

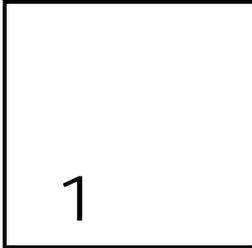
January 5, 2009

Experience Based Rating of  
Group Continuity  
Ohio Bureau of Workers' Compensation

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## Contents

1. Background.....	1
2. Summary and Conclusions .....	3
▪ Recommendation .....	4
3. Continuity Measurement.....	6
4. Methodology .....	8
▪ Persistency Calculation.....	9
5. Data Reliance .....	11
▪ Data Files .....	11
6. Caveats and Limitations.....	12
7. Exhibits .....	13



## Background

The Ohio Bureau of Workers' Compensation (OBWC) directed Oliver Wyman to evaluate the loss experience of Group rated policies based on a continuity measure that would segregate those groups with lower rates of member nonrenewals from those with higher rates of member nonrenewals. The deliverables from this analysis are as follows:

- Develop a continuity measure that captures the level of exposures renewed each policy year
- Provide loss ratio experience using continuity as a classification variable for three policy years
- Establish rating parameters based on the loss ratio differences resulting from continuity
- Consider options for establishing continuity rules and guidelines associated with the rating parameters

The lack of continuity in Group rating has been problematic for many years now, and prior attempts to rectify the high turnover rate within Group have been unsuccessful. Unfortunately most continuity solutions are administratively intractable, as they require a high level of record keeping and maintenance. The staffing and systems cost of any solution will be high given the scope and complexity of the program. Nonetheless, if continuity is not addressed in some fashion, rate inequities will persist.

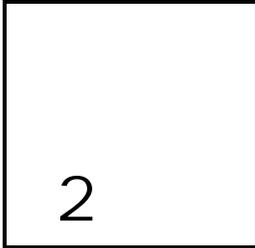
OBWC staff provided initial guidance to consider a persistency minimum of 90%, where the test is applied annually by comparing the new year group membership to the prior year. Using the annual changes in Group membership as the discriminator for performance measurement, the analysis was designed to test whether or not continuity is predictive of loss ratio performance.

The performance experience period selected for this report is policy years 2003 through 2005 (losses evaluated as of 9/30/2008). We noted that the maximum credibility used for

experience rating changed from 100% to 95% in 2005, which had an influence on member retention levels from 2004 to 2005 as those groups targeting lower rating mods initiated more membership turnover.

Group membership history was incorporated into the data for all policy years starting with 1997, as it takes a full seven years for a Group to be fully experience rated based on the claim history of its members, excluding new members. The Group membership rosters for each year were used to measure membership continuity.

This report is prepared by William D. Hansen (Bill), Principal, who is a member of the American Academy of Actuaries (MAAA) and meets its qualification standards. Bill is also a Fellow of the Casualty Actuarial Society (FCAS).



## Summary and Conclusions

The loss ratio performance of groups with higher continuity over the years has been much better than groups with lower continuity. This is true for all policy years reviewed and most evident for the 2005 policy year. We believe the 2005 policy year is a better representative of current experience since it was the first year where a reduction was made to the experience rating credibility table.

The results for the 2005 policy year are shown on Exhibit 1, page 1, using actual performance data for groups that were together from 1999 to 2005. In column (9) the relative performance measure suggests that groups with an average cumulative persistency greater than 30% have loss ratios that are 60% to 70% lower than groups with persistency below the 30% threshold. In other words, there is a strong correlation between the persistency measure and loss ratio performance. Note that persistency is used synonymously with continuity to describe the measure of group “stickiness.”

It is noteworthy that the loss ratio data shown is from roughly 10% of the total 2005 Group premium (\$40M/395M), using the criteria of Groups being together for at least seven years. Viewed another way, due to high turnover in membership 90% of the premium for policy year 2005 is from Groups that have been together six years or less.

One limitation of using historical performance data is that it does not reflect recent changes to the experience rating plan. To estimate how the performance loss ratios might respond with experience rating plan changes, the group premiums were rerated using the 77%, 65%, and 10k split plan credibility tables provided in Exhibit 2. Performance results under these scenarios for policy year 2005 are provided in Exhibit 1, pages 2-4, respectively.

The experience rating plan progression to lower maximum credibility tables reduces the loss ratio difference across the persistency spectrum, however there is still a significant

rate level difference even at more optimal credibility levels. Groups with higher persistency are still approximately 25% better on a loss ratio basis even with the split plan credibility table.

The same loss ratio analysis is provided for policy years 2003 and 2004 in Exhibit 1, pages 5 through 12. One notable difference with these policy years is that the loss ratio improvement occurs at a level above 50% persistency, compared with a 30% threshold for 2005. The 50% cutoff seems more plausible given the proportion of claims history that flows into experience rating from group members over time.

## Recommendation

To recognize the loss ratio differences and address the rate adequacy imbalance caused by low persistency within the Group program, we recommend the following:

1. Implement a minimum continuity standard of 90%, as an annual compound average. Starting from the base year, the cumulative continuity renewal minimums would be:
  - a. Year 1      90%
  - b. Year 2      81%
  - c. Year 3      73%
  - d. Year 4      66%
  - e. Year 5      59%
  - f. Year 6+     53%

Cumulative continuity means tracking each policy year cohort as it changes over time. For a Group in policy year 2008, we would expect 73% of the Group's exposure to renew in 2011, 66% in 2012, and so forth. Ideally each policy year would be tracked separately to ensure compliance. One advantage of this structure is that it would not be distorted by growth in membership.

2. Implement a surcharge if the Group fails to meet the continuity standard for any year, based on a scale such as this:

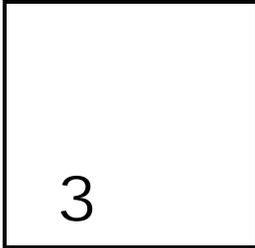
	<u>Period</u>	<u>Range</u>	<u>Surcharge</u>
a.	Year 1	89% to 82%	25%
b.	Year 2	80% to 74%	25%
c.	Year 3	72% to 67%	25%
d.	Year 4	65% to 60%	25%
e.	Year 5	58% to 54%	25%
f.	Year 6+	52% to 47%	25%

This table implies that groups can have a one year retention drop of up to 19%, assuming they are at the continuity minimum, and maintain their Group status with a premium surcharge. The surcharge would remain in place each year until the Group continuity reaches at or above the minimums in item [1]. If a Group is out of compliance for multiple years, it is assumed the surcharge would remain at 25%. Groups that fall below the low end of these ranges for any policy year would lose their Group status.

3. Grandfather existing Groups starting in the base year.
4. Allow new Groups to earn a fraction of their experience rating discount (1-credit mod) based on the proportion of experience rating data contributed by Group members. This scaling adjustment is primarily a function of the age of the Group, with a minimum of 15% applied in the first two years.
  - a. Year 0 15%
  - b. Year 1 15%
  - c. Year 2 15%
  - d. Year 3 43%
  - e. Year 4 68%
  - f. Year 5 90%
  - g. Year 6+ 100%

For example, a new group with a full experience mod of 0.35 would have a rating mod of 0.90 after the scaling is applied [ $0.90=1-(1-0.35) (.15)$ ]. This applies to Groups with credit mods only, who are meeting the persistency minimums as well. This table was developed from the claims emergence pattern for group members as shown on Exhibit 3.

Additional considerations may need to be incorporated to properly account for risks leaving Group for reasons other than rejection, such as business closings or non payment of premium. The 90% compound level could be sufficient to allow for voluntary and involuntary membership changes, however we have not examined any data yet on the various causes impacting retention of members.



## Continuity Measurement

Common measures of continuity (or persistency) include policy count and payroll, where the Group persistency is calculated as a ratio of current period membership to prior period membership. While counts and payroll are convenient and readily available, they do not fully incorporate the risk premium or exposure represented by each employer within a Group. For example if policy count is used, there could be a single employer that leaves a Group of 100 risks, resulting in 99% persistency. However if that single employer represented half of the expected losses, then effectively 50% of the exposure did not renew. Payroll has a similar weakness, because we can have high payroll classes with low premiums or low payroll classes with high premiums depending on base rate levels. As such, a Group could lose a large amount of payroll but retain most of its exposure if the non renewing classes have low expected losses.

To better account for the actual exposure share of each employer, base premium is recommended as the persistency measure to track continuity, which is the product of the payroll and base rate. Base premium is a good proxy for expected losses, which is a true measure of risk exposure. In addition, payroll and base rate data from the same year can be used in the numerator and denominator of the retention ratio to diminish the effects of base rate and payroll changes over time that might otherwise distort the persistency statistic. Here are a few examples of how persistency is calculated for a 2005 policy year renewal within this study:

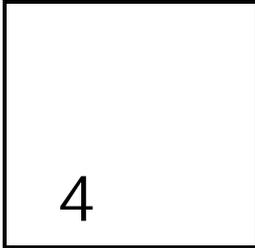
2005 One year persistency:  $(2005 \text{ base premium for all 2005 employers that were 2004 Group members}) / (2005 \text{ base premium for all 2004 members})$

2005 Three year persistency:  $(2005 \text{ one year persistency}) * (2004 \text{ one year persistency}) * (2003 \text{ one year persistency})$

Using current year 2005 base premium for all risks means that the persistency measure for prior years is limited to those risks that are still in business in 2005. Thus, persistency changes do not reflect employers leaving for reasons such as closing the business. Another consideration in choosing current year payroll as the basis is that a complete payroll history was not readily available for the older policy periods. In practice, the OBWC may choose to use prior year base premium or actual base premium by year, as the basis for persistency. Our opinion is that either option would be a good proxy for the measure used in this report.

If persistency is measured using all new and renewing Group members, then Groups with significant growth will be penalized. New exposures increase the denominator of the persistency ratio, and do not affect the numerator. A Group that loses 5% of renewing base premium each year, and adds 10% new business, would just meet the proposed minimums. The problem with ignoring new exposure growth in the continuity measure is that a large influx of new policies could be added for the purpose of lowering the experience mod. Hence the alternatives to address growth are to either have caps on annual increases, or use the cumulative persistency measures for each policy year.

A potential downside to the base premium continuity measure is that a Group could fail the continuity minimums if a single, large employer leaves the Group. While this is not desirable, the original tenets of the Group program contemplated a rating mechanism where smaller employers could join together to improve safety, and thereby benefit from premium savings if they earn a lower experience rating mod. Very large employers are already eligible for experience rating or retrospective rating on their own, therefore they do not need to join a group program to take on more insurance risk or earn premium savings. In fact, if Group rating is meant to encourage homogeneous risks to aggregate together, small employers and large employers should not be in the same groups. Therefore, while the loss of a large employer could be a transition issue, these continuity minimums will encourage groups to be formed with risks more similar in size. A rule should be considered limiting the size of Group members, particularly when large employers have other options such as retrospective rating.



## Methodology

Continuity is a desirable quality for Group rating within the experience rating plan because the basic premise of experience rating is that the claims experience feeding the experience mod calculation are representative of the exposures being rated. If there is low persistency over time, then the claims experience will never represent how the employers performed while members of the group.

There are two dimensions that determine the amount of claims experience feeding the experience mod calculation that was produced by the employers during their Group tenure. One dimension is the number of years the Group has been together, and the other is persistency. A group that was just formed, by definition, will not have any experience history under the Group flowing through the experience mod calculation until the third policy year. This time lag is simply a function of the elapsed time needed to get claims data mature enough for rating.

There is an important distinction here—only the claims history of the employer while they were a Group member is relevant to measuring how the Group program is performing with regard to improving safety and managing claim costs. The experience of an employer prior to joining the Group does not provided a measure of Group performance. Rather, Groups often choose to enlist employers that have a recent claim history that is relatively clean because they have an immediate, favourable impact on the experience mod.

The other dimension impacting the proportion of experience rating claims produced by Group members is persistency, which is the focus of this study. Exhibit 3 shows that if we define year 1 to be the year that a Group was formed, then it is not until year 7 that all five policy years flowing into experience rating are under Group membership. Experience rating data is based on calendar years, not policy years, which results in using half of two policy years and three full policy years in the rating mod calculation.

When we convolute the time dimension, namely the 7 year earning pattern of the claims history produced by Group members, with the persistency dimension using a minimum persistency of 90% per year, the result is a base line minimum threshold for the share of experience rating claims history produced by Group members.

For example, 100% of policy year 4 is in the experience rating data by year 7, which is then scaled by a cumulative persistency of 73%, or  $100\% * 73\% = 73\%$ . This means for a Group policy rated in year 7, the experience rating data will have a minimum of 73% of the claims experience in year 4 from employers that are still in the Group in year 7, with the remaining claims coming from members joining after year 4. These values are shown under year 7 on Exhibit 3. To make this example more concrete, for a 2008 policy year renewal (year 7), 100% of the 2005 policy year experience (July 1, 2005 to June 30, 2006) would be in experience rating data. Assuming the Group has been at the 90% minimum persistency each of the last three years, the percentage of exposure written in 2008 that has been with the Group since 2005 is  $(0.9 * 0.9 * 0.9) = 73\%$ .

When each of the policy year experience rating percentages are averaged across all time periods, the minimum experience rating claims data coming from Group members reaches 66% by year 7. Note that in year 3 the experience rating data contribution of Group members is only 10%.

## Persistency Calculation

On Exhibit 1, column 2 the loss ratio analysis is segregated by persistency deciles. This section describes how the persistency used for the range in columns (1) and (2) was determined.

Using the 2005 policy year as an example, the following steps were performed to calculate year-over-year persistency:

1. For each of the six prior policy years, base premiums were recomputed using the same payroll and current base rates. The one year persistency was calculated as shown in section 3:

2005 One year persistency:  $(2005 \text{ base premium for all 2005 employers that were 2004 Group members}) / (2005 \text{ base premium for all 2004 members})$

2. These persistencies are then compounded to get the cumulative persistencies for each of the years used for experience rating.

2005 Three year persistency:  $(2005 \text{ one year persistency}) * (2004 \text{ one year persistency}) * (2003 \text{ one year persistency})$

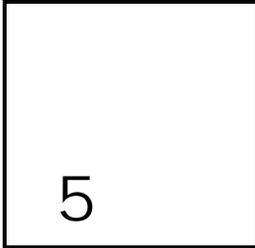
This persistency is a proxy for how much of the 2002 policy year experience is coming from employers in the Group for the 2005 renewal. As noted previously, one year measures are not effective in high membership growth scenarios.

3. The 2005 experience rating data would include the following policy years:

- 1999 (half)--six year persistency applies
- 2000—five year persistency applies
- 2001—four year persistency applies
- 2002—three year persistency applies
- 2003 (half)—two year persistency applies

4. The Group persistency statistic used for the 2005 loss ratio analysis is the simple average of the five cumulative persistencies listed in (3). While other more complex weighted averages were tested, none had significantly better performance than the straight average of all years.

After the one year persistencies had been determined, the groups were segmented based on the number of years for which persistency data was available. For analysis purposes, only Groups with a history of seven years or longer were selected, as those Groups with shorter tenures did not have a long enough history to span the experience rating period. This process was repeated for the 2004 and 2003 policy years.

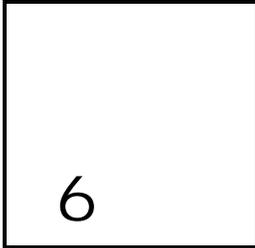


## Data Reliance

### Data Files

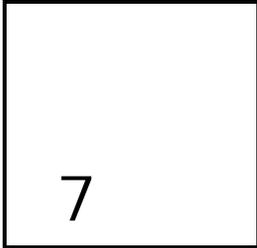
The following data files were provided by the OBWC to support the production of this study:

1. 20080930 – R&P – Claims Analysis Extract.mdb—all policy year losses evaluated as of 9/30/2008
2. Slippage.mdb—Premium and payroll file with policy years 2003, 2004 and 2005.
3. NEW MICROSOFT OFFICE ACCESS APPLICATION using table "Py 2005 Group EM" to define group rated risks and groups for PY 2005; also using table "Py 2004 Group EM" to define group rated risks and groups for PY 2004
4. PA EXPERIENCE RATING STUDY using table " Py 2003 Group EM" to define group rated risks and groups for PY 2003
5. PA EXPERIENCE RATING STUDY using table "FinalGroup" to define group rated risks and groups for PY 1996 - 2002



## Caveats and Limitations

1. The study results are developed in the text and exhibits, which together comprise the report.
2. The data for this study was provided by the OBWC. In the study we relied on the accuracy and completeness of this data and reviewed such data for reasonableness and consistency. If the data is found to be inaccurate or incomplete, our findings and conclusions may need to be revised.
3. Information concerning the current experience rating program structure was provided by several members of the OBWC staff. In the study, we relied on the accuracy and completeness of this information, sometimes without independent verification. If the information is inaccurate or incomplete, our findings and conclusions may need to be revised.
4. In addition to the assumptions stated in the report, numerous other assumptions underlie the calculations and results presented herein.
5. The study conclusions were based on analysis of the available data and on the estimation of many contingent events.
6. Numbers in the exhibits are generally calculated using more significant digits than their accuracy suggests. This has been done to simplify review of the calculations.



## Exhibits

Exhibit 1: pages 1-15: Policy Year Experience for Groups with a Seven Year History

Exhibit 2: Credibility Tables

Exhibit 3: Emergence of Experience Rating Plan History with Group Persistency

**2005 Policy Year Experience for Groups With a Seven Year History  
Results Based on the Experience Rating Plan used in 2005 (95% table)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 30%
0%	10%	392,141	1,203,862	307.0%	5,150,967	0.08	3.35	
10%	20%	10,677,784	13,648,472	127.8%	102,995,174	0.10	1.40	
20%	30%	7,588,930	11,961,999	157.6%	98,191,175	0.08	1.72	
30%	40%	7,531,886	3,268,268	43.4%	23,948,348	0.31	0.47	-70%
40%	50%	3,529,816	769,061	21.8%	7,772,457	0.45	0.24	-85%
50%	60%	4,912,954	2,696,998	54.9%	20,927,986	0.23	0.60	-62%
60%	70%	3,834,953	2,355,685	61.4%	15,233,688	0.25	0.67	-57%
70%	80%	893,763	555,858	62.2%	2,415,578	0.37	0.68	-57%
80%	90%	-	-	0.0%	-	-	-	
90%	100%	641,798	191,600	29.9%	1,069,666	0.60	0.33	-79%
Total		40,004,025	36,651,803	91.6%	277,705,038	0.14	1.00	
<b>Sub-Totals</b>								
0%	30%	18,658,855	26,814,333	143.7%	206,337,316	0.09	1.57	
30%	100%	21,345,170	9,837,470	46.1%	71,367,722	0.30	0.50	-68%
All Groups Exp		395,388,376	220,841,067	55.9%	1,448,795,768	0.27		
Non Group Exper.		1,158,380,554	317,381,400	27.4%	1,060,384,571	1.09		

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2005 Policy Year Experience for Groups With a Seven Year History  
Projected Results Based on an Experience Rating Plan with Max Credibility of 77%**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 30%
0%	10%	1,045,408	1,203,862	115.2%	5,150,967	0.20	2.18	
10%	20%	22,716,154	13,648,472	60.1%	102,995,174	0.22	1.14	
20%	30%	19,284,419	11,961,999	62.0%	98,191,175	0.20	1.17	
30%	40%	9,422,890	3,268,268	34.7%	23,948,348	0.39	0.66	-44%
40%	50%	3,967,855	769,061	19.4%	7,772,457	0.51	0.37	-69%
50%	60%	6,434,013	2,696,998	41.9%	20,927,986	0.31	0.79	-33%
60%	70%	4,572,653	2,355,685	51.5%	15,233,688	0.30	0.97	-17%
70%	80%	1,221,840	555,858	45.5%	2,415,578	0.51	0.86	-27%
80%	90%	-	-	0.0%	-	-	-	
90%	100%	634,525	191,600	30.2%	1,069,666	0.59	0.57	-52%
Total		69,299,757	36,651,803	52.9%	277,705,038	0.25	1.00	
<b>Sub-Totals</b>								
0%	30%	43,045,981	26,814,333	62.3%	206,337,316	0.21	1.18	
30%	100%	26,253,776	9,837,470	37.5%	71,367,722	0.37	0.71	-40%

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2005 Policy Year Experience for Groups With a Seven Year History  
Projected Results Based on an Experience Rating Plan with Max Credibility of 65%**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 30%
0%	10%	1,425,225	1,203,862	84.5%	5,150,967	0.28	1.96	
10%	20%	29,303,827	13,648,472	46.6%	102,995,174	0.28	1.08	
20%	30%	25,855,147	11,961,999	46.3%	98,191,175	0.26	1.07	
30%	40%	10,219,862	3,268,268	32.0%	23,948,348	0.43	0.74	-33%
40%	50%	4,135,084	769,061	18.6%	7,772,457	0.53	0.43	-61%
50%	60%	7,227,522	2,696,998	37.3%	20,927,986	0.35	0.87	-21%
60%	70%	5,128,105	2,355,685	45.9%	15,233,688	0.34	1.07	-3%
70%	80%	1,221,363	555,858	45.5%	2,415,578	0.51	1.06	-4%
80%	90%	-	-	0.0%	-	-	-	
90%	100%	630,421	191,600	30.4%	1,069,666	0.59	0.71	-36%
Total		85,146,556	36,651,803	43.0%	277,705,038	0.31	1.00	
<b>Sub-Totals</b>								
0%	30%	56,584,199	26,814,333	47.4%	206,337,316	0.27	1.10	
30%	100%	28,562,357	9,837,470	34.4%	71,367,722	0.40	0.80	-27%

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2005 Policy Year Experience for Groups With a Seven Year History  
Projected Results Based on an Experience Rating Plan with a 10k Split Plan**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>Persistency Range</u>		<u>Exp Rated</u>	<u>Incurred</u>	<u>Loss</u>	<u>Base Prem</u>	<u>Average</u>	<u>Loss Ratio</u>	<u>Relative Rate</u>
<u>Start</u>	<u>End</u>	<u>Premium</u>	<u>Loss</u>	<u>Ratio</u>		<u>EM</u>	<u>Relative to</u>	<u>for Persist</u>
							<u>Grp Total</u>	<u>above 30%</u>
0%	10%	1,909,767	1,203,862	63.0%	5,150,967	0.37	1.61	
10%	20%	32,464,007	13,648,472	42.0%	102,995,174	0.32	1.07	
20%	30%	27,994,584	11,961,999	42.7%	98,191,175	0.29	1.09	
30%	40%	11,022,926	3,268,268	29.6%	23,948,348	0.46	0.76	-31%
40%	50%	4,467,526	769,061	17.2%	7,772,457	0.57	0.44	-60%
50%	60%	7,761,087	2,696,998	34.8%	20,927,986	0.37	0.89	-19%
60%	70%	5,801,538	2,355,685	40.6%	15,233,688	0.38	1.04	-6%
70%	80%	1,359,877	555,858	40.9%	2,415,578	0.56	1.04	-5%
80%	90%	-	-	0.0%	-	-	-	
90%	100%	682,724	191,600	28.1%	1,069,666	0.64	0.72	-35%
<b>Total</b>		<b>93,464,034</b>	<b>36,651,803</b>	<b>39.2%</b>	<b>277,705,038</b>	<b>0.34</b>	<b>1.00</b>	
<u>Sub-Totals</u>								
0%	30%	62,368,357	26,814,333	43.0%	206,337,316	0.30	1.10	
30%	100%	31,095,677	9,837,470	31.6%	71,367,722	0.44	0.81	-26%

**2004 Policy Year Experience for Groups With a Seven Year History  
Results Based on the Experience Rating Plan used in 2004 (100% table)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 50%
0%	10%	599,604	1,182,651	197.2%	8,192,429	0.07	2.13	
10%	20%	4,804,998	7,593,085	158.0%	63,075,790	0.08	1.71	
20%	30%	22,581,380	19,482,206	86.3%	161,052,488	0.14	0.93	
30%	40%	11,310,261	13,813,524	122.1%	96,140,116	0.12	1.32	
40%	50%	22,691,724	21,586,423	95.1%	148,462,388	0.15	1.03	
50%	60%	7,155,250	3,870,466	54.1%	32,096,810	0.22	0.58	-47%
60%	70%	7,122,762	4,780,744	67.1%	35,906,627	0.20	0.73	-35%
70%	80%	2,550,776	889,127	34.9%	8,833,658	0.29	0.38	-66%
80%	90%	-	-	0.0%	-	-	-	
90%	100%	529,995	232,003	43.8%	1,261,892	0.42	0.47	-57%
Total		79,346,750	73,430,229	92.5%	555,022,198	0.14	1.00	
<b>Sub-Totals</b>								
0%	50%	61,987,967	63,657,889	102.7%	476,923,211	0.13	1.11	
50%	100%	17,358,783	9,772,340	56.3%	78,098,987	0.22	0.61	-45%
All Groups Exp		394,258,436	255,450,934	64.8%	1,653,961,960	0.24		
Non Group Exper.		1,275,297,471	354,843,761	27.8%	1,195,702,125	1.07		

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2004 Policy Year Experience for Groups With a Seven Year History  
Projected Results Based on an Experience Rating Plan with Max Credibility of 77%**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 50%
0%	10%	1,823,429	1,182,651	64.9%	8,192,429	0.22	1.32	
10%	20%	14,048,589	7,593,085	54.0%	63,075,790	0.22	1.10	
20%	30%	43,908,325	19,482,206	44.4%	161,052,488	0.27	0.90	
30%	40%	23,879,001	13,813,524	57.8%	96,140,116	0.25	1.18	
40%	50%	40,912,579	21,586,423	52.8%	148,462,388	0.28	1.08	
50%	60%	10,291,392	3,870,466	37.6%	32,096,810	0.32	0.77	-26%
60%	70%	10,695,937	4,780,744	44.7%	35,906,627	0.30	0.91	-13%
70%	80%	3,442,816	889,127	25.8%	8,833,658	0.39	0.53	-49%
80%	90%	-	-	0.0%	-	-	-	
90%	100%	671,806	232,003	34.5%	1,261,892	0.53	0.70	-32%
Total		149,673,875	73,430,229	49.1%	555,022,198	0.27	1.00	
<b>Sub-Totals</b>								
0%	50%	124,571,923	63,657,889	51.1%	476,923,211	0.26	1.04	
50%	100%	25,101,951	9,772,340	38.9%	78,098,987	0.32	0.79	-24%

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2004 Policy Year Experience for Groups With a Seven Year History  
Projected Results Based on an Experience Rating Plan with Max Credibility of 65%**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 50%
0%	10%	2,337,754	1,182,651	50.6%	8,192,429	0.29	1.22	
10%	20%	17,851,402	7,593,085	42.5%	63,075,790	0.28	1.02	
20%	30%	52,389,346	19,482,206	37.2%	161,052,488	0.33	0.89	
30%	40%	29,029,520	13,813,524	47.6%	96,140,116	0.30	1.14	
40%	50%	47,686,508	21,586,423	45.3%	148,462,388	0.32	1.09	
50%	60%	11,255,387	3,870,466	34.4%	32,096,810	0.35	0.83	-19%
60%	70%	11,789,957	4,780,744	40.5%	35,906,627	0.33	0.98	-5%
70%	80%	3,646,225	889,127	24.4%	8,833,658	0.41	0.59	-43%
80%	90%	-	-	0.0%	-	-	-	
90%	100%	676,294	232,003	34.3%	1,261,892	0.54	0.83	-20%
Total		176,662,393	73,430,229	41.6%	555,022,198	0.32	1.00	
<b>Sub-Totals</b>								
0%	50%	149,294,530	63,657,889	42.6%	476,923,211	0.31	1.03	
50%	100%	27,367,863	9,772,340	35.7%	78,098,987	0.35	0.86	-16%

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2004 Policy Year Experience for Groups With a Seven Year History  
Projected Results Based on an Experience Rating Plan with a 10k Split Plan**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 50%
0%	10%	2,882,591	1,182,651	41.0%	8,192,429	0.35	1.04	
10%	20%	19,960,409	7,593,085	38.0%	63,075,790	0.32	0.97	
20%	30%	54,994,329	19,482,206	35.4%	161,052,488	0.34	0.90	
30%	40%	31,000,134	13,813,524	44.6%	96,140,116	0.32	1.13	
40%	50%	48,263,810	21,586,423	44.7%	148,462,388	0.33	1.14	
50%	60%	12,433,322	3,870,466	31.1%	32,096,810	0.39	0.79	-23%
60%	70%	12,558,016	4,780,744	38.1%	35,906,627	0.35	0.97	-6%
70%	80%	3,940,328	889,127	22.6%	8,833,658	0.45	0.57	-44%
80%	90%	-	-	0.0%	-	-	-	
90%	100%	741,001	232,003	31.3%	1,261,892	0.59	0.80	-23%
Total		186,773,939	73,430,229	39.3%	555,022,198	0.34	1.00	
<b>Sub-Totals</b>								
0%	50%	157,101,273	63,657,889	40.5%	476,923,211	0.33	1.03	
50%	100%	29,672,666	9,772,340	32.9%	78,098,987	0.38	0.84	-19%

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2003 Policy Year Experience for Groups With a Seven Year History  
Results Based on the Experience Rating Plan used in 2003 (100% table)**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 50%
0%	10%	1,693,969	1,906,125	112.5%	11,187,141	0.15	1.05	
10%	20%	21,442,098	29,407,728	137.1%	126,953,049	0.17	1.28	
20%	30%	20,094,407	17,775,422	88.5%	98,509,898	0.20	0.83	
30%	40%	14,282,607	18,512,793	129.6%	99,042,545	0.14	1.21	
40%	50%	11,428,183	12,759,721	111.7%	73,578,685	0.16	1.04	
50%	60%	14,087,126	11,616,005	82.5%	51,537,360	0.27	0.77	-29%
60%	70%	11,515,201	8,499,054	73.8%	32,000,237	0.36	0.69	-37%
70%	80%	1,560,682	1,414,236	90.6%	13,710,677	0.11	0.85	-22%
80%	90%	819,248	722,659	88.2%	3,338,103	0.25	0.82	-24%
90%	100%	296,648	1,404,004	473.3%	5,928,686	0.05	4.42	306%
Total		97,220,169	104,017,747	107.0%	515,786,381	0.19	1.00	
<b>Sub-Totals</b>								
0%	50%	68,941,264	80,361,789	116.6%	409,271,318	0.17	1.09	
50%	100%	28,278,905	23,655,958	83.7%	106,515,063	0.27	0.78	-28%
All Groups Exp		408,225,707	330,460,722	81.0%	1,543,473,281	0.26		
Non Group Exper.		1,275,297,471	354,843,761	27.8%	1,195,702,125	1.07		

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2003 Policy Year Experience for Groups With a Seven Year History  
Projected Results Based on an Experience Rating Plan with Max Credibility of 77%**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 50%
0%	10%	3,229,012	1,906,125	59.0%	11,187,141	0.29	0.94	
10%	20%	38,804,347	29,407,728	75.8%	126,953,049	0.31	1.21	
20%	30%	33,734,722	17,775,422	52.7%	98,509,898	0.34	0.84	
30%	40%	28,186,959	18,512,793	65.7%	99,042,545	0.28	1.05	
40%	50%	21,412,126	12,759,721	59.6%	73,578,685	0.29	0.95	
50%	60%	19,633,233	11,616,005	59.2%	51,537,360	0.38	0.94	-8%
60%	70%	14,914,904	8,499,054	57.0%	32,000,237	0.47	0.91	-11%
70%	80%	3,526,511	1,414,236	40.1%	13,710,677	0.26	0.64	-37%
80%	90%	1,295,909	722,659	55.8%	3,338,103	0.39	0.89	-13%
90%	100%	1,332,559	1,404,004	105.4%	5,928,686	0.22	1.68	64%
Total		166,070,284	104,017,747	62.6%	515,786,381	0.32	1.00	
<b>Sub-Totals</b>								
0%	50%	125,367,168	80,361,789	64.1%	409,271,318	0.31	1.02	
50%	100%	40,703,117	23,655,958	58.1%	106,515,063	0.38	0.93	-9%

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2003 Policy Year Experience for Groups With a Seven Year History  
Projected Results Based on an Experience Rating Plan with Max Credibility of 65%**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 50%
0%	10%	3,831,232	1,906,125	49.8%	11,187,141	0.34	0.91	
10%	20%	44,949,615	29,407,728	65.4%	126,953,049	0.35	1.19	
20%	30%	37,838,759	17,775,422	47.0%	98,509,898	0.38	0.86	
30%	40%	33,438,815	18,512,793	55.4%	99,042,545	0.34	1.01	
40%	50%	24,943,041	12,759,721	51.2%	73,578,685	0.34	0.93	
50%	60%	21,075,951	11,616,005	55.1%	51,537,360	0.41	1.00	-1%
60%	70%	15,879,699	8,499,054	53.5%	32,000,237	0.50	0.97	-3%
70%	80%	4,235,935	1,414,236	33.4%	13,710,677	0.31	0.61	-40%
80%	90%	1,431,638	722,659	50.5%	3,338,103	0.43	0.92	-9%
90%	100%	1,759,039	1,404,004	79.8%	5,928,686	0.30	1.45	44%
Total		189,383,725	104,017,747	54.9%	515,786,381	0.37	1.00	
<b>Sub-Totals</b>								
0%	50%	145,001,462	80,361,789	55.4%	409,271,318	0.35	1.01	
50%	100%	44,382,263	23,655,958	53.3%	106,515,063	0.42	0.97	-4%

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**2003 Policy Year Experience for Groups With a Seven Year History  
Projected Results Based on an Experience Rating Plan with a 10k Split Plan**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Persistency Range		Exp Rated	Incurred	Loss	Base Prem	Average	Loss Ratio	Relative Rate
Start	End	Premium	Loss	Ratio		EM	Relative to	for Persist
							Grp Total	above 50%
0%	10%	4,358,730	1,906,125	43.7%	11,187,141	0.39	0.84	
10%	20%	45,871,024	29,407,728	64.1%	126,953,049	0.36	1.23	
20%	30%	40,611,298	17,775,422	43.8%	98,509,898	0.41	0.84	
30%	40%	34,908,231	18,512,793	53.0%	99,042,545	0.35	1.02	
40%	50%	26,848,133	12,759,721	47.5%	73,578,685	0.36	0.91	
50%	60%	22,429,002	11,616,005	51.8%	51,537,360	0.44	0.99	-2%
60%	70%	16,901,758	8,499,054	50.3%	32,000,237	0.53	0.97	-5%
70%	80%	4,328,110	1,414,236	32.7%	13,710,677	0.32	0.63	-38%
80%	90%	1,664,728	722,659	43.4%	3,338,103	0.50	0.83	-18%
90%	100%	1,784,613	1,404,004	78.7%	5,928,686	0.30	1.51	49%
Total		199,705,627	104,017,747	52.1%	515,786,381	0.39	1.00	
<b>Sub-Totals</b>								
0%	50%	152,597,416	80,361,789	52.7%	409,271,318	0.37	1.01	
50%	100%	47,108,212	23,655,958	50.2%	106,515,063	0.44	0.96	-5%

Notes:

(5) = (4)/(3)

(7) = (3)/(6)

(8) = (5)/Total of (5)

(9) the relative rate compares the loss ratio of segments with persistency greater than 50% to the total of all segments below 50%.

**Credibility Tables for Transition Years**

Credibility Group	Expected Losses	Current Credibility 85%	New Credibility 77%	New Credibility 65%	10k Split Plan
1	8,000	4%	10%	16%	16%
2	15,000	9%	14%	19%	19%
3	27,000	13%	18%	22%	22%
4	45,000	17%	21%	25%	25%
5	62,500	21%	24%	27%	27%
6	90,000	26%	28%	29%	29%
7	122,500	30%	31%	31%	31%
8	160,000	34%	34%	33%	33%
9	202,500	38%	37%	35%	35%
10	250,000	43%	40%	36%	36%
11	302,500	47%	43%	38%	38%
12	360,000	51%	45%	39%	39%
13	422,500	55%	48%	41%	41%
14	490,000	60%	52%	42%	42%
15	562,500	64%	55%	44%	44%
16	640,000	68%	59%	48%	45%
17	722,500	72%	64%	53%	46%
18	810,000	77%	69%	58%	47%
19	902,500	81%	73%	63%	48%
20	1,000,000	85%	77%	65%	49%

**Modeling the Experience Rating Plan Effects of Group Persistency Over Time**

	<b>Minimum Persistency:</b>						
	90%						
Year Count	1	2	3	4	5	6	7
Min Persistency	100%	90%	81%	73%	66%	59%	53%
Max Potential Experience	0%	0%	13%	38%	63%	88%	100%

Policy Years	<b><u>Max Persistency Table by Year</u></b>						
1	0%	0%	50%	100%	100%	100%	50%
2	0%	0%	0%	50%	100%	100%	100%
3	0%	0%	0%	0%	50%	100%	100%
4	0%	0%	0%	0%	0%	50%	100%
5							50%
Total	0%	0%	13%	38%	63%	88%	100%

<b><u>Emergence Pattern for Loss Experience Using Minimum Persistency</u></b>								
1	0%	0%	41%	73%	66%	59%	27%	All future
2	0%	0%	0%	41%	73%	66%	59%	
3	0%	0%	0%	0%	41%	73%	66%	
4	0%	0%	0%	0%	0%	41%	73%	
5							41%	
Total	0%	0%	10%	28%	45%	60%	66%	66%
Scaled to 100%	0%	0%	15%	43%	68%	90%	100%	100%
Recommended	0%	0%	15%	43%	68%	90%	100%	100%

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