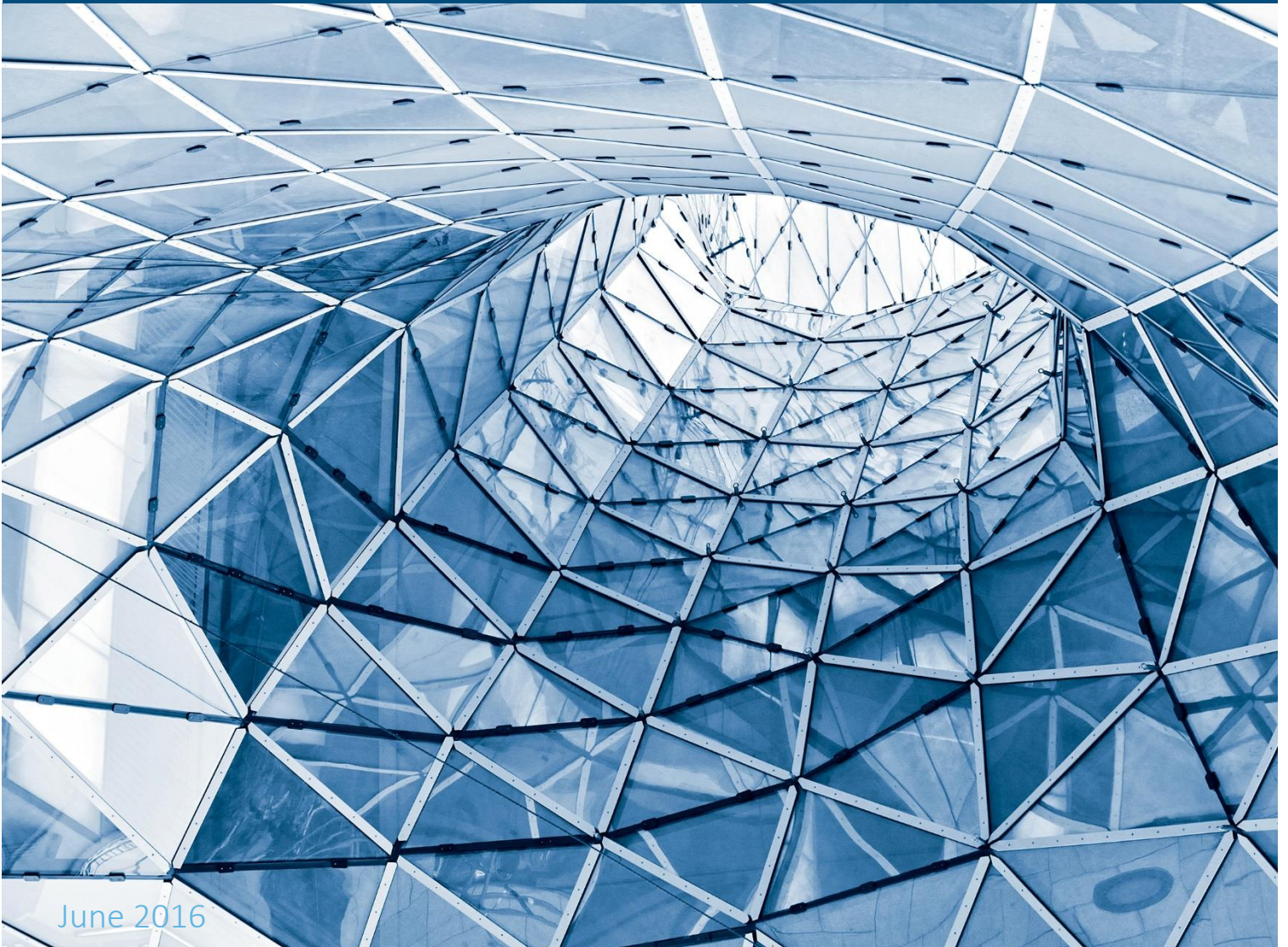




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Report on the Conversion Experience Study for the Level Premium Term Plans



June 2016



Report on the Conversion Experience Study for Level Premium Term Plans

SPONSOR

Reinsurance Section
Product Development Section
Committee on Life Insurance Research

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Background

The Society of Actuaries (SOA), along with the Product Development Section, Reinsurance Section and Committee for Life Insurance Research, engaged RGA Reinsurance Company (RGA) to undertake a research project on term conversion experience with a particular focus on conversion rates and mortality experience of term to permanent converted policies. Generally, term products in the United States have an option to convert to a permanent policy. The conversion privilege is usually offered to the end of the level term period but is sometimes limited to a shorter period. Exercising this option usually does not require additional underwriting. Because this is an option and not a requirement, an element of anti-selection is present for those that elect to convert rather than go through full underwriting again for a new and potentially cheaper product.

The experience results presented in this study will improve the reader's understanding of the policyholder behavior and potential mortality impact of conversion privileges as of March 2015. The survey results provide insight into market practices and trends of conversion privileges in term products as of September 2014.

This project includes two phases:

- Phase 1 consisted of a survey of the assumptions and product features used by companies for pricing and administering term conversion privileges. The Phase 1 Report "Report on the Survey of Conversion Assumptions and Product Features for Level Term Premium Plans" is available on the SOA website: <http://www.soa.org/Research/Research-Projects/Life-Insurance/2015-survey-conversion-assumptions.aspx>
- Phase 2 is presented here and consists of an experience analysis of level term business as it transitions into the converted policy. Participating companies were asked to provide policy level inforce and termination records so that experience results could be analyzed at a granular level including, but not limited to, age, gender, risk class and policy size. This report summarizes the combined results from the participating companies.
- After the release of the Phase 2 report, a predictive model will be developed that applies to the conversion experience study results. Upon completion, an updated version of this Phase 2 report with predictive model will be provided.

Please note that although the report is written in the present tense in a number of sections, the information provided is based on the time the data submissions were received, which is the period December 2014 to July 2015.

Disclaimer of Liability

The analysis presented in this report contains information related to the conversion privilege on term products in the U.S. life insurance industry. Interpretation of the study results would benefit from knowledge of conversion assumptions, options and features available on U.S. term insurance products. The results and analysis are derived from a data request of companies writing term life insurance products in the United States. Although a good faith effort has been made to analyze the reasonableness of each response, the final report is ultimately reliant on the accuracy of the underlying data provided.

The results provided herein come from a variety of life insurance companies with unique product structures, target markets, underwriting philosophies and distribution methods. As such, these results should not be deemed to be directly applicable to any particular company or deemed to be representative of the life insurance industry as a whole.

RGA Reinsurance Company (RGA), its directors, officers and employees disclaim liability for any loss or damage arising or resulting from any error or omission in RGA's analysis and summary of the study results or any other information contained herein. The report is to be reviewed and understood as a complete document.

This report is published by the Society of Actuaries (SOA) and contains information based on input from companies engaged in the U.S. life insurance industry. The information published in this report was developed from actual historical information and does not include any projected information.

The opinions expressed and conclusions reached by the authors are their own and do not represent an official position or opinion of RGA or the SOA or its members. The SOA makes no representations regarding the accuracy or completeness of the content of this study. It is for informational purposes only. The SOA does not recommend, encourage or endorse any particular use of the information provided in this study. The study should not be construed as professional or financial advice. The SOA makes no warranty, express or implied, guarantee or representation whatsoever and assumes no liability or responsibility in connection with the use or misuse of this study.

Executive Summary

Data and Methodology

Data validation and cleansing is a necessary first step in any experience study. Chapter 2, “Data Acquisition and Validation,” and Chapter 3, “Methodology and Definitions,” explain the processes used from the initial raw data validation to the calculation methodologies used to generate the final results. Throughout this process, some data proved to be unusable for the experience study. The unusable data were categorized as non-core and are further described in Appendix C: Non-Core Data Analysis.”

The largest weakness in the data was retaining original information of the term policy prior to conversion. Most companies retain data only on the converted policy, thereby losing information such as the issue date of the original term policy. In addition, many companies also struggle in categorizing partial conversions and joint policies. To the extent that a company could provide reliable information for partial conversions, data were segmented for the conversions and a factor applied to exposure, claim amounts and counts to account for any partial conversion.

Due to the antitrust requirements of the SOA and the desire to preserve the confidentiality of the data submissions, data from a company (or companies) that contributed more than 35% of the total study incidences was ratioed down to this threshold.

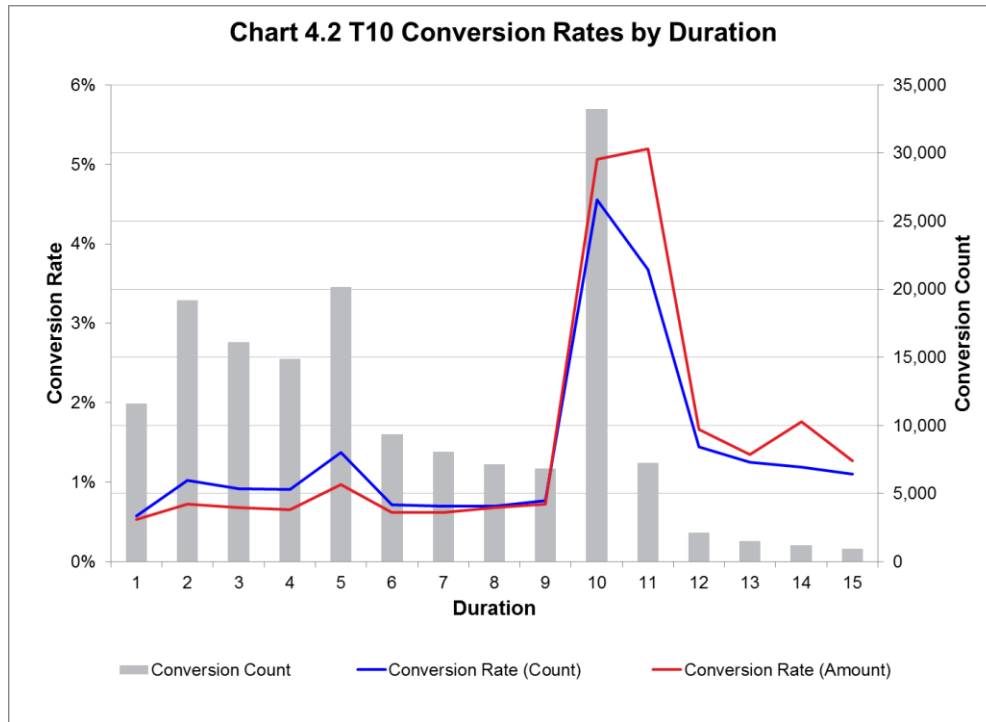
Permanent product mortality was not requested, and therefore the mortality experience on converted plans could not be compared to true point-in-scale mortality (PISM) of non-converted permanent plans. Instead, mortality of term plans during the level premium period (i.e., excluding post-level term period mortality) for all term products combined was used as a proxy for PISM.

Summary of Key Results

Term Conversion and Lapse Rates

Chapter 4 of the report summarizes the conversion rate and lapse rate results. Conversion rates and lapse rates are calculated separately for term products.

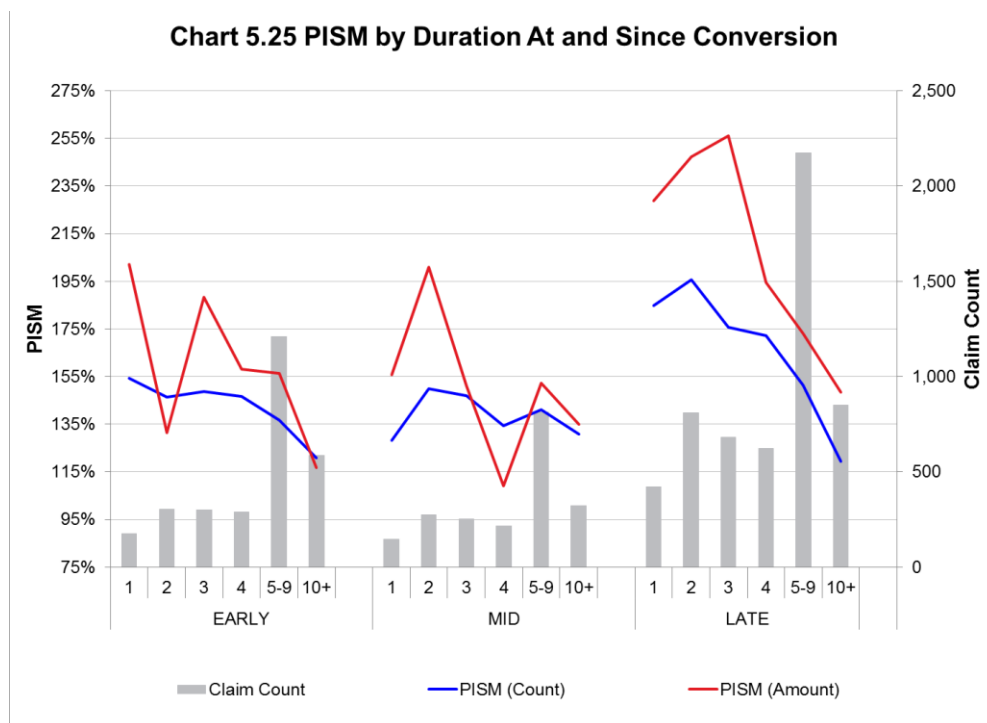
Conversion rates are generally low in the level term period ($\leq 1\%$), with the exception of five-year term (T5) policies and some volatility caused by conversion privileges not equal to the length of the level premium period. At the end of the level term period, there tends to be a large increase in the conversion rates. For example, 10-year term (T10) policies saw an increase in conversion rates in policy years 5 and 10, with the conversion rate in the 10th year more than 10 times the conversion rate in the first year. Chart 4.2 shows the magnitude of the increase in conversion rates during the 10th policy year for a 10-year term plan.



For the purposes of the study, policies that convert closer to the end of the level term period are categorized as late duration converters and exhibit different policyholder behavior than the early and mid-duration converters. Further descriptions of these groupings is explained in Chapter 3, “Conversion Groups.”

Post-Conversion Mortality

In Chapter 5, the mortality experience of converted policies is analyzed. Conversion mortality experience is expressed as actual to expected ratios based on the 2008 VBT as well as multiples of point-in-scale level term mortality experience (PISM). Policies that convert in the later durations have noticeably higher mortality in terms of the actual to expected ratio as a percent of the 2008 VBT relative to early or mid-duration converters (approximately 135% versus 115% of the 2008 VBT by count; 105% versus 110% by amount as in Chart 5.1). Comparing the mortality of the level period of a term product to post-conversion mortality (PISM) showed a 55–95% increase in the conversion mortality over the term mortality in the first duration after conversion, continuing above a 35% increase in durations 5–9 since conversion (Chart 5.4). The increase in late duration mortality relative to PISM is 80–120% in the first duration since conversion (Chart 5.25). Post-conversion mortality also varies by face amount band, where mortality experience for face amounts less than \$100k is lower than face amount bands greater than \$100k.



Ten- and 20-year term showed a 75–100% increase in mortality for conversions relative to term in the first duration since conversion. Nonsmoker conversion mortality increased over 100% from non-converted term mortality, while smokers saw less of an increase. Once a policy converted, both the actual to expected ratios and the PISM multiple decline from initial durations since conversion, indicating any anti-selective behavior may be wearing off, but not completely, within the time frame of this study.

The mortality experience results from this study were compared to the weighted average mortality assumptions of the survey participants in Phase 1 of the conversion study. The assumptions and experience are consistent as higher mortality is assumed and seen in the initial durations since conversion and declines over time. After reviewing other industry data available for individual life

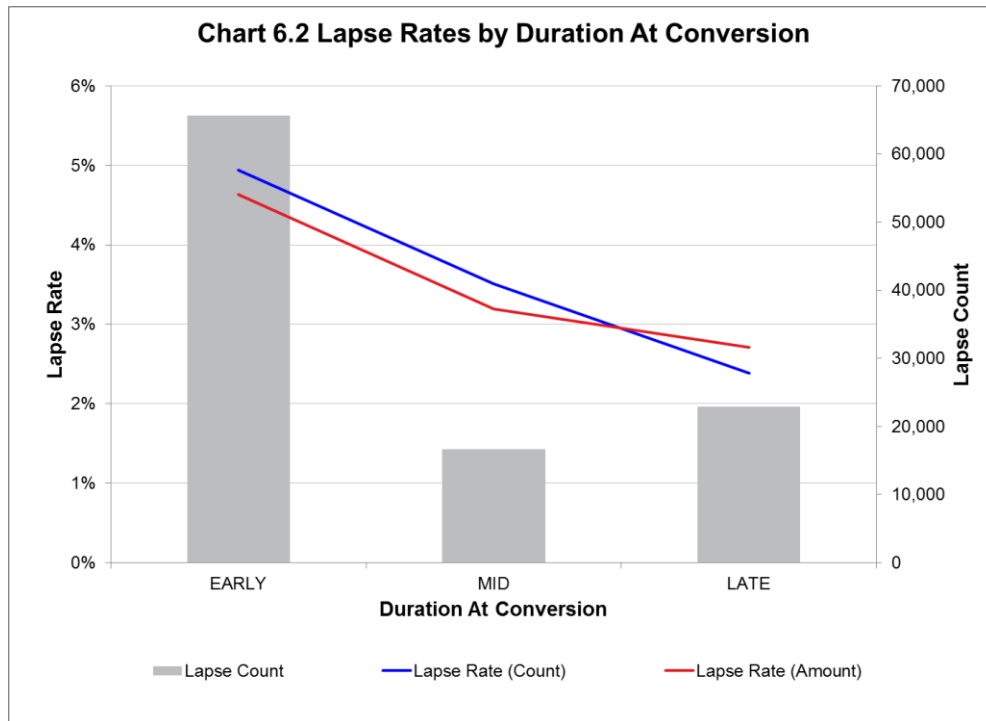
insurance, conversion mortality experience falls somewhere between post-level term mortality from this conversion study and post-level term mortality from the SOA Post-Level Term Lapse Experience Study results from 2014.¹ External sources referenced in this report include the 2014 post-level term study and the 2008–2009 Individual Life Experience Report published by the SOA in 2013.²

¹ <https://soa.org/Research/Experience-Study/Ind-Life/Persistency/research-2014-post-level-shock.aspx>

² <https://soa.org/Research/Experience-Study/Ind-Life/Mortality/research-2008-2009-ind-life-exp.aspx>

Post-Conversion Lapse

Lapse rates post-conversion are higher in the initial durations since conversion. In some cases the lapse rate in the second duration since conversion lapse rate are higher than the first duration. Partial conversions showed a higher initial lapse rate after conversion than full conversions. Early, mid- and late converters had a 4–6% lapse rate in the first one or two durations since conversion. Early converters had the highest overall lapse rate as shown in Chart 6.2. Smokers have higher post-conversion lapse rates than nonsmokers.



1. Introduction

Phase 1 of the conversion study presented the results of a survey of company practices and assumptions related to term conversions. The Phase 2 data request was sent to the top 75 term writers in the United States based on 2013 term sales by face amount (as reported in statutory annual statements aggregated from www.snl.com) as well as a select group of additional companies. Responses were provided by 19 companies covering over 30% of the term business written in 2013.

This report will walk through the process the researchers went through to do the study. The initial data request, review and validations were the first steps in the process. Each company's data went through a validation process and resubmission of the data to get information into study format.

Next, issues and assumptions were identified to allow for processing of the data for the study. Data where reasonable assumptions could not be made became non-core data and were not used for the entire study. Core data are data able to be followed from the term policy through to the converted permanent policy.

Finally, results of the experience study are presented. A few separate studies were done. The conversion rate study analyzes the amount of term business converting in each policy year. The conversion mortality study analyzes the post-conversion mortality experience as a percent of the 2008 VBT as well as the point in scale mortality (PISM) of converted business relative to nonconverted level term mortality. Finally, the conversion lapse study calculates the lapse rates for policies that have converted. Term life mortality and lapse studies are also included for reference.

2. Data Acquisition and Validation

Data Acquisition

The data request for Phase 2 is shown in Appendix A. Companies were asked to provide data on a single line in a file to help identify and link individual policies from term to permanent and avoid double counting. Companies were asked to fill in as many of the original term policy characteristics as possible to help with the overall validation and tying the term policy to the permanent policy.

In total 19 companies submitted data. Due to unique challenges each company faced in providing data sets for the different studies, not every company's data were used in every study. The study includes complete data from 10 companies used for all analysis including term conversion rate, term lapse rate, term mortality rate, post-conversion lapse rate and post-conversion mortality rate. Table 2.1 shows the number of participating companies in each of the five studies. Data sets vary for each of the studies except for the term conversion and term lapse rate analysis.

Table 2.1 Participating Company Totals

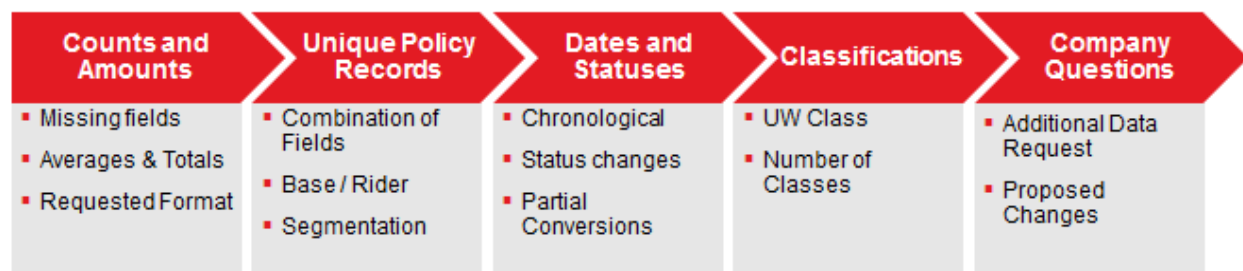
Term Conversion Rate	Post Conversion Lapse Rate	Post Conversion Mortality Rate	Term Lapse Rate	Term Mortality Rate
16	11	11	16	17

The most common challenge in acquiring company data was losing information on the original term policy that is necessary to fully analyze the post-conversion mortality and lapse experience. The data loss occurs because many companies are unable to retain the original term policy characteristics in their administration systems and link it to the existing converted permanent policy. In the Phase 1 report almost half of the respondents indicated they have the ability to identify the conversion on the permanent plan and link it back to the original term policy. We have a similar number of participating companies with this capability for Phase 2, 11 out of 19.

Another challenge in data acquisition was properly categorizing partial conversions and joint policies, which are referred to as segmented policies later in this section. In some instances companies were not able to provide accurate face amounts to determine if the policy had fully converted or not. In addition the original term policy information was lost when administering conversions of multiple policies or joint policies.

Many of these data challenges were expected as the Phase 1 report indicated that most companies (18/19) treat conversions as new business rather than inforce business on their administration systems. When the new conversion policy is added, no fields keep the original term policy information.

With each data set submitted by a company, the process shown in Chart 2.1 was performed every time.
Chart 2.1



Counts and Amounts

As an initial data validation, the data were put into Excel, and pivot tables were created to look at the data as a whole. Step 1 of this process in Chart 2.1 was completed for each company individually to ensure data fields were not blank, shifted or unusable. The data were initially verified that the averages and totals made sense. For example, if a company had an average face amount of \$10,000 or average issue age of 19, the data may have zeroes where data should be greater than 0. Ensuring each column of data made sense helped verify the data were in the format requested. A roll-forward analysis taking inforce policies, adding new issues, and subtracting deaths, lapses, maturities and conversions proved useful in data validation. When the amount of business in any one issue year ends up significantly higher or lower than the surrounding issue years, data may be incomplete. If conversions were identified as lapses before a certain year, the roll-forward can identify this issue early in the process.

Unique Policy Records

In order to make sure that each policy was represented once without duplication from term into permanent, unique records needed to be created (Step 2 of Chart 2.1). Often the permanent policy number is not tied to the term policy, and a single insured may have multiple conversions that should be accounted for only as one policy. To establish a unique record, a combination of fields including gender, age, birthdate and underwriting class needed to be available on both the permanent and term policies. The distinction between a base term policy and a term rider being converted is necessary to make sure one life is treated as a single policy and not two separate policies. Segmentation occurs when multiple conversions arise from the same term policy (partial conversions that may create multiple policies or multiple attained age calculations) or multiple term policies convert to one permanent policy.

Dates and Statuses

Step 3 of Chart 2.1, verifying dates and statuses, involves checking the chronological order of the various dates in the policy record. For example, the issue date comes after the birthdate and before the termination date. Also, the conversion date and termination date of the term policy are within 60 days of each other. Status changes associated with the dates need to make sense as well. The policy should not be identified as a death but inforce. Identifying partial conversions is often difficult especially if part of the policy is labeled as a lapse rather than a conversion. Also, the sum of the partial conversion should not exceed the total original face amount.

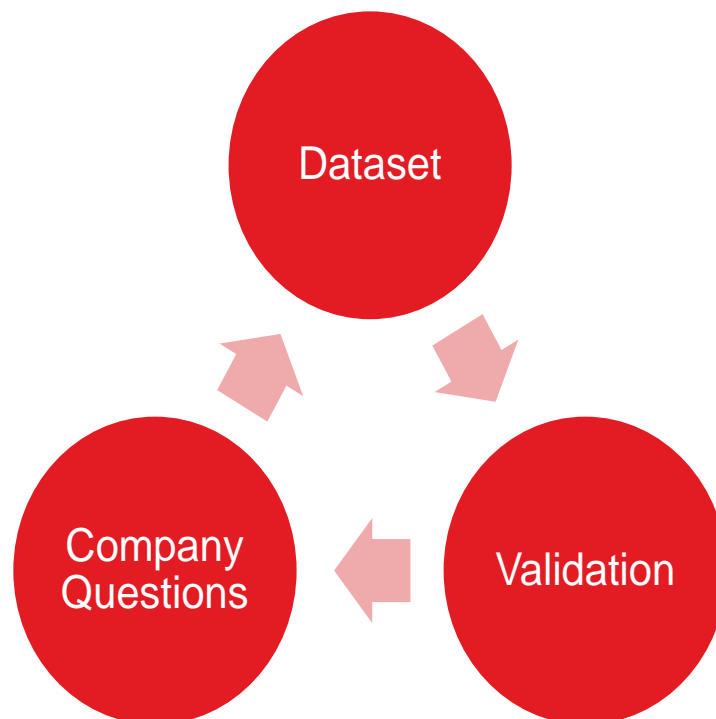
Classifications

Step 4 of Chart 2.1 involved the data request asking for the total number of risk classes as well as the number within the risk class. For example, a policy that has been identified with six underwriting classes (four NS/two SM) should have corresponding risk classes of 1, 2, 3, 4, 5 and 6 in the data for that plan. If a policy had only five risk classes, data may be missing or misclassified. Also seen in the data, risk classes may have changed. Some of this may be explainable going from a six class term product to a five class permanent product; however, upon conversion one may not expect a nonsmoker to switch to a smoker or vice versa.

Company Questions

Generally, Step 5 of Chart 2.1 is the validation process where data issues required the company to be asked to resubmit data with revisions requested if possible. If data were not able to be adjusted, assumptions sometimes had to be made to get the data into usable formats for the study. If an assumption could not be made based off the data, or the data were incomplete, they were categorized as non-core data. Chart 2.2 shows the cycle that was done each time a data set was submitted.

Chart 2.2



Key Fields Necessary for Permanent Products

The data fields listed below are necessary to analyze the post-conversion mortality and lapses:

- Original Issue Date of the term policy
- Date of Conversion
- Term Plan Code or Term Period
- Date of Birth
- Gender
- Face Amount of Converted Policy

Without these pieces of data, a full mortality or lapse study cannot be completed. The original issue date of the term policy was the most common missing key field. This date is needed to identify the duration at conversion and group the policies for the PISM analysis. The date of conversion and term period are needed to group the policies for analysis. The term period identifies the conversion group as discussed in Chapter 3, and the date of conversion is needed to calculate the duration since conversion for post-conversion mortality and lapse analysis. The remaining key fields—date of birth, gender and face amount—are necessary for any experience study analysis.

Core versus Non-Core

After the data had been reviewed and revised as much as possible, data were split into core and non-core data. Core data were able to be used for a mortality study, having all the elements necessary to follow the term policy completely through to the permanent policy. Data not able to be revised into a format that could be used for some part of the study or incomplete would be non-core. Data without a term period were included to increase credibility of the post-conversion study rather than included in the non-core data set.

Several assumptions were made for the core data. If the termination date and conversion date were more than 60 days apart, the company was asked which should be used. If unable to verify the appropriate date, the termination date was used. If the current face amount on the permanent product was missing, the policy was assumed to have been a full conversion (rather than a partial conversion) and the full original issued face amount was used. When the termination status between term and partial conversion is consistent, the term policy and the permanent policy would both have inforce elements.

Non-core data included policies where gender was missing. The default was unisex but was not included in the core data set. Aggregate or undifferentiated is also assumed for policies missing smoker status in the non-core data set. If the status was mislabeled as death or lapse, the policy was not included in the core data set. Policies with multiple segments (various term policies converting to one permanent policy or partial conversions) are included in the non-core data with each term policy converting to the permanent policy representing one converted policy. A policy with a status of joint or a changing status from single to joint or vice versa upon conversion is also included in the non-core data set. Further analysis of non-core data is shown in Appendix C: Non-Core Data Analysis.”

Grace Period

It is important to account for differences in how companies captured the effective date of lapses and conversions. For terminations due to lack of premium payment, some companies submitted a termination date equal to the anniversary date plus the grace period. To ensure consistency across companies, the researchers adjusted these dates to replicate the true effective date of the termination. This adjustment effectively moved shock lapses and conversion rates that were reported 30 to 100 days into the first duration of the post-level or conversion privilege period back into the final duration of the respective periods. After this adjustment, the results from these companies were much more consistent with those that reported the effective date of the termination (often on the policy anniversary). While other approaches may also have been appropriate, it was felt that this was the best way to report results in a manner most likely to be consistent with premium calculations and new business pricing model mechanics. An illustration of the impact of the grace period adjustments can be found in Appendix B. All displays in the remainder of the document exclude the grace period when appropriate.

3. Methodology and Definitions

Antitrust and Protection of Identities

In this report, we conducted five conceptually distinct studies:

1. Term life mortality study
2. Term life conversion study
3. Term life lapse study
4. Post-conversion mortality study
5. Post-conversion lapse study

For each study, when applicable, data from a company (or companies) that contributed more than 35% of incidences are ratioed down to this threshold. Note that since the ratio-down method is applied at an aggregate level, in individual cells, even after the ratio-down, it is possible that one participant can still account for more than 35% of the incidences. Ratios are applied to exposure, expected and actual counts and amounts. All the tables, figures and charts shown in this report are after the ratio-down calculation. The credibility of our findings is understated as a result. For confidentiality and antitrust purposes, we could not provide a measure of the understatement. Additionally, a listing of companies participating in the study is not provided.

Another self-imposed constraint is that throughout the report we ensure that each figure is represented by least five participating companies. When there are not enough companies represented in a cell, we discard the entire table or graph.

Segmented Policies

As stated earlier, segmentation occurs when multiple conversions occur from the same term policy (partial conversions that may create multiple policies or multiple attained age calculations) or multiple term policies that convert to one permanent policy. If each piece is identified as a policy, the count of conversions will be overstated. Because of this, separate methodologies were taken into account for partial conversions and multiple policies.

To account for partial conversions we applied a factor to both exposure and claim amounts as well as counts if the policy was a partial conversion. The factor is equal to the partial face amount converted divided by the total face amount of the policy before it converts. To get the mortality study correct, you still need to track each piece in the term mortality analysis and the post-conversion mortality analysis therefore. The remaining partial amount and count of the policy that did not convert is left with the term mortality, term lapse and term conversion analysis as an inforce policy with exposure equal to $(1 - \text{factor}) \times \text{exposure}$. In the case where a partial conversion amount was not provided in the data set, the conversion amount was assumed to be the full amount.

Multiple policy segments also occurred in the data when a policyholder converted varying face amounts of their term policy to a permanent policy at different attained ages. In these cases the data set had multiple records for each conversion. Because the face amounts of each partial conversion or the remaining term face amount prior to each conversion was not available, these records could not be consolidated and treated as multiple partial conversions. This overstates the count and amount of partial conversions because the factor was not available. For this reason these policies were left as multiple individual records using the original issue date for each policy provided and put in the non-core data set.

Conversion Timing

Getting timing of the conversion correct can impact the study results. As explained in Chapter 2, lapses and conversions may need to be adjusted to account for the actual occurrence of the lapse or conversion. After these adjustments are made the conversion is categorized in two ways for use in the study:

1. Duration at conversion—the time at which the conversion occurs
 - Months between conversion date and issue date divided by 12 and then rounded up
2. Duration since conversion—the time since the conversion occurred
 - Policy Year – Duration at conversion (+1 if policy is an off anniversary conversion)

These dates introduced added complexity in terms of how to treat off anniversary conversions. To elaborate on this, examples of on and off anniversary calculations are described below:

- Issue Date: 10/1/2000
- On Anniversary Conversion Date: 10/1/2005
- Off Anniversary Conversion Date: 7/1/2005
- As of date: 11/1/2006

The duration at conversion for these examples is calculated with the same formula. The months between conversion date and issue date total 60 for the on-anniversary conversion and 57 for the off-anniversary conversion. Both of these numbers divided by 12 and rounded up to a whole number produce a duration at conversion equal to 5.

The duration since conversion formula is calculated based on policy year and varies between the off- and on-anniversary conversions. The policy year is dependent on the original issue date of the policy, not the conversion date, and is therefore not an exact policy year calculation for policies with off anniversary conversions. As of November 1, 2006, both policies are in the seventh policy year. The duration since conversion for the on anniversary conversion is 2 ($7 - 5$), whereas the duration since conversion for the off anniversary conversion is 2 ($7 - 5 + 1$). This variance is the cause of differences in duration since conversion 1 and 2 count totals seen in Chapters 5 and 6, where charts display results by duration since conversion.

Conversion Groups

Not every company was able to provide the exact conversion privilege underlying their data. The level premium period is used as an approximation. Data were grouped into two identifiers based on the duration of the conversion and the term period of the policy. The durations at conversion were grouped as early, mid- or late. The conversion group definition identifies differences in policyholder behavior based on the timing of conversions. If a policy did not have a term period defined as 5, 10, 15, 20 or 30, then the grouping uses the Other category. Other represents approximately 10% of the business and is assumed to follow a pattern similar to the 10-year term business. If the term period was blank or equal to 1 (ART) it is not included in any of the conversion groups listed below (N/A). The rules applied by term period and duration at conversion are as follows:

- Early
 - 5 year: 1, 2
 - 10 year: 1, 2, 3, 4
 - 15 year: 1, 2, 3, 4, 5, 6, 7
 - 20 year: 1, 2, 3, 4, 5, 6, 7, 8, 9
 - 30 year: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
 - Other: 1, 2, 3, 4, 5
- Mid-
 - 5 year: 3
 - 10 year: 5, 6, 7, 8
 - 15 year: 8, 9, 10, 11, 12
 - 20 year: 10, 11, 12, 13, 14, 15
 - 30 year: 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25
 - Other: 6, 7, 8, 9
- Late
 - 5 year: 4+
 - 10 year: 9+
 - 15 year: 13+
 - 20 year: 16+
 - 30 year: 26+
 - Other: 10+
- N/A
 - Blank Term Period: All Years
 - 1 year: All Years

Underwriting Class Groupings

The data request asked for three fields of underwriting class data used to develop the underwriting class groupings shown in Chart 3.1 and 3.2 for nonsmokers and smokers, respectively. Two of the variables are the total number of smoker and nonsmoker risk classes available for that policy record. The other variable is the risk class rank. In an example of a nonsmoker with three nonsmoker risk classes, the risk class rank would be populated with N1 (the best nonsmoker risk class), N2 (the next best nonsmoker risk

class after N1) or N3 (the next best nonsmoker risk class after N2). Depending on the total number of classes and the risk class rank, the underwriting classes are grouped into 10 classes: the six underwriting class names listed in Chart 3.1 for nonsmokers, the three underwriting class names in Chart 3.2 for smokers and the Aggregate risk class.

Chart 3.1

Underwriting class names and abbreviation shown by number of underwriting classes (non-smoker)

Non-Smoker UW Classes					6	5	4	3
Super Preferred	N1	N1	N1	N1				
Preferred 2	N2	N2	N2	N2				
Preferred 3	N3	N3	N3					
	N4	N4						
Non-Preferred	N5	N5	N4	N3				
	N6							

Special NS Cases	
Non-Smoker UW Classes	
Preferred Best	N1
Non-Preferred	N2

Non-Smoker UW Classes	
Undifferentiated	N1

*The chart below shows the order of the mortality of each class relative to one another.

Super Preferred
Preferred Best
Preferred 2
Preferred 3
Undifferentiated
Non-Preferred

Chart 3.2

Underwriting class names and abbreviations
shown by number of underwriting classes (smoker)

Smoker UW Classes		3	2
Preferred		S1	S1
		S2	
Non-Preferred		S3	S2

Special SM Case	
Smoker UW Classes	
Undifferentiated	S1

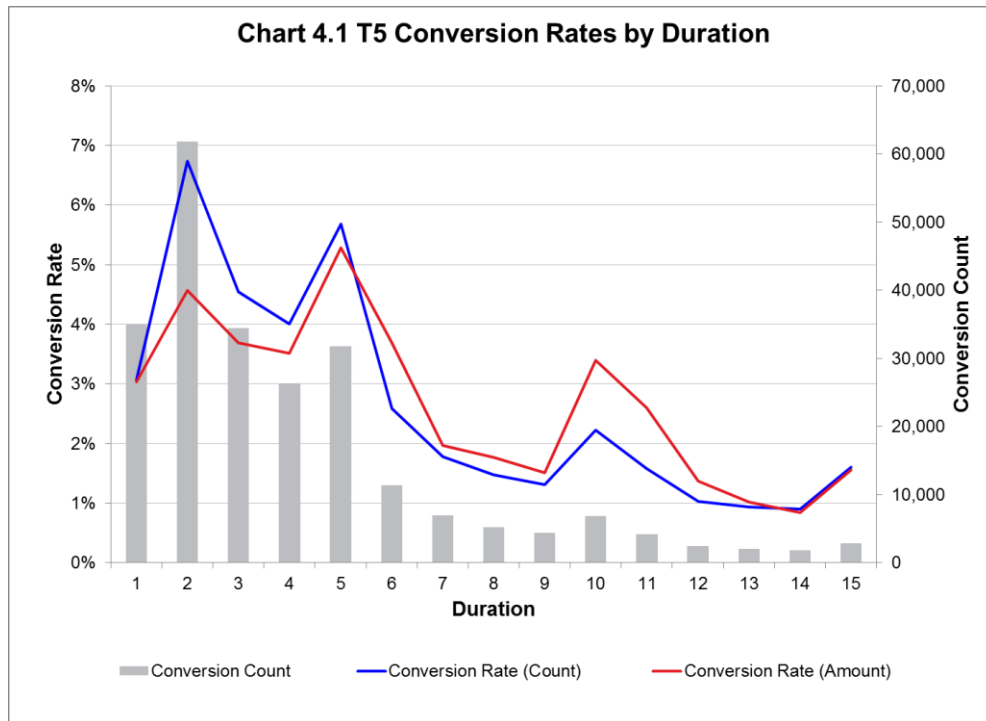
Description of RGA Study Method

Participating companies were asked to provide a listing of each inforce and terminated level term policy and a listing of each inforce and terminated converted permanent policy, including exact issue dates and dates of termination. When available the term policy and converted permanent policy data are linked together on the same record line. The collection of data in this manner allowed the researchers to ensure a consistent calculation of experience study exposures across multiple companies. This also enabled cells with relatively small exposure to be aggregated such that total credibility can be improved. These data were used to create a 2000–2014 anniversary year lapse study for term and converted business, a 2000–2014 anniversary year conversion study for term business, and a 2000–2014 calendar year mortality study for both term and converted business. The anniversary year method was chosen for the lapse study to account for the skewness of lapses throughout the policy year. Since many lapses occurred on policy anniversaries, a calendar year study would potentially miss much of the anticipated lapse activity at the end of a policy’s most recent policy year. Since deaths were generally evenly distributed throughout the policy year, a calendar year method was used for the mortality study to increase the amount of fully completed experience that could be included in the study. Both studies were primarily performed on a policy count basis to minimize the impact of volatility related to policy size. Results by face amount band are provided to help identify differences in experience at different policy sizes.

4. Term Conversion and Lapse Rates

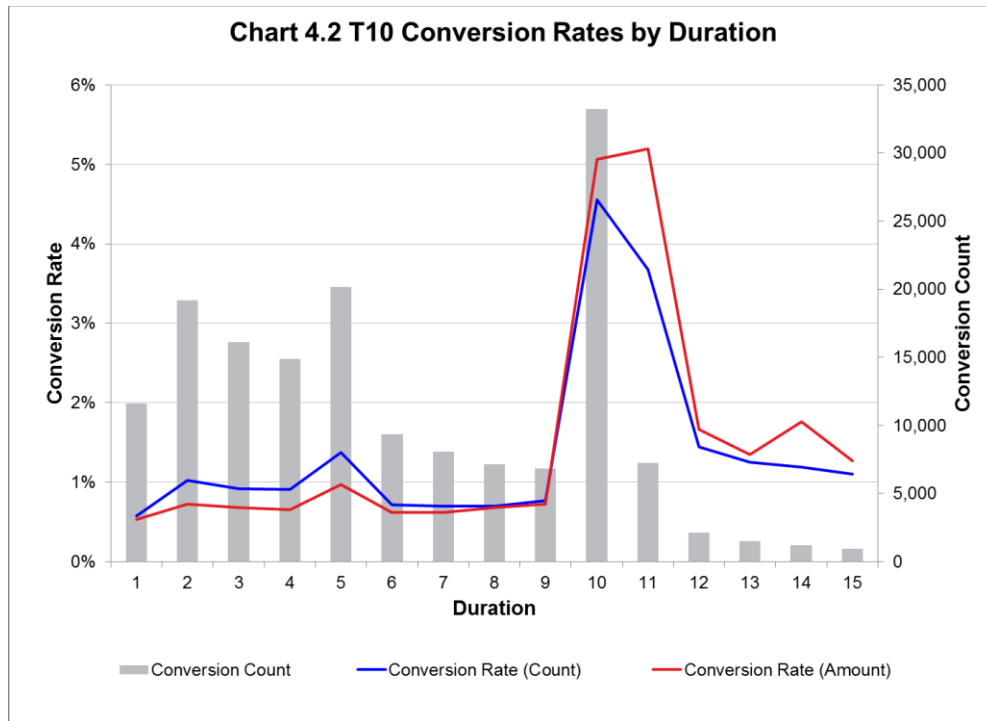
Conversion rates and lapse rates are defined as the amount of term business that converts or lapses each policy year. The largest data set was five-year term with 251,560 conversions then 10 year, 20 year, 30 year and 15 year with 166,858, 158,694, 39,140 and 37,761, respectively.

The five-year term (T5) products have varying conversion privileges in the post-level period and may also include additional five-year level premium periods (in step-rate versions of the product), as shown in Chart 4.1, causing an increase in conversion rates at quinquennial durations.



Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	3.1%	3.0%	34,967
2	6.7%	4.6%	61,758
3	4.5%	3.7%	34,416
4	4.0%	3.5%	26,217
5	5.7%	5.3%	31,687
6	2.6%	3.7%	11,340
7	1.8%	2.0%	6,878
8	1.5%	1.8%	5,210
9	1.3%	1.5%	4,315
10	2.2%	3.4%	6,831
11	1.6%	2.6%	4,161
12	1.0%	1.4%	2,433
13	0.9%	1.0%	1,994
14	0.9%	0.8%	1,736
15	1.6%	1.6%	2,779

With more than 166,000 total conversions, the T10 data set is very credible. Table 4.2 shows the conversion rates for the first nine policy years are less than 1% and increase to 5.1% in year 10 (by Amount). The large 10 times multiple increase aligns with the end of the conversion privilege period for most policies. Chart 4.2 shows a small increase in the conversion rate during the fifth policy year where some policies limit the conversion privilege to 5 years and allow policies a minimum of five years for older ages. Conversions still appear in durations 11 and later, which is caused by companies either allowing conversions as an exception after the conversion privilege has ended, or where conversion privileges are based on attained ages rather than the earlier of a specified T10 age and the level term period.



Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	0.6%	0.5%	11,601
2	1.0%	0.7%	19,166
3	0.9%	0.7%	16,078
4	0.9%	0.6%	14,881
5	1.4%	1.0%	20,116
6	0.7%	0.6%	9,313
7	0.7%	0.6%	8,050
8	0.7%	0.7%	7,118
9	0.8%	0.7%	6,838
10	4.5%	5.1%	33,211
11	3.7%	5.2%	7,230
12	1.4%	1.7%	2,087
13	1.3%	1.3%	1,496
14	1.2%	1.8%	1,198
15	1.1%	1.3%	937

Chart 4.3 compares the T10 lapse rates by policy year from the conversion study to the lapse rates in the SOA Report on the Lapse and Mortality Experience of Post-Level Premium Period Term Plans (2014). The results are very similar, though the duration 10 shock lapse in the conversion study is slightly higher. Note that data from the 2014 Post-Level Term Study are combined for durations six through nine.

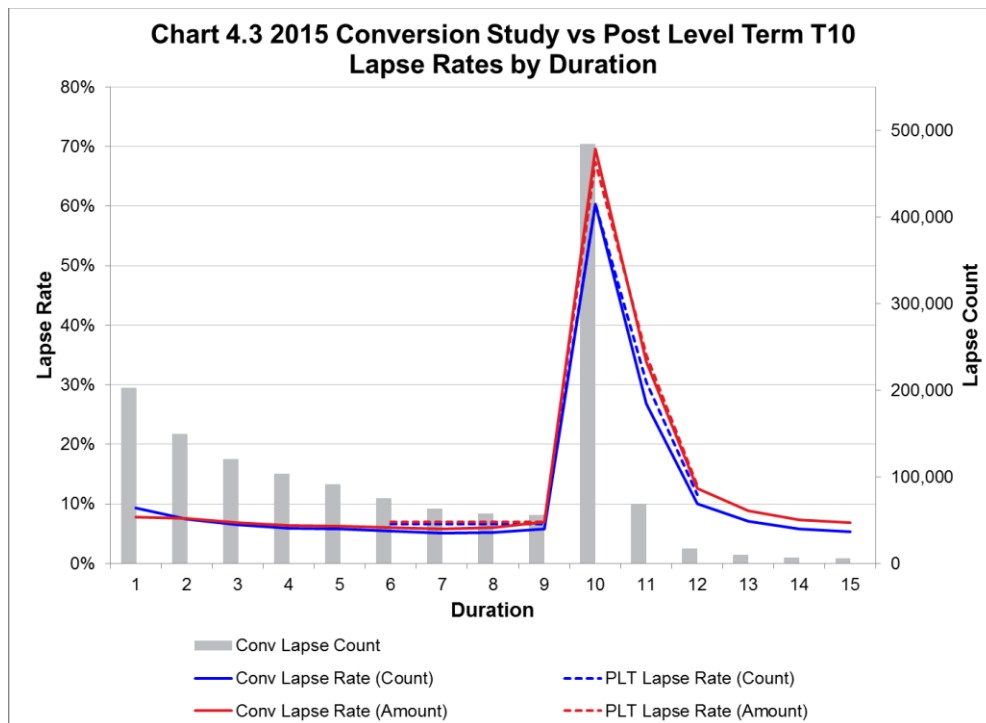
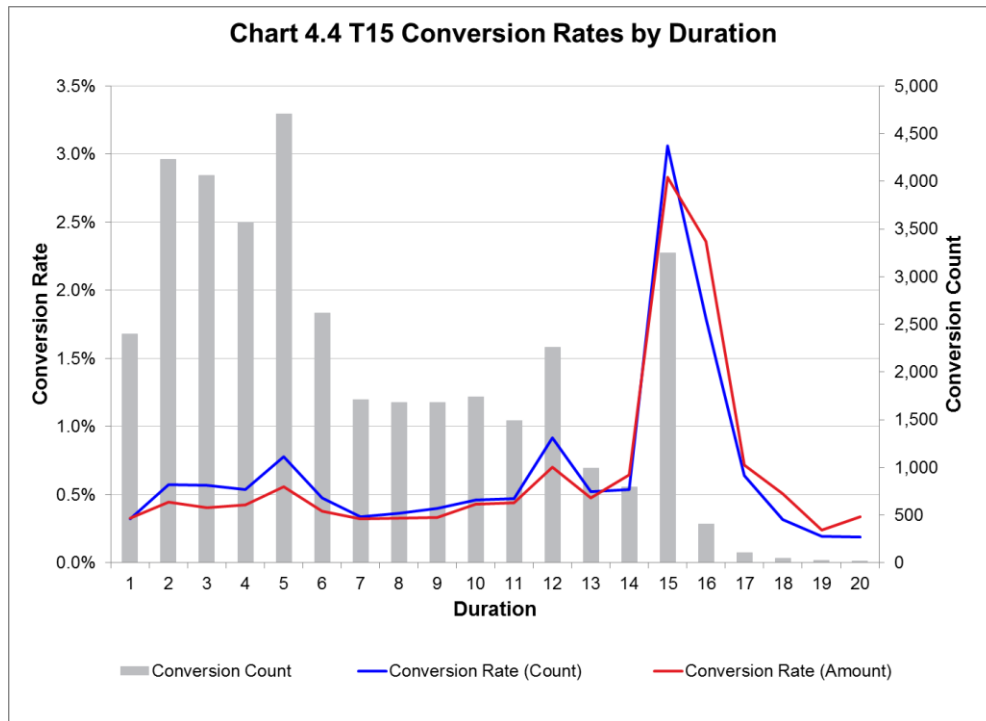


Chart 4.4 shows conversion rates for the T15 product. The conversion rates are less than 1% in the first 14 durations and spike to 3.1% in duration 15. The ratio of the conversion rate in policy year 1 to policy year 15 is approximately 10 times, similar to the 10T product. Similar to the T10 conversion rates in Chart 4.2, there is a small increase in the conversion rates in years 5 and 10. Again this is due to some companies limiting the conversion privilege to a period shorter than the level term period, with quinquennial years being the most common.



Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	0.3%	0.3%	2,399
2	0.6%	0.4%	4,226
3	0.6%	0.4%	4,059
4	0.5%	0.4%	3,567
5	0.8%	0.6%	4,706
6	0.5%	0.4%	2,617
7	0.3%	0.3%	1,711
8	0.4%	0.3%	1,681
9	0.4%	0.3%	1,683
10	0.5%	0.4%	1,736
11	0.5%	0.4%	1,486
12	0.9%	0.7%	2,258
13	0.5%	0.5%	989
14	0.5%	0.6%	796
15	3.1%	2.8%	3,245
16	1.8%	2.4%	403
17	0.6%	0.7%	103
18	0.3%	0.5%	43
19	0.2%	0.2%	22
20	0.2%	0.3%	18

The 20-year term (T20) data set is the third largest with more than 158,000 conversions in total. This data set has conversions until the last year of the level term period. The data are thin by the 20th policy duration, which explains the very high conversion rates relative to the T10 and T15 products.

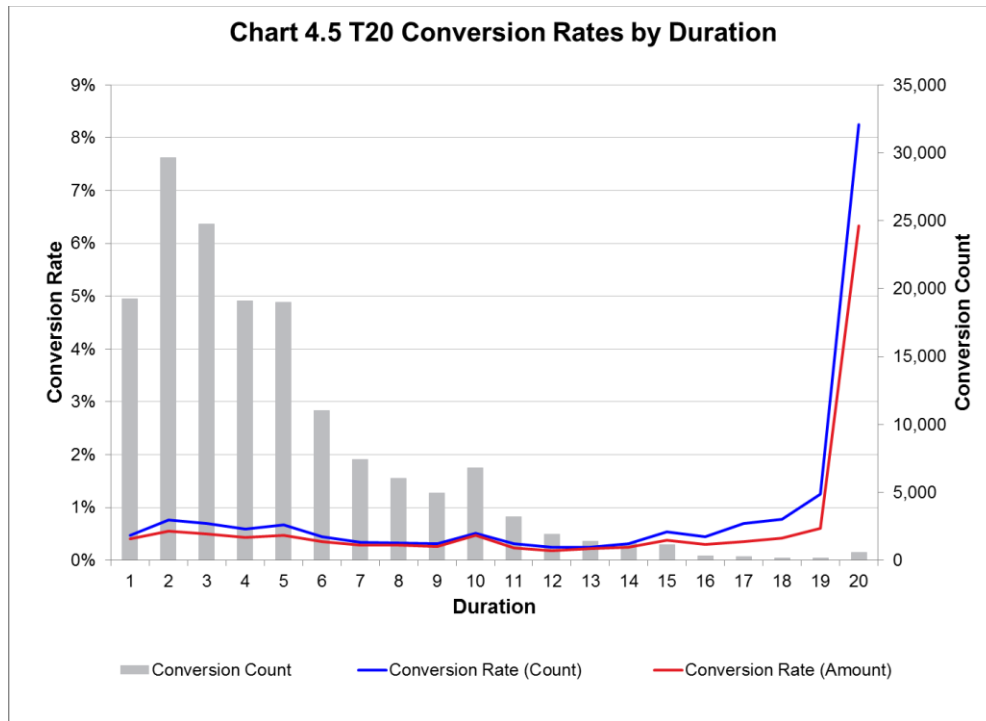
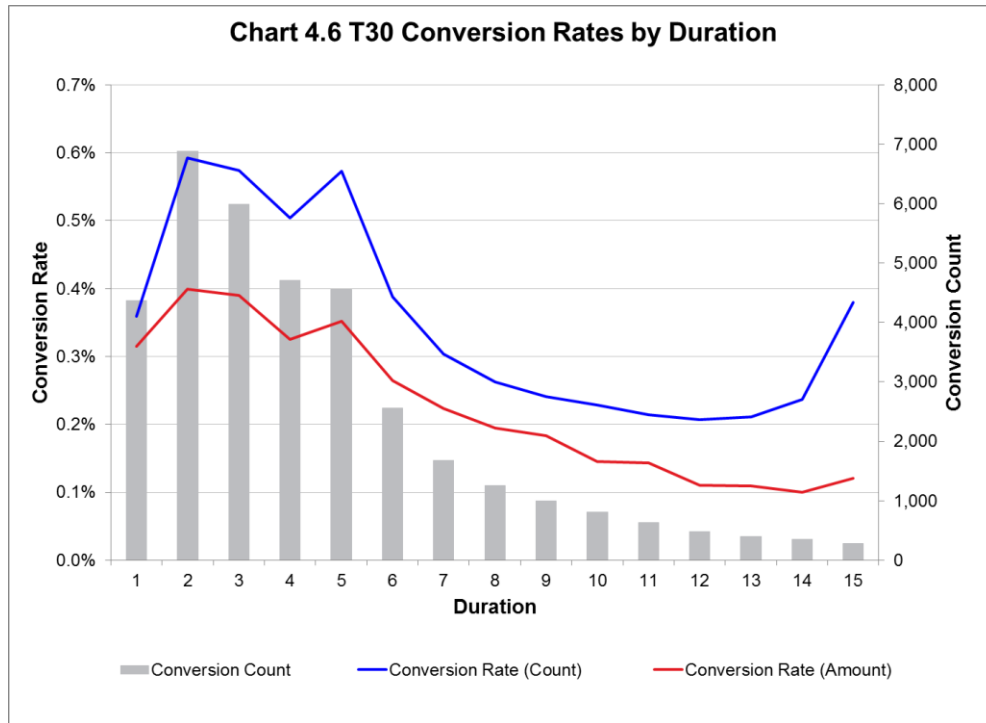


Table 4.5 T20

Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	0.5%	0.4%	19,236
2	0.8%	0.6%	29,658
3	0.7%	0.5%	24,772
4	0.6%	0.4%	19,108
5	0.7%	0.5%	18,988
6	0.4%	0.4%	11,029
7	0.3%	0.3%	7,440
8	0.3%	0.3%	6,052
9	0.3%	0.3%	4,940
10	0.5%	0.5%	6,801
11	0.3%	0.2%	3,217
12	0.3%	0.2%	1,940
13	0.3%	0.2%	1,419
14	0.3%	0.3%	1,251
15	0.5%	0.4%	1,163
16	0.4%	0.3%	326
17	0.7%	0.4%	260
18	0.8%	0.4%	190
19	1.2%	0.6%	192
20	8.3%	6.3%	581

Chart 4.6 shows conversion rates for the 30-year term (T30) product. The data are very thin and do not reach the end of the level term period. The data indicate a very low conversion rate, below 1%, with a small increase in duration 5, similar to the other level term plans.



Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	0.4%	0.3%	4,368
2	0.6%	0.4%	6,879
3	0.6%	0.4%	5,986
4	0.5%	0.3%	4,705
5	0.6%	0.4%	4,551
6	0.4%	0.3%	2,555
7	0.3%	0.2%	1,682
8	0.3%	0.2%	1,251
9	0.2%	0.2%	1,000
10	0.2%	0.1%	815
11	0.2%	0.1%	635
12	0.2%	0.1%	485
13	0.2%	0.1%	395
14	0.2%	0.1%	351
15	0.4%	0.1%	279

The remaining charts in this chapter present the T10 conversion rates by different policy characteristics. Only 10-year term is shown, but the remaining term periods exhibited similar results with the same policy characteristics. Chart 4.7 identifies the variation in T10 conversion rates by gender. Females have slightly higher conversion rates during the level period, whereas male rates are higher in policy years 10 and later.

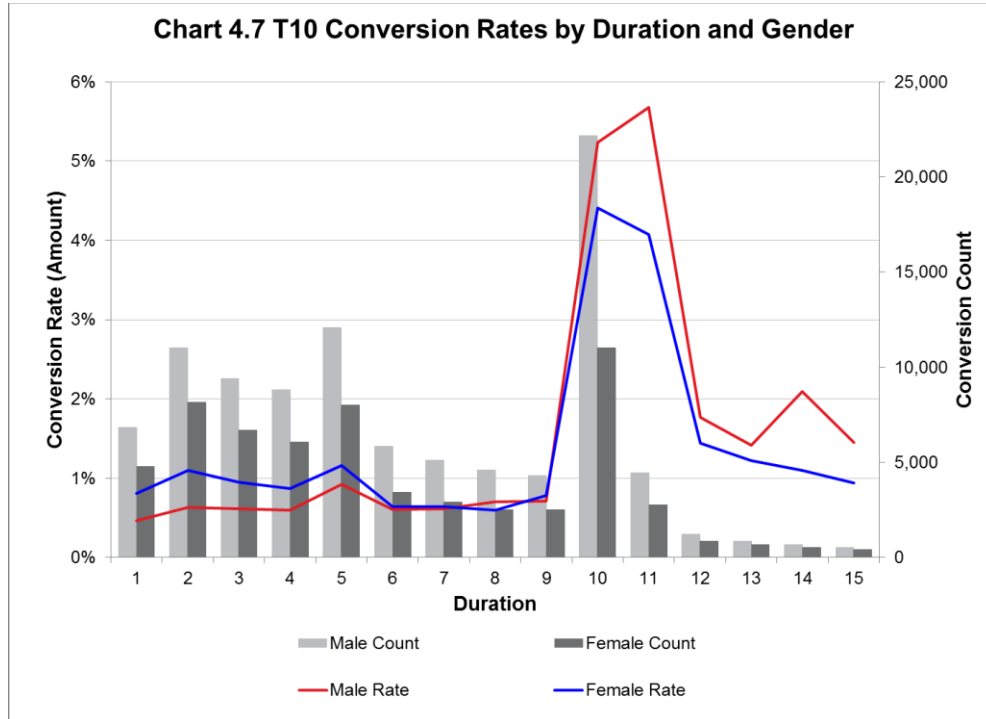
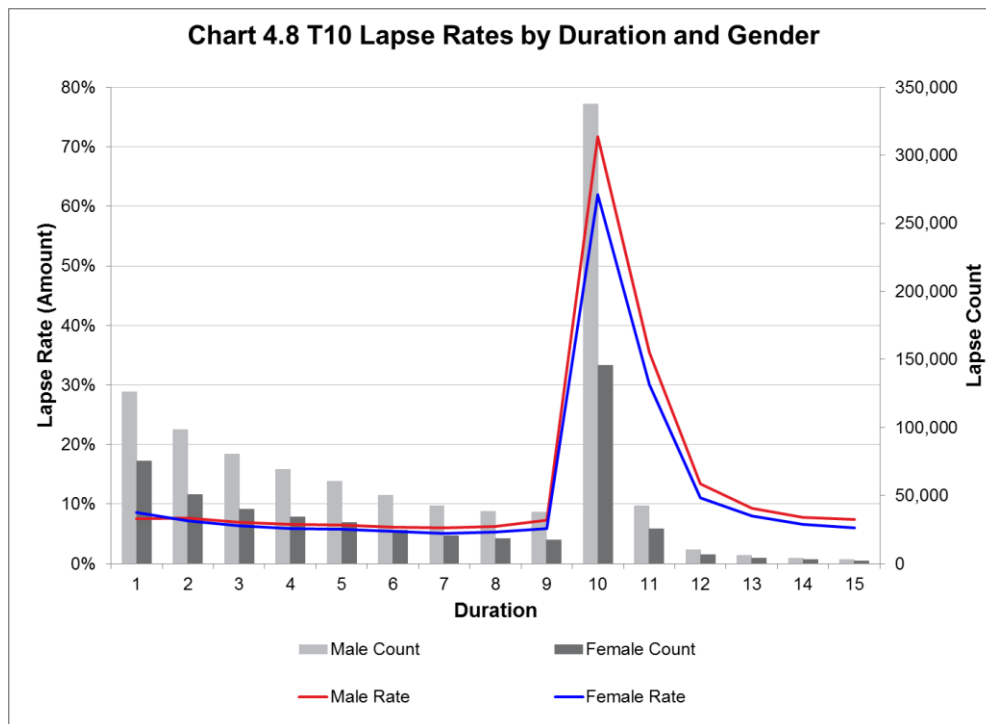


Chart 4.8 shows the lapse rates for T10 products by gender. Males have slightly higher lapse rates in the post-level periods, similar to post-level period conversion rates.



The breakdown by smoking status in Chart 4.9 displays consistently higher conversion rates for smokers during the level period than nonsmokers.

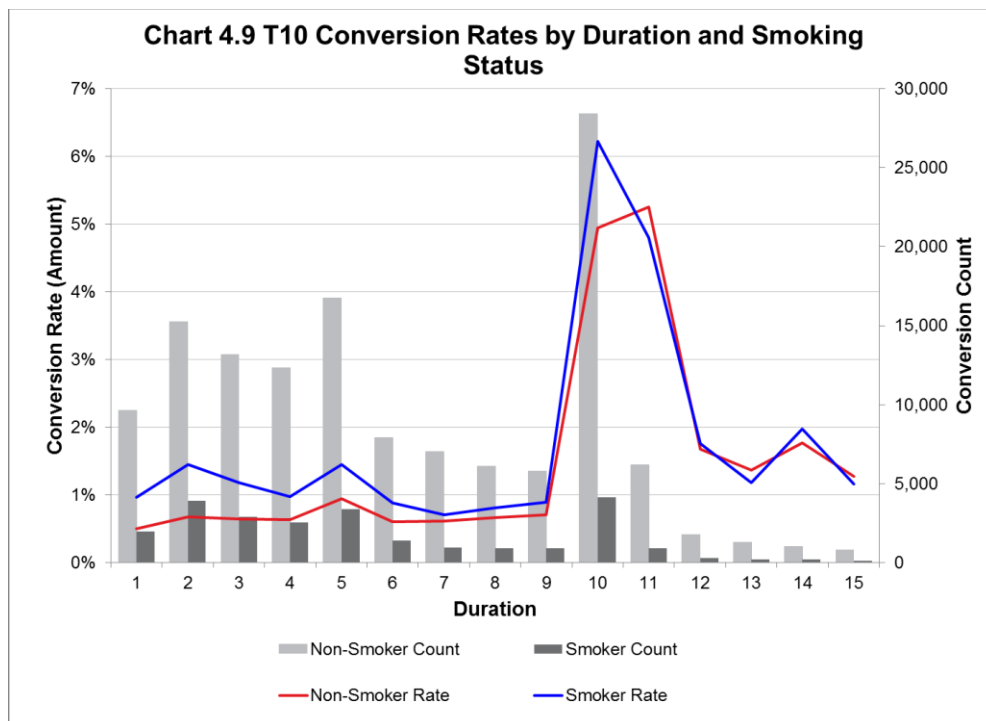


Chart 4.10 breaks down the T10 lapse rates by smoking status. Smokers have higher lapses during the level period than nonsmokers. After the level period there is little variation in lapses rate between the two smoking statuses, which is consistent with the behavior seen for conversions.

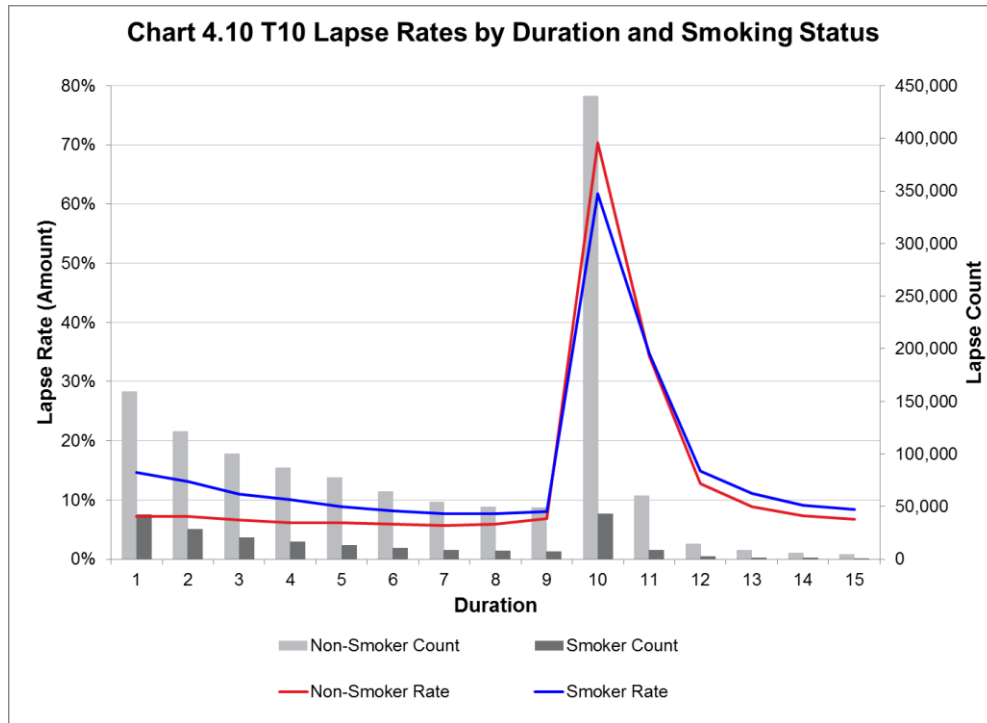
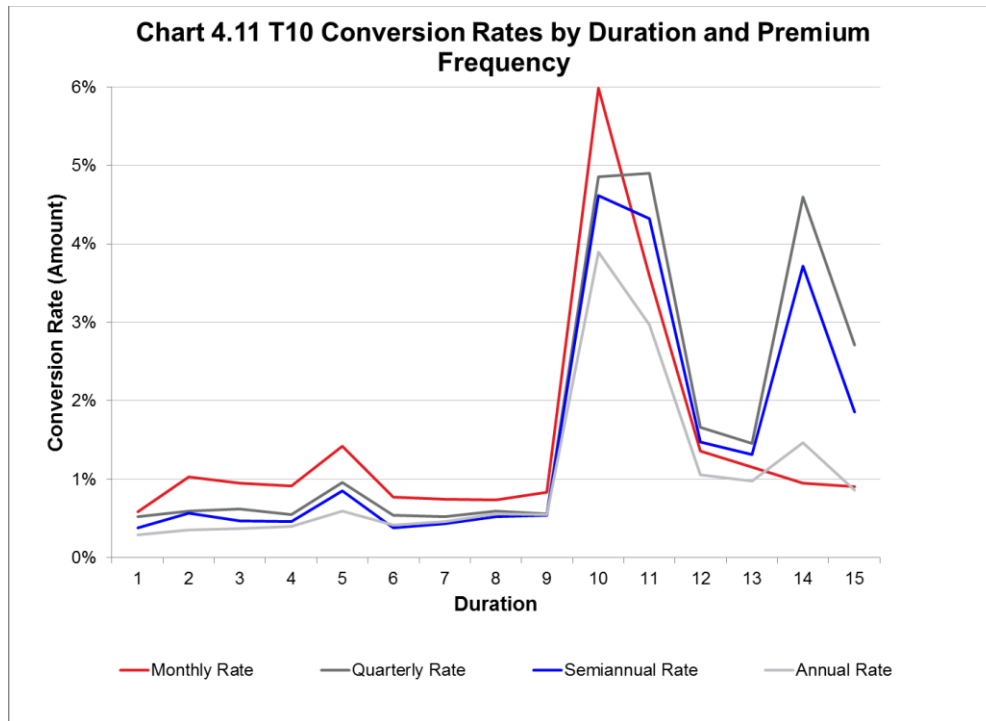
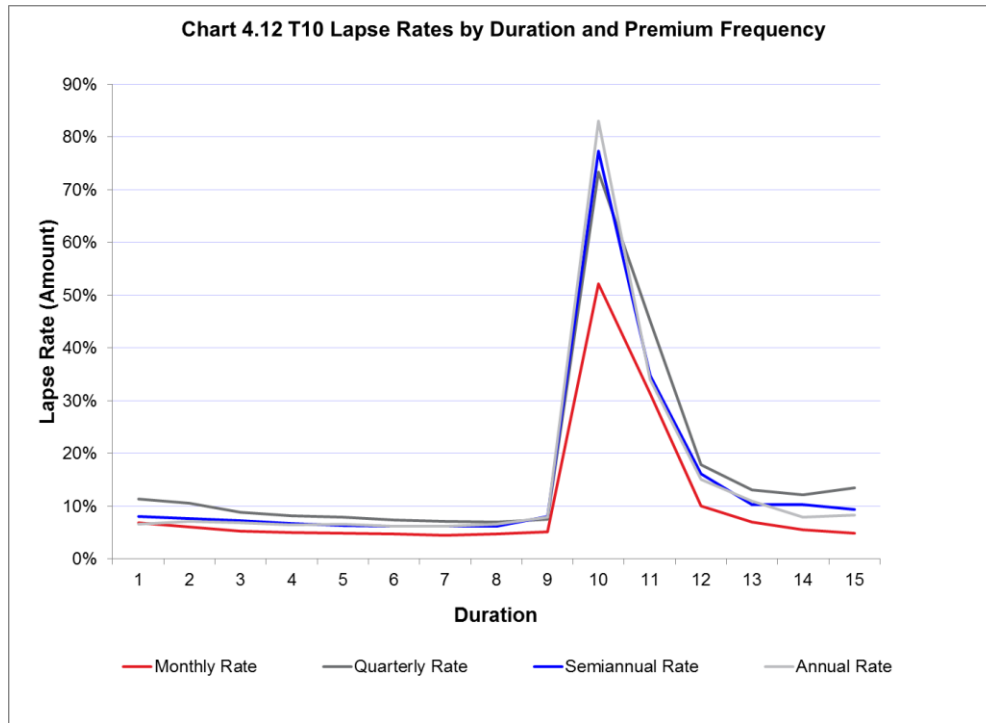


Chart 4.11 shows the conversion rates by premium payment frequency. During the level term period, monthly mode policies have the highest conversion rates, while in the post-level term period policies with quarterly mode have the highest conversion rates. The impact of premium frequency on conversion rates is smaller than the impact on lapses rate shown in Chart 4.12.



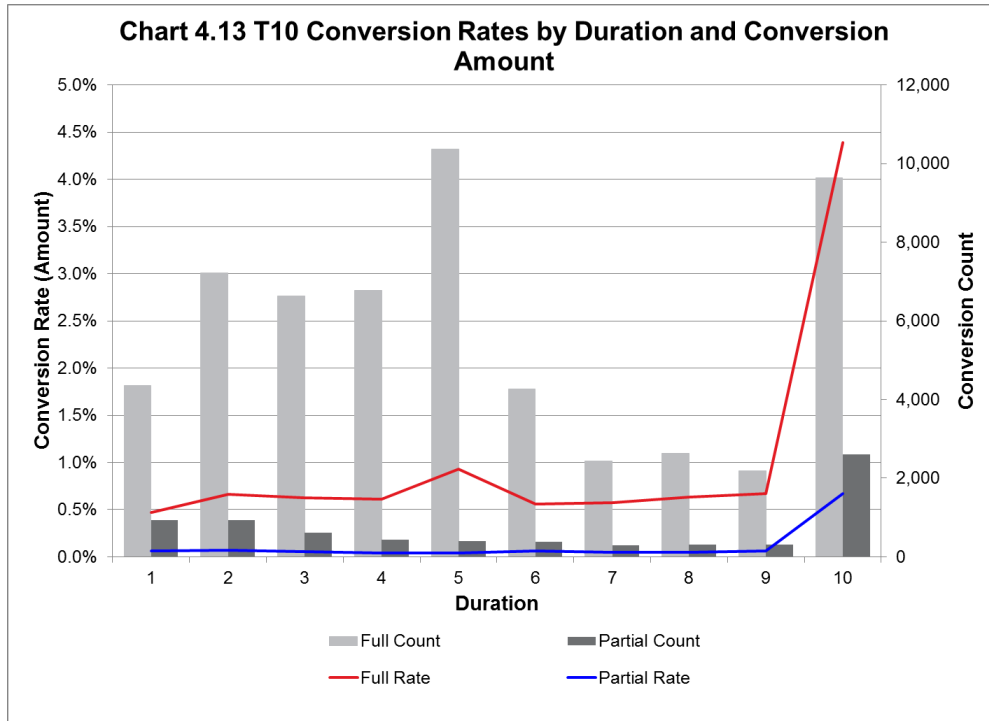
Duration	Conversion Rate (Count)				Conversion Rate (Amount)				Conversion Count			
	Monthly	Quarterly	Semiannual	Annual	Monthly	Quarterly	Semiannual	Annual	Monthly	Quarterly	Semiannual	Annual
1	0.7%	0.4%	0.3%	0.3%	0.6%	0.5%	0.4%	0.3%	5,298	1,379	246	1,669
2	1.5%	0.6%	0.5%	0.4%	1.0%	0.6%	0.6%	0.4%	11,043	2,179	433	2,148
3	1.4%	0.7%	0.5%	0.4%	1.0%	0.6%	0.5%	0.4%	9,372	2,170	398	1,912
4	1.3%	0.7%	0.5%	0.4%	0.9%	0.5%	0.5%	0.4%	8,627	2,301	426	1,863
5	2.0%	1.2%	1.0%	0.6%	1.4%	1.0%	0.9%	0.6%	11,876	3,450	709	2,570
6	0.9%	0.6%	0.5%	0.4%	0.8%	0.5%	0.4%	0.4%	4,818	1,534	295	1,484
7	0.9%	0.6%	0.5%	0.4%	0.7%	0.5%	0.4%	0.5%	4,134	1,301	312	1,416
8	0.9%	0.6%	0.5%	0.4%	0.7%	0.6%	0.5%	0.6%	3,528	1,163	264	1,329
9	1.0%	0.5%	0.5%	0.4%	0.8%	0.6%	0.5%	0.6%	3,456	977	246	1,211
10	5.8%	4.0%	3.3%	2.9%	6.0%	4.9%	4.6%	3.9%	16,071	5,920	1,289	6,568
11	3.2%	4.4%	3.1%	2.0%	3.6%	4.9%	4.3%	3.0%	3,534	1,214	266	699
12	1.5%	1.6%	1.3%	0.9%	1.4%	1.7%	1.5%	1.1%	1,270	285	84	230
13	1.3%	1.3%	1.0%	0.8%	1.2%	1.5%	1.3%	1.0%	997	179	51	158
14	1.2%	1.6%	1.3%	0.8%	1.0%	4.6%	3.7%	1.5%	770	179	63	131
15	1.1%	1.4%	0.9%	0.7%	0.9%	2.7%	1.9%	0.9%	634	127	40	101

Chart 4.12 shows the lapse rates by premium payment frequency. The quarterly premium frequency has the highest lapses throughout all durations shown. The quarterly mode typically corresponds to the highest modal charge.

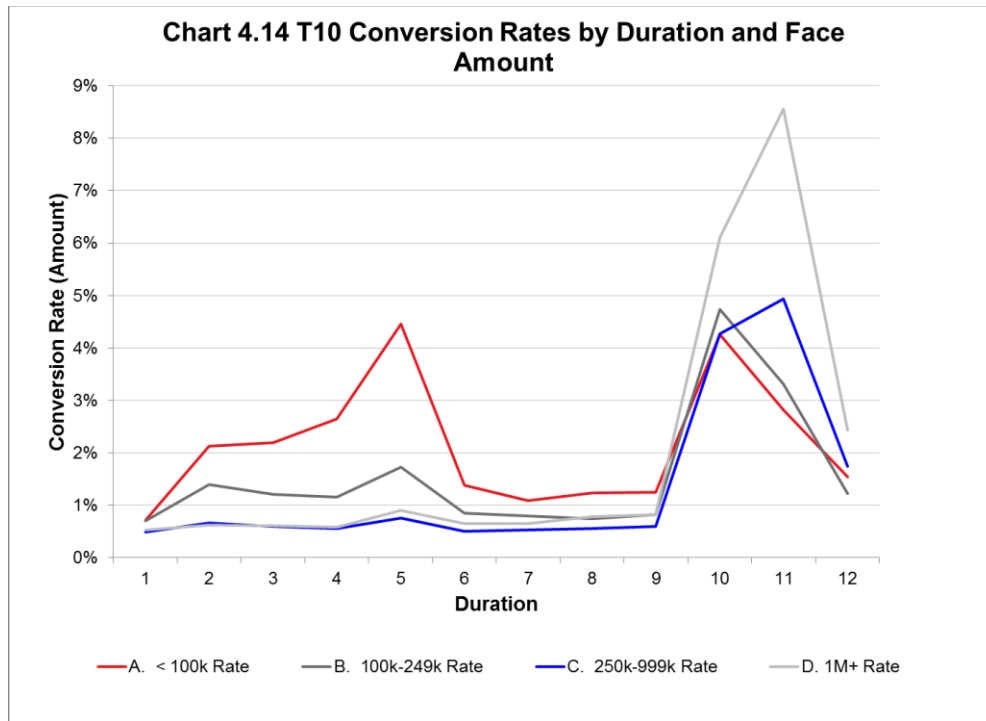


Duration	Lapse Rate (Count)				Lapse Rate (Amount)				Lapse Count			
	Monthly	Quarterly	Semiannual	Annual	Monthly	Quarterly	Semiannual	Annual	Monthly	Quarterly	Semiannual	Annual
1	9.0%	12.5%	7.9%	7.9%	6.9%	11.4%	8.0%	6.6%	81,897	46,703	6,858	48,317
2	6.9%	9.8%	6.6%	6.7%	6.1%	10.5%	7.6%	7.2%	57,250	34,398	5,764	39,690
3	5.9%	8.1%	6.1%	6.1%	5.3%	8.8%	7.3%	6.9%	45,707	26,927	5,134	34,311
4	5.5%	7.4%	5.6%	5.7%	5.0%	8.2%	6.7%	6.5%	39,730	23,342	4,522	29,781
5	5.3%	7.1%	5.8%	5.7%	4.9%	7.9%	6.3%	6.6%	34,216	20,536	4,296	27,176
6	5.0%	6.5%	5.5%	5.3%	4.8%	7.4%	6.2%	6.2%	28,338	16,775	3,652	22,699
7	4.5%	6.1%	5.4%	5.4%	4.4%	7.1%	6.2%	6.2%	22,519	14,217	3,235	20,292
8	4.6%	6.0%	5.6%	5.6%	4.8%	7.0%	6.2%	6.6%	20,589	12,442	2,981	18,609
9	4.9%	6.4%	7.0%	6.7%	5.1%	7.6%	8.0%	7.9%	18,854	11,868	3,324	19,277
10	44.3%	69.5%	70.0%	78.1%	52.2%	73.3%	77.3%	83.0%	142,846	109,810	28,746	191,632
11	23.7%	40.0%	26.9%	26.5%	31.4%	45.1%	34.8%	34.1%	35,370	14,988	2,819	10,747
12	8.2%	15.7%	12.0%	11.8%	10.0%	17.8%	16.2%	15.0%	8,551	3,089	866	3,238
13	5.9%	11.3%	7.9%	8.2%	6.9%	13.1%	10.3%	10.9%	5,241	1,689	484	1,861
14	4.9%	9.4%	6.5%	6.3%	5.6%	12.2%	10.3%	7.9%	3,796	1,138	356	1,249
15	4.3%	10.0%	6.5%	5.9%	4.8%	13.4%	9.4%	8.4%	2,889	987	331	1,043

Chart 4.13 shows the conversion rates by full and partial conversions. Full conversions follow the same pattern as the overall T10 conversion rates. Partial conversions, however, are very steady during the level period and do not exhibit as high a shock conversion in duration 10. A partial conversion might be less durationally dependent. For example, if a company's strategy is to encourage partial conversions, then that strategy exists throughout the level premium period, unlike full conversions, which must be exercised before the end of the conversion period.

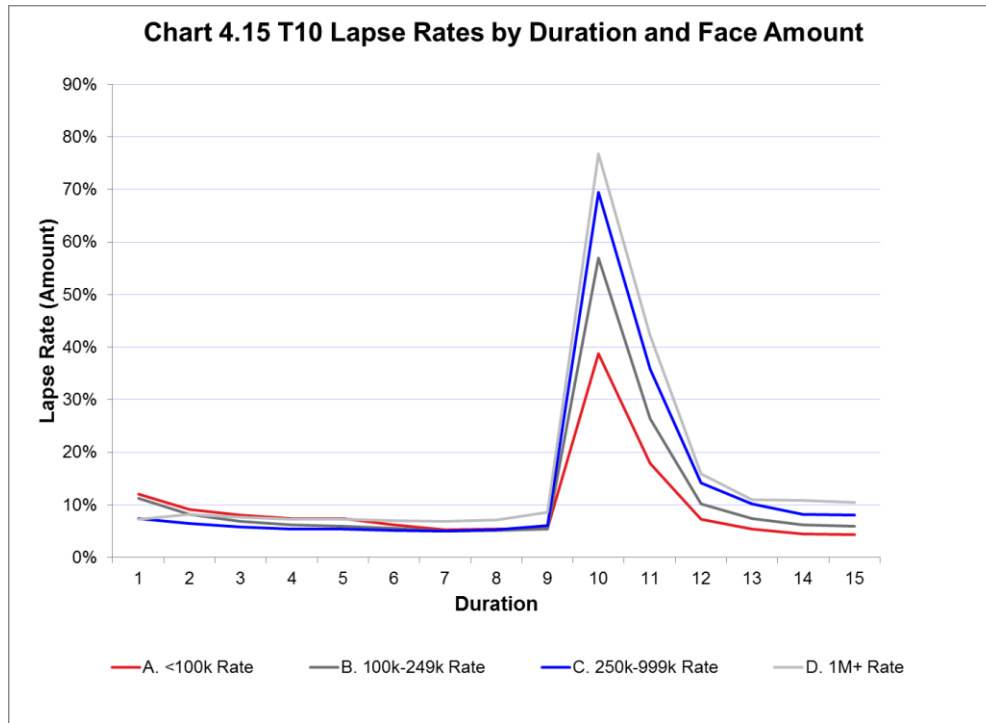


By Face Amount, Chart 4.14 shows T10 conversion rates. There is a much higher jump in conversion rates in the fifth policy year for smaller policies. This may be driven by companies that limit conversion to the first five policy years. The highest conversion rates in the post-level period are for the largest face amounts.



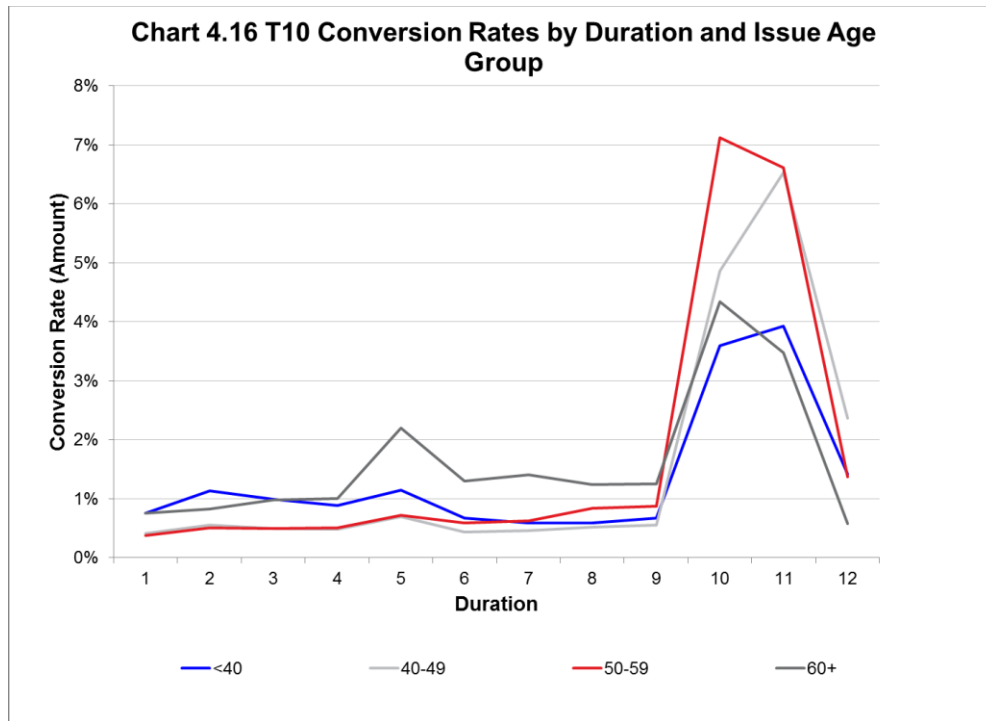
Duration	Conversion Rate (Count)				Conversion Rate (Amount)				Conversion Count			
	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+
1	0.7%	0.7%	0.5%	0.5%	0.7%	0.7%	0.5%	0.5%	391	5,590	4,289	1,332
2	2.0%	1.5%	0.7%	0.6%	2.1%	1.4%	0.7%	0.6%	1,241	10,702	5,712	1,512
3	2.1%	1.3%	0.6%	0.5%	2.2%	1.2%	0.6%	0.6%	1,457	8,738	4,724	1,159
4	2.6%	1.2%	0.6%	0.5%	2.6%	1.1%	0.6%	0.6%	1,948	7,971	3,989	973
5	4.3%	1.8%	0.8%	0.8%	4.5%	1.7%	0.8%	0.9%	3,068	10,910	4,891	1,247
6	1.4%	0.9%	0.5%	0.6%	1.4%	0.8%	0.5%	0.6%	934	4,730	2,838	812
7	1.2%	0.8%	0.5%	0.6%	1.1%	0.8%	0.5%	0.6%	781	4,034	2,586	648
8	1.4%	0.8%	0.5%	0.7%	1.2%	0.7%	0.5%	0.8%	881	3,310	2,281	646
9	1.4%	0.8%	0.6%	0.7%	1.2%	0.8%	0.6%	0.8%	869	3,305	2,092	571
10	4.2%	4.7%	4.2%	5.3%	4.3%	4.7%	4.3%	6.1%	2,573	15,568	11,821	3,249
11	2.7%	3.2%	4.7%	8.0%	2.8%	3.3%	4.9%	8.6%	985	3,288	2,421	536
12	1.6%	1.2%	1.7%	2.7%	1.5%	1.2%	1.7%	2.4%	555	929	513	90
13	1.6%	1.0%	1.3%	2.2%	1.5%	1.0%	1.4%	2.0%	534	629	287	46
14	1.5%	0.9%	1.2%	5.5%	1.5%	0.8%	1.2%	6.8%	491	443	192	72
15	1.3%	0.9%	1.2%	3.2%	1.3%	0.9%	1.3%	3.4%	409	363	144	22

Chart 4.15 shows the T10 lapse rates by face amount band. There is little variation in lapse rates during the level period. In the post-level period, lapses rate are highest for the highest face amounts and decrease with decreasing face amount band.



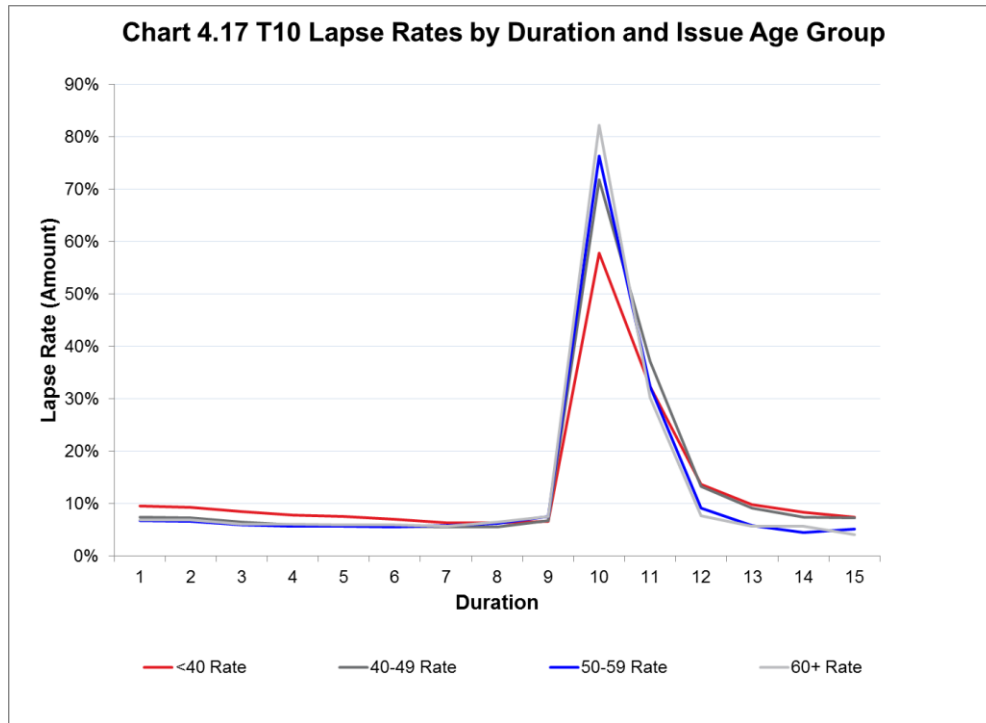
Duration	Lapse Rate (Count)				Lapse Rate (Amount)				Lapse Count			
	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+
1	12.1%	11.6%	7.6%	7.3%	12.1%	11.3%	7.5%	7.3%	7,223	102,254	71,518	20,903
2	8.6%	8.3%	6.4%	7.4%	9.1%	8.2%	6.4%	8.3%	5,922	68,241	56,035	19,212
3	7.7%	6.9%	5.8%	6.8%	8.0%	6.9%	5.8%	7.6%	5,756	53,081	46,152	15,432
4	7.2%	6.2%	5.4%	6.5%	7.4%	6.2%	5.4%	7.3%	5,936	45,306	39,443	12,767
5	7.1%	6.0%	5.3%	6.3%	7.4%	6.0%	5.4%	7.2%	5,602	39,565	34,827	10,665
6	6.0%	5.5%	5.1%	6.1%	6.2%	5.5%	5.1%	7.0%	4,408	32,450	29,354	8,749
7	5.1%	5.0%	5.0%	6.2%	5.2%	5.1%	5.1%	6.9%	3,668	26,833	25,276	7,342
8	5.3%	5.0%	5.2%	6.4%	5.4%	5.1%	5.3%	7.2%	3,863	24,137	22,687	6,278
9	5.4%	5.4%	6.0%	7.8%	5.5%	5.5%	6.1%	8.5%	3,848	23,125	22,312	6,312
10	33.8%	56.2%	68.4%	76.2%	38.7%	57.0%	69.4%	76.7%	23,586	207,113	204,677	48,339
11	15.4%	25.6%	34.9%	41.4%	17.9%	26.4%	35.8%	42.1%	7,284	33,906	23,548	3,661
12	6.5%	10.0%	13.8%	16.3%	7.3%	10.2%	14.1%	16.0%	2,709	8,771	4,759	586
13	4.8%	7.2%	10.0%	11.2%	5.4%	7.4%	10.2%	11.0%	1,943	5,149	2,425	250
14	4.1%	6.1%	8.0%	11.4%	4.5%	6.2%	8.2%	10.9%	1,574	3,587	1,465	162
15	3.9%	5.8%	7.7%	11.0%	4.4%	5.9%	8.1%	10.4%	1,432	2,817	1,009	81

Chart 4.16 shows T10 conversion rates by issue age groups. The youngest ages have the highest conversion rates in the early years, and the older ages have the highest conversion rates at the end of the level period and later. Conversion rates spike in duration 5 for the oldest issue ages and stay higher than other ages when durational and age limitations of the conversion privileges start to come into play.



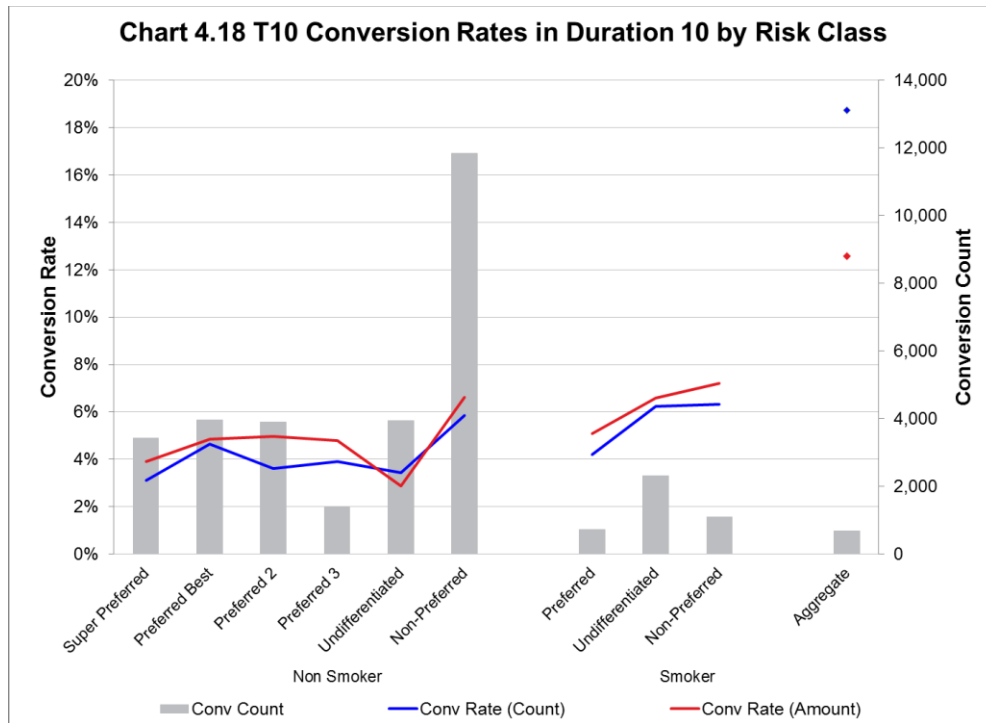
Duration	Conversion Rate (Count)				Conversion Rate (Amount)				Conversion Count			
	<40	40-49	50-59	60+	<40	40-49	50-59	60+	<40	40-49	50-59	60+
1	0.9%	0.5%	0.4%	0.5%	0.8%	0.4%	0.4%	0.8%	5,613	2,604	2,127	1,258
2	1.7%	0.8%	0.7%	0.7%	1.1%	0.6%	0.5%	0.8%	9,837	4,291	3,281	1,758
3	1.4%	0.7%	0.6%	0.8%	1.0%	0.5%	0.5%	1.0%	7,695	3,780	2,892	1,711
4	1.3%	0.8%	0.6%	0.8%	0.9%	0.5%	0.5%	1.0%	6,809	3,646	2,783	1,642
5	1.8%	1.2%	1.0%	1.6%	1.1%	0.7%	0.7%	2.2%	8,402	5,091	3,919	2,704
6	0.9%	0.6%	0.6%	0.8%	0.7%	0.4%	0.6%	1.3%	3,726	2,357	2,097	1,133
7	0.7%	0.6%	0.7%	0.8%	0.6%	0.5%	0.6%	1.4%	2,787	2,082	2,193	987
8	0.7%	0.6%	0.8%	0.7%	0.6%	0.5%	0.8%	1.2%	2,340	1,987	2,016	775
9	0.8%	0.7%	0.9%	0.7%	0.7%	0.6%	0.9%	1.3%	2,362	1,943	1,879	654
10	3.3%	5.0%	6.3%	3.1%	3.6%	4.9%	7.1%	4.3%	8,466	11,353	11,211	2,181
11	2.6%	5.0%	5.3%	3.2%	3.9%	6.5%	6.6%	3.5%	2,852	2,683	1,482	213
12	1.1%	2.0%	1.9%	1.2%	1.4%	2.4%	1.4%	0.6%	936	746	351	54
13	1.0%	1.6%	1.6%	1.1%	1.3%	1.5%	1.4%	0.4%	728	493	239	36
14	1.0%	1.5%	1.4%	1.6%	1.3%	2.4%	1.9%	1.8%	594	379	181	44
15	0.9%	1.4%	1.4%	1.6%	1.1%	1.8%	1.2%	0.7%	471	293	139	34

Chart 4.17 shows T10 lapses by issue age bands. The youngest issue ages have the highest lapses during the level period, similar to the conversion rate results. The shock lapse rate in the 10th duration is highest for the highest issue age group and lowest for the lowest issue age group.

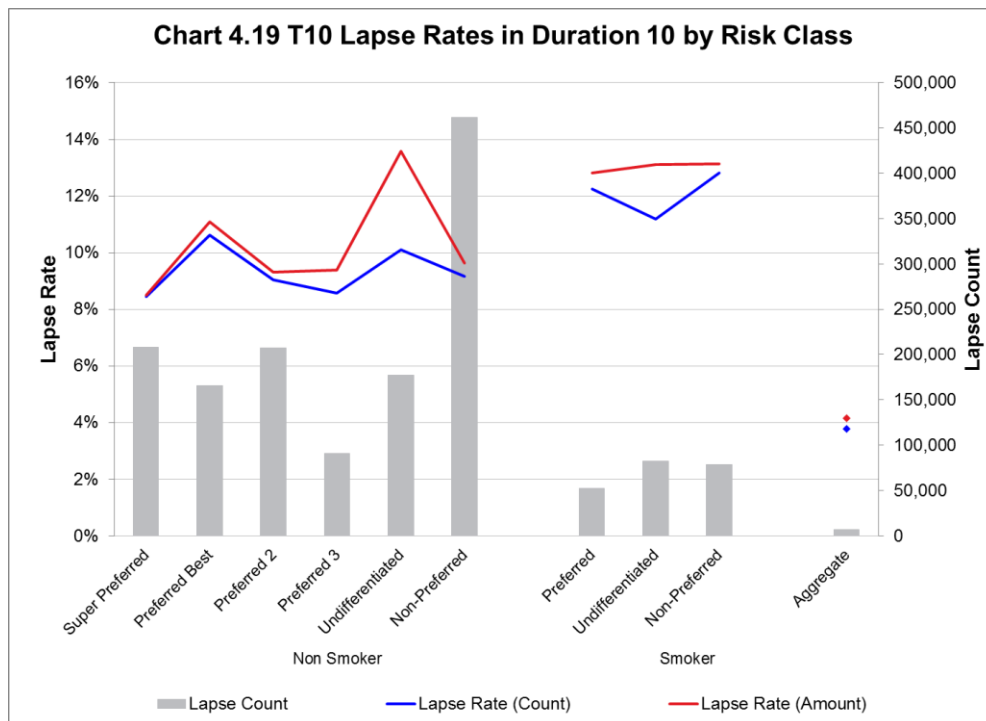


Duration	Lapse Rate (Count)				Lapse Rate (Amount)				Lapse Count			
	<40	40-49	50-59	60+	<40	40-49	50-59	60+	<40	40-49	50-59	60+
1	12.7%	8.8%	6.9%	6.5%	9.6%	7.4%	6.8%	6.9%	92,156	53,155	38,135	18,453
2	10.0%	6.9%	5.6%	5.4%	9.3%	7.3%	6.6%	6.9%	66,815	39,894	28,990	13,710
3	8.8%	5.9%	4.9%	4.7%	8.5%	6.5%	6.0%	6.1%	53,682	32,001	23,826	10,911
4	8.0%	5.4%	4.5%	4.5%	7.8%	6.0%	5.7%	6.1%	46,483	27,487	20,276	9,207
5	7.7%	5.2%	4.6%	4.5%	7.6%	5.9%	5.6%	6.0%	40,250	24,306	18,349	7,755
6	7.0%	4.9%	4.3%	4.3%	7.0%	5.6%	5.5%	6.0%	32,898	20,528	15,208	6,326
7	6.3%	4.6%	4.4%	4.3%	6.4%	5.5%	5.8%	5.7%	26,606	17,584	13,581	5,349
8	6.0%	4.7%	4.8%	4.8%	6.3%	5.6%	6.2%	6.5%	23,169	16,024	12,718	5,054
9	6.2%	5.4%	5.8%	5.9%	6.6%	6.7%	7.5%	7.5%	21,074	15,950	13,211	5,363
10	45.4%	63.2%	71.4%	80.8%	57.8%	71.8%	76.3%	82.2%	130,924	157,785	134,891	60,116
11	24.3%	30.6%	27.9%	29.2%	32.4%	37.1%	32.4%	30.2%	34,193	21,838	9,886	2,481
12	10.2%	10.7%	8.1%	7.9%	13.6%	13.2%	9.2%	7.7%	10,112	4,614	1,708	391
13	7.4%	7.4%	5.5%	4.9%	9.9%	9.1%	5.8%	5.7%	6,099	2,547	933	189
14	6.2%	5.8%	4.3%	4.7%	8.3%	7.4%	4.5%	5.7%	4,317	1,701	620	150
15	5.5%	5.7%	4.4%	4.5%	7.4%	7.2%	5.1%	4.0%	3,314	1,394	525	107

The final breakdown for the T10 plans shows the conversion rates in the 10th policy year by risk class using the methodology described in Chapter 3. Overall the aggregate risk class has the highest conversion rates. There is little variation in conversion rates between preferred classes within a smoking status.



Similar to Chart 4.18, Chart 4.19 analyzes the overall lapse rates in the 10th year for T10 products. Unlike conversions, lapses rate are lowest for the aggregate risk class structure.



5. Post-Conversion Mortality

The post-conversion mortality section analyzes the mortality experience of term life policies after conversion to a permanent plan. Some charts in this chapter focus on the actual to expected ratios, based on the 2008 VBT table, while some are based on the point-in-scale mortality. Later in this chapter, we compare the conversion mortality to other products in the industry. Higher mortality is observed for face amount bands greater than \$100k, and for this reason Charts 5.1, 5.6, 5.16, 5.20, 5.25 and 5.28 are replicated by face amount band to further show the increased mortality.

Actual to Expected

The actual to expected ratios are based on the 2008 VBT table. Black bars, when applicable, represent 90% confidence intervals for the actual to expected results by face amount. The calculation method is given by

$$\left(\frac{A}{E^{Tab}} \right) \pm 1.645 * \left(\frac{\sigma_{BE}}{E^{Tab}} \right)$$

where

A = Actual claims by amount

E^{Tab} = Expected claims by amount using the 2008VBT as the basis

σ_{BE} = The standard deviation of the expected aggregate claims distribution. The variance is calculated at the policy level using a Bernoulli distribution as $(1 - q) \times (q) \times (\text{Face Amount})^2$.

The resulting seriatim variance calculations can be summed up to any level of aggregation to approximate each cell's aggregate claim distribution. By invoking the Central Limit Theorem, using a multiple of ± 1.645 approximates a 90% CI between the 5th and 95th percentile of the Normal distribution. The Normal distribution has inherent deficiencies and should therefore be reviewed with caution.

Point-in-Scale Mortality Rates

The point-in-scale mortality (PISM) is calculated using core actual to expected mortality ratios for the converted permanent (conv perm) business divided by the actual to expected mortality ratios for the core nonconverted level period term business. Both the nonconverted term and converted permanent business use the 2008VBT as an expected basis and have the consistent time (t) in years since the original policy issue date. The level period term experience is used as an approximation for permanent business.

$$PISM = \frac{\left[\frac{\sum_t \text{Conv Perm Business Actual Claim Amount (or Count)}}{\sum_t \text{Conv Perm Business 08VBT Expected Claim Amount (or Count)}} \right]}{\left[\frac{\sum_t \text{Level Term Period Business Actual Claim Amount (or Count)}}{\sum_t \text{Level Term Period Business 08VBT Expected Claim Amount (or Count)}} \right]}$$

$t = \text{Policy Year from Original Term Issue Date}$

For example, to calculate a duration since conversion = 2 data point, the actual to expected counts are summed up across all variables that have duration since conversion = 2 for the converted permanent business. Each of these cells has a corresponding cell in the level term period business with the same time t since original issue date. The actual to expected values are summed and used as the denominator for the PISM ratio calculation.

Illustrative PISM Calculation Example
Duration Since Conversion = 2

Converted Permanent Business				
Duration (t)	Dur Since Conv	Dur At Conv	Actual Count	Expected 08VBT Count
3	2	1	280	207
4	2	2	560	437
5	2	3	420	322
6	2	4	112	46
7	2	5	56	32
8	2	6	56	23

Level Term Business			
Duration (t)	Actual Count	Expected 08VBT Count	
3	18,209		21,333
4	18,437		22,400
5	18,665		22,613
6	18,892		22,827
7	19,120		23,040
8	19,348		23,253

$$PISM = \frac{\left[\frac{\sum_t \text{Conv Perm Business Actual Claim Count}}{\sum_t \text{Conv Perm Business 08VBT Expected Claim Count}} \right]}{\left[\frac{\sum_t \text{Level Term Period Business Actual Claim Count}}{\sum_t \text{Level Term Period Business 08VBT Expected Claim Count}} \right]}$$

$t = \text{Policy Year from Original Term Issue Date}$

$$PISM = \frac{\left[\frac{280 + 560 + 420 + 112 + 56 + 56}{207 + 437 + 322 + 46 + 32 + 23} \right]}{\left[\frac{18,209 + 18,437 + 18,665 + 18,892 + 19,120 + 19,348}{21,333 + 22,400 + 22,613 + 22,827 + 23,040 + 23,253} \right]}$$

$$PISM = \frac{\left[\frac{1,484}{1,068} \right]}{\left[\frac{112,671}{135,466} \right]}$$

$$PISM = 167\%$$

As the mix of business varies between the two groups of core data, and level period term is used as an approximation for permanent experience, the PISM shown in this report is a best estimate of the true PISM.

Analysis by Duration at Conversion

Chart 5.1 shows how the overall actual to expected (A/E) mortality ratios vary by the duration at which the policy converted. Policies that convert in the later durations of the level term period have significantly higher actual to expected mortality ratios than policies that converted in the early or mid-durations of the level premium period. A complete description of Early, Mid- and Late Conversion Groups is explained in Chapter 3.

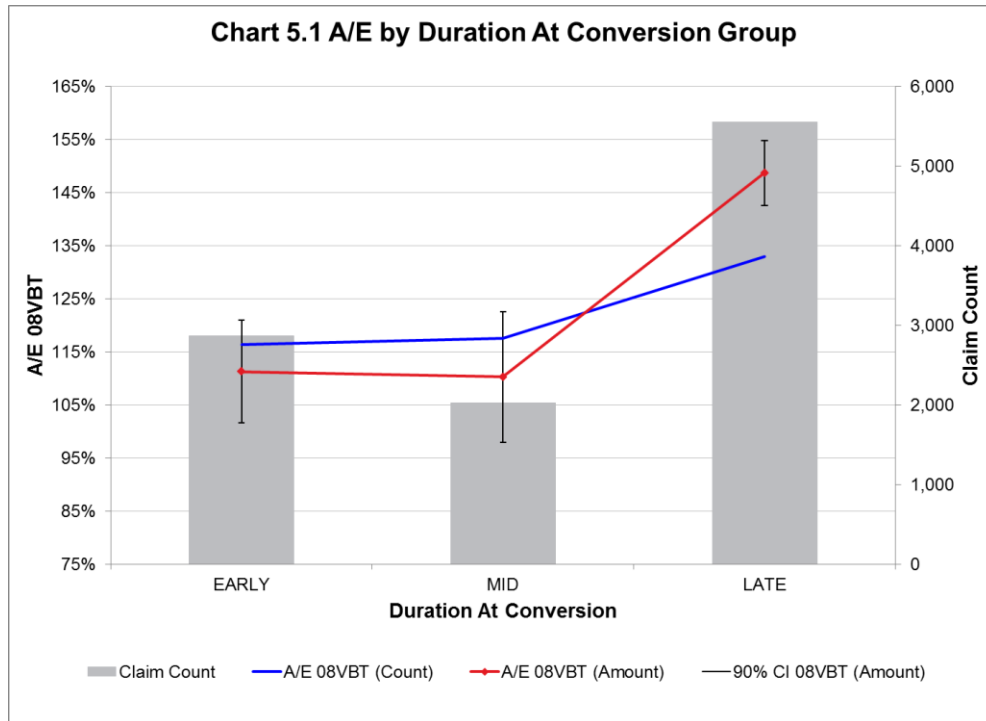


Chart 5.2 and Chart 5.3 show the actual to expected ratios by conversion group similar to Chart 5.1 for face amount bands \$100k–249k and \$250k–999k. For the face amount band \$100k–249k, the early and mid-converters have similar actual to expected ratios, but late converters show an actual to expected ratio just above 125%.

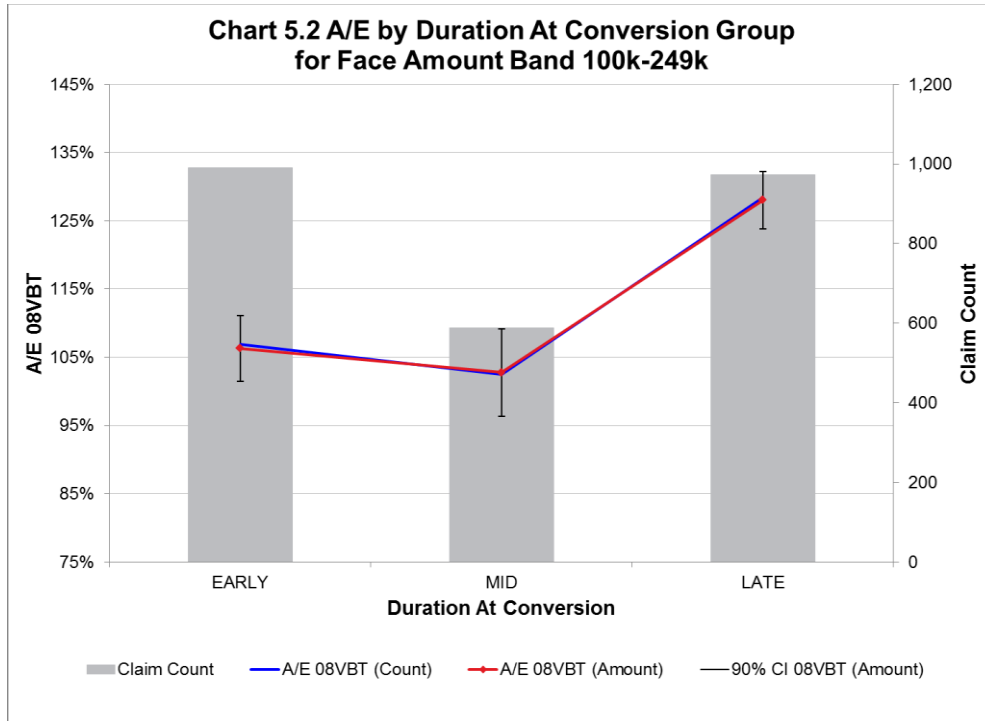


Chart 5.3 for the face amount band \$250k–999k shows more of an increase in the actual to expected ratios for mid- and late converters than the lower face amount band showed in Chart 5.2. Late converters show an actual to expected ratio above 155% versus the 125% from the \$100k–249k band. Early conversions have an actual to expected ratio near 100%. This does not mean early conversion have no anti-selection since overall pricing mortality may have an actual to expected ratio lower than 100% of the 2008 VBT.

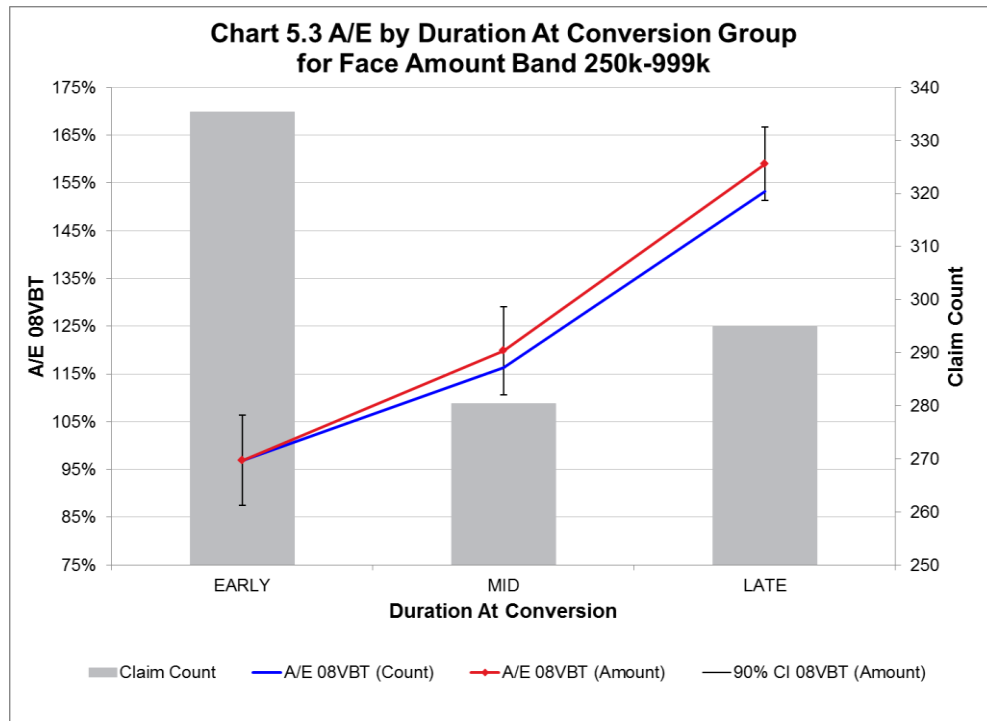


Chart 5.4 shows a similar pattern of A/E ratios by face amount band. Large face amount policies have a greater difference in mortality by duration at conversion, although the data are thinner. This example illustrates the importance of comparing the underlying business mix to what is included in the study. If the average face amount of the block being considered is very different from this study, the ratio of late conversion mortality to early conversion mortality can be very different from what is shown here.

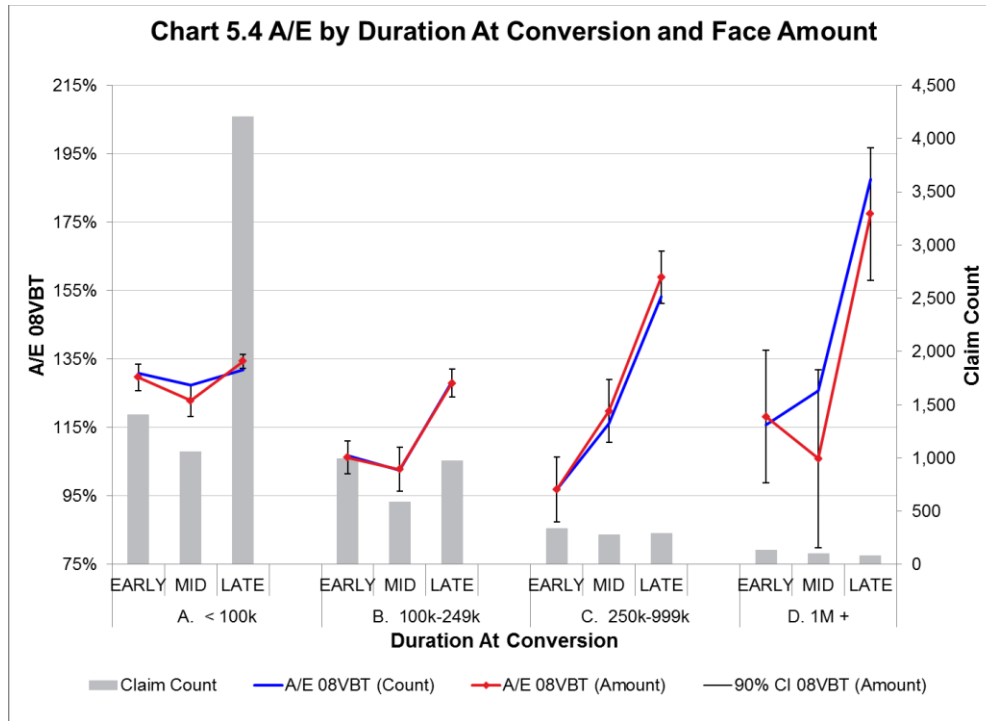
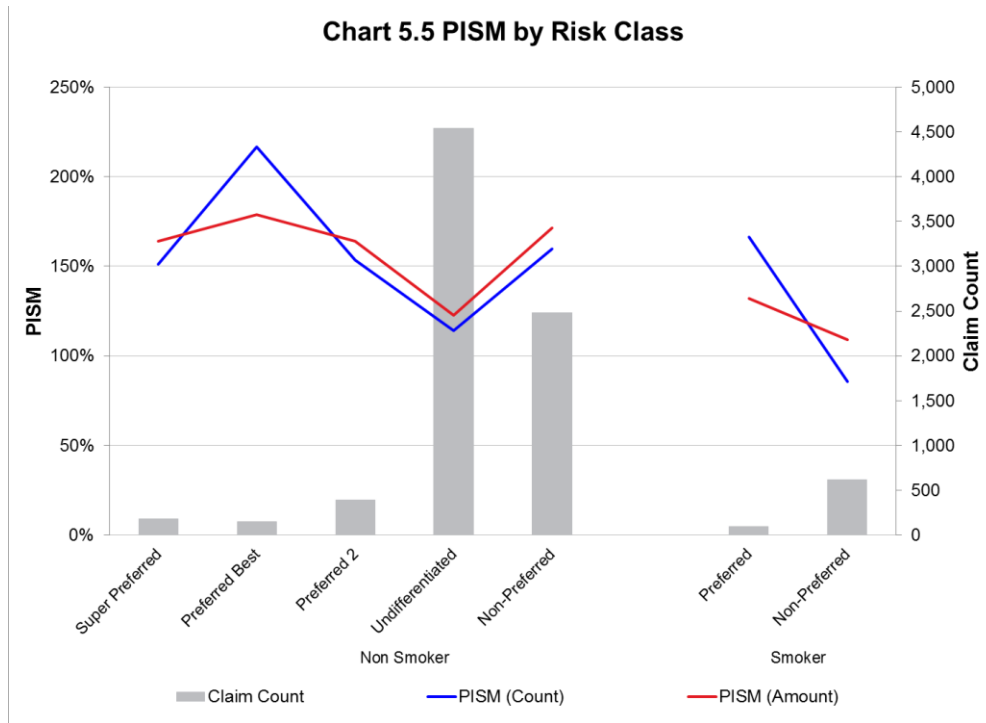


Chart 5.5 displays the PISM by risk class groupings, as defined in Chapter 3. At conversion, the PISM is much higher for the preferred classes for both nonsmokers and smokers. The PISM is calculated for each risk class. For example, the post-conversion mortality of a Super Preferred risk is compared to the level term period mortality of only Super Preferred risks in the same policy duration.

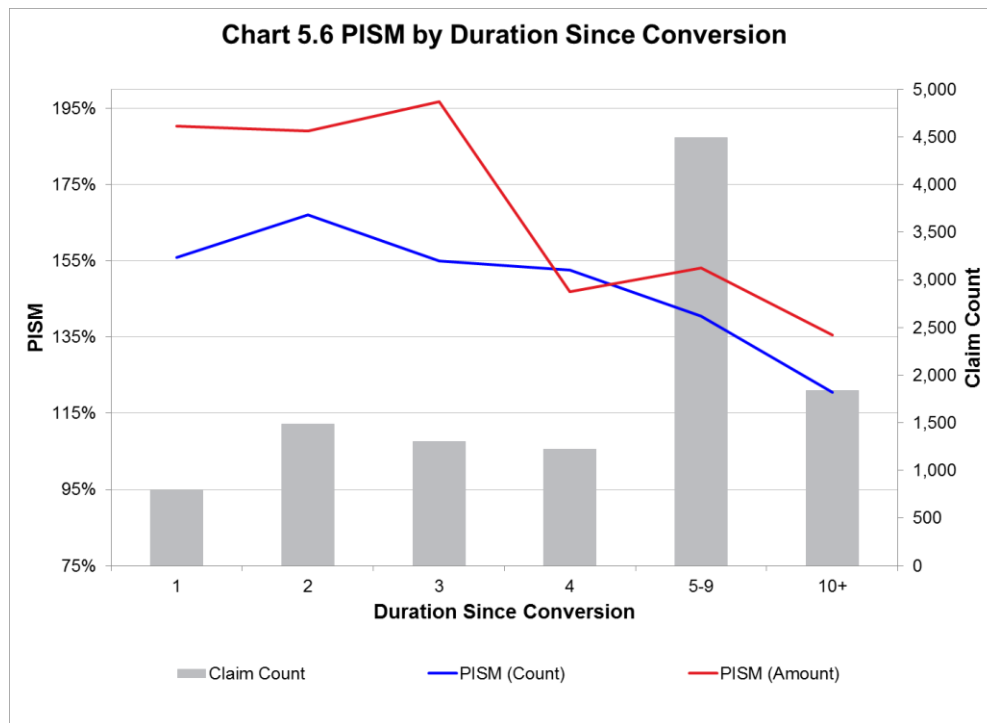


Analysis by Duration since Conversion

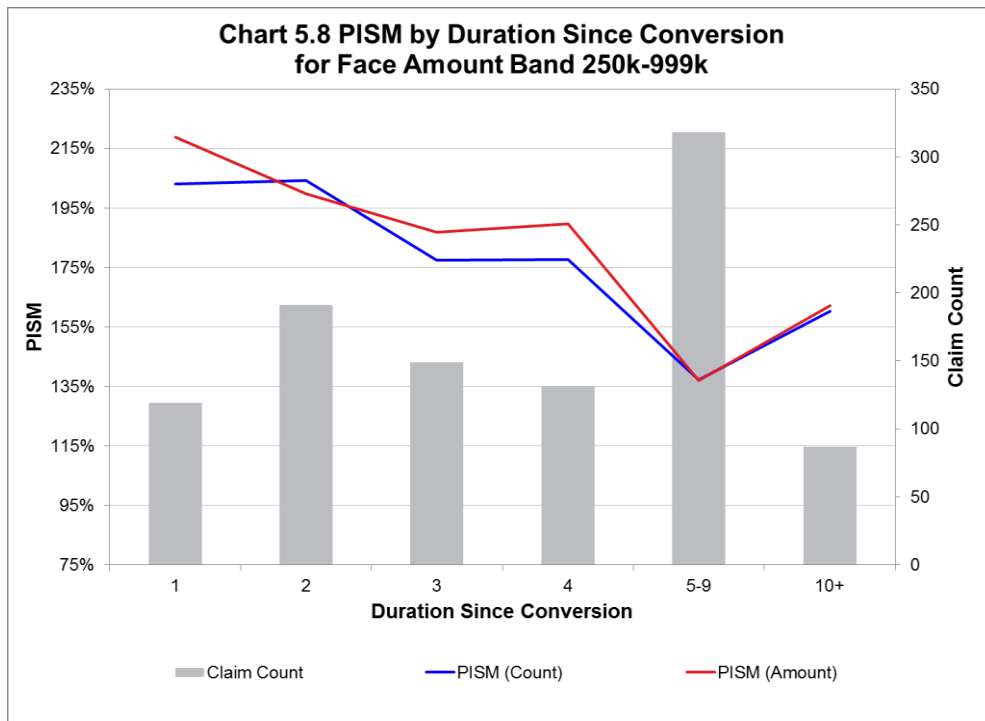
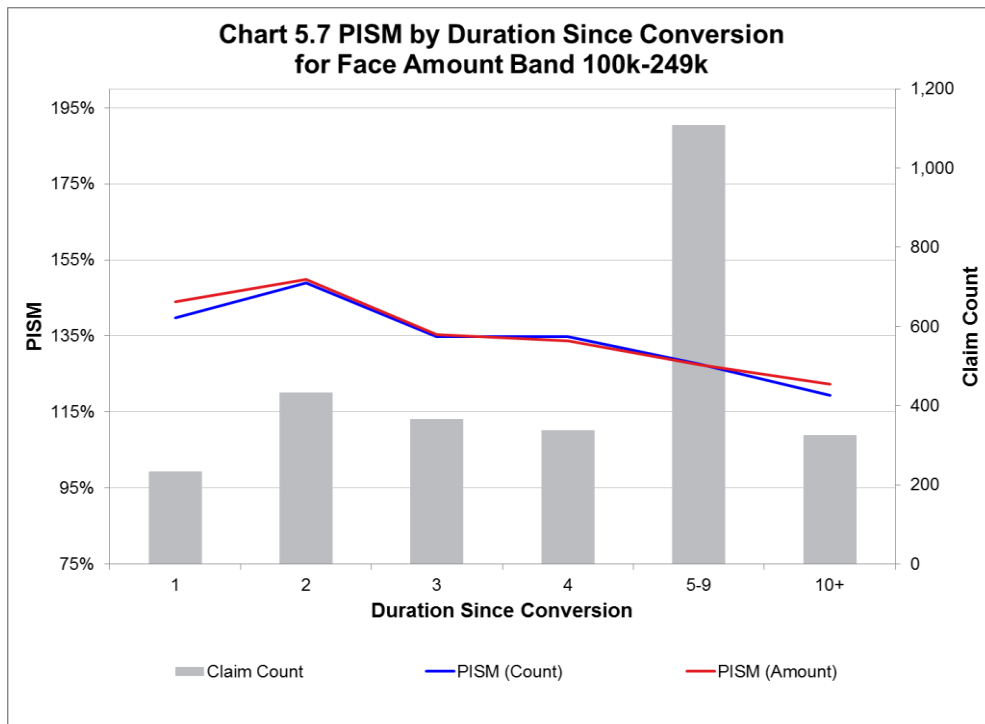
Off-anniversary conversions have only a partial year of exposure in the first duration since conversion. Therefore, the claim count in the first duration since conversion is lower than those in the following years. The ratio increases in the second duration since conversion and declines after that. We observed a similar pattern for both on- and off-anniversary conversions. If a policyholder perceives an immediate need for insurance, the term policy is likely to cover their remaining life span. It is possible that the term conversion is used to address a higher perceived mortality in the future, but not an immediate need.

Durations since conversion are grouped into years 5–9 and 10+ in all charts to increase credibility and reduce the volatility in the charts when slicing by multiple variables.

Chart 5.6 shows the overall PISM by duration since conversion for the entire core block. The overall PISM by amount appears to be more anti-selective than by count. By amount, the multiplier starts out close to 200% and grades down to 135%, meaning that in the initial years after conversion, converted business has mortality that is close to two times that of non-converted business that was issued at the same time as the converted business.



Charts 5.7 and 5.8 replicate Chart 5.6 for the two face amount bands. The results show higher PISM in Chart 5.8 for the higher face amount band.



Analyzing the results by level term period we see the T5 business has relatively flat PISM. Chart 5.9 shows some fluctuations by amount; however, by count the multiplier shows mortality flat by duration since conversion.

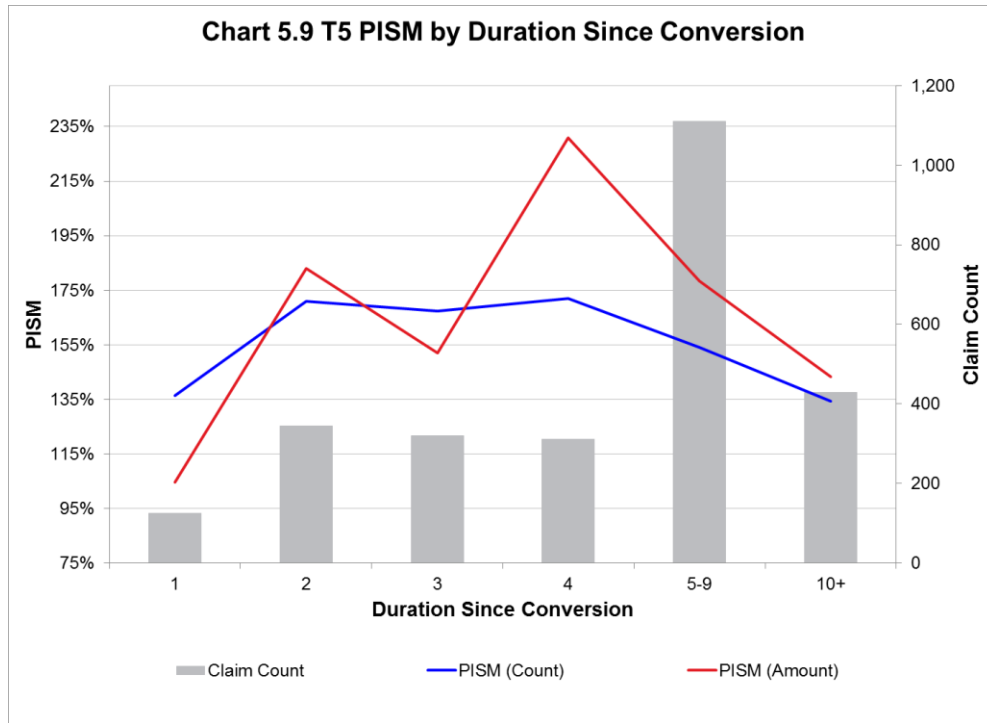
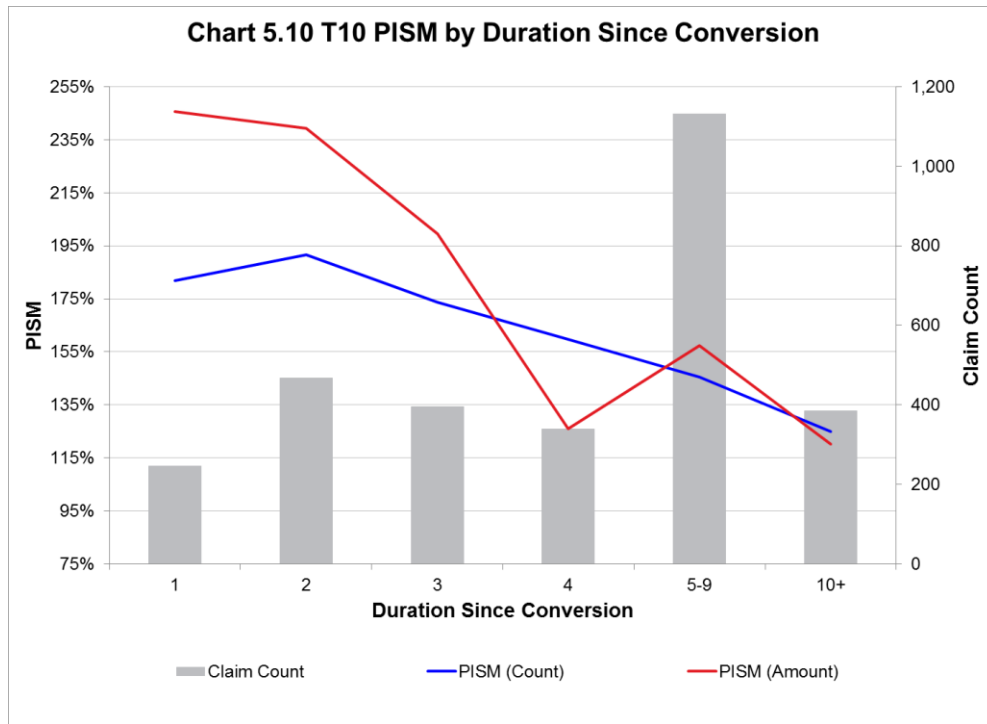
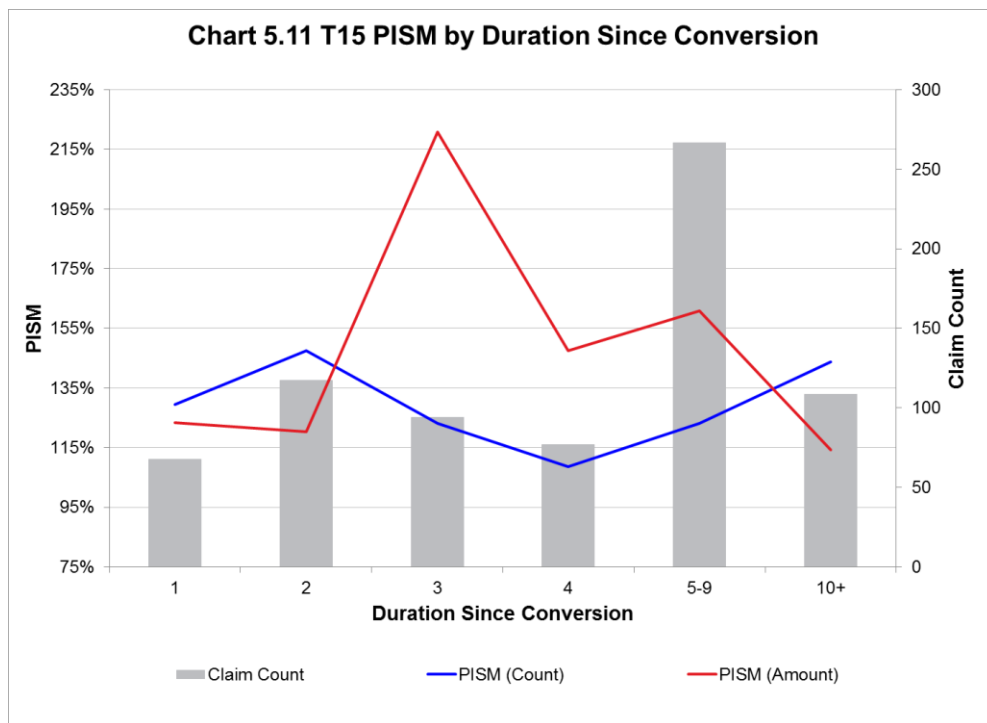


Chart 5.10 shows the PISM for T10 is above 200% by amount in the initial years after conversion grading down to approximately 120% in durations 10 and later since conversion.



Fifteen-year term business in Chart 5.11 has flatter PISM mortality ratios, similar to the T5 business in Chart 5.9. The T15 business has less credibility than T10 and has greater volatility in results by amount.



Charts 5.12 and 5.13 show the PISM for T20 and T30 and are high in the first few durations after conversion and grade down to just over 115–130% by years 10 and later following conversion.

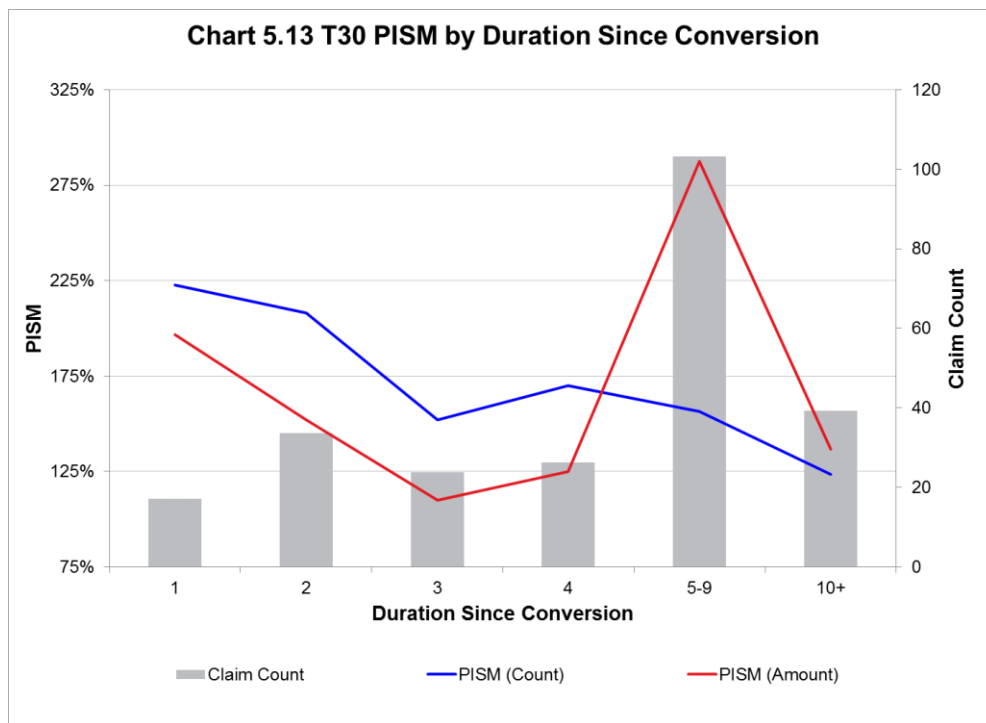
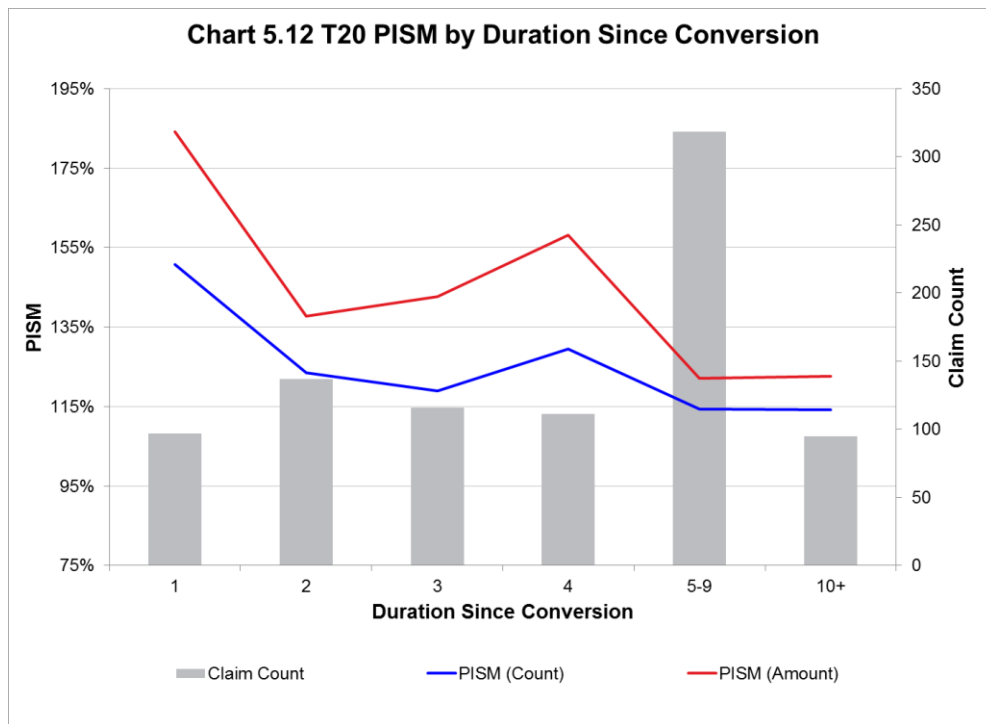
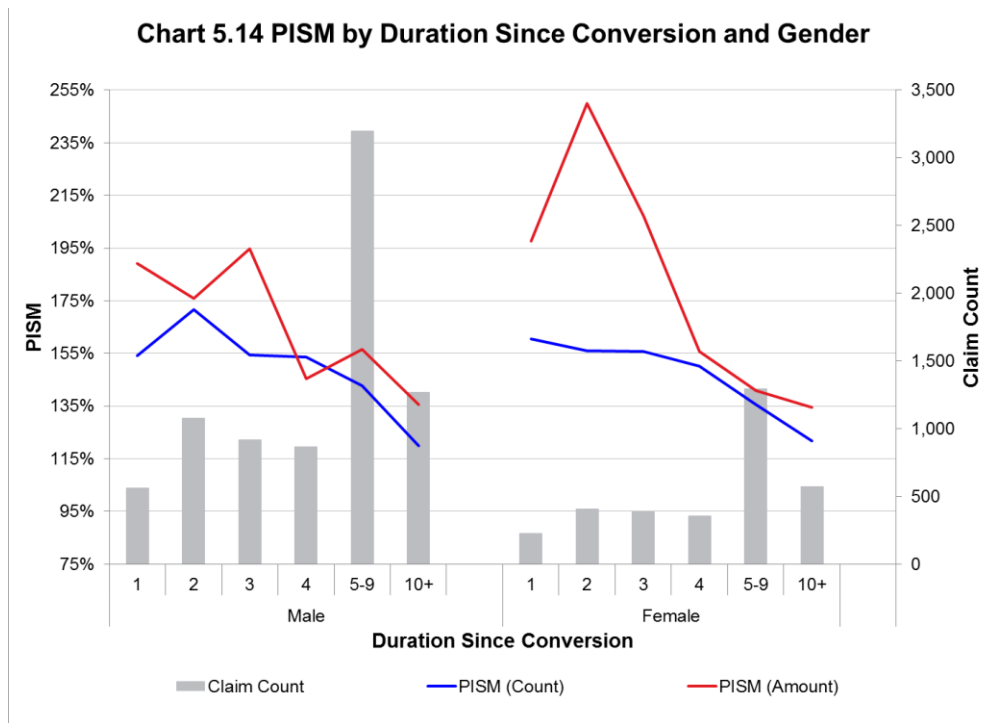
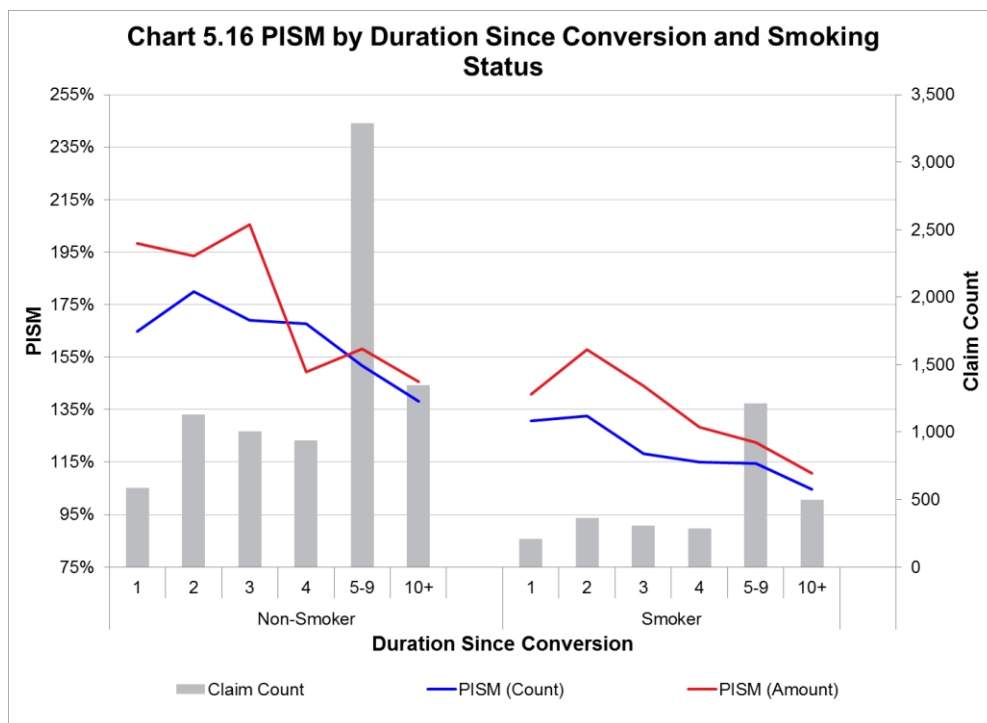
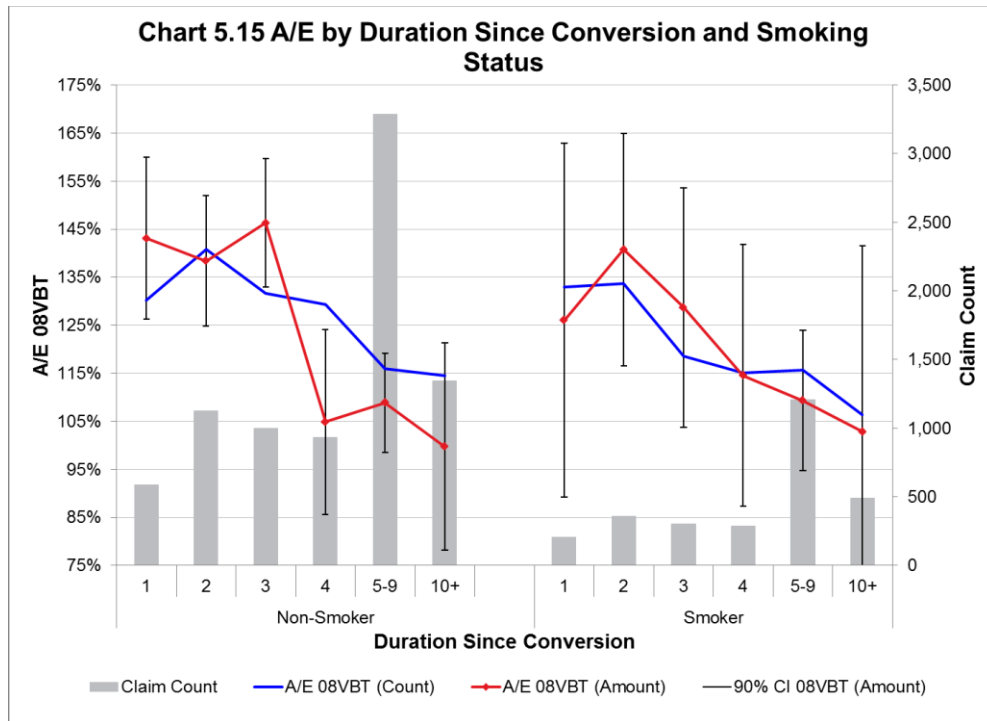


Chart 5.14 analyzes the PISM by Duration since Conversion and by Gender. The PISM is calculated separately for each gender. For example, the post-conversion mortality of a female risk is compared to the level period term mortality of only female risks in the same policy duration. By count, gender does not appear to have a material impact on the PISM results.



Charts 5.15 and 5.16 analyze the A/E ratios by Duration since Conversion and by Smoking Status. The mortality patterns are similar across different smoking status. The smoker results are noticeably less credible, and the confidence intervals are much wider. Nonsmokers have significantly higher PISM, suggesting anti-selection. The PISM is calculated for each smoking status, where the post-conversion mortality of a smoker risk is compared to the level period term mortality of only smoker risks in the same policy duration. The difference between these two charts is due to different term life experience by smoking status. As shown in Chart 7.5, during level term periods, term nonsmokers have lower A/Es than smokers.



Breaking down the smoker and nonsmoker Chart 5.16 by face amount band shows the differences by PISM are showing up only for the larger face amount band \$250k–999k in Chart 5.18. Chart 5.17 for face amount band \$100k–249k shows less variation between the two smoking statuses.

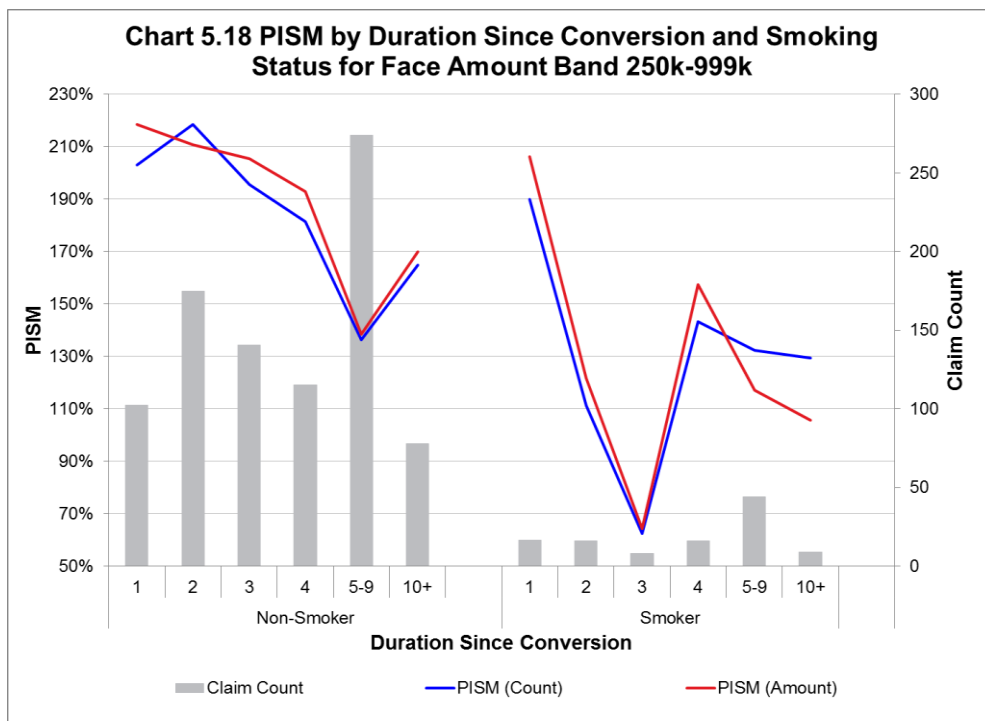
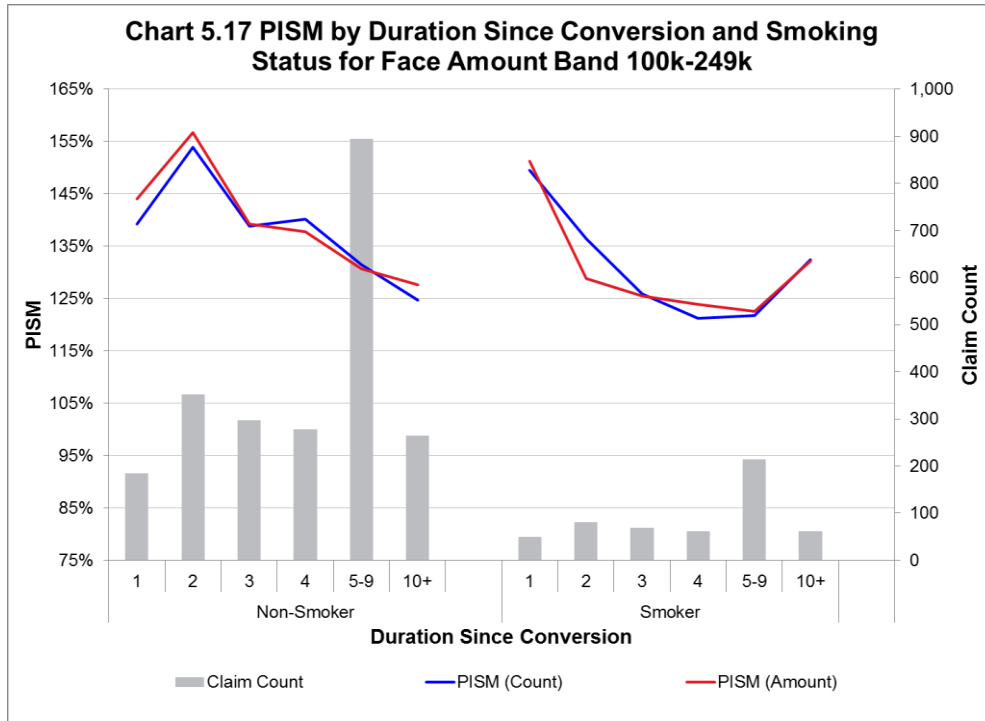


Chart 5.19 analyzes PISM by Duration Since Conversion and by face amount band. Larger face amount groups, though data are thin, exhibit more anti-selection. The PISM is calculated for each face amount band. For example, the post-conversion mortality of face amount group “A. < 100k” is compared to the level period term mortality of only policies with face amounts less than 100,000 in the same policy duration.

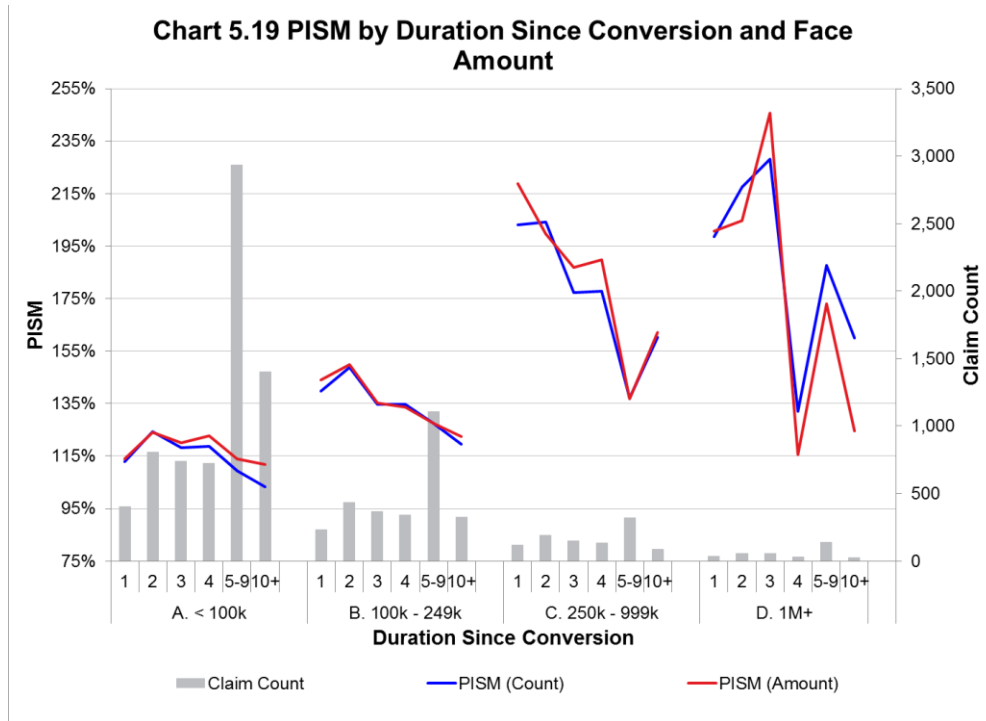
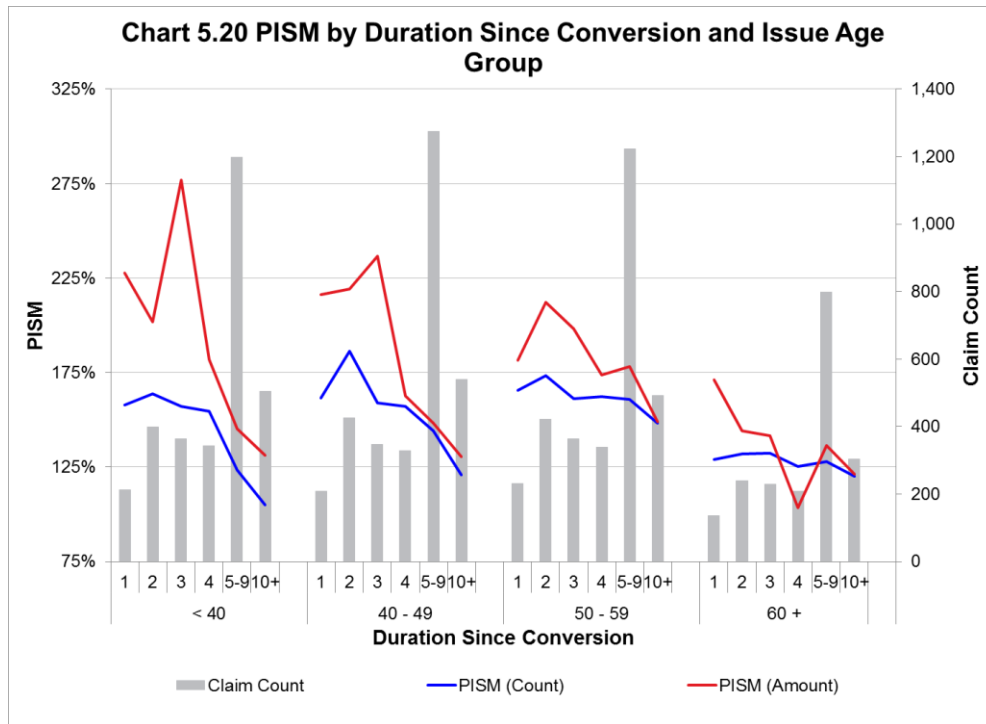
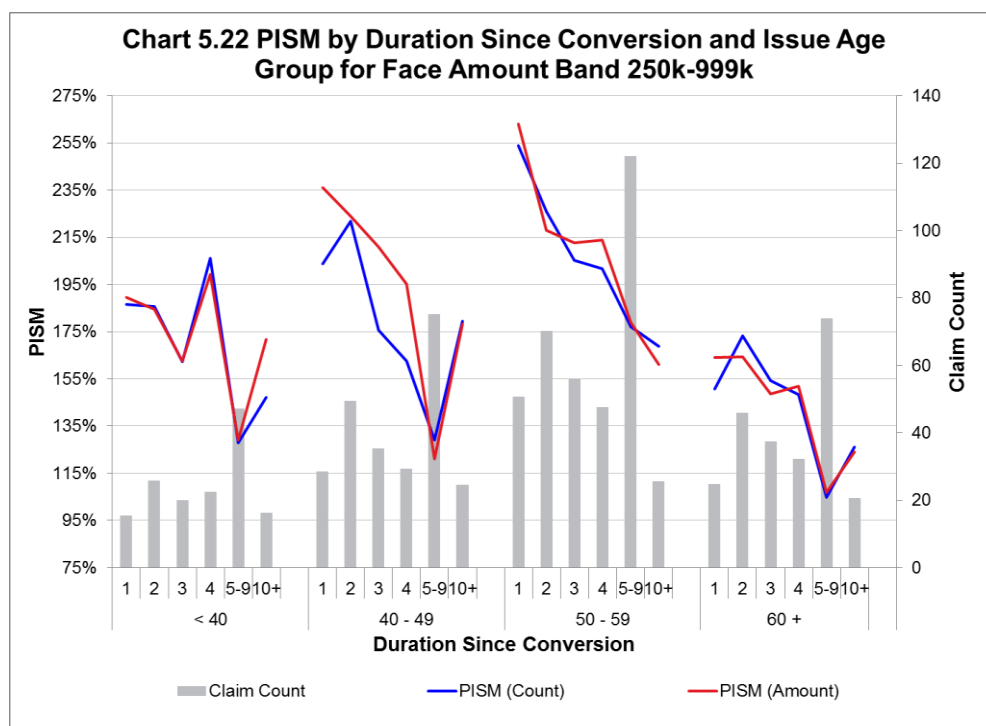
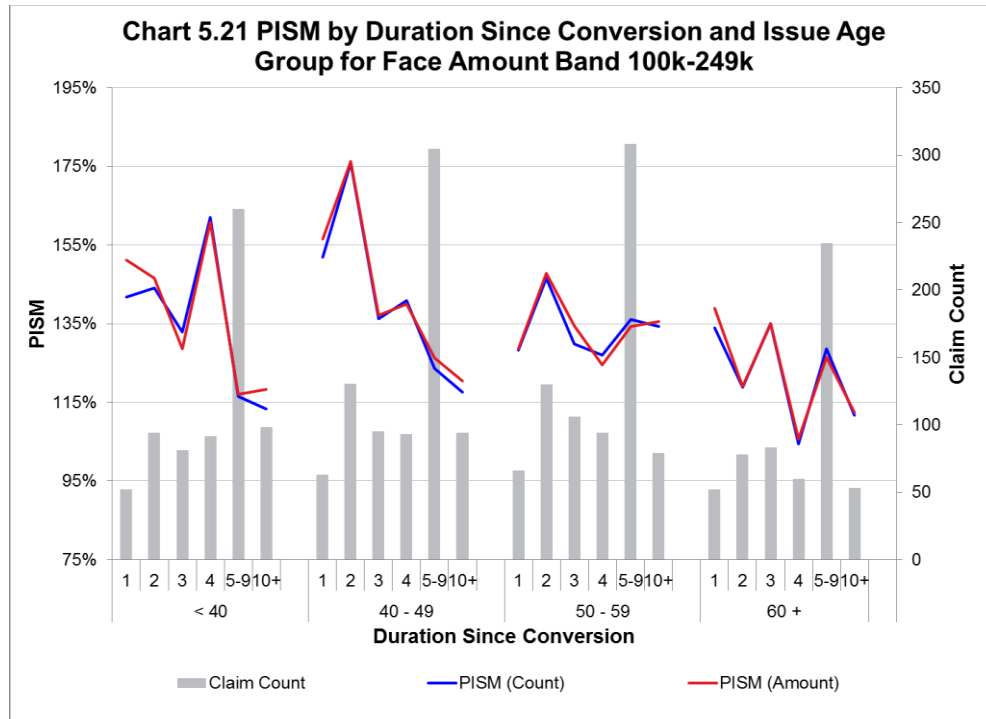


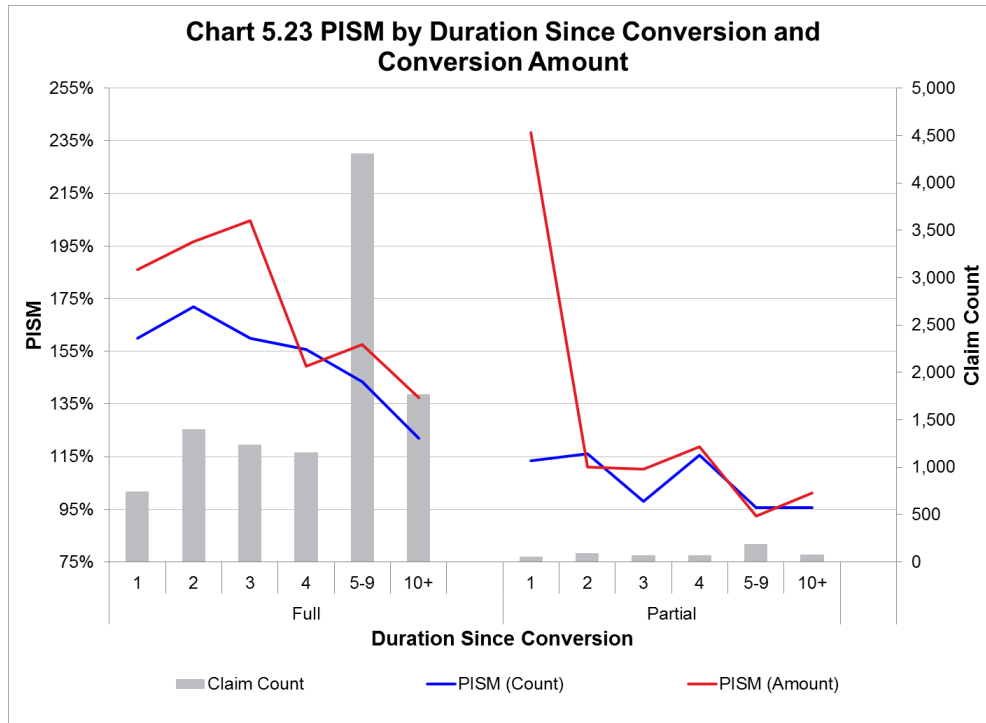
Chart 5.20 analyzes PISM by the Duration since Conversion and by Issue Age Groups. By count, issue age does not appear to have as large impact on the PISM conversion mortality, but the By Amount results have larger variations with more anti-selection at the younger issue ages. In duration since conversion 10+ issue age group 50–59 has much higher PISM than other issue ages. The PISM is calculated for each issue age group, where the post-conversion mortality of a policyholder originally issued at age range 50–59 is compared to the level period term mortality of only term policyholders issued at ages 50–59 in the same policy duration.



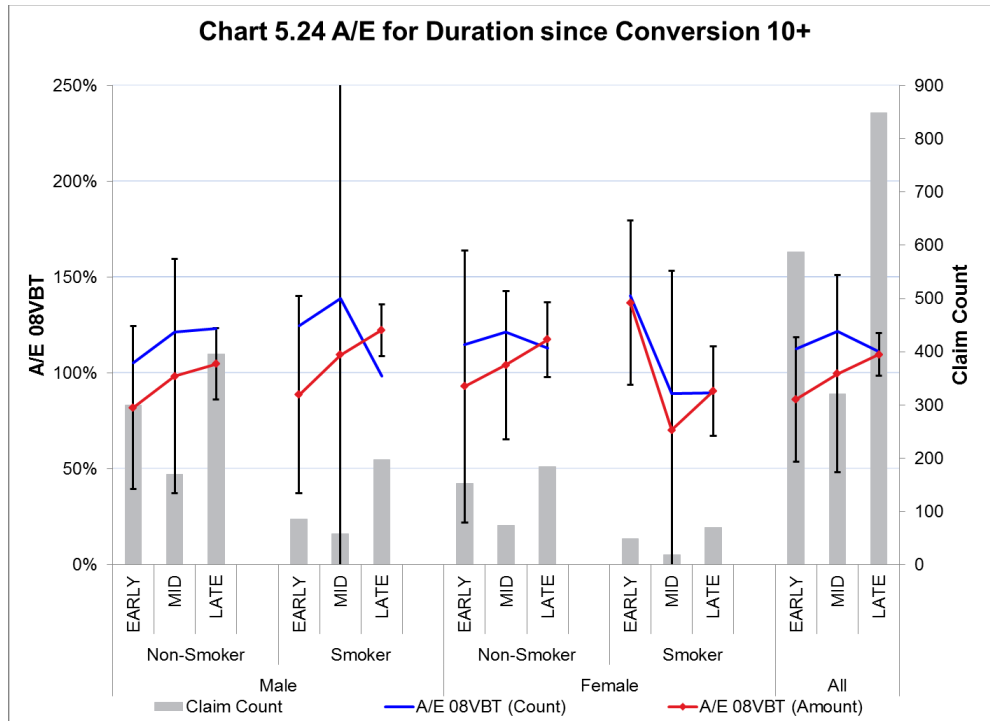
Issue age groupings by face amount band are shown in Charts 5.21 and 5.22. The results shown in these charts have higher PISM than the original Chart 5.20. The face amount band \$250k–999k has very high PISM rates for the 50–59 issue age group, grading down to a duration since conversion 10+ PISM of approximately 160%, which is much higher than the other issue age groups PISM in duration since conversion 10+.



Full conversions show higher PISM by duration since conversion in Chart 5.23. Results for partial conversions are more volatile, due to low credibility and a large claim amount in duration since conversion 1, but show lower PISM in all other durations.

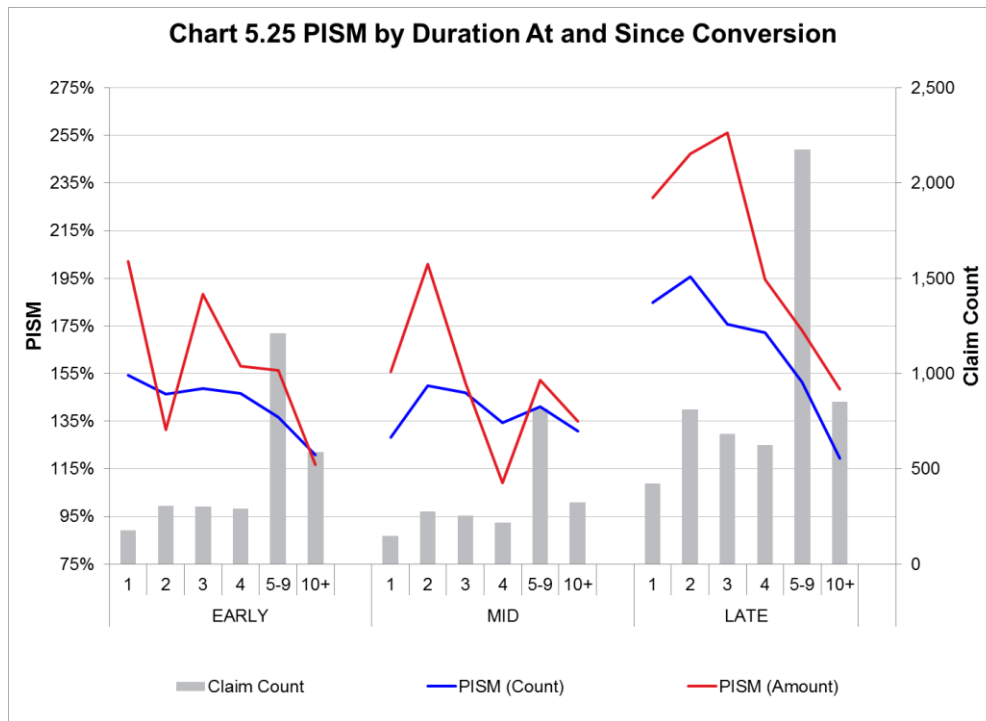


When reviewing the duration since conversion, it is interesting to note that the mortality in the 10+ durations since conversion appears to converge regardless of when a conversion occurred. Chart 5.24 shows experience in that duration group only. Nonsmokers appear to be flat across different conversion groups for both male and females. Smokers have thinner data, and the timing of conversion appears to be affecting the mortality experience even after 10 years since conversion.



Analysis by Duration Both at and since Conversion

Chart 5.25 separates the PISM into the three Conversion Groups: Early, Mid- and Late as defined in Chapter 3. There is little variation between early and mid-converters. However, late converters have the highest PISM rates in the initial years post-conversion, at more than 200%. Once a policy converts, the ratio generally decreases by duration since conversion. For companies who treat converted policies as new business regardless of the duration of the conversion, the late duration converters exhibit higher mortality than newly underwritten permanent policies. If converted policies are not analyzed separately, they would increase the overall mortality assumptions in the early duration of the permanent product. Table 5.25 shows PISM rates by amount and count for the three conversion groups.



Duration	(Amount)			(Count)		
	Early	Mid	Late	Early	Mid	Late
1	202%	156%	229%	154%	128%	185%
2	131%	201%	247%	146%	150%	196%
3	188%	151%	256%	149%	147%	176%
4	158%	109%	194%	147%	134%	172%
5-9	156%	152%	173%	137%	141%	151%
10+	117%	135%	148%	121%	131%	119%

In Chart 5.25, PISM is broken down by conversion group. Looking specifically at the late duration converters, the face amount band \$100k–\$249k in Chart 5.26 is lower than the average shown in Chart 5.25. However, Chart 5.27 for face amount band \$250k–999k shows much higher PISM for all conversion groups, with the late converters having PISM greater than 275% in the first duration since conversion. This face amount band also has a larger variation between early and mid-converters.

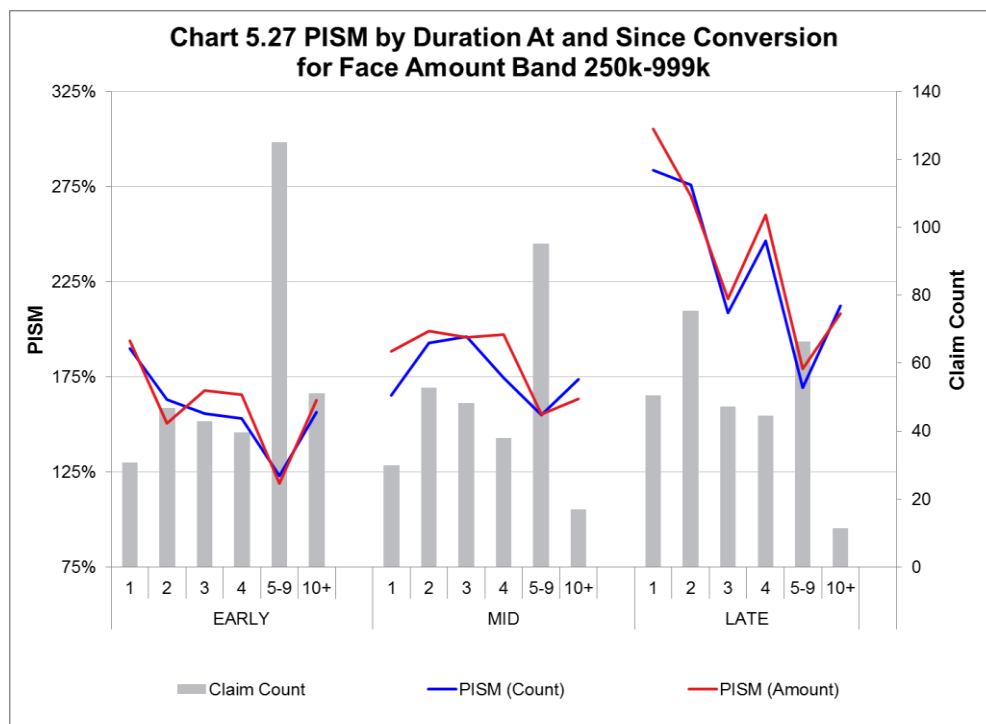
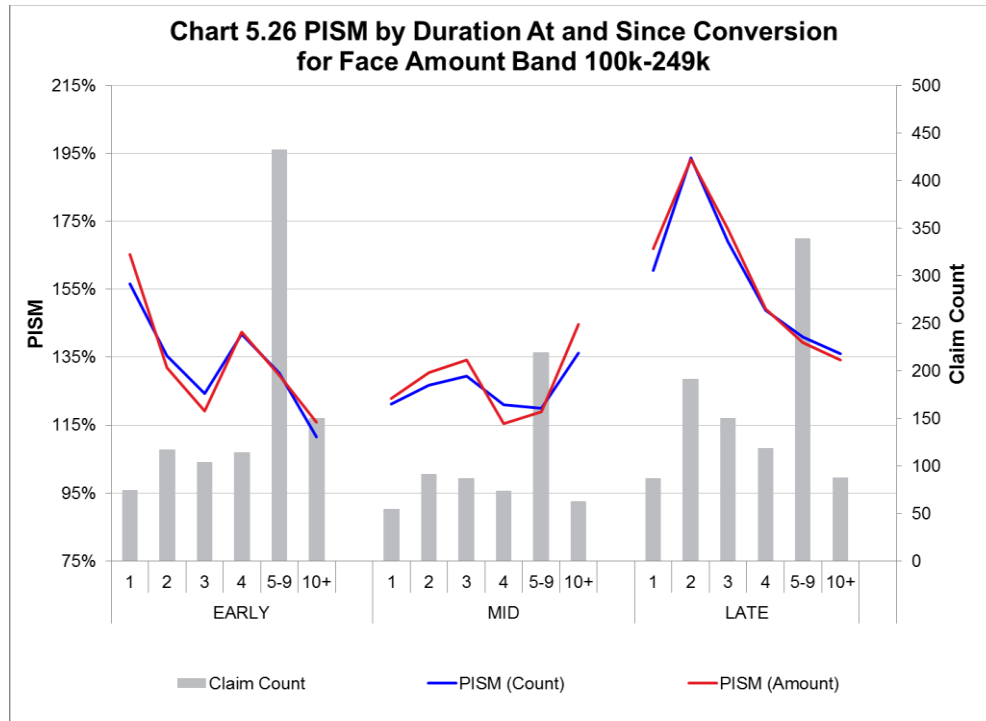
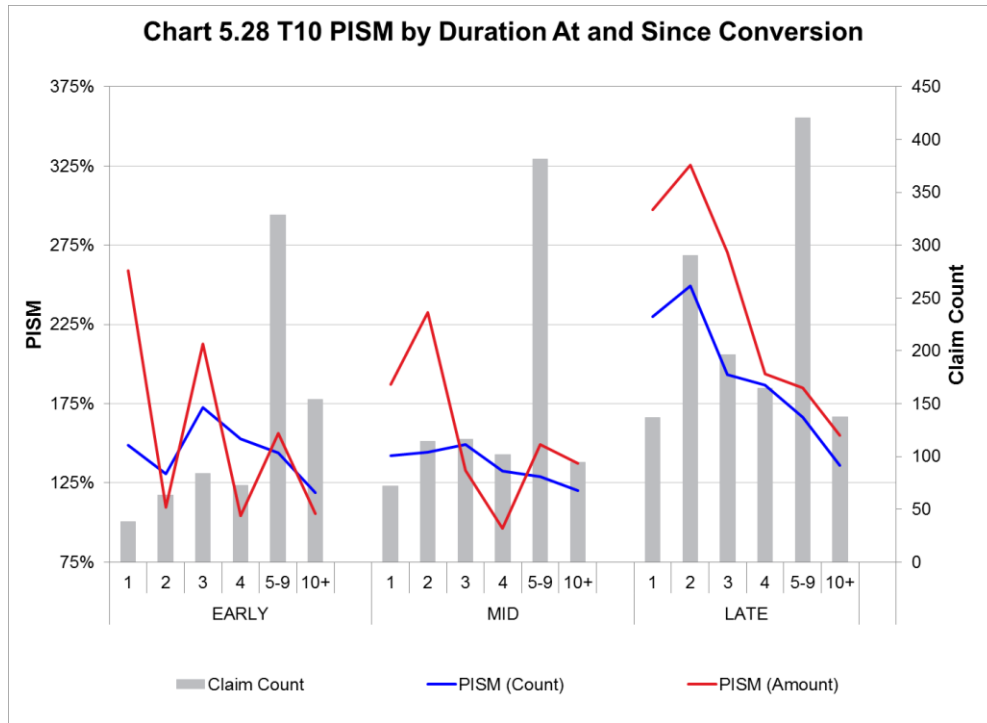
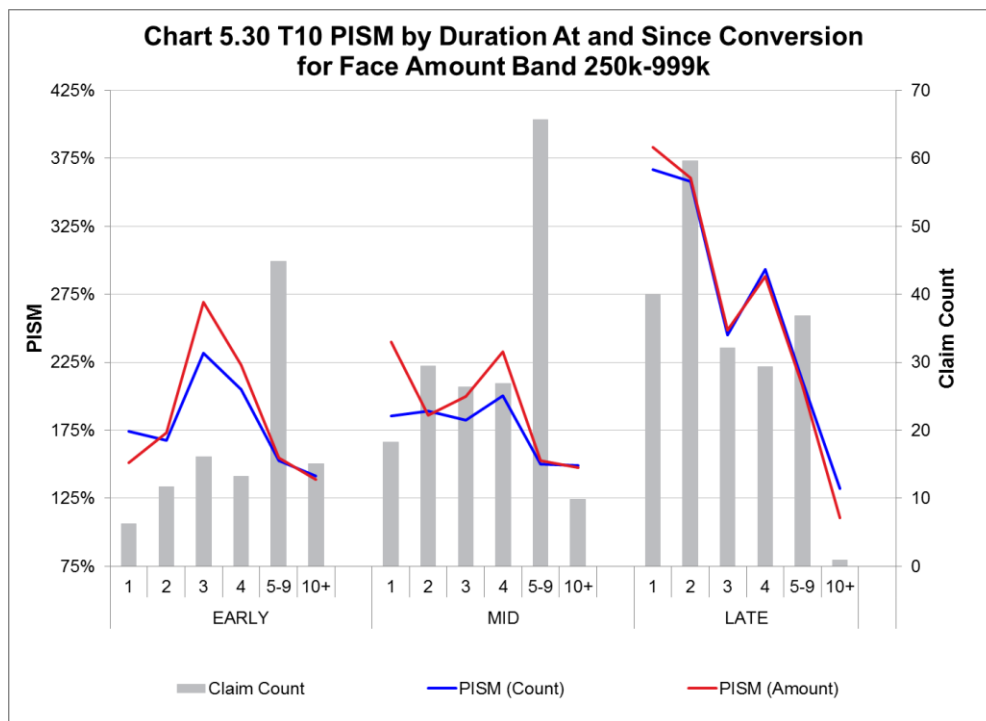
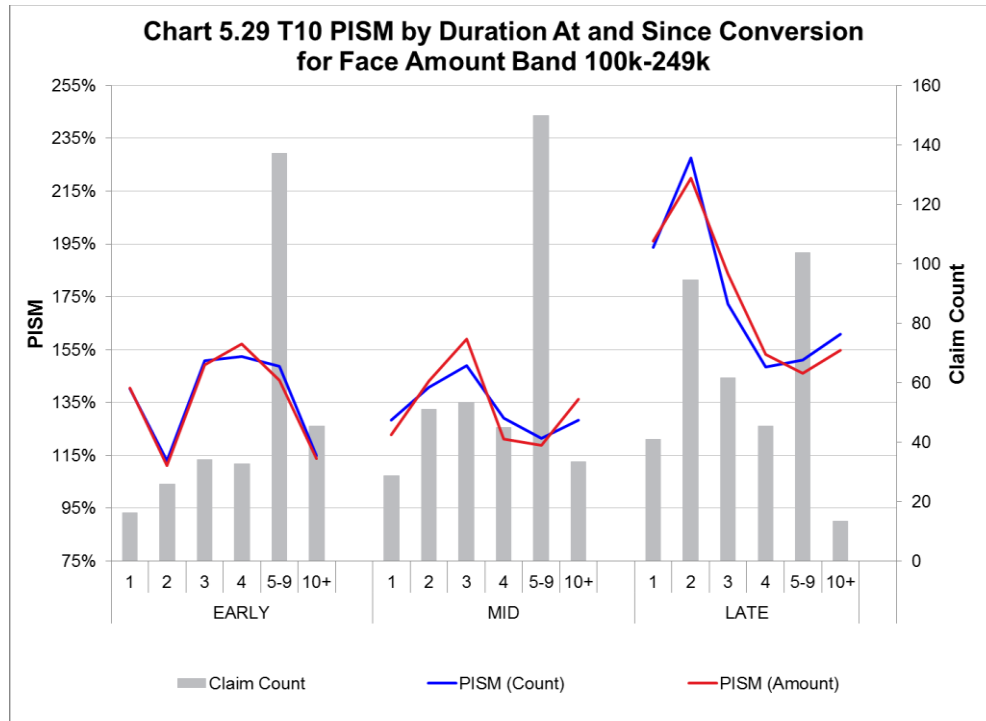


Chart 5.28 is the same as Chart 5.25 except these are results for T10 plans. The PISM mortality rates are higher for the late duration converters than overall at close to 300% PISM for a few durations after conversion.

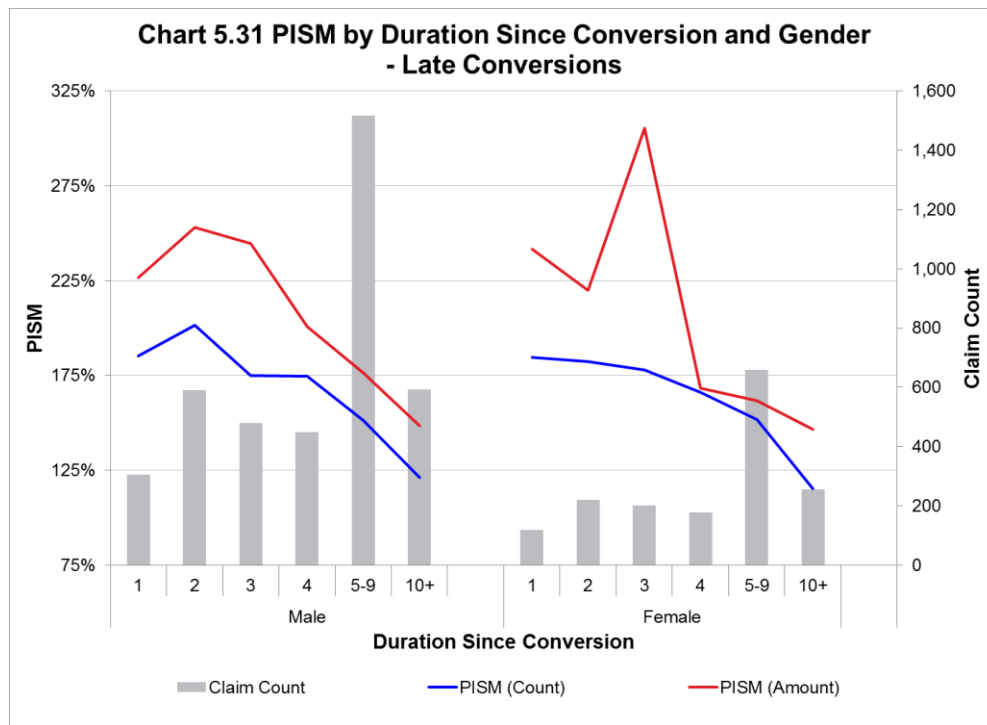


Charts 5.29 and 5.30 replicate 5.26 and 5.27 but are only for conversions from 10-year term products. Late duration converters for the \$250k–999k face amount band show an initial PISM around 375% in the first duration since conversion. Overall the PISM for the \$250k–999k face amount band is higher for each conversion group than for the overall average in Chart 5.28; however, the data in these charts are very thin.



The late converters are analyzed further in Charts 5.31–5.34 by gender, smoking status, face amount band and issue age group. These charts show the overall results for all term plans combined. It is expected that the T10 PISM rates for each grouping would be slightly higher but cannot be shown due to lack of credibility.

Chart 5.31 shows gender results for late converters trend the same as the other conversion groups, but the late converters have a higher PISM as expected. The spike in PISM by amount for females is caused by a handful of large claims. The PISM is calculated for each gender, where the post-conversion mortality of a female risk is compared to the level period term mortality of only female risks in the same policy duration.



Smoking status shows the same anti-selection for smokers in the late conversion group compared to all conversion groups together in Chart 5.32. The PISM is calculated for each smoking status, where the post-conversion mortality of a smoker risk is compared to the level period term mortality of only smoker risks in the same policy duration.

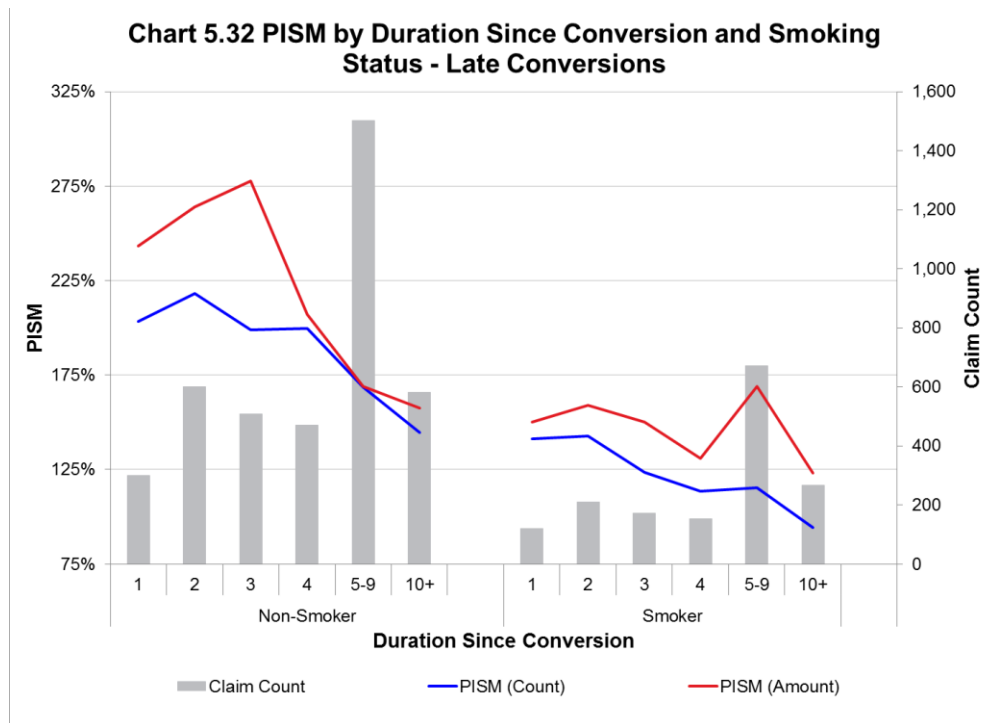
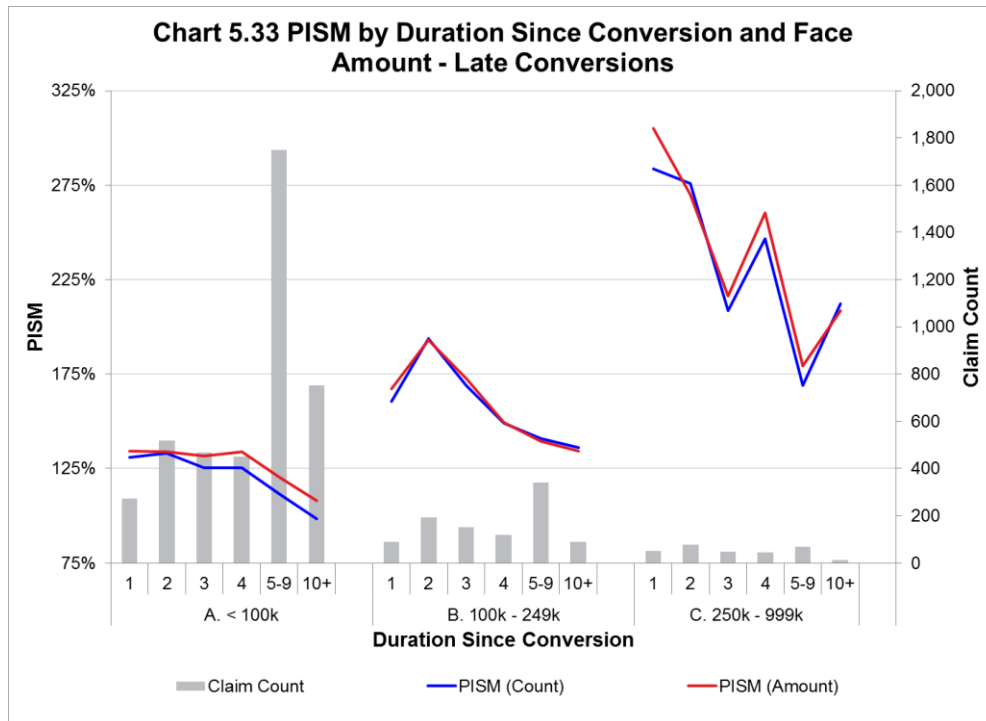
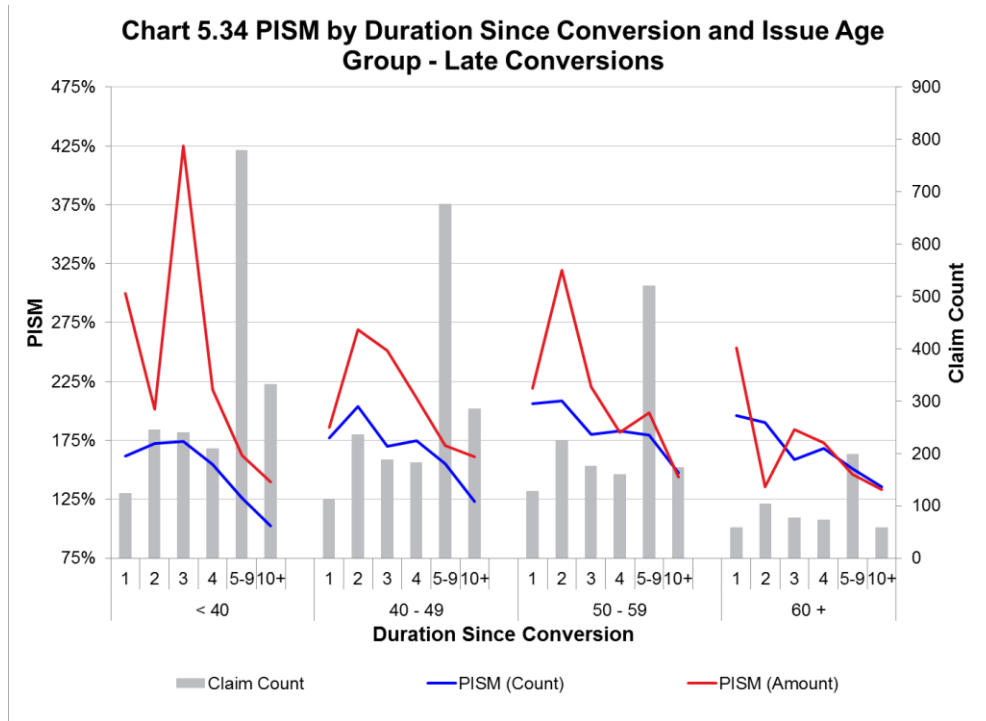


Chart 5.33 shows the PISM for late converters is highest for the face amount band \$250k–999k at approximately 300% in the first duration since conversion although experience in that face amount band is relatively thin as can be seen in the chart below. The results for face amount bands above 1 million are not credible. The PISM is calculated for each face amount band, where the post-conversion mortality of face amount group “A. < 100k” is compared to the level period term mortality of only policies with face amounts less than 100,000 in the same policy duration.



Late converters show increasing PISM with increasing issue age shown in Chart 5.34. The PISM is calculated for each issue age group, where the post-conversion mortality of a policyholder originally issued their policy at age range 50–59 is compared to the level period term mortality of only term policyholders issued ages 50–59 in the same policy duration. The volatility of the rates by amount is increased due to the limited number of claims per issue age group.



Conversion Mortality Comparisons

In the Phase 1 report, “Report on the Survey of Conversion Assumptions and Product Features for Level Term Premium Plans,” companies were asked for their best estimate mortality assumption for converted business as a multiple of nonconverted business. Chart 5.35 shows the results from the survey question in red with Phase 2 PISM experience results from Chart 5.6 in gray. Despite volatility from the experience study, the results fall between the weighted-average and equal average results from the Phase 1 survey of a PISM multiple between 175% and 210% in the initial years since conversion grading down to little or no additional mortality by 10 years post-conversion as shown in Table 5.35. PISM for late converters is higher than the mortality assumptions from the Phase 1 survey as shown below.

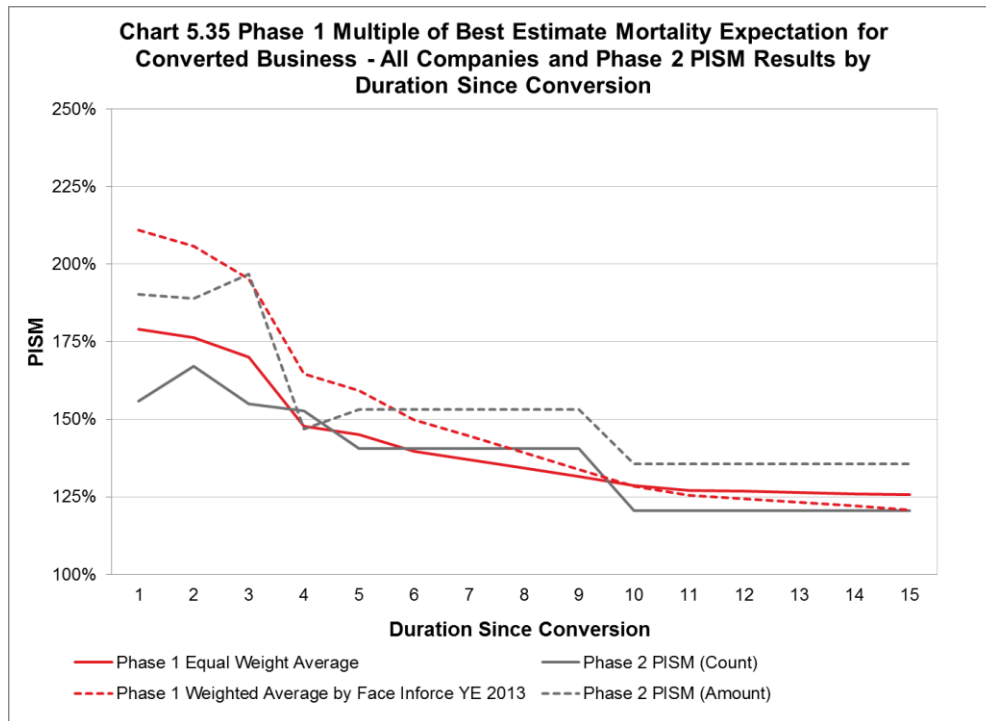
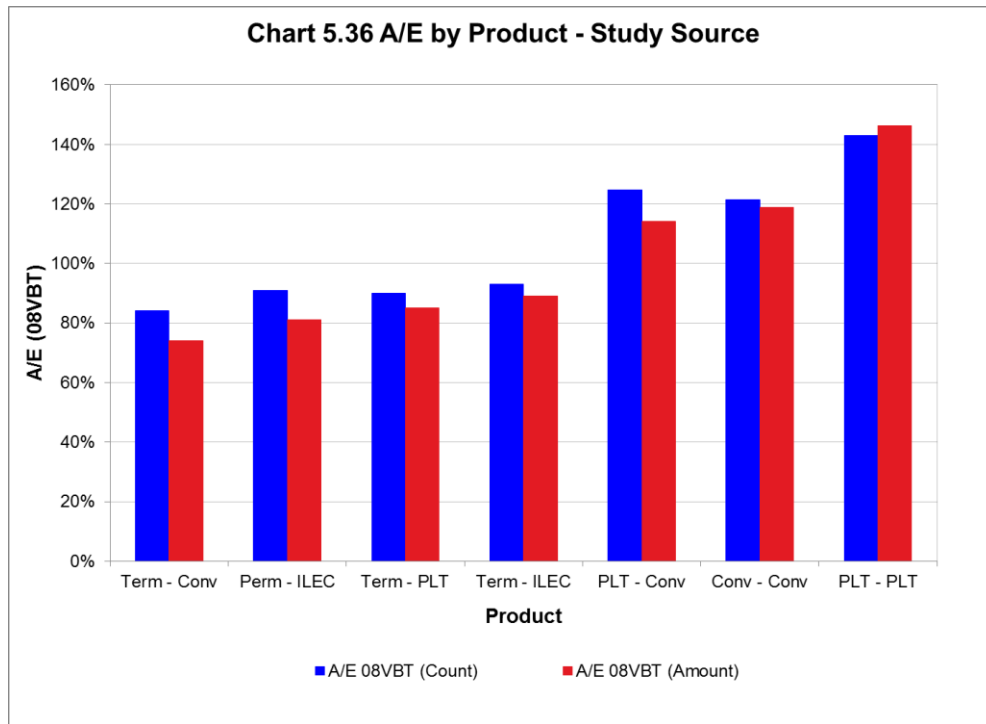


Table 5.35 PISM Comparison				
	Phase 2 PISM Results (Count)	Phase 1 PISM Assumption (Equal)	Phase 2 PISM Results (Amount)	Phase 1 PISM Assumption (Weighted)
Duration				
1	156%	179%	190%	211%
2	167%	176%	189%	206%
3	155%	170%	197%	195%
4	153%	148%	147%	165%
5-9	140%	145%	153%	159%
10+	121%	129%	136%	129%

Chart 5.36 benchmarks conversion mortality against other mortality products by “Product–Study Source.” The data sources for this chart are “Conv” (Phase 2 Conversion Experience Analysis), “ILEC” (SOA 2005–2009 Individual Life Preferred Mortality Experience Study) and “PLT” (2014 Post-Level Term and Lapse Mortality Report). Conversion Mortality (Conv–Conv) comes in higher than term (Term–Conv, Term–PLT, Term–ILEC) and permanent (Perm–ILEC) product mortality and higher than the post-level term (PLT–Conv) mortality from this conversion report. It is not as high as the post-level term (PLT–PLT) mortality from the PLT report.



6. Post-Conversion Lapse

In addition to studying conversion mortality, the overall analysis also includes a study of the lapse rates of converted policies. At a high level, Chart 6.1 indicates that lapse rates increase in the second duration since conversion and decline after that.

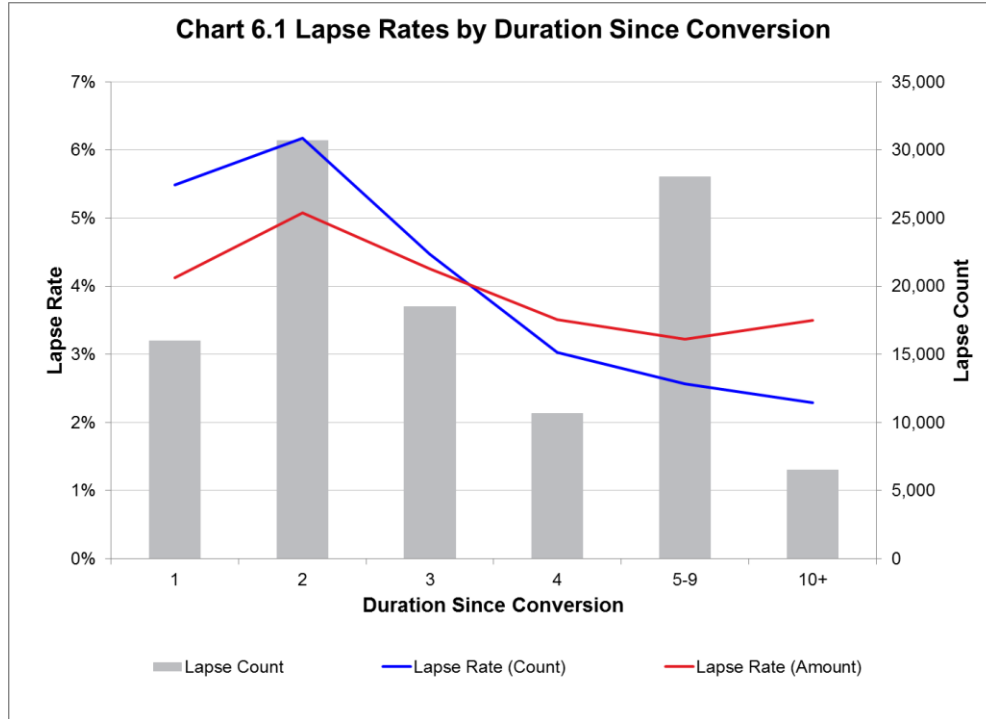
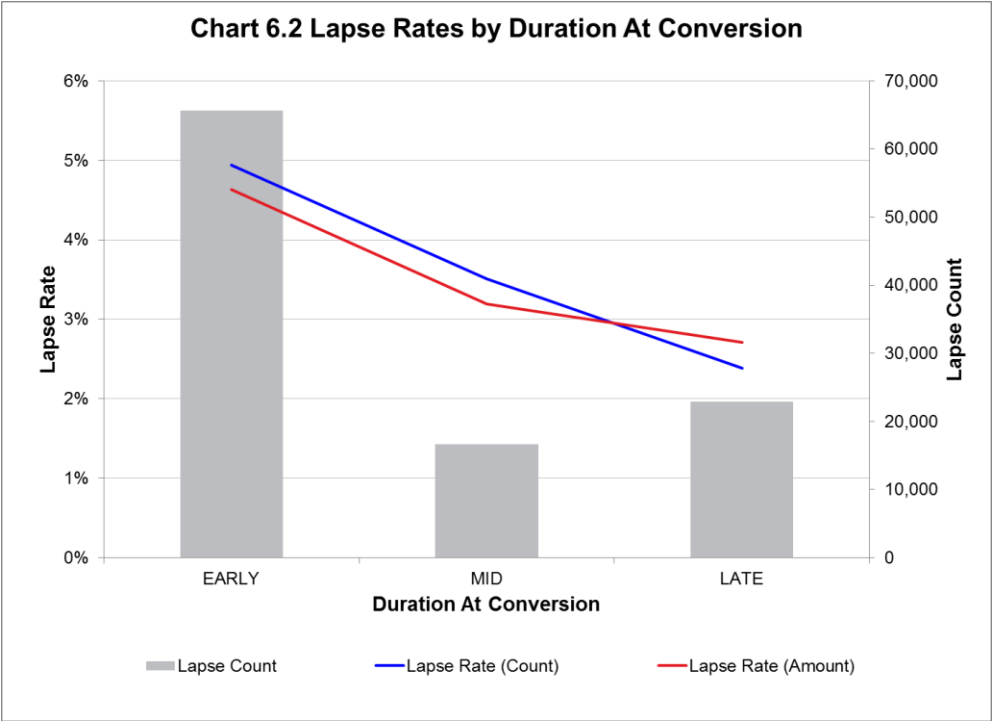


Chart 6.2 shows that overall lapse rates decline with increasing duration at which the policy converted. Policies that convert in the early durations of the level term period have a higher lapse rate than policies that convert in the late durations of the level premium period.



The declining pattern in Chart 6.2 lines up with the general lapse pattern of many permanent products that have a higher initial lapse rate and then decline by duration relative to new business. However, this may not exactly line up with point in scale lapse rates of the permanent product.

Chart 6.3 combines charts 6.1 and 6.2, showing a declining lapse rate by duration at conversion and since conversion. It is important to consider conversions separately when evaluating company experience because converted policies may skew the underlying mortality experience of the permanent plans. Companies that treat converted policies as new business regardless of the duration of the conversion might see mid- and late duration converters exhibiting lower lapses than newly underwritten policies. Without being analyzed separately, converted policies would be bringing down the overall lapse rate in the early duration of the permanent product. For example, a permanent product may have initial lapse rates of 8%, 7% and 6%, but mid- and late duration converters have lapse rates of 6%, 5% and 4%.

For companies that treat converted business as point in scale, mid- and late duration lapses may be increasing the overall ultimate lapse rate. For example, after 10 years, the lapse rate on the most popular permanent product may be 4% or 3%. Mid- and late durations conversion lapses showing 6%, 5% and then 4% will take a little time to settle to the ultimate lapse rate assumption for a permanent product.

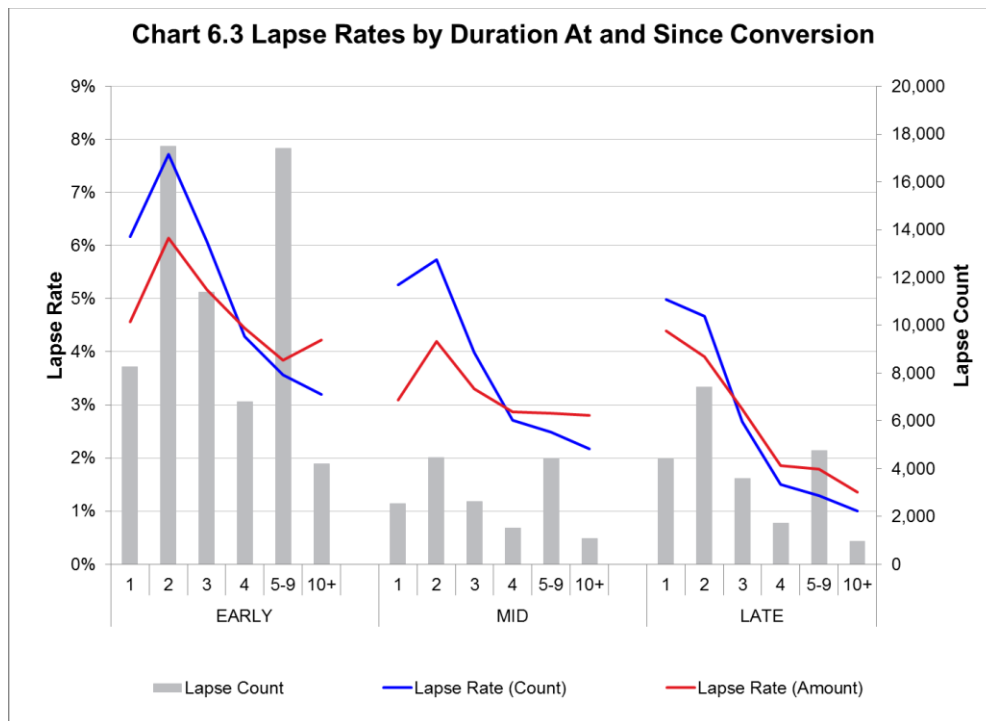
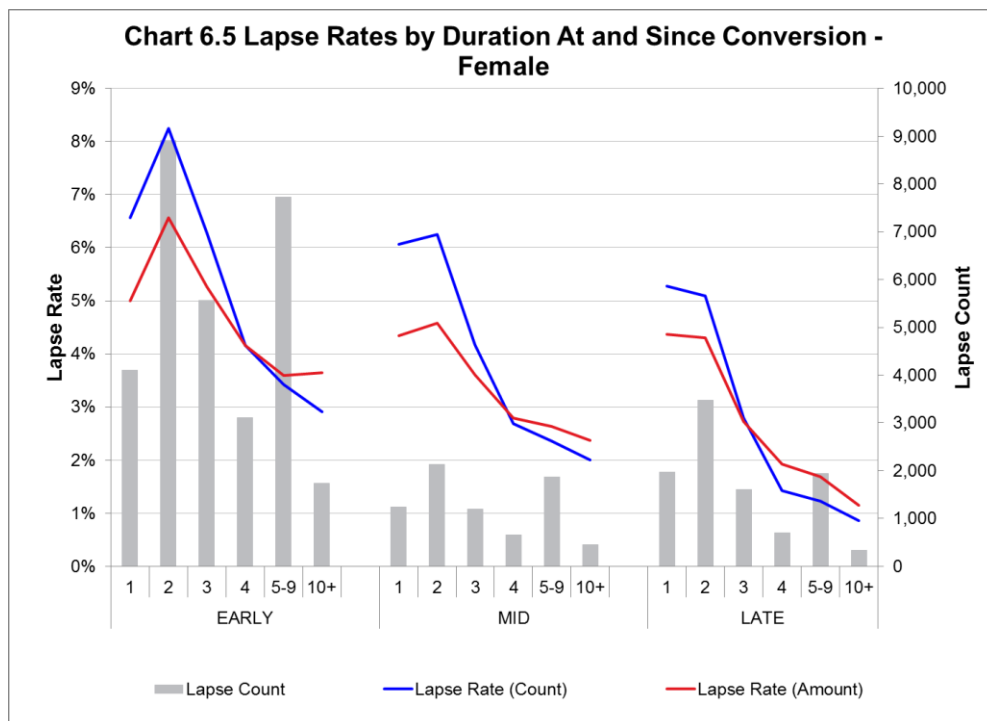
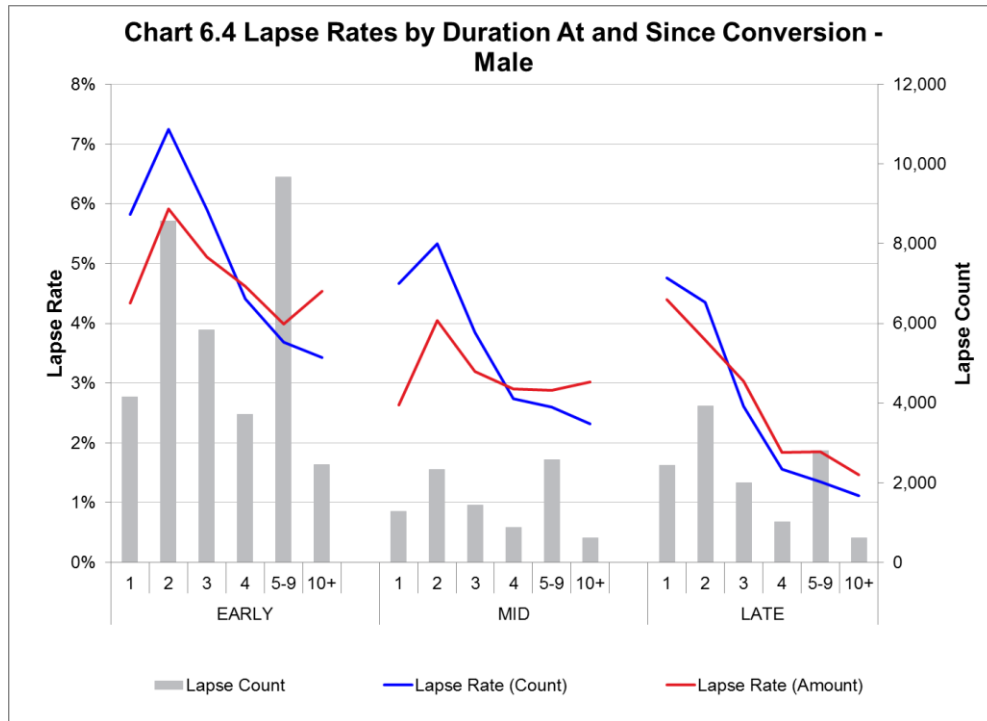


Chart 6.4 and 6.5 breaks down duration since conversion by duration at conversion for males and females, respectively. Gender lapse rates have very similarly patterns, with females exhibiting a slightly steeper slope by duration than males.



Charts 6.6 and 6.7 break down duration since conversion by duration at conversion for nonsmokers and smokers, respectively. Similar to most products, smokers have a higher lapse rate than nonsmokers. Chart 6.6 shows a larger differentiation between lapse rates by count and amount for nonsmokers in the first few durations since conversion than the smokers in Chart 6.7.

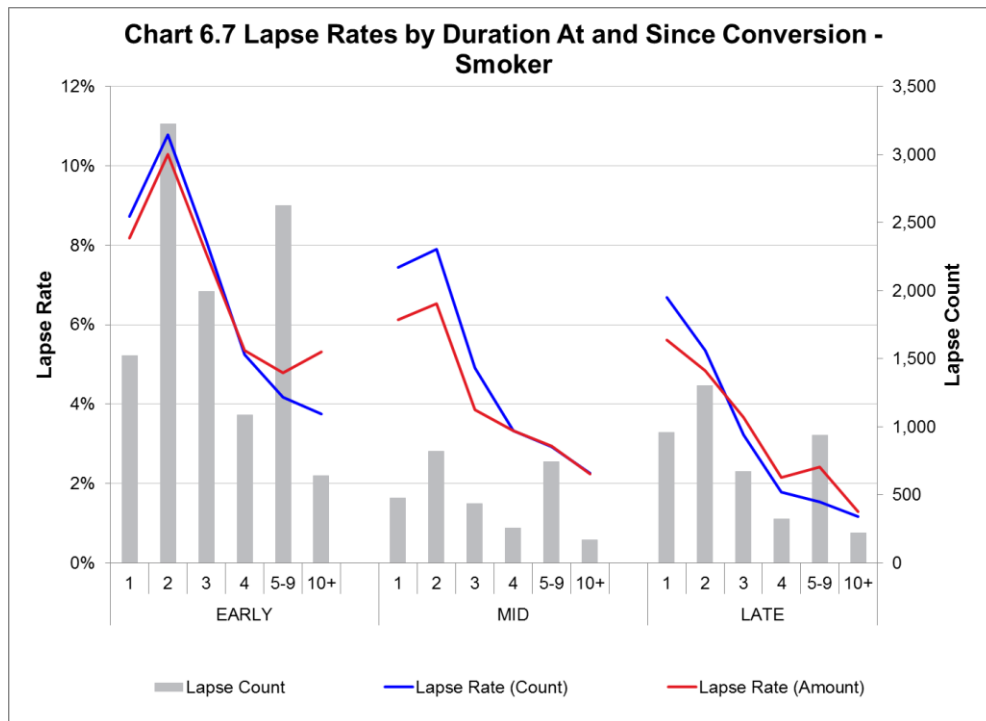
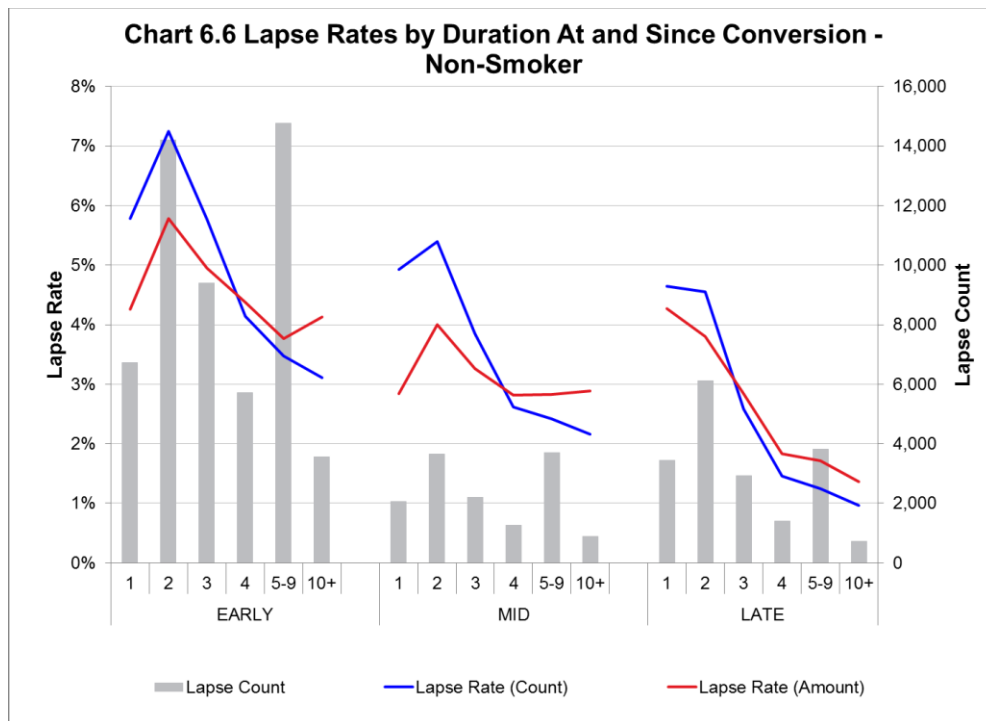
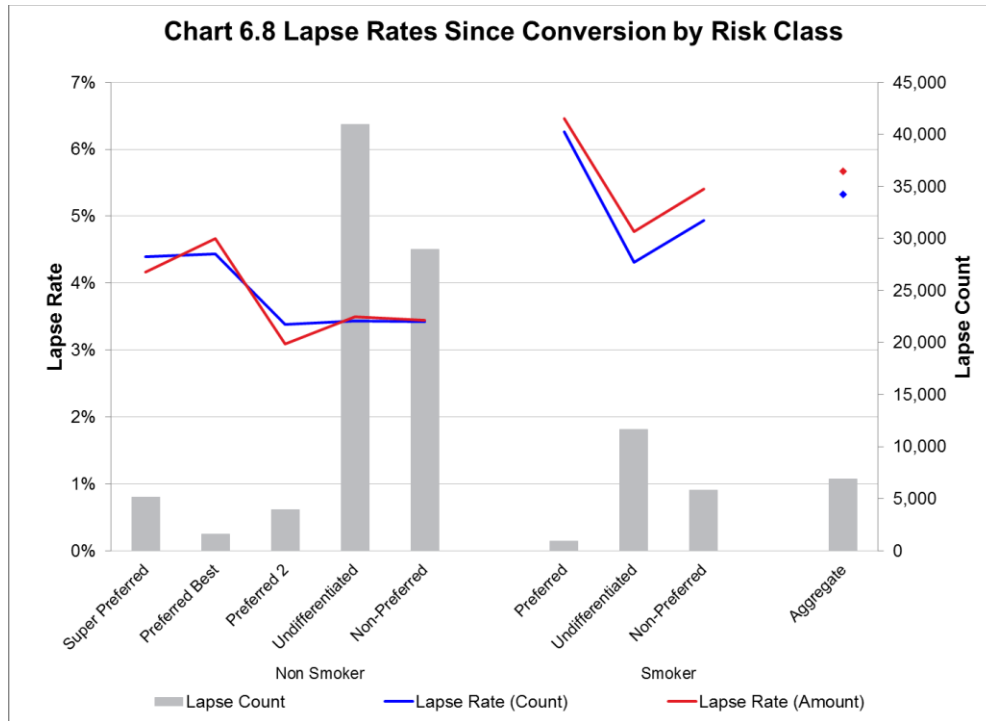


Chart 6.8 shows how the lapse rates vary based on the number and ranking of the risk class. Due to the variety of underwriting paradigms and risk classes available, the analysis was broken down by ranking of class compared to number of classes available as explained in Chapter 3. The chart shows an increasing lapse trend from nonsmoker to smoker and slightly higher lapse rates for some of the better preferred classes. The preferred 3 class is not shown because there were not enough participating companies.



Lapse Chart 6.9 shows a breakdown by face amount band. Despite much less credible numbers at the higher face amount bands, the data do indicate that lapse rates may not decrease from mid- to late duration conversions at higher face amounts.

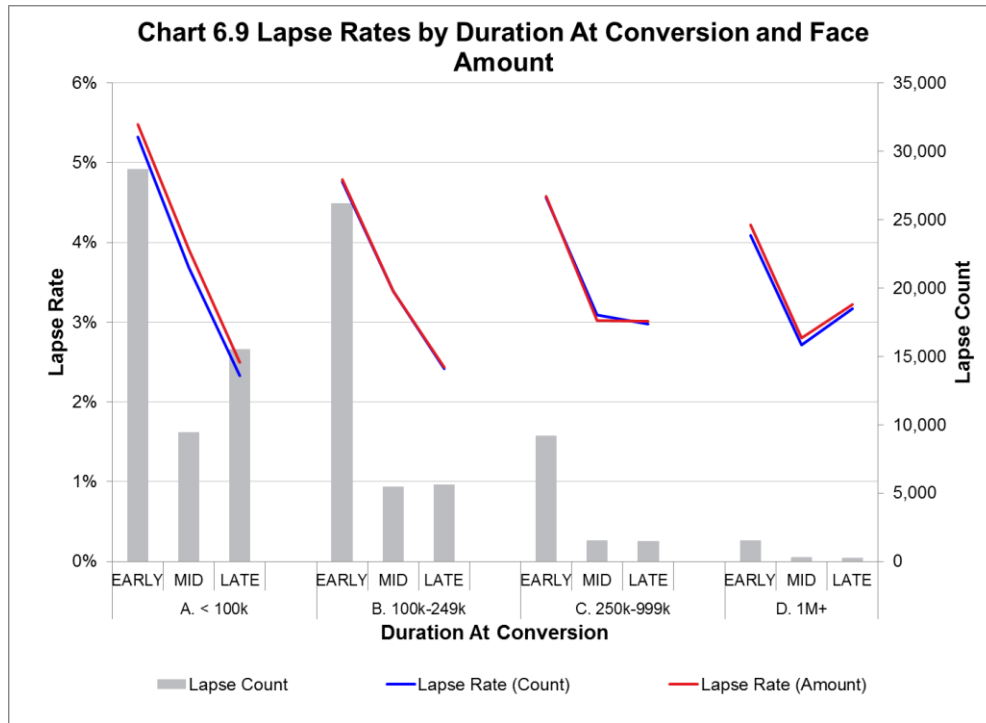


Chart 6.10 shows a breakdown of lapse rates by duration since conversion varying by premium payment mode. The payment mode is based on the permanent product, not the original term policy. Participating companies were given a choice of modal premium payments in the data collection, but the Other category may include limited premium patterns or was chosen when flexible premium policies do not require a specific payment pattern. This may be why the persistency is better in the early durations since conversion than the other traditional payment modes.

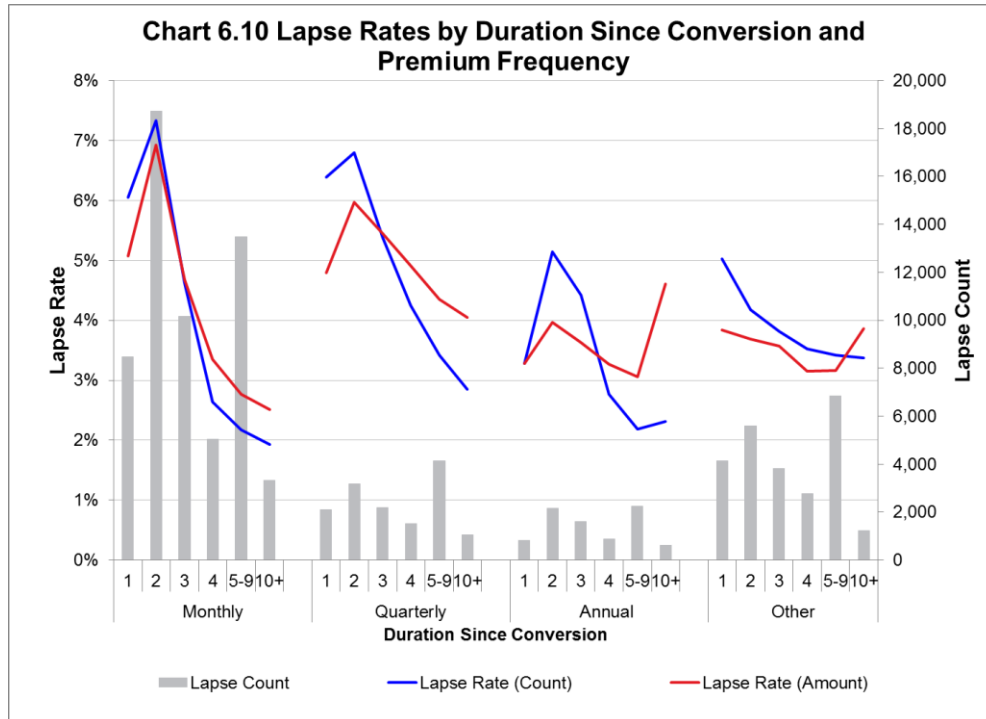


Chart 6.11 show lapse rates by duration since conversion by level term period. The level term period of “Other” could include ART and other less common level premium products such as 25-year term (T25). The more traditional level premium periods exhibit higher lapse rate by count in the second policy year relative to the “Other” term.

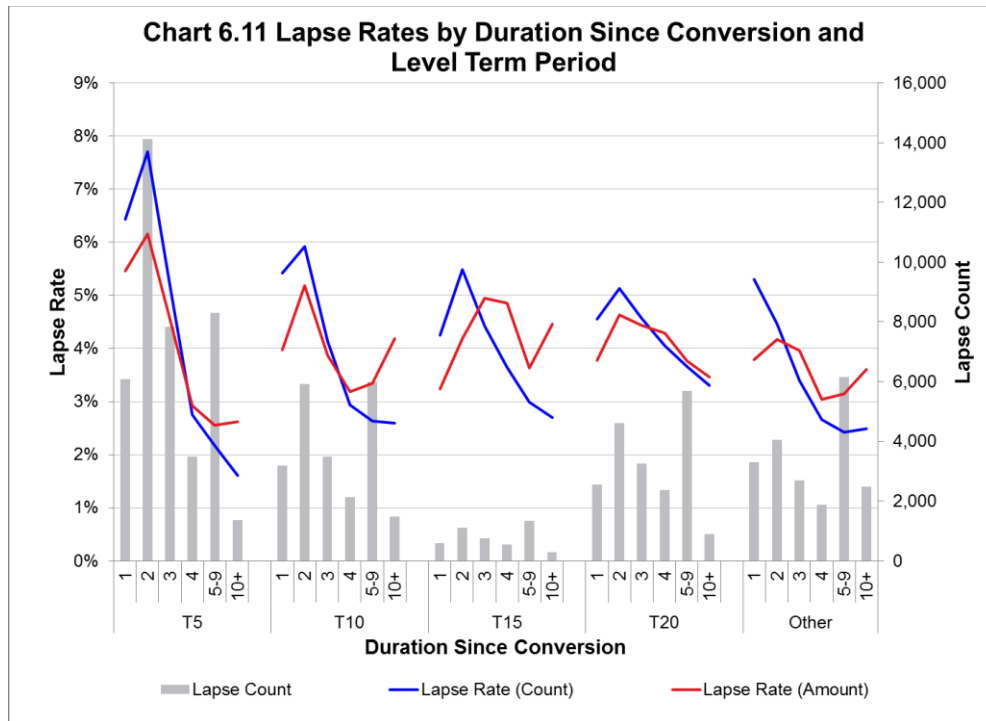
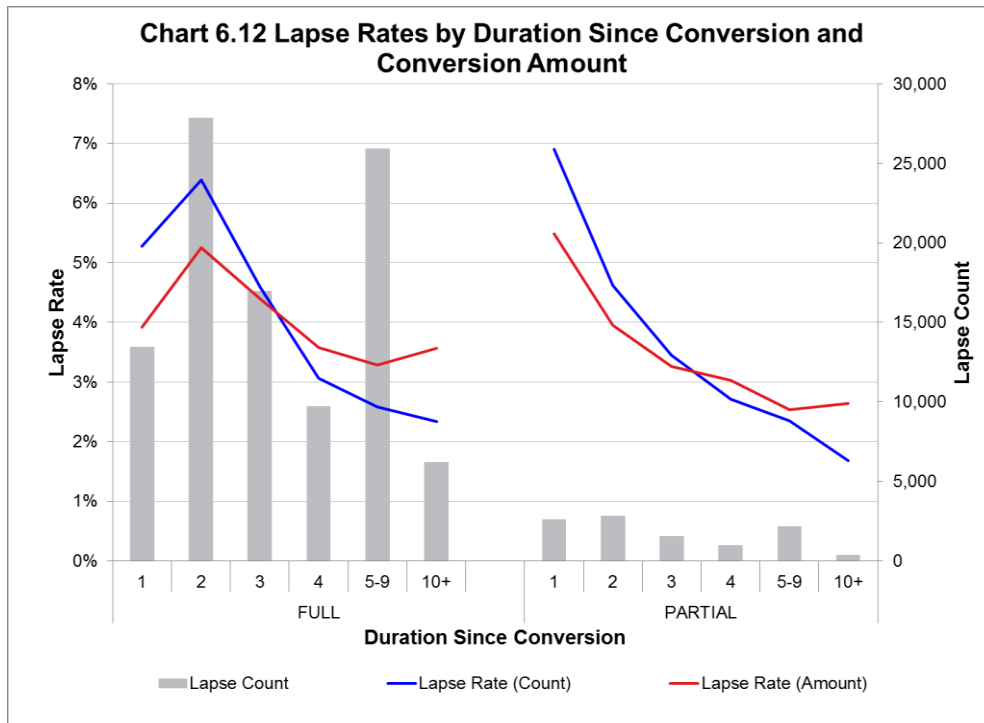


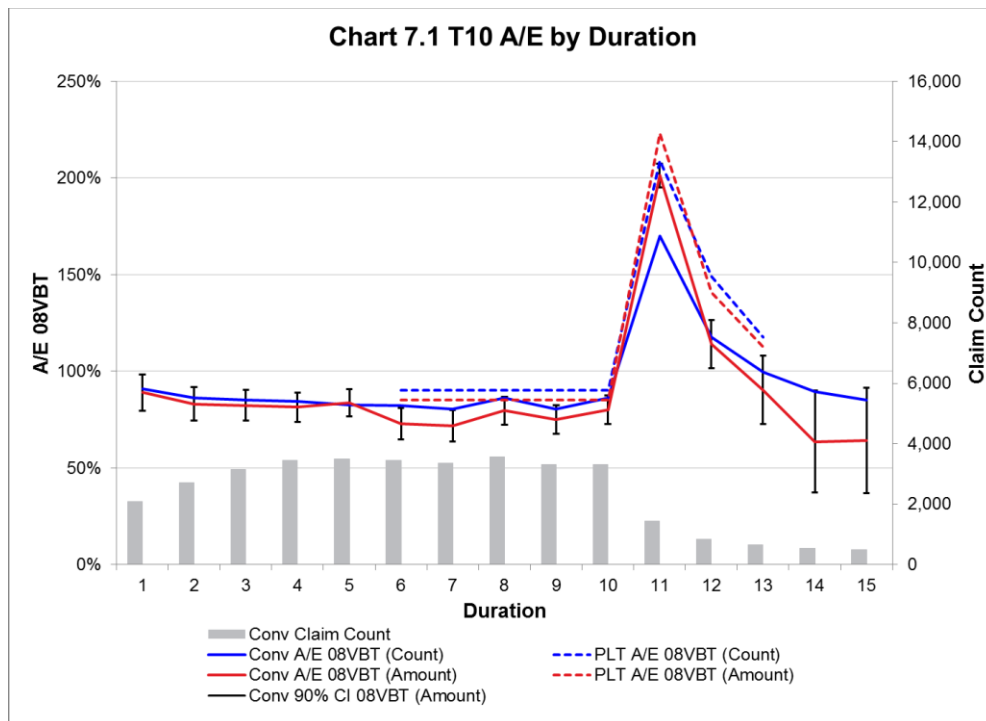
Chart 6.12 shows the lapse rate by duration since conversion by full or partial conversion amount. Partial conversions exhibit a slightly higher initial lapse rate but decrease over time to a similar level as full conversions. They do not exhibit the spike in year 2 like full conversions do.



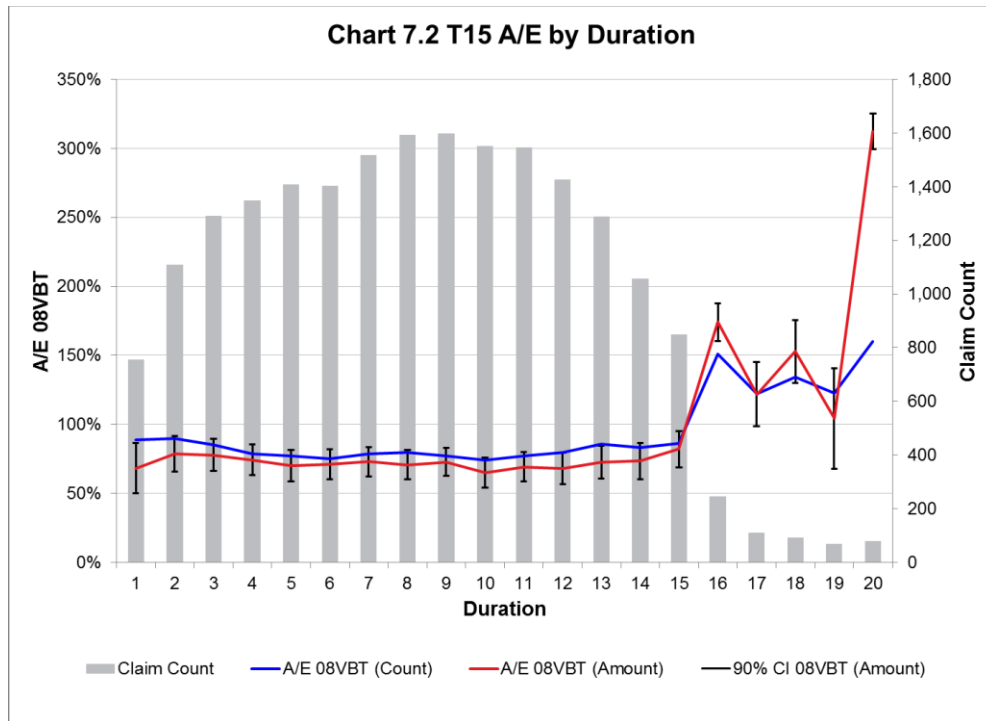
7. Term Life Mortality Rate

The majority of the term life data submitted was for the T10 plan. Chart 7.1 shows the results of the term mortality experience study expressed as actual to expected ratios based on the 2008VBT. The results indicate a relatively level actual to expected ratio throughout the level term period and a considerable jump in the post-level period in durations 11 and later. The actual to expected mortality ratio is more than 200% in duration 11 and grades down in later durations. These results are consistent with the SOA Report on the Lapse and Mortality Experience of Post-Level Premium Period Term Plans (2014).. The black bars in the chart represent confidence intervals showing the varying mortality expectation due to the data being thin in the post-level period.

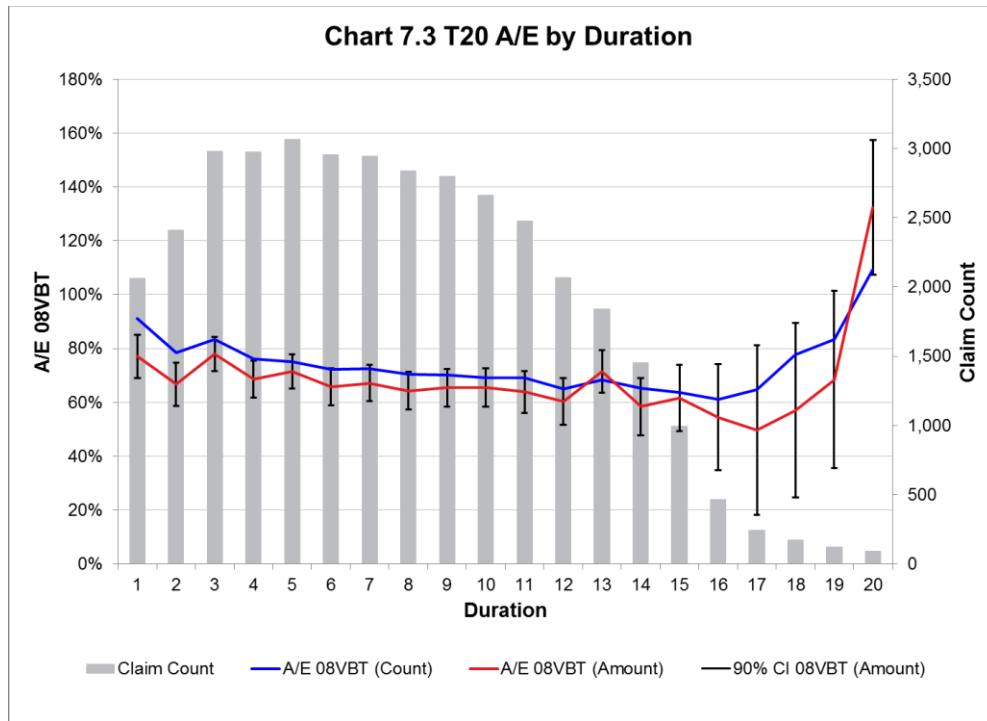
The pattern is similar to what is observed in the SOA Report on the Lapse and Mortality Experience of Post-Level Premium Period Term Plans (2014). Note that in the Post-Level Premium Period study, the durations 6 to 10 are aggregated, while in the conversion study, we have values for each individual duration 6 to 10.



The mortality experience for the remainder of the term periods was less credible than the T10 product. The results in Chart 7.2 show a relatively flat actual to expected ratio as a percentage of the 2008VBT for the 15-year term product, but results in the post-level period are volatile due to the lack of credibility and two large claims in policy year 20.



The T20 data are not credible in the tail, and those results are not shown. Data are also very thin in the later level period durations. Chart 7.3 shows a jump in mortality in policy year 20. This jump is likely due to low claim count volatility as shown by the wider confidence intervals. Mortality is not typically expected to increase until policy year 21, after the level premium period and shock lapses have occurred.



The remaining term mortality graphs show further breakdowns for the T10 plan only because the results are the most credible. Chart 7.4 shows a breakdown of T10 mortality ratios by gender. There is little variation in gender throughout both the level term and post-level period. Anti-selection by amount in the post-level period is shown where the dotted lines are above the solid lines in policy year 11.

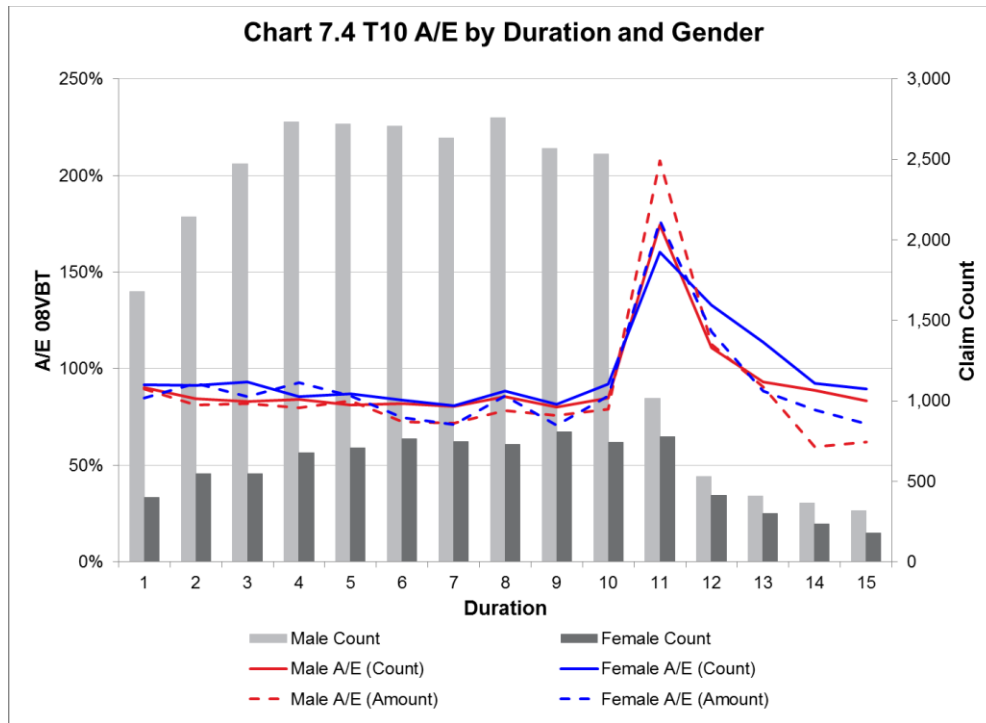


Chart 7.5 shows that smokers have slightly higher actual to expected ratios during the level period, although it is important to note the smoker data are not very credible and the majority of the data are nonsmokers.

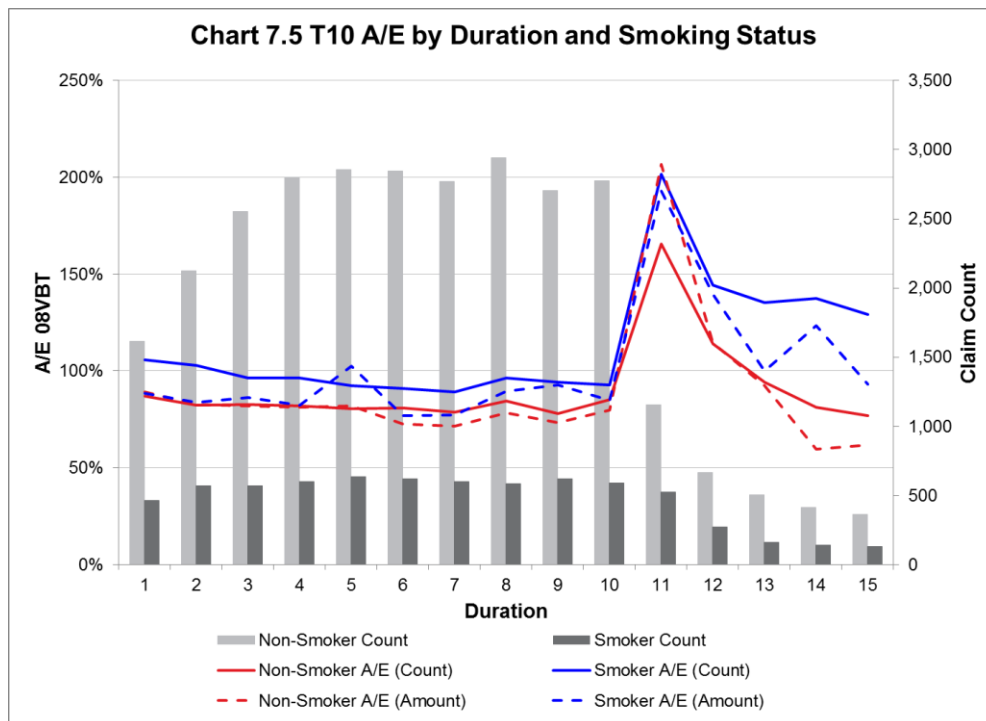


Chart 7.6 shows the T10 A/E ratios by face amount band. Results by amount and count are similar when grouped by face amount band. Overall the actual to expected ratios decrease as the face amount size increases except in the post-level period where the larger face amounts appear to be more anti-selective.

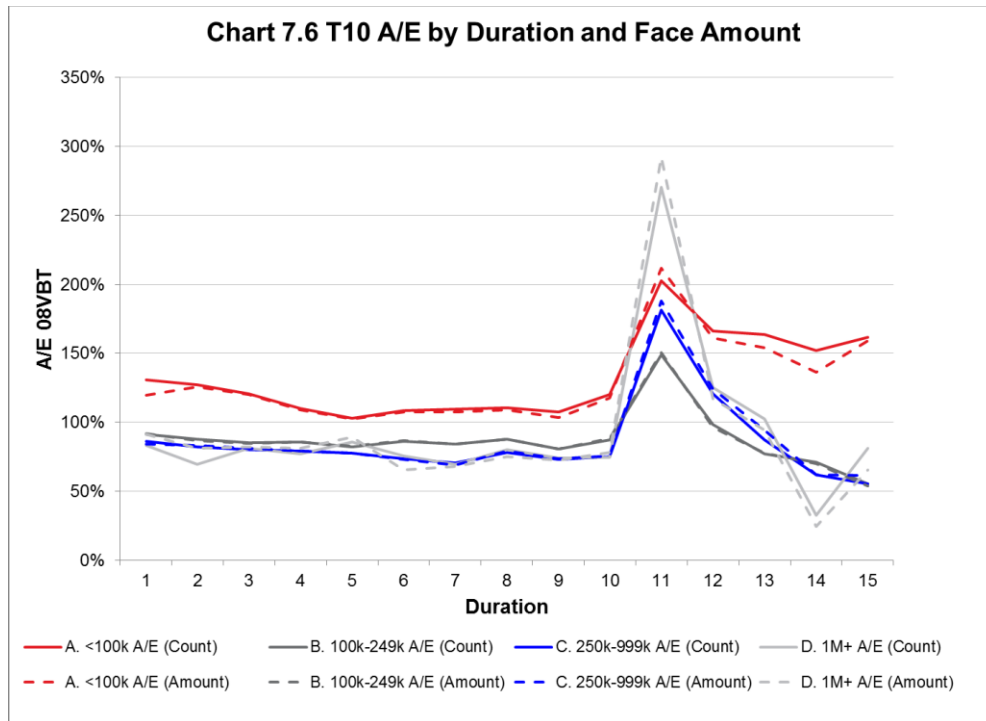
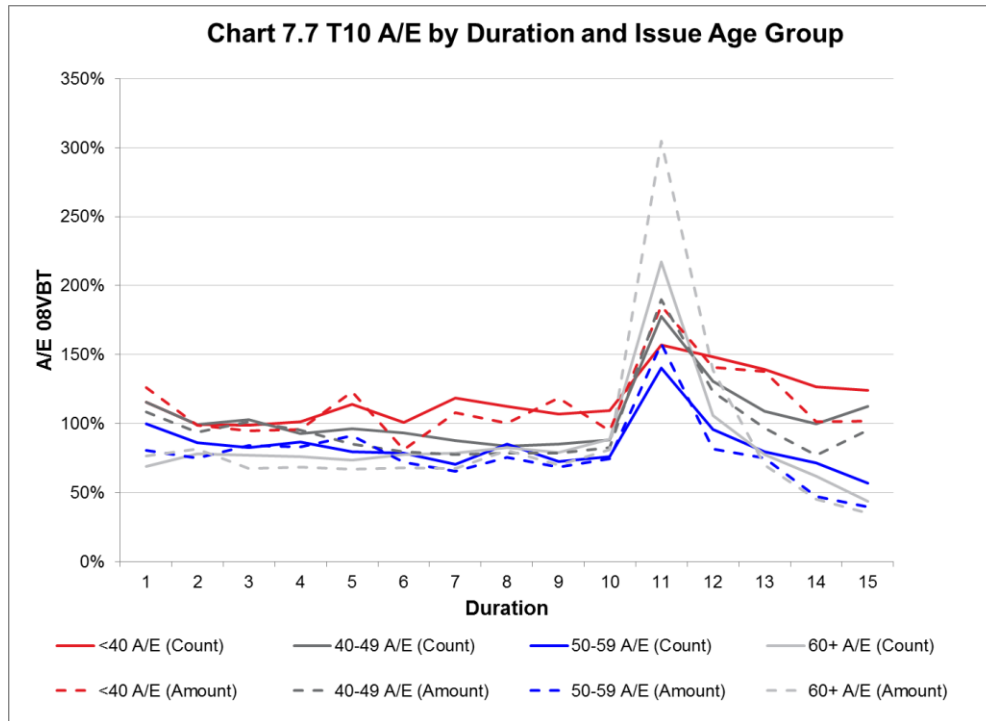


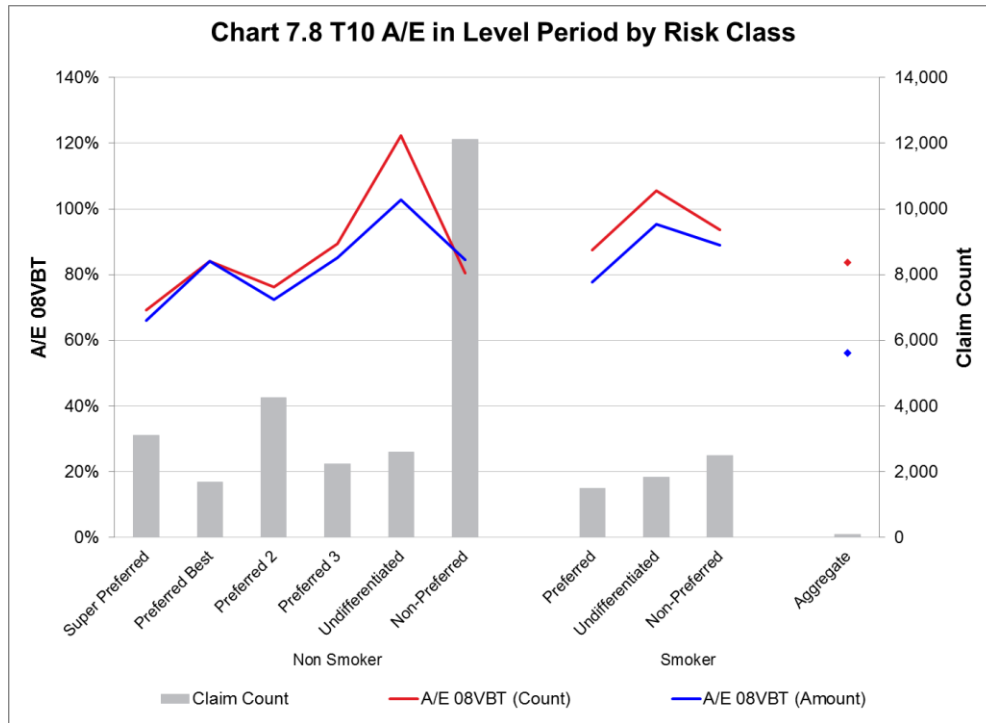
Table 7.6 T10 by Face Amount Band												
Duration	A/E 08VBT (Count)				A/E 08VBT (Amount)				Claim Count			
	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+
1	130.9%	91.3%	86.4%	83.3%	119.8%	91.9%	84.4%	91.1%	150	1,020	726	184
2	127.2%	87.5%	82.2%	69.5%	125.6%	86.7%	82.9%	81.3%	220	1,321	948	209
3	120.8%	85.0%	79.9%	81.3%	120.2%	84.7%	81.0%	81.9%	220	1,514	1,084	279
4	110.0%	85.8%	79.3%	77.0%	108.8%	85.6%	79.3%	81.0%	276	1,690	1,173	279
5	103.1%	82.4%	77.6%	85.7%	102.3%	82.8%	77.8%	89.1%	303	1,682	1,182	306
6	108.4%	86.0%	73.3%	75.3%	107.5%	86.5%	73.2%	65.7%	314	1,744	1,098	257
7	109.4%	84.3%	70.7%	69.6%	107.4%	84.1%	68.8%	68.0%	357	1,708	1,032	226
8	110.7%	87.8%	78.3%	80.3%	109.1%	87.5%	79.0%	74.9%	399	1,778	1,103	245
9	107.2%	80.5%	73.2%	74.0%	103.2%	80.4%	73.5%	72.6%	444	1,637	994	213
10	119.9%	87.5%	75.0%	74.7%	117.8%	88.1%	75.8%	78.3%	463	1,686	913	191
11	202.8%	149.0%	181.4%	270.7%	211.7%	150.7%	188.0%	292.3%	526	696	361	72
12	165.9%	98.1%	120.7%	125.1%	161.2%	96.4%	124.1%	117.1%	306	389	175	19
13	163.8%	76.9%	87.2%	102.3%	154.0%	77.4%	94.4%	94.5%	247	280	105	12
14	151.8%	71.1%	62.0%	32.7%	136.2%	70.2%	61.7%	24.7%	250	240	66	3
15	161.7%	55.2%	55.5%	81.4%	159.1%	53.7%	61.3%	65.7%	237	172	51	5

T10 mortality by issue age is shown in Chart 7.7. For both the level term period and the post-level term period, older issue ages have a lower actual to expected ratio, with the exception of policy year 11 where most of the issue ages cross over each other.



Duration	A/E 08VBT (Count)				A/E 08VBT (Amount)				Claim Count			
	< 40	40-49	50-59	60 +	< 40	40-49	50-59	60 +	< 40	40-49	50-59	60 +
1	115.6%	115.4%	99.7%	69.1%	126.2%	108.4%	80.4%	76.4%	329	397	663	691
2	99.5%	99.3%	86.2%	77.9%	98.6%	93.5%	75.2%	81.5%	320	485	839	1,054
3	98.8%	102.8%	82.5%	77.2%	94.8%	101.5%	84.2%	67.4%	320	614	980	1,227
4	101.2%	92.6%	86.8%	75.9%	95.7%	95.2%	83.3%	68.7%	332	626	1,159	1,319
5	113.9%	96.2%	79.4%	73.4%	123.2%	85.3%	91.2%	66.7%	341	690	1,122	1,300
6	100.7%	93.4%	78.4%	77.6%	81.3%	79.3%	71.8%	68.1%	372	687	1,123	1,323
7	118.5%	87.7%	70.4%	78.8%	107.9%	77.6%	65.5%	67.6%	323	661	1,008	1,312
8	112.6%	83.9%	85.3%	82.7%	100.3%	78.4%	75.3%	80.4%	384	644	1,199	1,348
9	106.7%	85.1%	72.7%	79.1%	118.7%	78.6%	68.4%	70.0%	379	657	1,000	1,276
10	109.4%	88.1%	76.3%	88.8%	95.0%	82.8%	74.4%	81.1%	374	640	966	1,339
11	157.0%	177.6%	140.1%	217.4%	185.1%	189.7%	157.8%	304.8%	371	377	392	410
12	148.2%	130.5%	95.6%	105.8%	140.9%	123.0%	81.4%	139.0%	256	236	223	152
13	139.4%	108.7%	79.4%	77.6%	137.6%	96.8%	74.9%	69.8%	219	183	169	98
14	126.7%	100.1%	71.6%	61.9%	101.5%	76.8%	47.2%	45.0%	197	161	143	70
15	124.2%	112.3%	57.0%	43.9%	102.0%	95.3%	39.5%	34.9%	172	172	104	44

Using the risk class structure from Chapter 3, Chart 7.8 displays the actual to expected ratios by risk class for T10 during the level period. The preferred classes for both smokers and nonsmokers show the lowest ratios, as expected. The aggregate class ratio is very low, but the data in this risk class are thin.



Special Thanks

The authors would again like to extend our thanks to all participating companies. Without their support such research projects would not be possible. Thank you as well to TAI Reinsurance Administration for their efforts in providing additional key field data to increase the number of participating companies in this report. In addition, Susan Willeat reviewed the report and provided valuable input.

The authors would also like to thank the SOA and the following members of the Project Oversight Group and SOA staff for their guidance and support on this research project. Their comments, feedback and direction have greatly improved the value of this project:

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Jean-Marc Fix

Sebastian Kleber

Vera Ljuccovic

Dave Moran

Michael Palace

Tony Phipps

Yana Shergina

SOA Staff

Jack Luff

Jan Schuh

Ronora Stryker

Appendix A: Data Request

Conversion Data Request Specs (all data to be provided on one line):

Term Policy

As of Date
Policy ID
Gender
Date of Birth
Issue Date
Issue Age
Age Basis
Substandard Rating
Substandard Rating Duration
Substandard Flat Extra
Substandard Flat Extra Duration
Distribution System
Level Term Period
Post-Level Premium Structure
Return of Premium Option
Billing Option
Company Name (or code)
Premium Mode
Original Face Amount
Current Face Amount
of NS Classes
of SM Classes
Risk Class Rank
Smoker Status
Internal Risk Class Code
Original Plan Code
Cause of Termination
Date of Termination
Cause of Death
Actual Claim Paid
Base/Rider Indicator
Underwriting Requirements
Single/Joint

Conversion Policy

New Policy ID
Conversion Age
Conversion Date
Age Basis
Substandard Rating
Substandard Rating Duration
Substandard Flat Extra
Substandard Flat Extra Duration
Full/Partial Conversion
of NS Classes
of SM Classes
Risk Class Rank
Smoker Status
Internal Risk Class Code
Cause of Termination
Date of Termination
Cause of Death
Actual Claim Paid
Conversion Product Type
Premium Mode
Conversion source
Original Term Company
Any Underwriting Considered?
Base/Rider Indicator
Single/Joint

Appendix B: Grace Period Adjustment

Grace period provisions can cause timing differentials that need to be accounted for in a study. Lapses or conversions may be identified in the data as occurring 30–60 days after the actual event. Dates may need adjusting to ensure the event is recorded in the policy year in which it occurred. Reviewing lapse rates by month can help identify possible grace period issues. If a spike in lapses occurs in the second month after a policy anniversary, there may be grace period issues.

Notice in Chart B.1 showing policy years 6–12 of a 10-year term policy how policy months 2 and 3 show a large proportion of the lapses. Chart B.2 also shows policy years 6–12 of a T10 policy with the adjustment for the grace period included, thereby increasing the number of lapses at the end of each year and the first month of the following year.

Chart B.1 Before Adjustment

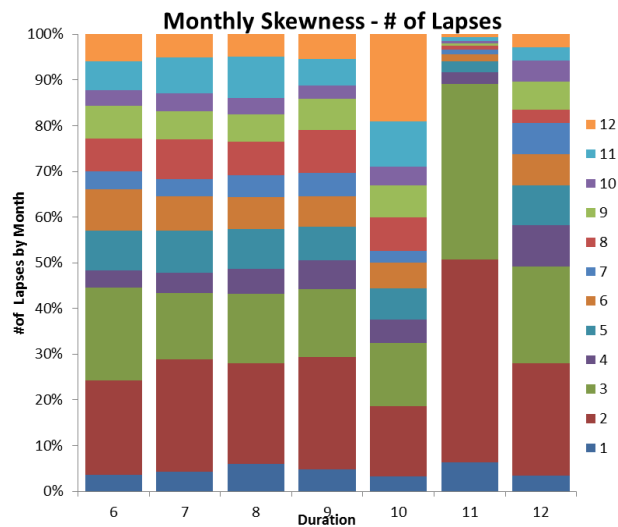
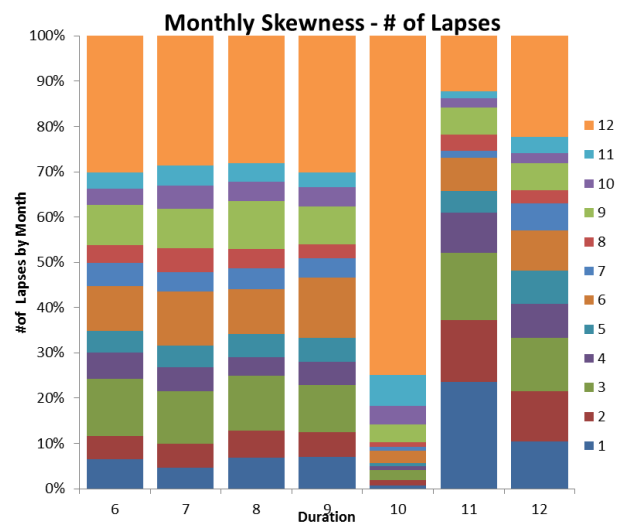


Chart B.2 After Adjustment



Another visual demonstration of lapse (or conversion) skewness is shown in Chart B.3 before adjustment and B.4 after adjustment. Notice with the adjustment that the spike in lapses moves from day 60 after the policy anniversary to closer to the end of policy year t .

Chart B.3 Before Adjustment

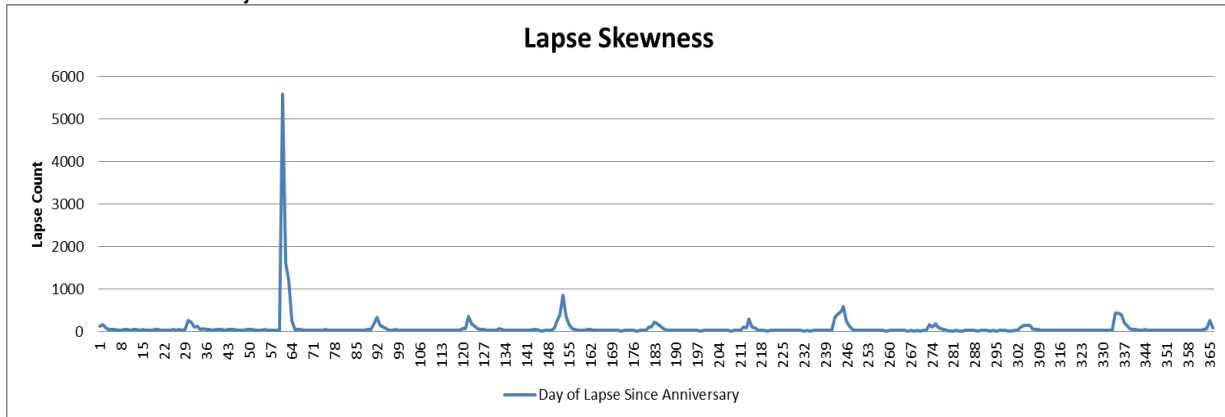
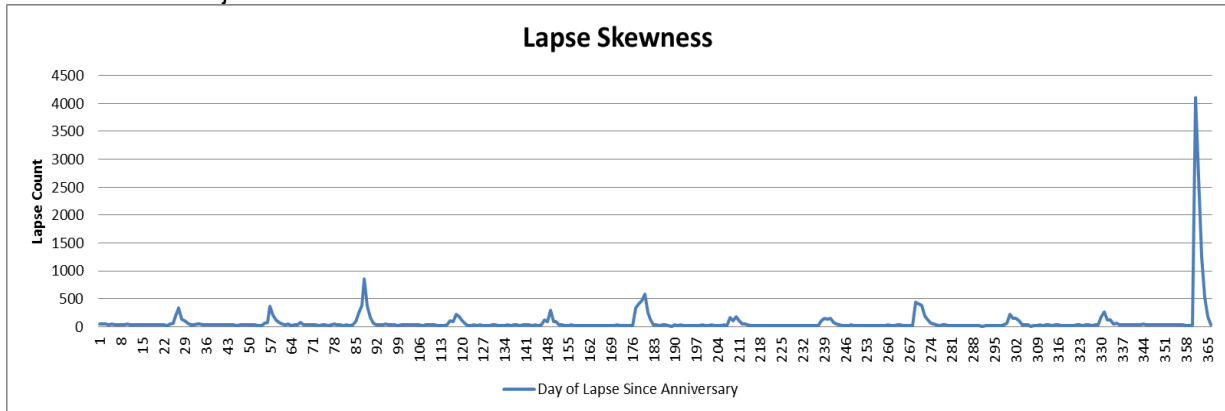


Chart B.4 After Adjustment



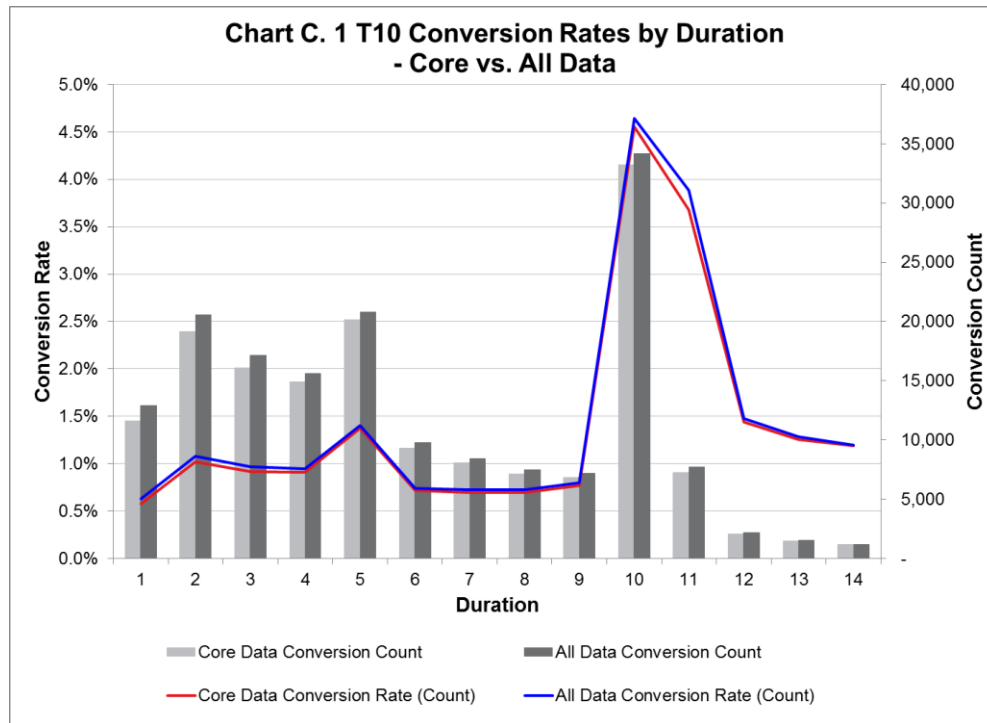
Appendix C: Non-Core Data Analysis

As explained in chapter 2, not all data received from participants were used in the body of this report. We evaluated data from multiple angles and tried to reconcile these data with survey participants to the extent possible. After our due diligence, there was still a portion of the data where we were not comfortable with the underlying quality. These records were labeled as non-core and excluded from the body of the report. The non-core data account for 15% of the conversions by amount and 8% by count.

The table below summarizes the data in the conversion rate study, by core versus non-core data.

Table App. C. 1 - Conversion Data Exclusion				
	Exposure Amount	Exposure Count	Conversion Amount	Conversion Count
Core	27,800,065,757,590	76,800,259	200,390,982,320	815,226
Non-Core	595,671,715,189	1,245,723	35,112,200,757	72,115
Total	28,395,737,472,779	78,045,982	235,503,183,077	887,342

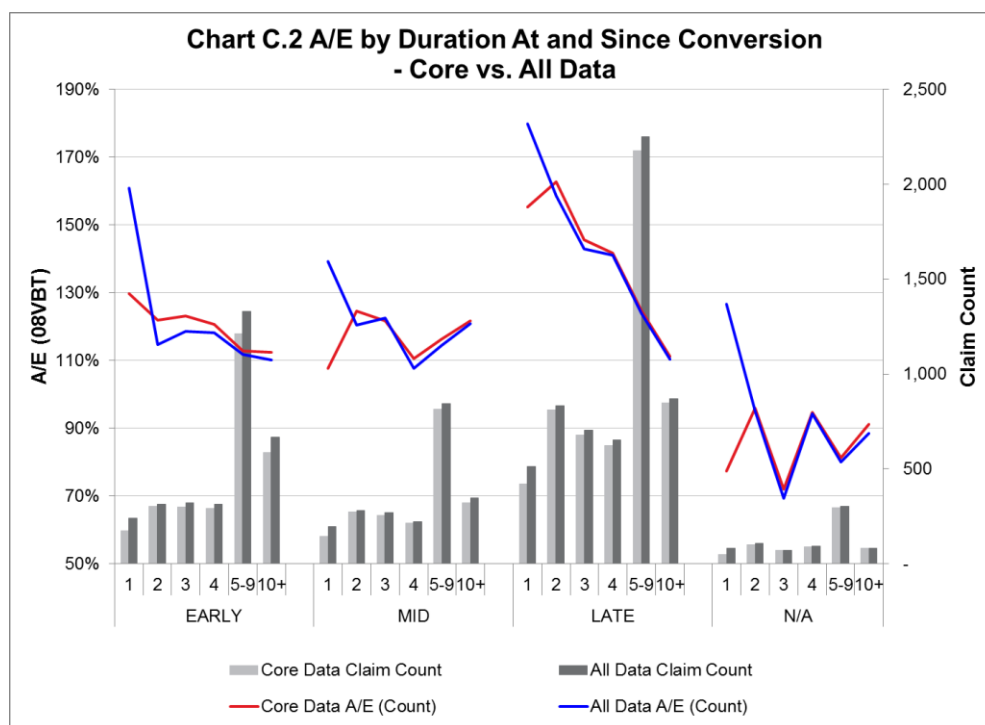
The unused data are not significant and do not affect the observations found in the report. The chart below gives conversion rates for the T10 plans by duration. The total data count bars are slightly higher than the core only data bars, and the conversion rate lines follow similar patterns as the core-only data.



Similarly, the following table summarizes non-core data excluded in the main body of the conversion mortality analysis compared to the total in the study.

Table App. C. 2 - Conversion Mortality Data Exclusion				
	Exposure Amount	Exposure Count	Claim Amount	Claim Count
Core	389,111,463,967	2,620,895	1,582,896,508	11,130
Non-Core	84,534,512,793	328,907	168,830,987	841
Grand Total	473,645,976,760	2,949,801	1,751,727,495	11,971

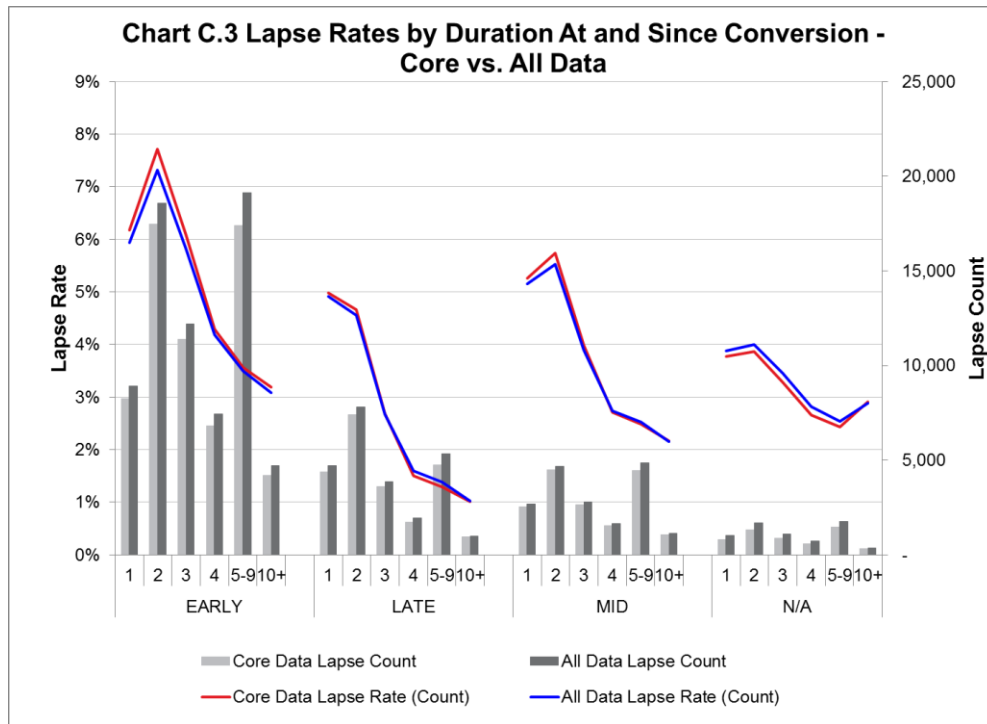
The portion of excluded data is small. For non-core data, actual to expected ratios in the duration since conversion year 1 are high. As explained in the chapter 2, non-core data contain a variety of data quality issues, such as missing gender, smoking status or duration at conversion. Other than duration since conversion year 1, the total data track the core data closely.



Here 8.5% of total data by count and 10.7% by amount in the conversion lapse study were labeled as non-core and therefore excluded from the analysis in Chapter 6.

Table App. C. 3 - Conversion Lapse Data Exclusion				
	Exposure Amount	Exposure Count	Lapse Amount	Lapse Count
Core	411,774,922,117	2,933,498	15,999,527,158	110,401
Non-Core	79,864,706,994	318,887	1,925,547,903	10,266
Grand Total	491,639,629,111	3,252,385	17,925,075,061	120,667

Based on the chart below, we conclude that the non-core data do not appear to materially alter the observations we draw with core data only.



Appendix D: Conversion Privileges

Most of the time, the level term period of a policy will be the primary indicator of the length of the conversion privilege, but not always. For example, the phase 1 survey of conversion assumptions and product features for level term plans reported a variety of restrictions on when a term policy can convert, such as policy year, attained age, product restrictions (for example, no conversions to Secondary Guarantee Universal Life) etc. Please refer to the phase 1 report for details.

We requested participating companies to provide conversion privileges by products and refined the timing of conversions. Not every company was able to provide this information. Table D.1 shows a summary of data where we do not have policy level term period. Of the policies where the term is known, Table D.1 also shows the percentage of data for which we do not have information about conversion privileges.

	No Term	Have Term But not Privileges
Exposure Amount	10%	6%
Exposure Count	7%	12%
Claim Amount	8%	10%
Claim Count	6%	24%

On average, approximately 74% of the business that provided conversion privilege data had the level of the conversion privilege equal to the level of the term period. In addition to the length of the conversion period, other privileges were provided, which are summarized in Table D.2. The maximum age is the highest attained age at which a policyholder is able to convert. The minimum number of years can override the maximum age, where regardless of maximum age, the policyholder has the minimum number of years shown in the chart below to convert. A typical formula for the number of years of conversion privilege period is $\text{MINIMUM}(\text{Conversion Period}, \text{MAXIMUM}(\text{Maximum Age} - \text{Attained Age}, \text{Minimum Years}))$.

Term Period	Conversion Period	Maximum Age	Minimum Years*
10	9.7	72.7	4.8
15	14.1	71.5	4.7
20	19.0	65.7	4.7
30	27.1	73.0	4.2

*When minimum is greater than zero

In the body of the phase 2 report, the timing of conversion is defined relative to the level term period, as illustrated in Chapter 3. In this appendix, we redefine the timing of conversion, that is, Early/Mid-/Late, by the length to the end of the conversion privileges, when the conversion privileges and term period are available. We define this as “by privileges” rather than “by term.” If conversion privileges were available but term period was not provided, then we assumed a 10-year term product. Early is always defined as durations 1–5 except where the maximum number of years of the conversion privilege is shorter than five years, shown below.

Table D.3 Privilege Group by Policy Year When Privilege Less Than 5 Years	
Maximum Number of Years of Conversion Privilege	Privilege Group by Policy Year
4-5	1-2 Early, 3 Mid, 4 (5) Late
3	1 Early, 2 Mid, 3 Late
2	1 Early, 2 Late

Otherwise, “Late” is defined as a conversion during the last 20% of the total conversion privilege and “Mid-” is everything else in between. If the privileges were not available but the term period was available it follows Early as durations 1–5, Late as after the last 20% of the term period and the remaining policy years mid.

The two definitions of conversion timing overlap for most policies. Some Late converters are now called Mid- in this revised definition. In Tables D.4 and D.5, we use the conversion mortality study to illustrate how data were moved from one definition to the other. Transitions with data from fewer than five clients are left blank.

Table D.4 - Conversion Mortality - Exposure Amount				
Conversion Privileges				
by Term	EARLY	MID	LATE	N/A
EARLY	173,825,331,310	21,426,426,725		6,263,800,575
MID	24,743,277,214	27,428,712,951	7,486,313,185	3,876,395,648
LATE	18,794,190,763	33,084,982,764	14,555,517,177	9,704,140,725
N/A	26,293,263,652	10,329,201,730	3,148,964,243	

Table D.5 - Conversion Mortality - Claim Count				
Conversion Privileges				
by Term	EARLY	MID	LATE	N/A
EARLY	2,025	294		394
MID	578	771	251	425
LATE	520	2,030	1,325	1,680
N/A	92	446	143	

Term conversion rates were also grouped by conversion privilege for T10 in Chart D.1. The conversion rates using the term groupings are durationally dependent, 1–4 early, 5–8 mid-, 9+ late, whereas the groups by privileges shown below vary within a duration. The highest conversion rates at the end of the level period are coming from late converters, where policyholders still have 20% of their conversion period remaining.

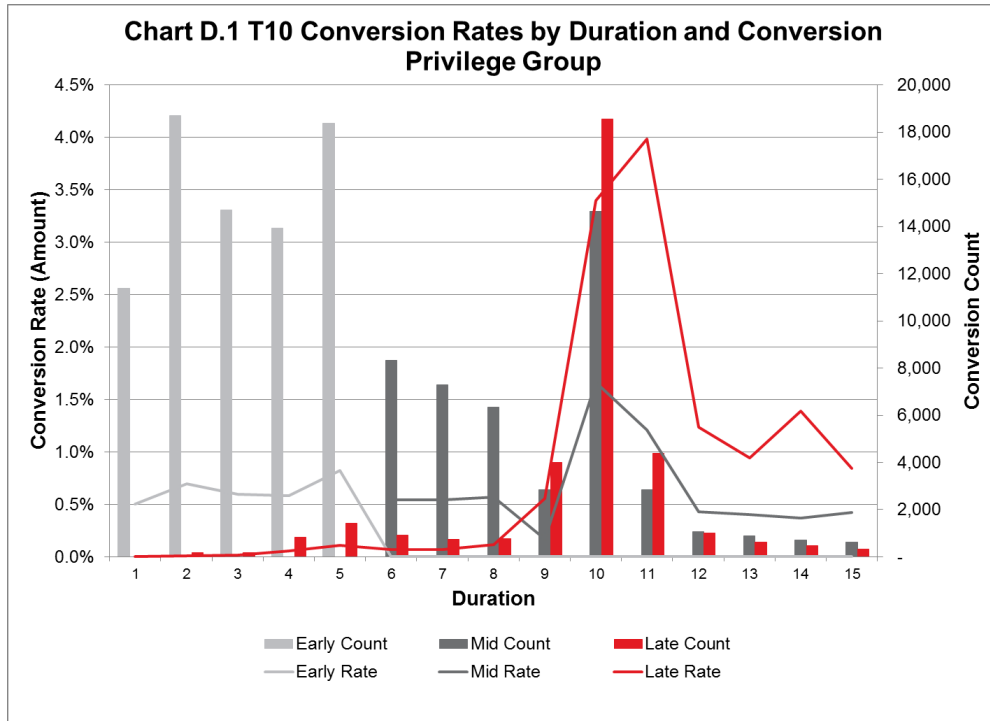


Chart D.2 illustrates the actual to expected ratios using the 2008VBT by both definitions. The gray lines are A/Es by the conversion privilege definition, and the red lines are by level term period. As discussed above, the underlying data for the red and gray lines are different. Early and mid-convertors have similar behavior under both definitions. Late conversions according to the privilege definition are generally lower than the late conversions by policy term definition.

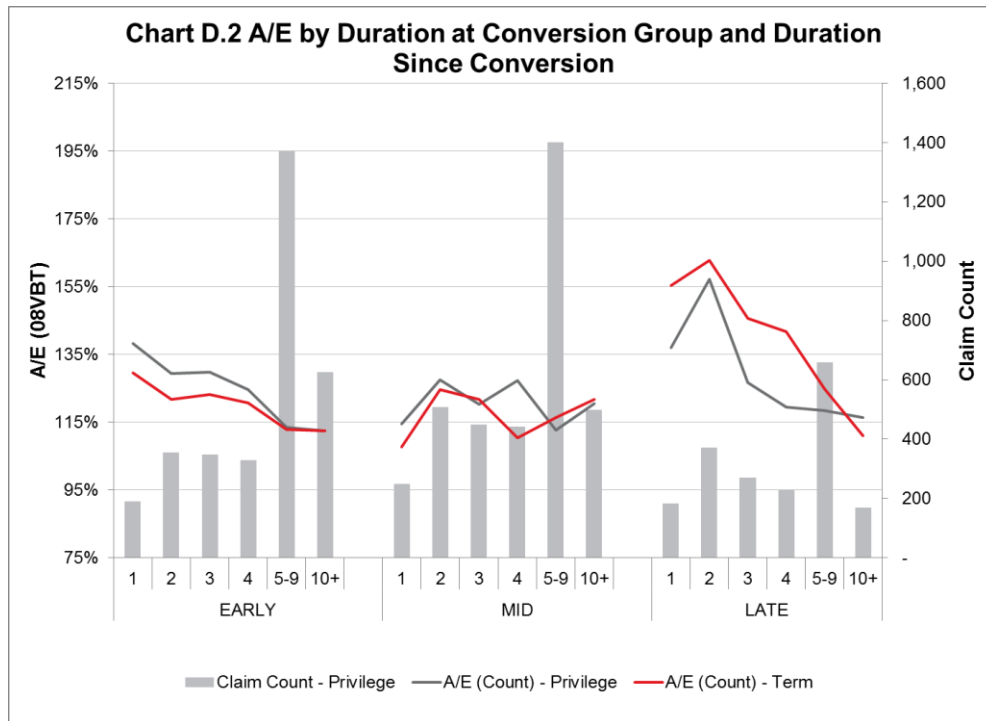
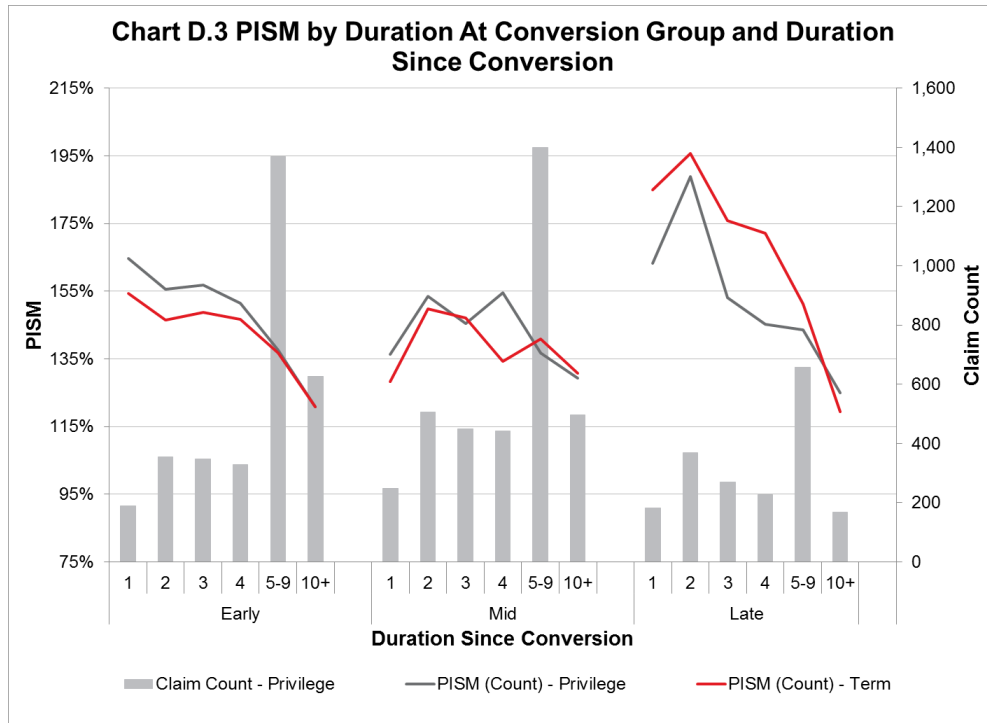


Chart D.3 shows the same information as D.2 but uses PISM mortality (by count) rather than the actual to expected ratio. The observations are similar to Chart D.2.



In addition, those who converted with less than two years left in their conversion privilege, regardless of the total length of the privilege, are called “Last Chance Converters.” Other conversions, the conversions that occurred with more than two years remaining in their conversion privilege, are labeled as “Other.” For comparison purposes, we paired up the Late conversions defined by policy term period with the Last Chance conversions, and the Early and Mid-duration conversions defined by policy term period with the “Other” conversions. The Last Chance conversions appear to have lower A/E than the late duration converters, but are still above the Other/Early/Mid- converters. The “Other” conversions have higher mortality A/E than the combination of Early and Mid- conversions by count.

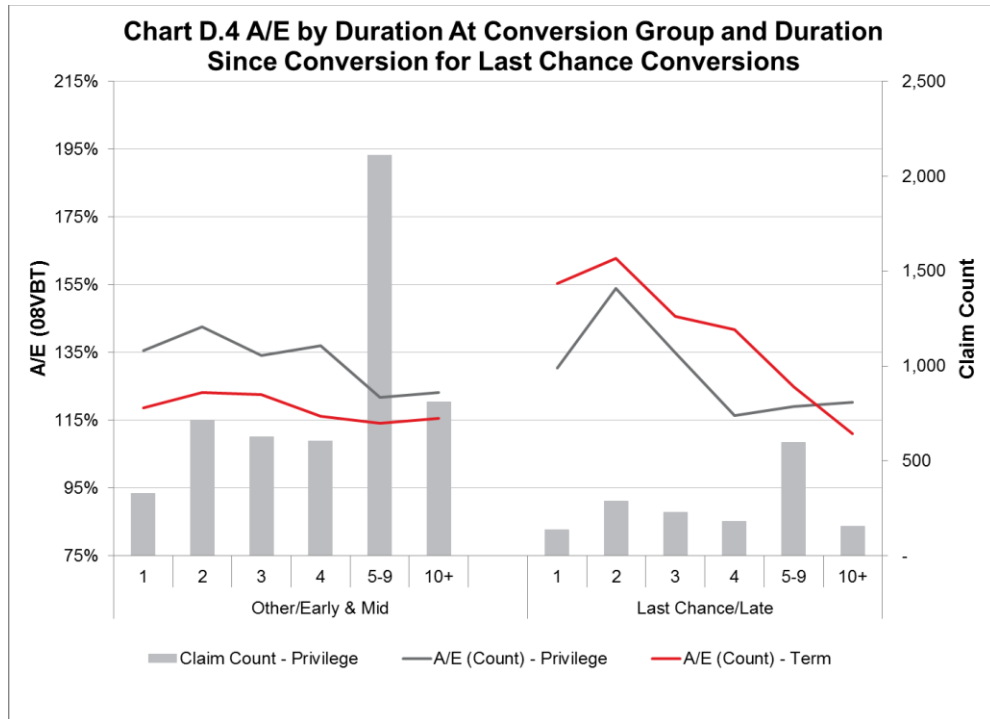


Chart D.5 replicates Chart D.4 but uses PISM instead of actual to expected ratios. Again, last chance converters appear to have lower PISM than late converters, but still higher PISM than early and mid-converters.

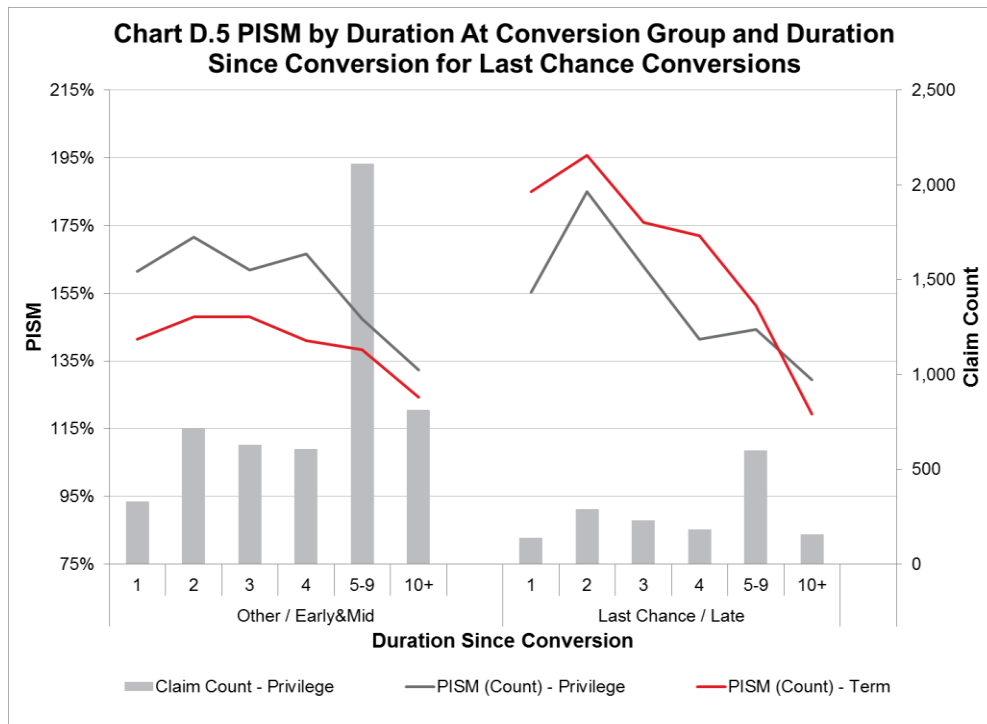
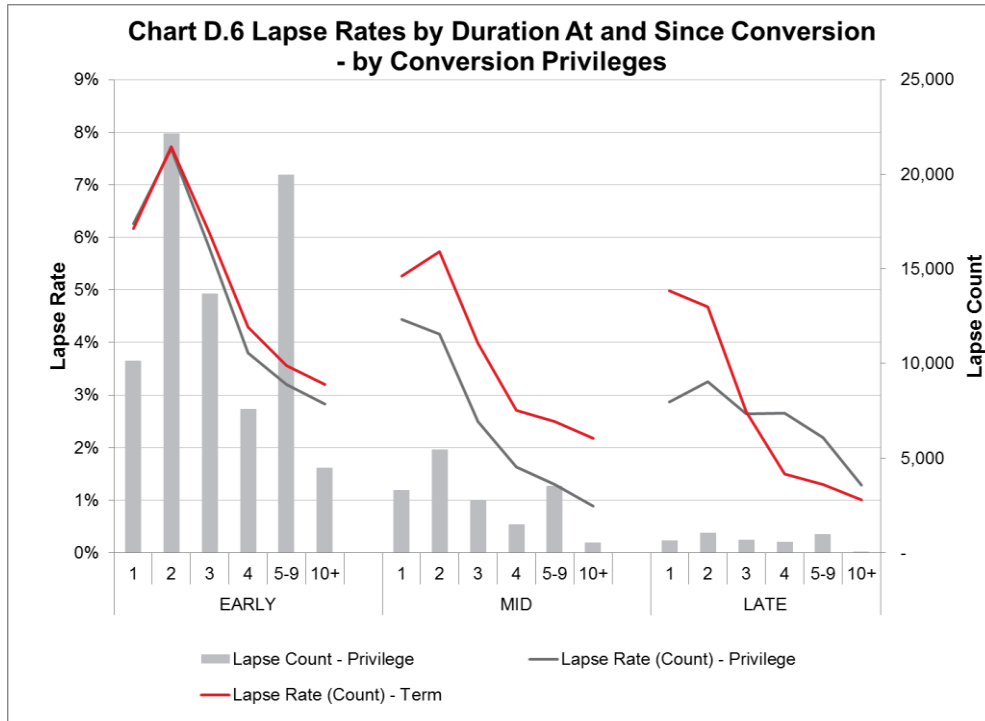


Chart D.6 illustrates the lapse rates by the timing of conversions. The gray lines are lapse rates by the conversion privilege definition, and the red lines are identical to what is used in the body of this report. The gray lines are identical to Chart 6.3. The two definitions lead to similar observations for early conversions. For mid-conversions, the definition by privileges has lower lapse rate. For late conversions, there is a crossover where the definition by privilege has flatter lapse rates after conversions.



Appendix E: Data Tables

Tables in this appendix provide detailed data supporting the corresponding chart numbers in the body of the report. (The Chart 4.1 data set is found in Table 4.1.) All numbers shown are rounded to the nearest tenth of a decimal place.

Chapter 4

Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	3.1%	3.0%	34,967
2	6.7%	4.6%	61,758
3	4.5%	3.7%	34,416
4	4.0%	3.5%	26,217
5	5.7%	5.3%	31,687
6	2.6%	3.7%	11,340
7	1.8%	2.0%	6,878
8	1.5%	1.8%	5,210
9	1.3%	1.5%	4,315
10	2.2%	3.4%	6,831
11	1.6%	2.6%	4,161
12	1.0%	1.4%	2,433
13	0.9%	1.0%	1,994
14	0.9%	0.8%	1,736
15	1.6%	1.6%	2,779

Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	0.6%	0.5%	11,601
2	1.0%	0.7%	19,166
3	0.9%	0.7%	16,078
4	0.9%	0.6%	14,881
5	1.4%	1.0%	20,116
6	0.7%	0.6%	9,313
7	0.7%	0.6%	8,050
8	0.7%	0.7%	7,118
9	0.8%	0.7%	6,838
10	4.5%	5.1%	33,211
11	3.7%	5.2%	7,230
12	1.4%	1.7%	2,087
13	1.3%	1.3%	1,496
14	1.2%	1.8%	1,198
15	1.1%	1.3%	937

Table 4.3 T10 by Study					
Duration	Lapse Rate (Count)		Lapse Rate (Amount)		Lapse Count
	Conv	PLT	Conv	PLT	Conv
1	9.3%		7.8%		201,898
2	7.4%		7.6%		149,409
3	6.5%		6.8%		120,420
4	5.9%		6.4%		103,453
5	5.8%		6.3%		90,659
6	5.4%	6.6%*	6.0%	7.0%*	74,960
7	5.1%	6.6%*	5.8%	7.0%*	63,120
8	5.2%	6.6%*	6.0%	7.0%*	56,965
9	5.8%	6.6%*	7.0%	7.0%*	55,597
10	60.4%	60.3%	69.6%	67.4%	483,716
11	26.7%	30.5%	33.8%	35.0%	68,398
12	10.0%	11.6%	12.6%	13.1%	16,825
13	7.1%		8.9%		9,767
14	5.8%		7.4%		6,787
15	5.4%		6.9%		5,339

*PLT study data is aggregated for durations 6-9

Table 4.4 T15			
Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	0.3%	0.3%	2,399
2	0.6%	0.4%	4,226
3	0.6%	0.4%	4,059
4	0.5%	0.4%	3,567
5	0.8%	0.6%	4,706
6	0.5%	0.4%	2,617
7	0.3%	0.3%	1,711
8	0.4%	0.3%	1,681
9	0.4%	0.3%	1,683
10	0.5%	0.4%	1,736
11	0.5%	0.4%	1,486
12	0.9%	0.7%	2,258
13	0.5%	0.5%	989
14	0.5%	0.6%	796
15	3.1%	2.8%	3,245
16	1.8%	2.4%	403
17	0.6%	0.7%	103
18	0.3%	0.5%	43
19	0.2%	0.2%	22
20	0.2%	0.3%	18

Table 4.5 T20			
Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	0.5%	0.4%	19,236
2	0.8%	0.6%	29,658
3	0.7%	0.5%	24,772
4	0.6%	0.4%	19,108
5	0.7%	0.5%	18,988
6	0.4%	0.4%	11,029
7	0.3%	0.3%	7,440
8	0.3%	0.3%	6,052
9	0.3%	0.3%	4,940
10	0.5%	0.5%	6,801
11	0.3%	0.2%	3,217
12	0.3%	0.2%	1,940
13	0.3%	0.2%	1,419
14	0.3%	0.3%	1,251
15	0.5%	0.4%	1,163
16	0.4%	0.3%	326
17	0.7%	0.4%	260
18	0.8%	0.4%	190
19	1.2%	0.6%	192
20	8.3%	6.3%	581

Table 4.6 T30			
Duration	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
1	0.4%	0.3%	4,368
2	0.6%	0.4%	6,879
3	0.6%	0.4%	5,986
4	0.5%	0.3%	4,705
5	0.6%	0.4%	4,551
6	0.4%	0.3%	2,555
7	0.3%	0.2%	1,682
8	0.3%	0.2%	1,251
9	0.2%	0.2%	1,000
10	0.2%	0.1%	815
11	0.2%	0.1%	635
12	0.2%	0.1%	485
13	0.2%	0.1%	395
14	0.2%	0.1%	351
15	0.4%	0.1%	279

Table 4.7 T10 by Gender						
Duration	Conversion Rate (Count)		Conversion Rate (Amount)		Conversion Count	
	Male	Female	Male	Female	Male	Female
1	0.5%	0.7%	0.5%	0.8%	6,820	4,776
2	0.9%	1.4%	0.6%	1.1%	11,006	8,139
3	0.8%	1.2%	0.6%	1.0%	9,386	6,678
4	0.8%	1.1%	0.6%	0.9%	8,820	6,051
5	1.2%	1.7%	0.9%	1.2%	12,086	8,012
6	0.7%	0.8%	0.6%	0.6%	5,859	3,441
7	0.7%	0.8%	0.6%	0.6%	5,123	2,922
8	0.7%	0.7%	0.7%	0.6%	4,599	2,512
9	0.7%	0.9%	0.7%	0.8%	4,307	2,521
10	4.6%	4.5%	5.2%	4.4%	22,158	11,005
11	3.9%	3.4%	5.7%	4.1%	4,455	2,766
12	1.5%	1.4%	1.8%	1.4%	1,227	855
13	1.2%	1.3%	1.4%	1.2%	840	655
14	1.2%	1.2%	2.1%	1.1%	665	528
15	1.1%	1.1%	1.4%	0.9%	527	409

Table 4.8 T10 by Gender						
Duration	Lapse Rate (Count)		Lapse Rate (Amount)		Lapse Count	
	Male	Female	Male	Female	Male	Female
1	8.7%	10.5%	7.6%	8.6%	126,222	75,465
2	7.3%	7.7%	7.7%	7.2%	98,590	50,649
3	6.4%	6.6%	7.0%	6.3%	80,231	40,038
4	5.9%	6.0%	6.6%	5.9%	68,982	34,351
5	5.8%	5.9%	6.5%	5.7%	60,248	30,299
6	5.4%	5.4%	6.1%	5.4%	50,254	24,617
7	5.2%	5.0%	6.0%	5.1%	42,664	20,388
8	5.3%	5.0%	6.2%	5.3%	38,502	18,400
9	6.1%	5.4%	7.3%	5.9%	38,012	17,520
10	64.0%	53.4%	71.8%	62.0%	337,615	145,568
11	28.5%	24.3%	35.5%	30.0%	42,561	25,745
12	10.8%	9.0%	13.4%	11.1%	10,260	6,539
13	7.6%	6.5%	9.3%	8.0%	5,876	3,881
14	6.2%	5.3%	7.8%	6.6%	4,072	2,703
15	5.7%	4.9%	7.4%	6.0%	3,166	2,161

Table 4.9 T10 by Smoking Status						
Duration	Conversion Rate (Count)		Conversion Rate (Amount)		Conversion Count	
	Smoker	Non Smoker	Smoker	Non Smoker	Smoker	Non Smoker
1	0.9%	0.5%	1.0%	0.5%	1,969	9,621
2	1.9%	0.9%	1.4%	0.7%	3,887	15,254
3	1.6%	0.8%	1.2%	0.6%	2,898	13,173
4	1.5%	0.8%	1.0%	0.6%	2,550	12,320
5	2.2%	1.3%	1.5%	0.9%	3,375	16,729
6	1.0%	0.7%	0.9%	0.6%	1,367	7,909
7	0.8%	0.7%	0.7%	0.6%	963	7,022
8	0.9%	0.7%	0.8%	0.7%	905	6,083
9	1.0%	0.7%	0.9%	0.7%	879	5,770
10	5.8%	4.3%	6.2%	4.9%	4,117	28,419
11	3.9%	3.6%	4.8%	5.3%	911	6,176
12	1.5%	1.4%	1.8%	1.7%	269	1,778
13	1.5%	1.2%	1.2%	1.4%	215	1,258
14	1.4%	1.2%	2.0%	1.8%	173	1,015
15	1.1%	1.1%	1.2%	1.3%	122	810

Table 4.10 T10 by Smoking Status						
Duration	Lapse Rate (Count)		Lapse Rate (Amount)		Lapse Count	
	Smoker	Non Smoker	Smoker	Non Smoker	Smoker	Non Smoker
1	16.1%	8.4%	14.7%	7.3%	42,493	159,015
2	12.2%	6.8%	13.2%	7.2%	28,103	121,160
3	9.9%	6.0%	11.0%	6.6%	20,351	100,000
4	8.8%	5.6%	10.0%	6.2%	16,454	86,955
5	8.0%	5.5%	8.9%	6.2%	13,255	77,351
6	7.4%	5.2%	8.1%	5.9%	10,549	64,345
7	6.8%	4.9%	7.7%	5.7%	8,600	54,431
8	6.7%	5.1%	7.7%	5.9%	7,404	49,452
9	7.0%	5.7%	8.1%	6.9%	6,745	48,741
10	53.3%	61.3%	61.8%	70.4%	42,733	440,048
11	26.5%	26.9%	34.7%	34.3%	8,152	60,173
12	10.7%	10.0%	14.9%	12.7%	2,212	14,593
13	7.7%	7.0%	11.1%	8.9%	1,331	8,419
14	5.9%	5.8%	9.1%	7.3%	885	5,886
15	5.8%	5.3%	8.4%	6.8%	755	4,572

Duration	Conversion Rate (Count)				Conversion Rate (Amount)				Conversion Count			
	Monthly	Quarterly	Semiannual	Annual	Monthly	Quarterly	Semiannual	Annual	Monthly	Quarterly	Semiannual	Annual
1	0.7%	0.4%	0.3%	0.3%	0.6%	0.5%	0.4%	0.3%	5,298	1,379	246	1,669
2	1.5%	0.6%	0.5%	0.4%	1.0%	0.6%	0.6%	0.4%	11,043	2,179	433	2,148
3	1.4%	0.7%	0.5%	0.4%	1.0%	0.6%	0.5%	0.4%	9,372	2,170	398	1,912
4	1.3%	0.7%	0.5%	0.4%	0.9%	0.5%	0.5%	0.4%	8,627	2,301	426	1,863
5	2.0%	1.2%	1.0%	0.6%	1.4%	1.0%	0.9%	0.6%	11,876	3,450	709	2,570
6	0.9%	0.6%	0.5%	0.4%	0.8%	0.5%	0.4%	0.4%	4,818	1,534	295	1,484
7	0.9%	0.6%	0.5%	0.4%	0.7%	0.5%	0.4%	0.5%	4,134	1,301	312	1,416
8	0.9%	0.6%	0.5%	0.4%	0.7%	0.6%	0.5%	0.6%	3,528	1,163	264	1,329
9	1.0%	0.5%	0.5%	0.4%	0.8%	0.6%	0.5%	0.6%	3,456	977	246	1,211
10	5.8%	4.0%	3.3%	2.9%	6.0%	4.9%	4.6%	3.9%	16,071	5,920	1,289	6,568
11	3.2%	4.4%	3.1%	2.0%	3.6%	4.9%	4.3%	3.0%	3,534	1,214	266	699
12	1.5%	1.6%	1.3%	0.9%	1.4%	1.7%	1.5%	1.1%	1,270	285	84	230
13	1.3%	1.3%	1.0%	0.8%	1.2%	1.5%	1.3%	1.0%	997	179	51	158
14	1.2%	1.6%	1.3%	0.8%	1.0%	4.6%	3.7%	1.5%	770	179	63	131
15	1.1%	1.4%	0.9%	0.7%	0.9%	2.7%	1.9%	0.9%	634	127	40	101

Duration	Lapse Rate (Count)				Lapse Rate (Amount)				Lapse Count			
	Monthly	Quarterly	Semiannual	Annual	Monthly	Quarterly	Semiannual	Annual	Monthly	Quarterly	Semiannual	Annual
1	9.0%	12.5%	7.9%	7.9%	6.9%	11.4%	8.0%	6.6%	81,897	46,703	6,858	48,317
2	6.9%	9.8%	6.6%	6.7%	6.1%	10.5%	7.6%	7.2%	57,250	34,398	5,764	39,690
3	5.9%	8.1%	6.1%	6.1%	5.3%	8.8%	7.3%	6.9%	45,707	26,927	5,134	34,311
4	5.5%	7.4%	5.6%	5.7%	5.0%	8.2%	6.7%	6.5%	39,730	23,342	4,522	29,781
5	5.3%	7.1%	5.8%	5.7%	4.9%	7.9%	6.3%	6.6%	34,216	20,536	4,296	27,176
6	5.0%	6.5%	5.5%	5.3%	4.8%	7.4%	6.2%	6.2%	28,338	16,775	3,652	22,699
7	4.5%	6.1%	5.4%	5.4%	4.4%	7.1%	6.2%	6.2%	22,519	14,217	3,235	20,292
8	4.6%	6.0%	5.6%	5.6%	4.8%	7.0%	6.2%	6.6%	20,589	12,442	2,981	18,609
9	4.9%	6.4%	7.0%	6.7%	5.1%	7.6%	8.0%	7.9%	18,854	11,868	3,324	19,277
10	44.3%	69.5%	70.0%	78.1%	52.2%	73.3%	77.3%	83.0%	142,846	109,810	28,746	191,632
11	23.7%	40.0%	26.9%	26.5%	31.4%	45.1%	34.8%	34.1%	35,370	14,988	2,819	10,747
12	8.2%	15.7%	12.0%	11.8%	10.0%	17.8%	16.2%	15.0%	8,551	3,089	866	3,238
13	5.9%	11.3%	7.9%	8.2%	6.9%	13.1%	10.3%	10.9%	5,241	1,689	484	1,861
14	4.9%	9.4%	6.5%	6.3%	5.6%	12.2%	10.3%	7.9%	3,796	1,138	356	1,249
15	4.3%	10.0%	6.5%	5.9%	4.8%	13.4%	9.4%	8.4%	2,889	987	331	1,043

Duration	Conversion Rate (Count)		Conversion Rate (Amount)		Conversion Count	
	Full	Partial	Full	Partial	Full	Partial
1	0.5%	0.0%	0.5%	0.1%	10,673	928
2	1.0%	0.0%	0.7%	0.1%	18,229	938
3	0.9%	0.0%	0.6%	0.1%	15,472	607
4	0.9%	0.0%	0.6%	0.0%	14,449	432
5	1.3%	0.0%	0.9%	0.0%	19,715	401
6	0.7%	0.0%	0.6%	0.1%	8,924	389
7	0.7%	0.0%	0.6%	0.0%	7,755	295
8	0.7%	0.0%	0.6%	0.1%	6,806	312
9	0.7%	0.0%	0.7%	0.1%	6,522	316
10	4.2%	0.4%	4.4%	0.7%	30,608	2,603
11	3.4%	0.3%	4.3%	0.9%	6,694	536
12	1.4%	0.1%	1.4%	0.3%	1,993	94
13	1.2%	0.0%	1.2%	0.2%	1,441	55
14	1.2%	0.0%	1.7%	0.1%	1,181	17
15	1.1%	0.0%	1.3%	0.0%	934	3

Table 4.14 T10 by Face Amount Band												
Duration	Conversion Rate (Count)				Conversion Rate (Amount)				Conversion Count			
	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+
1	0.7%	0.7%	0.5%	0.5%	0.7%	0.7%	0.5%	0.5%	391	5,590	4,289	1,332
2	2.0%	1.5%	0.7%	0.6%	2.1%	1.4%	0.7%	0.6%	1,241	10,702	5,712	1,512
3	2.1%	1.3%	0.6%	0.5%	2.2%	1.2%	0.6%	0.6%	1,457	8,738	4,724	1,159
4	2.6%	1.2%	0.6%	0.5%	2.6%	1.1%	0.6%	0.6%	1,948	7,971	3,989	973
5	4.3%	1.8%	0.8%	0.8%	4.5%	1.7%	0.8%	0.9%	3,068	10,910	4,891	1,247
6	1.4%	0.9%	0.5%	0.6%	1.4%	0.8%	0.5%	0.6%	934	4,730	2,838	812
7	1.2%	0.8%	0.5%	0.6%	1.1%	0.8%	0.5%	0.6%	781	4,034	2,586	648
8	1.4%	0.8%	0.5%	0.7%	1.2%	0.7%	0.5%	0.8%	881	3,310	2,281	646
9	1.4%	0.8%	0.6%	0.7%	1.2%	0.8%	0.6%	0.8%	869	3,305	2,092	571
10	4.2%	4.7%	4.2%	5.3%	4.3%	4.7%	4.3%	6.1%	2,573	15,568	11,821	3,249
11	2.7%	3.2%	4.7%	8.0%	2.8%	3.3%	4.9%	8.6%	985	3,288	2,421	536
12	1.6%	1.2%	1.7%	2.7%	1.5%	1.2%	1.7%	2.4%	555	929	513	90
13	1.6%	1.0%	1.3%	2.2%	1.5%	1.0%	1.4%	2.0%	534	629	287	46
14	1.5%	0.9%	1.2%	5.5%	1.5%	0.8%	1.2%	6.8%	491	443	192	72
15	1.3%	0.9%	1.2%	3.2%	1.3%	0.9%	1.3%	3.4%	409	363	144	22

Table 4.15 T10 by Face Amount Band												
Duration	Lapse Rate (Count)				Lapse Rate (Amount)				Lapse Count			
	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+
1	12.1%	11.6%	7.6%	7.3%	12.1%	11.3%	7.5%	7.3%	7,223	102,254	71,518	20,903
2	8.6%	8.3%	6.4%	7.4%	9.1%	8.2%	6.4%	8.3%	5,922	68,241	56,035	19,212
3	7.7%	6.9%	5.8%	6.8%	8.0%	6.9%	5.8%	7.6%	5,756	53,081	46,152	15,432
4	7.2%	6.2%	5.4%	6.5%	7.4%	6.2%	5.4%	7.3%	5,936	45,306	39,443	12,767
5	7.1%	6.0%	5.3%	6.3%	7.4%	6.0%	5.4%	7.2%	5,602	39,565	34,827	10,665
6	6.0%	5.5%	5.1%	6.1%	6.2%	5.5%	5.1%	7.0%	4,408	32,450	29,354	8,749
7	5.1%	5.0%	5.0%	6.2%	5.2%	5.1%	5.1%	6.9%	3,668	26,833	25,276	7,342
8	5.3%	5.0%	5.2%	6.4%	5.4%	5.1%	5.3%	7.2%	3,863	24,137	22,687	6,278
9	5.4%	5.4%	6.0%	7.8%	5.5%	5.5%	6.1%	8.5%	3,848	23,125	22,312	6,312
10	33.8%	56.2%	68.4%	76.2%	38.7%	57.0%	69.4%	76.7%	23,586	207,113	204,677	48,339
11	15.4%	25.6%	34.9%	41.4%	17.9%	26.4%	35.8%	42.1%	7,284	33,906	23,548	3,661
12	6.5%	10.0%	13.8%	16.3%	7.3%	10.2%	14.1%	16.0%	2,709	8,771	4,759	586
13	4.8%	7.2%	10.0%	11.2%	5.4%	7.4%	10.2%	11.0%	1,943	5,149	2,425	250
14	4.1%	6.1%	8.0%	11.4%	4.5%	6.2%	8.2%	10.9%	1,574	3,587	1,465	162
15	3.9%	5.8%	7.7%	11.0%	4.4%	5.9%	8.1%	10.4%	1,432	2,817	1,009	81

Table 4.16 T10 by Issue Age Group												
Duration	Conversion Rate (Count)				Conversion Rate (Amount)				Conversion Count			
	<40	40-49	50-59	60+	<40	40-49	50-59	60+	<40	40-49	50-59	60+
1	0.9%	0.5%	0.4%	0.5%	0.8%	0.4%	0.4%	0.8%	5,613	2,604	2,127	1,258
2	1.7%	0.8%	0.7%	0.7%	1.1%	0.6%	0.5%	0.8%	9,837	4,291	3,281	1,758
3	1.4%	0.7%	0.6%	0.8%	1.0%	0.5%	0.5%	1.0%	7,695	3,780	2,892	1,711
4	1.3%	0.8%	0.6%	0.8%	0.9%	0.5%	0.5%	1.0%	6,809	3,646	2,783	1,642
5	1.8%	1.2%	1.0%	1.6%	1.1%	0.7%	0.7%	2.2%	8,402	5,091	3,919	2,704
6	0.9%	0.6%	0.6%	0.8%	0.7%	0.4%	0.6%	1.3%	3,726	2,357	2,097	1,133
7	0.7%	0.6%	0.7%	0.8%	0.6%	0.5%	0.6%	1.4%	2,787	2,082	2,193	987
8	0.7%	0.6%	0.8%	0.7%	0.6%	0.5%	0.8%	1.2%	2,340	1,987	2,016	775
9	0.8%	0.7%	0.9%	0.7%	0.7%	0.6%	0.9%	1.3%	2,362	1,943	1,879	654
10	3.3%	5.0%	6.3%	3.1%	3.6%	4.9%	7.1%	4.3%	8,466	11,353	11,211	2,181
11	2.6%	5.0%	5.3%	3.2%	3.9%	6.5%	6.6%	3.5%	2,852	2,683	1,482	213
12	1.1%	2.0%	1.9%	1.2%	1.4%	2.4%	1.4%	0.6%	936	746	351	54
13	1.0%	1.6%	1.6%	1.1%	1.3%	1.5%	1.4%	0.4%	728	493	239	36
14	1.0%	1.5%	1.4%	1.6%	1.3%	2.4%	1.9%	1.8%	594	379	181	44
15	0.9%	1.4%	1.4%	1.6%	1.1%	1.8%	1.2%	0.7%	471	293	139	34

Table 4.17 T10 by Issue Age Group												
Duration	Lapse Rate (Count)				Lapse Rate (Amount)				Lapse Count			
	<40	40-49	50-59	60+	<40	40-49	50-59	60+	<40	40-49	50-59	60+
1	12.7%	8.8%	6.9%	6.5%	9.6%	7.4%	6.8%	6.9%	92,156	53,155	38,135	18,453
2	10.0%	6.9%	5.6%	5.4%	9.3%	7.3%	6.6%	6.9%	66,815	39,894	28,990	13,710
3	8.8%	5.9%	4.9%	4.7%	8.5%	6.5%	6.0%	6.1%	53,682	32,001	23,826	10,911
4	8.0%	5.4%	4.5%	4.5%	7.8%	6.0%	5.7%	6.1%	46,483	27,487	20,276	9,207
5	7.7%	5.2%	4.6%	4.5%	7.6%	5.9%	5.6%	6.0%	40,250	24,306	18,349	7,755
6	7.0%	4.9%	4.3%	4.3%	7.0%	5.6%	5.5%	6.0%	32,898	20,528	15,208	6,326
7	6.3%	4.6%	4.4%	4.3%	6.4%	5.5%	5.8%	5.7%	26,606	17,584	13,581	5,349
8	6.0%	4.7%	4.8%	4.8%	6.3%	5.6%	6.2%	6.5%	23,169	16,024	12,718	5,054
9	6.2%	5.4%	5.8%	5.9%	6.6%	6.7%	7.5%	7.5%	21,074	15,950	13,211	5,363
10	45.4%	63.2%	71.4%	80.8%	57.8%	71.8%	76.3%	82.2%	130,924	157,785	134,891	60,116
11	24.3%	30.6%	27.9%	29.2%	32.4%	37.1%	32.4%	30.2%	34,193	21,838	9,886	2,481
12	10.2%	10.7%	8.1%	7.9%	13.6%	13.2%	9.2%	7.7%	10,112	4,614	1,708	391
13	7.4%	7.4%	5.5%	4.9%	9.9%	9.1%	5.8%	5.7%	6,099	2,547	933	189
14	6.2%	5.8%	4.3%	4.7%	8.3%	7.4%	4.5%	5.7%	4,317	1,701	620	150
15	5.5%	5.7%	4.4%	4.5%	7.4%	7.2%	5.1%	4.0%	3,314	1,394	525	107

Table 4.18 T10 Duration 10 by Risk Class			
Risk Class	Conversion Rate (Count)	Conversion Rate (Amount)	Conversion Count
Super Preferred	3.1%	3.9%	3,414
Preferred Best	4.6%	4.8%	3,958
Preferred 2	3.6%	5.0%	3,900
Preferred 3	3.9%	4.8%	1,380
Undifferentiated	3.4%	2.9%	3,930
Non-Preferred	5.8%	6.6%	11,837
S Preferred	4.2%	5.1%	724
S Undifferentiated	6.2%	6.6%	2,304
S Non-Preferred	6.3%	7.2%	1,089
Aggregate	18.7%	12.6%	675

Table 4.19 T10 Duration 10 by Risk Class			
Risk Class	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
Super Preferred	8.4%	8.5%	208,191
Preferred Best	10.6%	11.1%	165,993
Preferred 2	9.1%	9.3%	206,999
Preferred 3	8.6%	9.4%	90,961
Undifferentiated	10.1%	13.6%	176,916
Non-Preferred	9.2%	9.6%	461,899
S Preferred	12.3%	12.8%	52,253
S Undifferentiated	11.2%	13.1%	82,272
S Non-Preferred	12.8%	13.1%	78,806
Aggregate	3.8%	4.2%	6,941

Chapter 5

Table 5.1 A/E by Duration at Conversion Group			
Conversion Group	A/E 08VBT (Count)	A/E 08VBT (Amount)	Claim Count
EARLY	116%	111%	2,868
MID	118%	110%	2,025
LATE	133%	149%	5,556

Table 5.2 100k-249k A/E by Duration at Conversion Group			
Conversion Group	A/E 08VBT (Count)	A/E 08VBT (Amount)	Claim Count
EARLY	107%	106%	991
MID	103%	103%	587
LATE	128%	128%	972

Table 5.3 250k-999k A/E by Duration at Conversion Group			
Conversion Group	A/E 08VBT (Count)	A/E 08VBT (Amount)	Claim Count
EARLY	97%	97%	335
MID	116%	120%	280
LATE	153%	159%	295

Table 5.4 A/E by Duration at Conversion Group and Face Amount Band				
Face Amount Band	Conversion Group	A/E 08VBT (Count)	A/E 08VBT (Amount)	Claim Count
A. < 100k	EARLY	131%	130%	1,409
	MID	128%	123%	1,058
	LATE	132%	134%	4,203
B. 100k-249k	EARLY	107%	106%	991
	MID	103%	103%	587
	LATE	128%	128%	972
C. 250k-999k	EARLY	97%	97%	335
	MID	116%	120%	280
	LATE	153%	159%	295
D. 1M +	EARLY	118%	122%	87
	MID	131%	131%	65
	LATE	192%	190%	63

Table 5.5 PISM by Risk Class			
Risk Class	PISM (Count)	PISM (Amount)	Claim Count
Super Preferred	151.2%	163.8%	180
Preferred Best	216.5%	179.0%	148
Preferred 2	153.4%	163.9%	394
Undifferentiated	114.2%	122.6%	4,543
Non-Preferred	159.9%	171.4%	2,479
S Preferred	166.2%	131.9%	94
S Non-Preferred	85.6%	109.1%	615

Table 5.6 PISM by Duration Since Conversion			
Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
1	155.8%	190.3%	789
2	167.0%	189.0%	1,485
3	154.9%	196.7%	1,305
4	152.7%	147.0%	1,219
5-9	140.5%	153.2%	4,494
10+	120.5%	135.5%	1,838

Table 5.7 100k-249k PISM by Duration Since Conversion			
Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
1	139.7%	144.0%	232
2	148.9%	149.8%	431
3	134.8%	135.3%	364
4	134.8%	133.6%	338
5-9	127.6%	127.4%	1,107
10+	119.4%	122.3%	324

Table 5.8 250k-999k PISM by Duration Since Conversion			
Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
1	203.0%	218.8%	119
2	204.2%	199.7%	191
3	177.3%	186.9%	148
4	177.7%	189.7%	131
5-9	137.2%	136.9%	318
10+	160.3%	162.1%	87

Table 5.9 T5 PISM by Duration Since Conversion			
Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
1	136.4%	104.5%	125
2	171.0%	183.0%	345
3	167.3%	152.1%	319
4	172.0%	230.9%	310
5-9	154.0%	178.3%	1,110
10+	134.4%	143.2%	429

Table 5.10 T10 PISM by Duration Since Conversion			
Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
1	181.8%	245.6%	246
2	191.6%	239.2%	468
3	173.8%	199.5%	396
4	159.6%	125.9%	338
5-9	145.5%	157.4%	1,131
10+	124.9%	120.3%	385

Table 5.11 T15 PISM by Duration Since Conversion			
Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
1	129.5%	123.3%	68
2	147.6%	120.4%	117
3	123.1%	220.7%	94
4	108.6%	147.4%	77
5-9	123.2%	160.8%	267
10+	143.8%	114.3%	109

Table 5.12 T20 PISM by Duration Since Conversion			
Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
1	150.7%	184.1%	97
2	123.6%	137.8%	136
3	118.9%	142.6%	116
4	129.5%	158.1%	111
5-9	114.3%	122.0%	318
10+	114.1%	122.7%	95

Table 5.13 T20 PISM by Duration Since Conversion			
Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
1	222.9%	196.7%	17
2	207.9%	152.1%	34
3	152.2%	110.1%	24
4	169.9%	124.9%	26
5-9	156.3%	287.4%	103
10+	123.7%	136.5%	39

Table 5.14 PISM by Duration Since Conversion Group and Gender					
Gender	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count	
Male	1	154.0%	189.1%	561	
	2	171.8%	175.9%	1,079	
	3	154.4%	194.7%	918	
	4	153.7%	145.3%	864	
	5-9	142.7%	156.6%	3,199	
	10+	119.9%	135.7%	1,266	
	Female	1	160.4%	197.6%	228
2		155.9%	249.8%	405	
3		155.8%	207.2%	385	
4		150.1%	155.8%	354	
5-9		135.5%	140.9%	1,293	
10+		121.9%	134.4%	571	

Table 5.15 A/E by Duration Since Conversion and Smoking Status				
Smoking Status	Dur Since Conv	A/E 08VBT (Count)	A/E 08VBT (Amount)	Claim Count
Non Smoker	1	130.2%	143.1%	586
	2	140.7%	138.4%	1,126
	3	131.6%	146.3%	1,000
	4	129.3%	104.9%	934
	5-9	115.9%	108.9%	3,285
	10+	114.5%	99.7%	1,345
	Smoker	1	133.0%	126.0%
2		133.7%	140.8%	358
3		118.6%	128.7%	304
4		115.0%	114.6%	285
5-9		115.7%	109.3%	1,207
10+		106.4%	102.9%	493

Smoking Status	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
Non Smoker	1	164.8%	198.3%	586
	2	180.0%	193.5%	1,126
	3	169.1%	205.4%	1,000
	4	167.7%	149.3%	934
	5-9	151.6%	158.2%	3,285
	10+	138.1%	145.5%	1,345
Smoker	1	130.8%	140.7%	203
	2	132.6%	157.9%	358
	3	118.2%	143.9%	304
	4	115.0%	128.3%	285
	5-9	114.5%	122.5%	1,207
	10+	104.5%	110.7%	493

Smoking Status	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
Non Smoker	1	139.2%	144.0%	184
	2	153.9%	156.7%	352
	3	138.9%	139.2%	297
	4	140.2%	137.7%	276
	5-9	131.5%	130.7%	894
	10+	124.6%	127.6%	264
Smoker	1	149.5%	151.2%	48
	2	136.5%	128.8%	80
	3	125.9%	125.5%	68
	4	121.2%	123.8%	61
	5-9	121.7%	122.5%	213
	10+	132.5%	132.2%	60

Table 5.18 250k-999k PISM by Duration Since Conversion Group and Smoking Status

Smoking Status	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
Non Smoker	1	202.9%	218.5%	102
	2	218.4%	210.8%	175
	3	195.4%	205.5%	141
	4	181.4%	192.8%	115
	5-9	136.3%	138.5%	274
	10+	164.8%	169.8%	78
Smoker	1	189.9%	206.3%	17
	2	111.3%	121.6%	16
	3	62.3%	64.2%	8
	4	143.2%	157.3%	16
	5-9	132.2%	117.0%	44
	10+	129.5%	105.6%	9

Table 5.19 PISM by Duration Since Conversion Group and Face Amount Band

Face Amount Band	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
A. < 100k	1	112.8%	113.9%	404
	2	124.3%	124.0%	806
	3	118.1%	119.9%	738
	4	118.8%	122.8%	721
	5-9	109.3%	113.9%	2,932
	10+	103.4%	111.8%	1,404
B. 100k - 249k	1	139.7%	144.0%	232
	2	148.9%	149.8%	431
	3	134.8%	135.3%	364
	4	134.8%	133.6%	338
	5-9	127.6%	127.4%	1,107
	10+	119.4%	122.3%	324
C. 250k - 999k	1	203.0%	218.8%	119
	2	204.2%	199.7%	191
	3	177.3%	186.9%	148
	4	177.7%	189.7%	131
	5-9	137.2%	136.9%	318
	10+	160.3%	162.1%	87
D. 1M+	1	198.6%	200.7%	34
	2	217.5%	204.8%	57
	3	228.2%	245.6%	54
	4	132.1%	115.5%	29
	5-9	187.6%	173.1%	138
	10+	160.0%	124.7%	24

Table 5.20 PISM by Duration Since Conversion Group and Issue Age Group				
Issue Age Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
< 40	1	157.8%	227.8%	213
	2	163.9%	202.0%	398
	3	157.0%	277.1%	363
	4	154.7%	181.7%	343
	5-9	123.5%	145.2%	1,199
	10+	105.1%	131.3%	504
	40 - 49	1	161.5%	216.2%
2		186.2%	219.2%	427
3		159.1%	236.6%	348
4		156.9%	162.6%	329
5-9		144.3%	148.1%	1,275
10+		121.0%	130.4%	539
50 - 59		1	165.5%	181.5%
	2	173.5%	212.0%	421
	3	161.2%	198.2%	364
	4	162.4%	173.7%	338
	5-9	160.8%	178.3%	1,223
	10+	148.1%	148.8%	493
	60 +	1	129.0%	171.0%
2		132.1%	144.2%	239
3		132.2%	141.4%	230
4		125.3%	103.5%	208
5-9		127.8%	136.3%	798
10+		120.0%	121.1%	303

Table 5.21 100k-249k PISM by Duration Since Conversion Group and Issue Age Group

Issue Age Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
< 40	1	141.8%	151.2%	52
	2	144.1%	146.5%	94
	3	132.8%	128.6%	81
	4	162.0%	160.9%	92
	5-9	116.4%	117.1%	260
	10+	113.3%	118.3%	98
	40 - 49	1	151.8%	156.6%
2		175.9%	176.3%	130
3		136.2%	137.1%	95
4		140.9%	140.1%	93
5-9		123.6%	126.3%	304
10+		117.6%	120.5%	94
50 - 59		1	128.2%	128.7%
	2	146.6%	147.8%	130
	3	129.8%	134.5%	106
	4	126.9%	124.5%	94
	5-9	136.0%	134.3%	308
	10+	134.4%	135.5%	79
	60 +	1	133.9%	138.9%
2		118.8%	118.9%	78
3		135.0%	135.0%	83
4		104.4%	105.7%	60
5-9		128.6%	126.4%	235
10+		111.6%	112.4%	53

Issue Age Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
< 40	1	186.5%	189.6%	15
	2	185.6%	184.4%	26
	3	162.2%	162.7%	20
	4	206.3%	199.2%	22
	5-9	127.9%	129.0%	47
	10+	147.2%	171.7%	16
	40 - 49	1	203.7%	236.2%
2		221.9%	224.0%	49
3		175.7%	210.8%	35
4		162.7%	195.0%	29
5-9		129.2%	121.2%	75
10+		179.5%	178.1%	24
50 - 59		1	253.8%	263.2%
	2	226.0%	218.0%	70
	3	205.4%	212.6%	56
	4	201.6%	213.9%	47
	5-9	177.0%	178.8%	122
	10+	168.8%	160.9%	26
	60 +	1	150.6%	164.0%
2		173.1%	164.3%	46
3		154.2%	148.7%	37
4		148.3%	151.9%	32
5-9		104.8%	106.9%	74
10+		126.1%	124.1%	21

Conversion Amount	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
Full	1	159.8%	186.0%	739
	2	172.0%	196.6%	1,393
	3	160.0%	204.6%	1,237
	4	155.7%	149.4%	1,150
	5-9	143.4%	157.5%	4,308
	10+	121.9%	137.2%	1,762
	Partial	1	113.5%	238.2%
2		116.1%	110.9%	92
3		98.0%	110.3%	68
4		115.6%	118.8%	69
5-9		95.5%	92.3%	187
10+		95.7%	101.3%	76

Table 5.24 A/E for Duration Since Conversion 10 + by Gender, Smoking Status and Conversion Group

Gender	Smoking Status	Conversion Group	A/E 08VBT (Count)	A/E 08VBT (Amount)	Claim Count
Male	Non Smoker	EARLY	105%	82%	300
		MID	121%	98%	170
		LATE	123%	105%	395
	Smoker	EARLY	125%	89%	86
		MID	139%	109%	58
		LATE	98%	122%	197
Female	Non Smoker	EARLY	115%	93%	152
		MID	122%	104%	74
		LATE	113%	117%	184
	Smoker	EARLY	140%	137%	49
		MID	89%	70%	18
		LATE	90%	90%	70
All	All	EARLY	112%	86%	587
		MID	122%	100%	321
		LATE	111%	110%	849

Table 5.25 PISM by Duration Since Conversion Group and Conversion Group

Conversion Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
EARLY	1	154.4%	202.2%	176
	2	146.5%	131.3%	303
	3	148.7%	188.2%	301
	4	146.6%	158.2%	290
	5-9	136.7%	156.3%	1,211
	10+	120.9%	116.7%	587
	MID	1	128.3%	155.7%
2		149.8%	200.9%	274
3		147.0%	151.1%	253
4		134.2%	109.1%	216
5-9		141.0%	152.3%	815
10+		130.8%	134.8%	321
LATE		1	184.9%	229.0%
	2	195.7%	247.2%	809
	3	175.8%	256.0%	680
	4	172.1%	194.4%	624
	5-9	151.3%	173.0%	2,174
	10+	119.3%	148.3%	849

Table 5.26 100k-249k PISM by Duration Since Conversion Group and Conversion Group				
Conversion Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
EARLY	1	156.5%	165.3%	74
	2	135.3%	131.9%	117
	3	124.3%	119.2%	104
	4	141.7%	142.4%	114
	5-9	130.3%	129.7%	433
	10+	111.5%	115.8%	150
	MID	1	121.1%	122.8%
2		126.7%	130.4%	91
3		129.3%	134.2%	87
4		120.9%	115.5%	74
5-9		119.9%	118.9%	219
10+		136.3%	144.6%	63
LATE		1	160.6%	167.0%
	2	193.6%	193.2%	191
	3	169.0%	172.7%	150
	4	148.9%	149.3%	119
	5-9	141.0%	139.3%	339
	10+	136.1%	134.1%	87

Table 5.27 250k-999k PISM by Duration Since Conversion Group and Conversion Group				
Conversion Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
EARLY	1	189.9%	194.0%	31
	2	162.9%	150.6%	47
	3	155.6%	167.9%	43
	4	153.1%	165.8%	39
	5-9	123.0%	118.8%	125
	10+	156.3%	162.7%	51
	MID	1	165.4%	188.4%
2		192.7%	199.1%	53
3		196.3%	195.9%	48
4		174.6%	197.2%	38
5-9		154.8%	155.2%	95
10+		173.7%	163.5%	17
LATE		1	283.6%	305.1%
	2	275.7%	270.0%	75
	3	208.6%	216.1%	47
	4	246.5%	260.2%	45
	5-9	169.1%	179.4%	66
	10+	212.4%	208.4%	11

Table 5.28 T10 PISM by Duration Since Conversion Group and Conversion Group				
Conversion Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
EARLY	1	148.6%	258.8%	38
	2	130.8%	109.6%	63
	3	172.7%	212.6%	84
	4	152.6%	104.1%	72
	5-9	144.0%	156.2%	329
	10+	118.9%	105.6%	154
MID	1	142.1%	187.1%	72
	2	144.1%	232.3%	114
	3	149.3%	132.9%	116
	4	132.6%	96.4%	101
	5-9	128.9%	149.2%	381
	10+	120.2%	137.5%	95
LATE	1	229.7%	297.2%	136
	2	249.1%	325.6%	290
	3	193.0%	270.4%	196
	4	186.8%	193.5%	165
	5-9	166.2%	185.0%	421
	10+	136.1%	155.0%	137

Table 5.29 T10 100k-249k PISM by Duration Since Conversion Group and Conversion Group

Conversion Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
EARLY	1	140.3%	140.6%	16
	2	112.9%	111.0%	26
	3	150.8%	149.3%	34
	4	152.3%	157.2%	33
	5-9	148.8%	143.5%	137
	10+	114.9%	113.8%	45
	MID	1	128.2%	122.7%
2		140.8%	143.0%	51
3		149.0%	159.1%	53
4		129.1%	121.1%	45
5-9		121.5%	118.9%	150
10+		128.5%	136.3%	33
LATE		1	193.6%	196.0%
	2	227.7%	220.0%	95
	3	172.3%	183.7%	62
	4	148.3%	153.2%	45
	5-9	151.2%	146.0%	104
	10+	160.9%	154.7%	14

Table 5.30 T10 250k-999k PISM by Duration Since Conversion Group and Conversion Group

Conversion Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
EARLY	1	174.0%	151.3%	6
	2	167.5%	173.0%	12
	3	231.5%	269.1%	16
	4	205.0%	223.1%	13
	5-9	152.7%	154.9%	45
	10+	141.1%	138.7%	15
	MID	1	185.5%	240.0%
2		188.8%	186.0%	29
3		182.2%	199.7%	26
4		200.4%	232.7%	27
5-9		150.0%	152.7%	66
10+		149.0%	147.3%	10
LATE		1	366.7%	383.0%
	2	357.8%	360.5%	60
	3	245.2%	248.8%	32
	4	293.4%	288.3%	29
	5-9	211.7%	208.3%	37
	10+	132.1%	110.3%	1

Table 5.31 PISM by Duration Since Conversion Group and Gender for Late Converters				
Gender	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
Male	1	185.2%	226.7%	303
	2	201.4%	253.3%	589
	3	175.0%	244.8%	478
	4	174.6%	200.9%	447
	5-9	151.3%	176.4%	1,516
	10+	121.2%	148.4%	592
Female	1	184.7%	241.8%	117
	2	182.2%	219.8%	220
	3	177.8%	305.3%	201
	4	166.0%	168.5%	176
	5-9	151.6%	161.8%	657
	10+	115.1%	146.7%	255

Table 5.32 PISM by Duration Since Conversion Group and Smoking Status for Late Converters				
Smoking Status	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
Non Smoker	1	203.2%	243.4%	300
	2	218.0%	264.2%	600
	3	199.0%	277.7%	508
	4	199.6%	206.9%	471
	5-9	168.7%	168.8%	1,503
	10+	144.5%	157.7%	581
Smoker	1	141.1%	150.2%	119
	2	142.8%	158.9%	209
	3	123.4%	150.0%	172
	4	113.7%	130.7%	153
	5-9	115.3%	169.0%	672
	10+	94.2%	123.1%	268

Table 5.33 PISM by Duration Since Conversion Group and Face Amount Band for Late Converters

Face Amount Band	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
A. < 100k	1	130.8%	134.2%	272
	2	133.3%	133.9%	518
	3	125.5%	131.5%	466
	4	125.4%	133.9%	450
	5-9	111.6%	120.5%	1,748
	10+	98.3%	107.9%	750
B. 100k - 249k	1	160.6%	167.0%	87
	2	193.6%	193.2%	191
	3	169.0%	172.7%	150
	4	148.9%	149.3%	119
	5-9	141.0%	139.3%	339
	10+	136.1%	134.1%	87
C. 250k - 999k	1	283.6%	305.1%	50
	2	275.7%	270.0%	75
	3	208.6%	216.1%	47
	4	246.5%	260.2%	45
	5-9	169.1%	179.4%	66
	10+	212.4%	208.4%	11
D. 1M+	1	193.3%	221.6%	10
	2	358.5%	292.3%	25
	3	293.3%	396.6%	17
	4	255.4%	173.8%	11
	5-9	241.1%	192.6%	21

Table 5.34 PISM by Duration Since Conversion Group and Issue Age Group for Late Converters

Issue Age Group	Dur Since Conv	PISM (Count)	PISM (Amount)	Claim Count
< 40	1	161.4%	299.8%	124
	2	172.3%	201.3%	244
	3	174.0%	425.1%	240
	4	154.6%	218.2%	209
	5-9	126.0%	162.0%	779
	10+	102.5%	139.9%	331
40 - 49	1	177.3%	185.9%	111
	2	203.7%	268.8%	236
	3	170.2%	251.5%	187
	4	174.4%	211.0%	182
	5-9	155.1%	170.3%	676
	10+	123.0%	161.1%	286
50 - 59	1	206.2%	219.3%	127
	2	208.7%	319.3%	225
	3	180.3%	220.6%	176
	4	183.1%	182.0%	160
	5-9	179.5%	198.5%	520
	10+	147.3%	144.0%	173
60 +	1	195.8%	253.8%	58
	2	189.9%	135.7%	103
	3	158.6%	184.1%	77
	4	168.1%	173.1%	73
	5-9	150.9%	146.3%	199
	10+	135.6%	133.0%	58

Table 5.35 PISM Comparison

Duration	Phase 2	Phase 1	Phase 2	Phase 1
	PISM Results (Count)	PISM Assumption (Equal)	PISM Results (Amount)	PISM Assumption (Weighted)
1	156%	179%	190%	211%
2	167%	176%	189%	206%
3	155%	170%	197%	195%
4	153%	148%	147%	165%
5-9	140%	145%	153%	159%
10+	121%	129%	136%	129%

Table 5.36 A/E by Product and Study			
Product	Study	A/E 08VBT (Count)	A/E 08VBT (Amount)
Level Term	Conversion	84.0%	74.1%
Permanent	ILEC	91.0%	81.0%
Level Term	PLT	90.0%	85.0%
Level Term	ILEC	93.0%	89.0%
Post Level Term	Conversion	124.8%	114.1%
Conversion	Conversion	121.3%	118.7%
Post Level Term	PLT	143.1%	146.3%

Chapter 6

Table 6.1 Lapse Rate by Duration Since Conversion			
Dur Since Conv	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
1	5.5%	4.1%	16,005
2	6.2%	5.1%	30,678
3	4.5%	4.3%	18,506
4	3.0%	3.5%	10,639
5-9	2.6%	3.2%	28,049
10+	2.3%	3.5%	6,525

Table 6.2 Lapse Rate by Duration Since Conversion Group			
Conversion Group	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
EARLY	4.9%	4.6%	65,544
MID	3.5%	3.2%	16,637
LATE	2.4%	2.7%	22,832

Table 6.3 Lapse Rate by Duration Since Conversion				
Conversion Group	Dur Since Conv	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
EARLY	1	6.2%	4.6%	8,265
	2	7.7%	6.1%	17,479
	3	6.1%	5.2%	11,401
	4	4.3%	4.4%	6,812
	5-9	3.6%	3.8%	17,396
	10+	3.2%	4.2%	4,192
MID	1	5.3%	3.1%	2,524
	2	5.7%	4.2%	4,466
	3	4.0%	3.3%	2,631
	4	2.7%	2.9%	1,525
	5-9	2.5%	2.8%	4,434
	10+	2.2%	2.8%	1,058
LATE	1	5.0%	4.4%	4,398
	2	4.7%	3.9%	7,415
	3	2.7%	2.9%	3,598
	4	1.5%	1.9%	1,727
	5-9	1.3%	1.8%	4,749
	10+	1.0%	1.4%	945

Table 6.4 Male Lapse Rate by Duration Since Conversion

Conversion Group	Dur Since Conv	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
EARLY	1	5.8%	4.3%	4,154
	2	7.2%	5.9%	8,561
	3	5.9%	5.1%	5,826
	4	4.4%	4.6%	3,707
	5-9	3.7%	4.0%	9,672
	10+	3.4%	4.5%	2,458
	MID	1	4.7%	2.6%
2		5.3%	4.0%	2,333
3		3.8%	3.2%	1,430
4		2.7%	2.9%	867
5-9		2.6%	2.9%	2,567
10+		2.3%	3.0%	608
LATE		1	4.8%	4.4%
	2	4.3%	3.7%	3,924
	3	2.6%	3.0%	1,991
	4	1.6%	1.8%	1,022
	5-9	1.3%	1.9%	2,808
	10+	1.1%	1.5%	606

Table 6.5 Female Lapse Rate by Duration Since Conversion

Conversion Group	Dur Since Conv	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
EARLY	1	6.6%	5.0%	4,105
	2	8.2%	6.6%	8,904
	3	6.3%	5.3%	5,566
	4	4.2%	4.2%	3,103
	5-9	3.4%	3.6%	7,718
	10+	2.9%	3.6%	1,733
	MID	1	6.1%	4.3%
2		6.2%	4.6%	2,130
3		4.2%	3.6%	1,201
4		2.7%	2.8%	658
5-9		2.4%	2.6%	1,863
10+		2.0%	2.4%	450
LATE		1	5.3%	4.4%
	2	5.1%	4.3%	3,478
	3	2.8%	2.7%	1,604
	4	1.4%	1.9%	704
	5-9	1.2%	1.7%	1,940
	10+	0.9%	1.2%	339

Table 6.6 Non Smoker Lapse Rate by Duration Since Conversion

Conversion Group	Dur Since Conv	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
EARLY	1	5.8%	4.3%	6,720
	2	7.2%	5.8%	14,211
	3	5.8%	4.9%	9,395
	4	4.1%	4.4%	5,719
	5-9	3.5%	3.8%	14,763
	10+	3.1%	4.1%	3,548
	MID	1	4.9%	2.8%
2		5.4%	4.0%	3,646
3		3.8%	3.3%	2,194
4		2.6%	2.8%	1,268
5-9		2.4%	2.8%	3,690
10+		2.2%	2.9%	887
LATE		1	4.7%	4.3%
	2	4.6%	3.8%	6,116
	3	2.6%	2.8%	2,928
	4	1.5%	1.8%	1,404
	5-9	1.2%	1.7%	3,810
	10+	1.0%	1.4%	725

Conversion Group	Dur Since Conv	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
EARLY	1	8.7%	8.2%	1,524
	2	10.8%	10.3%	3,225
	3	8.1%	7.8%	1,993
	4	5.2%	5.4%	1,087
	5-9	4.2%	4.8%	2,624
	10+	3.8%	5.3%	640
MID	1	7.4%	6.1%	476
	2	7.9%	6.5%	819
	3	4.9%	3.9%	437
	4	3.3%	3.3%	256
	5-9	2.9%	2.9%	743
	10+	2.3%	2.2%	171
LATE	1	6.7%	5.6%	956
	2	5.4%	4.8%	1,299
	3	3.2%	3.7%	670
	4	1.8%	2.2%	324
	5-9	1.5%	2.4%	939
	10+	1.2%	1.3%	219

Risk Class	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
Super Preferred	4.4%	4.2%	5,156
Preferred Best	4.4%	4.7%	1,557
Preferred 2	3.4%	3.1%	3,940
Undifferentiated	3.4%	3.5%	40,959
Non-Preferred	3.4%	3.4%	28,977
S Preferred	6.3%	6.5%	916
S Undifferentiated	4.3%	4.8%	11,675
S Non-Preferred	4.9%	5.4%	5,815
Aggregate	5.3%	5.7%	6,876

Table 6.9 Lapse Rate by Face Amount Band and Conversion Group				
Face Amount Band	Conversion Group	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
A. < 100k	EARLY	5.3%	5.5%	28,686
	MID	3.7%	3.9%	9,421
	LATE	2.3%	2.5%	15,482
B. 100k-249k	EARLY	4.8%	4.8%	26,154
	MID	3.4%	3.4%	5,441
	LATE	2.4%	2.4%	5,615
C. 250k-999k	EARLY	4.6%	4.6%	9,181
	MID	3.1%	3.0%	1,518
	LATE	3.0%	3.0%	1,451
D. 1M+	EARLY	4.1%	4.2%	1,524
	MID	2.7%	2.8%	290
	LATE	3.2%	3.2%	251

Table 6.10 Lapse Rate by Premium Mode and Duration Since Conversion

Premium Mode	Dur Since Conv	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
Monthly	1	6.1%	5.1%	8,481
	2	7.3%	6.9%	18,727
	3	4.6%	4.7%	10,152
	4	2.6%	3.3%	5,029
	5-9	2.2%	2.8%	13,470
	10+	1.9%	2.5%	3,322
Quarterly	1	6.4%	4.8%	2,097
	2	6.8%	6.0%	3,169
	3	5.4%	5.4%	2,196
	4	4.2%	4.9%	1,529
	5-9	3.4%	4.3%	4,126
	10+	2.9%	4.0%	1,045
Annual	1	3.3%	3.3%	817
	2	5.1%	4.0%	2,165
	3	4.4%	3.6%	1,614
	4	2.8%	3.3%	879
	5-9	2.2%	3.1%	2,244
	10+	2.3%	4.6%	622
Other	1	5.0%	3.8%	4,146
	2	4.2%	3.7%	5,593
	3	3.8%	3.6%	3,820
	4	3.5%	3.2%	2,771
	5-9	3.4%	3.2%	6,848
	10+	3.4%	3.9%	1,216

Table 6.11 Lapse Rate by Term Period and Duration Since Conversion

Term Period	Dur Since Conv	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
10	1	5.4%	4.0%	3,176
	2	5.9%	5.2%	5,908
	3	4.1%	3.9%	3,475
	4	2.9%	3.2%	2,117
	5-9	2.6%	3.3%	5,971
	10+	2.6%	4.2%	1,454
	15	1	4.2%	3.2%
2		5.5%	4.2%	1,084
3		4.4%	4.9%	745
4		3.6%	4.9%	528
5-9		3.0%	3.6%	1,320
10+		2.7%	4.5%	283
20		1	4.5%	3.8%
	2	5.1%	4.6%	4,594
	3	4.6%	4.4%	3,245
	4	4.1%	4.3%	2,355
	5-9	3.7%	3.8%	5,671
	10+	3.3%	3.5%	892
	5	1	6.4%	5.5%
2		7.7%	6.2%	14,102
3		5.2%	4.6%	7,822
4		2.8%	2.9%	3,469
5-9		2.2%	2.5%	8,285
10+		1.6%	2.6%	1,359
Other		1	5.3%	3.8%
	2	4.5%	4.2%	4,030
	3	3.4%	4.0%	2,670
	4	2.7%	3.0%	1,861
	5-9	2.4%	3.2%	6,140
	10+	2.5%	3.6%	2,467

Table 6.12 Lapse Rate by Conversion Amount and Duration Since Conversion				
Conversion Amount	Dur Since Conv	Lapse Rate (Count)	Lapse Rate (Amount)	Lapse Count
Full	1	5.3%	3.9%	13,435
	2	6.4%	5.2%	27,865
	3	4.6%	4.4%	16,953
	4	3.1%	3.6%	9,686
	5-9	2.6%	3.3%	25,891
	10+	2.3%	3.6%	6,193
Partial	1	6.9%	5.5%	2,569
	2	4.6%	3.9%	2,813
	3	3.4%	3.3%	1,553
	4	2.7%	3.0%	954
	5-9	2.4%	2.5%	2,157
	10+	1.7%	2.6%	332

Chapter 7

Table 7.1 T10 by Study							
Duration	08VBT A/E (Count)		08VBT A/E (Amount)			Claim Count	
	Conv	PLT	Conv	Conv 90% CI Low	Conv 90% CI High	PLT Conv	
1	90.7%		88.9%	80.5%	97.3%	2,080	
2	86.0%		83.1%	75.9%	90.2%	2,698	
3	85.0%		82.3%	75.8%	88.9%	3,153	
4	84.3%		81.4%	75.2%	87.5%	3,445	
5	82.4%		83.7%	77.8%	89.7%	3,484	
6	82.4%	90.1%*	72.8%	66.9%	78.7%	85.0%*	3,456
7	80.6%	90.1%*	71.8%	66.0%	77.6%	85.0%*	3,365
8	86.2%	90.1%*	79.5%	73.8%	85.2%	85.0%*	3,570
9	80.4%	90.1%*	75.0%	69.4%	80.7%	85.0%*	3,307
10	86.4%	90.1%*	80.1%	74.2%	85.9%	85.0%*	3,316
11	170.1%	209.0%	201.3%	188.8%	213.7%	223.2%	1,435
12	117.6%	148.9%	113.8%	99.7%	128.0%	140.7%	830
13	99.7%	117.7%	90.3%	74.4%	106.2%	112.5%	647
14	89.6%		63.5%	46.8%	80.3%		546
15	85.2%		64.1%	46.7%	81.5%		483

*PLT study data is aggregated for durations 6-9

Table 7.2 T15					
Duration	08VBT A/E (Count)	08VBT A/E (Amount)			Claim Count
		90% CI Low	90% CI High		
1	89.0%	68.3%	56.0%	80.6%	755
2	89.9%	78.6%	68.5%	88.8%	1,109
3	85.1%	77.8%	68.8%	86.8%	1,289
4	78.6%	74.4%	66.0%	82.7%	1,348
5	77.1%	70.1%	62.1%	78.1%	1,408
6	75.0%	71.2%	63.4%	79.0%	1,402
7	78.9%	72.9%	65.3%	80.6%	1,517
8	79.8%	70.7%	63.2%	78.2%	1,591
9	77.2%	72.8%	65.5%	80.1%	1,596
10	74.4%	65.1%	57.8%	72.3%	1,550
11	77.2%	69.1%	61.8%	76.5%	1,545
12	79.8%	68.2%	60.4%	76.0%	1,425
13	85.7%	72.7%	64.1%	81.4%	1,288
14	83.5%	73.4%	63.7%	83.1%	1,056
15	86.3%	82.0%	71.3%	92.7%	847
16	151.2%	174.1%	150.4%	197.8%	244
17	122.3%	121.9%	93.8%	150.0%	110
18	134.2%	152.9%	118.0%	187.8%	92
19	122.8%	104.3%	66.1%	142.4%	69
20	160.1%	312.2%	271.8%	352.7%	79

Duration	08VBT A/E (Count)	08VBT A/E (Amount)			Claim Count
		90% CI Low	90% CI High		
1	91.1%	77.2%	71.0%	83.4%	2,064
2	78.6%	66.7%	61.4%	72.1%	2,410
3	83.5%	77.9%	73.0%	82.9%	2,980
4	76.2%	68.6%	63.9%	73.3%	2,977
5	75.1%	71.5%	67.0%	76.1%	3,064
6	72.2%	65.8%	61.3%	70.3%	2,953
7	72.4%	67.1%	62.6%	71.6%	2,946
8	70.4%	64.3%	59.8%	68.9%	2,839
9	70.3%	65.5%	60.9%	70.1%	2,798
10	69.2%	65.5%	60.8%	70.2%	2,664
11	69.2%	63.8%	59.0%	68.7%	2,475
12	65.1%	60.3%	55.1%	65.5%	2,067
13	68.4%	71.6%	65.9%	77.2%	1,839
14	65.3%	58.4%	52.2%	64.6%	1,454
15	63.8%	61.7%	54.1%	69.3%	994
16	61.0%	54.5%	43.8%	65.2%	466
17	64.9%	49.8%	34.1%	65.5%	245
18	77.8%	57.0%	38.6%	75.5%	173
19	83.4%	68.4%	45.9%	91.0%	121
20	109.4%	132.5%	99.3%	165.7%	91

Duration	08VBT A/E (Count)		08VBT A/E (Amount)				Claim Count			
	Male	Female	Male		Female		Male	Female		
			90% CI Low	90% CI High	90% CI Low	90% CI High				
1	90.4%	91.8%	89.6%	80.4%	98.8%	84.7%	65.7%	103.7%	1,679	398
2	84.6%	91.3%	81.2%	73.4%	89.0%	92.3%	76.0%	108.6%	2,142	549
3	83.1%	93.0%	82.0%	74.9%	89.1%	85.7%	71.1%	100.3%	2,474	678
4	84.0%	85.6%	79.8%	73.0%	86.6%	92.9%	79.4%	106.5%	2,733	709
5	81.3%	86.9%	83.5%	77.0%	90.1%	85.7%	72.9%	98.6%	2,718	764
6	82.0%	83.7%	72.6%	66.0%	79.1%	74.6%	62.3%	87.0%	2,705	746
7	80.5%	80.8%	72.0%	65.5%	78.4%	71.2%	59.1%	83.2%	2,632	730
8	85.5%	88.6%	78.3%	71.9%	84.6%	85.9%	74.1%	97.8%	2,759	806
9	80.2%	81.6%	75.8%	69.5%	82.1%	70.9%	59.1%	82.6%	2,566	741
10	84.7%	91.9%	79.2%	72.7%	85.7%	85.7%	73.4%	98.1%	2,532	777
11	174.4%	160.3%	207.8%	193.0%	222.6%	176.4%	156.8%	196.0%	1,017	415
12	110.7%	133.0%	112.5%	95.5%	129.6%	119.0%	97.1%	140.9%	530	299
13	93.1%	113.6%	90.7%	71.4%	110.0%	88.5%	65.4%	111.6%	409	236
14	88.8%	92.3%	59.5%	38.9%	80.1%	78.7%	57.0%	100.3%	365	181
15	83.3%	89.4%	62.2%	40.5%	83.9%	71.3%	49.3%	93.4%	316	166

Duration	08VBT A/E (Count)		08VBT A/E (Amount)				Claim Count			
	Non Smoker	Smoker	Non Smoker		Smoker		Non Smoker	Smoker		
			90% CI Low	90% CI High	90% CI Low	90% CI High				
1	87.1%	105.9%	89.3%	80.2%	98.5%	88.4%	68.8%	108.0%	1,615	462
2	82.4%	102.8%	82.6%	74.8%	90.3%	83.8%	66.8%	100.9%	2,126	570
3	82.8%	96.4%	82.1%	75.1%	89.1%	86.4%	70.0%	102.8%	2,553	600
4	81.9%	96.2%	81.4%	74.7%	88.0%	82.2%	66.0%	98.3%	2,801	637
5	80.6%	92.4%	81.8%	75.4%	88.3%	102.4%	89.1%	115.6%	2,858	622
6	80.7%	90.9%	72.5%	66.1%	78.9%	76.7%	63.4%	90.1%	2,844	602
7	78.9%	89.2%	71.4%	65.1%	77.6%	77.4%	63.8%	90.9%	2,768	583
8	84.4%	96.5%	78.4%	72.2%	84.6%	89.7%	77.0%	102.3%	2,940	619
9	78.0%	94.4%	73.3%	67.2%	79.4%	92.6%	80.8%	104.5%	2,707	588
10	85.2%	93.0%	79.7%	73.3%	86.0%	84.8%	72.5%	97.0%	2,774	525
11	165.5%	201.8%	206.6%	193.2%	220.0%	192.9%	166.9%	218.8%	1,156	274
12	114.2%	144.3%	114.5%	99.4%	129.6%	139.8%	110.1%	169.4%	667	162
13	94.2%	135.3%	92.3%	75.4%	109.1%	100.1%	72.0%	128.2%	506	140
14	81.2%	137.6%	59.5%	41.8%	77.3%	123.4%	94.6%	152.2%	411	132
15	77.1%	129.2%	61.7%	42.9%	80.6%	93.1%	64.9%	121.3%	363	117

Duration	A/E 08VBT (Count)				A/E 08VBT (Amount)				Claim Count			
	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+	A. < 100k	B. 100k-249k	C. 250k-999k	D. 1M+
1	130.9%	91.3%	86.4%	83.3%	119.8%	91.9%	84.4%	91.1%	150	1,020	726	184
2	127.2%	87.5%	82.2%	69.5%	125.6%	86.7%	82.9%	81.3%	220	1,321	948	209
3	120.8%	85.0%	79.9%	81.3%	120.2%	84.7%	81.0%	81.9%	220	1,514	1,084	279
4	110.0%	85.8%	79.3%	77.0%	108.8%	85.6%	79.3%	81.0%	276	1,690	1,173	279
5	103.1%	82.4%	77.6%	85.7%	102.3%	82.8%	77.8%	89.1%	303	1,682	1,182	306
6	108.4%	86.0%	73.3%	75.3%	107.5%	86.5%	73.2%	65.7%	314	1,744	1,098	257
7	109.4%	84.3%	70.7%	69.6%	107.4%	84.1%	68.8%	68.0%	357	1,708	1,032	226
8	110.7%	87.8%	78.3%	80.3%	109.1%	87.5%	79.0%	74.9%	399	1,778	1,103	245
9	107.2%	80.5%	73.2%	74.0%	103.2%	80.4%	73.5%	72.6%	444	1,637	994	213
10	119.9%	87.5%	75.0%	74.7%	117.8%	88.1%	75.8%	78.3%	463	1,686	913	191
11	202.8%	149.0%	181.4%	270.7%	211.7%	150.7%	188.0%	292.3%	526	696	361	72
12	165.9%	98.1%	120.7%	125.1%	161.2%	96.4%	124.1%	117.1%	306	389	175	19
13	163.8%	76.9%	87.2%	102.3%	154.0%	77.4%	94.4%	94.5%	247	280	105	12
14	151.8%	71.1%	62.0%	32.7%	136.2%	70.2%	61.7%	24.7%	250	240	66	3
15	161.7%	55.2%	55.5%	81.4%	159.1%	53.7%	61.3%	65.7%	237	172	51	5

Duration	A/E 08VBT (Count)				A/E 08VBT (Amount)				Claim Count			
	< 40	40-49	50-59	60 +	< 40	40-49	50-59	60 +	< 40	40-49	50-59	60 +
1	115.6%	115.4%	99.7%	69.1%	126.2%	108.4%	80.4%	76.4%	329	397	663	691
2	99.5%	99.3%	86.2%	77.9%	98.6%	93.5%	75.2%	81.5%	320	485	839	1,054
3	98.8%	102.8%	82.5%	77.2%	94.8%	101.5%	84.2%	67.4%	320	614	980	1,227
4	101.2%	92.6%	86.8%	75.9%	95.7%	95.2%	83.3%	68.7%	332	626	1,159	1,319
5	113.9%	96.2%	79.4%	73.4%	123.2%	85.3%	91.2%	66.7%	341	690	1,122	1,300
6	100.7%	93.4%	78.4%	77.6%	81.3%	79.3%	71.8%	68.1%	372	687	1,123	1,323
7	118.5%	87.7%	70.4%	78.8%	107.9%	77.6%	65.5%	67.6%	323	661	1,008	1,312
8	112.6%	83.9%	85.3%	82.7%	100.3%	78.4%	75.3%	80.4%	384	644	1,199	1,348
9	106.7%	85.1%	72.7%	79.1%	118.7%	78.6%	68.4%	70.0%	379	657	1,000	1,276
10	109.4%	88.1%	76.3%	88.8%	95.0%	82.8%	74.4%	81.1%	374	640	966	1,339
11	157.0%	177.6%	140.1%	217.4%	185.1%	189.7%	157.8%	304.8%	371	377	392	410
12	148.2%	130.5%	95.6%	105.8%	140.9%	123.0%	81.4%	139.0%	256	236	223	152
13	139.4%	108.7%	79.4%	77.6%	137.6%	96.8%	74.9%	69.8%	219	183	169	98
14	126.7%	100.1%	71.6%	61.9%	101.5%	76.8%	47.2%	45.0%	197	161	143	70
15	124.2%	112.3%	57.0%	43.9%	102.0%	95.3%	39.5%	34.9%	172	172	104	44

Risk Class	A/E 08VBT (Count)	A/E 08VBT (Amount)	Claim Count
Super Preferred	69.2%	65.9%	3,095
Preferred Best	84.1%	84.1%	1,685
Preferred 2	76.2%	72.5%	4,248
Preferred 3	89.4%	85.1%	2,230
Undifferentiated	122.4%	102.8%	2,601
Non-Preferred	80.5%	84.5%	12,127
S Preferred	87.5%	77.7%	1,482
S Undifferentiated	105.5%	95.3%	1,832
S Non-Preferred	93.7%	88.8%	2,494
Aggregate	83.7%	56.1%	80