November 11, 2014

Steve Ostlund
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National Association of Insurance Commissioners
1100 Walnut Street, Suite 1500
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Re: Analysis of Medicare Supplement Rate Refund Formula and Recommended Changes

Dear Steve,

The American Academy of Actuaries'[1] Medicare Supplement Work Group appreciates the opportunity to provide the results of its analysis of and potential modifications to the Medicare Supplement refund formula. The work group that developed this report consists of actuaries who have particular expertise in the area of Medicare Supplement insurance.

BACKGROUND

The current refund formula is defined in Section 14 of the Medicare Supplement Model Regulation—"Loss Ratio Standards and Refund or Credit of Premium." Section 14 discusses five different loss ratio standards that must be met. The benchmark formula ("the formula") produces a stream of cumulative loss ratios ("the benchmark") that ultimately reach 65 percent[2] for business in year 15 or later. The refund calculation compares the actual experience to date to the benchmark. While the formula includes an assumption for a third-year loss ratio consistent with the loss ratio standards, the benchmark can be described as a test of reasonable progress towards a lifetime loss ratio equal to or in excess of 65 percent.

The assumptions (all per policy year) used to create the benchmark values include:

- Durational loss ratios: 40 percent, 55 percent, 65 percent, 67 percent, …, 77 percent (year 15).

[1] The American Academy of Actuaries is an 18,000+ member professional association whose mission is to serve the public and the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualifications, practice, and professionalism standards for actuaries in the United States.

[2] The 65 percent is for individual policies; it is 75 percent for group policies.

- Persistency: 70 percent, 75 percent, 80 percent, 80 percent, 80 percent, 83 percent (thereafter) – terminations occur at the end of each policy year.

- Rate changes: 10 percent (all causes) – apply to each full policy year.

- Earned premiums, to which the durational loss ratios are applied to produce benchmark incurred claims, are set according to the previous assumptions based on actual earned premium in each year of issue assuming a July 1 issue date – 50 percent of premium earned in each of two calendar years.

In addition, the refund calculation also requires that:

- Refunds are calculated for each combination of state, plan (15 possible plans: A-N standardized plans and all pre-standardized plans), and type (individual, group, individual Medicare Select and group Medicare Select). Within each state/plan/type combination, all experience is pooled and no difference is recognized for variations based on premium structure (i.e., issue age, attained age, community rated), marketing method (i.e., agency, direct), among others.

- An addition to the reported experience loss ratio is allowed, prior to comparing the result to the benchmark, to allow for random fluctuations in cases in which the experience is not deemed to be fully credible (10,000 cumulative life years are considered to be fully credible).

As early as 2007, the National Association of Insurance Commissioners (NAIC) requested the assistance of the work group to review and make potential recommended changes to the refund formula. In order to evaluate and test the refund formula, the work group decided it would need to rely on data consisting of actual refund formula filings. The NAIC tabulated refund filing data for reporting years 2005-2009 in four states: Florida, Oregon, Virginia, and Washington.

In 2012, the work group began to build modeling algorithms to incorporate into an expansive mathematical model used to accomplish the analysis and testing needed. Early on in the process of planning the modeling, we realized that the data were missing an important component. We needed to identify rate structure in terms of whether or not rate levels include pre-funding of the aging component ("issue age") or not ("attained age"). The work group was assisted by the Medical Information Bureau (MIB) for purposes of polling carriers for the missing information. The extent to which rate structure is captured and the process utilized is discussed in greater detail in the section titled "Underlying Data."

CHARGE

Various communications have addressed the issue of the refund formula and called for review and potential changes. A letter from the work group to the NAIC Medicare Supplement Refund Formula Subgroup dated Aug. 24, 2011 spelled out the work group's understanding and clarification of the charge. The charge is noted as follows:

1st Priority: Revised Formula/Factors

- Evaluate the current formula against alternative factors between issue age ("prefunding") and non-issue age rate structures; and
- Recommend revised formulas for issue age and non-issue age rate structures.

2nd Priority: Pooling

- Evaluate the impact of pooling across all plans within type (i.e., group, individual, etc.) within a state: and
- Make a recommendation regarding pooling.

3rd Priority: Tolerance Formula and Level

- Evaluate the impact of alternative tolerance formulas and levels; and
- Make a recommendation regarding revised tolerance formula.

To this end, the work group presents the results of its analysis and recommendations.

EXECUTIVE SUMMARY AND RECOMMENDATIONS

The work group analyzed Medicare Supplement refund filing data ("data") provided by the NAIC for four states (FL, OR, VA, WA). This data was supplemented, to the extent possible, with rate structure indicators (issue age vs. attained age) in order to allow an analysis at the rate structure level. Our analysis incorporated the results of alternative input assumptions for premium trend, termination rates, durational loss ratios, and the corresponding alternative refund formulas.[3] The work group derived an initial range and subsequent set of assumption scenarios for consideration as alternatives to the current refund formula. In spite of data limitations (refer to the "Limitations and Considerations" section near the end of this report), the work group believes that the analysis results support the recommended changes to the current refund formula.

Vary Benchmarks by Rating Structure

With respect to the issue of classification of Medicare Supplement business into issue age and non-issue age rate structures, our analysis supported the general actuarial position that these two rate structures exhibit distinctly different patterns of expected experience. As such, separate factors applicable to the refund formula are justified. Based on the extent to which various assumption sets fit industry experience underlying the data along with general discussion and debate within the work group, the work group is prepared to recommend two revised refund formulas—one formula applicable to issue age rate structures and another applicable to attained age rate structures. These refund formula factors are identified in Appendix 1a (Individual Forms) and 1b (Group Forms). With the NAIC's approval, the work group was able to provide these appendices without the separation of the first two years from later years for use in new benchmark worksheets.

[3] This is based on a review of the report on Medicare Supplement experience by the Academy and Reden & Anders. ("Study of Alternatives for the Medicare Supplement Refund Formula" prepared by Jay Boekhoff Dec. 6, 2002).

It should be noted that, with respect to issue age business, this would reflect durational loss ratios below 65 percent for the first four policy durations. Note that the revised formulas are presented all the way to duration 30 should the NAIC prefer to implement factors beyond year 15. The work group recommends 30-year benchmark factors.

Pooling Across Plans

With respect to pooling across plans, the analysis indicates that pooling results in an insignificant change in refunds for issue age business and the elimination of refunds for attained age business. The elimination of refunds results from loss ratio subsidization across plans. Appendix 4 includes the actual situations in which this occurred in the data.

While pooling across plans would result in an increase in data credibility (and corresponding lower levels of tolerance) for most companies,[4] it may not produce greater refunds. In addition, pooling would be contrary to legislative language that applies the loss ratio standard to unique plans.

As noted in the report, from an actuarial perspective, pooling for refunds would make sense when similar pooling is used in requesting rate increases for multiple policy forms that involve multiple plans.

There are merits to either choice and, as such, the work group cannot make any recommendation with respect to pooling across plans. However, this report provides background of our analysis for the NAIC to consider.

Revise the Tolerance Formula

With respect to the tolerance formula, the work group did not have the data necessary to fully evaluate credibility for Medicare Supplement business. Actual credibility would vary widely based on the plan, assuming the base remains number of life-years. Without changing the initial tolerance level or the full credibility level, the work group recommends a geometric progression tolerance formula. Refer to Appendix 3 for the geometric progression tolerance formula. While the geometric progression formula is more complex than the current formula, and the impact is not dramatic based on the analysis, it provides a smoother progression of tolerance in consecutive reporting years as a company's business matures. It avoids the large steps in the current formula that cause periods of no refunds followed by a significant refund in the year when the tolerance adjustment drops to the next level. It also provides more relative consistency and equity between various companies with different exposure levels. In addition, a smoother progression is more appropriate from a theoretical perspective.

Based on the data from four states included in the work group's analysis, the recommendations are as follows:

- Issue age rate structure – reduction in refunds from $5.9 million to $1.0 million; and
- Attained age rate structure – increase in refunds from $1.6 million to $4.2 million.

[4] Note that a few companies and states may already be fully credible for all plans.

The impact is almost all due to the proposed change in specific refund formulas by rate structure.

ANALYSIS OF CURRENT AND ALTERNATIVE FORMULA AND UNDERLYING PREMIUM AND LOSS RATIO ASSUMPTIONS

The work group has obtained Medicare Supplement refund filing data from the NAIC for reporting years 2005-2008 for four states—FL, OR, VA, and WA. In addition to the raw data records, the MIB was retained to poll representative companies for rate structure assignment (attained age vs. issue age) to supplement our analysis by rate structure. Subsequently, the work group developed an algorithm for analyzing the data and developed a model to: 1) perform analysis of industry experience in the data against benchmarks based on the current refund formula as well as any alternative benchmarks based on alternative assumptions; 2) develop alternative refund formulas based on underlying alternative assumptions; and 3) generate alternative (retrospective) refund amounts based on alternative formulas. Additional detail as well as the limitations of our analysis based on the data is presented later in this report.

The following subsections will focus on the results of alternative assumptions and the resulting refund formulas without pooling across plans.

Assumption Sets

The work group discussed various assumption sets (i.e., premium trend, termination rates, durational loss ratios) based on collective experience and observations of industry experience. The work group ultimately settled on four assumption sets for both attained age and issue age rate structures. It is the opinion of the work group that these assumption sets encompass a reasonable lower and upper bound of industry levels. Based on the prior work of the Academy Medicare Supplement Work Group and the Reden & Anders ("R&A") report, the work group determined that the number of years the benchmark would use to reach a "lifetime" 65 percent loss ratio needed to be increased from 15 years to 30 years for issue age rating. For consistency, the same 30 years was used in the work related to attained age benchmarks as well.

It could be argued that assumptions also could vary, especially over a 30 year period, based on 1) age at issue (in order to recognize the increasing impact of mortality at the later durations) and 2) plan, due to variations in benefits. The current formula does not vary the benchmark factors by issue age, and any such addition would add considerable administrative complexity and increase auditing costs. The proposed assumption sets were developed without a variation for either issue age or plan.

These assumption sets are identified in Table 1 below:

Table 1
Academy Medicare Supplement Work Group
Assumption Sets

	Issue Age Rate Structure				Attained Age Rate Structure			
	Set 1	**Set 2**	**Set 3**	**Set 4**	**Set 1**	**Set 2**	**Set 3**	**Set 4**
Premium Trend	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Termination Rates								
1	15.0%	15.0%	20.0%	20.0%	15.0%	15.0%	20.0%	20.0%
2	12.0%	12.0%	15.0%	15.0%	13.0%	13.0%	16.0%	16.0%
3	10.0%	10.0%	12.0%	12.0%	11.0%	11.0%	13.0%	13.0%
4	10.0%	10.0%	12.0%	12.0%	11.0%	11.0%	13.0%	13.0%
5	10.0%	10.0%	12.0%	12.0%	11.0%	11.0%	13.0%	13.0%
6+	10.0%	10.0%	12.0%	12.0%	11.0%	11.0%	13.0%	13.0%
Durational LR								
1	44.0%	48.0%	44.0%	48.0%	55.0%	60.0%	55.0%	60.0%
2	49.0%	53.0%	49.0%	53.0%	58.0%	63.0%	58.0%	63.0%
3	57.0%	58.0%	57.0%	58.0%	64.0%	65.0%	63.0%	65.0%
4	60.0%	62.0%	60.0%	62.0%	65.0%	65.0%	65.0%	66.0%
5	63.0%	65.0%	63.0%	65.0%	66.0%	65.0%	65.0%	66.0%
6	65.0%	67.0%	65.0%	67.0%	67.0%	65.0%	66.0%	66.0%
7	66.0%	68.0%	66.0%	68.0%	67.0%	65.0%	66.0%	66.0%
8	68.0%	69.0%	68.0%	69.0%	67.0%	66.0%	67.0%	66.0%
9	70.0%	69.0%	70.0%	70.0%	67.0%	66.0%	67.0%	66.0%
10	71.0%	69.0%	71.0%	71.0%	67.0%	66.0%	69.0%	66.0%
11	71.0%	69.0%	72.0%	71.0%	67.0%	66.0%	69.0%	66.0%
12	71.0%	69.0%	73.0%	71.0%	67.0%	66.0%	69.0%	66.0%
13	71.0%	69.0%	74.0%	71.0%	67.0%	66.0%	69.0%	66.0%
14	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
15	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
16	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
17	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
18	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
19	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
20	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
21	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
22	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
23	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
24	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
25	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
26	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
27	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
28	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
29	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%
30	71.0%	69.0%	75.0%	71.0%	67.0%	66.0%	69.0%	66.0%

In addition to our assumption sets, we also produced results for the current refund formula as well as alternatives based on R&A assumptions as presented in its report on the study of alternatives to the Medicare Supplement refund formula (Dec. 6, 2002) as well as the Academy Medicare Supplement Work Group report on loss ratio curves for redetermination of refund benchmarks (March 10, 2004).

The underlying assumption sets for the current formula as well as R&A assumptions can be found in Appendix 2.

It should be pointed out that both the R&A loss ratio assumptions as well as the work group's alternative loss ratio assumptions do not place restrictions on policy years 3+ to meet the applicable minimum loss ratio of 65 percent for individual business and 75 percent for group business.

Data Basis

The data was scrubbed to provide consistent filing records across all reporting years. Appendix 3 describes the scrubbing process, which was used for comparing results on a "by plan" refund approach and a "pooled" refund approach (see section on pooling below) together with underlying data totals in terms of: 1) baseline data, 2) data used for initial analysis without pooling, and 3) data used for analysis of pooling across plans.

Results

Results are presented in Table 2 below by assumption set and for entries identified as either attained age or issue age.

Results are presented in terms of the following:

- Total Refunds

Note that for purposes of the work group's analysis, refunds were measured slightly different than the annual refund calculations in the refund reporting forms. The work group determined the total refund since the inception of each block of business (under both the current and any of the alternative formulas tested) without adjustment for previous refunds in the calculation. The work group did this because the data does not allow the calculation of each year's refunds prior to reporting year 2005, only the total refund since inception. To illustrate the point with an extreme example, if a carrier with a large Medicare Supplement block paid a refund of $5 million, in 2004 but subsequently paid no refunds (primarily due to the adjustment for prior refunds), then any effect of proposed changes on this refund would be missed if only the refunds paid from 2005-2009 were considered.

It should be noted that while we developed alternative refund factors through Year 30 for consideration in our recommendation, the actual resulting refunds modeled reflect only the factors through Year 15. This is due to the data limitations resulting from the current refund form level of detail required.

However, the actual effect of experience in durations 16+ is extremely small in the data because the period ends in 2008, so only standardized plan issues of 1992 would create duration 16[5] data.

- Premium Fit – Actual to Projected Ratio

Premium fit compares actual premium to projected levels based on the underlying benchmarks given the applicable assumption set.

- Distribution of Results Around "Mean"

The results from all assumption sets were extremely wide, so a mean is of questionable value. We did try to provide a measure of fit by determining the portion of entries within each of three ranges:

— Below (less than 90 percent of mean),
— Within (+/- 10 percent of mean), and
— Above (over 110 percent of mean of the ratio of actual to projected premium).

The choice of 10 percent, while somewhat arbitrary, seems reasonable given the wide variation in results and it provides a range not too wide to provide meaning.

- Actual to Projected Loss Ratio

Actual to projected loss ratio compares actual loss ratios to projected levels (for 2006-2008) based on the underlying benchmarks given the applicable assumptions.

Table 2
Academy Medicare Supplement Work Group
Results

Underlying Assumptions	Current	R&A	Set 1	Set 2	Set 3	Set 4
Issue Age Rate Structure						
Total Refunds	5,870,051	1,514,740	213,271	1,790,716	168,926	1,101,448
Actual to Projected Premium Fit						
Ratio	125%	87%	79%	79%	96%	96%
Tolerance distribution						
Below	34%	57%	64%	64%	51%	51%
Within	12%	17%	13%	13%	14%	14%
Above	54%	26%	23%	23%	35%	35%
Actual to Projected Loss Ratio Fit	122%	123%	127%	126%	127%	126%

[5] All pre-standardized business is considered as having, for refund purposes, an issue date of Jan. 1, 1995.

Attained Age Rate Structure						
Total Refunds	1,556,679	2,515,819	2,339,536	3,589,940	1,830,704	3,885,793
Actual to Projected Premium Fit						
Ratio	129%	93%	89%	89%	106%	106%
Tolerance Distribution						
Below	26%	57%	61%	61%	45%	45%
Within	23%	16%	15%	15%	21%	21%
Above	51%	27%	24%	24%	34%	34%
Actual to Projected Loss Ratio Fit	112%	113%	114%	114%	114%	113%

Observations:

- As expected, any of the alternatives considered would result in a reduction of refunds for issue age business and an increase in refunds for attained age business;
- Assumption sets 3 and 4 seem to provide the best fit[6] to actual premium. Note that these assumption sets correspond to higher termination rates. In general, all of the alternative assumption sets (along with the R&A assumptions) provide a much better fit than the current formula; and
- The actual to projected loss ratio fit is consistently greater than 100 percent. This is indicative of the general observation that the Medicare Supplement industry as a whole experiences loss ratio levels above required levels.

Based on the extent to which the various assumption sets fit industry experience underlying the data along with general discussion and debate within the group, the work group recommends two revised refund formulas specific to issue age and attained age rate structures corresponding to "Set 4" assumptions for both rate structures. The work group based its recommendation on Set 4 because of the best fit to actual premium and the work group's actuarial judgment with respect the durational loss ratio pattern.

IMPACT OF POOLING

[6] This assumes that there is no difference between values above and below 100 percent. A value over 100 percent means that the actual premiums in the "front" part of the benchmark period are higher than expected. This means that higher values will also be necessary after this point in time to match the loss ratio requirement over the 30 years. A value below 100 percent means that the premiums in the "front" part are lower than expected. If premiums are as expected for the remainder of the 30 years, the lifetime loss ratio requirement will surely be met.

In addition to the analysis noted in the previous section, we tested the impact of pooling across plans. It should be noted that once data is pooled across plans, our data scrubbing process eliminates additional records. Refer to Appendix 3 for details.

Table 3 provides the pooling results with respect to total refunds. The current refund formula does not recognize pooling by plan. Therefore, reference to pooling under the current formula refers to the current formula factors applied to experience for all plans added together. It should be noted that the impact of plan pooling on a particular entry can be either positive or negative depending on: 1) current credibility adjustments applied after pooling for the pooled values; and 2) the inherent subsidization of experience between plans. "No Pooling" is as defined in the prior sections.

Table 3
Academy Medicare Supplement Work Group
Results - Pooling Across plans
Total refunds included in pooling analysis

Underlying Assumptions	Current	R&A	Set 1	Set 2	Set 3	Set 4
Issue Age Rate Structure						
No pooling	2,057,342	187,912	142,847	368,577	118,742	187,360
Pooling across plans	1,637,630	309,587	237,349	301,289	207,835	292,033
Attained Age Rate Structure						
No pooling	739,907	1,079,444	910,406	1,636,472	700,418	1,804,780
Pooling across plans	0	0	0	0	0	0

Observations:

- Under the current formula, pooling results in lower refunds for both issue age and attained age business. In fact, in the case of attained age business, for the data used, refunds would be reduced to zero. The causes of the reduction vary as noted in Appendix 4, which reviews the cases in which refunds were produced by the data set for either 2007 or 2008;

- In the case of issue age business, results are more mixed. All alternative formulas result in a lower volume of refunds in the aggregate under either pooling scenario, and there doesn't appear to be a significant difference in volume; and

- When we view results for each given assumption set, it is clear that refunds disappear for the data used under all attained age alternatives.

The impact of pooling across plans based on the modeling of the data can best be characterized as having little impact for issue age business and the elimination of refunds for attained age business. In either case, there are no cases of a significant increase. While the data provides a reasonable representation of the Medicare Supplement industry, it is not known what the impact would be for states not included in the data.

From an actuarial perspective, there is value in pooling for refunds in situations in which there is also pooling for rate increase filings and not pooling in situations where the rate filings are based on non-pooled data. However, it would seem commonplace that rate filings may start using pooled data because the experience is not yet credible and then later the filings would be based on credible experience that is no longer pooled. This may happen at different times for different companies or for different plan types. We do not see any simple, yet appropriate, way to reflect pooling for refunds limited to situations where the rates are based on pooled experience. If pooling is to be included for refund calculations, it must be done on a uniform basis within the NAIC model.

REVIEW OF CREDIBILITY RECOGNITION AND TOLERANCE FORMULAS

The general conclusions of the R&A report was that little change was needed to the tolerance adjustments given a set of underlying assumptions provided in their report. The work group has not attempted to update any of the needed statistical values necessary for in-depth analysis of credibility.

The work group does suggest that a modification be made to eliminate the step values in the current tolerance adjustments and replace them with a continuously reducing tolerance adjustment. The point at which credibility starts (500 life years) and number of lives when tolerance adjustments cease (10,000 life years) are unchanged. To avoid the sudden change from intermediate step values, the tolerance values could be generated through a formula-driven approach. One approach is to create four separate linear formulas based on the number of life years. This would increase the tolerance at the low end of the range and decrease the tolerance at the upper end of the range so that a more normal change in tolerance value occurs throughout the entire range:

Range 500-999: Tolerance = Base Amount#1 – Reduced Tolerance per Life Year * (Number of Life Years - 499)
Range 1,000-2,499: Tolerance = Base Amount#2 – Reduced Tolerance per Life Year * (Number of Life Years - 999)
Range 2,500-4,999: Tolerance = Base Amount#3 – Reduced Tolerance per Life Year * (Number of Life Years - 2,499)
Range 5,000-9,999: Tolerance = Base Amount#4 – Reduced Tolerance per Life Year * (Number of Life Years - 4,999)

This approach can be calibrated in such a way to be consistent within each range to the current tolerance levels.

Alternatively, all tolerance values could be replaced with a single formula (geometric progression). An example:

Range 500-9,999: Tolerance = ((15,000 – Number of Life Years)/14,500)^2.3*0.155[7]

A graphic illustration of this alternative geometric progression formula is in Appendix 5.

If we utilize the alternative geometric progression formula, the resulting refunds are provided in Tables 4 and 5 before and after analysis of pooling.

Table 4
Academy Medicare Supplement Work Group
Total Refund: Impact of Alternative Geometric Progression Formula

	Current	R&A	Set 1	Set 2	Set 3	Set 4
Issue Age Rate Structure						
Current Tolerance Formula	5,870,051	1,514,740	213,271	1,790,716	168,926	1,101,448
Geometric Progression	5,700,549	1,396,721	158,523	1,688,955	134,520	1,005,933
Impact	(169,502)	(118,019)	(54,747)	(101,761)	(34,405)	(95,516)
Attained Age Rate Structure						
Current Tolerance Formula	1,556,679	2,515,819	2,339,536	3,589,940	1,830,704	3,885,793
Geometric Progression	1,866,409	2,817,128	2,646,387	3,892,827	2,151,424	4,219,476
Impact	309,730	301,309	306,851	302,888	320,719	333,683

Table 4 indicates that the geometric progression formula results in slight reductions in refunds for issue age and increases for attained age business. The direction of impact is consistent across all formulas. This would appear to be more a function of the particular exposure levels than some inherent characteristic difference in the two rate structures.

Based on the underlying data, from an impact perspective, the current tolerance formula has little impact. However, from a theoretical perspective, the geometric progression formula would provide more consistency and less year-to-year disruption for a particular carrier.

[7] The specific formula parameters were chosen such that they provide a reasonable progression from the low and high end of the spectrum.

Table 5
Academy Medicare Supplement Work Group
Results - Pooling across plans with current tolerance formula and alternative geometric progressive formula

Underlying Assumptions	Current	R&A	Set 1	Set 2	Set 3	Set 4
Current Tolerance Formula						
Issue Age Rate Structure						
Total refunds included in pooling analysis						
No pooling	2,057,342	187,912	142,847	368,577	118,742	187,360
Pooling across plans	1,637,630	309,587	237,349	301,289	207,835	292,033
Attained Age Rate Structure						
Total refunds included in pooling analysis						
No pooling	739,907	1,079,444	910,406	1,636,472	700,418	1,804,780
Pooling across plans	0	0	0	0	0	0
Alternative Geometric Progression Formula						
Issue Age Rate Structure						
Total refunds included in pooling analysis						
No pooling	2,069,167	203,793	158,523	384,061	134,520	202,861
Pooling across plans	1,530,935	200,577	126,179	191,809	95,916	182,317
Attained Age Rate Structure						
Total refunds included in pooling analysis						
No pooling	739,907	1,079,444	910,406	1,636,472	700,418	1,804,780
Pooling across plans	0	0	0	0	0	0
Impact						
Issue Age Rate Structure						
Total refunds included in pooling analysis						
No pooling	11,825	15,881	15,676	15,483	15,778	15,501
Pooling across plans	(106,695)	(109,010)	(111,170)	(109,479)	(111,919)	(109,716)
Attained Age Rate Structure						
Total refunds included in pooling analysis						
No pooling	-	-	-	-	-	-
Pooling across plans	-	-	-	-	-	-

Under a pooling scenario, issue age business refunds are further reduced and are lower under all scenarios than the refunds with the current tolerance formula with no pooling. There is no impact on attained age business for which pooling eliminates all refunds.

IMPLEMENTATION/TRANSITIONAL ISSUES

The NAIC should consider the various issues inherent with the implementation and transition of these recommendations should they be accepted.

- Implementation

  Implementation of revised refund formulas has implications on federal law as well as NAIC model regulation 651 and resulting updates to the Medicare Supplement compliance manual.

  As it relates to the NAIC model regulations, modifications would require;

  - An update to the specific formulas in Appendix A of the NAIC model regulation.

  - Definitions. The work group has recommended separate handling of issue age and attained age rating. Definitions of "issue age rated policy" and "attained age rated policy" will be needed. In addition, a variety of circumstances exist in which data for a state/plan/type combination could contain both or other rating types (e.g., community rating does not neatly fit as attained age or issue age rating). Handling of other rating types will need to be addressed.

  - Changes in the Refund calculation form-Assuming the use of separate benchmarks by rating type, the reporting form showing the refund calculation will need to be modified so that it is able to reflect the composite data in instances in which the form has premiums subject to both rating types and the revision to tolerance calculations.

  Accepting our recommendation to implement 30-year benchmark factors, would require the expansion of carrier data requirements for completing refund filing forms.

- Transition

  Decisions will be required with respect to the extent, if at all, for transitioning the new formulas from the current formula with respect to effective periods as well as the length of any transition period, the number of intermediate stages, and the specific intermediate formulas.

  If pooling for refunds is to be included, the above transition decisions will need to reflect that as well.

LIMITATIONS AND CONSIDERATIONS

In reading this report and interpreting our results and recommendations, one should take into consideration various factors as noted below:

- Refunds cannot be analyzed prior to 2005; therefore, the work group excluded past refunds in its analysis.

- Records were excluded that showed first year premium inconsistencies across reporting years or that were not included for all reporting years.

- Results reflect the underlying data set created by the NAIC and assumptions used.

- With the exception of Florida records, rate structure information to the extent available was produced by MIB through polling of the applicable companies. Florida records were all assigned issue age rate structure.

- Individual company results will not necessarily follow aggregate patterns of the underlying data.

- Note that the data represents a much higher representation of issue age rated business (due to the presence of Florida records and only three other states) than would be the case of a dataset representative of the nation as a whole.

- The underlying data set includes only 43 records with reported refunds out of a total of 6,436. It is likely that any analysis results of refund levels need to be viewed with an understanding of the inherent variability of this limited data set.

❖ ❖ ❖ ❖ ❖

The work group welcomes the opportunity to discuss its report and recommendations with you at your convenience. If you have any questions or would like to discuss further, please contact Tim Mahony, the Academy's state health policy analyst (202.223.8196; Mahony@actuary.org).

Sincerely,

Kenneth L. Clark
Chair, Medicare Supplement Work Group
American Academy of Actuaries

Appendices

Appendix 1a
American Academy of Actuaries Medicare Supplement Work Group
Recommended Revised Refund Factors - Individual Forms

Attained Age					Issue Age				
Year	EP Factor c	Cumulative Loss Ratio (e)	EP Factor (g)	Cumulative Loss Ratio (i)	Year	EP Factor c	Cumulative Loss Ratio (e)	EP Factor (g)	Cumulative Loss Ratio (i)
1	2.840	0.609	0.000	0.000	1	2.840	0.495	0.000	0.000
2	4.421	0.620	0.000	0.000	2	4.430	0.516	0.000	0.000
3	4.421	0.620	1.418	0.655	3	4.430	0.516	1.443	0.599
4	4.421	0.620	2.713	0.657	4	4.430	0.516	2.776	0.616
5	4.421	0.620	3.896	0.658	5	4.430	0.516	4.008	0.629
6	4.421	0.620	4.977	0.659	6	4.430	0.516	5.145	0.639
7	4.421	0.620	5.964	0.659	7	4.430	0.516	6.197	0.647
8	4.421	0.620	6.866	0.659	8	4.430	0.516	7.168	0.654
9	4.421	0.620	7.690	0.659	9	4.430	0.516	8.066	0.659
10	4.421	0.620	8.442	0.659	10	4.430	0.516	8.896	0.664
11	4.421	0.620	9.130	0.659	11	4.430	0.516	9.662	0.668
12	4.421	0.620	9.758	0.659	12	4.430	0.516	10.370	0.671
13	4.421	0.620	10.331	0.659	13	4.430	0.516	11.024	0.673
14	4.421	0.620	10.855	0.659	14	4.430	0.516	11.629	0.675
15	4.421	0.620	11.105	0.659	15	4.430	0.516	11.919	0.676
16	4.421	0.620	11.334	0.659	16	4.430	0.516	12.188	0.676
17	4.421	0.620	11.771	0.659	17	4.430	0.516	12.704	0.678
18	4.421	0.620	12.171	0.659	18	4.430	0.516	13.181	0.679
19	4.421	0.620	12.536	0.659	19	4.430	0.516	13.622	0.680
20	4.421	0.620	12.869	0.659	20	4.430	0.516	14.029	0.681
21	4.421	0.620	13.174	0.659	21	4.430	0.516	14.405	0.682
22	4.421	0.620	13.452	0.659	22	4.430	0.516	14.753	0.682
23	4.421	0.620	13.706	0.659	23	4.430	0.516	15.074	0.683
24	4.421	0.620	13.938	0.659	24	4.430	0.516	15.371	0.683
25	4.421	0.620	14.150	0.659	25	4.430	0.516	15.645	0.684
26	4.421	0.620	14.344	0.659	26	4.430	0.516	15.899	0.684
27	4.421	0.620	14.521	0.659	27	4.430	0.516	16.133	0.685
28	4.421	0.620	14.682	0.659	28	4.430	0.516	16.349	0.685
29	4.421	0.620	14.830	0.660	29	4.430	0.516	16.549	0.685
30	4.421	0.620	14.965	0.660	30	4.430	0.516	16.734	0.686

Appendix 1b
American Academy of Actuaries Medicare Supplement Work Group
Recommended Revised Refund Factors - Group Forms

Attained Age					Issue Age				
Year	EP Factor c	Cumulative Loss Ratio (e)	EP Factor (g)	Cumulative Loss Ratio (i)	Year	EP Factor c	Cumulative Loss Ratio (e)	EP Factor (g)	Cumulative Loss Ratio (i)
1	2.840	0.703	0.000	0.000	1	2.840	0.571	0.000	0.000
2	4.421	0.715	0.000	0.000	2	4.430	0.595	0.000	0.000
3	4.421	0.715	1.418	0.756	3	4.430	0.595	1.443	0.691
4	4.421	0.715	2.713	0.758	4	4.430	0.595	2.776	0.711
5	4.421	0.715	3.896	0.759	5	4.430	0.595	4.008	0.726
6	4.421	0.715	4.977	0.760	6	4.430	0.595	5.145	0.738
7	4.421	0.715	5.964	0.760	7	4.430	0.595	6.197	0.747
8	4.421	0.715	6.866	0.760	8	4.430	0.595	7.168	0.754
9	4.421	0.715	7.690	0.760	9	4.430	0.595	8.066	0.761
10	4.421	0.715	8.442	0.761	10	4.430	0.595	8.896	0.766
11	4.421	0.715	9.130	0.761	11	4.430	0.595	9.662	0.770
12	4.421	0.715	9.758	0.761	12	4.430	0.595	10.370	0.774
13	4.421	0.715	10.331	0.761	13	4.430	0.595	11.024	0.776
14	4.421	0.715	10.855	0.761	14	4.430	0.595	11.629	0.779
15	4.421	0.715	11.105	0.761	15	4.430	0.595	11.919	0.780
16	4.421	0.715	11.334	0.761	16	4.430	0.595	12.188	0.781
17	4.421	0.715	11.771	0.761	17	4.430	0.595	12.704	0.782
18	4.421	0.715	12.171	0.761	18	4.430	0.595	13.181	0.783
19	4.421	0.715	12.536	0.761	19	4.430	0.595	13.622	0.785
20	4.421	0.715	12.869	0.761	20	4.430	0.595	14.029	0.786
21	4.421	0.715	13.174	0.761	21	4.430	0.595	14.405	0.786
22	4.421	0.715	13.452	0.761	22	4.430	0.595	14.753	0.787
23	4.421	0.715	13.706	0.761	23	4.430	0.595	15.074	0.788
24	4.421	0.715	13.938	0.761	24	4.430	0.595	15.371	0.789
25	4.421	0.715	14.150	0.761	25	4.430	0.595	15.645	0.789
26	4.421	0.715	14.344	0.761	26	4.430	0.595	15.899	0.790
27	4.421	0.715	14.521	0.761	27	4.430	0.595	16.133	0.790
28	4.421	0.715	14.682	0.761	28	4.430	0.595	16.349	0.790
29	4.421	0.715	14.830	0.761	29	4.430	0.595	16.549	0.791
30	4.421	0.715	14.965	0.761	30	4.430	0.595	16.734	0.791

Appendix 2 Academy Medicare Supplement Work Group Assumption Sets - Current Formula and R&A Basis			
	Current	**R&A - AA**	**R&A - IA**
Premium Trend	10.0%	7.5%	7.5%
Termination Rates			
1	30.0%	25.0%	25.0%
2	25.0%	15.0%	15.0%
3	20.0%	12.0%	12.0%
4	20.0%	12.0%	12.0%
5	20.0%	12.0%	12.0%
6+	17.0%	12.0%	12.0%
Durational LR			
1	40.0%	52.0%	44.0%
2	55.0%	57.0%	50.0%
3	65.1%	61.0%	55.0%
4	67.1%	65.0%	61.0%
5	69.1%	69.0%	66.0%
6	71.1%	69.0%	67.0%
7	73.1%	69.0%	68.0%
8	75.1%	69.0%	70.0%
9	76.1%	69.0%	71.0%
10	76.1%	69.0%	72.0%
11	76.1%	69.0%	73.0%
12	77.1%	69.0%	74.0%
13	77.1%	69.0%	74.0%
14	77.1%	69.0%	75.0%
15	77.1%	69.0%	76.0%
16	77.1%	69.0%	76.0%
17	77.1%	69.0%	76.0%
18	77.1%	69.0%	76.0%
19	77.1%	69.0%	77.0%
20	77.1%	69.0%	77.0%
21	77.1%	69.0%	77.0%
22	77.1%	69.0%	77.0%
23	77.1%	69.0%	78.0%
24	77.1%	69.0%	78.0%
25	77.1%	69.0%	78.0%
26	77.1%	69.0%	78.0%
27	77.1%	69.0%	78.0%
28	77.1%	69.0%	79.0%
29	77.1%	69.0%	79.0%
30	77.1%	69.0%	79.0%

Appendix 3
Data Basis

The data was put through a scrubbing process for the work group's analysis. This process was required for two reasons.

1) The algorithm for analysis derives actual reported values of each entry by taking differences of consecutive reporting years. Calendar year 2006 values are derived as the difference between reporting year 2006 accumulated values and reporting year 2005 accumulated values. The same process is used to derive calendar year 2007 and 2008 values. The work group removed from consideration any records applicable to entries for which either all of the reporting years (2005-2008) are not present or for which the derived values are negative, revealing a flawed or missing record or set of records.

2) Reported values of first year earned premium entries for consecutive reporting years are tested for consistency, and if they fail the test, they are excluded.

Table A below provides the totals of the underlying data as presented by rate structure both in terms of the baseline data as well as the data ultimately used for initial analysis without pooling after the scrubbing process.

Table A
Academy Medicare Supplement Work Group
Data Basis

Rate Structure	Baseline	Plan Detail Analysis
Earned Premium Measures (2006-2008)		
Attained Age	556,927,655	470,111,302
Issue Age	3,829,460,466	3,665,464,980
NA	181,077,609	119,924,949
Total	4,567,465,730	4,255,501,231
Total Entries		
Attained Age	403	154
Issue Age	845	422
NA	723	221
Total	1,971	797

Data involve entries defined as a unique company/state/plan/type segment across all reporting years. The scrubbing process eliminated a significant number of entries. However, the premium volume retained for attained age and issue age combined is in excess of 94 percent.

It should be noted that once data is pooled across plans, the data scrubbing process eliminates additional records. Table B below provides the corresponding data totals applicable to the pooling analysis.

Table B
Academy Medicare Supplement Work Group
Data Basis

Rate Structure	Baseline	Plan Pooling Analysis
Earned Premium Measures (2006-2008)		
Attained Age	556,927,655	280,984,978
Issue Age	3,829,460,466	2,890,678,916
NA	181,077,609	62,619,538
Total	4,567,465,730	3,234,283,432
Total Entries		
Attained Age	403	120
Issue Age	845	338
NA	723	173
Total	1,971	631

This additional scrubbing eliminated additional entries. The premium volume retained for attained age and issue age combined is in excess of 72 percent.

Appendix 4
Medicare Supplement Work Group
NAIC Data Refunds (2005-2009) - Analysis of Pooling

State	Company Name	Type	SMSBP	No Pooling	Pooling Plans
			Current Formula - Issue Age		
FL	Company 1	Individual	F	$561,035	$0
FL	Company 2	Individual	E	$3,680	$0
OR	Company 3	Individual	P	$1,240,490	$1,240,490
OR	Company 4	Individual	P	$136,546	$136,546
OR	Company 5	Individual	F	$115,591	$0
OR	Company 6	Individual	All	$0	$260,594
All	All	All	All	**$2,057,342**	**$1,637,630**
			Current Formula - Attained Age		
OR	Company 3	Individual	F	$739,907	$0
All	All	All	All	**$739,907**	**$0**
			Alternative Formula Set 4 - Issue Age		
FL	Company 1	Individual	F	$0	$0
FL	Company 2	Individual	E	$0	$0
OR	Company 3	Individual	P	$0	$0
OR	Company 4	Individual	P	$81,749	$81,749
OR	Company 5	Individual	F	$105,610	$0
OR	Company 6	Individual	All	$0	$210,283
All	All	All	All	**$187,360**	**$292,033**
			Alternative Formula Set 4 - Attained Age		
OR	Company 3	Individual	F	$1,120,223	$0
VA	Company 4	Individual	F	$684,557	$0
All	All	All	All	**$1,804,780**	**$0**

Appendix 5

Alternative Tolerance Adjustment

Life Years Exposed Since Inception (LYE)	Tolerance
Fewer than 500	Unlimited (no credibility)
500-9,999	((15,000 – LYE)/14500)^2.3*0.155
10,000+	0%

Here is a representation of how this alternative compares to the current values: