

Report

Lapse Experience Study for 10-Year Term Insurance

Individual Life Experience Subcommittee

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Tables Supplement 1: age-/gender-specific rates up to duration 12 together with exposure and lapse statistics

Tables Supplement 2: age-specific, unisex rates up to duration 24 together with exposure and lapse statistics

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INTRODUCTION

This study of lapse experience under Canadian fully-guaranteed individual renewable and convertible 10-year term insurance (T10) policies was conducted by the Canadian Institute of Actuaries (CIA) through the Individual Life Experience Subcommittee of the Research Committee. This is the first study of T10 lapses conducted by the CIA.

The CIA retained Fraser Group to act as the study manager, with a mandate to:

- Collect and validate data submissions;
- Analyse the merged data;
- Produce lapse rate tables; and
- Prepare appropriate documentation, including this report.

The initial data request for the study was issued in August 2011 with a data deadline of November 30, 2011. The initial data collection was actually completed by July 2012.

During the data validation process, a number of carriers provided supplemental data submissions to address certain deficiencies. In several cases, it was necessary for the carrier to provide a completely new submission. The final merging of all validated data submissions was completed by the end of February 2013.

PROJECT GOVERNANCE

- Marc-André Belzil, Research Committee Chair until June 2013
- Dave Dickson, Research Committee Chair
- Members of the Individual Life Experience Subcommittee:
Nikolai Serykh, Chair
Mark Andrews Simon Bélanger
Rhys DeGrave Annie Girard
Blake Hill Nicolas Rochon
Scott Spencer Lisa Zwicker
- Marie-Josée Blanchet and Kim Girard were members of the subcommittee until September 2013.

Insurance Companies Contributing Data

The 12 largest writers of T10 insurance in Canada were invited to contribute to the study. The following 10 companies contributed data:

- BMO Life;
- Canada Life;
- Co-operators Life Insurance;
- Equitable Life Insurance;
- Industrial Alliance;
- Great-West Life Assurance;
- London Life;
- Manulife Financial;
- RBC Life Insurance; and
- Sun Life Assurance.

Project Team

The CIA retained Fraser Group, an independent research organization, to act as the study manager. The project leaders at Fraser were Ken Fraser and Richard Shillington.

TERMINOLOGY

This section discusses a number of key terms used throughout this study.

Committee refers to the Individual Life Experience Subcommittee of the Research Committee of the Canadian Institute of Actuaries.

Exposure has its usual actuarial sense and refers to policies which are active and thus “exposed” to a contingent termination event. In this study, exposure quantities are expressed in “life-years” where a life-year represents a policy active for 12 months. Exposure may be quantified either in terms of the number of lives exposed or the amount of benefit exposed. Exposure by Amount is measured by the amount at risk just prior to the end of observation (i.e., just prior to policy termination or at the end of the Study Period¹).

Lapse means a policy termination that is due to action or inaction on the part of the policyholder (i.e., notice of termination, request for conversion, or non-payment of premiums). Policies may also terminate due to death or maturity but these are not considered lapses. A lapse is defined to occur on the last day for which a premium has been paid (i.e., before the grace period). A lapse in this study refers only to a complete termination of a policy. Partial lapses (reduction in face amount) are not included in the lapse rates reported here.

Policy is generally used to refer to a T10 coverage, which may be provided either as a standalone policy or as a rider under a base policy which may also provide whole life or universal life.

Study Database refers to the entire set of policy data which was accepted into the study.

Study manager refers to the independent contractor (Fraser Group) retained by the CIA to process data and to prepare analysis tables for the *committee*.

SCOPE OF STUDY

This section sets out the framework for the study as it was defined in the Request for Data sent to contributing carriers.

Key Definitions

A “policy” includes a standalone policy or a rider providing an eligible coverage.

An eligible coverage provides:

- Ten-year term renewable and convertible life insurance;
- On Canadian lives;
- In Canadian currency; with
- Guaranteed initial and renewal rates.

The event of interest is a policy lapse during the period of observation.

While it would have been desirable to separately measure lapses due to conversion versus lapses for other reasons, this was not possible due to a lack of consistent coding among the contributing carriers.

¹ This produces a slight understatement of the theoretical exposure since a small percentage of policies will have changed their face amount during the Study Period. In almost all cases, the face amount is revised downwards.

A lapse is defined to occur on the last day for which coverage has been paid (i.e., excluding the grace period).

Example:

Policy effective July 1, 2005 (premiums paid annually). Premiums are paid in 2005 and 2006. No premiums are paid in 2007 and the insurer cancels the policy for non-payment. The lapse is defined to occur on June 30, 2007 = a lapse in the second policy year.

Of particular interest in this study is the subset of lapses which occur just before or immediately after the first renewal policy anniversary.

Where a policy has been terminated due to non-payment and then reinstated, with or without evidence, it is not considered a lapse.

Study Period

The study period runs from January 1, 2005, to December 31, 2010. All eligible policies in premium-paying mode between these dates were reportable subject to the exclusions below. However, it is important to note that the analysis in this study is based on complete policy years within these six calendar years. Thus, not every policy in the Study Database contributed exposure to the analysis.

Exclusions Defined by the Data Request

- Policies which provided insurance under a Temporary Insuring Agreement and which were not subsequently approved for issue by underwriting;
- Policies that have been rescinded by the carrier or are subject to litigation in any way;
- Policies that have been subject to a policy change resulting in a change to the premium during the study period; and
- Policies paid on a single-premium basis.

DATA PROCESSING AND VALIDATION

The project managers reviewed all data submissions for completeness and for consistency with expected norms. Additional data were requested from the participants where necessary to resolve incongruities.

Over 6 million data records were received from contributing carriers. However, this represented only 2.3 million unique policies since some carriers submitted a series of annual extracts.

Not all carriers provided data for the entire six years of the study:

- Three carriers provided data for five years only (2006–2010); and
- One carrier provided data for three years only (2008–2010) for most of its block.

In addition, one carrier provided data only for policies issued since 1999.

All data submissions were processed into a Raw Data File. For some carriers, this involved reconciling duplicate information in extracts from different dates. The processed file included information on 2,313,885 unique policies.

To create the Study Database, the Raw Data File was further processed to ensure that all records were appropriately coded. The Raw Data File was also filtered to remove policies for various reasons. These include:

- Policies outside the scope of the Data Request;
- Policies issued on any form of guaranteed issue;
- Joint policies where gender information was unavailable;
- Joint Last to Die policies²;
- Policies with Issue Age under age 16;
- Policies with Issue Age over age 69; and
- A small number of policies which appeared to have corrupt data in certain fields.

The Study Database has 2.2 million records, a reduction of 4.2% from the Raw Data File.

Since the analysis was done using complete policy years only, not all policies contributed exposure to the analysis. For instance, a policy which was active throughout the six calendar years of the study would normally contribute a maximum of five policy years of exposure (six years if the policy anniversary was January 1).

Table 1 Study Database Statistics

Policies active in the Study Period	2,217,293
Policies contributing Exposure	2,019,372
Exposure (life-years)	6,871,582
Lapses in exposed policies	591,337

Data Fields

In addition to the usual data on age, gender, amount, and policy duration, the research design also captured data on:

- Smoking status;
- Mortality rating;
- Preferred underwriting classification;
- Joint/single;
- Policy structure (standalone or rider);
- Payment frequency;
- Mode of payment (pre-authorized or other); and
- Province.

The original research design also anticipated an analysis of lapse rates relative to the size of the premium rate change at renewal. Ultimately, only a few carriers were able to supply the necessary premium data and this part of the study could not be completed.

Concentration

The largest single data contribution accounted for 27% of the exposure. The smallest was 2%.

The top three carriers accounted for 60% of the exposure in the study. The largest five carriers (50% of the participant group) accounted for 80% of the exposure.

Policy Duration

The maximum duration reported was policy year 44, by one carrier.

² Joint last to die policies are relatively uncommon and not written by all carriers.

However, most participants only contributed significant numbers of policies up to duration 22 approximately. Thereafter, the number of contributing carriers and the number of policies exposed diminished rapidly. At duration 22, there were 1,261 lapses from nine carriers. By duration 25, there were 347 lapses from seven carriers. At duration 30, there were 55 lapses from three carriers.

Consequently, to ensure statistical credibility and a reasonable spread of carriers, only data up to and including duration 24 are used in the results reported here.

Date Coding

The majority of lapses occur on a monthly or annual anniversary date. The majority of carriers code such termination dates on the actual anniversary date. For example, a June 15, 2003, policy lapsing after five annual premiums were paid would show a termination date of June 15, 2008. For conformity with the definitions in this study, these records were re-coded to show a termination on the day before the anniversary (e.g., June 14, 2008).

Most carriers also show some policies terminating on dates that are not a monthly anniversary. These terminations tend to be spread fairly evenly throughout the policy month. These dates have been accepted as submitted. There are several reasons why terminations may be recorded off-anniversary. They include:

- Conversions;
- Surrenders (in conjunction with the issuance of a replacement policy);
- Pre-authorized payment (PAC) policies cancelled at the request of the insured where a pro rata premium is retained; and
- Cancellation of a T10 rider in conjunction with the cancellation of the base policy.

In the case of one carrier, it was determined that the submitted termination date in some cases reflected the date that the termination was processed administratively. However, the carrier confirmed that in such cases, the recorded date precedes the actual end of coverage and would still properly identify the policy month of termination. No adjustment was deemed necessary.

Analysis of the raw data revealed that it is a common industry practice to avoid dating policies on the 29th, 30th, or 31st day of the month³. For greater consistency (and ease of programming), all effective or termination dates on the 29th, 30th, or 31st day of the month were changed to the 28th of the month.

³ The observed frequencies for the 29th, 30th, or 31st day were 20% of what would be expected compared to most days (excluding peaks at day 1 and 15) while the frequency on the 28th was substantially elevated.

VERIFICATION OF RESULTS

The committee received regular reports from the study manager and provided direction as needed. Key definitions and operating processes were documented by the study manager and confirmed by the committee.

The committee reviewed the calculation of exposure and lapse values in a random sample of 10,000 policies. The committee also requested and reviewed tests on a number of technical issues in the data, including the treatment of dates (see above).

Finally, each of the participating carriers was provided with a summary of their own data as processed through the study methodology. All carriers confirmed that these results were consistent with their internal studies.

LAPSE RATES: OVERVIEW

Lapse rates vary by face amount as evidenced by the differences in lapse rates based on policy count and lapse rates based on amount of insurance. Consequently, most of the analysis in this report is presented in two ways: based on policy count and based on face amount.

Age

As indicated in table 2, total lapse rates over all durations show little variation by issue age. Rates for younger issue ages are slightly higher than average. Ages over age 60 show slightly higher lapse rates when measured by amount.

Table 2 Lapse Rates by Age (by Count and Amount)

Issue Age	Count	Amount
Under 25	10.0%	9.7%
25–29	9.3%	8.7%
30–34	8.7%	7.9%
35–39	8.7%	7.9%
40–44	8.4%	7.7%
45–49	8.3%	7.6%
50–54	8.3%	7.7%
55–59	8.2%	7.8%
60–64	8.2%	8.2%
65–69	7.5%	8.5%
Total	8.6%	7.9%

However, the reader should note that lapse rates do vary by issue age within a given duration. In particular, as shown in table 3, lapse rates at renewal can vary significantly by age of issue.

For the full range of durations, the reader is directed to the detailed tables provided in the Tables Supplements (provided as Excel workbooks) or to the Reference Tables provided in the appendix.

Table 3 Lapse Rates by Age at Duration 10 (by Count and Amount)

Issue Age	Count	Amount
Under 25	16.9%	18.2%
25–29	19.7%	21.8%
30–34	24.5%	26.7%
35–39	29.6%	32.6%
40–44	35.7%	39.5%
45–49	42.0%	46.1%
50–54	48.2%	52.1%
55–59	56.1%	59.3%
60–64	58.1%	63.5%
65–69	53.7%	63.0%
Total	34.1%	37.1%

Gender

Lapse rates for males are higher than for females, whether measured by count or by amount.

Table 4 Lapse Rates by Gender (by Count and Amount)

Gender	Count	Amount
Females	8.3%	7.4%
Males	8.9%	8.2%
Total	8.6%	7.9%

Duration

Lapse rates show significant variation by duration as indicated in chart 1 and table 5. As expected, lapse rates increase dramatically around the 10- and 20-year renewal points.

Lapse rates by amount are lower than rates by count until duration 7. Afterwards, the rates by amount are generally higher than the rates by count.

Other than at the renewal points, lapse rates are slightly lower in the renewal periods (after 10 and after 20 years) compared to the initial policy term. However, the reader is cautioned that these observations are based on policies sold in the 1980s and 1990s. The design and pricing of those policies may differ from those sold more recently.

Chart 1 Lapse Rates by Duration (by Count and Amount)

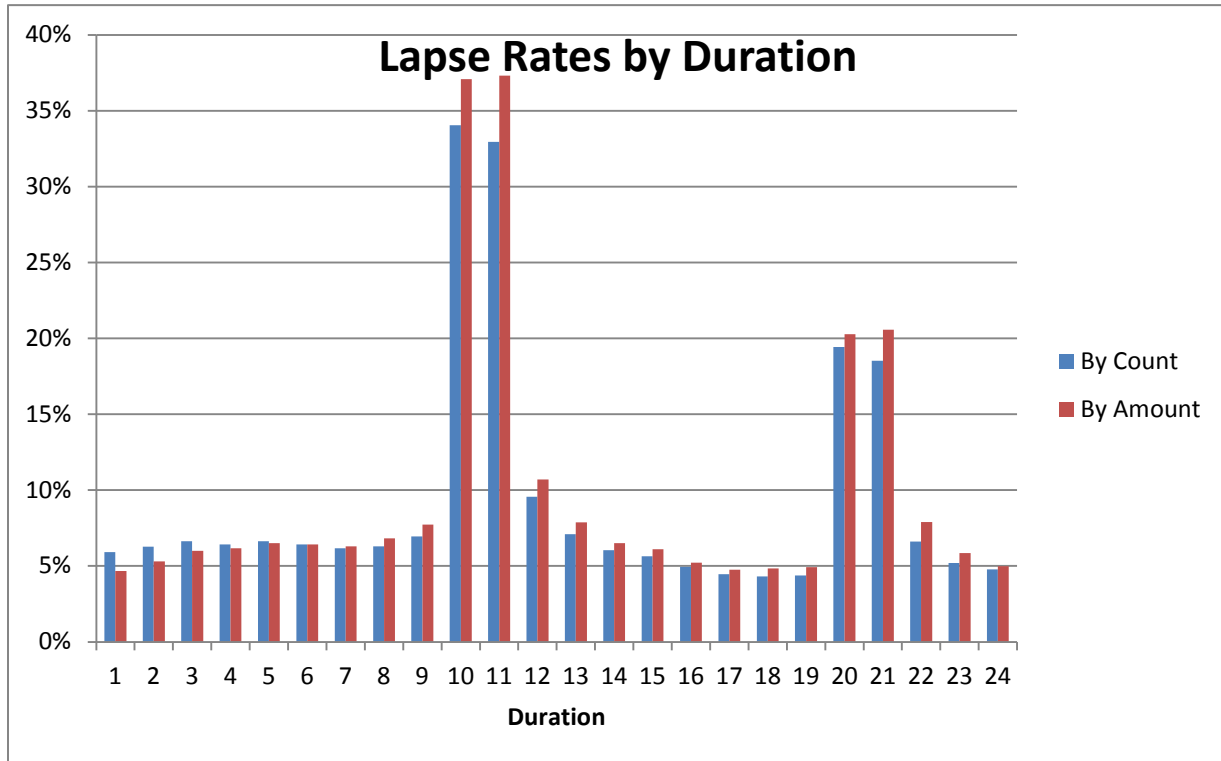


Table 5 Lapse Rates by Duration (by Count and Amount)

Duration	Count	Amount	Duration	Count	Amount
1	5.9%	4.7%	13	7.1%	7.9%
2	6.3%	5.3%	14	6.0%	6.5%
3	6.6%	6.0%	15	5.6%	6.1%
4	6.4%	6.2%	16	4.9%	5.2%
5	6.6%	6.5%	17	4.5%	4.8%
6	6.4%	6.4%	18	4.3%	4.8%
7	6.2%	6.3%	19	4.4%	4.9%
8	6.3%	6.8%	20	19.4%	20.3%
9	7.0%	7.7%	21	18.5%	20.6%
10	34.1%	37.1%	22	6.6%	7.9%
11	32.9%	37.3%	23	5.2%	5.9%
12	9.6%	10.7%	24	4.8%	5.0%
			Total	8.6%	7.9%

The total lapse rate by amount is significantly lower than the lapse rate by count even though lapse rates by amount are usually higher from duration 7 onwards. In part, this is because there are fewer policies still active at later durations. However, the average face amount exposed is also much higher in the early durations, as shown in table 6.

Table 6 Average Face Amount Exposed by Duration

Duration	Face Amount	Duration	Face Amount
1	374,465	13	163,040
2	355,152	14	158,098
3	332,411	15	153,971
4	311,630	16	149,433
5	293,380	17	147,075
6	274,719	18	143,348
7	259,528	19	138,642
8	246,914	20	135,989
9	232,182	21	130,089
10	216,666	22	123,039
11	194,311	23	120,024
12	172,589	24	117,367
		Total	280,309

LAPSE RATES: DETAILED TABLES

Tables 7 and 8 present gender-specific lapse rates by duration.

More detailed tables are provided in two Excel files published with this report. In addition, a semi-aggregated database is also available for users who wish to create their own multidimensional queries.

Tables Supplement 1 provides age-/gender-specific rates up to duration 12 segmented by:

- Smoking Status; and
- Preferred Underwriting Status.

Tables Supplement 2 provides age-specific, unisex rates up to duration 24 segmented by:

- Smoking Status;
- Mode of Payment; and
- Base/Rider Status.

Table 7 Lapse Rates by Duration and Gender (by Count)

Duration	Female	Male	Duration	Female	Male
1	6.0%	5.9%	13	6.8%	7.3%
2	6.2%	6.3%	14	5.6%	6.3%
3	6.6%	6.7%	15	5.4%	5.9%
4	6.3%	6.5%	16	4.8%	5.1%
5	6.5%	6.7%	17	4.2%	4.6%
6	6.3%	6.5%	18	4.1%	4.5%
7	6.0%	6.3%	19	4.0%	4.6%
8	6.1%	6.4%	20	17.8%	20.5%
9	6.8%	7.1%	21	17.6%	19.1%
10	31.8%	35.6%	22	6.1%	6.9%
11	31.0%	34.3%	23	4.8%	5.5%
12	9.0%	10.0%	24	3.8%	5.3%
			Total	8.3%	8.9%

Table 8 Lapse Rates by Duration and Gender (by Amount)

Duration	Female	Male	Duration	Female	Male
1	4.8%	4.6%	13	7.2%	8.3%
2	5.1%	5.4%	14	5.8%	6.9%
3	5.8%	6.1%	15	5.5%	6.4%
4	5.8%	6.4%	16	4.9%	5.4%
5	6.3%	6.6%	17	4.3%	5.0%
6	6.1%	6.6%	18	4.7%	4.9%
7	5.9%	6.5%	19	4.2%	5.3%
8	6.2%	7.1%	20	18.3%	21.2%
9	7.2%	8.0%	21	18.7%	21.4%
10	33.4%	38.8%	22	6.6%	8.5%
11	34.6%	38.7%	23	5.0%	6.2%
12	9.7%	11.2%	24	3.8%	5.4%
			Total	7.4%	8.2%

LAPSE RATES: SEMI-AGGREGATED DATABASE

In addition to the tables provided in this document and in the Table Supplements, the exposure file used in the study is available as a semi-aggregated database. This file is provided as an Excel workbook and is structured to allow cross tabulations using any or all of the variables listed below:

- Age at Issue (in five-year age groups);
- Gender;
- Smoking Status;

- Preferred Underwriting Status;
- Payment Mode;
- Payment Frequency;
- Mortality Rating;
- Face Amount Band;
- Standalone Policy or Rider; and
- Joint/Single.

LAPSE RATE VARIATION BY RISK FACTORS

Reference Tables

To analyze the variance in lapse rates associated with a range of policy characteristics (risk factors), two Reference Tables were constructed (by count and by amount). These are unisex tables with age-specific rates until duration 14 and rates based on duration alone from duration 15 to 24. The values are simply the crude lapse rates computed from the exposure and lapses within each cell. The tables are shown in the appendix and are provided together with the underlying exposure in an Excel workbook (Tables Supplement 3).

Format of Variance Tables

The tables in this section of the report generally provide three columns of information.

The first column shows the Proportion of Exposure for each subgroup in the table. Note that some tables may be based on a subsample of the Study Database. The Proportion of Exposure shown is calculated on the subsample.

The second column indicates the actual Lapse Rate observed in the subgroup without any standardization.

The final column presents a Variance Ratio of actual lapses to “standardized lapses” where standardized lapses⁴ have been computed from the Reference Tables. The Reference Tables standardize for duration and age up to duration 14 and for duration only after duration 14.

There is no necessary relationship between the absolute values of the Actual Lapse Rate and the Variance Ratio. For instance, the Actual Lapse Rate for a subgroup could be below the study average while the Variance Ratio could be higher than 1.00. This would imply that the Standardized Lapse Rate for that subgroup was much lower than the study average.

The reader is cautioned that at least some of the observed variation in some tables may be due to other policy characteristics which are not standardized by the Reference Tables. Some risk factors may be cross-correlated.

⁴ The standardized lapse rate is not shown in the table but can be derived from the other columns if desired.

The reader is also cautioned that the great majority of exposure in this study is before the first renewal. Durations 1–10 represent 86% of the exposure by Count and 92% by Amount. Variance relationships shown in this section may vary materially by duration and, in particular, may vary between initial and renewal periods. Durations close to a renewal may vary from other durations.⁵

Gender

Since the reference tables are unisex, there are modest differences in the Variance ratios by gender. Females have lower lapse rates than males.

Table 9 Variance in Lapse Rates by Gender (by Count)

Gender	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Female	42%	8.3%	0.96
Male	58%	8.9%	1.03
Total	100%	8.6%	1.00

Table 10 Variance in Lapse Rates by Gender (by Amount)

Gender	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Female	34%	7.4%	0.94
Male	66%	8.2%	1.03
Total	100%	7.9%	1.00

Smoking Status

Lapse rates on policies issued to Smokers are substantially higher than rates for Non-smokers.

The reader should note that the exposure in the Aggregate category is quite limited and consists primarily of individuals under age 20 or policies more than 10 years old. Not all carriers reported Aggregate policies.

⁵ The reader can use the Semi-Aggregated Database to examine more closely the relationship between duration and any other variable.

Table 11 Variance in Lapse Rates by Smoking Status (by Count)

Smoking Status	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Smoker	17%	10.3%	1.20
Non-smoker	81%	8.3%	0.96
Aggregate	2%	6.4%	0.98
Total	100%	8.6%	1.00

Table 12 Variance in Lapse Rates by Smoking Status (by Amount)

Smoking Status	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Smoker	13%	9.8%	1.25
Non-smoker	85%	7.7%	0.96
Aggregate	3%	5.3%	0.98
Total	100%	7.9%	1.00

Preferred Underwriting

Every carrier has a unique Preferred Underwriting scheme with varying number of classes and nomenclature. Some carriers have more than one scheme.

However, the example below illustrates a fairly typical structure.

Figure 1 Example of Preferred Underwriting Scheme

Preferred Class	Smoking Status	Underwriting Significance	Rating Implication (assumed)	Distribution of Policies
1	Non-smoker	Much better than average risk	Lower than standard rate	10%
2	Non-smoker	Better than average risk	Lower than standard rate	15%
3	Non-smoker	Residual risk	Close to standard underwriting rate	60%
4	Smoker	Better than average risk for a smoker	Lower than standard rate	5%
5	Smoker	Residual Smoker risk	Close to standard underwriting rate	10%

The significant observation is that one class is much larger than the others. We assume the corresponding premium rate is fairly similar to what the premium rate would be if a standard underwriting approach was used (perhaps a little higher).

For analysis, the various carrier schemes were compressed into a lowest common denominator structure using two classes as indicated in figure 2. Note that the “Best Preferred” category includes both Smokers and Non-smokers. For coding purposes, an additional category was added for policies where a Preferred Underwriting approach has not been used.

Figure 2 Preferred Underwriting Codes

Study Category	Sample Carrier Codes (from Figure 1 above)
Best Preferred class(es)	1, 2, 4
Residual Preferred class(es)	3, 5

The Best Preferred class has lower than average lapse rates while the Residual Preferred class was close to expected. Rates for policies written on a Standard Underwriting approach are slightly above expected. The relative differences are similar whether measured by count or amount.

The reader should take note of the significant difference in the distribution of exposure between the tables by Count and by Amount. This indicates that policies where preferred underwriting was not used have significantly lower face amounts.

Tables 13 and 14 are based on experience in durations 1 to 12 only since Preferred Underwriting was rarely used prior to the mid-1990s.

In tables 13 and 14, the Preferred Underwriting Not Used category includes a block of preferred policies written by one carrier where the preferred class was not available (2% of the exposure by count).

Table 13 Variance in Lapse Rates by Preferred Underwriting (by Count)

Category	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Preferred Best Class	19%	6.3%	0.85
Preferred Residual Classes	38%	7.2%	0.98
Preferred Underwriting Not Used	43%	11.2%	1.06
Total	100%	8.6%	1.00

Table based on durations 1 to 12 only.

Table 14 Variance in Lapse Rates by Preferred Underwriting (by Amount)

Category	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Preferred Best Class	26%	6.0%	0.87
Preferred Residual Classes	43%	6.9%	1.02
Preferred Underwriting Not Used	31%	11.0%	1.05
Total	100%	7.9%	1.00

Table based on durations 1 to 12 only.

Smoking and Preferred Underwriting Combined

Tables 15 and 16 present results for all policies underwritten using Preferred Underwriting, separating the results by Smoker and Non-smoker⁶. It indicates that all smokers, even those in the Best Smoker category, have lapses higher than the standardized value.

Table 15 Variance in Lapse Rates by Smoking and Preferred Underwriting Status (by Count)

Smoking Category	Preferred Category	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Smoker	Best	2%	8.4%	1.16
Smoker	Residual	14%	8.9%	1.18
Non-smoker	Best	32%	6.2%	0.83
Non-smoker	Residual	52%	6.8%	0.92
Total for Table		100%	6.9%	0.93

This table excludes policies not using Preferred Underwriting and policies with an Aggregate Smoking rating.

⁶ Tables 15 and 16 use data from all durations and thus will not reconcile to tables 13 and 14, which are based on data from durations 1–12.

Table 16 Variance in Lapse Rates by Smoking and Preferred Underwriting Status (by Amount)

Smoking Category	Preferred Category	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Smoker	Best	2%	8.2%	1.26
Smoker	Residual	10%	8.6%	1.26
Non-smoker	Best	36%	5.9%	0.85
Non-smoker	Residual	52%	6.5%	0.97
Total for Table		100%	6.5%	0.96

This table excludes policies not using Preferred Underwriting and policies with an Aggregate Smoking rating.

Payment Frequency

The reader should note the data on payment frequency were unavailable or unusable for the majority of the exposure.

The great majority of T10 policies (approximately 90% based on those policies where this information is available) are paid monthly. Policies paid less frequently exhibit much higher lapse rates.

Table 17 Variance in Lapse Rates by Frequency (by Count)

Frequency	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Monthly	37%	8.4%	1.09
Annual*	4%	11.1%	1.40
Unknown	59%	8.5%	0.93
Total	100%	8.6%	1.00

**Annual includes Quarterly and Semi-Annual (0.6% of exposure).*

Table 18 Variance in Lapse Rates by Frequency (by Amount)

Frequency	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Monthly	31%	7.7%	1.08
Annual*	5%	9.3%	1.31
Unknown	64%	7.9%	0.95
Total	100%	7.9%	1.00

**Annual includes Quarterly and Semi-Annual (0.6% of exposure).*

Mode of Payment

Compared to standardized, lapse rates on policies not paid by preauthorized cheque or similar arrangements (PAC) are approximately twice those of PAC policies. The reader should note the

very high proportion of exposure (48% by count) where data on mode of payment were unavailable or unusable.

Table 19 Variance in Lapse Rates by Payment Mode (by Count)

Payment Mode	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Preauthorized	44%	7.4%	0.93
Other	8%	15.7%	1.82
Unknown	48%	8.5%	0.93
Total	100%	8.6%	1.00

Table 20 Variance in Lapse Rates by Payment Mode (by Amount)

Payment Mode	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Preauthorized	39%	6.4%	0.89
Other	9%	13.9%	1.79
Unknown	52%	7.9%	0.94
Total	100%	7.9%	1.00

Standalone versus Riders

T10 coverage may be provided in a standalone policy or as a rider to a base policy which provides permanent insurance on either a traditional whole life basis or as universal life⁷. Standalone policies represent 89% of the exposure by count and 94% by amount.

The average face amount for T10 insurance under Riders is much lower than under Standalone policies as shown in table 21.

Table 21 Average Face Amount by Standalone/Rider

Category	Average Face Amount (,000)
Standalone	295
Rider on Universal Life	188
Rider on Other	128

Lapse rates for Term Riders under UL policies are at standardized levels while lapse rates for riders under other base policy types are lower than standardized.

⁷ There were rare instances in the data where the T10 coverage was provided as a rider to another term policy or to a health insurance policy.

Table 22 Variance in Lapse Rates by Standalone/Rider (by Count)

Category	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Standalone	89%	8.6%	1.01
Rider on UL	6%	8.9%	1.02
Rider on Other	5%	8.3%	0.86
Total	100%	8.6%	1.00

Table 23 Variance in Lapse Rates by Standalone/Rider (by Amount)

Category	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Standalone	94%	7.9%	1.00
Rider on UL	4%	7.9%	1.01
Rider on Other	2%	8.3%	0.90
Total	100%	7.9%	1.00

Joint Lives

Lapse rates on Joint life policies are higher than standardized when measured by count but closer to standardized when measured by amount.

The Joint life category consists exclusively of joint first to die policies. Joint last to die policies were excluded from the study.

Table 24 Variance in Lapse Rates by Joint Lives (by Count)

Category	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Single	94%	8.6%	0.99
Joint	6%	9.4%	1.09
Total	100%	8.6%	1.00

Table 25 Variance in Lapse Rates by Joint Lives (by Amount)

Category	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Single	95%	7.9%	1.00
Joint	5%	8.5%	1.05
Total	100%	7.9%	1.00

Mortality Rating

Policies issued on a substandard mortality rating constitute approximately 6% of the study database. Lapse rates on substandard policies are slightly higher than standardized when measured by count but significantly higher when measured by amount.

Table 26 Variance in Lapse Rates by Mortality Rating (by Count)

Mortality Rating	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
100	94%	8.6%	1.00
101–249	4%	7.8%	1.05
250 +	2%	9.3%	1.03
Total	100%	8.6%	1.00

Table 27 Variance in Lapse Rates by Mortality Rating (by Amount)

Mortality Rating	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
100	94%	7.9%	0.99
101–249	4%	7.5%	1.15
250 +	2%	9.5%	1.15
Total	100%	7.9%	1.00

Face Amount

Variations by face amount are relatively modest across most values. However, very large policies (\$2 million and higher) exhibit higher than standardized lapses.

Table 28 Variance in Lapse Rates by Face Amount (by Count)

Amount	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Under \$50,000	2%	11.3%	1.10
\$50K but under \$100K	8%	10.2%	0.98
\$100K but under \$250K	46%	9.3%	1.03
\$250K but under \$500K	27%	7.8%	0.98
\$500K but under \$1,000K	12%	6.8%	0.90
\$1,000K but under \$2,000K	4%	7.0%	0.96
\$2,000K and over	1%	8.2%	1.19
Total	100%	8.6%	1.00

Table 29 Variance in Lapse Rates by Face Amount (by Amount)

Amount	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
Under \$50,000	0%	11.4%	1.01
\$50K but under \$100K	2%	10.4%	0.93
\$100K but under \$250K	22%	9.4%	1.00
\$250K but under \$500K	28%	7.8%	0.99
\$500K but under \$1,000K	24%	6.8%	0.93
\$1,000K but under \$2,000K	14%	7.0%	0.99
\$2,000K and over	9%	8.5%	1.26
Total	100%	7.9%	1.00

Province

Information on province of residence was not available from some carriers⁸. Consequently, data on residence were available on 47% of the exposure.

There are significant regional variations in lapse behaviour. Lapse rates in the west are lower than in the rest of the country. For ease of presentation, some of the information from tables 30 and 31 is provided in table 32 on a standardized basis after removing the Unknown segment.

Table 30 Variance in Lapse Rates by Province (by Count)

Province	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
British Columbia	6%	8.3%	1.05
Alberta	5%	7.2%	0.91
Saskatchewan	1%	7.3%	0.92
Manitoba	1%	8.4%	1.04
Ontario	20%	9.0%	1.14
Québec	10%	9.8%	1.20
New Brunswick	1%	8.8%	1.10
Nova Scotia	1%	8.1%	1.03
Prince Edward Island	0%	8.4%	1.14
Newfoundland and Labrador	1%	7.7%	1.01
Other (see note)	0%	14.5%	1.74
Unknown	53%	8.4%	0.92
Total	100%	8.6%	1.00

Note: Other includes the Territories and Outside Canada.

⁸ In addition, even carriers who provided residence data had some policies where the residence was coded "Unknown".

Table 31 Variance in Lapse Rates by Province (by Amount)

Province	Proportion of Exposure	Actual Lapse Rate	Variance Ratio
British Columbia	7%	7.6%	1.04
Alberta	6%	6.7%	0.93
Saskatchewan	1%	6.5%	0.90
Manitoba	1%	7.8%	1.04
Ontario	18%	8.3%	1.14
Québec	7%	9.0%	1.22
New Brunswick	1%	8.1%	1.11
Nova Scotia	1%	7.4%	1.04
Prince Edward Island	0%	7.5%	1.11
Newfoundland and Labrador	0%	7.5%	1.05
Other (see note)	0%	12.7%	1.57
Unknown	58%	7.8%	0.94
Total	100%	7.9%	1.00

Note: Other includes the Territories and Outside Canada.

Table 32 Variance in Lapse Rates by Province – Standardized

Province	Variance Ratio (standardized)	
	By Count	By Amount
British Columbia	0.95	0.95
Alberta	0.83	0.85
Saskatchewan	0.84	0.83
Manitoba	0.94	0.95
Ontario	1.03	1.04
Québec	1.09	1.12
New Brunswick	1.01	1.02
Nova Scotia	0.94	0.95
Prince Edward Island	1.04	1.01
Newfoundland and Labrador	0.92	0.96
Total	1.00	1.00

Carriers

There is substantial variation among carriers in lapse activity. The reader is cautioned that at least some of the observed variation may be due to elements of business mix not controlled by the Reference Tables.

Note that there is no correspondence between the carrier codes used in tables 33 and 34.

Table 33 Variance in Lapse Ratios by Carrier (by Count)

Carrier Code	Variance Ratio
A	0.89
B	0.92
C	0.92
D	0.94
E	0.95
F	0.96
G	0.97
H	1.00
I	1.16
J	1.19
Total	1.00

Table 34 Variance in Lapse Ratios by Carrier (by Amount)

Carrier Code	Variance Ratio
1	0.92
2	0.92
3	0.93
4	0.94
5	0.96
6	0.99
7	1.01
8	1.05
9	1.14
10	1.18
Total	1.00

LAPSE ACTIVITY AT POINT OF FIRST RENEWAL

Lapse activity increases significantly as T10 policies approach the point of first renewal (i.e., at the end of duration 10). At older ages, as indicated in table 35, lapse rates in duration 10 are approximately 10 times higher than the average rate over earlier durations.

**Table 35 Ratio of Lapse Rate at Duration 10 to Average Rate in Durations 1–9
(by Count and Amount)**

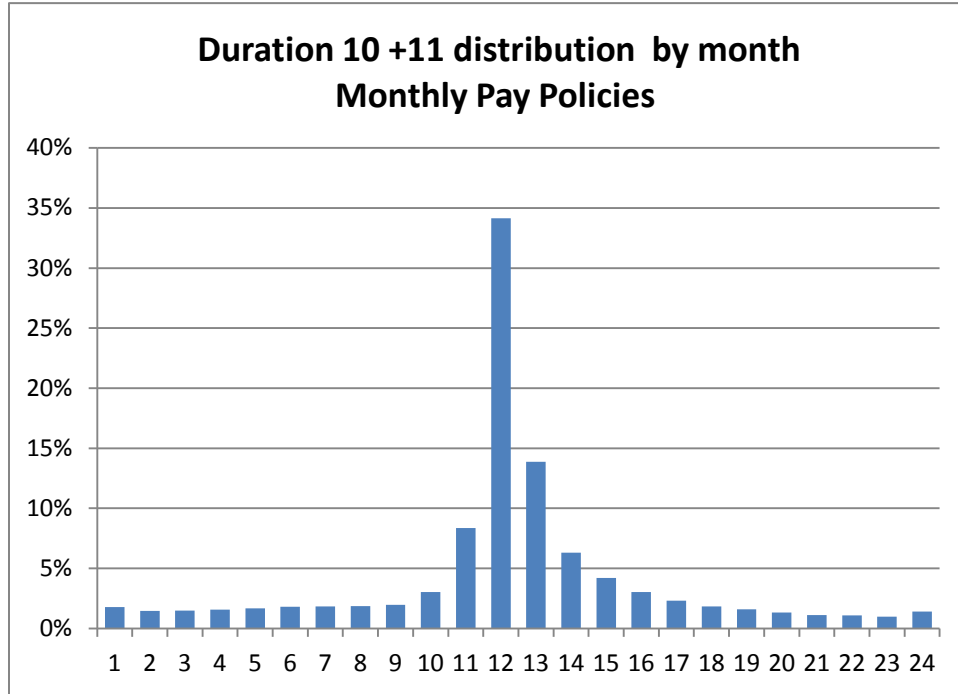
Issue Age	Count	Amount
Under 25	1.7	1.9
25–29	2.2	2.7
30–34	3.4	4.1
35–39	4.7	5.6
40–44	6.3	7.3
45–49	7.9	8.8
50–54	9.2	9.7
55–59	9.9	10.1
60–64	9.8	10.1
65–69	9.7	9.3
Total	5.3	6.2

This section examines in greater detail the lapse behaviour in durations 10 and 11. The analysis is based on policy count and includes only policies paid monthly or annually (99% of the study database).

As indicated in table 17, the great majority of T10 policies (approximately 90%) are paid monthly. Chart 2 shows that, among monthly-paid policies, there is no significant change in monthly lapse activity until about two months before the renewal date. The highest lapse activity occurs in the final month of the initial policy term, accounting for 34% of the lapses reported in the two years (durations 10 and 11).

The months immediately following the renewal show above-average numbers of lapses tapering off to a constant level after eight months.

Chart 2 Distribution by Month of Lapses in Durations 10+11 – Monthly Pay Policies



Charts 3 and 4 provide a view of the cumulative effect of monthly lapse activity in durations 10 and 11 respectively.

Chart 3 Distribution by Month of Lapses in Duration 10 – Monthly Pay Policies

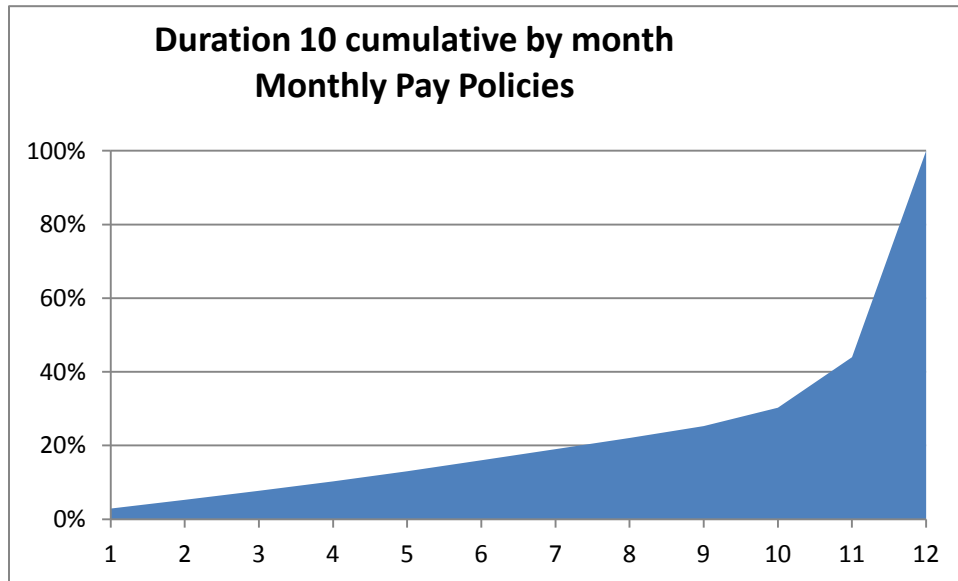


Chart 4 Distribution by Month of Lapses in Duration 11 – Monthly Pay Policies

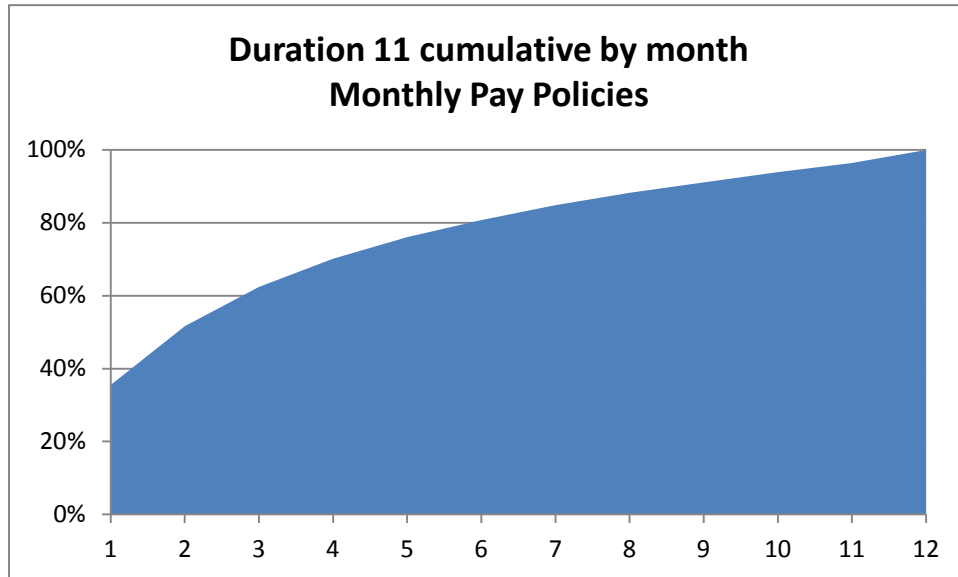
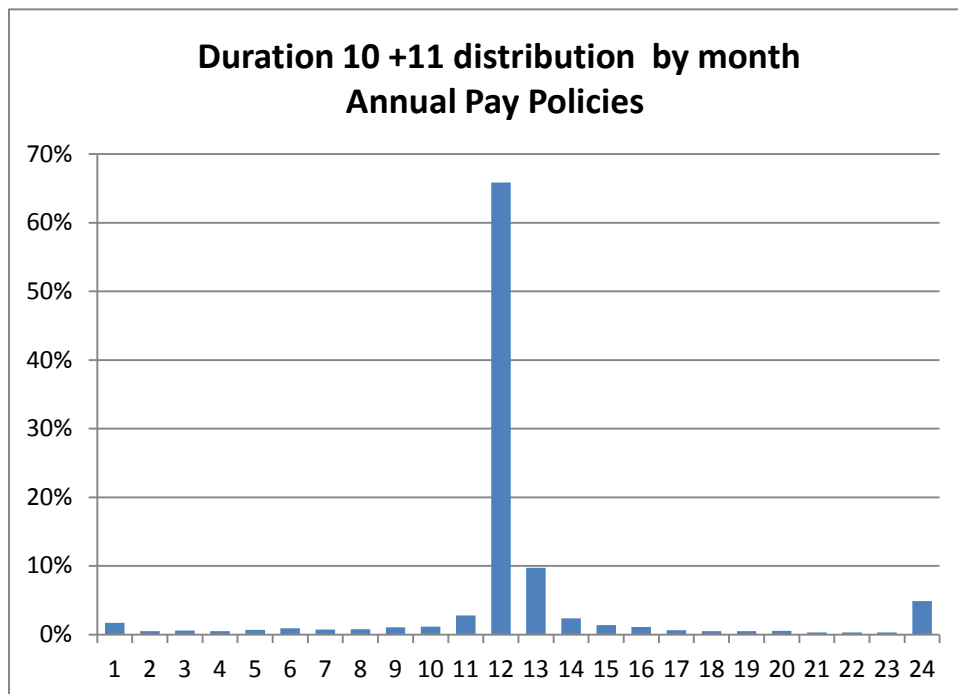


Chart 5 shows that, among annual paid policies, there is no significant change in monthly lapse activity until two months before the renewal date. The highest lapse activity occurs in the final month of the initial policy term, accounting for over 60% of the lapses reported in the two year period.

The months immediately following the renewal show above average numbers of lapses tapering off to a normal level after eight months.

Chart 5 Distribution by Month of Lapses in Durations 10+11 – Annual Pay Policies



Charts 6 and 7 provide a view of the cumulative effective of monthly lapse activity in durations 10 and 11 respectively.

Chart 6 Distribution by Month of Lapses in Duration 10 – Annual Pay Policies

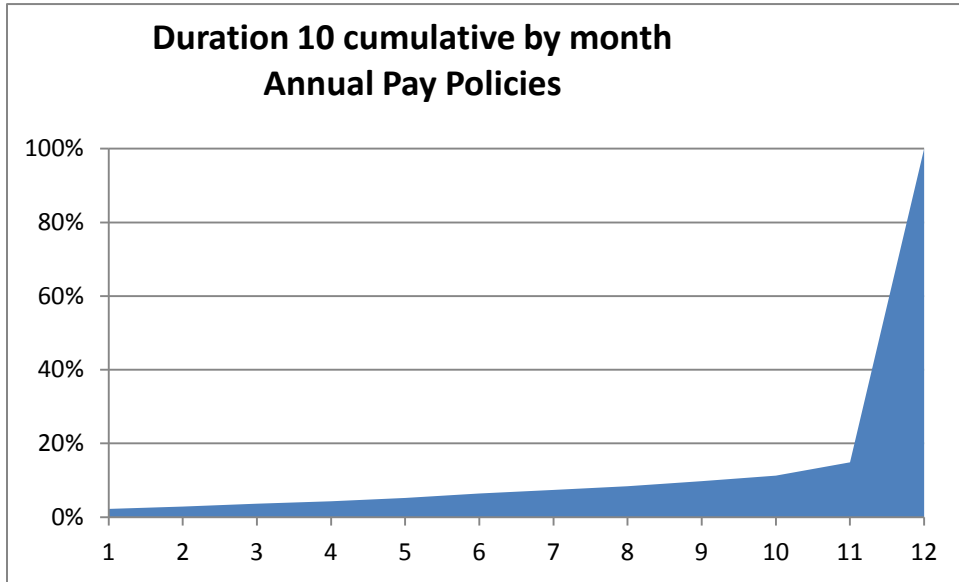


Chart 7 Distribution by Month of Lapses in Duration 11 – Annual Pay Policies

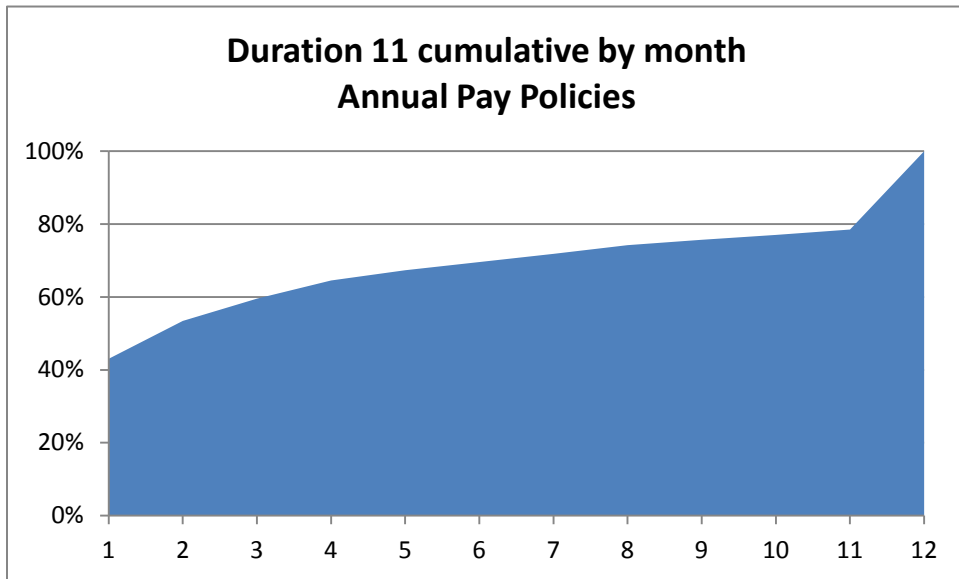


Table 36 shows the monthly and cumulative monthly distributions of lapses during durations 10 and 11. The data are also presented in the charts above.

Table 36 Distribution of Lapse Rates by Month in Durations 10 and 11 (by Payment Mode)

Month	Monthly Pay Policies		Annual Pay Policies	
	Monthly Lapses	Cumulative Lapses	Monthly Lapses	Cumulative Lapses
YR10 – M 1	1.8%	1.8%	1.7%	1.7%
YR10 – M 2	1.4%	3.2%	0.5%	2.2%
YR10 – M 3	1.5%	4.7%	0.6%	2.8%
YR10 – M 4	1.6%	6.3%	0.5%	3.3%
YR10 – M 5	1.7%	7.9%	0.7%	4.0%
YR10 – M 6	1.8%	9.8%	0.9%	5.0%
YR10 – M 7	1.8%	11.6%	0.7%	5.7%
YR10 – M 8	1.9%	13.4%	0.8%	6.5%
YR10 – M 9	2.0%	15.4%	1.1%	7.6%
YR10 – M10	3.0%	18.5%	1.2%	8.7%
YR10 – M11	8.4%	26.8%	2.8%	11.5%
YR10 – M12	34.1%	61.0%	65.9%	77.4%
YR11 – M 1	13.9%	74.8%	9.7%	87.1%
YR11 – M 2	6.3%	81.1%	2.4%	89.5%
YR11 – M 3	4.2%	85.3%	1.4%	90.9%
YR11 – M 4	3.0%	88.4%	1.1%	92.0%
YR11 – M 5	2.3%	90.7%	0.6%	92.6%
YR11 – M 6	1.8%	92.5%	0.5%	93.1%
YR11 – M 7	1.6%	94.1%	0.5%	93.6%
YR11 – M 8	1.3%	95.4%	0.5%	94.2%
YR11 – M 9	1.1%	96.5%	0.3%	94.5%
YR11 – M10	1.1%	97.6%	0.3%	94.8%
YR11 – M11	1.0%	98.6%	0.3%	95.1%
YR11 – M12	1.4%	100.0%	4.9%	100.0%

CAVEATS

Users of this study should take note of the following:

1. The detailed lapse rate tables provided in this study are based on the combined experience of a variety of products sold by a variety of insurance companies through various distribution channels over an extended period of time. Policy pricing, underwriting standards, and competitive factors may have evolved over time and the reported experience may not be fully predictive for policies currently being issued.
2. The majority of exposures underlying the lapse rate tables published in this study (approximately 60%) share the following characteristics:

- a. Standalone policies;
- b. Non-smokers;
- c. Rated standard; and
- d. Paid monthly.

For policies with other characteristics, the reader may find the Semi-Aggregated Database useful in evaluating the impact of a change in these characteristics.

3. Some carriers exhibit lapse experience that varies widely from the standardized table. This variance may be due, at least in part, to factors that are not controlled within the Reference Tables (for instance, province).

APPENDIX – REFERENCE TABLES

Lapse Rates by Count

Duration/ Age at Issue	under 25	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	All Ages
1	11.228%	7.888%	6.142%	5.777%	5.443%	5.182%	4.882%	4.987%	5.233%	5.897%	
2	11.136%	8.948%	7.083%	6.216%	5.728%	5.160%	4.728%	4.923%	5.353%	5.206%	
3	11.127%	9.691%	7.610%	6.512%	5.753%	5.346%	5.179%	5.394%	6.161%	5.886%	
4	10.196%	9.263%	7.505%	6.429%	5.522%	5.041%	4.988%	5.245%	6.621%	6.005%	
5	9.933%	9.452%	7.708%	6.371%	5.822%	5.363%	5.392%	5.547%	6.846%	5.673%	
6	9.537%	9.039%	7.422%	6.147%	5.545%	5.304%	5.402%	6.180%	6.240%	5.680%	
7	8.800%	8.521%	6.868%	5.952%	5.403%	5.337%	5.426%	6.402%	5.359%	4.299%	
8	8.712%	8.053%	6.884%	6.224%	5.753%	5.480%	5.707%	6.599%	5.578%	4.795%	
9	8.658%	8.279%	7.440%	6.719%	6.431%	6.398%	6.605%	7.858%	6.669%	5.772%	
10	16.898%	19.699%	24.494%	29.650%	35.741%	42.039%	48.179%	56.136%	58.068%	53.698%	
11	16.521%	21.663%	28.040%	33.373%	37.294%	40.305%	42.435%	44.388%	38.984%	30.920%	
12	7.641%	8.672%	8.791%	9.617%	10.208%	10.676%	12.162%	11.244%	8.741%	7.609%	
13	6.447%	6.619%	6.598%	7.078%	7.106%	7.886%	9.789%	9.415%	6.424%	5.833%	
14	5.388%	5.385%	5.765%	5.933%	6.042%	6.852%	9.729%	5.931%	6.420%	6.953%	
15											5.647%
16											4.949%
17											4.453%
18											4.306%
19											4.375%
20											19.422%
21											18.530%
22											6.615%
23											5.201%
24											4.783%

Lapse Rates by Amount

Duration/ Age at Issue	under 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	All Ages
1	9.139%	5.924%	4.715%	4.463%	4.342%	4.186%	4.193%	4.299%	5.326%	8.457%	
2	10.209%	7.485%	5.593%	4.999%	4.735%	4.568%	4.638%	5.244%	5.274%	5.289%	
3	10.016%	8.641%	6.556%	5.729%	5.274%	5.247%	5.192%	5.446%	6.773%	6.358%	
4	9.957%	8.349%	6.873%	6.059%	5.319%	5.193%	5.567%	5.950%	7.500%	6.941%	
5	9.618%	9.147%	7.331%	6.190%	5.837%	5.683%	5.598%	5.851%	6.866%	7.561%	
6	9.718%	8.861%	7.240%	6.136%	5.653%	5.399%	5.826%	6.884%	6.678%	6.436%	
7	9.106%	8.565%	6.868%	6.054%	5.509%	5.745%	6.026%	6.546%	5.929%	4.682%	
8	8.729%	8.292%	7.213%	6.291%	6.605%	6.168%	6.926%	8.155%	5.838%	5.494%	
9	8.859%	8.704%	8.008%	7.460%	7.240%	7.530%	7.555%	9.309%	8.906%	7.433%	
10	18.153%	21.771%	26.705%	32.584%	39.520%	46.075%	52.072%	59.329%	63.482%	63.009%	
11	18.036%	24.882%	31.556%	37.721%	41.670%	45.626%	47.461%	49.618%	44.145%	30.164%	
12	8.053%	9.488%	9.576%	10.928%	11.276%	12.493%	13.989%	13.920%	7.866%	3.956%	
13	6.450%	6.894%	7.006%	7.850%	7.692%	10.000%	12.180%	14.456%	6.808%	6.738%	
14	5.636%	5.280%	6.066%	6.169%	7.302%	7.197%	12.462%	6.974%	11.317%	2.490%	
15											6.114%
16											5.223%
17											4.755%
18											4.833%
19											4.921%
20											20.274%
21											20.564%
22											7.906%
23											5.856%
24											4.994%