90.7%	98.7%
1995–1999	105.5%	91.9%	93.0%	89.0%	86.8%	93.5%	90.3%
2000–2006	92.7%	86.8%	95.1%	79.1%	79.5%		87.6%
Total	106.5%	100.2%	108.7%	104.4%	102.2%	91.3%	98.1%

For policies issued prior to 2000, the A/E incidence ratios for occupation class 2 are a little higher than the ratios for occupation class 1. For policies issued in 2000 and later, the A/E ratios for occupation class 2 are generally higher than the ratios for occupation class 1 at each policy year. For policies issued in 1995 and later, the A/E incidence ratios for occupation classes 3 and 4 have been higher than the ratios for the other occupation classes. Policies for occupation classes 3 and 4 appear to experience some anti-selection in policy year 1, which does not appear to be occurring in the other occupation classes and will most likely lessen in later policy years.

4.4 A/E Claim Incidence Ratios by Market

Table 4.4 shows the A/E claim incidence ratios by issue year and policy year for the ESML market and individual market for AS policies after excluding policies with the lifetime benefit period. The ratios of the A/E incidence for the ESML market to the A/E incidence for the individual market are generally lower than 0.80 in all policy years, except in policy years 6+ for policies issued prior to 1990. The ratios of ESML incidence to individual incidence are lowest in the first policy year for issue years prior to 2000, but are higher in the first policy year for policies issued in 2000 and later. The jump in the A/E ratios in the first year for policies issued in 2000 and later could be attributable to a higher proportion of ESML policies issued via voluntary guaranteed standard issue underwriting, which is more susceptible to anti-selection in the first few policy years.

Table 4.4 A/E Claim Incidence Ratios (by Amount) by Issue Year, Policy Year and Market: AS Policies Only, Excluding Policies with Lifetime Benefit Period							
Issue Year	PY 1	PY 2	PY 3	PY 4-5	PY 6-10	PY 11+	All Policy Years
Individual Market							
Pre-1990	107.0%	115.0%	139.5%	137.9%	126.2%	96.8%	108.9%
1990-1994	93.2%	101.5%	123.2%	112.1%	111.1%	93.3%	103.6%
1995-1999	73.8%	78.0%	89.8%	94.6%	87.2%	77.7%	86.1%
2000-2006	74.1%	78.7%	84.5%	78.7%	76.5%		78.3%
Total	85.0%	94.0%	113.7%	113.8%	113.4%	95.8%	102.8%
ESML Market							
Pre-1990	46.4%	67.4%	76.9%	100.2%	102.6%	89.0%	92.4%
1990-1994	60.9%	73.0%	80.6%	81.6%	85.9%	72.6%	77.0%
1995-1999	51.3%	59.7%	60.9%	68.2%	67.1%	64.5%	64.5%
2000-2006	58.7%	59.2%	61.4%	66.4%	56.1%		60.8%
Total	57.6%	64.1%	69.3%	79.1%	85.0%	82.7%	77.2%
Ratio of ESML A/E to Individual A/E							
Pre-1990	0.433	0.586	0.551	0.726	0.813	0.919	0.848
1990-1994	0.654	0.719	0.654	0.728	0.773	0.779	0.743
1995-1999	0.694	0.766	0.678	0.721	0.769	0.830	0.749
2000-2006	0.792	0.752	0.727	0.844	0.733		0.777
Total	0.678	0.682	0.609	0.695	0.750	0.863	0.751

A/E claim incidence ratios vary by occupation class within each market and issue year. Table 4.5 shows the A/E claim incidence ratios for policies issued from 1995 to 1999 by market and occupation class, along with the ratios of ESML incidence to individual incidence by occupation class. Table 4.6 provides comparable results for policies issued from 2000 to 2006. The underwriting practices implemented since 1995 are more consistent with those applied today than with the practices used prior to 1995. The A/E claim incidence ratios for the ESML market issued prior to 1995 show a more modest jump in policy year 3 than in the individual market. The A/E claim incidence ratios for the ESML market issued in 1995 and later show no third-year jump.

Table 4.5 A/E Claim Incidence Ratios (by Amount) by Policy Year, Market and Occupation Class: AS Policies Only, Issued 1995–1999, Excluding Policies with Lifetime Benefit Period							
Occupation Class	PY 1	PY 2	PY 3	PY 4–5	PY 6–10	PY 11+	All Policy Years
Individual Market							
M	64.5%	74.4%	75.7%	94.2%	84.2%	71.0%	81.3%
1	69.2%	75.6%	93.9%	96.7%	89.6%	80.1%	87.9%
2	78.1%	78.1%	106.0%	94.6%	88.2%	85.5%	89.0%
3–4	108.8%	93.6%	94.0%	89.8%	87.3%	89.9%	90.9%
Total	73.8%	78.0%	89.8%	94.6%	87.2%	77.7%	86.1%
ESML Market							
M	47.7%	58.7%	48.2%	71.0%	68.3%	61.2%	64.1%
1	51.9%	61.9%	64.1%	66.5%	66.5%	64.2%	64.5%
2	51.1%	47.5%	77.8%	68.9%	64.6%	66.4%	63.8%
3–4	78.6%	74.3%	79.5%	72.7%	76.6%	122.2%	81.1%
Total	51.3%	59.7%	60.9%	68.2%	67.1%	64.5%	64.5%
Ratio of ESML A/E to Individual A/E							
M	0.739	0.788	0.637	0.753	0.810	0.862	0.788
1	0.750	0.819	0.682	0.688	0.742	0.801	0.733
2	0.654	0.608	0.734	0.728	0.732	0.776	0.717
3–4	0.723	0.793	0.846	0.809	0.877	1.358	0.892
Total	0.694	0.766	0.678	0.721	0.769	0.830	0.749

Table 4.6 A/E Claim Incidence Ratios (by Amount) by Policy Year, Market and Occupation Class: AS Policies Only, Issued 2000–2006, Excluding Policies with Lifetime Benefit Period							
Occupation Class	PY 1	PY 2	PY 3	PY 4–5	PY 6–10	PY 11+	All Policy Years
Individual Market							
M	70.9%	70.8%	80.2%	78.2%	72.2%		74.5%
1	67.7%	77.8%	84.2%	75.9%	73.3%		75.3%
2	78.5%	89.8%	79.6%	90.3%	96.5%		85.5%
3–4	94.4%	86.8%	97.3%	79.7%	80.1%		88.6%
Total	74.1%	78.7%	84.5%	78.7%	76.5%		78.3%
ESML Market							
M	40.0%	50.5%	56.5%	53.8%	42.4%		48.8%
1	63.5%	59.3%	61.7%	68.4%	60.8%		63.0%
2	62.2%	79.0%	73.7%	85.2%	57.4%		72.7%
3–4	65.9%	87.4%	57.8%	68.5%	67.6%		70.1%
Total	58.7%	59.2%	61.4%	66.4%	56.1%		60.8%
Ratio of ESML A/E to Individual A/E							
M	0.565	0.712	0.704	0.687	0.588		0.655
1	0.938	0.761	0.732	0.900	0.830		0.837
2	0.793	0.879	0.926	0.944	0.595		0.850
3–4	0.698	1.006	0.594	0.859	0.844		0.791
Total	0.792	0.752	0.727	0.844	0.733		0.777

The ratios of ESML incidence to Individual incidence have been under 0.850 for all policy years combined, although the ratios have generally increased for policies issued in 2000–2006 for occupation classes 1 and 2 and decreased for occupation classes M and 3–4.

Table 4.7 shows the A/E claim incidence ratios for policies issued in 2000–2006 to those for policies issued in 1995–1999 by market and occupation class. These ratios illustrate how claim incidence is changing on new business issued since 1995.

Table 4.7 A/E incidence Ratios for Policies Issued 2000–2006 Divided by A/E incidence Ratios for Policies Issued 1995–1999 by Market, Occupation Class and Policy Year: AS Policies Only, Excluding Policies with Lifetime Benefit Period						
Occupation Class	PY 1	PY 2	PY 3	PY 4–5	PY 6–10	All Policy Years
Individual Market						
M	1.100	0.951	1.060	0.830	0.857	0.915
1	0.979	1.030	0.897	0.786	0.818	0.857
2	1.006	1.150	0.750	0.955	1.094	0.961
3–4	0.868	0.927	1.035	0.887	0.917	0.975
Total	1.004	1.009	0.940	0.832	0.877	0.909
ESML Market						
M	0.840	0.860	1.171	0.758	0.622	0.761
1	1.224	0.958	0.962	1.028	0.914	0.978
2	1.219	1.663	0.948	1.237	0.889	1.140
3–4	0.838	1.176	0.727	0.942	0.883	0.864
Total	1.145	0.991	1.008	0.974	0.836	0.943

ESML policies issued in 2000–2006 in occupation class 1 experienced a jump in A/E claim incidence ratios in the first policy year relative to the policies issued in 1995–1999. This jump could be attributable to the higher portion of ESML policies issued via voluntary guaranteed standard issue underwriting. This first-year jump was not observed in occupation class M. Companies may have been more restrictive in using this form of underwriting for occupation class M. Interestingly, ESML policies issued to occupation class 2 in 2000–2006 experienced incidence deterioration in most of the first five policy years, relative to business issued in 1995–1999.

4.5 A/E Claim Incidence Ratios by Underwriting Type in the ESML Market

Generally, companies have issued policies in the individual market using individual medical underwriting, although a small subset of policies have been issued using simplified underwriting or were the result of option elections of future insurability option riders. The two main types of underwriting in the ESML market are individual medical and guaranteed standard issue (GSI). GSI underwriting is applied either on a mandatory basis (i.e., all employees eligible for IDI coverage under the plan will receive it, and typically the employer pays the premium) or a voluntary basis (i.e., eligible employees choose to purchase the coverage and typically pay the premium).

The IDEC database used in this analysis is unable to separate the GSI policies into mandatory and voluntary. However, a report by the Individual Disability Tables Work Group describes a recent industry survey of IDI companies indicating that, on average, claim incidence on ESML policies issued using voluntary GSI was 70 percent higher than on those issued using mandatory GSI.⁵ Some companies have issued ESML policies using guaranteed-to-issue underwriting, where they will guarantee to issue a policy but may limit it based on the medical health of the insured. This basis is rarely used now and has been combined with individual medical underwriting in the following analysis.

⁵ American Academy of Actuaries, *Report of the Individual Disability Tables Work Group* (see Footnote 2).

Table 4.8 shows the significant growth of the percentage of GSI business in all ESML business by issue year group, reaching 62 percent since 2000.

Table 4.8 Distribution of ESML Exposure (by Amount) by Issue Year and Underwriting Type			
Issue Year	GSI	Individual Medical	Total
Pre-1990	4.9%	95.1%	100.0%
1990–1994	10.8%	89.2%	100.0%
1995–1999	38.4%	61.6%	100.0%
2000–2006	62.1%	37.9%	100.0%

Table 4.9 compares the A/E claim incidence ratios for ESML policies issued in 1995–1999 by underwriting type (individual medical underwriting versus GSI) and occupation class. The bottom section of the table also shows the ratios of GSI incidence to individual medical incidence. Table 4.10 shows similar results for ESML policies issued in 2000–2006.

Table 4.9 A/E Claim Incidence Ratios (by Amount) by Policy Year and Occupation Class for ESML Policies Issued 1995–1999: AS Policies Only, Excluding Policies with Lifetime Benefit Period							
Occupation Class	PY 1	PY 2	PY 3	PY 4–5	PY 6–10	PY 11+	All Policy Years
Individual Medical Underwriting							
M	51.0%	68.3%	NA	74.1%	67.3%	62.4%	65.7%
1	39.8%	53.9%	57.3%	55.7%	66.8%	63.9%	60.2%
2	NA	NA	79.3%	64.1%	62.0%	NA	59.6%
3–4	NA	NA	NA	NA	85.8%	NA	84.7%
Total	45.2%	56.8%	59.0%	63.3%	66.7%	64.4%	62.7%
GSI Underwriting							
M	42.5%	42.6%	42.5%	64.0%	71.0%	57.5%	60.3%
1	71.1%	74.3%	74.3%	81.3%	66.0%	64.8%	71.2%
2	81.9%	87.1%	72.2%	83.4%	73.9%	NA	79.2%
3–4	NA	NA	NA	NA	NA	NA	53.6%
Total	62.1%	65.0%	64.3%	76.7%	67.8%	64.8%	68.3%
Ratio of GSI Underwriting A/E to Individual Medical Underwriting A/E							
M	0.834	0.624	0.824	0.863	1.055	0.922	0.918
1	1.786	1.379	1.298	1.459	0.988	1.013	1.183
2	1.868	2.282	0.911	1.302	1.191	NA	1.329
3–4	NA	NA	NA	NA	NA	NA	0.632
Total	1.374	1.146	1.090	1.213	1.017	1.006	1.089

Table 4.10 A/E Claim Incidence Ratios (by Amount) by Policy Year and Occupation Class for ESML Policies Issued 2000–2006: AS Policies Only, Excluding Policies with Lifetime Benefit Period						
Occupation Class	PY 1	PY 2	PY 3	PY 4–5	PY 6–10	All Policy Years
Individual Medical Underwriting						
M	45.9%	57.5%	58.0%	63.0%	42.2%	54.4%
1	34.3%	46.6%	56.7%	66.0%	52.0%	50.5%
2	57.8%	53.8%	45.1%	55.4%	36.5%	52.0%
3–4	61.2%	81.8%	40.9%	74.9%	78.5%	66.9%
Total	40.5%	51.4%	55.9%	64.4%	48.2%	52.2%
GSI Underwriting						
M	31.3%	38.8%	53.9%	36.7%	43.0%	39.1%
1	76.6%	65.2%	64.1%	69.9%	69.7%	69.7%
2	65.4%	97.0%	94.2%	107.0%	70.4%	87.3%
3–4	75.9%	99.4%	95.9%	NA	NA	77.5%
Total	69.9%	64.2%	65.1%	68.2%	65.1%	67.0%
Ratio of GSI Underwriting A/E to Individual Medical Underwriting A/E						
M	0.682	0.675	0.930	0.582	1.020	0.718
1	2.235	1.400	1.131	1.058	1.340	1.381
2	1.132	1.802	2.091	1.931	1.929	1.680
3–4	1.240	1.215	2.344	NA	NA	1.158
Total	1.726	1.250	1.164	1.058	1.349	1.283

Tables 4.9 and 4.10 provide an interesting comparison of A/E claim incidence ratios in the ESML market for the two types of underwriting. The A/E claim incidence ratios for GSI underwritten business are higher and generally flatter than the A/E claim incidence ratios for individual medical underwritten business in the ESML market. The GSI underwritten A/E claim incidence ratios for occupation class M are generally lower than the individual medical underwritten A/E ratios, which may be due to companies using more conservative GSI underwriting (e.g., a higher proportion of employer-pay business) for occupation class M.

Table 4.11 shows the ratios of A/E incidence for ESML policies issued in 2000–2006 to those issued in 1995–1999 by occupation class and policy year.

Table 4.11 A/E Incidence Ratios for ESML Policies Issued 2000–2006 Divided by A/E Incidence Ratios for Policies Issued 1995–1999, by Underwriting Type, Occupation Class and Policy Year: AS Policies Only, Excluding Policies with Lifetime Benefit Period						
Occupation Class	PY 1	PY 2	PY 3	PY 4–5	PY 6–10	All Policy Years
Individual Medical Underwriting						
M	0.899	0.843	1.124	0.849	0.627	0.829
1	0.861	0.865	0.990	1.185	0.778	0.839
2	1.318	1.410	0.568	0.865	0.588	0.871
3–4	0.833	1.160	0.480	0.939	0.915	0.790
Total	0.895	0.905	0.949	1.018	0.723	0.833
GSI Underwriting						
M	0.735	0.912	1.269	0.573	0.606	0.648
1	1.078	0.878	0.863	0.859	1.055	0.979
2	0.799	1.114	1.305	1.283	0.953	1.102
3–4	NA	NA	NA	NA	NA	1.447
Total	1.125	0.988	1.013	0.889	0.960	0.981

The incidence for ESML policies issued using either type of underwriting improved between 1995–1999 and 2000–2006 for occupation class M. Similarly, incidence for ESML policies issued to occupation class 1 improved, albeit not as much as occupation class M did. However, there was an obvious jump in the GSI claim incidence in policy year 1 for business issued in 2000–2006. The incidence for ESML policies issued to occupation classes 2–4 improved between 1995–1999 and 2000–2006 for the individual medically underwritten business but deteriorated for the GSI underwritten business.

The IDEC is currently collecting industry data to study IDI morbidity experience from 2006 to 2015. The data should differentiate experience between voluntary and mandatory GSI underwriting, and thus should significantly expand our understanding of the ESML business.

4.6 A/E Claim Incidence Ratios by State of Issue

The IDEC database used for this analysis does not allow us to evaluate claim incidence experience by policy year for the various states of issue. However, the claim incidence differences by state of issue can be studied by the following year-of-issue groupings: pre-1990, 1990–1994, 1995–1999 and 2000–2006, which provide insight into how differences by state of issue may be affected by changes in risk management practices.

Table 4.12 shows the minimum, maximum, median and average A/E claim incidence ratios among the states of issue for issue year groupings pre-1990, 1990–1994, 1995–1999 and 2000–2006, as well as all issue years combined.

Table 4.12 A/E Claim Incidence Ratios (by Amount) by State of Issue and Issue Year: AS Contracts Only					
Statistical Measure	Issued Pre-1990	Issued 1990–1994	Issued 1995–1999	Issued 2000–2006	All Issue Years Combined
Minimum	81.6%	44.9%	38.7%	18.3%	69.7%
Maximum	155.2%	147.4%	110.5%	118.7%	145.3%
Median	97.9%	90.8%	76.0%	66.1%	89.7%
Average	108.3%	100.1%	80.5%	73.1%	99.5%
Relative A/E					
Minimum	75%	45%	48%	25%	70%
Maximum	143%	147%	137%	162%	146%
Median	90%	91%	94%	90%	90%

The A/E claim incidence ratios among the various issue year groupings reflect differences in the aging of the business, as well as differences in underwriting and product provisions. Consequently, for us to understand how the differences by state of issue are changing, it is necessary to focus more on the relative A/E ratios derived by dividing the A/E claim incidence ratios for each state and issue year grouping by the average A/E claim incidence ratio for all states combined for the issue year grouping.

The range of relative A/E ratios among the states of issue for business issued prior to 1990 is narrower than for business issued in 1990 and later. The impact of different state characteristics on the A/E ratios appears to be wearing off on this older block of business. The range of relative A/E ratios for business issued in 2000 and later is wider than the range for business issued from 1990 to 1999.

Table 4.13 shows the relative A/E claim incidence ratios by issue year groupings for the 10 states with the highest A/E ratios over the full study period, which were listed in Table 3.33, along with their respective A/E rankings within each issue year grouping. Most of the 10 states with the highest A/E ratios over the full study period maintained high relative A/E ratios for all of the issue year groupings. One exception is New Mexico, where the relative A/E ratios for business issued since 1995 have improved dramatically.

Table 4.13 Relative A/E by State of Issue and Issue Year: AS Contract Only					
State	Issued Pre-1990	Issued 1990– 1994	Issued 1995– 1999	Issued 2000– 2006	All Issue Years Combined
Rhode Island	143%	147%	126%	162%	146%
California	122%	137%	137%	145%	130%
Nevada	129%	138%	103%	110%	129%
New York	117%	114%	119%	110%	118%
Florida	114%	121%	113%	116%	118%
Louisiana	114%	114%	133%	121%	115%
Arizona	109%	115%	117%	109%	112%
Montana	105%	111%	124%	131%	111%
New Jersey	104%	106%	108%	123%	107%
New Mexico	106%	114%	99%	55%	106%
Average of all other states combined	90%	88%	91%	91%	89%
Total	100%	100%	100%	100%	100%
A/E Ranking					
Rhode Island	1	1	4	1	1
California	3	3	1	2	2
Nevada	2	2	15	10	3
New York	4	8	6	11	4
Florida	5	4	9	8	5
Louisiana	6	7	2	6	6
Arizona	7	5	7	12	7
Montana	10	10	5	3	8
New Jersey	11	11	12	4	9
New Mexico	9	6	23	47	10

Section 5: Reliance and Limitations

5.1 Reliance

In conducting our analysis, Milliman relied upon the database developed by the IDEC for its 1990–2006 claim incidence study. Unless otherwise described, Milliman did not audit or independently verify any of the information furnished, except that we did review the data for reasonableness and consistency. To the extent that any of the data or other information supplied to us was incorrect or inaccurate, the results of our analysis could be materially affected.

5.2 Limitations on Use and Distribution of Report

This report is intended for the benefit of the Society of Actuaries. Although the author understands that this report will be made widely available to third parties, Milliman does not assume any duty or liability to such third parties with its work. In particular, the results in this report are technical in nature and are dependent on certain assumptions and methods. No party should rely upon these results without a thorough understanding of those assumptions and methods. Such an understanding may require consultation with qualified professionals. This report should be distributed and reviewed only in its entirety.

Appendix A: Comparison of 2013 IDI Valuation Table Claim Incidence Rates for Occupation Classes M and 1

Incidence Rates per 1,000: by Gender and Elimination Period (EP)

Occupation Class	Male - 30 day EP			Male - 60 day EP		
	M	1	OC M/ OC 1	M	1	OC M/ OC 1
Attained Age						
25	13.15	10.84	121%	5.91	3.95	150%
30	13.11	10.61	124%	6.15	4.25	145%
35	13.38	10.65	126%	6.69	4.73	141%
40	14.14	11.11	127%	7.61	5.48	139%
45	15.74	12.35	127%	9.11	6.62	138%
50	19.02	15.05	126%	11.47	8.42	136%
55	25.04	19.97	125%	15.19	11.16	136%
60	34.32	27.36	125%	20.62	14.86	139%
65	46.24	36.88	125%	27.30	19.40	141%
Occupation Class	Male - 90 day EP			Male - 180 day EP		
	M	1	OC M/ OC 1	M	1	OC M/ OC 1
Attained Age						
25	2.86	1.56	183%	1.67	0.96	174%
30	2.60	1.55	168%	1.47	0.83	177%
35	2.78	1.73	161%	1.57	0.80	196%
40	3.64	2.17	168%	2.12	0.98	216%
45	5.39	2.95	183%	3.34	1.46	229%
50	8.08	4.20	192%	5.30	2.34	226%
55	12.00	6.22	193%	8.08	3.64	222%
60	17.22	9.18	188%	11.79	5.37	220%
65	23.47	12.79	184%	16.18	7.48	216%

Incidence Rates per 1,000: by Gender and Elimination Period (EP)

Occupation Class	Female - 30 day EP			Female - 60 day EP		
	M	1	OC M/ OC 1	M	1	OC M/ OC 1
Attained Age						
25	48.29	30.17	160%	17.67	11.68	151%
30	46.53	29.76	156%	18.67	11.40	164%
35	43.10	28.41	152%	18.54	10.92	170%
40	38.12	26.11	146%	16.97	10.44	163%
45	34.59	24.50	141%	15.37	10.79	142%
50	34.37	24.86	138%	15.73	12.35	127%
55	37.88	27.26	139%	18.98	14.83	128%
60	46.02	32.00	144%	25.59	17.87	143%
65	56.86	38.50	148%	34.73	21.86	159%
Occupation Class	Female - 90 day EP			Female - 180 day EP		
	M	1	OC M/ OC 1	M	1	OC M/ OC 1
Attained Age						
25	7.17	4.26	168%	2.07	0.85	244%
30	8.32	4.64	179%	2.64	1.33	198%
35	9.04	4.88	185%	3.28	1.88	174%
40	9.26	5.00	185%	4.01	2.53	158%
45	9.54	5.38	177%	5.05	3.27	154%
50	10.70	6.52	164%	6.65	4.11	162%
55	13.12	8.60	153%	8.92	5.13	174%
60	16.94	11.62	146%	11.79	6.45	183%
65	21.73	15.43	141%	15.27	7.98	191%

Appendix B: Policy and Claim Data by State of Issue

State of Issue	Exposure		Claims		Actual-to-Expected (A/E) Ratio	
	By Count	By Amount (\$000)	By Count	By Amount (\$000)	By Count	By Amount
Alabama	407,101	989,614	3,083	6,218	96.2%	97.2%
Alaska	15,349	44,781	114	235	99.7%	79.4%
Arizona	359,240	947,663	3,094	7,367	98.5%	111.5%
California	2,696,472	7,508,124	32,346	73,130	123.3%	129.3%
Colorado	584,214	1,214,202	4,052	7,219	90.0%	92.3%
Connecticut	734,768	1,708,443	6,466	9,399	97.5%	88.6%
Delaware	77,821	195,185	417	814	71.9%	73.4%
District of Columbia	136,436	448,770	652	1,591	71.8%	69.7%
Florida	1,504,974	3,941,078	14,173	33,622	103.3%	117.1%
Georgia	895,860	2,216,259	5,428	11,736	87.6%	89.8%
Hawaii	148,448	292,797	1,189	1,966	81.1%	85.9%
Idaho	78,770	144,536	530	808	86.8%	88.5%
Iowa	565,561	770,149	4,665	4,444	81.8%	79.8%
Illinois	1,485,829	3,505,995	9,777	16,821	82.5%	81.2%
Indiana	611,009	1,197,277	3,984	5,530	77.7%	73.0%
Kansas	275,873	560,784	2,089	3,375	86.0%	89.5%
Kentucky	333,978	693,241	3,024	4,999	103.3%	103.9%
Louisiana	364,848	920,138	3,465	6,975	103.9%	114.6%
Maine	154,829	304,531	1,521	2,096	92.8%	94.0%
Maryland	683,560	1,678,744	5,787	10,879	94.6%	93.8%
Massachusetts	1,182,855	2,649,482	11,996	17,637	98.8%	93.4%
Michigan	1,137,409	2,802,322	10,362	19,105	99.2%	97.7%
Minnesota	898,208	1,640,839	5,894	7,954	79.1%	79.4%
Mississippi	163,218	421,869	1,414	2,622	97.0%	94.0%
Missouri	559,582	1,201,225	3,753	5,847	81.0%	76.9%
Montana	72,703	127,782	619	945	94.6%	110.1%
North Carolina	873,195	2,002,062	5,638	9,756	87.9%	84.5%
North Dakota	57,685	85,124	418	515	74.7%	83.6%
Nebraska	594,421	1,498,412	5,033	8,931	87.9%	87.2%
New Hampshire	141,071	270,746	1,445	1,814	93.0%	96.9%
New Jersey	1,130,198	2,864,029	12,532	22,393	112.5%	106.6%
New Mexico	78,493	167,168	686	1,320	94.5%	105.1%
Nevada	68,944	213,460	765	1,987	117.0%	128.1%
New York	2,814,475	7,261,285	34,453	58,404	120.0%	117.1%
Ohio	1,245,158	2,783,292	10,026	15,960	86.4%	86.3%
Oklahoma	179,309	427,928	1,249	2,524	80.1%	86.6%
Oregon	338,404	693,797	2,141	3,943	81.1%	86.7%
Pennsylvania	1,504,220	3,579,684	13,823	23,258	99.4%	95.4%
Rhode Island	168,788	335,153	2,856	3,770	155.1%	145.3%
South Carolina	299,926	747,472	1,993	4,153	96.0%	91.1%
South Dakota	75,878	122,730	671	755	83.2%	84.5%
Tennessee	757,545	1,670,874	5,554	10,490	92.3%	96.1%
Texas	1,278,507	3,500,044	8,433	20,431	89.8%	91.6%
Utah	132,126	317,593	606	1,221	75.6%	70.0%
Virginia	781,038	1,764,133	4,708	8,447	79.3%	76.7%
Vermont	65,705	125,213	566	778	77.0%	84.1%
Washington	507,345	1,177,054	3,749	6,958	86.8%	88.2%
Wisconsin	859,692	1,370,873	7,564	8,625	86.9%	86.1%
West Virginia	127,904	241,097	1,206	1,506	99.3%	93.7%
Wyoming	17,457	37,214	148	214	78.2%	73.3%
Unknown	950,236	904,434	14,708	6,947	69.4%	76.6%
All states combined	31,176,637	72,286,704	280,865	488,434	96.3%	99.5%

Appendix C: Actual-to-Expected (A/E) and Relative Claim Incidence Ratios by State of Issue

A/E Claim Incidence Ratios by Amount

State of Issue	Study Period				Issue Year			
	1990–1994	1995–1999	2000–2006	Full	Pre-1990	1990–1994	1995–1999	2000–2006
Alabama	110.8%	97.2%	91.2%	97.2%	106.7%	97.1%	81.6%	65.3%
Alaska	109.6%	80.2%	69.9%	79.4%	97.7%	75.6%	60.2%	40.1%
Arizona	123.9%	113.7%	103.5%	111.5%	117.8%	115.5%	94.3%	80.0%
California	163.1%	132.8%	109.4%	129.3%	131.8%	137.1%	110.5%	105.7%
Colorado	113.0%	102.8%	81.3%	92.3%	103.4%	95.6%	72.8%	73.7%
Connecticut	101.6%	88.6%	80.9%	88.6%	92.4%	92.3%	74.5%	66.4%
Delaware	79.9%	86.8%	64.8%	73.4%	81.6%	84.0%	38.7%	50.7%
District of Columbia	95.5%	67.6%	60.8%	69.7%	90.1%	60.4%	58.9%	41.9%
Florida	126.7%	130.0%	104.6%	117.1%	123.4%	121.4%	91.3%	84.8%
Georgia	98.7%	95.1%	84.1%	89.8%	95.4%	100.2%	73.1%	66.5%
Hawaii	127.3%	102.0%	61.9%	85.9%	87.6%	92.3%	65.1%	65.8%
Idaho	97.5%	73.3%	91.9%	88.5%	88.4%	110.9%	70.7%	61.1%
Iowa	96.5%	73.6%	75.5%	79.8%	88.8%	72.2%	70.6%	62.9%
Illinois	92.1%	83.5%	75.6%	81.2%	89.1%	78.6%	71.0%	65.9%
Indiana	82.0%	81.2%	65.0%	73.0%	84.1%	71.2%	55.4%	46.6%
Kansas	94.6%	90.1%	86.5%	89.5%	98.1%	83.7%	82.3%	67.6%
Kentucky	99.2%	115.3%	99.8%	103.9%	116.1%	96.4%	86.0%	77.2%
Louisiana	130.5%	121.8%	105.1%	114.6%	123.0%	114.2%	106.8%	88.4%
Maine	107.3%	97.4%	85.2%	94.0%	95.8%	100.6%	72.7%	87.6%
Maryland	101.5%	103.3%	84.8%	93.8%	103.2%	98.7%	64.6%	65.8%
Massachusetts	117.6%	94.0%	82.1%	93.4%	101.9%	92.0%	75.2%	73.4%
Michigan	109.0%	102.9%	89.2%	97.7%	105.5%	98.4%	81.2%	74.5%
Minnesota	97.9%	77.0%	72.8%	79.4%	89.9%	78.1%	64.0%	57.1%
Mississippi	102.8%	98.9%	88.9%	94.0%	100.8%	91.7%	81.7%	84.4%
Missouri	93.3%	80.8%	67.5%	76.9%	86.1%	70.9%	75.5%	49.9%
Montana	110.3%	114.0%	108.0%	110.1%	113.7%	110.7%	100.0%	96.0%
North Carolina	86.4%	87.0%	82.8%	84.5%	95.7%	86.4%	65.6%	68.8%
North Dakota	94.7%	101.0%	69.7%	83.6%	92.6%	83.2%	71.9%	38.4%
Nebraska	78.5%	66.6%	89.2%	87.2%	86.8%	91.7%	82.0%	88.7%
New Hampshire	100.7%	101.6%	92.3%	96.9%	108.7%	89.0%	81.6%	69.9%
New Jersey	123.2%	109.0%	94.6%	106.6%	112.4%	105.7%	86.5%	90.2%
New Mexico	123.1%	113.0%	91.7%	105.1%	114.6%	114.6%	79.9%	40.5%
Nevada	163.3%	133.2%	108.0%	128.1%	139.3%	138.5%	82.6%	80.7%
New York	143.0%	121.0%	97.9%	117.1%	126.6%	114.1%	95.9%	80.5%
Ohio	96.1%	86.6%	81.3%	86.3%	94.8%	86.3%	70.0%	58.8%
Oklahoma	108.9%	77.7%	79.8%	86.6%	95.0%	85.8%	78.8%	47.8%
Oregon	90.7%	95.5%	81.1%	86.7%	93.7%	84.7%	84.1%	67.1%
Pennsylvania	112.9%	96.0%	86.4%	95.4%	107.3%	87.7%	76.5%	69.3%
Rhode Island	193.6%	143.6%	118.6%	145.3%	155.2%	147.4%	101.7%	118.7%
South Carolina	110.4%	90.5%	83.9%	91.1%	106.3%	89.9%	68.5%	62.1%
South Dakota	85.3%	82.8%	85.0%	84.5%	89.2%	86.3%	88.1%	59.3%
Tennessee	102.2%	106.4%	87.5%	96.1%	103.5%	98.2%	81.0%	63.6%
Texas	117.7%	97.9%	77.1%	91.6%	102.5%	94.5%	66.4%	65.6%
Utah	62.0%	84.6%	66.7%	70.0%	84.3%	67.9%	50.9%	51.1%
Virginia	85.7%	77.6%	72.8%	76.7%	86.2%	74.4%	66.6%	56.4%
Vermont	99.0%	76.2%	80.5%	84.1%	93.1%	80.0%	92.1%	45.0%
Washington	104.6%	88.9%	80.8%	88.2%	95.8%	89.5%	73.2%	68.4%
Wisconsin	91.8%	84.0%	84.4%	86.1%	93.3%	82.7%	75.5%	67.1%
West Virginia	107.7%	100.3%	83.7%	93.7%	107.9%	72.1%	101.8%	63.8%
Wyoming	60.1%	63.4%	82.2%	73.3%	98.1%	44.9%	91.1%	18.3%
Unknown	85.5%	80.3%	71.0%	76.6%	78.9%	95.2%	65.3%	57.3%
All states combined	118.2%	104.0%	88.4%	99.5%	108.3%	100.1%	80.5%	73.1%

Relative Claim Incidence Ratios by Amount

State of Issue	Study Period				Issue Year			
	1990–1994	1995–1999	2000–2006	Full	Pre-1990	1990–1994	1995–1999	2000–2006
Alabama	94%	93%	103%	98%	99%	97%	101%	89%
Alaska	93%	77%	79%	80%	90%	76%	75%	55%
Arizona	105%	109%	117%	112%	109%	115%	117%	109%
California	138%	128%	124%	130%	122%	137%	137%	145%
Colorado	96%	99%	92%	93%	95%	95%	90%	101%
Connecticut	86%	85%	92%	89%	85%	92%	93%	91%
Delaware	68%	83%	73%	74%	75%	84%	48%	69%
District of Columbia	81%	65%	69%	70%	83%	60%	73%	57%
Florida	107%	125%	118%	118%	114%	121%	113%	116%
Georgia	84%	91%	95%	90%	88%	100%	91%	91%
Hawaii	108%	98%	70%	86%	81%	92%	81%	90%
Idaho	83%	70%	104%	89%	82%	111%	88%	84%
Iowa	82%	71%	85%	80%	82%	72%	88%	86%
Illinois	78%	80%	86%	82%	82%	79%	88%	90%
Indiana	69%	78%	74%	73%	78%	71%	69%	64%
Kansas	80%	87%	98%	90%	91%	84%	102%	92%
Kentucky	84%	111%	113%	104%	107%	96%	107%	106%
Louisiana	110%	117%	119%	115%	114%	114%	133%	121%
Maine	91%	94%	96%	94%	88%	100%	90%	120%
Maryland	86%	99%	96%	94%	95%	99%	80%	90%
Massachusetts	100%	90%	93%	94%	94%	92%	93%	100%
Michigan	92%	99%	101%	98%	97%	98%	101%	102%
Minnesota	83%	74%	82%	80%	83%	78%	79%	78%
Mississippi	87%	95%	101%	94%	93%	92%	102%	115%
Missouri	79%	78%	76%	77%	80%	71%	94%	68%
Montana	93%	110%	122%	111%	105%	111%	124%	131%
North Carolina	73%	84%	94%	85%	88%	86%	81%	94%
North Dakota	80%	97%	79%	84%	85%	83%	89%	52%
Nebraska	66%	64%	101%	88%	80%	92%	102%	121%
New Hampshire	85%	98%	104%	97%	100%	89%	101%	96%
New Jersey	104%	105%	107%	107%	104%	106%	108%	123%
New Mexico	104%	109%	104%	106%	106%	114%	99%	55%
Nevada	138%	128%	122%	129%	129%	138%	103%	110%
New York	121%	116%	111%	118%	117%	114%	119%	110%
Ohio	81%	83%	92%	87%	88%	86%	87%	80%
Oklahoma	92%	75%	90%	87%	88%	86%	98%	65%
Oregon	77%	92%	92%	87%	87%	85%	104%	92%
Pennsylvania	96%	92%	98%	96%	99%	88%	95%	95%
Rhode Island	164%	138%	134%	146%	143%	147%	126%	162%
South Carolina	93%	87%	95%	92%	98%	90%	85%	85%
South Dakota	72%	80%	96%	85%	82%	86%	110%	81%
Tennessee	86%	102%	99%	97%	96%	98%	101%	87%
Texas	100%	94%	87%	92%	95%	94%	82%	90%
Utah	52%	81%	75%	70%	78%	68%	63%	70%
Virginia	73%	75%	82%	77%	80%	74%	83%	77%
Vermont	84%	73%	91%	85%	86%	80%	114%	62%
Washington	89%	85%	91%	89%	89%	89%	91%	94%
Wisconsin	78%	81%	95%	87%	86%	83%	94%	92%
West Virginia	91%	96%	95%	94%	100%	72%	127%	87%
Wyoming	51%	61%	93%	74%	91%	45%	113%	25%
Unknown	72%	77%	80%	77%	73%	95%	81%	78%
All states combined	100%	100%	100%	100%	100%	100%	100%	100%

About The Society of Actuaries

The Society of Actuaries (SOA), formed in 1949, is one of the largest actuarial professional organizations in the world dedicated to serving more than 27,000 actuarial members and the public in the United States, Canada and worldwide. In line with the SOA Vision Statement, actuaries act as business leaders who develop and use mathematical models to measure and manage risk in support of financial security for individuals, organizations and the public.

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

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

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

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

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

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