



REPORT

**CANADIAN GROUP LONG-TERM DISABILITY
TERMINATION EXPERIENCE
1988-1994
COMMITTEE ON EXPECTED EXPERIENCE –
GROUP LIFE AND HEALTH**

MAY 1998

© 1998 Canadian Institute of Actuaries

Ce document est disponible en français

TABLE OF CONTENTS

PAGE

EXECUTIVE SUMMARY

INTRODUCTION

U.S. STUDY

GROUP LTD CHARACTERISTICS AND PLAN DESIGN

CONFIDENTIALITY

SCOPE

PERIOD COVERED: 1988-94

PARAMETERS ANALYZED

PARTICIPATION

METHODOLOGY

INITIAL PROCESSING OF CONTRIBUTIONS

SUBSEQUENT PROCESSING OF CONTRIBUTIONS

DEVELOPMENT OF TERMINATION RATES

1987 BASIC GLTD TABLE

CAVEATS

RESULTS

TABLES

VARIABILITY BY INSURER

DURATION

SEX

AGE

ELIMINATION PERIOD

Different Elimination Periods

Crude Termination Rates by Elimination Period

REGION

REASON FOR TERMINATION

Deaths and Recoveries

Comparison to Standard Tables

CAUSE OF DISABILITY

Incidence by Cause of Disability

Terminations by Cause of Disability

Actual-to-Expected by Cause of Disability

Termination Rates by Certain Causes of Disability

Related to Total for All Causes

RISK STATUS

Characteristics of the Exposure

Observed Variations in Termination Rates

Possible Explanations for the Observed Variation

RESERVES

FUTURE PLANS

APPENDIX 1 – BASIC TABLES

APPENDIX 2 – TABLES USED TO CREATE EXHIBITS

APPENDIX 3 – COPY OF SPECIFICATIONS

APPENDIX 4 – LIST OF ADDITIONAL TABLES ON THE INTERNET

CANADIAN GROUP LTD TERMINATION STUDY 1988-1994 TERMINATIONS

EXECUTIVE SUMMARY

This paper presents the results of the inaugural Canadian Group Long-Term Disability (LTD) Termination Study. This study was undertaken by the Committee on Expected Experience – Group Life and Health Subcommittee (the committee).

Requests for data were sent to all companies known to be actively writing group LTD business in Canada. The participation in this study was exceptional and surpassed initial expectations. Twenty-two companies contributed, representing approximately 70% of the group LTD premium in Canada, with additional companies committing to participate in the next study. The published results are based on 165,273 claimants that were active some time during the years 1988 through 1994. The results are not dominated by any single company.

Extensive reasonableness checks were performed on the submitted data, errors were corrected, some data were excluded, and then termination rates were calculated.

The 1987 Basic Group LTD (1987 Basic GLTD) Table, or a modification of it, is the most current and the most prevalent table in use in Canada today, and the committee, therefore, chose it as the expected benchmark.

The results show termination rates are not consistent with the 1987 Basic GLTD Table, and if this study's current Canadian termination experience is utilized, the reserves at earlier durations would be significantly lower.

Among the key findings are:

- The 1987 Basic GLTD Table is significantly conservative in the first seven years, but is fairly representative thereafter. The actual-to-expected (A/E) termination rates jump at 24 months and again at months 28, 30, and 31. This is likely due to the expiry of the two-year own-occupation period predominant in group LTD contracts (however, own-occupation data were not collected).
- Female termination rates generally exceed male termination rates in the first four years of disability and fall below male rates in later durations.
- The A/E ratios over the initial 10-year select period generally exceed 1.00 by significant margins.
- The A/E ratios during the first two years of disablement tend to increase with age regardless of elimination period and sex.
- Termination rates gradually decrease by month and vary significantly by month even in the third year; thus, monthly rates for the first 36 months of disability have been tabulated (the 1987 Basic GLTD is monthly for the first 24 months).

The committee recognizes that each company's claims management process is different and encourages readers to analyze the results and determine how the results can best be used in their own circumstances.

The results of this study are not necessarily applicable to group life waiver of premium claims, even if similar definitions of disability apply. However, a comparison of deaths and recoveries from this study against the Krieger Table suggests that the Krieger Table is significantly outdated and conservative.

The committee had originally considered completing both an LTD incidence and an LTD termination study, but it was felt that this would be too ambitious a project. Hence, the committee settled on the termination study only in order to meet the new demands of PPM valuation. It should be noted that the committee also expected some difficulty in getting quality exposure data for an incidence study.

This initial LTD termination experience report highlights some of the main findings but is not intended to be an exhaustive analysis. Additional tables and results are available on the CIA web site or by diskette.

It is anticipated that the committee will complete a termination study every two to three years. The next study will add terminations from 1995, 1996 and 1997, with an expected publication date in 1999. Ultimately, the committee plans to produce a graduated termination rate table that could replace the 1987 Basic GLTD Table.

The committee thanks all the companies that contributed to make this study a success and encourages other companies to participate in the next study.

This report was prepared by the Committee on Expected Experience – Group Life and Health Subcommittee, with assistance from Jack Luff of the Society of Actuaries.

John D. Have, Vice-Chairperson

Walton Achoy

Donald A. Blue

Daniel J.J. Couture

Richard K. Hampton

Firoz K. Hirji

R. Allan Ireland

Caterina Lindman

George Melnik

Peter Muirhead

Jacques Parent

Pierre Saddik

Catherine T. Shum-Adams

Bernard Tanguay

Gary Weigel

George Turpie

Michael R. Wise

Prior committee members who also contributed to the study are: Wendy Achoy, Kim Anderson, Jon Falkenberg, David Martin, Kelly Rendek, Luc St-Amour and Stephen Tedesco. The committee also thanks Robert L. Brown, and Peter DaSilva who acted as peer reviewers.

INTRODUCTION

In the past decade, there have been many significant changes in Canada which have had a major impact on group long-term disability (LTD) results for insurers.

These changes occurred in demographics, socioeconomic conditions, political interactions among groups of people, technological advances, and overlapping combinations of all these areas. As a result, the patterns of claim incidence and termination have also changed, so that the most recent and widely recognized reserving standard, the 1987 Basic GLTD Table (developed from U.S. data for 1962 to 1980), has needed updating and extensive adjustments to fit the current Canadian experience. In the U.S., for similar reasons, the Society of Actuaries (SOA) is conducting a study to produce a standard based on more recent experience.

Accordingly, the committee requested data from Canadian insurers in 1995 to develop termination rates based on recent Canadian experience, and ultimately to develop a recognized standard for use in setting disabled life reserves (DLR) for LTD claims. Incidence, or the probability that an actively working person becomes an LTD claimant, has not been analyzed.

When the committee received the data, it determined that the most reasonable period covered was from 1988 through 1994, though some data were received for years outside this range.

The data were provided by the 22 companies listed below, which together receive an estimated 70% of the LTD premium in Canada.

Aeterna Vie	Aetna Canada	Allstate Life
Blue Cross Life	Canada Life	Co-operators Life
Desjardins Vie	Equitable Life	Great-West Life
L'Industrielle-Alliance	London Life	Manulife Financial
Maritime Life	Metropolitan Life	Mutual Life
National Life	North American Life	La Personnelle Vie
Prudential of America	Standard Life	La Survivance
Zurich Life		

The data were submitted for over 190,000 claims, of which 165,273 were used in the final study. The claims data included duration, sex, age, elimination period, region, broad types of termination (death, recovery and expiry), cause of disability and risk basis (Insured vs. Administrative Service Only Plans).

The committee analyzed the data according to various combinations of these components, determined sets of crude termination rates, and compared these rates to corresponding rates from the 1987 Basic GLTD Table.

While the information coming out of this study gives an indication of recent aggregate Canadian experience, an individual insurer's experience may differ. An insurer's claims termination experience is influenced by many factors, such as management philosophy and goals, by practices in each of its Sales, Underwriting and Claims Departments, insurer size, policy provisions, target market, and external factors affecting target market.

Any derived table will likely require additional considerations for use as a standard for claims incurred under association policies, and possibly for claims incurred under small group coverages which may exhibit different characteristics. However, all Canadian valuation must adhere to PPM valuation methodology, which broadly requires an insurer to establish an expected reserve and adjust it with appropriate margins; so, the committee expects that the results of this study will become the best tabular source to use when the insurer's own experience is not fully credible.

In Canada, the timing of disability benefits from various government plans leads many policyholders to select a four-month elimination period for their LTD coverage, and the data reflect this.

Further, although there are several large contributors of data to the study, there is no single contributor which predominates, and so the data come from diverse sources.

The committee's methods for collecting, correcting, treating, and analyzing the data are described in the following text. This was the first time such a study has been conducted in Canada, and so the committee drew on the experience of similar past studies in the U.S., and in particular on the expertise of Jack Luff (FSA, FCIA) of the SOA, who is also involved with the corresponding U.S. study now underway. The committee acknowledges his valuable contribution to the study.

U.S. STUDY

A pilot study of LTD experience in the United States has been underway during the same time period as this current work. The study is of a size similar to this current work, but is based on data from a much smaller number of larger companies. The focus of the U.S. study also reflects the general practice of using standard tables for valuation in that country. Results of this work were presented at the June and October 1996 meetings of the Society of Actuaries and will appear in the 1995-96 *Reports* of the Society. While this study is an important reference, those who compare its results with those of the Canadian study should keep in mind that the differences in demographics and socioeconomic conditions between Canada and the U.S. could impact the two sets of termination rates in very different ways.

GROUP LTD CHARACTERISTICS AND PLAN DESIGN

LTD has been an important group benefit in Canada for many years, and has grown significantly since 1970. Disability income periods range from two years to age 65, with the latter being most common. Total annual premium revenues in Canada were about \$2 billion in 1994-1996.

The product usually provides benefits for two years if an insured person is unable to perform the duties of his/her own occupation, and thereafter for any occupation for which the person is reasonably trained or educated. A typical LTD plan provides a disabled person with 50% to 75% of pre-disability income. The coverage is coordinated with other overlapping disability coverages (such as those provided by statutory plans) so that the total benefit is not a disincentive for the disabled worker to return to work when able.

The major overlapping benefits are provided either by the Canada Pension Plan (CPP) or by the Québec Pension Plan (QPP). Usually LTD contracts offset the CPP/QPP benefits entirely or partially so that claimants are limited to, at most, 85% of pre-disability earnings. Detailed information on CPP/QPP claim adjudication practices was not available to the committee. Some claim managers feel that, prior to the past 10 years, these government benefits were awarded only to claimants who had severe and prolonged disabilities. The perception is that this approach was softened about 10 years ago. However, indications are that this softening is being reversed in early 1996.

Rehabilitation benefits are usually a major component of a viable plan.

In the past decade, the socioeconomic environment in Canada has worsened for many workers with added stresses in the workplace often leading to disabilities labeled "mental and nervous." There has also been considerable downsizing which has led to fewer desirable jobs, and fewer jobs that have long-range potential; it is difficult for a less than healthy person to become employed or re-employed. Also, many new jobs require new skills so that re-entry into a new job becomes difficult.

The combination of these factors has led to a significant increase in LTD claims in the past 10 years, and the Canadian insurance industry in general has reacted by strengthening both its underwriting standards and its claims practices, including the proactive use of rehabilitation benefits and taking advantage of the many improvements in medicine over the same period.

Some recent compilations indicate that nearly seven million Canadians have some form of private disability coverage, including some creditors' insurance and some short-term disability benefits. Many insurers sell fixed benefits packages which include LTD coverage to small groups, so that almost every working person has access to some form of the product. These will, of course, have appropriate risk-related restrictions and varying prices whenever possible.

The product is similar to that sold in the United States, both with reference to policy provisions and for the underwriting and claims practices needed to control the results. Integration with U.S. Social Security disability benefits parallels the integration of CPP/QPP benefits in Canada.

CONFIDENTIALITY

In the initial stages of the study, the committee decided that confidentiality would be a very sensitive issue. The committee wanted to ensure that no company would be reluctant to participate in the study for reasons having to do with confidentiality, and severely restricted access to the data submitted.

1. Only three people actually know which data belong to a particular company, these being the people responsible for receiving and inputting the data, and manipulating the data to produce the tables. None of the three currently works for any of the 22 contributing companies nor any other direct insurer. All other references to a particular company's data were handled by using code numbers.
2. The tables were reviewed carefully in order to ensure that no company could be identified from a particular table. For example, if only one company had been able to submit data by cause, the committee would have excluded cause from the analysis in order to protect the identity of that company.
3. The list of participating companies deliberately excludes any reference to numbers of claims, proportion of the market held, and similar items, in order to ensure claims could not be attached to the companies.

SCOPE

PERIOD COVERED: 1988-94

In general terms, the study covers claims active at some time during the period from the start of 1988 through the end of 1994. However, not all companies were able to provide data for this entire period, and the results must be interpreted with that in mind.

From an economic perspective, the 1988-94 period includes some highs and some lows – but probably does not cover a complete business cycle. From a benefits perspective, the two-year maximum benefit period limitation for mental and nervous conditions was removed to comply with employment equity regulations – at a time when such claims were on an increase.

Companies were requested to provide all the data that they had available. One company provided data back through 1979 and another back through 1983. While the committee wanted to include as much data as possible, it was not appropriate to include data from periods that were represented by only a few companies. After review of the pattern of companies by year, the January 1, 1988 start date was chosen. This was partly based on ten companies having provided data back through 1988 and five having provided data back through 1987. Another factor was that 3,800 terminations were submitted for 1988 and only 1,700 for 1987.

There was general agreement on the end of the study since most companies provided data until late in 1994. (Some companies provided data into 1995.) Only six companies were able to participate for the entire study period. The table below summarizes the start and end dates by number of companies.

Table 1

<u>Start Date</u>	<u>Number of Companies</u>
01.01.1988	10
1989 - 1990	8
1991 - 1993	4

<u>End Date</u>	<u>Number of Companies</u>
31.12.1993	2
During 1994	4
31.12.1994	16

PARAMETERS ANALYZED

Appendix 3 includes a copy of the specifications, which shows the data requested. The parameters actually analyzed are shown in the Results section.

Results are shown for the entire study period and for certain parameters only. For example, the committee felt that there were not enough companies participating for the entire study period to allow for analysis of results by year, or periods of years, of termination. In addition, there was sufficient variation by company, combined with their participation periods, that results could have been misleading.

The section Future Plans includes a list of other parameters that could be analyzed in a future study if data can be obtained.

PARTICIPATION

The committee requested participating companies to send data from their claim files in a specified format. In total, over 190,000 claims records were submitted. The process of reviewing preliminary termination results by company led to the resubmission of data by several companies and to two companies asking to be dropped from the study. This, combined with the committee's choice of the study period, reduced the total number of claim records to 165,273.

The claims data used represent a wide range of years of disablement, with 36,772 claims having dates of disablement that preceded 1988. This means that the data used in the study come from many different generations of claims. Following is a summary of claims by year of disablement:

Table 2

Year of Disablement	Number of Claims	Proportion of Claims
pre-1988	36,772	22.3%
1988	13,185	8.0%
1989	18,157	11.0%
1990	22,312	13.5%
1991	24,510	14.8%
1992	23,630	14.3%
1993	19,068	11.5%
1994	<u>7,639</u>	<u>4.6%</u>
TOTAL	165,273	100.0%

The low number of disabilities for 1993 and 1994 is the result of insurer exposure periods, processing lags and elimination periods. That is, Table 2 should not be used as a guide to any change in rates of disablement.

The contributions of insurers in the study have been grouped by size in the following table:

Table 3

Insurers with <u>Contribution of:</u> <u>Proportion of Terminations</u>	<u>Number of Insurers</u>	<u>Proportion of Claims</u>	
Under 1.00% of claims	5	1.9%	2.0%
1.00 - 4.99% of claims	9	20.4%	23.9%
5.00 - 9.99% of claims	5	34.8%	36.2%
10.00% or more	<u>3</u>	<u>42.9%</u>	<u>37.9%</u>
Total	22	100.0%	100.0%

The insurer with the largest contribution had less than 20% of the total claims in the study.

METHODOLOGY

INITIAL PROCESSING OF CONTRIBUTIONS

For each insurer, a "profile" of the data set was produced and examined. For most fields, this profile consisted simply of a listing of the values that occurred in that field. These were checked against the expected values for that field, and any unexpected values were flagged for further review. For example, the sex field was expected to contain either "M" or "F" and other values were flagged.

The disablement date and termination date were summarized by year and also checked against other dates submitted. The date of birth was summarized by year, and also used in conjunction with the disablement date to calculate an age at disablement. A summary by this age was produced.

Comparisons of the report date relative to the disablement date and the date benefits commenced were done. Comparisons of the termination date relative to the disablement date, the report date and the date benefits commenced were also done. Particular attention was given to records where the termination date was before or the same as the disablement date.

For each of the benefit amount fields on the record, a summary by the field size was produced.

Copies of these profiles, with any concerns noted, were sent to contributing companies. Follow-up discussions were held as necessary to resolve any concerns.

After the initial profiles were produced, additional summaries were made with appropriate follow up as necessary. A net benefit amount was calculated and summarized. Particular note was made of net

amounts that were zero and negative. A comparison was made between the date benefits commenced and the end of the elimination period. "Other" and "no claim" termination reasons were reviewed to ensure appropriate processing. In conjunction with the termination reason, a comparison between the benefit duration information and the termination date was made.

In the initial processing, no records were deleted.

SUBSEQUENT PROCESSING OF CONTRIBUTIONS

Some insurers submitted revised contributions. Other insurers submitted changes on the hardcopy error list. Further processing still resulted in some inconsistencies as described below.

For each contribution, an exposure period was established with the contributor by determining a contribution start date and contribution end date. Any records with termination dates prior to the contribution start date or with disablement dates after the contribution end date were deleted. Also, on any records with a termination date after the contribution end date, the termination data were deleted (i.e., the record was counted as an active claim through the contribution end date). Note that the contribution start date was never earlier than January 1, 1988, and the end date was never later than December 31, 1994, even though companies may have submitted valid records outside this range (as noted above).

An exposure start date was established for each record as the earlier of the date benefits commenced and the end of the elimination period. (Part of the reason for this approach was that the date benefits commenced was missing on a number of records.) These fields essentially agreed on most records, but differed widely in both directions on some records. Records were deleted if the termination date was before or the same as this exposure start date. Records were also deleted if the exposure start date was after or the same as the contribution end date.

Deletions were also made for certain field values being other than acceptable values or outside what came to be considered an acceptable range. A significant number of deletions were made for termination reasons of "no claim," elimination periods of greater than 25 months, and sexes of "unknown." A more moderate number of records were deleted for ages at disablement being greater than 69 and geographic regions being "out of Canada." A few records were also deleted for ages at disablement being less than 15, disablement date missing, and identified company-specific situations.

Negative net benefit amounts were set to zero for subsequent processing. No adjustment was made for seeming benefit period and termination date/reason inconsistencies. It was felt that more information was needed to identify true inconsistencies from special benefit situations. As well, no use was made of the report date in any subsequent processing as it had not exhibited any consistency relative to other dates. That the benefit period information and report date were missing on a significant number of records also contributed to these decisions.

DEVELOPMENT OF TERMINATION RATES

Termination rates, by number of claims, were developed by calculating fractional durations, from date of disability – in months (or years after 36 months) – to exposure start dates, expiry dates and termination (decrement) dates. These were adjusted as follows:

1. Exposures were counted to end of month (or year) for decrements due to death, recovery and benefit ceasing due to change in definition.
2. Terminations due "To Settlements" were counted as expiries without decrements.
3. Termination reason "Other" was counted as a .75 decrement. This was coded when reason was unknown and the .25 reduction represents the average ratio of terminations which were due to expiries based on the whole data set. The actual ratio is 1.00 - (95% x .794) with the 95% factor providing some margin.
4. Age was calculated to the nearest quinquennial age group (22, 27, ..., 67) at date of disability.

Then termination rate $q = \frac{\text{sum decrements}}{\text{sum exposures}}$ for each cell.

These methods are similar to those used to develop the 1987 Basic GLTD Table which has been used as the expected table for the study.

1987 BASIC GLTD TABLE

The two standard tables used by Canadian insurers for valuing disabled life reserves for group LTD claims over the past 25 years have been the 1964 CDT and the 1987 Basic GLTD Table.

By now, most companies have switched to the 1987 Basic GLTD table which filled the need for a more up-to-date table when it was adopted as an acceptable standard in both Canada and the U.S. The 1987 Basic GLTD Table also provided termination rates that distinguished between male and female lives, and among three different elimination periods, unlike any similar previous North American table. Further, the 1964 CDT was based on individual experience, which led to termination rates which were often too high when applied to group LTD claims.

Most companies have used the 1987 Basic GLTD Table while substituting their own experience for a specified period. In the U.S., the maximum period of such substitutions is two years, unless a company's experience is highly credible. In Canada, companies have often modified the 1987 Basic GLTD Table or substituted their own experience for periods longer than two years.

The 1987 Basic GLTD Table is based on data from the period 1975 to 1980 for the first two years of termination rates, and back to 1962 for longer durations. The data are mainly U.S. based, and do not allow for changes in demographics that underlie current claims either in the U.S. or in Canada, or for differences in demographics and socioeconomic conditions between the two countries now or in the recent past. This is significant as the largest portion of active claims in Canada were incurred in the past five years. From Table 2 under Participation, it can be shown that 68% of total claims up to 1993 are for disabilities occurring in the five years 1989 to 1993. Hence, the need for a more appropriate standard for valuation in Canada. Nevertheless, the 1987 Basic GLTD Table is the most recent and most used standard in Canada, and LTD experience should be compared to it.

CAVEATS

The actuary intending to use the study results will need to make allowance for several characteristics of the data:

1. The processing of the claim records initially submitted by individual companies resulted in the deletion of some claims and adjustments to others, as noted above. The committee believes that the results have not been materially affected by such deletions and adjustments.
2. The termination experience is actually a blend of many different and evolving claims management practices. A company with an active and successful claims management program may even find it necessary to use lower termination rates than those produced by the study, on the grounds that those claimants who are not managed back to work are seriously disabled and likely to remain so.
3. Participation in the study was such that each year of experience results from a different combination of participating companies. In addition, some data for the latter years of the study are missing due to lags in reporting and recording claims. More insurers participating in the later period means less weight for the 1988-90 economic high period.
4. The study period itself was one in which the economy experienced extreme peaks and troughs. Recognizing the strong connection between economic activity and morbidity, it may be necessary to make carefully considered adjustments to the results to reflect the expected future economic environment.
5. Not all companies were able to distinguish between insured and administrative services only (ASO) claims. Thus the observed raw termination rates are a blend of insured and ASO experience. On those claims where the type of administration was shown (74% of the total), termination rates on insured business were noticeably higher than on ASO business. Claims on this type of business were identified by just five companies. Therefore, caution needs to be used when interpreting the results.
6. The committee found that the use of "Other" as a cause of termination was not consistent from one company to another. In total, there were 3,705 terminations (5.3% of all terminations) whose cause was reported as "Other." Counting each such termination as a .75 decrement (see prior section), assumes .25 of terminations are expiries; however, there is no reliable way to test this average assumption against the 3,705 terminations.

RESULTS

TABLES

Appendix 1 includes the following five tables:

- (i) Exposure – by monthly duration during the first three years of disablement and annually thereafter, until the end of the first 10 years. After that, all durations are combined by age for the ultimate period.
- (ii) Actual terminations – by exposure cell as defined above
- (iii) Crude termination rates – by exposure cell
- (iv) Expected terminations – based on the 1987 Basic GLTD Table termination rates for a three-month elimination period, except where otherwise specified. In particular, expected rates for age 67 are the same as those for age 62.
- (v) Actual-to-expected (A/E) ratios resulting from (ii) and (iv)

Please note that (i) and (iv) have been calculated using fractions, but only integers have been printed in the tables for readability (thus, rows and columns may not total correctly).

Appendix 1 shows results by age and duration for males and females combined and for all elimination periods combined.

Additional tables cover males and females separately, as well as other items such as region, termination reason, cause of disability and risk basis. Elimination periods examined are three months, four months, six months, 12 months and a final catch-all category to reflect experience among the odd elimination periods that did not exactly fit the clear delineations mentioned above. Detailed tables for these are available at the CIA web site on the Internet or on diskette from the office of the CIA.

VARIABILITY BY INSURER

Ratios of A/E for each insurer participating in the study were calculated, and compared to the A/E for all insurers in the study. The results are shown in the following table:

Table 4

**Ratio of
A/E for Insurer
to A/E for Study**

Number of

**Insurers
Insurers
Terminations
Terminations**

**Proportion of
Number of
Proportion of**

less than .50	0	0%	0	0%
.50 - .70	2	9%	2,457	3.5%
.70 - .90	4	18%	12,734	18.1%
.90 - 1.10	9	41%	42,120	59.9%
1.10 - 1.30	3	14%	5,208	7.4%
1.30 - 1.50	2	9%	6,477	9.2%
1.50 or more	<u>2</u>	<u>9%</u>	<u>1,296</u>	<u>1.9%</u>
Total	22	100%	70,292	100.0%

As one might expect, results for most insurers in the study fall within a relatively narrow band. Each of nine (of 22) insurers representing 59.9% of all terminations had A/E ratios that were between 90% and 110% of the total A/E ratio for all claims in the study.

DURATION

Exhibit 1 (below) shows actual-to-expected by duration for all elimination periods combined; the expected rates are those of the three-month elimination period portion of the 1987 Basic GLTD Table. In the first year, the A/E by duration for all claims combined rises gradually from about the 1.00 level to the 1.40 level. Then, in the second year, it stabilizes at that level almost all year until it jumps up to the 2.46 level at exactly the twenty-fourth month. In the third year, it peaks at around 3.50 to 4.50 in months 28, 30, 31 and subsequently drops to the 1.40 level.

In years four and beyond, the A/E reduces gradually to stabilize around the 1.00 level at year eight. The experience used in the study did not include many claims past the tenth year of disability, and claims for all years after the tenth were combined in one group as “ultimate” for the purposes of showing A/E.

The data did not include information on own-occupation periods for claims. However, it is likely that the peaks from months 24 to 36 are due to the end of the two-year own-occupation period fairly predominant in group LTD contracts issued since the mid-1970's. The peak at exactly month 24 probably occurs because some plans measure a two-year own-occupation definition from the disability date. Others measure it from the end of the elimination period, leading to different peaks, for the other more prevalent elimination periods (four to six months).

Overall, we may infer that the 1987 Basic GLTD Table is significantly conservative in the first seven years but fairly representative thereafter.

Crude termination rates are shown in **Exhibit 2** (below).

The 1987 Basic GLTD Table shows monthly termination rates for the first 24 months. This study shows the first 36 months of terminations by month. Rates of termination gradually decrease by month, and there appears to be merit in monitoring termination rates after year two on a monthly basis, since rates of termination vary significantly by month in the third year. It is possible that monthly terminations should be tabulated even after the third year. The number of terminations drops very quickly after the first few years, but there are still 3,335 in year four and 1,583 in year five, and every age/duration cell has 35 or more. Even looking at males and females separately still leaves 25 or more terminations in most cells. After year five, the number of terminations in the study drops very rapidly, the A/E is relatively close from one year to the next, and crude termination rates do not change by large amounts from one year to the next, so it is less important to tabulate results by month.

In the first year, the combined crude monthly termination rates reduce almost linearly from 8.5% to 4.0%.

In the second year, the monthly rates drop slowly to 1.7% at 23 months, then rise sharply to 2.6% at 24 months.

In the third year, the monthly rates drop from 1.8% at 25 months to 1.1% at 35 months, with peaks at 28, 30 and 36 months.

In years four to 10, the combined annual crude termination rates continue to drop.

SEX

The following table shows the distribution by sex of claims in the study.

Table 5

<u>Claims of Claims Terminations of Terminations</u>	Number of	Proportion	Number of	Proportion
Male	99,347	60.1%	40,941	58.2%
Female	<u>65,926</u>	<u>39.9%</u>	<u>29,351</u>	<u>41.8%</u>
Total	165,273	100.0%	70,292	100.0%

The 1987 Basic GLTD Table displays female termination rates that exceed male rates in the first two years of disability and fall sharply below male rates in later durations. This pattern is similar to that seen in this study, except that female rates generally exceed male rates for the first four years of disability and the male rates slightly exceed female rates at early durations.

It is worth noting, as well, that A/E ratios for females during the first two years of disability were noticeably lower than for males. This pattern generally reversed itself at later durations.

AGE

For this study, age was defined as age nearest birthday on the date of disability. Ages below 22 are included in totals for age 22. The committee chose to exclude exposure below age 15 and above age 69.

Actual-to-expected termination ratios by age exhibit patterns that are reasonably consistent with those for all ages combined. This is illustrated in Exhibit 4(a).

As one might expect, the crude termination rates show a clear pattern of reduction with increasing age and with increasing duration. This is shown in Exhibit 4(b). Older claimants, or longer duration claimants will tend to be more seriously disabled, and, thus, less likely to return to work. Also, employers may be less cooperative in the reintegration of older claimants into the work force than they are for younger employees. Mortality may also affect how termination rates at one duration compare to a later duration.

ELIMINATION PERIOD

The 1987 Basic GLTD Table is comprised of three tables for elimination period because of the large differences found in the rates of termination in the first two years among the three, six and 12-month elimination period plans. The four-month elimination period is the most common one in Canada. This elimination period coordinates well with employment insurance sickness benefits. It also coordinates well with CPP/QPP benefits, where the first disability benefit can become payable at the end of the fourth month after disability begins.

The specifications requested that the elimination period be coded by number of months. The date of disability and the date benefits commenced were also requested, and one of the checks on the data was to compare the calculated commencement date to the one actually shown as the date of benefit commencement in the file.

In order to give a comparison of actual-to-expected claims with the maximum amount of credibility, claims for all elimination periods are combined. The following section will attempt to give an indication of how experience varies by different elimination periods. Comparison is made to the three-month table for 1987 Basic GLTD Table because it was felt the three-month table was closest to the resulting experience. The following tables illustrate this:

Table 6(a)**Actual-to-expected, using 1987 Basic GLTD for three-month elimination period plans**

	Plan Elimination Period			
	3 months	4 months	6 months	12 months
Year 1	1.10	1.16	1.15	n/a
Year 2	1.37	1.46	1.38	1.72
Year 3	3.26	2.83	2.46	1.92

Table 6(b)**Actual-to-expected, using 1987 Basic GLTD Table for three, six or 12-month elimination period plans.**

	<u>6-Month Elimination Period</u>		<u>12-Month Elimination Period</u>	
	Expected 1987(3)	Expected 1987(6)	Expected 1987(3)	Expected 1987(12)
Year 1	1.15	1.47	n/a	n/a
Year 2	1.38	1.58	1.72	2.29
Year 3	2.46	2.46	1.92	1.92

As can be seen, the experience does not follow 1987 Basic GLTD Table very well anywhere in the first few years. Table 6(b) demonstrates that the three-month 1987 table is a better basis for expected termination rates than the six or the 12-month tables.

This does not necessarily indicate that the experience termination rates for all plans combined are appropriate for all elimination periods.

It appears rates vary enough by elimination period (at least in the first three years of disability) that consideration needs to be given to separating out the experience by elimination period when creating a table to be used for valuation or pricing purposes. On the other hand, it is also possible that the differences by elimination period are due to different types of business included in the study. This question, thus, needs to be reviewed carefully when looking at a termination rate table.

Different Elimination Periods

Many different elimination periods were reported. Of those reported, elimination periods of three, four, six and seven to 22 months have been tabulated separately. All other elimination periods are grouped in "other." The following table shows the number of claims exposed and number of terminations in the study by elimination period:

Table 7

Elimination Period	Number of Claims	Percentage of Claims	Terminations	Proportion of Terminations
3 months	15,985	9.7%	7,979	11.4%
4 months	56,274	34.1%	27,086	38.5%
6 months	49,921	30.2%	19,818	28.2%
7-22 months	28,492	17.2%	9,616	13.7%
other	<u>14,601</u>	<u>8.8%</u>	<u>5,793</u>	<u>8.2%</u>
total	165,273	100.0%	70,292	100.0%

Exact elimination periods three, four and six months together represent 74% of the claims.

Elimination periods of seven to 22 months are tabulated together because of the small numbers of claims. Included in this category are 11,734 claims with a 12-month elimination period. The "other" category is very diverse, including elimination periods below three months, of five months, as well as those above 22 months. These are likely due to unique plans sold to meet particular circumstances. In addition, there

were 396 terminations in “other” where the elimination period was not assigned; excluding these, there were 5,397 “other” terminations. There were not enough claims in the elimination periods that it was deemed worthwhile tabulating them separately for the purposes of this study. However, they have been included in the total terminations in order to increase the amount of data available for study.

Crude Termination Rates by Elimination Period

Crude termination rates are compared for various elimination periods in Exhibit 5.

The crude rate of termination for all ages starts in month four at about 8.5% per month, and gradually decreases on a reasonably consistent basis by month after that. However, there are spikes at various points from month 24 to month 36.

The pattern is very similar regardless of elimination period, but there are discontinuities that appear to be correlated to the end of the own-occupation period. After 60 months duration, termination rates appear to merge for all elimination periods.

Crude termination rates for each elimination period were compared to rates for four-month plans. The purpose was to show how close rates of termination for other plans were to the four-month plans. Exhibit 6 shows the results.

These results suggest that one base table can be developed with modifications required for the various elimination periods and the end of the own-occupation period.

REGION

Thirteen of the 22 companies participating were able to provide information on geographic region for claims. Of 165,273 claims in the study, 109,464 or 66.2% were coded for region. Of 70,292 terminations, 42,458 or 60.4%, were coded for region. The following table shows the particulars of claims where region was coded:

Table 8

<u>Region</u>	<u>Number of Claims</u>	<u>Proportion of Claims</u>	<u>Number of Terminations</u>	<u>Proportion of Coded Terminations</u>
East	8,842	8.1%	2,542	6.0%
Ontario	57,519	52.5%	20,849	49.1%
Quebec	17,825	16.3%	9,361	22.0%
West	25,225	23.0%	9,682	22.8%
Yukon/NWT	53	.1%	24	.1%
Total Coded	109,464	100.0%	42,458	100.0%

The actual-to-expected ratio for all claims in the study is 138.5%. For claims coded for region, the actual-to-expected ratio is 130.9%. The reason for the difference is not readily apparent, but the difference and the relatively low numbers of claims coded for region suggest that the results of Exhibit 7 be interpreted very cautiously. The characteristics of the data may be at least partly responsible for the quirks that appear below.

The most striking results come from the Québec A/E’s which are well above the A/E’s for all regions combined in the first year. The differential then reduces markedly except in the fourth year, and the ultimate A/E is 81% of the overall coded.

The Western provinces’ A/E seem to do the exact opposite, starting low and ending high, relative to the overall coded. Eastern Canada and Ontario’s results are more stable relatively to the overall coded, both below the total coded.

It is difficult to interpret the results for Québec compared to those for other regions. Possible explanations could be that there are differences in administration of CPP and QPP, or that there are higher incidence rates with shorter durations in Québec. The relatively similar results in year three may be due to the end of the own-occupation period which dilutes these effects.

REASON FOR TERMINATION

Deaths and Recoveries

The committee examined the relative composition of terminations between deaths and recoveries (see Exhibit 8). The observed patterns were as follows:

- (a) Terminations resulting from deaths tended to grow as a percent of total terminations, both with advancing age and advancing duration. An exception is year three with the additional own-occupation period terminations.
- (b) Overall, male terminations were more likely to result from death than were female, and male aggregate crude mortality rates were higher than female rates (nearly twice as high).

Comparison to Standard Tables

A comparison of the annual crude death and recovery termination rates, separately for male and female, was made to two previously published tables. These are presented in Exhibit 9(a) to 9(f).

The first comparison was to the mortality rates from the Canadian Basic Group Life Tables, 1968-72. To make a valid comparison, it was first necessary to convert the crude death rates from the study to their single decrement basic equivalents. This was done by applying to the crude death and recovery termination rates from this study, formula 9.5.10 on page 274 of the *Actuarial Mathematics* textbook published by the Society of Actuaries (by Bowers, Gerber et al, 1986 edition):

$$q'(j) = 1 - [1 - q'_x(t)]^{(qx(j)/qx(t))}$$

With respect to the patterns by duration, the death rates from the study are extremely high relative to standard group life mortality at the early durations. While this falls off rapidly at durations three and later, the death rates from the study remain substantially higher than standard group life mortality even at durations six to ten. These durational patterns are more pronounced the lower the disability age. To put it another way, the gradient of death rates by increasing age is less for disabled lives than it is for standard group life mortality, according to this study. As noted above, the crude death rates for males are higher than for females in this study. However, for the higher ages at disability, the observed variation by sex in this study is somewhat less than it is for standard group life mortality.

The second comparison was to 1970 Intercompany Group Life Disability Experience Table (usually referred to as the “Krieger Basic” Table). For this comparison, we are able to compare the crude rates directly. The death rates from the study are substantially lower than those in the Krieger Table. For males, the study death rates are on average about 50% of the Krieger Table rates. Since the Krieger Table is a unisex table, the female death rates in the study are even lower in relation to the Krieger Table, in the order of 20% to 30% for most ages and durations. Finally, a word of caution is in order. There is interaction between the death and recovery rates. For example, the level of recoveries affects the extent to which the lives in the study are exposed to mortality risk. Thus, one must be cautious in drawing conclusions about the level of mortality in this study, and, more particularly, how those conclusions are applied.

The recovery rates, on the other hand, are much higher in the study than in the Krieger Table, especially at the lower durations. This is also much more pronounced for the higher ages at disability. Note that the Krieger Table relates to the premium waiver provision and that the experience period was 1955 to 1965. The definition of disability was a more restrictive definition – total and permanent disability. The current study reflects typical LTD definitions of disability which often include an “own-occupation” definition for the

first two years. Thus, one would expect much higher recovery rates for the current study than those in the Krieger Table.

CAUSE OF DISABILITY

The specifications requested cause of disability information for each claim by using the latest revision of the International Classification of Disease code numbers. If this was not possible, a company was asked to use its own code. There was substantial diversity in the submissions, ranging from a description of the cause in words, to a one-page code map, to detailed codes that took many pages to list. Most companies used their own codes, and provided an explanation of the coding methods. The cause information was mapped to the single set of codes shown below.

Incidence by Cause of Disability

There were 150,253 claims coded, with a cause, out of the total number 165,273 of claims studied. Thus, 90.9% of claims in the study could be included in the breakdown by cause. Not every insurer used all codes, and, thus, caution needs to be used when interpreting the analysis by cause. The following table shows the number and proportion of claims by cause of disability:

Table 9

<u>Code</u>	<u>Cause of Disability</u>	<u>Number of Claims</u>	<u>Proportion of Claims</u>
<u>Coded for Cause</u>			
50	Infectious & parasitic diseases	1,515	1.0%
51	Neoplasms	11,866	7.9%
52	Endocrine, metabolic and immunity disorders	2,121	1.4%
53	Blood & blood-forming organ diseases	871	.6%
54	Mental disorders	21,199	14.1%
55	Nervous system and sensory organ diseases	12,630	8.4%
56	Circulatory system diseases	22,203	14.8%
57	Respiratory system diseases	5,079	3.4%
58	Digestive system diseases	4,035	2.7%
59	Genitourinary system diseases	3,120	2.1%
60	Complications of pregnancy and childbirth	1,564	1.0%
61	Skin & subcutaneous tissue diseases	1,278	.8%
62	Musculoskeletal system and connective tissue	35,820	23.8%
63	Congenital anomalies	441	.3%
64	Perinatal period conditions	14	.0%
65	Symptoms, signs & ill-defined conditions	3,527	2.3%
66	External causes of injury & poisoning	16,144	10.7%
69	Homicide, suicide	3,872	2.6%
70	AIDS, HIV	392	.3%
71	Chronic fatigue syndrome	556	.4%
72	Fibromyalgia	86	.1%
73	Diabetes	407	.3%
74	Motor vehicle accidents	495	.3%
75	Other accidents	712	.5%
79	Drugs & alcohol	289	.2%
99	Not converted	<u>17</u>	<u>.0%</u>
TOTAL		150,253	100.0%

Terminations by Cause of Disability

There were a total of 63,354 terminations coded by cause of disability of the total of 70,292 terminations. This represents 90.1% of the total terminations. The A/E for all cases coded for cause is 1.390 compared to the A/E for the full study of 1.385. It thus appears to be reasonable to assume that the results by cause are indicative of results in general. However, it should be noted that results vary considerably by company, and coding by cause was not consistent, so results need to be interpreted very cautiously. The following table shows the number and proportion of terminations by cause of disability for a number of selected causes, about which interest has been shown:

Table 10

<u>Cause</u>	<u>Codes Included</u>	<u>Number of Terminations</u>	<u>Proportion of Terminations Coded for Cause</u>
Accidents	66, 74, 75	9,769	15.4%
Mental/Nervous	54, 55	13,359	21.1%
Chronic Fatigue	71	163	.3%
Pregnancy & Complications	60, 64	879	1.4%
AIDS	70	215	.3%
All Other Causes	All Other	<u>38,969</u>	<u>61.5%</u>
Total coded for cause		63,354	100.0%

Actual-to-Expected by Cause of Disability

Ratios of actual-to-expected terminations vary considerably by cause of disability for at least some causes of disability, as one might expect. An insurer with large blocks of unusual business, or with significant proportions of business different from the norm would need to be careful to monitor the basis used for expected terminations in order to ensure the reserve basis represents the underlying claim termination rates properly. For example, an insurer with a large block of business where claims are payable for accidents only, or with large proportions of groups susceptible to mental and nervous claims would, on the basis of this study, have very different termination rates than an insurer with a more normal business.

Tables (available on diskette or on the CIA web site) show actual-to-expected ratios of terminations by cause for specified causes. These can be reviewed to determine how claim termination rates vary from expected rates in the 1987 Basic GLTD table.

Termination Rates by Certain Causes of Disability Related to Total for All Causes

Crude termination rates by cause of disability were divided by the rates for all causes and the results shown in Exhibits 10(a) and 10(b). When reviewing the following comments, reference should be made to the number of claims included with a particular cause.

Termination rates for accidents were higher than those for all causes for almost all durations. The spikes from 27 to 36 months suggest that accidents are more likely to result in termination under the own-occupation clause definition.

Rates for mental and nervous claims were lower than the corresponding totals for almost all durations.

Chronic fatigue claims had extremely low rates of termination, which start to move up in year three. However, it must be noted that there are very few claims involved even initially, and the data are not statistically significant after year three. It must also be noted that some participants may have coded chronic fatigue claims as mental/nervous claims, so the results are valid only for cases coded as chronic fatigue.

As one might expect, claims due to pregnancy or complications of pregnancy had very high rates of termination in the early durations.

For AIDS/HIV claims, early rates of termination are very low, increasing in year two and later, and eventually exceeding the rates on all claims. This is as one would expect, with the likelihood being that most, if not all, terminations in later years are the result of termination by death.

Claims for all other causes combined have rates of termination very close to those of the totals, gradually getting higher than those of the total in the later years.

RISK STATUS

Characteristics of the Exposure

Seventy-four percent of the exposures and 80% of the terminations were coded for risk status. Of the terminations coded for risk status, 17% were for ASO business. Five companies, representing just under 50% of the total exposure, submitted significant amounts of ASO exposures.

Table 11

	<u>Number of Terminations</u>	<u>Proportion Coded for Administration</u>
Insured	46,787	82.8%
ASO	<u>9,735</u>	<u>17.2%</u>
Total Coded	56,522	100.0%

Observed Variations in Termination Rates

Generally, A/E ratios were distinctly lower for ASO business (1.18) than for Insured business (1.44). This was also seen when the business was examined separately by age (except 60 and over), sex, and duration of claim. The exception for ages 60 and over is likely due to the fact that terminations due to death are a much more significant factor at these ages.

Table 12 and Exhibit 11 show the variation by risk status, age, duration and sex.

Table 12

Actual-to-Expected Ratios (10-Year Select Period)

Age	Insured			ASO			ASO/Insured		
	Male	Female	M&F	Male	Female	M&F	Male	Female	M&F
<40	1.41	1.25	1.33	1.12	1.06	1.08	.79	.85	.81
40-49	1.54	1.39	1.47	1.14	1.19	1.16	.74	.86	.79
50-59	1.52	1.48	1.51	1.23	1.34	1.27	.81	.91	.84
60+	<u>1.81</u>	<u>1.75</u>	<u>1.79</u>	<u>1.89</u>	<u>1.74</u>	<u>1.84</u>	<u>1.04</u>	<u>.99</u>	<u>1.03</u>
Total	1.51	1.35	1.44	1.20	1.17	1.19	.79	.87	.83

Possible Explanations for the Observed Variation

Because there were only five participants who were able to provide significant amounts of ASO exposure, some of the variation may be related to the fact that each of the two blocks of exposure represents a different set of participants. Some of the variation may be due to the particular characteristics of a relatively small group of plan sponsors, since generally, only large LTD plans would be on an ASO risk basis. There is also the possibility that claim practices vary between insured and ASO. If this was the case, one would expect that the variation would be more pronounced in the first few years of claim, where claims management has the greatest impact. However, this was not the case, as the variation is fairly consistent by duration. It may be that some other characteristic of the ASO block such as elimination period, region, size of group, industry or occupation may explain much of the observed variation between the two blocks.

RESERVES

The effect on a company's reserves of incorporating the results of this study in its valuation will depend on its block of business, and how this experience relates to its current valuation table. A table of sample reserve factors is included in the appendix.

Exhibit 12 shows the ratio of reserves based on crude termination rates from this study to those computed for the 1987 Basic GLTD Table. Reserves using rates from this study are significantly lower than those using the 1987 Basic GLTD Table.

If desiring to incorporate the results of this study into a company's valuation, the actuary must consider the underlying characteristics of the company's LTD business, and how those differ from the combined study data. For example, the data show a spike in termination rates after 24 months, 28 months and again at 30 months. This suggests a correlation to the change in definition of disability from "own occupation" to "any occupation."

Another consideration is temporary terminations. If a person recovers, and then has a recurrence of disability, then the data will not show the initial recovery as a termination. If the person's recurrence occurs after the data were collected, then the recovery is shown at the initial recovery date. An attempt was made to mitigate this situation in the experience study by having the data collected sufficiently later than the study period, so that the eventual status of the claim was recorded. The actuary may want to set up a recurrent claims reserve for terminated claims that will be readmitted.

It should be noted that this study has been prepared as an inaugural study of Canadian Group LTD termination rates. Specifically, a valuation table has not yet been developed, and there are a number of caveats to the study. Reserve comparisons are given only to assist in understanding the possible effects on reserves of a company using the 1987 Basic GLTD Table with no modification.

FUTURE PLANS

It is anticipated that the committee will develop an ongoing study of LTD termination rates that tabulates data on a two-year timetable. The next gathering of data will include terminations from 1995, 1996 and 1997, and is expected to be published in 1999.

The committee also hopes to be able to enhance the submissions for 1994 and earlier. Some of the data issues may be able to be resolved, and additional claims included for companies already in the study. The committee will also try to add additional detail for claims already submitted; for example, the committee will try to obtain more detail on cause of disability. The committee would also like to be able to add submissions for companies that were not able to provide data for all prior years, or for companies that were not able or willing to participate in this study.

The committee would also like to try to expand the study to include parameters that could not be included in this study. Possible enhancements would include information on the following: effect of amount; claims coordinated with workers' compensation benefits; probability of acceptance by CPP/QPP; replacement ratios; own-occupation periods; and refund vs. non-refund accounting cases. Consideration will also be given to including standard deviations, and to providing detail by year of disability and year of termination or periods of years of termination, so that variability by period can be measured.

Ultimately, the committee hopes to produce a graduated table that could be used for valuation and other purposes. It is possible that this could be done with the next study of experience, and completed in 1999.

APPENDIX 1 – BASIC TABLES

The next 5 pages show the Basic Tables for male and female combined. Refer to the CIA web site for separate male and female tables, and for the following appendices.

APPENDIX 2 – TABLES USED TO CREATE EXHIBITS

Refer to CIA web site.

APPENDIX 3 – COPY OF SPECIFICATIONS

Refer to CIA web site.

APPENDIX 4 – LIST OF ADDITIONAL TABLES ON THE INTERNET

All of the following tables are in the same format as shown for the five basic tables included in Appendix 1. That is, each table shows males, females, combined, for five items (exposure, terminations, crude rate, expected terminations and A/E), and with quinquennial ages, and select and ultimate periods, with duration starting at the end of the elimination period.

1. A/E by elimination period.

12-month elimination period compared to 12-month GLTD and 3-month GLTD rates;

6-month elimination period compared to 6-month GLTD and 3-month GLTD rates;

3-, 4-month elimination period compared to 3-month GLTD rates;

7-22 month elimination period compared to 3-month GLTD rates;

other elimination periods compared to 3-month GLTD rates.

2. A/E by region.

East, Québec, Ontario, West (including B.C.), B.C. and all coded.

3. Recovery and death.

4. A/E by cause.

Maternity, accidents, AIDS, chronic, mental/nervous, other and all coded

5. A/E by Risk Status.

ASO and insured separately on 3, 4, 6, 7-22 and all month elimination periods

1988-94 LTD - M&F Comb	All Elimination Periods						Crude Termination Rates				
	Nearest Age at Disability						52	57	62	67	Total
	22	27	32	37	42	47					
Mth 4	0.1503	0.1169	0.0963	0.0964	0.0949	0.0852	0.0783	0.0596	0.0538	0.0332	0.0853
Mth 5	0.1325	0.1157	0.1081	0.0914	0.0859	0.0825	0.0662	0.0551	0.0457	0.0571	0.0806
Mth 6	0.1453	0.1177	0.1015	0.0863	0.0859	0.0796	0.0673	0.0536	0.0416	0.0672	0.0782
Mth 7	0.1112	0.1108	0.0898	0.0838	0.0762	0.0670	0.0573	0.0399	0.0313	0.0384	0.0662
Mth 8	0.1229	0.0932	0.0895	0.0768	0.0709	0.0601	0.0498	0.0396	0.0294	0.0849	0.0608
Mth 9	0.0976	0.0769	0.0739	0.0686	0.0607	0.0529	0.0471	0.0364	0.0262	0.0000	0.0527
Mth 10	0.0893	0.0694	0.0639	0.0595	0.0566	0.0491	0.0393	0.0297	0.0199	0.0525	0.0456
Mth 11	0.0646	0.0568	0.0605	0.0551	0.0478	0.0430	0.0358	0.0283	0.0188	0.0214	0.0405
Mth 12	0.0722	0.0644	0.0540	0.0568	0.0448	0.0460	0.0364	0.0232	0.0188	0.0287	0.0398
Year 1 *	2.8712	2.4249	2.2242	2.0038	1.8925	1.7515	1.5490	1.3843	1.1159	0.3735	1.7831
Mth 13	0.0768	0.0551	0.0555	0.0501	0.0444	0.0380	0.0324	0.0242	0.0180	0.0752	0.0368
Mth 14	0.0682	0.0490	0.0474	0.0458	0.0407	0.0342	0.0268	0.0204	0.0153	0.0000	0.0321
Mth 15	0.0536	0.0466	0.0399	0.0404	0.0331	0.0318	0.0255	0.0167	0.0136	0.0000	0.0281
Mth 16	0.0432	0.0426	0.0440	0.0396	0.0306	0.0299	0.0219	0.0172	0.0116	0.0000	0.0265
Mth 17	0.0450	0.0419	0.0364	0.0359	0.0318	0.0234	0.0238	0.0157	0.0094	0.0778	0.0244
Mth 18	0.0499	0.0374	0.0337	0.0337	0.0312	0.0283	0.0194	0.0146	0.0115	0.0435	0.0237
Mth 19	0.0419	0.0322	0.0332	0.0298	0.0276	0.0242	0.0214	0.0136	0.0088	0.0312	0.0216
Mth 20	0.0236	0.0298	0.0332	0.0286	0.0241	0.0213	0.0176	0.0125	0.0090	0.0427	0.0195
Mth 21	0.0373	0.0275	0.0299	0.0266	0.0225	0.0216	0.0151	0.0123	0.0108	0.0000	0.0187
Mth 22	0.0228	0.0286	0.0327	0.0310	0.0262	0.0201	0.0144	0.0114	0.0089	0.0437	0.0188
Mth 23	0.0319	0.0299	0.0283	0.0267	0.0262	0.0186	0.0120	0.0113	0.0065	0.0476	0.0172
Mth 24	0.0443	0.0522	0.0438	0.0405	0.0348	0.0318	0.0216	0.0153	0.0098	0.0000	0.0264
Year 2 *	0.4331	0.3797	0.3669	0.3460	0.3096	0.2751	0.2245	0.1710	0.1189	0.2598	0.2534
Mth 25	0.0363	0.0313	0.0340	0.0244	0.0216	0.0203	0.0166	0.0104	0.0104	0.0428	0.0182
Mth 26	0.0317	0.0243	0.0256	0.0220	0.0196	0.0177	0.0155	0.0092	0.0085	0.0000	0.0157
Mth 27	0.0313	0.0374	0.0260	0.0246	0.0228	0.0230	0.0168	0.0118	0.0082	0.0457	0.0183
Mth 28	0.1040	0.0854	0.0660	0.0640	0.0422	0.0378	0.0294	0.0223	0.0145	0.0375	0.0369
Mth 29	0.0508	0.0488	0.0382	0.0396	0.0283	0.0258	0.0213	0.0152	0.0091	0.0000	0.0235
Mth 30	0.0840	0.0703	0.0704	0.0543	0.0509	0.0334	0.0336	0.0251	0.0147	0.0000	0.0367
Mth 31	0.0478	0.0615	0.0622	0.0471	0.0382	0.0333	0.0244	0.0175	0.0114	0.0000	0.0293
Mth 32	0.0304	0.0415	0.0256	0.0236	0.0240	0.0174	0.0141	0.0121	0.0078	0.0588	0.0168
Mth 33	0.0316	0.0253	0.0316	0.0217	0.0193	0.0170	0.0131	0.0103	0.0063	0.1250	0.0150
Mth 34	0.0338	0.0296	0.0242	0.0215	0.0190	0.0164	0.0101	0.0079	0.0055	0.0000	0.0133
Mth 35	0.0242	0.0227	0.0214	0.0173	0.0138	0.0120	0.0086	0.0080	0.0073	0.0000	0.0113
Mth 36	0.0340	0.0408	0.0357	0.0223	0.0206	0.0165	0.0104	0.0084	0.0062	0.0000	0.0148
Year 3	0.4131	0.3922	0.3598	0.3077	0.2638	0.2311	0.1897	0.1444	0.0936	0.2460	0.2134
Yr 4	0.1986	0.2365	0.1779	0.1560	0.1367	0.1174	0.0889	0.0694	0.0685	0.1064	0.1050
Yr 5	0.1596	0.1331	0.1052	0.0837	0.0739	0.0582	0.0526	0.0480	0.0620	0.0000	0.0631
Yr 6	0.0875	0.0718	0.0678	0.0620	0.0523	0.0409	0.0483	0.0499	0.0724	0.0000	0.0517
Yr 7	0.0689	0.0593	0.0524	0.0432	0.0375	0.0364	0.0422	0.0489	0.0256	0.0000	0.0438
Yr 8	0.0354	0.0280	0.0401	0.0399	0.0250	0.0352	0.0343	0.0503	0.0126	0.0000	0.0375
Yr 9	0.0494	0.0215	0.0277	0.0313	0.0293	0.0373	0.0375	0.0476	0.0090	0.0000	0.0363
Yr 10	0.0236	0.0356	0.0276	0.0302	0.0246	0.0360	0.0409	0.0589	0.0139	0.0000	0.0370
Ultimate Period		Age 32	0.0390		Age 52	0.0288		Age 72	0.0234		
		Age 37	0.0482		Age 57	0.0344		Age 77	0.0557		
		Age 42	0.0200		Age 62	0.0432		Age 82	0.0393		
		Age 47	0.0277		Age 67	0.0478		Age 87+	0.0587		

* Annual termination rates have not been adjusted for multiple elimination periods

