SOCIETY OF ACTUARIES

LONG TERM CARE EXPERIENCE COMMITTEE

INTERCOMPANY STUDY

1984 – 2001

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INTRODUCTION

This document is the fourth Intercompany Study by the SOA LTC Experience Committee. Previous Reports were published January 1995, February 2000, and September 2002. The four reports of this committee sponsored by the SOA and the Long Term Care Persistency Experience Report of 2004 jointly sponsored by LIMRA and the SOA are the only publicly available and published reports of experience on lives insured under private LTC insurance plans in the United States. This Report, as well as the previous three, is based on data gathered for policies issued back to 1984. Data in this Report has been combined and analyzed from 20 organizations (24 insurers) that provided information to further the public and private knowledge of long term care insurance. The contributing organizations are listed in Appendix A.

Data has been collected on policies issued from January 1, 1984 through December 31, 2001. Claims incurred on policies during this time frame were followed from claim inception through the earlier of claim termination or June 30, 2002. Allowing a six-month period to report incurred claims allows for the capture of most of the incurred but not reported claims as of year-end 2001.

Insurers were asked to provide information on 100% of the policies issued unless their volume would potentially alter the Intercompany nature of the study. Under those circumstances, such an insurer was requested to submit a substantially representative portion of their issues that would allow an unbiased contribution but still protect the confidentiality of that company's experience.

Exposure records increased almost 50% from the 2000 Report reaching 3.9 million exposure records with 12.5 million exposure years. Parenthetical percentages below show comparable distribution in the previous study.

- 22% of the exposure was in the first policy year
- 21% of the exposure was in the second exposure year
- 15% of the exposure was in the third exposure year
- 10% of the exposure was in the fourth exposure year
- 69% of the exposure was on Individual insureds (73%)
- 31% of the exposure was from Group insureds (27%)
- Average issue age of all insureds in the database is 61 (63)
- Average issue age of Individual insureds is 67 (68)
- Average issue age of Group insureds is 47 (49)
- Average attained age of the insureds in the database is 64
- Female insureds represent 59% of the exposure (60%)

General Characteristics of the exposure file are found in Appendix B.

The number of claimants almost doubled from just over 50,000 in the 2000 Report to 95,000 claimants in this Report. Benefits paid increased from $1.3 billion in the previous Report to $4.1 billion in this Report. Although decreasing as a percentage of policies claimed, the majority of claims continue to be attributable to the use of nursing home care.

- o 80% of the claims were for nursing home care (91.5%)
- o 15% of the claims were for home care (8.5%)

- o 5% of the claimants received both NH & HC benefits
- o 75% of all claims (open and closed) have a claim duration of one year or less (75%)
- o 87% of claims in the data base are closed
- o Average attained age on incurral date of claim was 79.9 years (78.8)
- o Female claimants incurred 70% of the claims and 70% of the benefit dollars (66%)

General Characteristics of the claim file are found in Appendix C.

Each section of this Report covers one or more of several areas for which sufficient data is available. The areas that are included in this Report are:

- o Gender
- o Issue Age
- o Attained Age
- o Elimination Period
- o Benefit Period (Limited vs. Unlimited)
- o Policy Duration
- o Individual vs. Group
- o Nursing Home vs. Home Care
- o Issue Year Groupings
- o Experience Year Groupings
- o Underwriting Type
- o Benefit Escalator Clause
- o Distribution Source

The compiled data continues to verify some long held expectations relative to long term care:

- o Incidence rates rise steadily by attained age and policy duration
- o Mortality rates increase steadily by attained age and policy duration
- o Morbidity and Mortality selection is apparent in early policy durations

Other general results of interest:

Incidence Rates
- o Overall incidence rate is .69% (up from .60%)
- o Select period may be at least 10 years
- o Reductions over time in previous Reports may be leveling off

Claim Continuance
- o Increases with increasing age at claim until about age 89 then decreases
- o Average length of claim is 393 days
- o 68% of nursing home claims end in death
- o 49% of home care claims end in recovery

Cause of Claim
- o Alzheimer's claims continue to be the most frequent, longest and most expensive as well as trending upward
- o Alzheimer's is the leading cause for nursing home care claim

- o Alzheimer's is the leading cause for home care claim after age 75
- o Cancer is the leading cause of home care claim through age 75
- o Cancer and Injury are large for home care but are short in duration

Mortality
- o Overall mortality rate is 1.1%
- o Male mortality is 40% greater than female (49%)
- o Mortality is considerably lower than the 83 GAM, A2000, and the new 2001 VBT
- o Disabled Lives mortality is 20 times than of Active Lives
- o Disabled Lives mortality for LTCI is 150-200% greater than for disabled lives under Disability Insurance
- o Select period may be at least 10 years
- o GSI mortality appears less than both Full and Simplified Underwriting (in the past, it was higher than Full but lower than Simplified Underwriting)

Voluntary Lapse Rates
- o Average annual lapse rate has been 7.4%
- o Average annual rate was 7.0% for the data solely for the current study period
- o Rates decrease for the first 9 policy years
- o Group insurance lapses start out higher than individual, then are lower after the first 6 years
- o Rates for insurance solicited by enrollers is noticeably lower than for all other types of distribution

Total Termination Rates
- o Average annual total termination rate is 8.9%
- o Average annual rate is 8.1% for the data solely for the current study period
- o Inputted mortality rates from Total and Voluntary Termination data indicate that mortality is much lower than current life industry mortality

Home Care
- o Average number of weekly home visits were 3.8 per week (down from 4.29 visit per week in the previous study, but higher that the 3.25 days per week in the study before that one)
- o Arthritis claimants use the most days of care per week (4.7 days)

Limited vs. Unlimited Benefit plans
- o Incidence rates are not consistently higher for either longer or unlimited benefit plans compared to shorter benefit plans
- o Voluntary Lapse Rates do not differ significantly between maximum benefit periods in this Report compared to the previous Report

CACULATIONS

Many tables in this report are segregated by policy duration. Duration is calculated based on exposure from either active or terminated records. From active records, duration is calculated by using only the latest record in the following formula:

Duration in Months = (1 + Last Observation Date – Issued Date) / Days per Month
(30.42 was used as the Days per Month to account for monthly variations and leap years)

From terminated policy records, duration is calculated by substituting the Termination Date for the Last Observation Date in the previous formula.

The incidence tables shown break duration down into annual periods as follows:

Duration	Months	Duration	Months
1	0 to 13	6	74 to 85
2	14 to 25	7	86 to 97
3	26 to 37	8	98 to 109
4	38 to 49	9	110 to 121
5	50 to 61	10	122 to 133

Duration 1 spans 13 months to estimate the effect of the grace period. The application of grace periods in practice varies significantly from carrier to carrier. Generally a company does not consider a policy "terminated" until at least the end of the grace period. For administrative simplicity, many carriers do not terminate (or lapse) a policy until well after the grace period has expired. The division of duration into these time periods has the effect of counting any active policy currently in its grace period in the previous duration.

Each policy is credited with a full exposure year for all integer duration years up to and including the duration year in which the observation period or termination date ends. For example, a policy whose duration is 26 months and 7 days will be included and counted as completing duration 3. This methodology will overstate duration by duration group and in total. Claim incidence and lapse rates will be understated as a result.

Incurral Date is the earliest incurred date shown on records submitted for each claimant. Issue Date is the earliest date of issue for each insured.

For each claim a duration is calculated using the following formula:

Duration in Months = (1 + Incurral Date – Issue Date) / Days per Month
(30.42 was used as the Days per Month to account for monthly variations and leap years)

An incidence rate is found by dividing the number of claims in any cell by the exposure in that cell.

Data was submitted for many specific elimination periods. Appendix B-6 details this study's exposure by elimination period. A trivial portion of all records provided contained no information on the elimination period. These records have been excluded from all calculations of incidence. Because the data contained small amounts of experience for several elimination

periods that were close to other periods with a large amount of exposure, the elimination period data was grouped in the following manner:

Elim. Periods	Group Label
0	0
7-21	20
28-30	30
31-80	60
90-91	90
100	100
>100	>100

LIMITATIONS

This fourth Intercompany report of the SOA LTC Experience Committee includes increasingly valuable but in some instances, limited information. As one considers the findings in this report, please remember four main points. First, the data has been gathered from different companies contributing over different time frames. Only two companies have contributed to all four studies. Second, most of the claim experience is based on policies that provide little in the way of home care benefits. Therefore, this is still primarily a Nursing Facility Experience Study. Thirdly, many of the contributors write either Individual or Association Group coverages which are both underwritten. More than 2/3 of all claim experience is based on individually underwritten insureds. Fourth, experience is reported exactly as calculated. There has been no attempt to smooth, interpolate or extrapolate numerical data.

Please note that this analysis, all tables and charts are based on raw data which cut across broad variations in market and product. While analyzing the data, if problems with data submissions were found, they were discussed with the contributors and corrected where possible. However, because this analysis is based on files submitted from a variety of sources there may be other issues that went undiscovered or are not completely homogenized.

Because results are aggregated over several calendar years, for companies with different distribution methods, types of underwriting, target markets, pricing levels, products and administrative rules, distortions may have been introduced. The representation of any one company varies from cell to cell, so trends shown are in part distorted by a shift in the underlying mix. Most exposure and claims data is still from early policy durations. The voluntary lapse rates on Individual policies from duration 10 and later are surprising, which suggests improper coding of deaths. This led us to include, in our previous Report, an entire new section entitled Total Terminations to assist in understanding the total decrement of all insureds. It is also important to note that incidence and lapse rates have fallen significantly over the seventeen year experience period: averages for this experience period are not indicative of levels at the end of this period. Therefore, great care needs to be exercised when applying the results in this report. Consideration must be given to whether the averages shown are appropriate for use as is, or whether adjustments are needed for any specific application of the data.

SECTION I   Morbidity

This section presents information on both the incidence and continuance of claims for long-term care insureds.

Incidence Rates Methodology

The incidence rates developed in this report are always shown by elimination period category and attained age and are calculated based on reaching the end of the elimination period. These categories were considered to be central to any unbiased determination of incidence rates. Elimination period categories were grouped to include elimination periods less commonly found with those with the bulk of the exposure (Zero days, 7- 21 days, 28-30 days, 31-80 days, 90-91 days, 100 days, and >100 days). Within these categories, incidence rates are classified by other variables including duration of the policy, gender, issue year, benefit period, and daily benefit. Incidence rates are also compared to those in the 1985 National Nursing Home Survey.

Some claims were submitted which had no paid benefits. A claim is only included in the incidence calculation if it reaches the end of the elimination period and has at least $1 of paid benefits of any type. All claims reported with zero dollars of paid amounts were removed from all calculations of incidence rates.

Incidence Rates by Attained Age and Elimination Period (Appendix D-1)
For all elimination periods combined, the incidence rates increase markedly by attained age, rising from an overall rate of 0.01 per hundred at ages "Less than 40" to 1.97 per hundred at "Ages 85-89". However, this increase in incidence rates by attained age is profoundly influenced by the change in relative exposure of the elimination period data by age group. A more useful pattern of increasing incidence rates exists when viewed by attained age within elimination period category as shown by Figure 1:

Figure 1
Incidence rates by Attained Age and Elimination Period (per hundred)

Elimination Period Category in Days

Attained Age	Zero	20	90	100	All Elims
Less than 40	0.00%*	0.00%*	0.01%	0.00%	0.01%
40-49	0.04%*	0.09%*	0.02%	0.02%	0.03%
50-59	0.13%	0.14%	0.04%	0.07%	0.05%
60-64	0.27%	0.25%	0.09%	0.13%	0.14%
65-69	0.57%	0.42%	0.13%	0.25%	0.28%
70-74	1.04%	0.71%	0.21%	0.42%	0.53%
75-79	1.90%	1.11%	0.47%	0.76%	0.98%
80-84	2.83%	1.72%	0.90%	1.34%	1.62%
85-89	3.07%	1.97%	1.51%	1.78%	1.97%
90+	1.62%*	1.66%	2.21%*	1.39%	1.61%
All Ages	**1.53%**	**1.12%**	**0.14%**	**0.79%**	**0.69%**
All-Prior Study	1.49%	0.86%	0.17%	0.50%	0.60%

*These cells have exposure less than 25,000 years.
"All Elims" includes data from all elimination periods, whether or not shown distinctly in the table.

Some patterns are noted when viewing data by attained age group across elimination period categories:

- "20 day" incidence rates are generally about 10%-40% less than "zero day" rates (40% less in the prior Study)
- "90 day" incidence rates are generally about 70% less than "zero day" rates (80% less in the prior Study) and about 50% less than "20 day" rates (85% less in the prior Study)
- "100 day" incidence rates are at or above the "90 day" rates; however different companies contribute data in the 90 day category than the 100 day category since few companies have experience in both these categories (about the same in the prior Study)

<u>Incidence Rates by Attained Age, Elimination Period, and Policy Duration (Appendix D-2)</u>
For all attained age groups and elimination period categories combined, incidence rates increase by duration group. This can be seen particularly at the older issue age groups. For all attained age groups and elimination period categories combined, the rate of increase is relatively smooth through duration 10 though, in fact, this is highly influenced by the changing mix of exposure and claims over the attained age group/elimination period cells. Rising incidence rates would reflect a typical pattern of the "wearing off" of underwriting as selection factors rise to an ultimate level.

<u>Incidence Rates by Issue Age, Elimination Period, and Policy Duration (Appendix D-2a)</u>
Figure 2 shows the implied select factors for this Study compared to the previous Study using duration 8 as the "ultimate" duration. Incidence rates by duration category in this Study were adjusted by the average increase in incidence rates by attained age (~9.7% annually, the same as in the previous Study) to remove distortion introduced by advancing age. For all attained age groups and elimination period categories combined, select factors for duration one start at 33% and increase gradually.

Figure 2
Implied Select Factors
Duration

	1	2	3	4	5	6	7	8
Prior Study	35%	51%	58%	63%	67%	74%	92%	100%
Current Total	33%	49%	59%	66%	72%	80%	89%	100%
Fully Und	27%	42%	53%	65%	74%	84%	92%	100%
Guar Issue	36%	49%	55%	55%	63%	74%	86%	100%
Simp Issue	48%	54%	70%	74%	74%	50%	77%	100%

<u>Incidence Rates by Attained Age, Elimination Period, and Gender (Appendix D-3)</u>
Figure 3 indicates that the incidence rate for females is modestly higher than that for males, except at the youngest ages. Ratios of female to male incidence rates have generally increased modestly from the prior Study.

Figure 3
Ratio of Female/Male Incidence Rates by Elimination Period, Attained Age Category

Elimination Period Category in Days

Attained Age	Zero	20	90	100	All
Less than 50	61%*	116%*	87%	N/A	87%
50-59	92%*	114%	98%	104%	109%
60-69	113%	96%	99%	144%	119%
70-79	99%	105%	120%	126%	116%
80+	108%	119%	140%	137%	126%

* These cells have exposure less than 25,000 years.

<u>Incidence Rates by Attained Age, Elimination Period, Issue Year, and Duration (Appendix D-4)</u>
Incidence rates by issue year group have continued to improve with time. Viewed by elimination period category for all attained age groups combined, incidence rates have decreased over the issue years. In

general, this decrease over issue years is also apparent for the most common attained age groups for all elimination period categories combined, though the results are certainly skewed by the general movement towards longer elimination periods over time. Results are consistent at most policy durations studied. Reasons for this improvement might include improved underwriting tools, better definitions of which impairments translate into long-term care risks, and increased market penetration leading to the coverage of a broader set of health risks. However, care should be used in projecting this trend forward as incidence rate decreases in some cells moderate and may completely disappear from the period 1992-1996 to the period 1997-2001.

Figure 4
Incidence Rates over Issue Year Groups

Duration	Issue Year Group	20 Day Elim	90 Day Elim
1	1984-87	0.51%	0.31%
	1988-91	0.46%	0.15%
	1992-96	0.32%	0.06%
	1997-01	0.10%	0.03%
3	1984-87	0.82%	0.33%
	1988-91	0.75%	0.25%
	1992-96	0.64%	0.12%
	1997-01	0.21%*	0.12%
5	1984-87	1.24%	0.40%
	1988-91	1.07%	0.36%
	1992-96	0.90%	0.19%
7	1984-87	1.53%	*
	1988-91	1.59%	0.25%
	1992-96	1.34%	0.44%

* These cells have exposure less than 25,000 years.

Incidence Rates by Attained Age, Elimination Period, and Benefit Period (Appendix D-5)
Incidence rates were compared by benefit period to ascertain any effect of antiselection at issue or reduced reticence to begin drawing claims benefits. For all elimination period categories, the average incidence rates for longer benefit periods (unlimited or lifetime) do not appear to be consistently higher than in benefit period categories 1-4 or 5+ (5 or more but not unlimited). Antiselection may be minimal or may be masked by the use of offers of shorter benefit periods for applicants with less robust health histories. This result is not different than that found in the prior Study.

Incidence Rates by Attained Age, Elimination Period, and Daily Benefit (Appendix D-6)
Incidence rates were compared by daily benefit to ascertain any effect of antiselection. Looking at all elimination period categories combined, antiselection does not seem apparent. This result is not different than that found in the prior Report.

Comparison of Incidence Rates to Admission Rates in the Report from the 1985 National Nursing Home Survey Utilization Data (Appendix D-7)
Earlier reports of the Long-Term Care Experience Committee included utilization data from the 1985 National Nursing Home Survey (NHSS). Part of the statistics presented were admission rates on three bases; all stays (stay concept), all stays (benefit period concept), and insurable stays (benefit period concept). Appendix D-7 compares the incidence rates from this current study (zero day elimination

period) with selected rates from Table 3 of that general population report, specifically with those under the insurable stays (benefit period concept).

Incidence rates vary from 46% to 101% of those presented in the 1985 NNHS; little different from the prior Study. Ratios are generally highest at the younger ages and lower at the older ages. Caution should be used in interpreting the results because direct comparisons are difficult to make given the differences in the data available, particularly because of the early durational experience included here.

Figure 5
Ratio of Intercompany Study Incidence Rates to 1985 NNHS Rates

Age Category	Both Sexes
Less than 60	1.013
60-64	1.006
65-69	0.965
70-74	0.785
75-79	0.630
80-84	0.456

Continuance by Elimination Period (Appendix E-1)
Persistency on claim is measured from the end of the elimination period. Claims of shorter duration due to recovery or death are included in the zero day elimination period continuance but are irrelevant in situations of longer elimination periods.

Continuance on claim is largely similar to the prior Study.

Figure 6
Percentage Persisting At Least N Days
Current vs. Prior Study

Duration from Incurral Date	Current	Prior
1	99.69%	99.76%
2	99.29	99.31
3	98.89	98.82
4	98.39	98.22
5	97.89	97.64
10	95.04	94.38
20	90.16	88.76
30	85.75	84.06
60	76.46	74.57
90	70.41	68.64
120	65.94	64.33
180	59.58	58.24
365	46.64	44.86
730	32.29	28.81

In order to make a meaningful comparison of persistency on claim, persistency figures have been adjusted to account for differences in elimination period. Figure 3 compares the zero day elimination period category continuance with that of the other two continuance categories, reformatting the data so that the "7-50 day" continuance data and the "60-150 day" continuance data are normalized to begin at the 20th day and the 90th day, respectively. The percentages indicate the comparison of zero day elimination continuance to "7-50 day" continuance data and the "60-150 day" continuance data. Zero day elimination period claimants stay on claim longer, using approximate adjustments for differences in elimination period in the data.

Figure 7

Persistency on Claim Relative to Zero Day Elimination Period Category

Duration from Incurral	Elimination Period Category	
	7-50 Days	60-150 Days
20	100%	
25	97	
30	94	
35	91	
40	89	
50	84	
60	80	
90	71	100%
120	65	90
180	58	75
365	45	53
730	31	32

Continuance by Gender (Appendix E-2)

The percentage persisting for n days or longer is similar for males and females at early claim durations. At durations over 90 days, female continuance is greater than male continuance (see Figure 4). Length of stay is only slightly longer than the prior Study.

Figure 8
Percentage Persisting At Least N Days by Gender

Duration from Incurral Date	Gender	
	Female	Male
1	99.75%	99.55%
2	99.39	99.07
3	99.02	98.61
4	98.54	98.10
5	98.08	97.51
10	95.33	94.49
20	90.57	89.43
30	86.24	84.89
60	76.90	75.75
90	70.99	69.39
120	66.74	64.43
180	60.71	57.36
365	48.46	42.92
730	34.93	26.91

Continuance by Age (Appendix E-3)

At almost all claim durations, persistency on claim increases as the age of the claimant increases. This may be due to fewer recoveries as age increases. However, at the longest durations for the 85-89 and 90+ group persistency on claim decreased. This may be due to the rising impact of mortality on terminations while on claim.

Figure 9
Percentage Persisting At Least N Days by Age at Incurral

Duration	Incurral Age Group				
	55-64	65-74	75-84	85-89	90+
1	99.01%	99.59%	99.69%	99.83%	99.89%

2	98.57	99.11	99.28	99.53	99.53
3	98.22	98.50	98.87	99.31	99.31
4	97.68	97.77	98.37	99.00	99.11
5	97.23	97.00	97.89	98.70	98.78
10	94.17	93.20	94.98	96.73	97.30
20	88.38	87.29	90.00	92.97	93.99
30	83.09	81.93	85.56	89.47	90.67
60	72.74	70.73	76.49	81.45	82.44
90	64.99	63.88	70.59	76.06	76.11
120	58.97	59.02	66.17	72.11	71.43
180	49.96	52.56	60.05	65.77	63.98
365	35.36	40.70	47.46	51.90	46.84
730	23.89	28.94	33.39	34.73	26.57
1095	19.17	21.47	23.25	21.61	13.89
1460	14.72	15.89	15.75	12.74	7.13
1825	11.82	11.38	10.32	6.94	3.70

<u>Comparison of Continuance to Continuance in the Report from the 1985 National Nursing Home Survey Utilization Data (Appendix E-4)</u>

The 1985 NHSS presented persistency on claim statistics on three bases; all stays (stay concept), all stays (benefit period concept), and insurable stays (benefit period concept). Appendix E-4 compares the persistency on claim from this current study with selected rates from that general population report, specifically with those under the insurable stays (benefit period concept).

In general, persistency on claim is higher and often significantly higher, especially at the older ages, than that presented in the 1985 NNHS. Ratios are generally highest at the oldest ages and at the longer durations, diverging widely from that Report. In the age 55-64 group, the % continuing on claim after 1,095 days is 19.2% in the current Study and 19.5% in the NNHS, or a ratio of about 98%. The corresponding numbers for the age 85+ group are 21.6% and 14.7%, respectively, for a ratio of 147%.

<u>Technical Notes on Continuance on Claim</u>

The continuance tables in this report are based on raw claim data without any adjustments for smoothing or graduation. This section documents the methodology to provide a framework for understanding and developing conclusions about the limitations of the data.

A value of 1 is assigned to each day a claimant is on claim, beginning with the earliest service begin date (or, if this was not available, the incurral date) plus the elimination period and ending with the latest service end date. The service begin date is the date that services began for the claim being made. The service end date is the date that services ended for the claim payment being made. Claims incurred on which no payment was ever made or which show zero benefit days are excluded from continuance calculations.

Data were tabulated separately using different characteristics; elimination period, gender, and age. The elimination period categories were set to aggregate data into "like" periods because the data available for some elimination periods was very small.

Data were initially tabulated for claims marked either open, closed, or unknown as of the end of the observation period. There appears to be wide variation in the labeling of claims by company, so some of the data were adjusted to separate data into only an open or closed status. All claims marked closed initially remained as marked. For each claim initially marked open or unknown, if the latest service end date was different that the observation date by more than 180 days, the claim was closed. Claims marked closed due to benefit expiry were removed from continuance calculations as of the date of the last

payment. A small portion of claims (all from one company) were marked as closed-benefit expiry as the date submitted was apparently miscoded.

Separating open claims from closed allows an effective study of continuance behavior. Open claim data can be used to support continuance curve research, but its usefulness is limited to the time the observation period ends. The persistency-on-claim data reported here combine the experience of the open claims (from inception to the observation date) and closed claims (throughout the claim until benefit expiry).

"Number of claims open" is the number of claimants marked open with a value of 1 for that particular duration. For example, 749 claims open means that there were 749 claimants which were coded open until at least that duration. "Number of claims closed" is the number of claimants marked closed with a value of 1 until at least that particular duration. In measuring persistency from one duration to the next, only the claims that are observable at the next duration can be counted. "Beginning exposure" is the number of open claims observable at the next duration plus the number of closed claims at the current duration. Specifically, the formula is:

$$\text{Beginning Exposure}_t = \text{Observable Claims}_{t+1} + \text{Closed Claims}_t - \text{Closed EOB}_t$$

The number of claims terminating on day t is calculated from the "number of claims closed" column, and then adjusted for any claims closed due to benefit expiry.

$$\text{Terminating on day } t = \text{Closed}_t - \text{Closed}_{t+1} - \text{Closed EOB}_{t+1}$$

Where closed is the "number of claims closed" for that duration and Closed EOB is the "number of claims closed due to End of Benefits" for that duration.

$$\text{Percent Persisting } t \text{ days} = \text{Percent Persisting } t\text{-1 days} *$$
$$[1- (\text{terminating on day } t/\text{beginning exposure } t)]$$

SECTION II   MORTALITY

This report presents the mortality experience of long-term care insurance in the United States for contracts issued during 1984-2001. The exposure period is 1984-2001. This report addresses terminations by death. Terminations that were not identified in the data are assumed to be other than death and are not included. Four of the contributing companies did not identify the cause of termination and the data from these companies is not included in this section. Unless otherwise stated, the data is for "non-claim" or active lives. Claim deaths are included in the claim termination rates. The study included 118,834 deaths of active lives and 18,624 deaths of disabled lives.

Because there is no death benefit on most of the policies, some terminations by death may not be recorded as such. In this report, they would be counted as lapse and included in Section V, Voluntary Lapse. Thus, mortality data reported is likely understated and lapse data may be overstated. Section VI, Total Terminations, provides information on voluntary lapse and mortality combined.

Mortality rates are broken out into the following categories:

- Active and Disabled Lives
- Attained Age
- Contract Duration
- Gender
- Underwriting Class

Total (Active and Disabled Lives) Mortality Rates

Overall, the LTCI mortality rate is about 1.1%. It is about 1.0% for females and 1.4% for males.

Figure 1 – Overall Mortality Rates

Total and Active Lives Mortality Compared to Industry Tables (Appendix H-1)

Total Long-Term Care mortality is considerably lower (25% to 50% lower) than many of the industry tables commonly used in pricing. Figures 2 and 3 below show a comparison of male and female LTC insurance mortality to three industry tables - the 1983 Group Annuity Table (83GAM), the Annuity 2000 table (A2000) and the Ultimate portion of the 2001 Society of Actuaries Valuation Basic Table (2001VBT). The 2001 VBT is new to the report this year. It is a recently published table using the 1990-96 Society of Actuaries experience study. Issue ages above 75 and attained ages above 90 were areas of focus in constructing the table making it applicable for LTCI. The composite smoker/nonsmoker table is

used in this report. The select portion will be addressed later in this report. Figure 2 is total lives and Figure 3 is active lives only.

Figure 2
Ratio of LTC Mortality to Industry Tables
Active and Disabled Lives

Attained Age	Female			Male		
	83GAM	A2000	2001 VBT (Ult)	83GAM	A2000	2001 VBT (Ult)
40-49	0.69	0.74	0.46	0.53	0.67	0.55
50-59	0.68	0.71	0.40	0.42	0.57	0.47
60-69	0.64	0.73	0.44	0.42	0.66	0.45
70-79	0.55	0.74	0.52	0.47	0.75	0.55
80-89	0.55	0.69	0.58	0.55	0.87	0.60
90-99	0.55	0.61	0.58	0.64	0.94	0.62
Total	0.57	0.72	0.53	0.49	0.77	0.55

Figure 3
Ratio of LTC Mortality to Industry Tables
Active Lives

Attained Age	Female			Male		
	83GAM	A2000	2001 VBT (Ult)	83GAM	A2000	2001 VBT (Ult)
40-49	0.65	0.70	0.44	0.50	0.64	0.52
50-59	0.63	0.66	0.37	0.40	0.54	0.45
60-69	0.59	0.68	0.41	0.39	0.62	0.43
70-79	0.48	0.65	0.46	0.43	0.68	0.50
80-89	0.45	0.57	0.48	0.47	0.74	0.52
90-99	0.46	0.51	0.49	0.56	0.82	0.53
Total	0.49	0.62	0.45	0.43	0.68	0.49

Total Lives Mortality Difference by Gender Compared to Industry Tables

Figure 4 below compares male and female mortality. The 83GAM table and A2000 table are also shown for reference. As expected, male mortality is consistently higher than female (44% higher overall). While the industry tables show male and female mortality rates coming closer together with increasing age, LTCI mortality does the opposite. Male and female rates grow farther apart at the older ages.
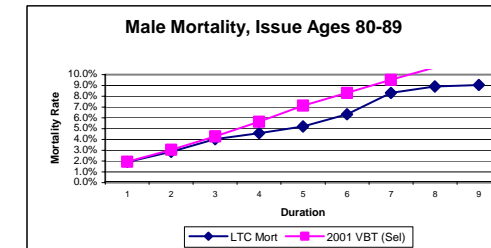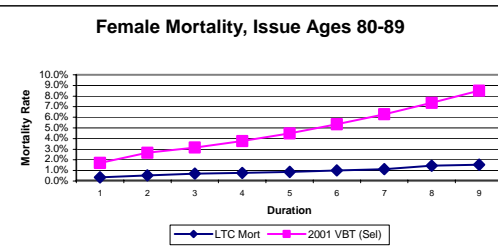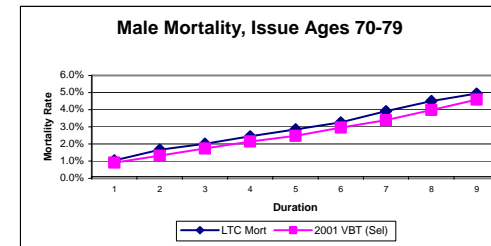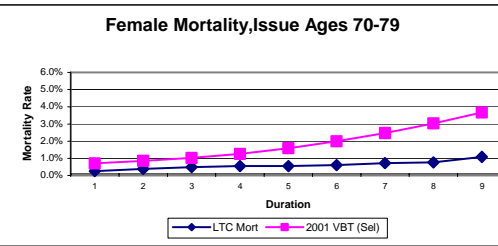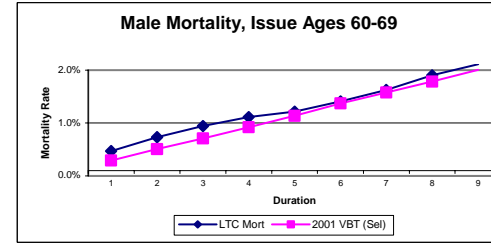
Figure 4
Ratio of Male to Female Mortality
Active and Disabled Lives

Attained Age	LTC	83GAM	A2000
40-49	1.67	2.15	1.84
50-59	1.42	2.29	1.78
60-69	1.48	2.26	1.64
70-79	1.61	1.87	1.57
80-89	1.62	1.63	1.29
90-99	1.63	1.39	1.05
Total	1.44	1.70	1.36

Active Lives Select Mortality Compared to 2001 VBT Table

Figure 5 below shows a comparison of male and female LTC mortality rates to the select period of the 2001 VBT for durations 1 through 9. For females, LTC mortality is much flatter by durations, while male LTC mortality seems to follow the 2001VBT more closely. Note that the scales on the graphs are not the same.
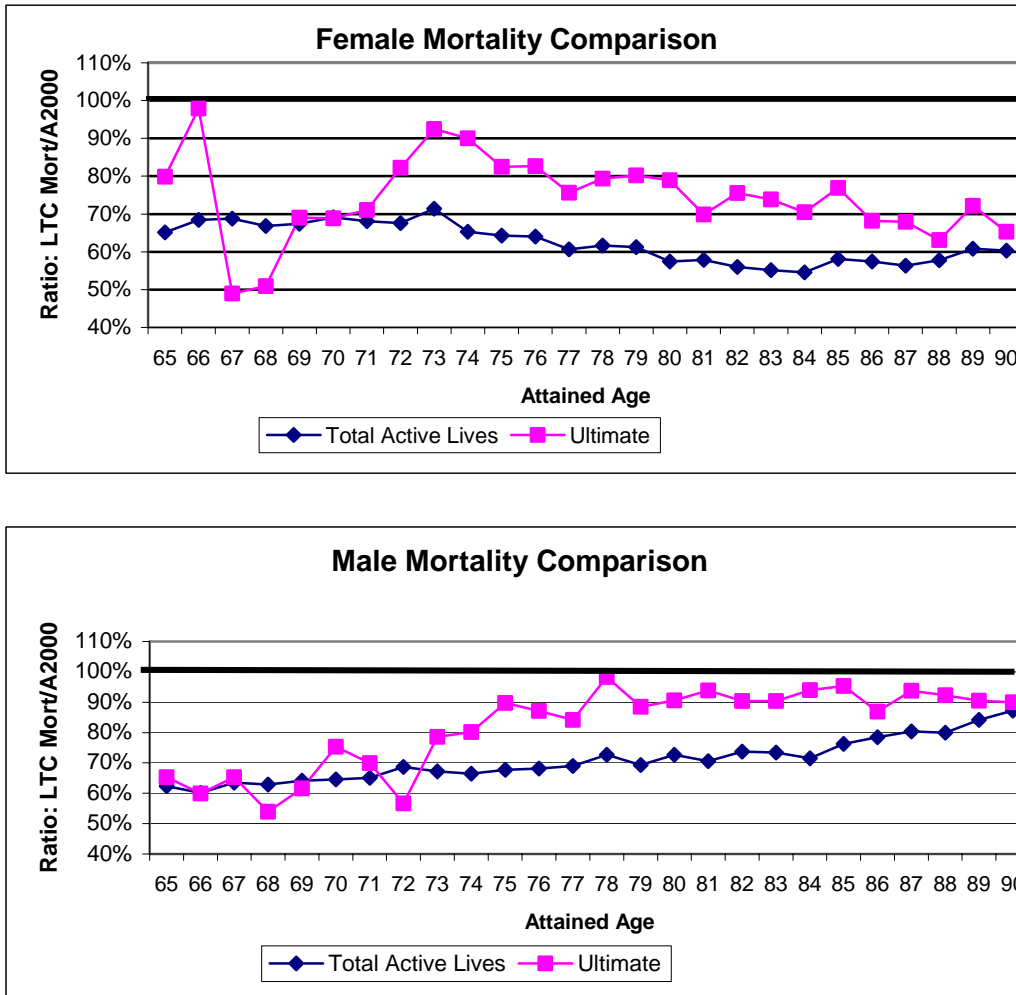
Figure 5 – Active Lives by Duration Compared to 2001 VBT Select

Female Mortality, Issue Age 50-59

Male Mortality, Issue Ages 50-59

Female Mortality, Issue Age 60-69

Male Mortality, Issue Ages 60-69

Female Mortality, Issue Ages 70-79

Male Mortality, Issue Ages 70-79

Female Mortality, Issue Ages 80-89

Male Mortality, Issue Ages 80-89

<u>Active Lives Ultimate Mortality Compared to the Annuity 2000 Table (Appendix H-2)</u>
For this exhibit, durations 10-19 are assumed to be ultimate. Taking out the early duration select period does have an effect on the level of mortality at the older ages.   For Males, the ultimate LTC mortality comes much closer to the A2000 table, but for Females, ultimate LTC mortality remains below the A2000 (i.e., ratio remains less than 1.00).

Figure 6 – Comparison of Total and Ultimate Active Life Mortality and A2000

Female Mortality Comparison

Male Mortality Comparison

Disabled Lives Mortality Compared to SOA Table 95 (Appendix H-3)

The Society of Actuaries Table 95 (SOA Table 95) is a disabled life mortality table based on a disability income insurance definition of disability. It excludes deaths from mental nervous disorders, AIDS and pregnancy. It does not provide data for age groups above age 75. Since people receiving LTC may be primarily a subset of disabled lives that is generally more disabled, it is not surprising that LTCI mortality is generally higher.

Figure 7
Ratio of LTC Mortality to SOA 95 Mortality

Age at Claim	Female	Male
Under 50	1.37	2.06
50-54	3.00	2.29
55-59	3.69	3.08
60-64	4.13	2.74
65-69	2.56	3.49
70-74	2.20	2.81
Total	2.40	2.92

Disabled Lives Mortality by Gender Compared to the SOA 95 Table

Figure 8 shows that the spread between male and female mortality for LTC disabled lives is wider than the spread in the SOA 95 table for ages 65 and above.

Figure 8
Ratio of Male to Female Mortality

Age at Claim	LTC	SOA 95
Under 50	2.03	1.35
50-54	0.92	1.21
55-59	1.15	1.38
60-64	0.79	1.18
65-69	1.50	1.10
70-74	1.40	1.09
Total	1.34	1.10

Trend of Active Lives Mortality By Exposure Period (Appendix H-4)

The exposure period was divided into four parts to discover any trend. Note that this is NOT issue year. A contract issued in 1986 would have its first two durations in the 1984 – 1987 exposure period and duration 3 in the 1988 – 1991 exposure period. Figures 9 and 10 below show there is little mortality difference over the four periods. This is a different finding from prior year's reports. In prior years, a different method was used to separate the data into exposure periods. The divergence between the exposure periods at the oldest ages bears watching as more data is gained.
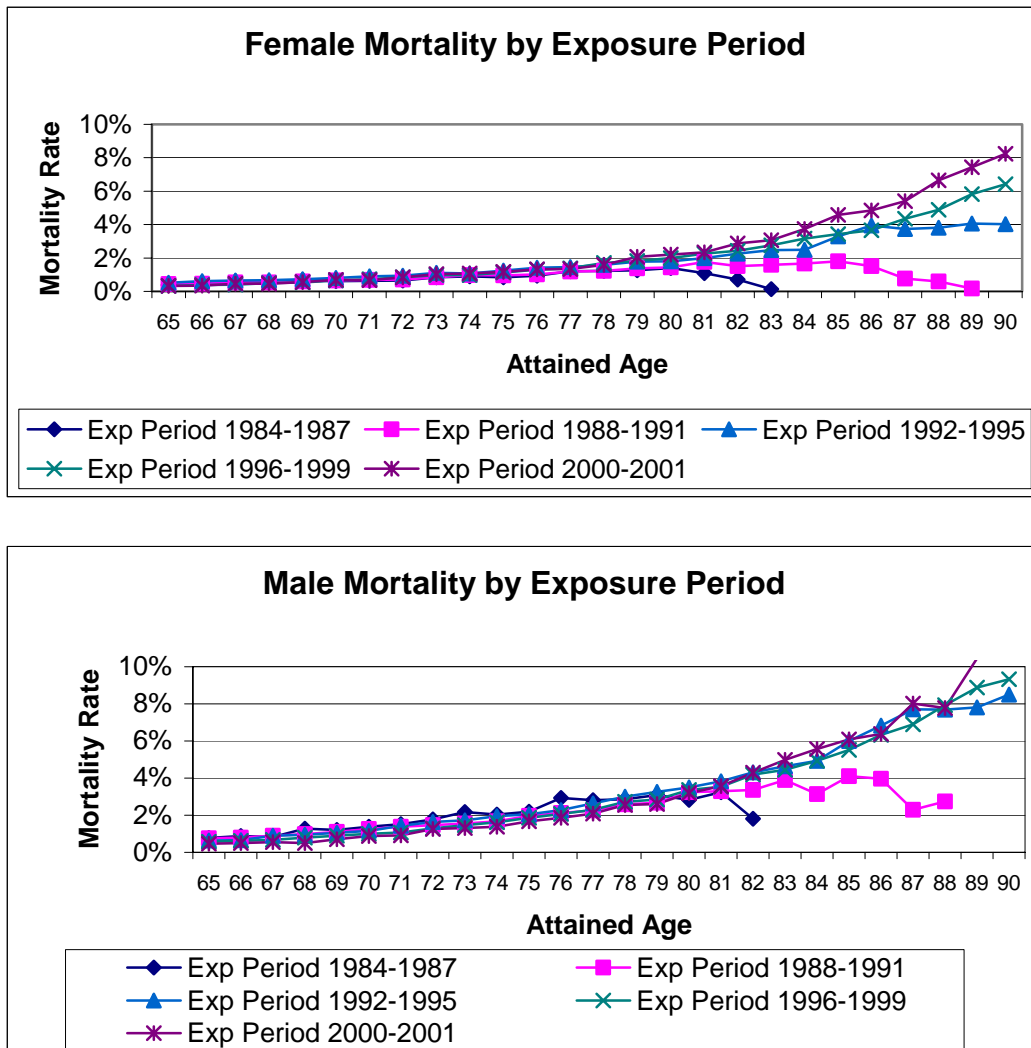
Figure 9 – Mortality by Exposure Period

Female Mortality by Exposure Period

- Exp Period 1984-1987
- Exp Period 1988-1991
- Exp Period 1992-1995
- Exp Period 1996-1999
- Exp Period 2000-2001

Male Mortality by Exposure Period

- Exp Period 1984-1987
- Exp Period 1988-1991
- Exp Period 1992-1995
- Exp Period 1996-1999
- Exp Period 2000-2001

Figure 10
Average Annual Mortality Improvement
Exp Period 1984-87 to Exp Period 2000-01

Attained Age	Female	Male
65	1%	3%
70	-1%	3%
75	-2%	2%
80	-3%	-1%

Exp Period 1996-99 to Exp Period 2000-2001

Attained Age	Female	Male
65	-1%	6%
70	-3%	4%
75	-1%	4%
80	-4%	2%

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Active Lives Mortality Compared to Disabled Lives Mortality (Appendix H-5)
Disabled lives represent a very small portion of total exposure. Overall, disabled lives mortality is over
twenty times active lives mortality. Overall, disabled lives mortality is about 18.8%. It is 15.5% for
females and 26.5% for males.

Active Lives Select Mortality (Appendix H-6)
The appendix (H-6) is a table of age banded mortality rates and selection factors given assumed select
periods of 7 years, 8 years and 9 years. The select factors are calculated as the ratio of a given duration to
the mortality rate we may consider to be ultimate. The three assumptions for ultimate are 1) Durations 8-
19, 2) Durations 9-19 and 3) Durations 10-19. For attained ages 50-59, the selection period is only one
year. For attained ages 60-69, the selection period seems to be two years. For attained ages 70 and
above, it appears the end of the select period is around year ten. Figure 11 below shows one possibility
for selection factors based on the data in Appendix H-6. Issue-age-based selection factors would be a
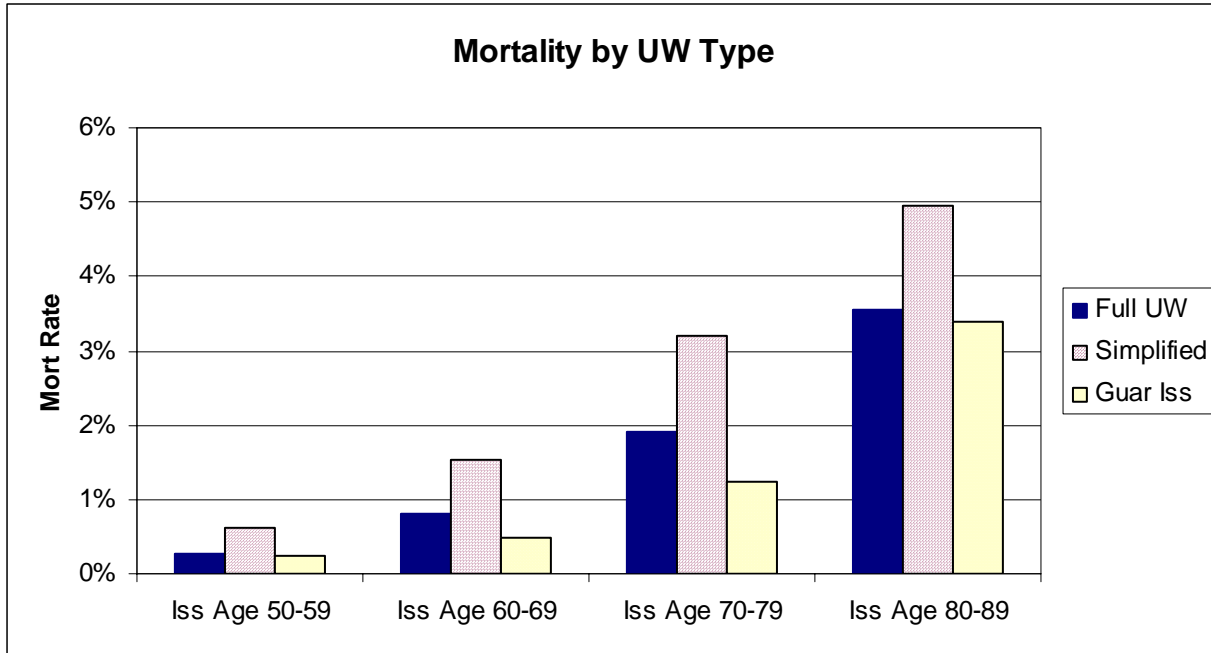grading between the attained age groups.

Figure 11 – Select Factors

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This section includes both active and disabled lives mortality. There is a significant difference in the mortality experience of groups with different types of underwriting – full, simplified and guaranteed issue.

Figure 12 – Comparison by UW Type

Mortality by UW Type

Interestingly, the guaranteed issue group has lower mortality than the simplified underwriting and full underwriting. The guaranteed issue group is mostly group business with actively-at-work requirements. This may indicate that actively-at-work requirements may be more effective than other underwriting techniques with regard to mortality.

SECTION III   CAUSE OF CLAIM

This section presents information relating to the primary diagnosis for long-term care claimants in this study. There were eight categories selected for analysis with respect to Nursing Home claims and nine categories with respect to Home Health Care/ADC/Other ("Home Health Care"). Appendices G-1 through G-14 detail number of claims, days on claim and dollars of claim payment as well as average payments, average days and average payments per day by primary diagnosis groupings along with other policy and claim characteristics.

Compared with the prior study through 1999, significantly more Nursing Home and Home Health Care claim records were captured with diagnosis information (for Nursing Home 59,009 compared with 31,461 in the last study, for Home Health Care 16,734 compared with 4,680 in the last study). Despite this increase in data, the Home Health Care and to a lesser extent the Nursing Home data for some of the more detailed breakdowns is still not credible. Some judgment was used to exclude these less credible cells from our analysis and comments that follow.

Of the 78,135 claims that had Nursing Home payments, 59,009 (76%) were coded with primary diagnosis information (compared to 69% in the last study). Claims coded with diagnosis "Other/Unknown" have decreased for both Nursing Home and Home Health Care, which is a good trend. The "other" diagnosis group includes claims in the ill-defined/miscellaneous condition diagnosis group as well as any diagnosis group where the prevalence was less than 1.0% of the total. Home Health Care unless otherwise noted the following analysis excludes the "Other/Unknown" diagnosis category.

In summary, for all claims combined (with or without diagnosis information, the average claim (whether open or closed) has a length of 392.5 days and $42,227. For those with a diagnosis, the averages are 428.4 days and $48,796.

The chart on the following page summarizes the findings of Cause of Claim Analysis.

Summary of Cause of Claim Findings

	Nursing Home	*Home Health Care*
Top Cause of Claim (G-2)		
- by claim count	Alzheimer's (24.7%)	Cancer (17.1%)
- by average claim payments	Alzheimer's ($88K)	Stroke ($42K)
- by length of claim	Alzheimer's (694 days)	Nervous Systems (300 visits)
Open vs. Closed Status (G-3)		
- open (average number of days/visits)	644 days	422 visits
- closed (average number of days/visits)	418 days	135 visits
Male vs. Female (G-4)		
- male (leading cause of claim)	Alzheimer's (26%)	Cancer (20%)
- female (leading cause of claim)	Alzheimer's (24%)	Arthritis (20%)
Attained Age <75 vs. 75+ (G-5)		
- <75 (leading cause of claim)	Alzheimer's (26%)	Cancer (20%)
- 75+ (leading cause of claim)	Alzheimer's (24%)	Alzheimer's (24%)
Policy Duration (G-6)		
- claim counts	peak around duration 4	decreasing prevalence by duration
Incurral Year Group (G-7)		
- leading diagnosis		
1984-1987	Circulatory (20%)	N/A
1988-1991	Alzheimer's (15%)	Cancer (17%)
1992-1996	Alzheimer's (23%)	Injury (14%)
1997-2001	Alzheimer's (30%)	Cancer(18%)
Closed Status (G-8)		
- leading cause (of known status)	Death (68%)	Recovery (49%)
Issue Year Group (G-9)		
- leading diagnosis		
1984-1987	Alzheimer's (15%)	Injury (18%)
1988-1991	Alzheimer's (24%)	Alzheimer's (16%)
1992-1996	Alzheimer's (33%)	Cancer (17%)
1997-2001	Alzheimer's (34%)	Cancer (23%)
Underwriting Type (G-10)		
- full underwriting (Avg. $ per day)	$72	N/A
- simplified underwriting (Avg. $ per day)	$127	N/A
Benefit Period Type (G-11)		
- limited (average days)	414	N/A
- unlimited (average days)	444	N/A
Average Number of Home Care Visits (G-12)		
- leading diagnosis	N/A	Arthritis (4.7 day per week)
- overall average	N/A	Overall (3.8 days per week)

Definition of Terms

Average Claim Payments: Total Payments/Tally

Average Days: Days/Tally

Average per Day: Average Claim Payments/Average Days

Days: The minimum of the number of days recorded for that claim or the length of time between the service begin date and the service end date.

Tally: Number of claims with either a Nursing Home and/or a Home Health Care payment. If a claim had payments in both locations it is included in the tally of both Nursing Home and Home Health Care charts. If a claim had payments in both locations, the claim days and payments only reflect the portion of the claim attributable to each location.

Total Payments: The sum of the claim payments made for that claim within that claim location.

ICD-9-CM Codes by Diagnosis (Appendix G-1)

Primary ICD9 codes were used to map claims into diagnosis categories. Appendix G-1 describes the mapping logic.

Nursing Home, Home Health Care/ADC/Other Claims: Diagnosis Category Summary (Appendix G-2)

Alzheimer's claims have continued to increase in prevalence in recent years and remain the leading cause of claim in this study, now as prevalent as the next two most common causes combined. The leading causes of Nursing Home claims over the 1984 to 2001 period were Alzheimer's (24.7%), Stroke (13.4%), and Circulatory (11.2%).

Average claim payments for Alzheimer's were the most costly at $88K, followed by Nervous System ($71K), Stroke ($63K), and Arthritis ($56K). The least costly claims are Congenital ($10K), Pregnancy Disorders ($19K) and Cancer ($20K).

For Nursing Home claims, Alzheimer's exhibited the longest average claim duration with 694 days, followed by Mental (616 days). The diagnosis groups with the shortest average Nursing Home claim duration were Congenital (182 days) and Cancer (192 days). The diagnosis groups with the highest average claim payments per day were Nervous System ($128/day) and Alzheimer's ($127/day). Among the least costly causes as measured by average claim payments/day, were Pregnancy ($52/day) and Congenital ($55/day).

FIGURE 1: Distribution of number of Nursing Home Claims by Diagnosis.
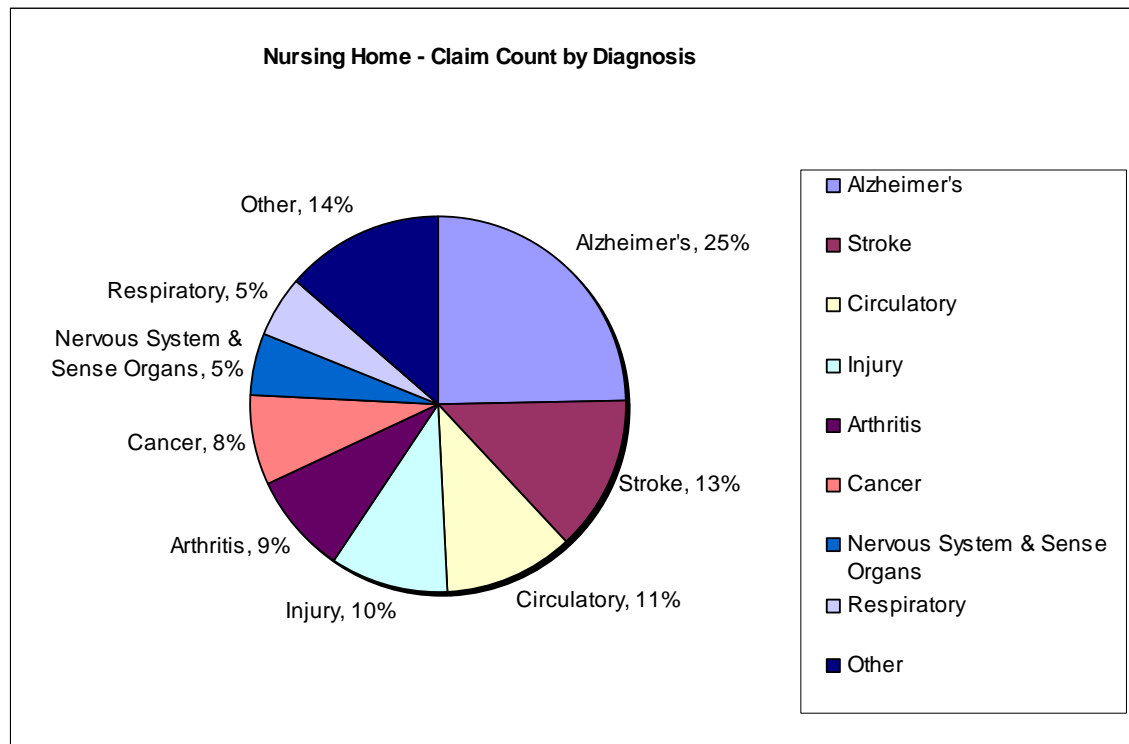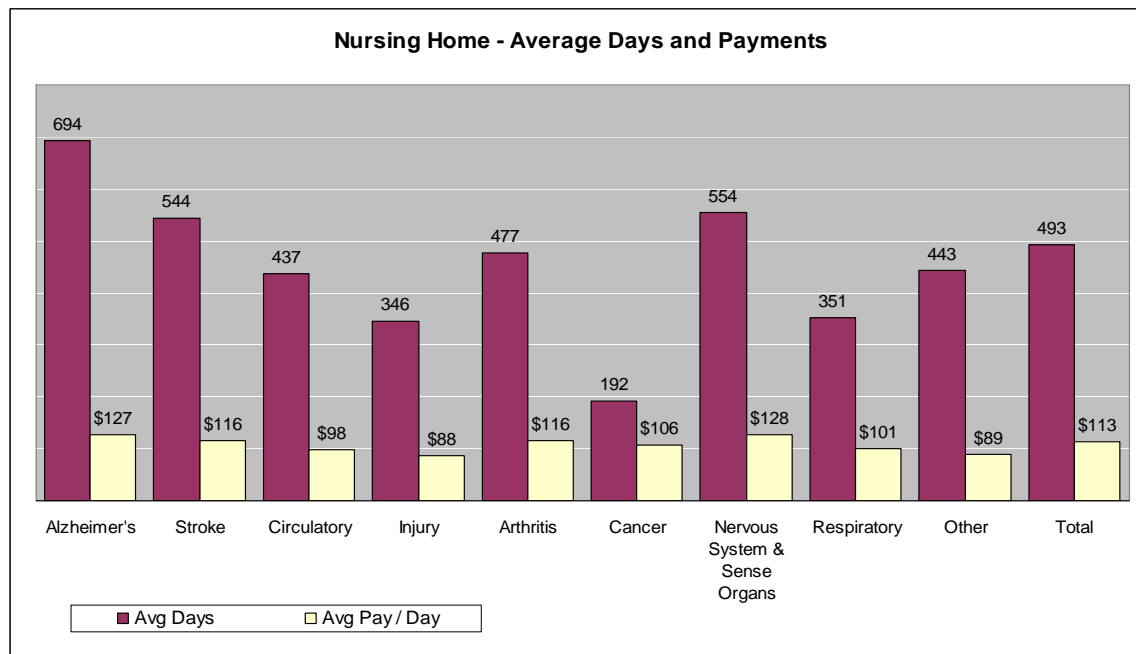

FIGURE 2: Average number of days on claim and Average cost per day for Nursing Home Claims by diagnosis.

Home Health Care claims, while still much smaller than the block of Nursing Home claims, the current study, (data through 2001) contributed four times as many Home Health Care claims as

the prior study (data through 1999). There were 16,734 claims with Home Health Care payments in the current study vs. 4,680 in the prior study. While 24% of the Nursing Home claims were coded as diagnosis Other\Unknown, there were only 14% of the Home Health Care claims with an Other\Unknown diagnosis. Unlike the Nursing Home claims grouping, Alzheimer's claims on Home Health Care dropped from the leading cause of claim from the prior study. The leading cause of claim is now Cancer followed by Arthritis.

For the 1984 through 2001 study, the leading Home Health Care diagnosis by claim count was Cancer at 17.1%, followed by Arthritis (16.4%) and Alzheimer's (15.3%). In terms of average claim payments for Home Health Care claims, Stroke claims have the highest at $42K, followed by Nervous System ($38K). On the lower side of the average claim payments were Pregnancy ($4.2K) and Congenital ($8.1K), although both of these had very low frequency. Average visits for Home Health Care claims were the longest for Nervous System and Alzheimer's claims. Viewing only diagnosis groups with at least 50 claims in the study, the mental diagnosis group exhibited the highest average payments per visit at $158/visit, followed by Stroke ($149/visit). Among the least costly diagnosis groups were Hypertension ($105/visit) and Diabetes ($111/visit). Compared with Nursing Home claims, Home Health Care claims had a shorter average length of claim for all diagnosis groups.

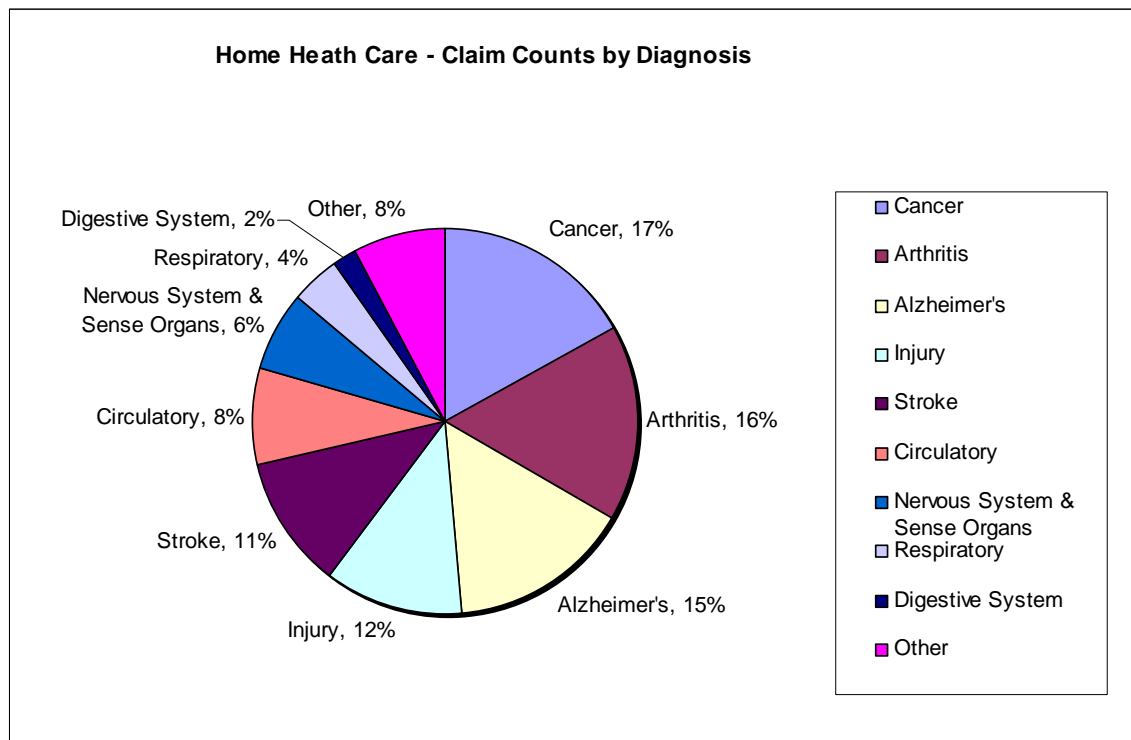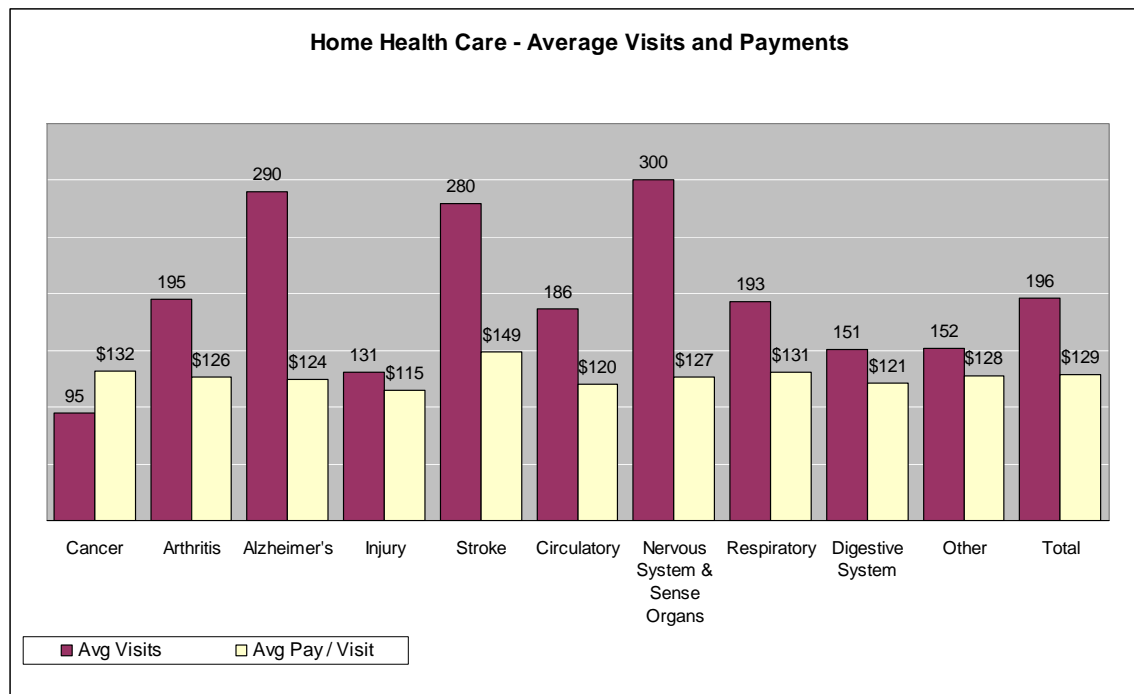**FIGURE 3**: Distribution of number of Home Health Care Claims by Diagnosis.

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FIGURE 4: Average number of visits per claim and Average cost/visit for Home Health Care Claims by diagnosis.
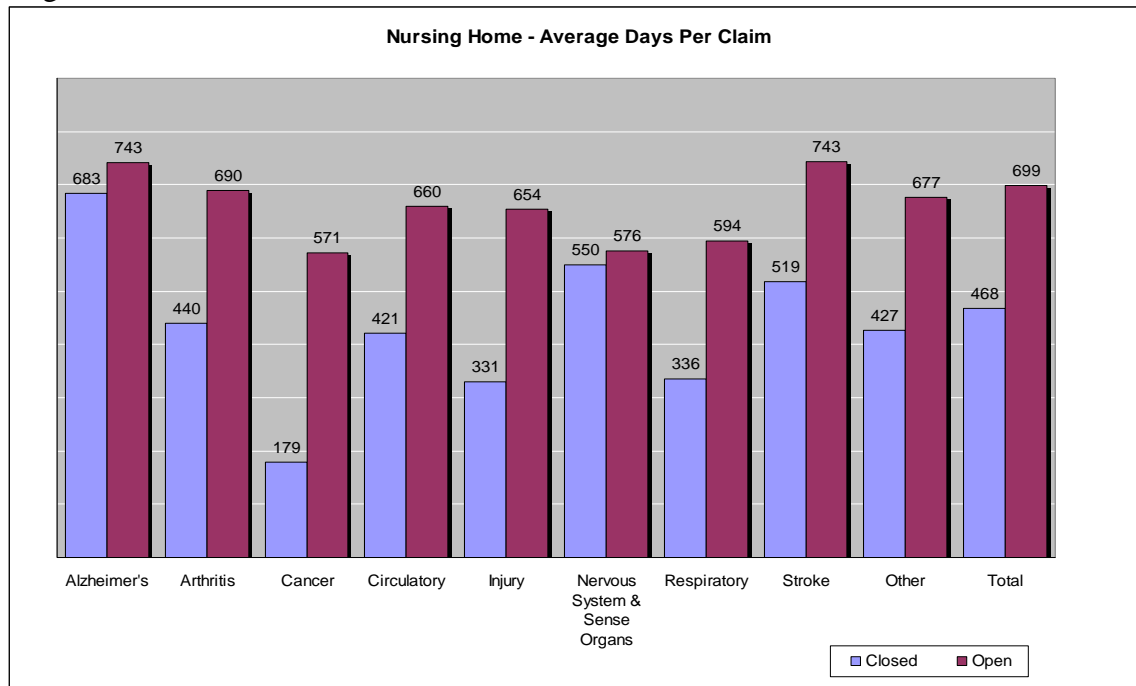

Home Health Care - Average Visits and Payments

Nursing Home, Home Health Care/ADC/Other Claims: Status Type and Diagnosis Summary (Appendix G-3)

Appendix G-3 is the same as G-2, except that it breaks claims by open versus closed claim status.

For this study, 87% of the studied claims were closed, which will help mitigate the impact that future experience from open claims will have on aggregate results. Based on average days on claim and average claim visits, open claims were longer than closed claims for all diagnosis groups. For Nursing Home claims contributing to the study, 89% were closed (88% prior study).
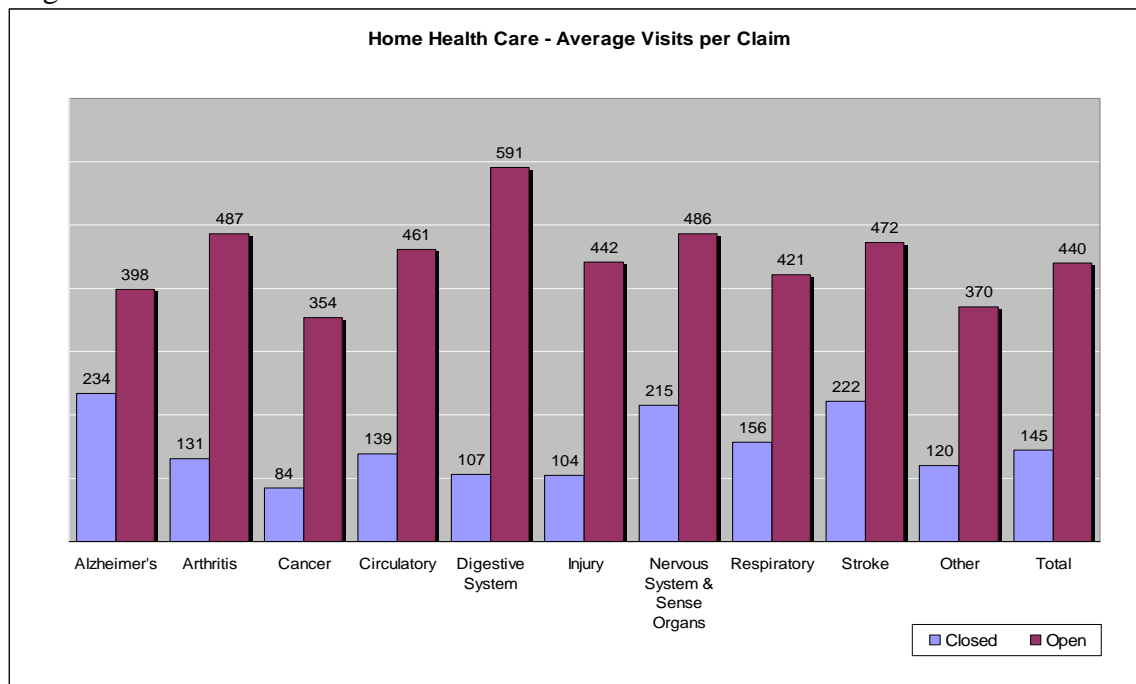
The average number of days on claim was 418 for closed claims compared to 642 for open claims. For closed claims, Alzheimer's had the highest average days on claim (683 days) followed by Mental (609 days). For open claims, Alzheimer's and Stroke had the highest average days on claim (743 days). Diagnosis groups with the highest percentage of open Nursing Home claims were Alzheimer's (30%), Stroke (10%) and Arthritis (8%).

FIGURE 5: Average number of days on claim for Nursing Home Open and Closed Claims by diagnosis.

Nursing Home - Average Days Per Claim

Diagnosis	Closed	Open
Alzheimer's	683	743
Arthritis	440	690
Cancer	179	571
Circulatory	421	660
Injury	331	654
Nervous System & Sense Organs	550	576
Respiratory	336	594
Stroke	519	743
Other	427	677
Total	468	699

For Home Health Care claims contributing to the study, 83% were closed (86% in prior study). The average number of claim visits was 134 for closed claims compared to 418 for open claims. For closed claims, Alzheimer's had the highest average number of claim visits (234 visits) followed by Stroke (222 visits). For open claims (excluding categories with under 50 claims), Arthritis had the highest average number of claim visits (487 visits), followed by Nervous Systems (486 visits) and Stroke (472 visits). Similar to open Nursing Home claims, the top three diagnosis groups with the highest percentage of open Home Health Care claims were Alzheimer's (26%), Arthritis (15%) and Stroke (13%).

FIGURE 6: Average visits per claim for Home Health Care Open and Closed Claims by diagnosis.
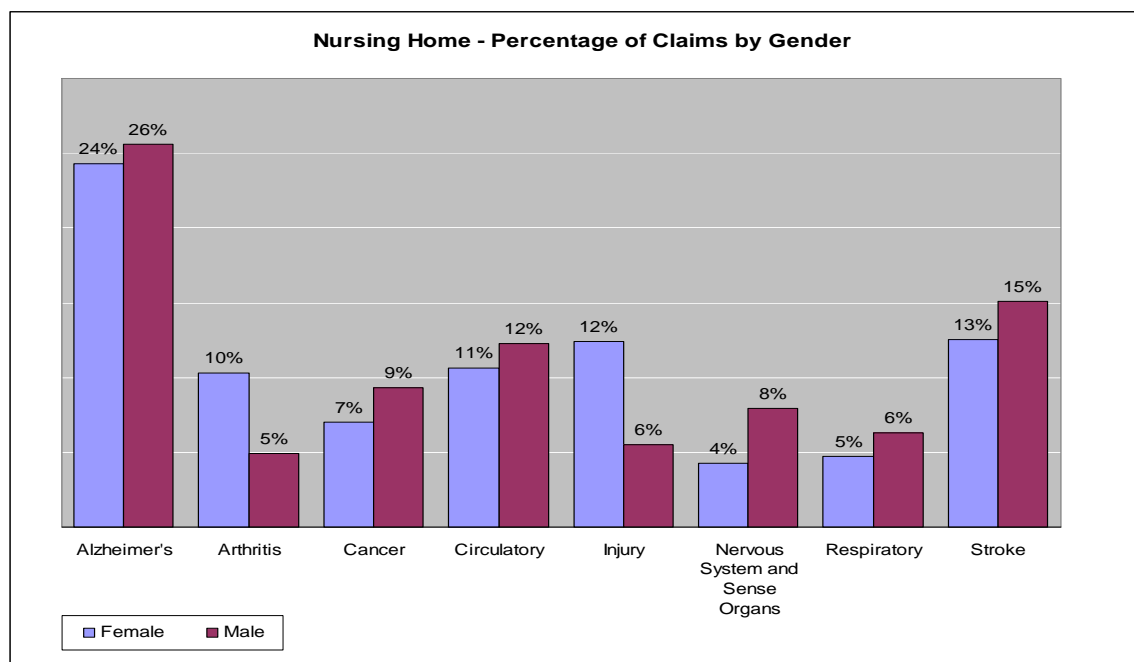

Home Health Care - Average Visits per Claim

Nursing Home, Home Health Care/ADC/Other Claims: Gender and Diagnosis Summary (Appendix G-4)

Appendix G-4 compares claims experience by diagnosis category for males and females.

The trend of increased prevalence of Alzheimer's claims is evident in both the male and female groups. Following Alzheimer's, the next most prevalent diagnosis groups for both males and females remained unchanged from the prior study (Stroke – males, Injury - females). In terms of Nursing Home average days and Home Health Care average visits, both male and female groups experienced an increase in days and visits; however the increase for females was slightly greater.
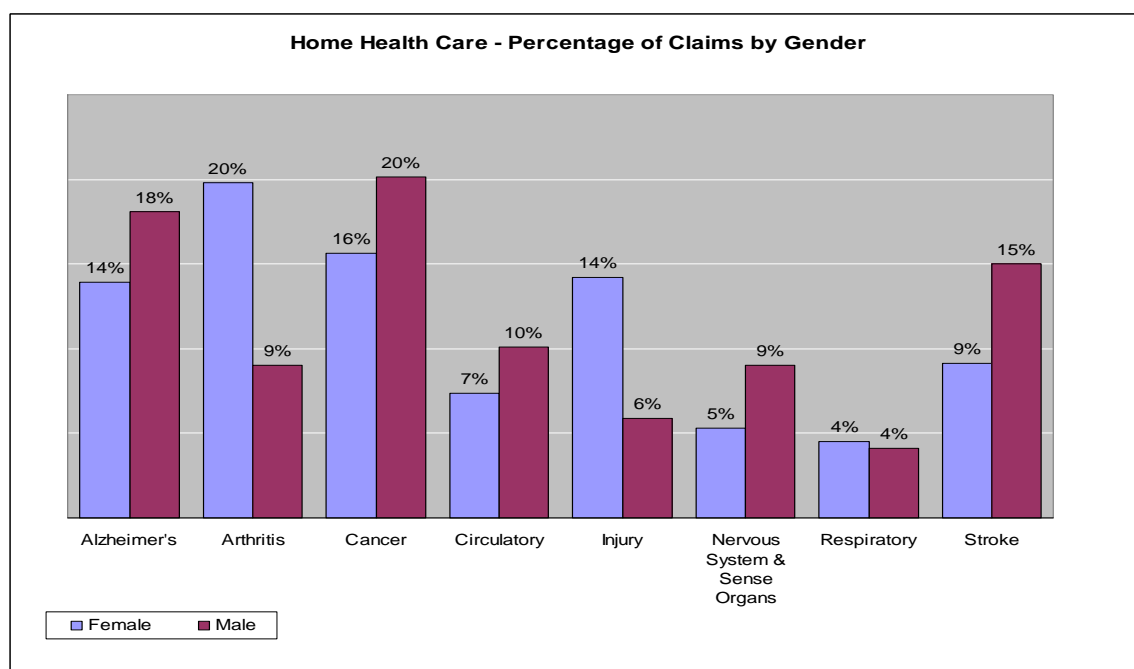
For both the male and female groups, Alzheimer's was the leading cause of Nursing Home claims at 26% and 24% respectively. Nursing Home Alzheimer's claims were also the most costly in terms of highest average payments for both male and female. Following Alzheimer's claims in prevalence were Stroke (13%) and Injury (12%) for females, and Stroke (15%) and Circulatory (12%) for males.

FIGURE 7: For the leading diagnosis codes, the percentage of total Nursing Home Claims for each gender.

Nursing Home - Percentage of Claims by Gender

Diagnosis	Female	Male
Alzheimer's	24%	26%
Arthritis	10%	5%
Cancer	7%	9%
Circulatory	11%	12%
Injury	12%	6%
Nervous System and Sense Organs	4%	8%
Respiratory	5%	6%
Stroke	13%	15%

For Female Home Health Care claims, Arthritis claims were the most prevalent at 20%, followed by Cancer (16%). For Male Home Health Care claims, Cancer claims were the most prevalent at 20%, followed by Alzheimer's (18%).

FIGURE 8: For the leading diagnosis codes, the percentage of total Home Health Care Claims for each gender.

Home Health Care - Percentage of Claims by Gender

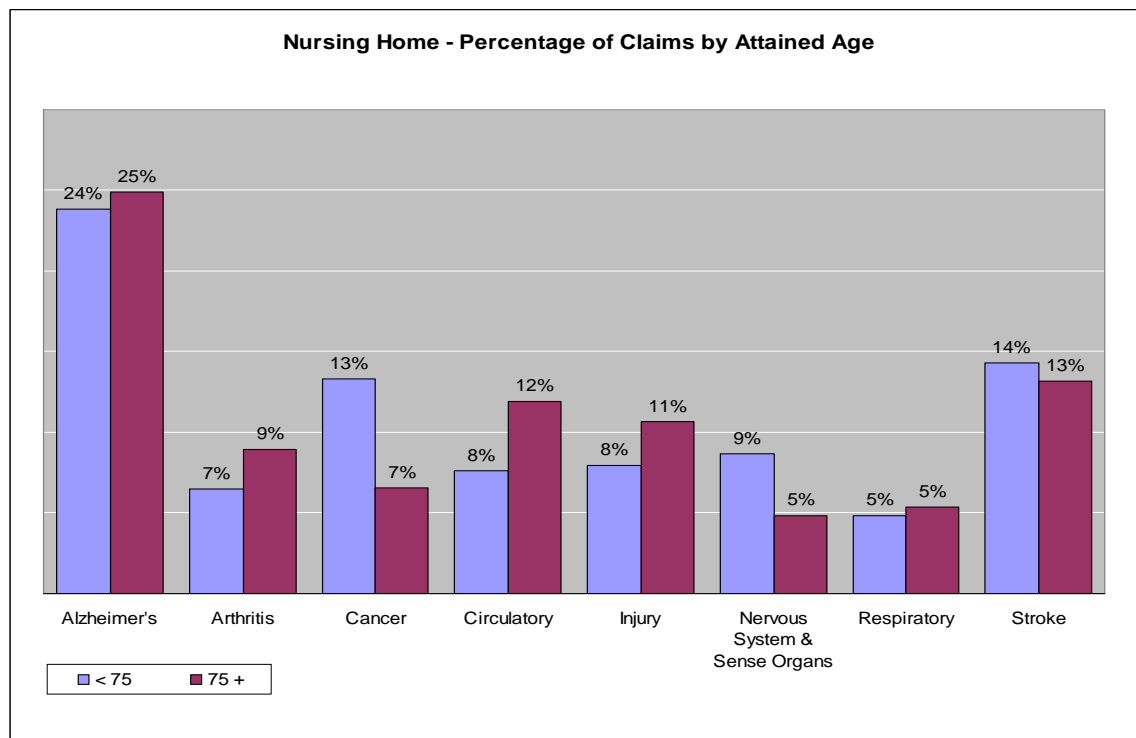| Diagnosis	Female	Male
Alzheimer's	14%	18%
Arthritis	20%	9%
Cancer	16%	20%
Circulatory	7%	10%
Injury	14%	6%
Nervous System & Sense Organs	5%	9%
Respiratory	4%	4%
Stroke	9%	15%

Nursing Home, Home Health Care/ADC/Other Claims: Diagnosis Category by Attained Age Summary (Appendix G-5)

Appendix G-5 compares claims experience by diagnosis category by attained age.

For Nursing Home claims, Alzheimer's, Circulatory, Stroke and Injury claims had approximately 84% of their claims attributed to attained ages over 75. For the prior study (through 1999) this percentage was 80%. Arthritis (87%) and Respiratory (84%) also had high percentages of their claims attributable to attained ages over 75. This group was only approximately 71% for Cancer and Nervous system claims compared to the prior study (through 1999) where the percentage was 65%. Excluding claims in attained age bracket, 0-64, which has relatively few claims and short durations, the diagnosis groups of Alzheimer's, Mental and Stroke had average claim durations that tended to decrease with age. Diagnosis groups of Cancer and Injury tend to increase with age.

The diagnosis groups with the highest percentage of Nursing Home claims for ages under 75 were Congenital (33%), Cancer (30%) and Nervous System and Sense Organs (28%).
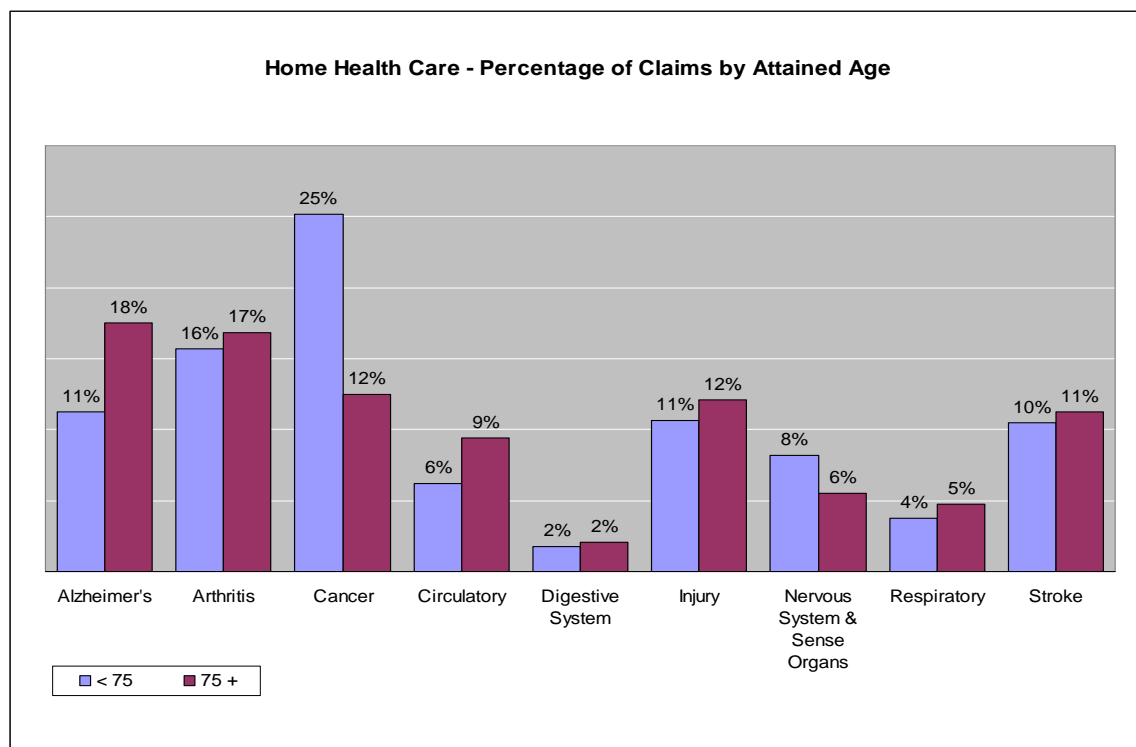
FIGURE 9: For the leading diagnosis codes, the percentage of total Nursing Home claims for attained age brackets 0 to 75 and ages 75 plus.

Nursing Home - Percentage of Claims by Attained Age

The Home Health Care claims have a similar distribution of ages by diagnosis, although overall they appear to have younger ages. The Alzheimer's, Circulatory, Stroke and Injury claims had between 65% and 73% of their claims attributed to attained ages over 75 which was higher than the prior study (through 1999) were these diagnosis groups accounted for between 60% and 70% of claims. The over age 75 group was 46% for Cancer and 54% for Nervous System claims.

The diagnosis groups with the highest percentage of Home Health Care claims for ages under 75 were Cancer (54%), Nervous System and Sense Organs (46%), Skin and Subcutaneous Tissue (44%) and Mental (42%).

FIGURE 10: For the leading diagnosis codes, the percentage of total Home Health Care claims for attained age brackets less than 75 and ages 75 plus.

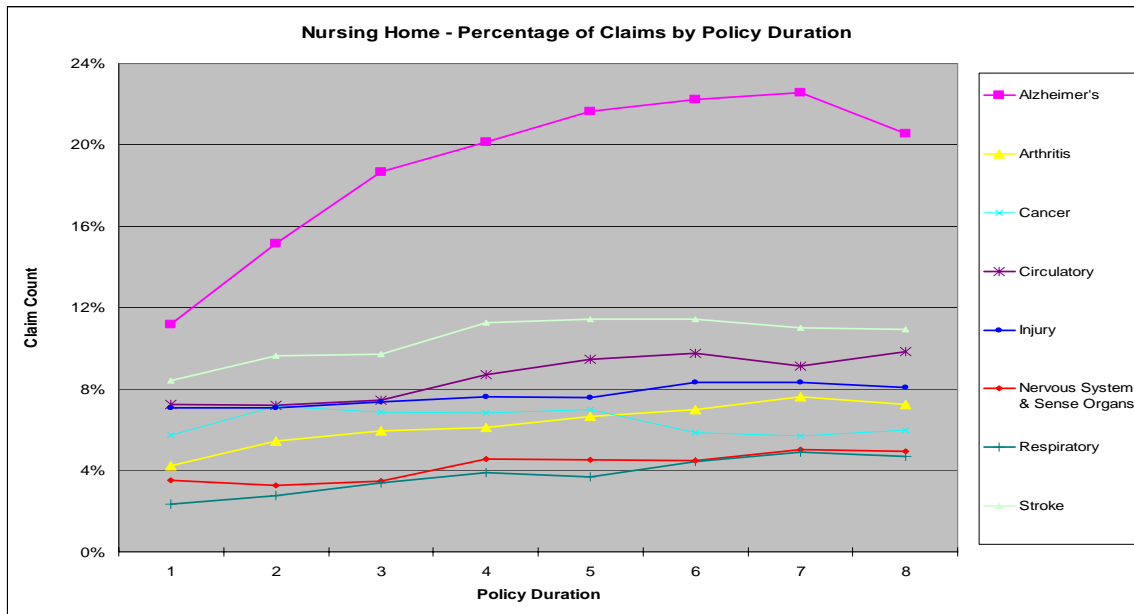Home Health Care - Percentage of Claims by Attained Age

Nursing Home, Home Health Care/ADC/Other Claims: Diagnosis Category by Duration Summary (Appendix G-6)

Appendix G-6 compares claims experience by diagnosis group by policy duration of claim incurral.
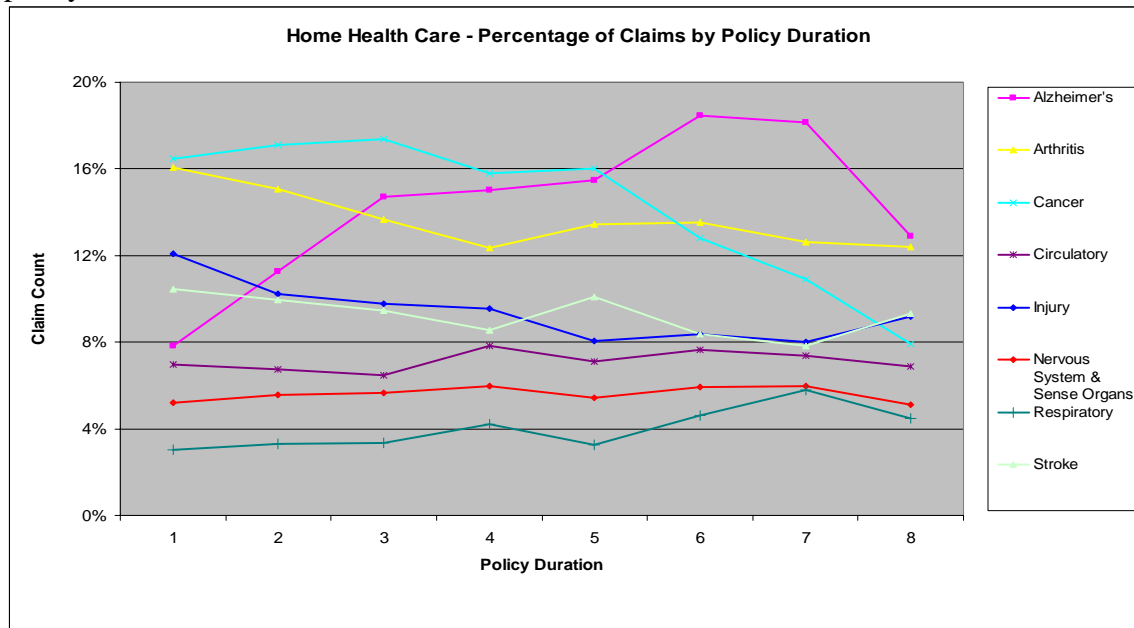
For Nursing Home claims, most diagnosis groups (excluding Ill Defined and Other/Unknown claims) have lower claim counts in early durations that peak at around duration 4 and then taper downward. The average cost per day is lower in the early duration for the most prevalent diagnosis codes, with the exception of Injury which is fairly flat over all durations.

FIGURE 11: For the leading diagnosis codes, Nursing Home percentage of claim counts by policy duration.

Nursing Home - Percentage of Claims by Policy Duration

Legend: Alzheimer's, Arthritis, Cancer, Circulatory, Injury, Nervous System & Sense Organs, Respiratory, Stroke

For Home Health Care claims, many of the cells in this exhibit have too few claims to be considered credible, but some diagnosis groups clearly indicate a higher prevalence of early duration claims. The major diagnosis groups that demonstrate this trend include Arthritis, Cancer, Circulatory, Injury, Nervous Systems and Stroke. These early duration claims could have underwriting significance including possible anti-selection. Diagnosis groups with exhibit higher average visits for first duration claims include Alzheimer's, Injury, Nervous System and Stroke.

FIGURE 12: For the leading diagnosis codes, Home Health Care percentage of claim counts by policy duration.

Nursing Home, Home Health Care/ADC/Other Claims: Diagnosis Category by Incurred Year Group (Appendix G-7)

Appendix G-7 compares claims experience by diagnosis group by claim incurral year grouping (1984-1987; 1988-1991; 1992-1996; 1997-2001).
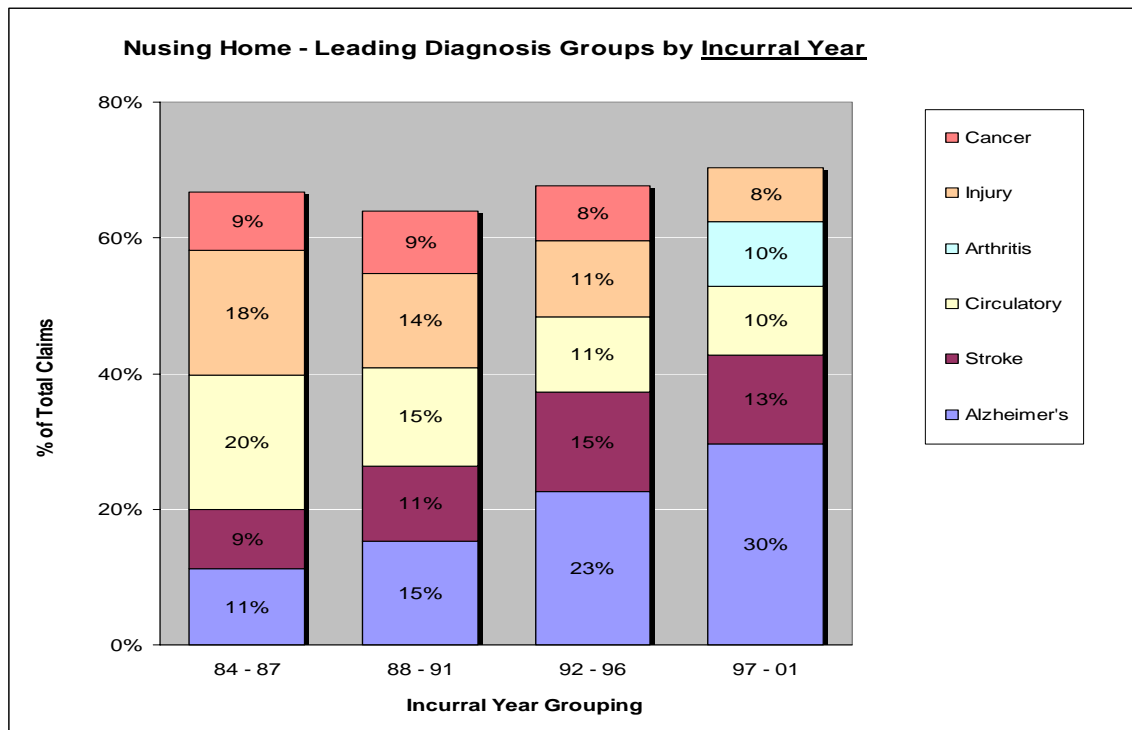
For Nursing Home Claims, the prevalence of the Alzheimer's diagnosis group has steadily increased over time. The Arthritis diagnosis group has replaced Cancer in the top 5 leading causes of claim for the most recent incurral period, 1997-2001.

The average cost per day increased as the incurral year increased. The average claim payment increased with incurral period except for the most recent incurral period, 1997-2001. The most recent incurral period had a larger portion of open claims (20% open for 1997-2001 group compared with 4% open for the earlier incurral year groups combined). This may have the potential to increase both the average payments and average days paid on these open claims until they are closed, which could be understating these measures in the most recent incurral group.

Excluding claims with incurral years before 1987, where there is very little experience by diagnosis group, Alzheimer's is the leading cause of claim for all the other incurral groups. The second leading cause of claim has varied by incurral year between Circulatory (1988-1991) and Stroke (1992-1996, 1997-2001).

In the prior study there had been a trend of increased ICD9 coding as one progressed towards more recent incurral years, with 74% of the 1984-1987 group coded as Other\Unknown compared with 45% for the 1988-1991 group and 14% for the 1992-1996 group. However, for the most recent incurral group, 1997-2001 the Other\Unknown category jumped to 22%. This increase is caused by different levels of diagnosis coding by recent contributing companies.
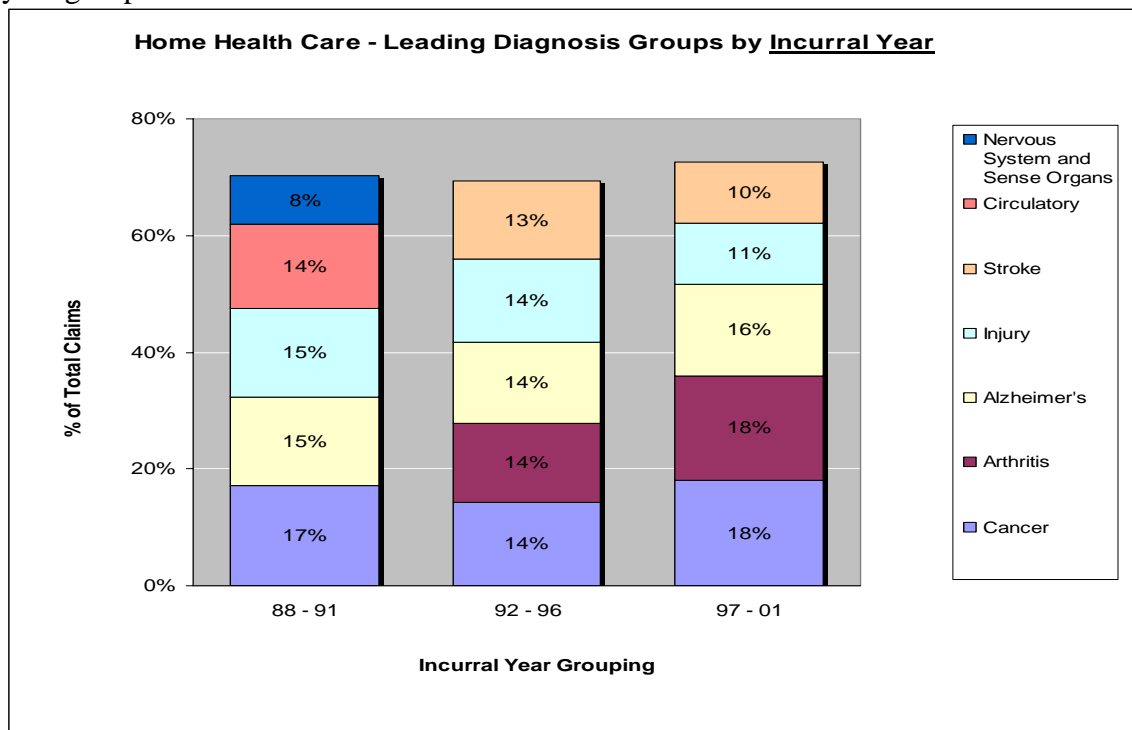
FIGURE 13: The chart below shows the trends of five leading diagnosis groups over incurral year group for Nursing Home claims.

Nusing Home - Leading Diagnosis Groups by Incurral Year

For Home Health Care claims, excluding incurral years 1984-1987 (only 28 claims), Cancer and Arthritis claims have increased in number to become the leading causes of claim in the most recent incurral period (1997-2001). Alzheimer's is the third leading cause of Home Health Care claim in the 1992-1996 and 1997-2001 incurral periods.

The average payments have increased over time. The average cost per visit is $127 for 1992 - 1996, $131 for 1997-2001.

FIGURE 14: The chart below shows the trends of five leading diagnosis groups over incurral year group for Home Health Care claims.

Home Health Care - Leading Diagnosis Groups by Incurral Year

Nursing Home, Home Health Care/ADC/Other Claims: Closed Status and Diagnosis Summary (Appendix G-8)

Appendix G-8 compares claims experience on closed claims by diagnosis group and claim close status (benefit expiry, death, recovery and transfer).
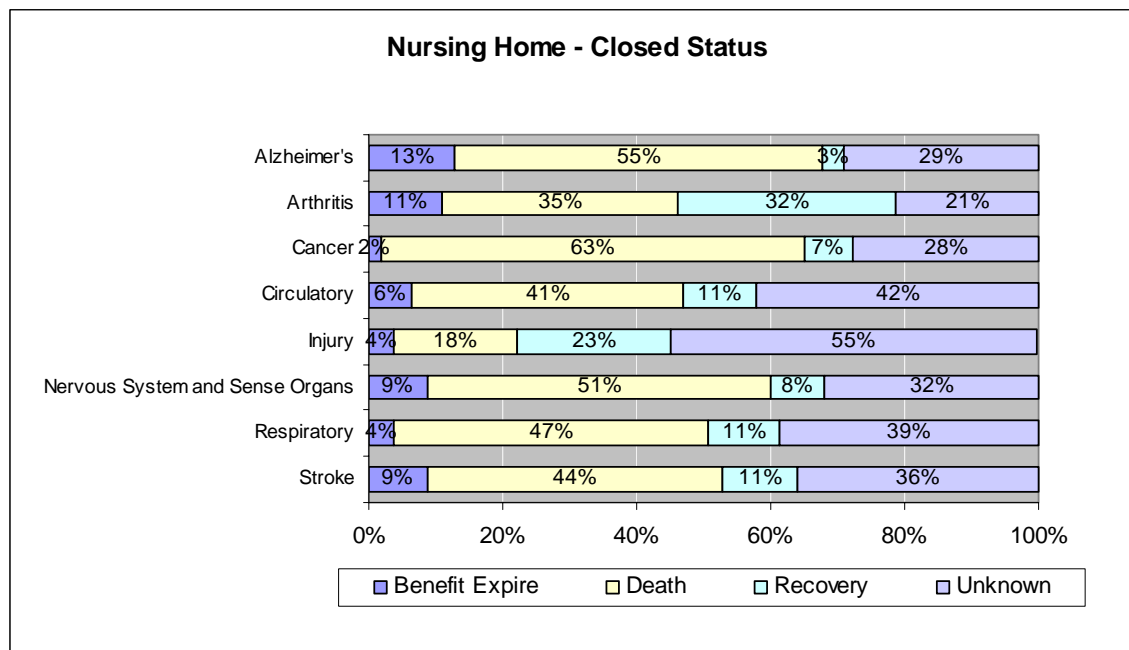
A significant portion of data is coded as "Other\Unknown" claim close status at this time (43% of the Nursing Home claims and 34% of Home Health Care claims).

For Nursing Home claims, excluding unknown close status, the percentage of claims closed due to death is 68% (prior study 65%), recovery is 20% (prior study 26%) and benefit expiry is 12% (prior study 8%). As expected, the largest average payments and largest average claim days are from Nursing Home claims that closed due to benefit expiry, followed by claims that closed due to death, with the smallest average payments and average claim days from claims that transferred.
Transferred status only represented 74 out of 54,673 claims.

By diagnosis group, Alzheimer's Nursing Home claims, excluding unknown close status, had a much larger than average percentage of claims close due to death at 77%, with benefit expiries at 18% and recoveries at 4%. In contrast, Nursing Home Injury claims, excluding unknown close status, had 40% of claims close due to death, with benefit expiries at 8% and recoveries at 51%.
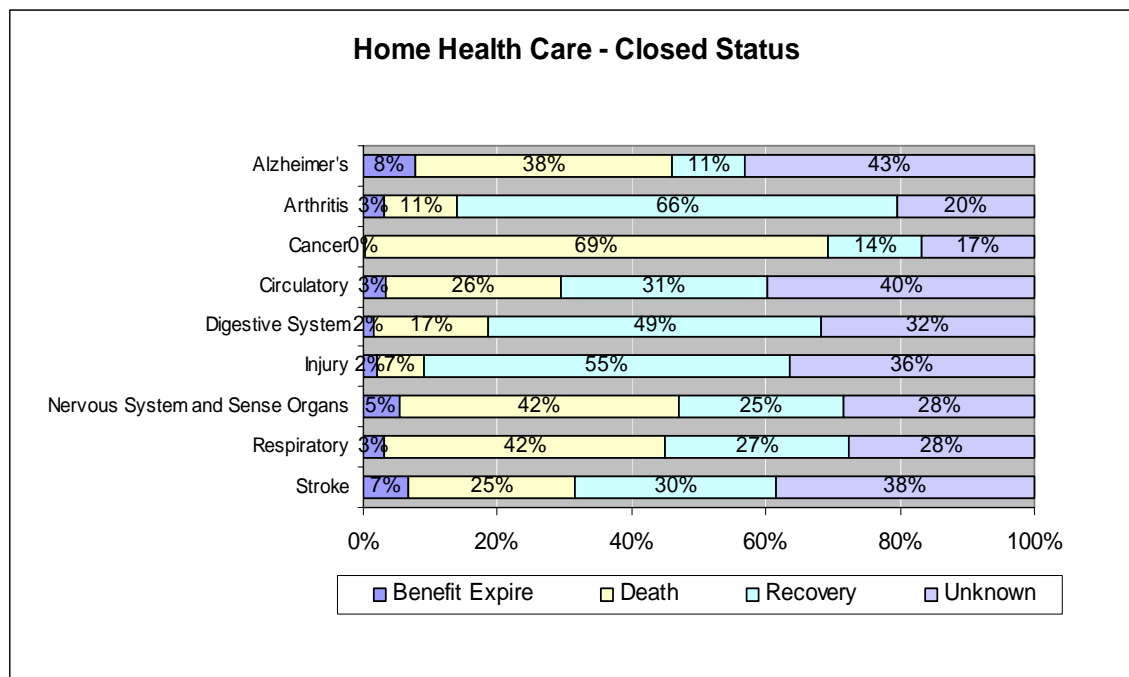
FIGURE 15: The chart below shows the percentage of claims closed by status code for the leading diagnosis groups of Nursing Home claims, excluding transfers.

Nursing Home - Closed Status

Diagnosis	Benefit Expire	Death	Recovery	Unknown
Alzheimer's	13%	55%	3%	29%
Arthritis	11%	35%	32%	21%
Cancer	2%	63%	7%	28%
Circulatory	6%	41%	11%	42%
Injury	4%	18%	23%	55%
Nervous System and Sense Organs	9%	51%	8%	32%
Respiratory	4%	47%	11%	39%
Stroke	9%	44%	11%	36%

For Home Health Care claims, excluding unknown close status, the percentage closed due to death is 45%, due to recovery is 49%, due to benefit expiry is 5% and due to transfer is 1%. As expected, the largest average payments are from Home Health Care claims that closed due to benefit expiry, followed by claims that closed due to death, then transfers, and finally the smallest average payments from claims that recovered. Claims that closed due to benefit expiry have the largest average claim days, followed by transfers, death and recovery.

By diagnosis, Alzheimer's Home Health Care claims, excluding unknown close status, had a much larger than average percentage of claims close due to death (65%), with benefit expiries (13%) and recoveries (18%) substantially less. In contrast, Home Health Care Injury (85%) and Arthritis (82%) claims (coding by close code available) had the highest recovery rates. Cancer claims had the highest close due to death at 83%.

FIGURE 16: The chart below shows the percentage of claims closed by status code for the leading diagnosis groups of Home Health Care claims, excluding transfers.

Home Health Care - Closed Status

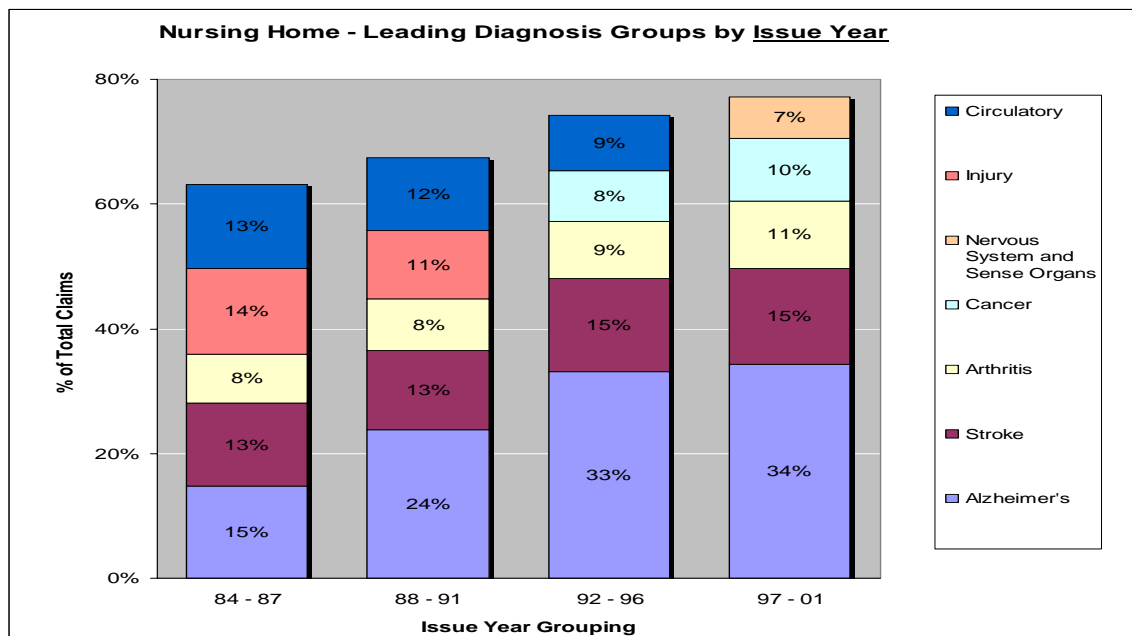| Diagnosis	Benefit Expire	Death	Recovery	Unknown
Alzheimer's	8%	38%	11%	43%
Arthritis	3%	11%	66%	20%
Cancer	0%	69%	14%	17%
Circulatory	3%	26%	31%	40%
Digestive System	2%	17%	49%	32%
Injury	2%	7%	55%	36%
Nervous System and Sense Organs	5%	42%	25%	28%
Respiratory	3%	42%	27%	28%
Stroke	7%	25%	30%	38%

Nursing Home, Home Health Care/ADC/Other Claims: Issue Year and Diagnosis Summary (Appendix G-9)

Appendix G-9 compares claims experience by diagnosis group and issue year.

The early issue year group (1984-1987) has a large percentage of the data with an Other\Unknown diagnosis group for Nursing Home and Home Health Care claims. A shift from Nursing Home to Home Health Care claim utilization is evident in study. For the most recent issue period (1997-2001), the percentage of claims that are Home Health Care is 64% where the prior period (1992-1996), Home Health Care represented 38% of claims.
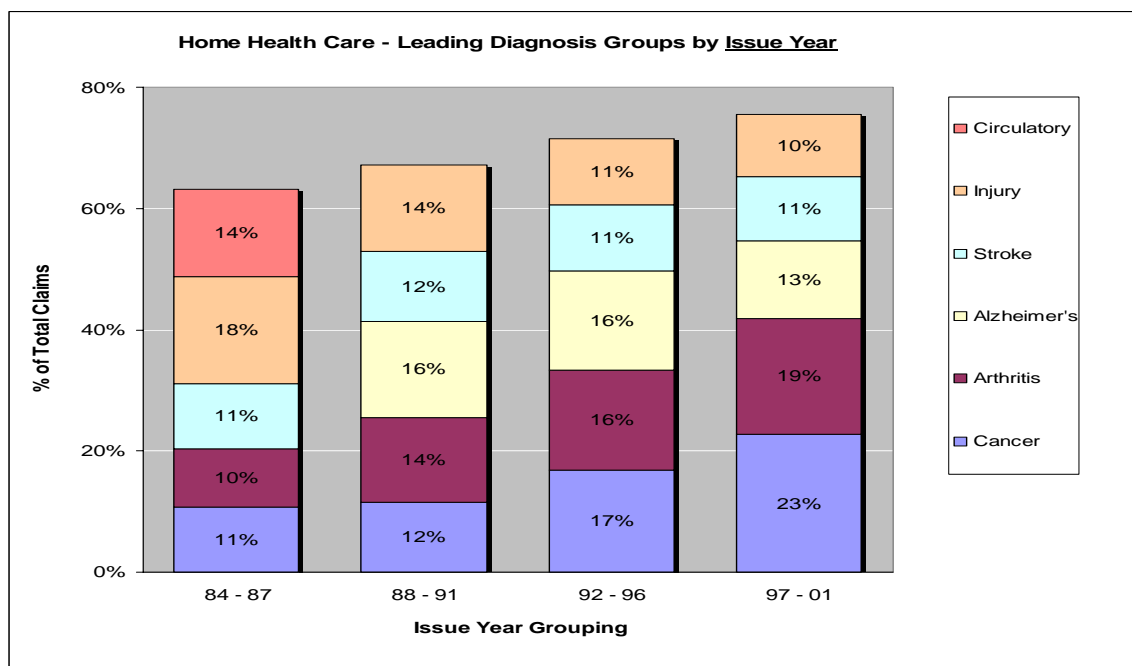
For Nursing Home claims, the most prevalent diagnosis groups for issue year group 1988-1991 are Alzheimer's, Stroke and Circulatory. For the issue year groups 1992-1996 and 1997-2001, the most prevalent diagnosis groups are Alzheimer's and Stroke. Arthritis has increased from the fifth in the 1984-1987 and 1988-1991 issue year groups to third in the 1992-1996 and 1997-2001 issue year groups. Injury is not in the top 5 diagnosis groups for the two most recent issue year groups. This may be due to younger issue ages and the younger attained ages associated with more recently issued policies.

FIGURE 17: The chart below shows the trends of five leading diagnosis groups by issue year grouping for Nursing Home Claims.

Nursing Home - Leading Diagnosis Groups by Issue Year

Issue Year Grouping	Circulatory	Injury	Nervous System and Sense Organs	Cancer	Arthritis	Stroke	Alzheimer's
84 - 87	13%	14%			8%	13%	15%
88 - 91	12%	11%			8%	13%	24%
92 - 96	9%			8%	9%	15%	33%
97 - 01			7%	10%	11%	15%	34%

% of Total Claims

For Home Health Care claims, the most prevalent diagnosis groups for issue year group 1988-1991 were Alzheimer's, Injury and Arthritis. For the issue year groups 1992-1996, the most prevalent were Cancer, Alzheimer's and Arthritis and for 1997-2001, they are Cancer, Arthritis and Alzheimer's.

FIGURE 18: The chart below shows the trends of five leading diagnosis groups by issue year grouping for Home Health Care Claims.

Home Health Care - Leading Diagnosis Groups by Issue Year

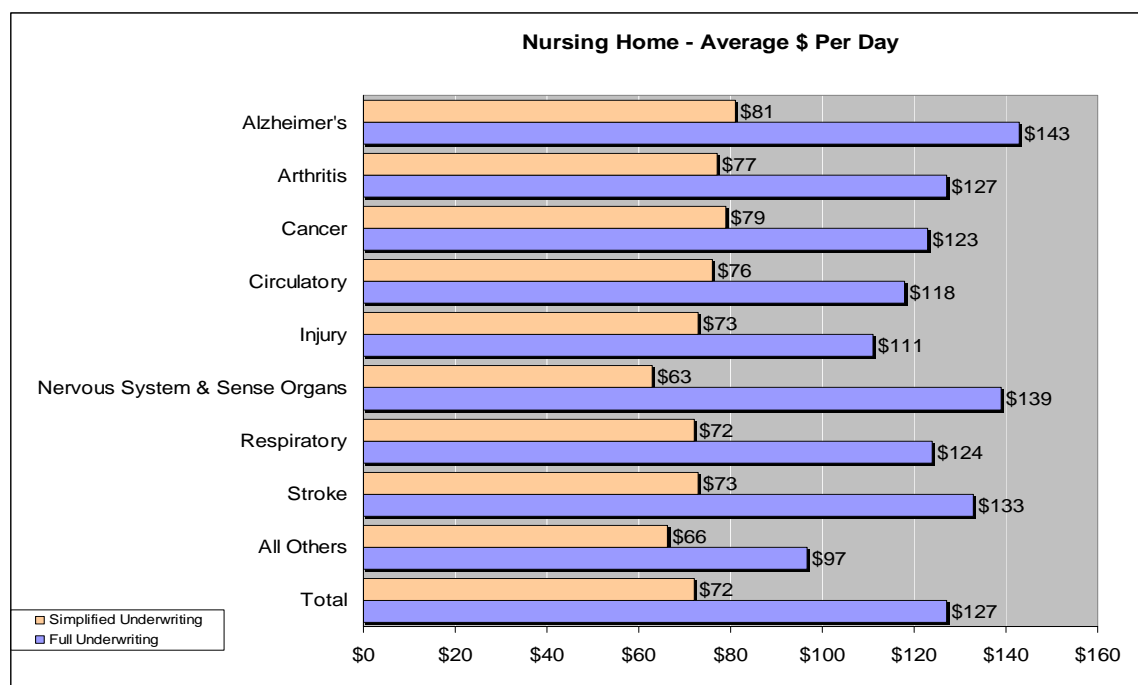| Issue Year Grouping	Circulatory	Injury	Stroke	Alzheimer's	Arthritis	Cancer
84 - 87	14%	18%	11%		10%	11%
88 - 91		14%	12%	16%	14%	12%
92 - 96		11%	11%	16%	16%	17%
97 - 01		10%	11%	13%	19%	23%

% of Total Claims

Nursing Home, Home Health Care/ADC/Other Claims: Underwriting Type and Diagnosis Summary (Appendix G-10)

41

Appendix G-10 compares claims experience by diagnosis group and underwriting type.

The underwriting categories of Full Medical and Simplified have the most credible data.

For Nursing Home claims with Simplified underwriting, the average claim payment and average days on claim are lower than claims with Full underwriting. This is the exact opposite of the prior study. Note that the claims subject to Full underwriting has increased 172% where the Simplified underwriting claims exposures has increased only 22% over the prior study. The lower cost for Simplified underwriting on Nursing Home claims is true for most diagnosis groups (except for Congenital and Pregnancy Disorders)

FIGURE 19: The chart below shows the average $ per day for the eight leading diagnosis groups for Nursing Home Claims.

For Home Health Care claims with Simplified underwriting the average claim payment and average days on claim are much lower than with claims with Full underwriting. The Simplified underwriting average claim payments and average days on claim may be influenced by lower issue limits on benefit amounts and benefit periods. The Simplified underwriting category has less than a 1,000 claims.

Nursing Home, Home Health Care/ADC/Other Claims: Benefit Period Type and Diagnosis Summary (Appendix G-11)

Appendix G-11 compares claims experience by diagnosis group and benefit period limitation.

For Nursing Home claims, 5.2% of claims have an unlimited benefit period. By diagnosis group, Alzheimer's, Stroke and Cancer have the highest percentage of claims with an unlimited benefit period. For most diagnosis groups, the average duration of claim is longer for limited benefit periods; certain diagnosis groups (Mental and Nervous Systems) are longer for the unlimited benefit periods.
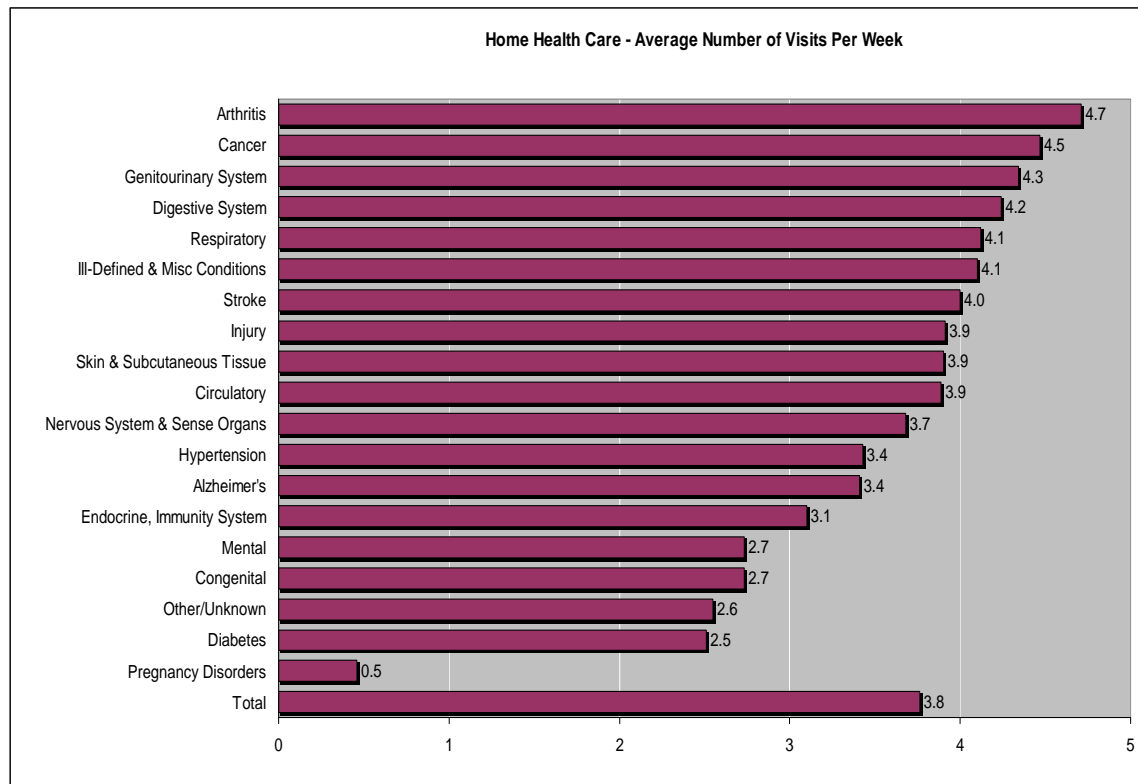
For Home Health Care claims, 15.0% of claims have an unlimited benefit period. By diagnosis group, Cancer, Injury and Alzheimer's, have the highest percentage of claims with an unlimited benefit period. For most diagnosis groups, the average duration of claim is longer for limited benefit periods are longer for the unlimited benefit periods. The only major exception is Nervous Systems where the unlimited benefit period claims are much larger than limited benefit period claims.

Average Number of Home Health Care Visits per Week by Diagnosis (Appendix G-12)

Appendix G-12 shows the average number of Home health care visits per week by diagnosis group.

Compared with the prior study, the average number of visits per week decreased from 4.29 to 3.76. This decrease was seen across most diagnosis groups with two exceptions, Nervous Systems increased from 2.73 to 3.68 and Stroke increased slightly from 3.91 to 4.00. Diagnosis groups with the highest average number of visits per week are Arthritis (4.71 visits) and Cancer (4.47 visits). Diagnosis groups with the fewest average number of visits per week (excluding categories with less than 100 claims and Unknown claims) are Mental (2.73 visits- 132 claims in the study) and Endocrine, Immune System (3.10 visits – 124 claims). Alzheimer's, which is consistently the most prevalent diagnosis in the study, has an average number of visits per week of 3.41, is slightly below the average for all diagnosis groups in the study of 3.76.

FIGURE 20: The chart below illustrates the average number of visits per week by diagnosis groups Home Health Care claims.

Home Health Care - Average Number of Visits Per Week

Diagnosis Group	Average Visits Per Week
Arthritis	4.7
Cancer	4.5
Genitourinary System	4.3
Digestive System	4.2
Respiratory	4.1
Ill-Defined & Misc Conditions	4.1
Stroke	4.0
Injury	3.9
Skin & Subcutaneous Tissue	3.9
Circulatory	3.9
Nervous System & Sense Organs	3.7
Hypertension	3.4
Alzheimer's	3.4
Endocrine, Immunity System	3.1
Mental	2.7
Congenital	2.7
Other/Unknown	2.6
Diabetes	2.5
Pregnancy Disorders	0.5
Total	3.8

SECTION IV   VOLUNTARY LAPSE

This section presents the voluntary lapse experience of long term care insurance in the United States for issue years 1984 - 2000. The 2001 issues were not utilized as the exposure ceased December 31, 2001. The data presented in this section includes terminations for all reasons except death. The data from those companies who did not distinguish between deaths and lapses has been excluded from this section and the mortality section.

In the following section are tables showing total termination rates, which include both lapses and deaths. Data from all contributing companies, including those who did not distinguish between deaths and lapses, is included in these tables.

The lapse data used for this study includes a significantly larger amount of exposure than was available for the previous study. The data extends to the first seventeen durations, compared to the first fourteen for the previous study. Although the overall lapse rate is roughly the same for the two studies, the lapse rates in the newer study start off slightly higher, and then reduce more quickly, through the first nine durations. These differences are shown in the table below. Note that, since the addition of two more years' of experience has lowered the cumulative lapse rate by 0.2%, the lapse rate of only the additional two years' worth of data must be even lower. The overall lapse rate of the newest data is 7.0%.

	Exposure		Lapse Rate	
Duration	1999 Study	2001 Study	1999 Study	2001 Study
1	1,905,567	3,226,158	10.6%	11.4%
2	1,432,141	2,337,392	7.9%	8.3%
3	1,095,890	1,732,848	6.9%	6.6%
4	829,992	1,337,757	6.1%	5.6%
5	600,594	1,033,030	5.4%	4.9%
6	403,210	785,779	5.1%	4.3%
7	252,336	599,946	5.0%	3.9%
8	174,517	455,764	4.9%	3.8%
9	124,395	330,422	4.7%	3.5%
10	73,041	249,703	5.4%	3.8%
11	44,109	165,322	5.8%	4.4%
12	19,900	106,367	7.4%	4.7%
13	8,029	52,175	8.2%	5.5%
14	1,156	24,494	11.5%	7.6%
15	1	9,853	0.0%	8.5%
16		2,765		9.6%
17		773		7.0%
18		1		0.0%
Total	6,964,878	12,450,549	7.6%	7.4%

The reader may wish to compare the results of this study with the results of the previous study done by this committee, entitled "*1984 – 1999 Long Term Care Experience Committee's Intercompany Study*". Also of interest might be the recent study entitled "*Long-Term Care Insurance Persistency Experience*", jointly sponsored by LIMRA and the Society of Actuaries (SOA). As of this writing, both may be found on the SOA web site www.soa.org. Go to the Health Area of Practice; then to Experience Studies. Links to both studies should appear by name.

<u>Summary of Findings</u>

This section summarizes the major findings of this Voluntary Lapse section. Note that these are only summaries; exceptions to these general trends, and additional discussion of the results observed, can be found in the sections that follow.

<u>Overall Lapse Rates by Duration</u>
Overall lapse rates drop quickly from their initial levels until duration 9, then rise as duration increases.

<u>Lapse Rates by Policy Type (Individual vs. Group)</u>
Individual lapse rates show the same pattern as overall lapse rates. Group rates start out higher, and then drop below individual lapse rates at durations 7 and above.

<u>Lapse Rates by Issue Year Group</u>
For individual insurance, more recent issues have lower lapse rates. There is no clear pattern for group insurance.

<u>Lapse Rates by Issue Age Group</u>
Younger issue ages have lower lapse rates, except for under age 50.

<u>Lapse Rates by Type of Underwriting</u>
The more stringent forms of underwriting have lower lapse rates.

<u>Lapse Rates by Gender</u>
Lapse rates do not differ greatly by gender.

<u>Lapse Rates by Elimination Period</u>
Longer elimination periods have lower lapse rates.

<u>Lapse Rates by Benefit Period</u>
Unlike the previous study, there was no consistent difference between lapse rates for policies with limited benefits versus those with unlimited benefits.

<u>Lapse Rates by Benefit Escalator Clause</u>
Policies with no benefit escalator clause have higher early lapse rates.

<u>Lapse Rates by Premium Payment Mode</u>
Lapse rates do not differ significantly by premium payment mode.
<u>Lapse Rates by Policy Quarter</u>

Lapse rates for the policy quarter containing the policy anniversary are twice as high as for other quarters. The pattern by quarter varies significantly with the frequency of premium payment.

Lapse Rates by Distribution Type
Insurance issued through enrollers have lower lapse rates than other types of distribution.

Definition of Terms

Duration: Duration is calculated as the number of years between the termination date and issue date. The participating company provides both dates. In calculating the duration, a one-month grace period after the coverage anniversary is assumed. For example, if coverage terminates between 1 and 13 months after the issue date, the duration is 1. If coverage terminates between 14 and 25 months after the issue date, the duration is 2, and so forth.

In Force: Coverage is considered in force if the termination reason code is specified as in force at the end of the observation period. In force business includes coverage issued from 1984 to 2000. The observation periods are calendar years 1984 through 2001.

Lapse: An individual's coverage is considered lapsed if it was terminated by the individual's 2001 coverage anniversary with one of the following reason codes:

- Terminated, reason unknown
- Terminated as a result of non payment of premiums
- Terminated as a result of expiration of benefits
- Terminated as a result of termination of the group
- Terminated for other reasons
- Terminated to reduced paid-up status
- Terminated to extended term

Coverage is not considered lapsed if:

- Terminated as a result of death
- Terminated after their 2001 coverage anniversary

Lapse Rates: Lapse rates in this report are calculated as the number of terminations (lapses) divided by the total lives exposed (in force). Lives active at the start of the experience period contribute a full year of exposure. Lapses therefore contribute a full year to both the numerator and denominator of the lapse rate calculation.

Lapse rates for this report are calculated by dividing the sum of all of the individual company's lapses by the sum of all of the individual company's exposure. The division to calculate a lapse rate is performed as a last step. Therefore, companies with larger exposure receive greater weight than companies with smaller exposure.

For this study, lapse rates are broken out by the following categories:
- Policy Duration
- Policy Type (individual versus group)
- Issue Year Group & Policy Type
- Issue Age Group

- Type of Underwriting & Policy Type
- Gender
- Elimination Period
- Benefit Period (limited versus unlimited)
- Benefit Escalator Clause
- Premium Payment Mode
- Policy Quarter
- Distribution Type

Discussion

Appendices F-1 through F-10 contain detailed data on exposures and lapses for each of the breakdowns discussed below. These discussions contain graphs and tables developed using the data in the appendices that highlight observed patterns and trends. Please note that judgment was used when deciding what data to include when producing these graphs and tables; some cells that contain only a small amount of exposure were omitted from them.

Lapse Rates by Issue Year Group, Policy Type and Duration (Appendix F-1)
Figure 1 shows lapse rates by duration for all issue years and policy types. The lapse rates drop quickly from their initial levels until duration 9, when the rate of lapse begins to rise as duration increases. Possible explanations for this observed increase in the later durations are offered in the discussions of Figures 2, 3, 5, and 8 that follow.
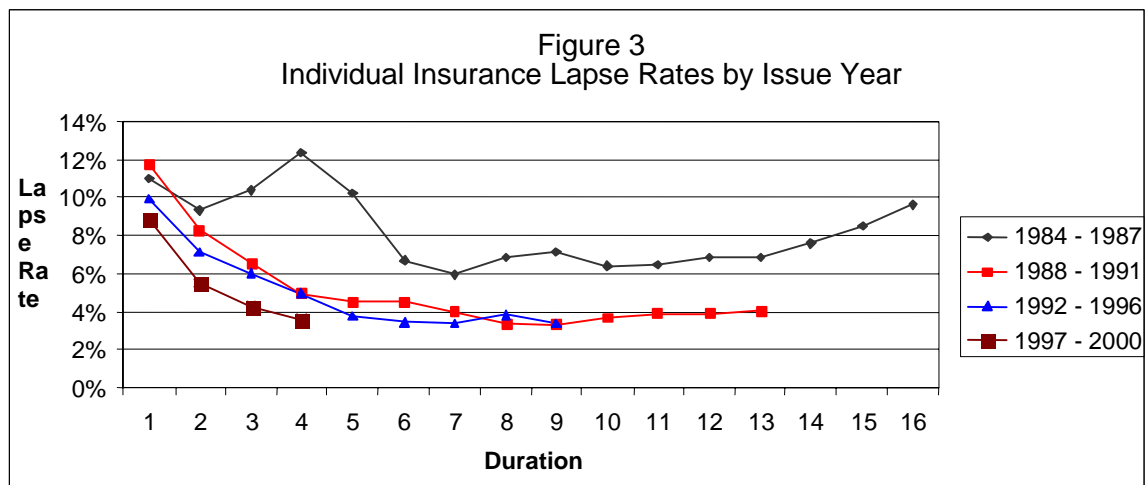

Figure 1
Lapse Rates By Duration

Figure 2 shows the pattern of lapse rates by duration for individual policies and group policies. By duration, the group insurance lapse rates start at a higher level, but then decrease more rapidly than individual insurance lapse rates. While the pattern of group lapse rates at the later durations is still unclear, the individual experience shows a significant increase in lapse rates after the ninth duration. While there is a reasonable amount of data in these later durations, the results are not what one would expect. If accurate, these results would have material implications on premiums and reserves. Possible explanations for this increasing pattern include: 1) conversions from older policy forms to new ones, or 2) unrecorded deaths being counted as lapses. This latter explanation is supported by the data shown in Figure 5, Lapse Rates By Issue Age Group.

Figure 2
Lapse Rates By Duration and Policy Type

Figures 3 and 4 show lapse experience by issue year group for individual and group policies, respectively.

Lapse rates for individual policies generally are lower as the issue year becomes more recent. It is possible the higher lapse rates on the older individual issues could be a result of rate increases that have been made on some of these policies, or could reflect conversions from older policy forms to newer ones. Another possible explanation is that the insured population for the earlier issue year groups is older, and unreported deaths are contributing to the observed lapse rate. The peak in the data at durations 3, 4, and 5 for issue years 1984 – 1987 is likely an anomaly of the data, as no other explanation is apparent.
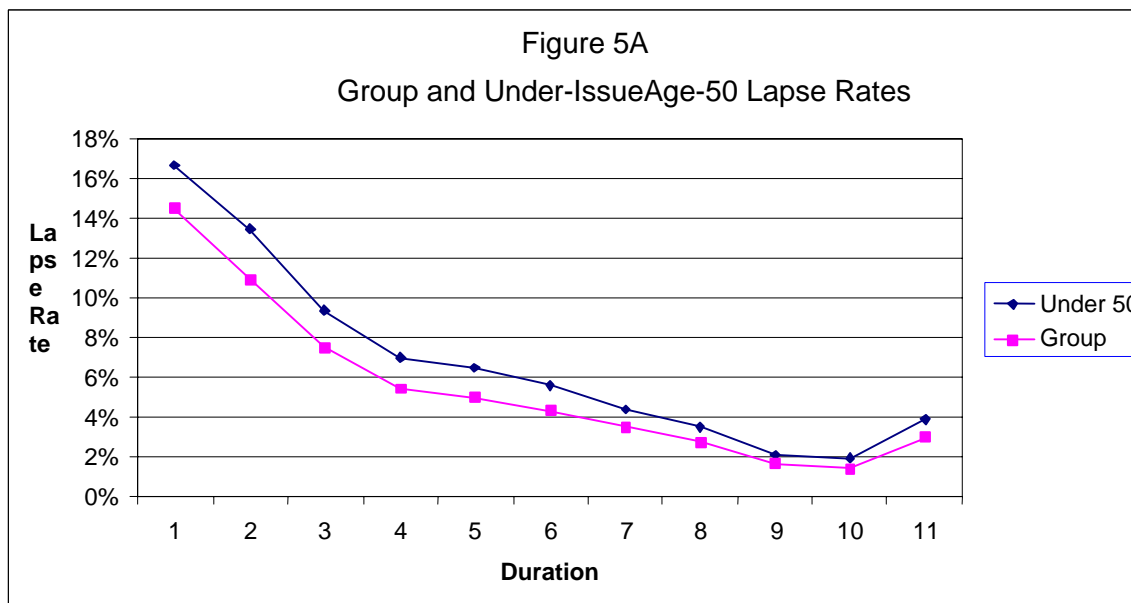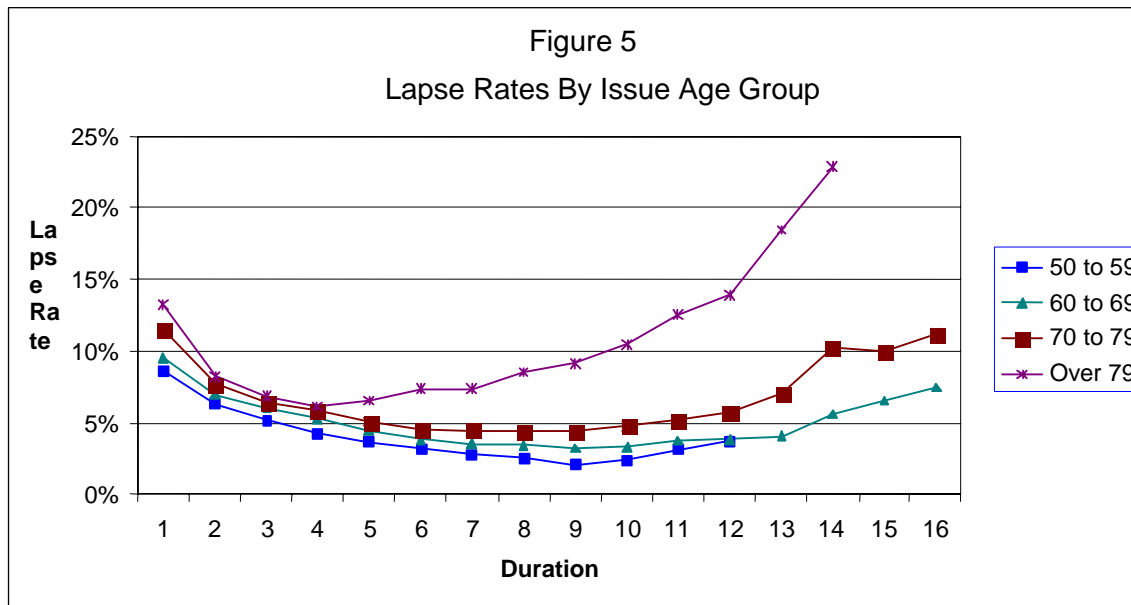
Group insurance lapse rates show no clear pattern by issue year groupings except that the lapse rates for the most recent issue years are significantly higher than those of the others. In contrast, the corresponding data in the previous study showed no clear pattern in group insurance lapse rates by issue year group.

Figure 3
Individual Insurance Lapse Rates by Issue Year

Figure 4
Group Insurance Lapse Rates by Issue Year

Lapse Rates by Issue Age Group and Duration (Appendix F-2)

Figure 5 shows the pattern by duration for various issue age groups. The pattern for the "Under 50" issue age group is significantly different from that of all of the older issue age groups, and so has been omitted from this chart so that the remaining pattern may be seen more clearly. The "Under 50" lapse rates closely track the pattern of group insurance experience shown in Figure 2. This can be seen in Figure 5A below, which shows the "Under 50" lapse rates relative to the group insurance lapse rates for all issue age groups. This is consistent with the fact that group insurance has dominated the long term care market at issue ages below 50. In fact, group insurance contributes over 92% of the exposure in Appendix F-2 for the "Under 50" issue age group.

The issue age groups in Figure 5 show a consistent pattern of higher lapse rates as the issue age group gets older. In addition, there is a distinct pattern of quickly rising lapse rates at the later durations for the oldest issue ages. The general pattern by duration could be the result of conversions from older policy forms to new ones; the pattern of high late-duration lapse rates at the oldest issue ages is likely the result of unrecorded deaths being counted as lapses.

Figure 5
Lapse Rates By Issue Age Group

Figure 5A
Group and Under-IssueAge-50 Lapse Rates

The pattern of higher initial lapse rates as the issue age group gets older is generally consistent for both individual insurance and group insurance, except at the youngest issue ages. Figure 5B shows first-year lapse rates by issue age group for both individual and group insurance. Interestingly, both individual group insurance show significantly higher lapse rates at issue ages under 50. Though it is possible that the observed increasing lapse rate by issue age group could be partly a result of unreported deaths, one would expect the effect of underwriting to limit any such effect in the first year of coverage.

Earlier Figure 2 showed that the first year lapse rate for all group insurance is higher than the first year lapse rate for all individual insurance. Figure 5B shows that this relationship is true for all issue age groups as well.
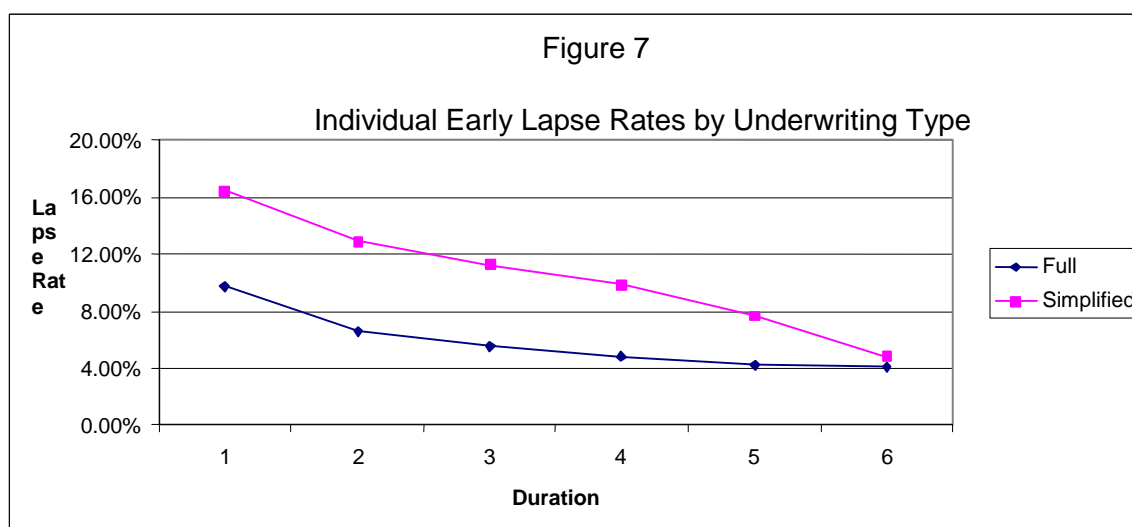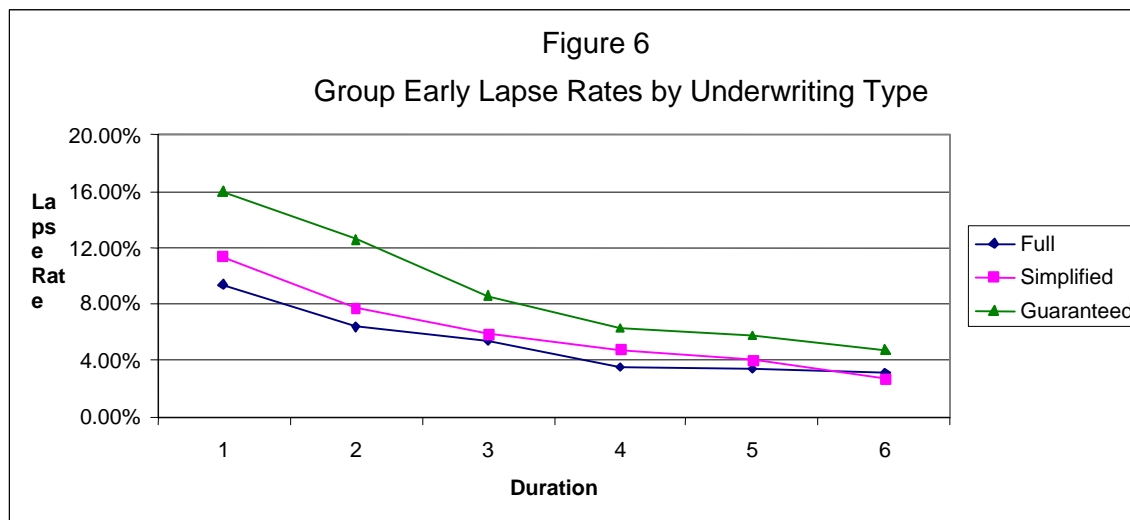
Figure 5B
First Year Lapse Rates by Issue Age Group

Issue Age Group	Individual Insurance	Group Insurance
Under 50	11.36%	17.17%
50-54	8.23%	9.69%
55-59	7.76%	9.46%
60-64	9.02%	10.39%
65-69	9.50%	11.23%
70-74	10.66%	13.81%
75-79	12.18%	17.45%
80-84	13.10%	25.37%

Lapse Rates by Type of Underwriting, Policy Type, and Duration (Appendix F-3)
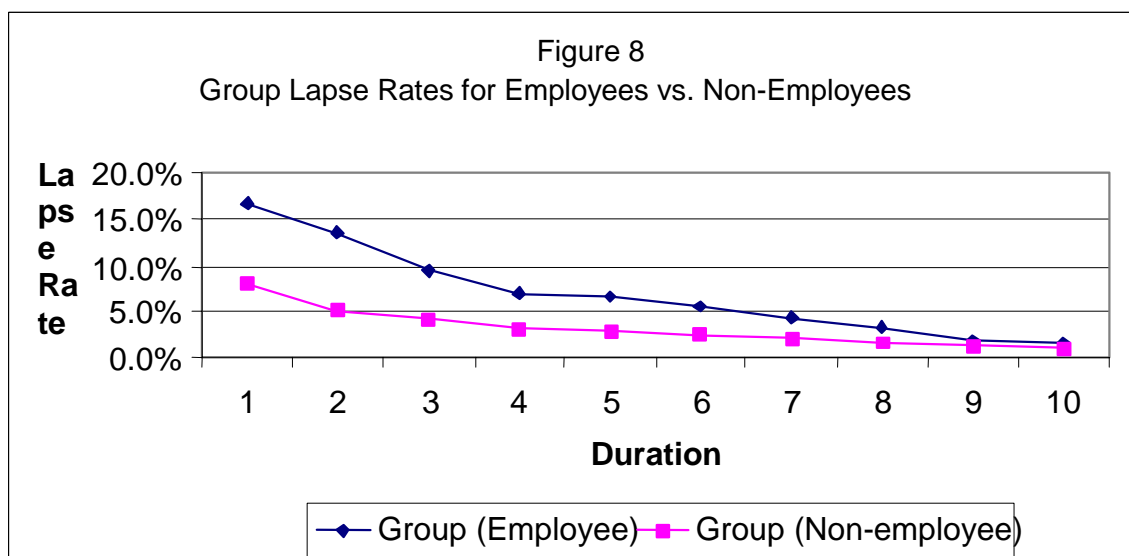
Appendix F-3 shows lapse rates broken down by type of underwriting, policy type, and duration. Note that Appendix F-3 contains relatively little data for simplified underwriting at the later durations, and no guaranteed-issue experience for individual policies.

Figures 6 and 7 show lapse experience in the early durations by type of underwriting for group and individual policies, respectively. For a given policy type, the data show a consistent pattern of lower lapse rates for full the more stringent forms of underwriting. The greater persistency associated with stricter underwriting might be explained by the fact that those who endured a more rigorous underwriting process presumably did so because they felt the value of the insurance was worth it. Those receiving simplified issue or guaranteed issue have a simpler enrollment process, and may be more inclined to reconsider their decision to purchase the coverage. Also, people who buy group plans or apply under simplified issue (which may lack preferred risk discounts) may re-write to more attractive individual plans.

Figure 6

Group Early Lapse Rates by Underwriting Type

Figure 7

Individual Early Lapse Rates by Underwriting Type

For the guaranteed issue experience, 84% of the exposure represents insurance on employee lives, and 16% on non-employee lives. Since guaranteed issue business shows the highest lapse rates in Figure 6, one would expect that group insurance lapse rates on employee lives would be higher than those on non-employee lives. Figure 8 below shows group insurance lapse rates for employees and non-employees. The data confirms that the employee lapse rates are higher than the non-employee lapse rates, though they become closer at the later durations.

An additional explanation for the higher observed lapse rates on employees could be that, when employees change jobs or retire, they often switch from payroll deduction to a more visible form of billing such as direct billing. Also, if a job change is the result of a layoff, there might be additional financial pressures that could cause a re-evaluation of the insured's ability to continue to pay the premiums.

Figure 8
Group Lapse Rates for Employees vs. Non-Employees

Lapse Rates by Gender (Appendix F-4)

Exposures coded for gender are about 60% female and 40% male. Note the "all genders" totals do not match the totals of some of the other tables. This is because records with unknown genders have been excluded entirely from Appendix 4.

Lapse rates do not differ greatly by gender, except that the lapse rate for males becomes increasingly higher at the oldest durations. This pattern is shown in Figure 9 below. It is possible that this pattern is the result of unrecorded deaths being mistakenly counted as lapses, since the higher unreported death rate for males could become increasingly significant as the male population ages.

Figure 9
Lapse Rates By Gender

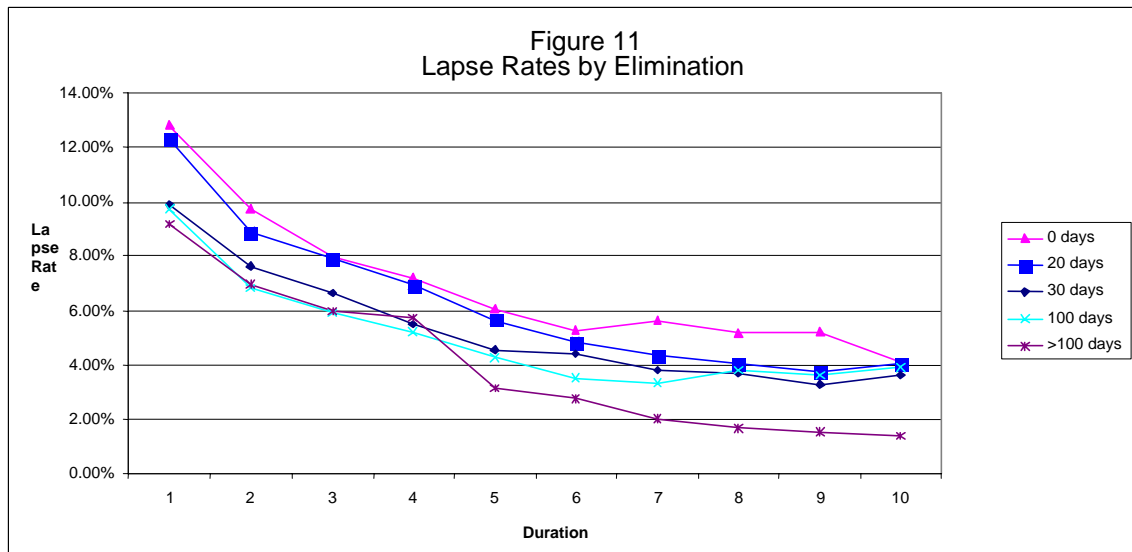| Duration	Male	Female	Difference
1	11.42%	11.41%	0.01%
2	8.26%	8.27%	-0.01%
3	6.51%	6.64%	-0.13%
4	5.47%	5.65%	-0.18%
5	4.79%	4.92%	-0.13%
6	4.24%	4.40%	-0.16%
7	3.83%	3.99%	-0.16%
8	3.61%	3.88%	-0.27%
9	3.32%	3.68%	-0.36%
10	3.53%	3.89%	-0.36%
11	4.38%	4.39%	-0.01%
12	4.62%	4.77%	-0.15%
13	5.61%	5.44%	0.17%
14	7.83%	7.55%	0.28%
15	8.95%	8.31%	0.64%
Total	7.35%	7.34%	0.01%

Lapse Rates by Elimination Period (Appendix F-5)

Appendix F-5 shows lapse rate experience by elimination period groupings.

First year lapse rates by elimination period group are shown in Figure 10. The data suggests a trend toward lower lapse rates as the elimination period becomes longer, with the exception of the 90 day and, to a lesser extent, 60 day groupings. As can be seen in the right-most column of Figure 10, these elimination period groupings contain a relatively large amount of group insurance data, which Figure 2 showed to have high early lapse rates. Figure 11 shows the pattern of lapse rates by duration for all groupings except for 60 days and 90 days. The pattern of lower lapse rates for policies with longer elimination periods generally continues through at least the first seven durations.

Figure 10

First Year Lapse Rates by Elimination Period

Elimination Period	First Year Lapse Rate	First Year Exposure	Percent Group
0 days	12.84%	219,857	8.5%
20 days	12.29%	525,137	0.6%
30 days	9.90%	199,822	11.5%
60 days	10.08%	224,903	55.2%
90 days	13.27%	1,066,842	72.5%
100 days	9.77%	515,221	3.7%
>100 days	9.18%	73,587	57.4%

Figure 11
Lapse Rates by Elimination

Lapse Rates by Benefit Period (Appendix F-6)

Figure 12 shows the lapse rates for policies with limited lifetime benefits versus those with unlimited lifetime benefits. The data reveal no consistent pattern between the two categories of benefit period. This is consistent with the findings of the 2004 Report of LTC Persistency Experience jointly sponsored by LIMRA and the SOA, but is in contrast to the findings of the previous SOA study, where policies with unlimited benefits tended to have lower lapse rates than those with limited benefits. (See the Introduction section for links to these reports).
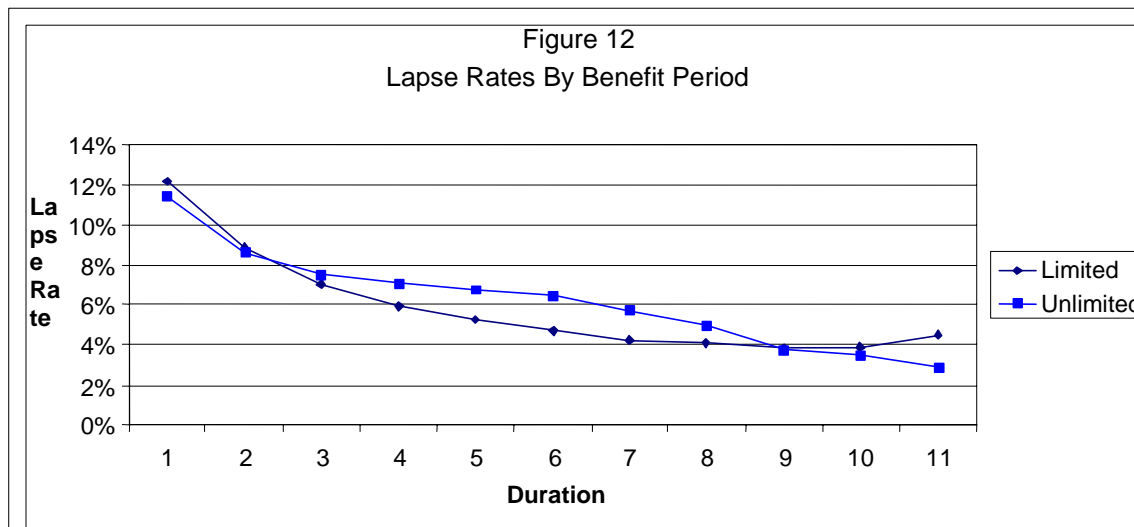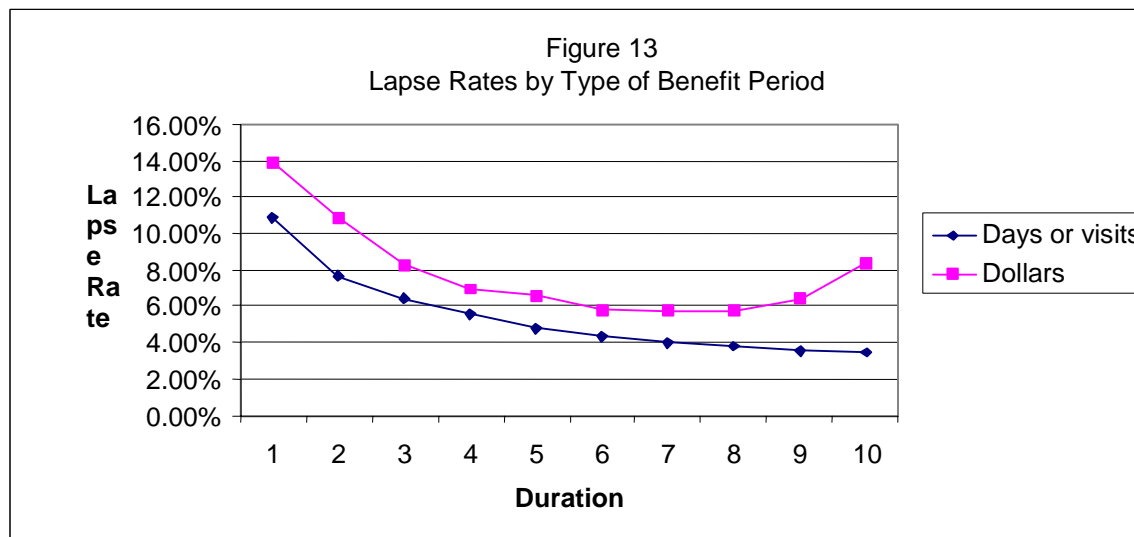
Figure 12
Lapse Rates By Benefit Period

Figure 13 breaks the "Limited" category into those whose limits are expressed in terms of dollars, and those expressed in terms of days or visits. At every duration, the lapse rates for policies with limits expressed in terms of dollars are higher than for those expressed in terms of days.
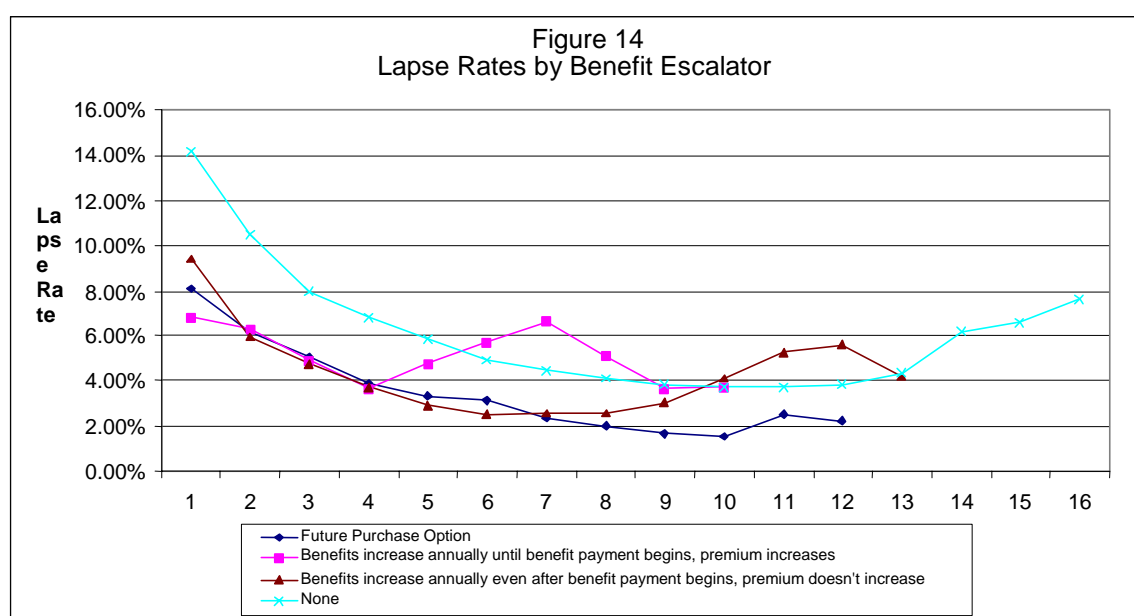
Figure 13
Lapse Rates by Type of Benefit Period

The joint LIMRA/SOA report further analyzed lapse rates for LTC insurance with limited benefits expressed in days and in dollars. When the "days" experience was split into insurance with a maximum benefit period of 5 years or less vs. more than 5 years, no consistent differences in lapse rates were seen. When the "dollars" experience was split into low/medium/high maximum benefit amounts, a distinct pattern was seen of lower lapse rates as the maximum benefit amount increased.

Lapse Rates by Benefit Escalator Clause (Appendix F-7)

Lapse data for policies with various types of benefit escalator clauses is shown in Appendix F-7. Several of the categories shown in Appendix F-7 have a limited amount of data, but the pattern of lapses for the four most common types is shown in Figure 14. The early duration lapse data shows similar lapse rates for policies with various types of benefit escalator clauses, but lapse rates for policies with no such clause are higher. The year-by-year experience becomes more volatile at the later durations, due to the smaller amount of exposure for some categories. However, at each duration shown, the lapse rate for policies with no benefit escalator clause is either highest or second highest, and the lapse rate for policies with a future purchase option is either roughly the same as, or lower than, the lapse rate for policies with other types of benefit escalators.
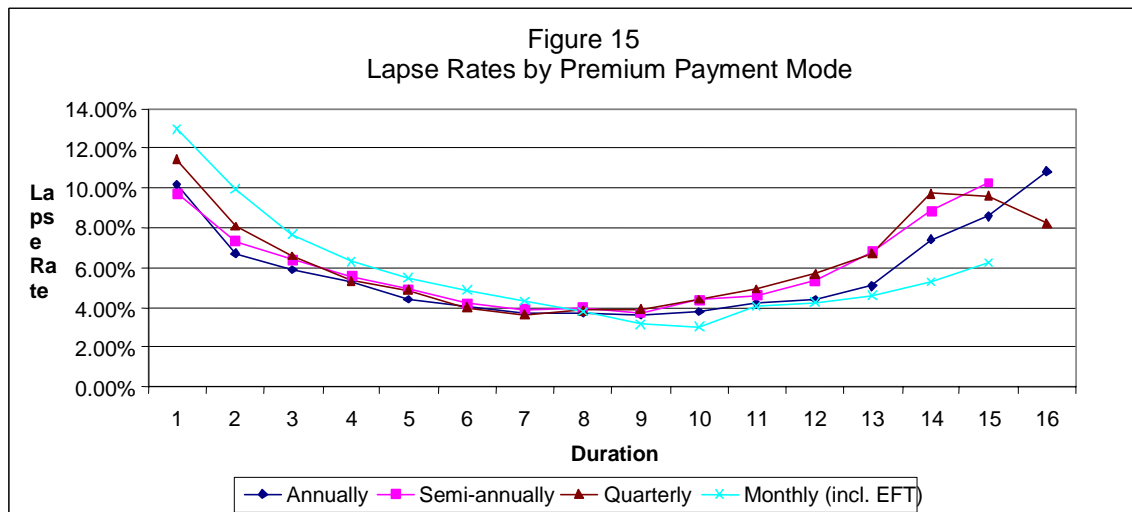
It is possible that the upward trend in lapse rates at the later durations for plans without a benefit escalator clause is at least partly the result of a perceived decline in the value and utility of the coverage over the years.

Figure 14
Lapse Rates by Benefit Escalator

Lapse Rates by Premium Payment Mode (Appendix F-8)

Figure 15 shows the pattern of lapse rates for four different frequencies of premium payment. No large differences between premium payment modes are apparent, though the data in the early durations does suggest that a higher frequency of payment results in a higher rate of lapse.

Interestingly, the lapse rates for the monthly payment mode are higher than the other modes at the early durations, and become lower than the others at the later durations. The higher persistency at the longer durations could be because some of the monthly payers are using payroll deduction through a group plan or electronic funds transfer.

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Figure 15
Lapse Rates by Premium Payment Mode

Lapse Rate vs Duration chart showing Annually, Semi-annually, Quarterly, and Monthly (incl. EFT) payment modes. Y-axis: Lapse Rate 0.00% to 14.00%. X-axis: Duration 1 to 16.

Legend: ◆ Annually ■ Semi-annually ▲ Quarterly ✕ Monthly (incl. EFT)

Lapse Rates by Policy Quarter (Appendix F-9)

Figure 16 below shows that 41% of all lapses occur on or near policy anniversary. Note that because of the definition of duration, the fourth quarter includes the month prior to anniversary, the month of anniversary and the month following anniversary.
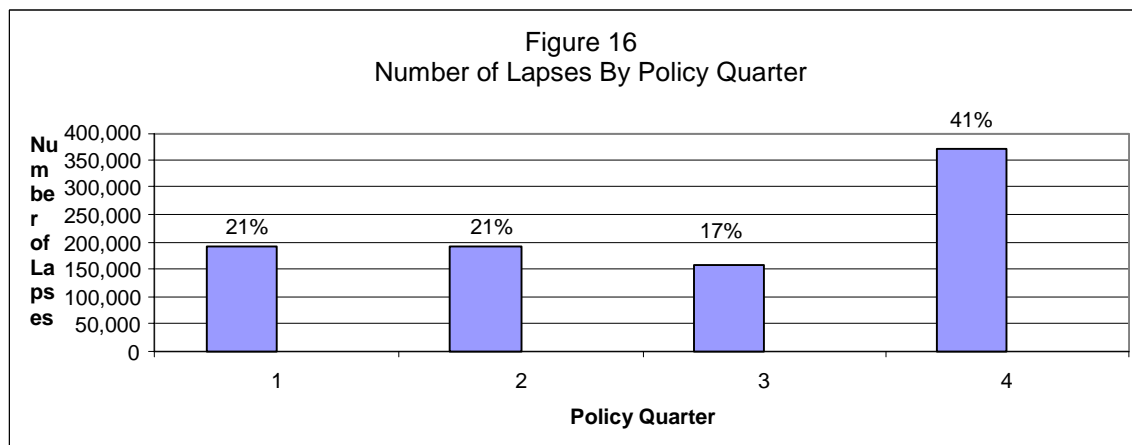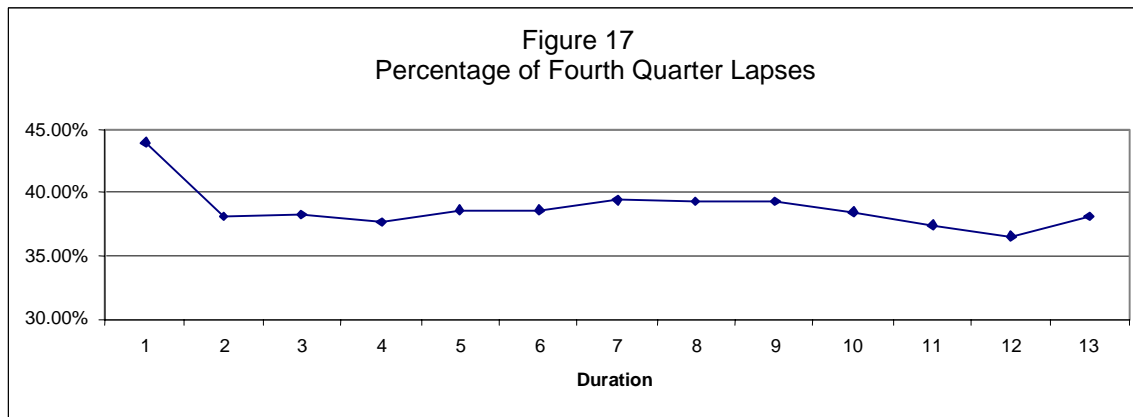
Figure 16
Number of Lapses By Policy Quarter

Bar chart. Y-axis: Number of Lapses 0 to 400,000. X-axis: Policy Quarter 1 to 4. Values: Quarter 1 = 21%, Quarter 2 = 21%, Quarter 3 = 17%, Quarter 4 = 41%.
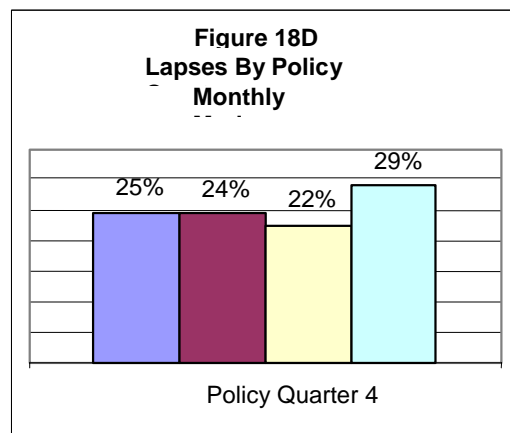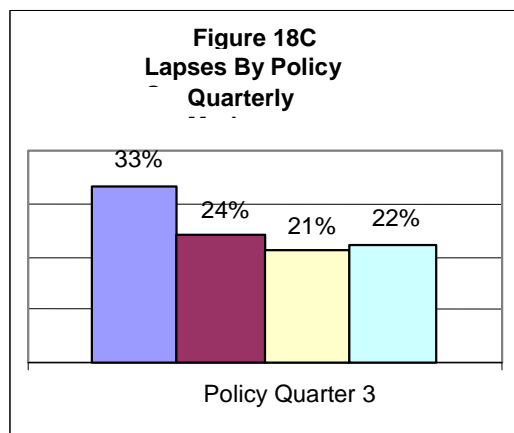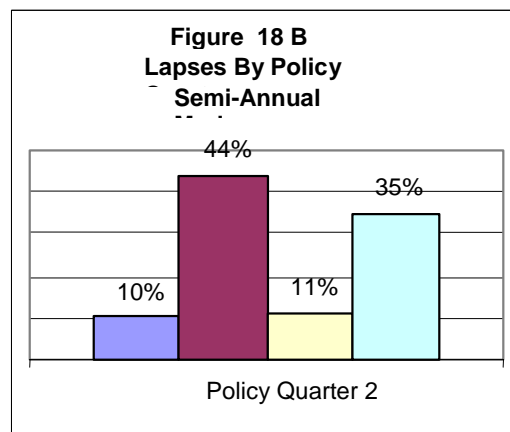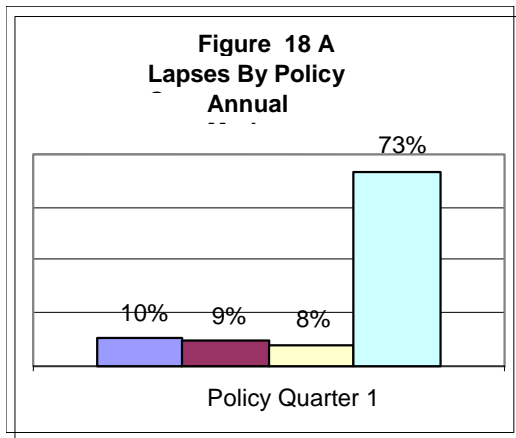
Figure 17 shows the percentage of lapses that occur in the fourth policy quarter. Note the consistent pattern after the first policy year, with between 36% and 40% of all lapses occurring in the fourth policy quarter.

Figure 17
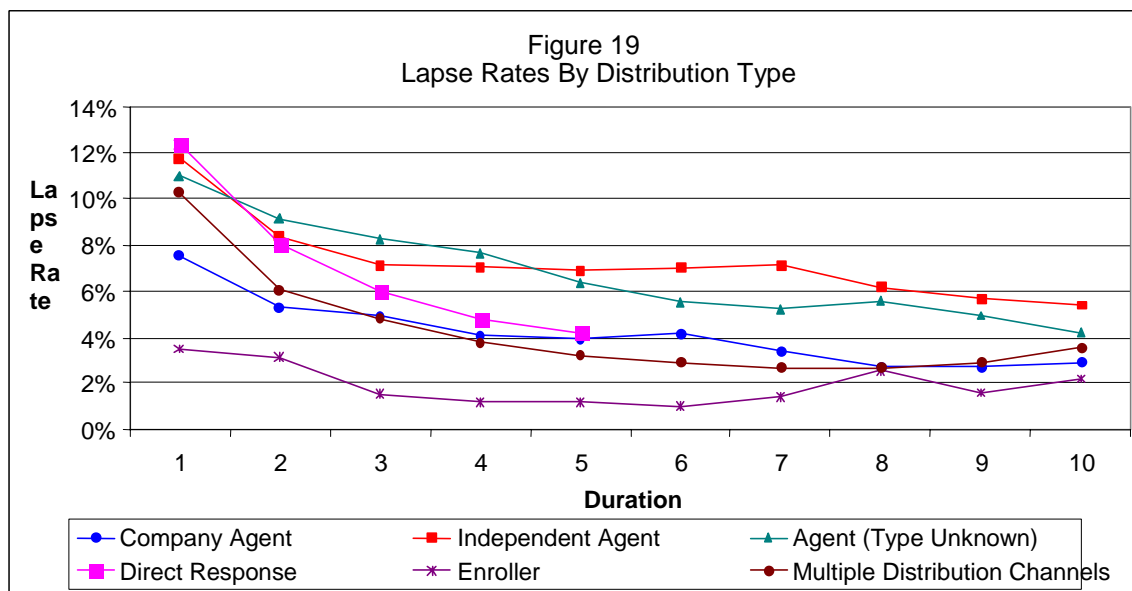**Percentage of Fourth Quarter Lapses**

The observed pattern of lapse by policy quarter varies significantly with the frequency of premium payment, indicating clearly that the premium-paying decision is a major driver of lapse rates. This is illustrated in Figures 18A, B, C, and D below, which break out the data used to create Figure 14 into its annual, semi-annual, quarterly, and monthly premium mode components.

Figure 18 A
Lapses By Policy
Annual

Figure 18 B
Lapses By Policy
Semi-Annual

Figure 18C
Lapses By Policy
Quarterly

Figure 18D
Lapses By Policy
Monthly

Lapse Rates by distribution type are shown below in Figure 19. Only data through the first ten durations are shown, since the amount of exposure at the later durations for some distribution types is small.

The lapse rates for Direct Response, Independent Agent, and Agent (Type Unknown) tend to be the highest, and the lapse rates for Enroller are the lowest. Since enrollers typically provide education and some degree of personal attention at the time of purchase, these findings suggest that there is a value provided by the enroller's education process that persists for a number of years.

Figure 19
Lapse Rates By Distribution Type

SECTION V   TOTAL TERMINATIONS

This section presents experience on total termination rates, which includes both lapses and deaths. Insurance issued in years 1984 – 2000 is included in this study. The 2001 issues were not utilized as the exposure ceased December 31, 2001. Data from all contributing companies, including those who did not distinguish between deaths and lapses, is included in these tables.

The total termination data used for this study includes a significantly larger amount of exposure than was available for the previous study. The data extends to the first seventeen durations, compared to the first fourteen for the previous study, and is summarized in the table below.

Note that, since the addition of two more years' of experience has lowered the cumulative total termination rate by 0.6%, the total termination rate of only the additional two years' worth of data must be even lower. The overall total termination rate of the newest data is 8.1%. This lower rate might be at least partly the result of having more exposure at the longer durations.

Duration	Exposure		Total Termination Rate	
	1999 Study	2001 Study	1999 Study	2001 Study
1	2,065,387	3,384,376	12.9%	12.9%
2	1,522,749	2,426,151	9.5%	9.5%
3	1,148,949	1,783,849	8.4%	7.9%
4	859,258	1,364,869	7.6%	6.9%
5	616,090	1,046,272	6.9%	6.3%
6	414,372	794,643	6.8%	5.9%
7	262,139	608,133	7.0%	5.8%
8	182,173	462,617	7.3%	6.0%
9	129,706	335,495	7.4%	6.1%
10	76,034	252,900	8.8%	6.5%
11	44,769	166,736	9.3%	7.6%
12	19,566	105,774	11.0%	8.5%
13	7,889	51,283	12.0%	9.3%
14	1,144	24,114	14.0%	10.9%
15	1	9,674		12.4%
16		2,712		13.6%
17		734		17.2%
Total	7,350,226	12,820,332	9.5%	8.9%

Overall, the total termination rate is 8.9%. After the first two durations, the total termination rates are lower at each duration than they were in the previous study.

In the discussion of voluntary lapse experience in Section VI, it was speculated that unrecorded deaths in the data submitted have been counted as lapses. By looking at total termination rates, this section provides an upper bound on how many insureds have terminated their coverage, regardless of the reason. In addition, this section includes data from the contributing companies who did not identify the cause of termination. Data from these companies was excluded from the mortality and voluntary lapse sections.
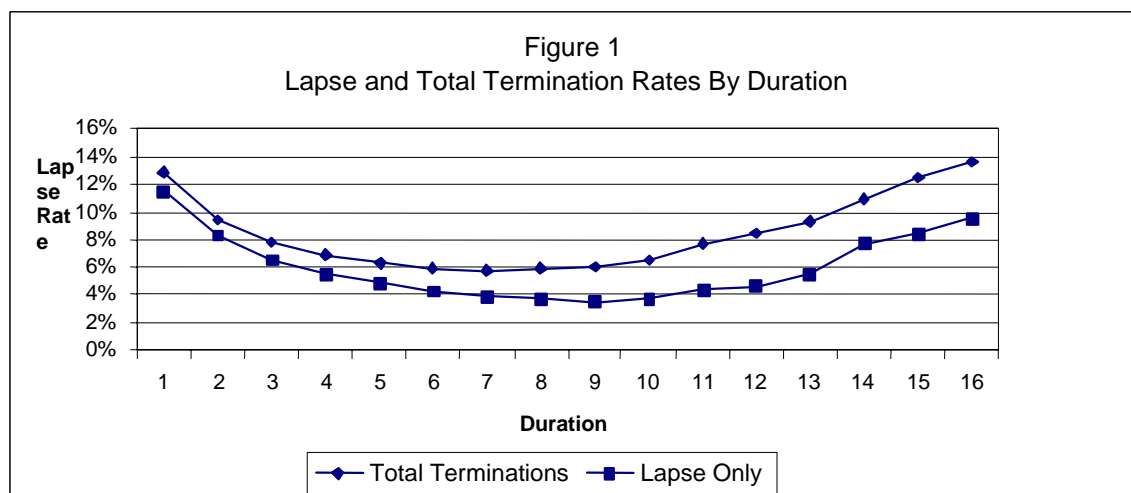
Since the voluntary lapse rates might be overstated due to unreported deaths, it is possible that the use of voluntary lapse rates developed from this data combined with the use of an industry mortality table (i.e., not based on the mortality experience shown in Section V) could result in an overstatement of total termination rates. Because of this, the actuary should use caution when using the voluntary lapse data with a separate mortality table. It is hoped that the data on total termination rates presented in this study will allow the actuary to judge whether the combined lapse and mortality assumptions being considered are reasonable.

Discussion

Appendices F-14 through F-16 contain detailed data on total terminations and total exposures for each of the breakdowns discussed below. These discussions contain graphs and tables developed using the data in the appendices that attempt to highlight observed patterns and trends. Please note that judgment was used when deciding what data to include when producing these graphs and tables; some cells that contain only a small amount of exposure were omitted from them.
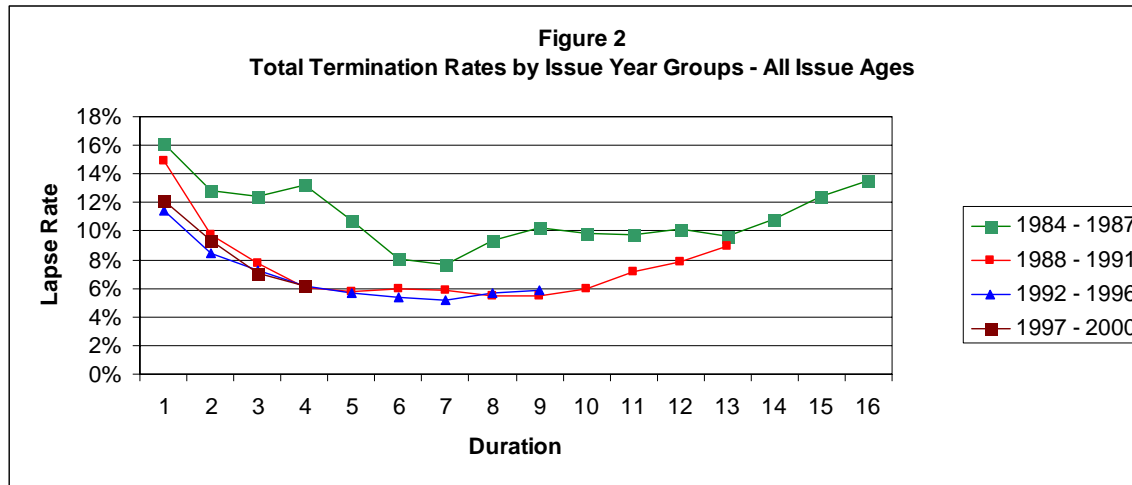
Total Termination Rates by Issue Age Group and Issue Year Group (Appendix F-14)

Figure 1 shows both lapse rates and total termination rates by duration for all issue ages and issue years. Both follow a similar pattern, but the difference between the total termination rate and the lapse rate appears to be increasing in general as duration increases. This is consistent with mortality rates becoming a more significant contributor to the total termination rate at the older ages.

Figure 1
Lapse and Total Termination Rates By Duration

Issue Year Groups

Total termination rates by issue year group are shown in Figure 2. Termination rates for the oldest issue year group are higher than the others at all durations shown. Rates for the other issue year groups differ little from each other after the first year.

Figure 2
Total Termination Rates by Issue Year Groups - All Issue Ages

When broken into issue age groups, some different patterns appear. The "Under 50" group shows a pattern of higher termination rates for the more recent issue year groups. The other issue age groups show no consistent pattern, except that the highest termination rates are generally from the least recent issue year group. Possible explanations for this include conversions from older policy forms to newer ones, rate increases that have been made on some of these policies, or higher mortality from an older insured population. These patterns are shown in Figures 2A through 2E below.
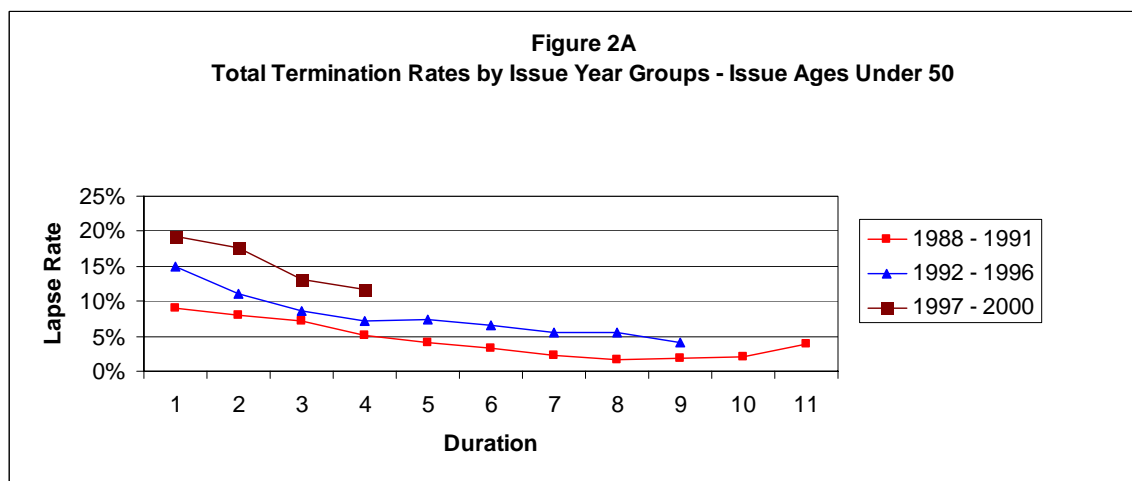
Figure 2A
Total Termination Rates by Issue Year Groups - Issue Ages Under 50

Figure 2B
Total Termination Rates by Issue Year Groups - Issue Ages 50 - 59

Figure 2C
Total Termination Rates by Issue Year Groups - Issue Ages 60 - 69

Figure 2D
Total Termination Rates by Issue Year Groups - Issue Ages 70 - 79
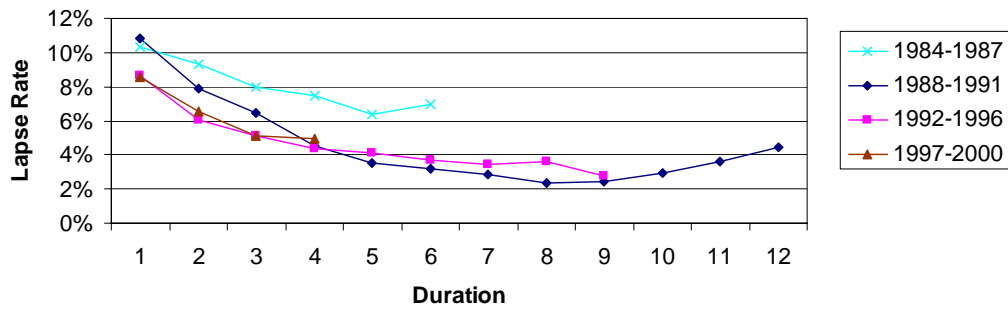
Figure 2E
Total Termination Rates by Issue Year Groups - Issue Ages 80 - 89
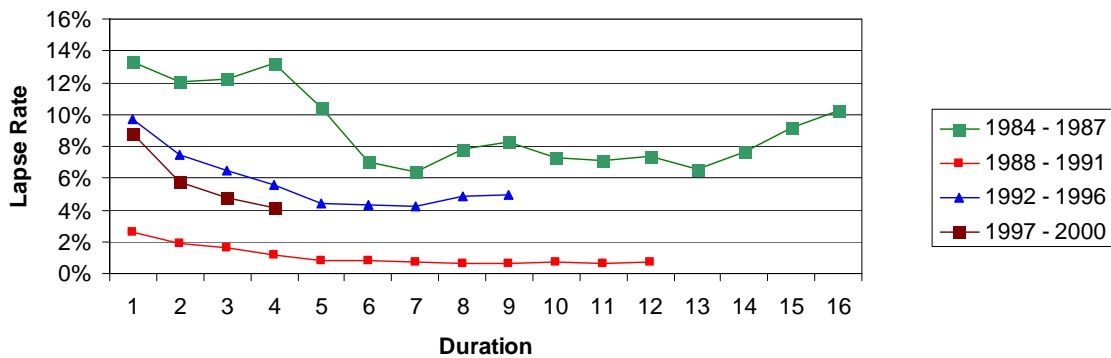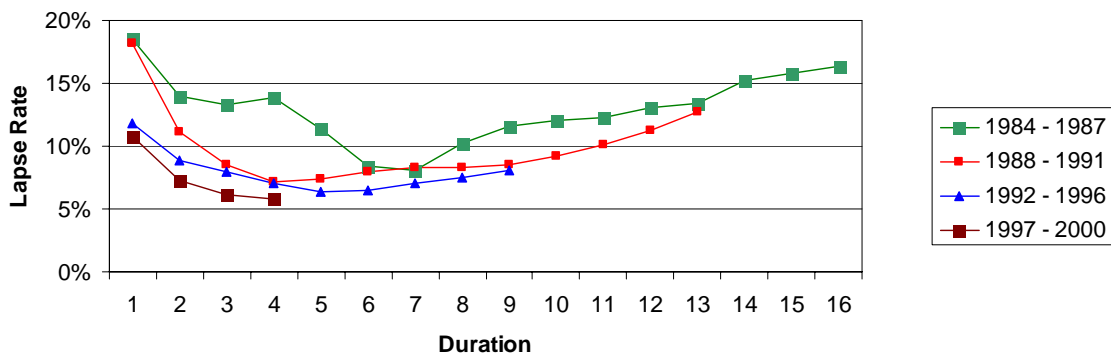

Issue Age Groups

Figure 3 shows total termination rates by issue age groups. The pattern for the "Under 50" issue age group mirrors the group insurance experience shown in Figure 2 of the Voluntary Lapse section. With the exception of the "Under 50" data, at each duration total termination rates get higher as the issue age group gets older. For issue ages 60 and older, total termination rates at the later durations begin increasing steadily, consistent with the expected impact of mortality.

Figure 3
Total Termination Rates by Issue Age Group

The corresponding data in Figure 5 of the Voluntary Lapse Section, entitled "Lapse Rates by Issue Age Group", shows a similar pattern of steady increases in the reported lapse rate at the later durations for the older issue age groups. In the discussion of Figure 5, it was speculated that this could be a result of unrecorded deaths in the data being counted as lapses. Further evidence of this can be seen by comparing the reported lapse rates and total termination rates for the oldest issue ages. Figure 4 below summarizes this data for issue ages 90 and over, taken from Appendices F-2 and F-14. Although the exposure differs slightly between the data reported in the two appendices, it is clear that the vast majority of terminations at these ages are being recorded as voluntary lapses. In fact, there are no reported deaths of anyone age 100 or older!

Figure 4
Lapse and Total Termination Data for Issue Ages 90 and Older

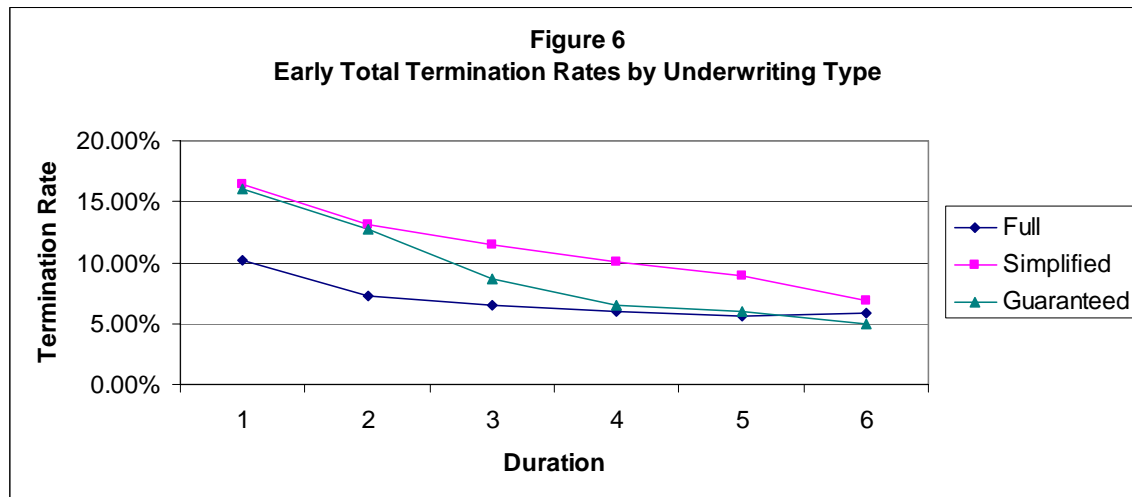| Duration	Reported Lapses			Total Terminations		
	Exposure	Lapses	Rate	Exposure	Terms.	Rate
1	490	35	7.1%	485	48	9.9%
2	413	35	8.5%	407	48	11.8%
3	355	32	9.0%	350	44	12.6%
4	301	36	12.0%	291	50	17.2%
5	246	39	15.9%	240	48	20.0%
6	188	47	25.0%	186	53	28.5%
7	121	37	30.6%	120	40	33.4%
8	72	17	23.6%	71	19	26.9%
9	48	10	20.8%	45	15	33.1%
10	27	12	44.4%	27	12	44.4%
11	12	7	58.3%	12	7	58.3%
12	5	1	20.0%	5	1	20.0%
13	4	4	100.0%	4	4	100.0%
Total	2,282	312	13.7%	2,244	389	17.3%

One can calculate the imputed mortality rate consistent with this data by subtracting the reported lapse rate from the total termination rate. The results appear below in Figure 5. For comparison purposes, we have also shown both: 1) the total mortality rates at ages 90 and above underlying the Mortality Section of this study, and 2) the mortality rates from the Final Report of the Individual Life Insurance Valuation Mortality Task Force 2001 Valuation Basic Mortality Table (2001 VBT). For purposes of this comparison, we have shown ultimate 2001 VBT rates weighted 2/3 female and 1/3 male, and have assumed that all people in the "90 and over" cohort are age 90 at issue. As expected, the directly reported rates and the imputed rates from the experience submitted for this study are close. Both, however, are far below the VBT mortality rates.

Figure 5

Duration	Imputed Mortality Rate	Reported Mortality Rate	2001 VBT Mortality Rate
1	2.8%	2.5%	13.2%
2	3.3%	3.0%	13.9%
3	3.6%	3.7%	14.9%
4	5.2%	4.6%	16.3%
5	4.1%	3.3%	17.9%
6	3.5%	3.8%	19.9%
7	2.9%	2.5%	21.7%
8	3.3%		23.6%
9	12.3%		24.2%
10	0.0%		25.5%
11	0.0%		27.2%
12	0.0%		29.4%
13	0.0%		31.8%

<u>Total Termination Rates by Issue Age Group and Type of Underwriting (Appendix F-15)</u>

Figure 6 shows total termination rates by type of underwriting over the first six durations. The total termination rate for policies that were fully underwritten tends to be the lowest, mirroring the voluntary lapse data shown in Figures 6 and 7 of the Voluntary Lapse Section.

Figure 6
Early Total Termination Rates by Underwriting Type

Total Termination Rates by Issue Age Group and Gender (Appendix F-16)

Total termination rates by issue age group and gender are shown in Appendix F-16. Figure 7 summarizes the difference between male and female total termination rates. Differences in the rate by gender are small for most of the durations shown. Although the male total termination rate is less than the female rate in the first duration, it becomes higher than the female rate in years two and beyond. The gender difference in the total termination rate generally becomes wider as duration increases, which could be the result of relatively higher male mortality rates as the insured population ages with duration.

Figure 7
Total Termination Rates by Gender

Duration	Male	Female	Difference
1	12.87%	12.90%	-0.03%
2	9.57%	9.37%	0.20%
3	8.00%	7.74%	0.26%
4	7.08%	6.75%	0.33%
5	6.52%	6.07%	0.45%
6	6.14%	5.72%	0.42%
7	6.13%	5.52%	0.61%
8	6.30%	5.75%	0.55%
9	6.46%	5.89%	0.57%
10	6.93%	6.28%	0.65%
11	8.51%	7.17%	1.34%
12	9.47%	7.98%	1.49%
13	10.58%	8.74%	1.84%
14	11.82%	10.57%	1.25%
15	14.38%	11.76%	2.62%
16	14.50%	13.29%	1.21%
Total	9.11%	8.76%	0.35%

Total Termination (Mortality and Lapse) Compared to Industry Mortality Tables (Appendix F-17)

Since, in Section IV Mortality, we are not certain that all deaths are included in the data reported, Figure 8 and Appendix F-17 show total terminations in the same format as Figure 2 and Appendix H-1. This information gives an idea of the range of reasonable assumptions for mortality and lapse combined in relation to the published mortality tables.

Figure 8
Ratio of LTC Terminations to Industry Mortality Tables

Attained	Female			Male		
Age	83GAM	A2000	2001 VBT (Ult)	83GAM	A2000	2001 VBT (Ult)
40-49	76.85	83.10	51.51	37.94	48.14	39.25
50-59	24.39	25.77	14.43	10.54	14.32	11.94
60-69	10.06	11.57	6.98	4.44	7.02	4.81
70-79	3.86	5.18	3.65	2.13	3.39	2.50
80-89	1.78	2.23	1.88	1.32	2.08	1.45
90-99	1.47	1.64	1.55	1.33	1.95	1.28
Total	4.58	5.79	4.23	2.77	4.37	3.14

Another way to look at it is to select an assumption for mortality and label the remaining terminations as lapse. Figure 8 assumes that LTC mortality equals the Annuity 2000 table.

Figure 9
Lapse Experience if LTC Mortality Equaled the Annuity 2000 Mortality Table

Dur	Exposure	A2000 Deaths*	Total Terminations	Calc Lapse+	Calc Lapse Rate
1	3,377,945	35,587	435,353	399,766	12%
2	2,423,190	28,738	229,078	200,340	8%
3	1,782,587	24,232	139,886	115,654	6%
4	1,364,055	20,614	93,899	73,285	5%
5	1,045,797	17,504	65,423	47,919	5%
6	794,444	14,707	46,798	32,091	4%
7	608,112	12,555	35,033	22,478	4%
8	462,599	10,826	27,593	16,767	4%
9	335,480	8,983	20,493	11,510	3%
10	252,888	7,514	16,498	8,984	4%
11	166,729	5,932	12,737	6,805	4%
12	105,769	4,212	8,978	4,766	5%
13	51,278	2,377	4,778	2,401	5%
14	24,112	1,241	2,638	1,397	6%
15	9,674	578	1,203	625	6%
16	2,712	187	368	181	7%

* Deaths are the Annuity 2000 mortality rates times exposure.
+Calculated Lapse is Total Terminations minus A2000 Deaths.