Report to the D.C. Department of Insurance, Securities and Banking

Group Hospitalization and Medical Services Inc.

MIEAA Surplus Review

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United Health Actuarial Services, Inc.

Table of Contents

Executive Summary

The 2011 Milliman Report and the 2013 Rector Report each purport to establish an appropriate surplus level for Group Health and Medical Services, Inc. ("GHMSI") that is consistent with a 98% confidence level of not falling below 200% of the authorized control level risk-based capital (RBC-ACL) requirements. This analysis of those reports demonstrates that:

1) Neither Milliman's nor Rector's assumptions, when disclosed, validate to the experience of GHMSI, to the experience of GHMSI's peers, or to recent market experience.
2) Each of the reports, which are actuarial communications, fail to adhere to Actuarial Standards of Practice[1] regarding identifying the methods, procedures, assumptions, and data with sufficient clarity that another qualified actuary could make an objective appraisal of the reasonableness of the reports.
3) When restated to more objective, validating bases, each of the key assumptions used in the reports would lead to lower recommended surplus levels.
4) We recreated the Stochastic Model used by Milliman and Rector and are able to quantify the differences in the losses from the Stochastic Model accurately by using objective, validating assumptions.

Rating Adequacy and Fluctuation Factor ("RAAF"). Of all the factors incorporated in the Stochastic Model, the RAAF factor has the greatest impact. This factor reflects "the risk that actual claims and expenses differ from the amounts for which provision is made in premium rates."[2] Although Milliman and Rector provide very little documentation for the derivation of this factor, Milliman has disclosed that it used data from 1986 to 2009[3] – an era that includes volatile years before modern RBC-ACL requirements and more controlled provider contracts – to develop its RAAF factor. In adjusting past experience to project future (primarily ACA) impacts, both Milliman and Rector failed to account for ("the three R") risk-mitigating provisions of the ACA that serve to limit or reduce potential underwriting losses by insurers. By eliminating volatile years before the late-1990's and incorporating the risk-mitigating provisions of the ACA into validated historical experience, we develop a probability distribution of impacts associated with RAAF that is more appropriate and reduces needed surplus by approximately $193 million, all other assumptions being unchanged.

Premium Growth Assumptions. Outside the stochastic modeling process, the assumption with the greatest impact on surplus is the premium growth assumption that Rector uses in its Pro Forma modeling. Premium growth is a proxy for claims growth; it increases the RBC-ACL, which in turn reduces the ratio of projected surplus to RBC-ACL and leads to greater projected need for surplus. Both Milliman and Rector assume premium growth rates that fail to validate with recent company experience and overstate the likely impact of ACA provisions that became effective in 2014. By creating a premium growth probability distribution that validates to recent

[1] See Actuarial Standard of Practice #41, Section 3.2 on page 3. http://www.actuarialstandardsboard.org/pdf/asops/asop041_120.pdf.
[2] See page 15 of the May 31, 2011 Milliman report.
[3] See response to Item 6 in Philip Barlow e-mail of 4/1/2014.

experience and still provides a possibility of higher growth rates due to ACA, we developed a revised premium growth probability distribution that is more appropriate and reduces the amount of needed surplus by an estimated $207 million, all other assumptions being unchanged.

Equity Portfolio Asset factor ("EPAV"). According to a memo from FTI Consulting[4], the assumption with the second largest contribution to the increase in required surplus from the 2009 Rector and 2008 Milliman reports to the current reports is the Equity Portfolio Asset Value factor ("EPAV"). Milliman and Rector have not disclosed how the EPAV was derived, whether or how it was validated, how the probability distributions were calculated, or the reasoning for the increase from previous reports. We derive an EPAV probability distribution based on historical Dow Jones Industrial Average experience. We show that the EPAV impact should have declined since the 2009 Rector and 2008 Milliman reports due to GHMSI's affected assets declining as a percentage of non-FEP premiums. Our more appropriate and validated EPAV assumption reduces the amount of needed surplus by an estimated $216 million, all other assumptions being unchanged.

Claims Adjustment and Administrative Expenses. This section of the report compares GHMSI's claims adjustment and administrative expenses with those of its peers. This comparison suggests considerable inefficiency by GHMSI. Because expenses make a significant difference in the profit margins and thus the results of Pro Forma modeling that occurs after the stochastic modeling is completed, inefficiently high costs increase calculated surplus need. We demonstrate that GHMSI's expenses are significantly higher than those of its peers. Assuming a reduction in the level of GHMSI's expenses to the average among its peers in recent years, the amount of needed surplus (as calculated by 3-year Pro Forma modeling on a pre-tax basis) is reduced by an estimated $153 million, or approximately $51 million per year.

Other Stochastic Model Risk Factors. In preceding sections we have discussed some of the factors that had the greatest impact in the Milliman/Rector modeling and how to adjust those factors to more appropriate values. Some of the remaining Risk Factors identified by Milliman also appear to have inappropriate values, or they are already accounted for in other factors, or they are not really risks to GHMSI. In this section we discuss some of the remaining risk factors and the appropriateness of the risk values selected by Milliman. We conclude that six of these factors are ultimately unneeded or they are accounted for in the development of the RAAF factor. Eliminating these unneeded or redundant risk factors in the Stochastic Model reduces the amount of needed surplus by an estimated $75 million, all other assumptions being unchanged.

Validation of Model, Assumptions and Results. In this section of this report we focus on the need for validation of the model and its key assumptions and on Rector's failure to validate appropriately. Validation is a critical step in determining whether key assumptions are appropriate and whether a model generates reliable outcomes. Rector and Milliman have provided very little validation of assumptions and results; Rector is unable to fully explain, much less validate, the changes to its recommendation from 2009 to 2013; and FTI's attempt at validation of the model is ineffective. Due to the failure of Milliman, Rector, and FTI Consulting to comport to the requirements of Actuarial Standard of Practice #41 in this regard, we are left to evaluate a black box. We find that the results of this black box are, on their face, unreasonable; and we explain why the FTI attempt at validation is ineffective.

[4] See pages 2 and 3 of the March 6, 2014 FTI Consulting memo.

Also in the sixth section we describe how we validated the Stochastic Model that we recreated. We compare the results of our recreated Stochastic Model and estimated Pro Forma outcomes to the limited data that Rector has shared. We believe the Stochastic Model comparison validates our recreated models within normal statistical fluctuation. The estimated Pro Forma outcomes also appear to reasonably correspond to those generated by the more sophisticated Milliman/Rector Pro Forma model. Therefore, while we acknowledge that our Pro Forma estimates in this report are necessarily rough estimates, we believe they provide appropriate directional guidance to the results that would be generated by a more sophisticated model.

Pro Forma Model. The Pro Forma model is the second phase of the Milliman model. Losses corresponding to various confidence levels that are generated by the Stochastic Model are input to the Pro Forma model in order to determine what beginning surplus is needed to exceed an ending surplus target. The Pro Forma model incorporates numerous assumptions – including assumptions about policyholder growth, pricing margins, expenses, investment income, taxes, miscellaneous income, etc.

While DC Appleseed requested documentation of all the assumptions used in the Pro Forma model, some key assumptions (notably projected expenses and policyholder projections) were withheld, presumably as being proprietary to GHMSI. Instead, we were provided four outcomes from the Pro Forma model that were asserted to correspond to the only four gain/loss outcomes that were put through the Pro Forma model at Rector's request[5]. Thus, we have not been able to replicate the Pro Forma model exactly but, as shown in the "Validation of UHAS Stochastic Model and Pro Forma Estimates" subsection of the Validation section of this report, we have been able to use a simplified approach to estimating the Pro Forma outcomes that reasonably replicates the four outcomes provided to us.

Other Considerations. Several important aspects of the modeling and estimation process have not been examined in the preceding sections: covariance, sensitivity and confidence levels. In this section we examine each of these aspects and conclude with a chart that summarizes the impact on required surplus of many of the considerations discussed in this report. We also include charts showing how Rector's 2009 and 2013 Reports proposed RBCs for GHMSI change if various different confidence levels are used for avoiding 200% RBC and 375% RBC.

[5] See page 11 of the April 18, 2014 letter from DISB Interim Commissioner Chester A. McPherson to DC Appleseed.

SECTION 1: Rating Fluctuation and Adequacy Factor

Summary

Of all the factors incorporated in the Stochastic Model, the RAAF factor has the greatest impact. This factor reflects "the risk that actual claims and expenses differ from the amounts for which provision is made in premium rates."[6] Although Milliman and Rector provide very little documentation for the derivation of this factor, Milliman has disclosed that it used data from 1986 to 2009[7] – an era that includes volatile years before modern RBC-ACL requirements and more controlled provider contracts – to develop its RAAF factor. In adjusting past experience to project future (primarily ACA) impacts, both Milliman and Rector failed to account for ("the three R") risk-mitigating provisions of the ACA that serve to limit or reduce potential underwriting losses by insurers. By eliminating volatile years before the late-1990's and incorporating the risk-mitigating provisions of the ACA into validated historical experience, we develop a probability distribution of impacts associated with RAAF that is more appropriate and reduces needed surplus by approximately $193 million, all other assumptions being unchanged.

Details

The Rector 2013 report[8] acknowledges that "modeling choices relating to the rating adequacy and fluctuation factor are crucial in the methodology used to select a loss income." It further states that "of the assumption changes that we made in the Milliman model, the changes made to the RAAF factor had the most significant impact on the modeling results." According to FTI Consulting,[9] 75% of the increase in needed surplus calculated in the Milliman 2011 report vs. the Milliman 2008 report was attributable to RAAF. Moreover, per page 14 of the May 13, 2014 letter from DISB Acting Commissioner Chester A. McPherson, 41% of the increase in the Rector 2013 report vs. the Rector 2009 report results from changes in the RAAF factor. It is therefore most important to understand the source of the probabilities and gain/losses that are associated with the RAAF assumed factors in the Milliman and Rector reports.

Milliman and Rector Fail to Explain their Work in Accordance with Actuarial Standards of Practice

Chart 1 in the February 27, 2014 letter from Milliman documents the RAAF factors that were used in the May 31, 2011 Milliman report. The chart contains a probability distribution and, associated with each probability, a surplus change based on a two-year and three-year deviation in actual experience from baseline trended rates. Neither the 2014 Milliman letter nor the 2011 Milliman report discloses how these probabilities and associated factors were derived.

Instead, the documentation is very general; it does not "state the actuarial findings, and identify the methods, procedures, assumptions, and data used by the actuary with sufficient clarity that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary's work as presented in the actuarial report" as required by

[6] See page 15 of the May 31, 2011 Milliman report.
[7] See response to Item 6 in Philip Barlow e-mail of 4/1/2014.
[8] See page 21 of the December 9, 2013 Rector report.
[9] FTI Consulting have acted as actuarial consultants to Rector and Associates in this surplus review process. See their March 6, 2014 memo to Rector and Associates.

Actuarial Standard of Practice #41[10]. What limited information we have from Milliman justifying their probability distribution assumptions as reflected in their May 31, 2011 report is summarized in the February 27, 2014 letter from Phyllis Doran as follows:

> "These values and probabilities are based on historical data, our observation of similar results in connection with our work at various BlueCross and BlueShield Plans, interpretation of that data in light of the current and anticipated future operating environment of GHMSI, and professional judgment."

In contrast, the Actuarial Standards of Practice, as applied to the current analysis, ***requires*** actuaries to disclose the following information:

- Which companies the historical data were drawn from
- From what years the data were drawn
- The raw historical results before any adjustments
- The specific adjustments made to the data in light of the current and anticipated future environment of GHMSI and the bases for such adjustments
- Where professional judgment was exercised and the impact of such exercise
- The specific reasons for and sources of the changes in this factor between the 2008 and 2011 Milliman reports[11]

Table 1 in the September 12, 2013 letter from FTI Consulting documents the RAAF factors that were used in the 2013 Rector Report. Both that letter and the 2013 Rector Report discuss various considerations in adjusting the RAAF factors that were used in the May 31, 2011 Milliman report. However, similar to the Milliman report, neither the September 2013 FTI letter nor the 2013 Rector report:

1) Discloses or quantifies how Rector's adjustments to the probabilities and associated factors were derived other than two vague references to changes in variability of risks in the September FTI letter.
2) Describes or makes any attempt to validate the RAAF factors that were used in the May 31, 2011 Milliman report.
3) Provides any detailed documentation or quantification of any considerations that were used as a basis for modifying the Rating Adequacy and Fluctuation factors that were used in the May 31, 2011 Milliman report.
4) Quantifies or provides sources for any of the specific considerations mentioned in the Rector report.

[10] See Section 3.2 on page 3. http://www.actuarialstandardsboard.org/pdf/asops/asop041_120.pdf.
[11] Milliman suggests on pages 15-16 of their 2011 report that the changes are all ACA related. However, there are no assumptions, sources or calculations detailed.

Instead, the documents include only general descriptions of the specific considerations embedded in Rector's RAAF factor, such as the following:

- "We instead incorporated the effects of trend miss into the stochastic modeling process by including the effect of trend miss in the revised provisions for rating and adequacy fluctuation as variables with their own probability distribution." [12]
- "We made changes to the trend variability assumption and the manner in which trend is incorporated into the rating adequacy and fluctuation factor."[13]
- "We removed the effect of Medical Loss Ratio ("MLR") modeling from the rating adequacy and fluctuation factor."[14]
- "We removed the effect of restricted premium increases from modeling for the rating adequacy and fluctuation factor."[15]
- "We included in the rating adequacy and fluctuation factor the following effects of health care reform that were not included in Milliman's modeling: underwriting restrictions; policyholder behavior changes; and coverage mandates."[16]

Finally, we note that the March 6, 2014 memo from FTI Consulting states[17] that, "The rating adequacy component of the model had the largest relative changes between the 2011 and 2008 Milliman models and the Rector model. The most significant changes recognized the uncertain impact that health care reform would have on GHMSI to forecast accurate premiums rates in a volatile marketplace."

Neither Milliman's nor Rector's 2008 models and analysis embedded the impact of health care reform in the RAAF factor, but both did so in their 2011 reports. FTI Consulting states in its March 6, 2014 memo[18], "We estimate our rating adequacy assumption is between 100% and 150% higher than the previous rating adequacy assumption as a result of health care reform." While this statement may disclose the ultimate impact of this health care reform related change, it absolutely fails to identify the methods, procedures, assumptions, and data with sufficient clarity as required by Actuarial Standards of Practice.

It is clear that Rector's report also fails to comport with the requirements of Actuarial Standard of Practice #41, which requires an actuarial communication such as the Rector report to "state the actuarial findings, and identify the methods, procedures, assumptions, and data used by the actuary with sufficient clarity that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary's work as presented in the actuarial report." Rector attempts to justify the lack of detail in their actuarial report by saying that, "It is

[12] See page 22 of the December 9, 2013 Rector Report.
[13] See page 22 of the December 9, 2013 Rector Report.
[14] See page 22 of the December 9, 2013 Rector Report.
[15] See page 23 of the December 9, 2013 Rector Report.
[16] See page 23 of the December 9, 2013 Rector Report.
[17] See page 3 of the March 6, 2014 FTI Consulting memo.
[18] See page 3 of the March 6, 2014 FTI Consulting memo.

important to point out that the values and probabilities for the model's risk and contingency categories were determined based on a number of factors that required Rector to exercise actuarial judgment in its review of the values and probabilities chosen by Milliman. Accordingly, *it is not feasible or appropriate to quantify the reasons behind our revisions to the rating adequacy and fluctuation factor"*[19].

Contrary to this remarkable assertion, the Actuarial Standards of Practice ***require*** that there be disclosure of the methods, procedures, assumptions and data used with sufficient clarity that another qualified actuary could make an objective appraisal of the work. Therefore, Rector must spell out the specifics of and the basis for its actuarial judgment and not merely assert that it is not feasible and fail to even attempt to quantify the reason(s) behind such judgment.

To take one aspect of the missing details, the time period from which historical data are drawn is important. Prior to implementation of RBC requirements in the 1990's, underwriting results (the best measure of rating adequacy) were characteristically cyclical, and provider contracts were not as stable or predictable as they have become since the 1990s. Consequently, underwriting results were subject to large swings that the market has not seen in the last 15 years. In response to questions DC Appleseed submitted to DISB, Rector states that it was aware that "with respect to the time span by years of historical data that Milliman took into account in its analysis of the model's rating adequacy and fluctuation factor assumptions, Milliman reviewed historical healthcare expenditure data from the mid-1970s through 2009 but indicated that it employed time spans occurring during 1986 and 2009 and that it excluded from consideration the inflationary environment occurring during the 1970s and early 1980s.[20]" We understand this to mean that results from 1986 through the mid 1990's were part of the data used by Milliman and adopted by Rector. Given that these data include results from an unstable era unlike the last 15 years (i.e., before RBC requirements and more stable provider contracts), it is likely that any data developed in part from this historical period are unrealistically skewed in the direction of uncertainty – thereby inflating surplus requirements, other things being equal.

Historical Experience for GHMSI and Peers

Lacking the required explanation for how Milliman and Rector did their work (and consequently a good basis for assessing the reasonableness of that work) and having indications that their work was based on unreasonable assumptions, we constructed an alternative model for measuring the RAAF factor. To establish an appropriate peer group for rating adequacy, we selected the 10 Blue Cross Blue Shield Plans most comparable to GHMSI in non-FEP premium revenue in the 2000's. The ten selected peers[21] are as follows:

1) Blue Cross Blue Shield of GA

[19] See Rector response to Item 13 forwarded by Philip Barlow of the DISB on April 1, 2014 (italics added for emphasis).
[20] See Item 6 of the April 1, 2014 email from Phil Barlow of the DISB.
[21] Page 12 of the 2009 Rector report identified seven of these same peers. The additional peers that have been added to increase the reliability of results are BCBS of RI, BCBS of UT and Regence BCBS of OR, each of which was also identified by Invotex in its 2009 report as an appropriate GHMSI peer.

2) Blue Cross Blue Shield of MN
3) Blue Cross Blue Shield of RI
4) Blue Cross Blue Shield of TN
5) Blue Cross Blue Shield of UT
6) Horizon Blue Cross Blue Shield of NJ
7) Premera Blue Cross
8) Independence Blue Cross (QCC Insurance Co.)
9) Regence Blue Cross Blue Shield of OR
10) Regence BlueShield

We sourced the Annual Statements for each of the peers for the 12-year period from 2002 – 2013[22] and for GHMSI for the 15-year period from 1999 – 2013, and used the underwriting gain/loss for each company in each time period as the historical proxy for rating adequacy. We then took that underwriting gain/loss for each company for each year and divided it by the company's non-FEP premium for that same year to measure rating adequacy as a percentage of non-FEP premiums. We rank-ordered the results and, by grouping similar results together, created a probability distribution that reflects a distribution of 1-year rating adequacy results.

We also created underwriting results for 2-year time periods by using all the data from each company for successive two-year periods (i.e., 2002-2003, 2003-2004, 2004-2005,… 2012-2013), rank-ordered the results, and grouped similar results together to create a probability distribution of 2-year rating adequacy.

Similarly, underwriting results for 3-year time periods were created by using all the data from each company for each three consecutive years (i.e., 2002-2004, 2003-2005, 2004-2006, … 2011-2013). We then rank-ordered the results and, by grouping similar results together, created a probability distribution of 3-year rating adequacy. The unadjusted historical underwriting results for GHMSI and its peers for 1-year, 2-year, and 3-year time periods are as follows:

[22] 2002 was chosen as the starting point for GHMSI competitor experience due to availability of earlier data from the NAIC.

Chart 1

Actual Historical Rating Fluctuation by Different Time Periods								
One Year			Two Year			Three Year		
Prob	U/W G/L Range	Avg U/W Gain/Loss	Prob	U/W G/L Range	Avg U/W Gain/Loss	Prob	U/W G/L Range	Avg U/W Gain/Loss
0.0%	20+%	N/A	4.1%	20+%	24.5%	9.8%	20+%	31.3%
0.0%	15.0 to 19.9%	N/A	5.7%	15.0 to 19.9%	18.3%	12.5%	15.0 to 19.9%	16.4%
5.2%	10.0 to 14.9%	11.8%	10.6%	10.0 to 14.9%	11.9%	11.6%	10.0 to 14.9%	11.3%
15.7%	5.0 to 9.9%	7.2%	34.1%	5.0 to 9.9%	7.0%	27.7%	5.0 to 9.9%	8.1%
34.3%	2.5 to 4.9%	3.5%	13.0%	2.5 to 4.9%	3.8%	11.6%	2.5 to 4.9%	3.9%
22.4%	0.0 to 2.4%	1.1%	10.6%	0.0 to 2.4%	1.3%	8.0%	0.0 to 2.4%	1.5%
13.4%	-2.4 to -0.1%	-0.9%	11.4%	-2.4 to -0.1%	-1.5%	7.1%	-2.4 to -0.1%	-1.6%
7.5%	-4.9 to -2.5%	-3.2%	6.5%	-4.9 to -2.5%	-3.2%	6.3%	-4.9 to -2.5%	-3.7%
1.5%	-5.0 to -9.9%	-6.6%	3.3%	-5.0 to -9.9%	-5.5%	5.4%	-5.0 to -9.9%	-6.9%
0.0%	-10.0+%	N/A	0.8%	-10.0+%	-11.8%	0.0%	-10.0+%	N/A

The following chart compares these actual historic results to the factors that Milliman and Rector[23] proposed:

Chart 2

Comparison of Actual Historical Gain/Loss vs. Milliman and Rector Assumptions									
	Historical				Milliman			2.5-year Rector	
		2-year		3-year		2-year	3-year		
	Prob.	Gain/Loss	Prob.	Gain/Loss	Prob.	Gain/Loss	Gain/Loss	Prob.	Gain/Loss
	4.1%	24.5%	9.8%	31.3%	3.0%	26.0%	31.1%	3.0%	30.1%
	5.7%	18.3%	12.5%	16.4%	6.8%	20.9%	24.6%	6.8%	24.1%
	10.6%	11.9%	11.6%	11.3%	7.6%	17.4%	20.3%	7.6%	20.2%
	34.1%	7.0%	27.7%	8.1%	6.7%	15.0%	17.4%	6.7%	17.5%
	13.0%	3.8%	11.6%	3.9%	12.2%	12.2%	14.1%	12.2%	14.6%
	10.6%	1.3%	8.0%	1.5%	27.4%	6.8%	7.4%	27.4%	9.3%
	11.4%	-1.5%	7.1%	-1.6%	12.2%	0.6%	-0.2%	12.2%	3.4%
	6.5%	-3.2%	6.3%	-3.7%	6.7%	-3.0%	-4.7%	6.7%	-0.3%
	3.3%	-5.5%	5.4%	-6.9%	7.6%	-6.6%	-9.3%	7.6%	-3.6%
	0.8%	-11.8%	0.0%	N/A	6.8%	-12.1%	-16.1%	6.8%	-9.3%
					3.0%	-20.6%	-26.7%	3.0%	-18.2%
Overall Wtd Average		5.7%		8.5%		5.8%	6.1%		8.5%
Std Deviation		6.9%		9.8%		10.6%	13.1%		10.7%
Positive Results	78.0%		81.25%		75.9%		63.7%	75.9%	
Wtd Average		8.1%		11.4%		10.5%	11.9%		13.2%
Std Deviation		5.8%		8.6%		6.9%	8.4%		7.1%
Negative Results	22.0%		18.75%		24.1%		36.3%	24.1%	
Wtd Average		-2.6%		-3.8%		-8.9%	-12.1%		-6.1%
Std Deviation		1.7%		2.2%		5.6%	7.0%		5.7%

[23] Milliman data are from page 1 of Attachment A of the February, 27, 2014 memo from Phyllis A. Doran. Rector data are from page 22 of the December 9, 2013 Rector Report.

Comparing the Historical and Milliman results, we observe the following:

1) The overall weighted results for Milliman and Historical data show a similar weighted average for a 2-year time period, but the Historical weighted data are significantly higher than Milliman's data for a 3-year time period. In addition, Milliman assumes greater variability in both time periods, primarily on the negative side, artificially increasing surplus requirements.

2) The probability of negative results based on Historical data decreases as the time period lengthens from 2 years to 3 years, but Milliman assumes a significant increase in the probability of negative results – to almost *twice* the Historical probability of negative results for a 3-year period.

3) The probability of results that are significantly negative (i.e., between -2.0% and -26.7%) based on Historical data is just 10.6% for a 2-year time period (6.5% + 3.3% + 0.8% probability) and 11.7% for a 3-year period (6.3% + 5.4% probability). However, the probability of negative results in the Milliman model is 24.1% for either the 2-year or 3-year periods – which is more than *twice* the Historical probability.

Finally:

4) **The severity of average negative results for Milliman (-8.9% for 2 years, -12.1% for 3 years) is 3 to 4 times actual Historical (-2.6% for 2 years and -3.8% for 3 years) negative results**. As the thrust of the Milliman model is to increase surplus in order to avoid large negative results with a high degree of certainty, **these remarkably high negative results combined with the doubled probability of negative results would by themselves account for a significant portion of needed surplus as calculated by Milliman.**

With regard to the Rector model compared to the Historical data, Rector retains the following Milliman errors to a degree that again significantly inflates their conclusion concerning required surplus:

1) Rector assumes greater variability in results, especially on the negative side.

2) Rector assumes a much higher probability of significantly negative results. Based on Historical data, the probability of results that are significantly negative (i.e., between -2.0% and -18.2%) is just 10.6% (6.5% + 3.3% + 0.8%) for 2 years and 11.7% (6.4% + 5.3%) for 3 years; but for Rector the probability is 17.4% (7.6% + 6.8% + 3.0%).

And finally,

3) The severity of Rector's negative results (-6.1%) is 1.6 to 2.3 times actual Historical negative results (-2.6% for 2 years and -3.8% for 3 years). **Again, these severe negative results combined with the increased probability of negative results would by themselves account for a significant portion of the required surplus calculated from Rector's revisions to the Milliman modeling.**

It is not unexpected that the Rector Report would repeat many of Milliman's errors, given that Rector apparently accepted Milliman's starting point for the RAAF factor and made only modest adjustments to it. Rector's adjustments to Milliman's RAAF factors may have been intended to address the concerns listed in pages 22-23 of the Rector report[24]; however, such adjustments did not correct the central underlying flaw of the Milliman approach – i.e., it assumes severe negative results several times higher than more appropriate and recent historical negative results.

Adjusting Historical Results for ACA

While the 2011 Milliman model and the 2013 Rector report included adjustments for the ACA in the RAAF factor,[25] neither Milliman nor Rector identifies the methods, procedures, assumptions, or data used to make these adjustments with sufficient clarity to allow other qualified actuaries to evaluate their work. Neither the Milliman nor Rector reports identify,[26, 27] consider, discuss, or quantify any of the important aspects of the ACA that were intended to help insulate insurers from potential losses due to the ACA's requirements for guaranteed issue and the possible enrollment of less-healthy individuals (adverse selection).

In fact, future underwriting results might show *less* variability than historical results due to two key provisions of the ACA:

1) Underwriting gains will be limited by the Medical Loss Ratio (MLR) requirements that Individual and Small Group plans achieve a minimum MLR of 80% and Large Group insurance achieve a minimum MLR of 85%. Premiums from 2013 were subject to these MLR requirements, and 2013 underwriting gains/losses among GHMSI and its peers (ranging from a loss of 4.7% to a gain of 5.8%) reflected this reduced variability.

2) Beginning in 2014, three risk mitigation provisions of the ACA – risk adjustment, reinsurance, and risk corridors (the "three Rs") – become effective. Each of these is designed to limit any losses for insurers that might occur due to receiving a disproportionate enrollment of high-risk individuals, unusually high claims, or reduced profit:

[24] Rector cites five reasons for revising Milliman's RAAF factor. Specifically, Rector states that it (1) "incorporated the effects of trend miss into the stochastic modeling process by including the effect of trend miss in the revised provisions for [RAAF] as variables with their own probability distribution"; (2) "made changes to the trend variability assumption and the manner in which trend is incorporated into the [RAAF] factor" to account for Rector's belief that "trends occurring between time intervals are correlated to trends from prior periods"; (3) removed the effect of medical loss ratio ("MLR") modeling from the RAAF factor; (4) removed the effect of restricted premium rate increases from modeling for the RAAF factor; and (5) included in the RAAF factor ACA underwriting restrictions, policyholder behavioral changes, and coverage mandates. Rector at 22–23.

[25] Page 3 of the March 6, 2014 memo from FTI Consulting estimates that impact as 100% to 150%.

[26] Page 5 of the Milliman Review and Consideration of Optimal Surplus Target Range dated June 28, 2013 does note that their estimates of profit, "does not reflect the potential impact of the risk corridors programs which will become effective in 2014, and which could be expected to increase the effective margin." However, this potential increase in margins is not incorporated into either the Milliman or Rector surplus modeling.

[27] Page 6 of the Milliman Review and Consideration of Optimal Surplus Target Range dated June 28, 2013 acknowledges the three new mitigation programs become effective in 2014. It states, "These risk mitigation programs are designed to mitigate the impact of potential adverse selection and stabilize premiums in the individual and small group markets." However, there is no attempt made to quantify the impact.

a. **Risk Adjustments**. The permanent Risk Adjustment program applies to non-grandfathered individual and small group plans inside and outside Exchanges. It provides payments to health insurance issuers that disproportionately attract higher-risk populations (such as individuals with chronic conditions). It transfers funds from plans with relatively lower risk enrollees to plans with relatively higher risk enrollees to protect against adverse selection in the market

b. **Reinsurance** is a temporary mitigation program that will compensate insurers when they pay unusually high claims costs for enrollees either inside or outside the exchange(s). The reinsurance program is a 2014-2016 transition program that will help mitigate premium increases in the individual market resulting from individuals with very high health care costs purchasing insurance in the new exchanges.

c. **Risk Corridors**. Risk Corridors are a temporary risk mitigation program that will limit the extent of issuer gains or losses inside the exchange. The risk corridor program will apply to individual and small group qualified health plans (QHPs) from 2014 through 2016. The program compares "allowable costs" against a "target amount." "Allowable costs are essentially claim costs plus various adjustments – including adjustments for the other two Rs, as well as costs incurred for improvements in health care quality and health information technology. The target amount is essentially premium less allowable administrative (non-claim) costs, where the administrative costs include a certain allowance for profit. If the ratio of these amounts is greater than one, then the premium was less than what was required, and if the ratio is less than one, then the premium was more than what was required. If a plan's ratio is within three percentage points of 100 percent, the plan keeps all gains (or losses) for itself. For the next five percentage points, gains (or losses) are shared 50/50 between the plan and the government. Beyond that (either below 92 percent or above 108 percent), the plan keeps 20 percent of gains (or losses), ceding the remaining 80 percent to the government."[28]

Each of the ACA's 3Rs will mitigate underwriting losses. In addition, the Risk Corridors and the MLR requirements will limit the favorable underwriting gains that a company might otherwise achieve.

It should be noted that HHS issued final regulations in March[29] increasing federal reinsurance protections for issuers in 2014, *signaling its expectation that few issuers will incur high losses either in or outside of the exchanges*. These regulations reduce the 2014 reinsurance attachment point from $60,000 to $45,000 and increase the federal coinsurance rate to 100 percent if reinsurance contributions allow, rolling over any remaining funds for use as reinsurance payments for the subsequent benefit year.

[28] From the October 2013 HealthWatch published by the Society of Actuaries Health Section Counsel; article by Doug Norris, Mary van der Heijde and Hans Leida of Milliman, Inc.

[29] https://www.federalregister.gov/articles/2014/03/11/2014-05052/patient-protection-and-affordable-care-act-hhs-notice-of-benefit-and-payment-parameters-for-2015#h-112.

Although each of the 3R provisions is complex, we believe a simplified approach to adjusting historical results can reasonably simulate the impact of these provisions. Accordingly, we have made the following adjustments to historical data to simulate what the impact of the effects of ACA post-2013 would likely have had on past results. Specifically:

1) We reduced historical annual underwriting gains by:

    a. Imposing an underwriting gain limit of 8%. Given that the lowest total administrative expense for GHMSI and peers in 2013 was 11.87% and that the required MLR is at least 80% for comprehensive medical insurance, this is the maximum underwriting gain that could reasonably be achieved.

    b. Further reducing all underwriting gains over 3% of non-FEP premium by 50% to simulate the maximum impact of risk corridors.

2) We adjusted historical annual underwriting losses to simulate the impact of risk corridors by:

    a. Reducing all underwriting losses that are between 3% and 8% to 3% plus half of the remaining loss.

    b. Reducing all underwriting losses that are greater than 8% to 5.5% plus 20% of the underwriting loss above 8%.

    Each of these limitations will simulate what the historical impact of risk corridors on underwriting losses might have been.

3) We used actuarial judgment to make a simplifying assumption that Reinsurance and Risk Adjustment will offset the impact of guaranteed issue in the Individual market that begins in 2014. This simplifying assumption is conservative: it ignores the potential for Reinsurance and Risk Adjustment to reduce future losses (in addition to the Risk Corridor adjustments made above), as well as the fact that Risk Adjustment would also apply in the Small Group market in 2014-2016, limiting variability further and providing additional protection to the insurer. In short, this simplifying assumption understates the impact of risk mitigation provisions that could serve only to reduce underwriting losses.

After making the above adjustments to historic underwriting gains and losses, the revised rating fluctuation by time period for GHMSI and peers is as follows:

Chart 3

After ACA Adjustments - Rating Fluctuation by Different Time Periods								
One Year			Two Year			Three Year		
Prob	U/W G/L Range	Avg U/W Gain/Loss	Prob	U/W G/L Range	Avg U/W Gain/Loss	Prob	U/W G/L Range	Avg U/W Gain/Loss
0.0%	20+%	N/A	0.0%	20+%	N/A	0.0%	20+%	N/A
0.0%	15.0 to 19.9%	N/A	0.0%	15.0 to 19.9%	N/A	8.9%	15.0 to 19.9%	16.5%
0.0%	10.0 to 14.9%	N/A	11.4%	10.0 to 14.9%	10.9%	18.8%	10.0 to 14.9%	15.6%
13.4%	5.0 to 9.9%	5.4%	39.8%	5.0 to 9.9%	6.8%	33.0%	5.0 to 9.9%	8.7%
41.8%	2.5 to 4.9%	3.5%	15.4%	2.5 to 4.9%	3.9%	9.8%	2.5 to 4.9%	4.4%
22.4%	0.0 to 2.4%	1.1%	11.4%	0.0 to 2.4%	1.2%	10.7%	0.0 to 2.4%	1.8%
13.4%	-2.4 to -0.1%	-0.9%	13.0%	-2.4 to -0.1%	-1.6%	6.3%	-2.4 to -0.1%	-1.5%
8.2%	-4.9 to -2.5%	-3.1%	7.3%	-4.9 to -2.5%	-3.4%	8.9%	-4.9 to -2.5%	-4.0%
0.7%	-5.0 to -9.9%	-5.4%	1.6%	-5.0 to -9.9%	-7.2%	3.6%	-5.0 to -9.9%	-7.4%
0.0%	-10.0+%	N/A	0.0%	-10.0+%	N/A	0.0%	-10.0+%	N/A

From Chart 3, we observe that:

1) The largest impact from ACA adjustments is the significant reduction in large increases in underwriting gains. This change does not impact the needed surplus generated by the Milliman model, which is focused on avoiding a substantial decrease in surplus with a high degree of certainty.

2) The probability of any underwriting loss (2-year = 21.9%, 3-year = 18.8%) is virtually the same as losses before ACA adjustments.

3) The magnitudes of underwriting losses are not materially different than before ACA adjustments.

4) The most significant change with regard to underwriting losses is that the probability of larger losses (greater than 5%) is much less likely after ACA adjustment.

A summary of underwriting losses before and after ACA adjustments, using excerpts from Chart 1 and Chart 3, is as follows:

Chart 4

	2-year Underwriting Losses				3-year Underwriting Losses			
	Historical Before ACA Adjust		Historical After ACA Adjust		Historical Before ACA Adjust		Historical After ACA Adjust	
	Prob.	Avg Loss	Prob.	Avg Loss	Prob.	Avg Loss	Prob.	Avg Loss
	11.4%	-1.5%	13.0%	-1.6%	7.1%	-1.6%	6.3%	-1.5%
	6.5%	-3.2%	7.3%	-3.4%	6.3%	-3.7%	8.9%	-4.0%
	4.1%	-6.8%	1.6%	-7.2%	5.4%	-6.9%	3.6%	-7.4%
Prob of loss	22.0%		22.0%		18.8%		18.8%	
Wtd Average		-3.0%		-2.6%		-3.8%		-3.8%

As can be seen from the highlighted numbers in Chart 4, the overall probability of loss is not materially changed after ACA adjustments to historical data, but **the probability of the largest losses are reduced[30] by more than 50% (4.1% to 1.6%) for a 2-year period and more than 30% (5.4% to 3.6%) for a 3-year period**. **As the largest losses are the likely drivers of Rector's modeled surplus needs, this is a very significant change**.

The Impact of a More Appropriate Rating Adequacy and Fluctuation Factor

We replicated the Milliman stochastic model[31] and re-ran it changing[32] the stochastic model only to replace the Rector RAAF table with the following ACA-adjusted RAAF distribution for 3 years:

Revised RAAF Table - 3-Year Historical Experience Adjusted for ACA	
	Avg U/W
Prob	Gain/Loss
8.9%	16.5%
18.8%	15.6%
33.0%	8.7%
9.8%	4.4%
10.7%	1.8%
6.3%	-1.5%
8.9%	-4.0%
3.6%	-7.4%

By substituting the above modified RAAF table for the Rector RAAF table (all other things held equal), the 98th percentile result changed from -23.2% to -16.6%.

We are unable to compute with precision exactly how much this revised stochastic model loss would reduce RBC requirements – owing to Rector's failure to provide certain details of the Pro Forma model (notably, the projected expense data) that we requested, and which are required by Actuarial Standards of Practice. But based on calculations using the data that were made available, we estimate that the inappropriately high losses the Milliman and Rector reports used in its RAAF factor alone contributed roughly $193 million to Rector's estimate of needed surplus. This estimate is calculated as follows:

[30] Based on the revised probabilities a significant portion of the largest losses shift to probabilities of lower loss levels.

[31] We ran 500,000 iterations of our version of the stochastic model using the methodology and factors described in the February 27, 2014 memo from Phyllis A. Doran of Milliman. To emulate the Rector results we used the updated RAAF factors, the updated Catastrophic Event factors, the updated Provision for Unidentified Growth and Development factors and the updated Premium Growth Levels as described in the December 9, 2013 Rector & Associates report. We found that the 98th percentile result from our stochastic model to be 23.2% vs. the 23.3% generated by Milliman's stochastic model for Rector. This small difference is well within likely statistical variance.

[32] Updating the RAAF factor table was literally the only change we made for the rerun as we saved the random numbers from the first 500,000 iterations to reuse so that there would not be any change introduced by random statistical fluctuation.

1) When we revise the RAAF factor, the loss passed from the Stochastic Model to the Pro Forma model is approximately 71.55% (16.6% / 23.2%) of the loss using Rector's RAAF factor.

2) Rector's RAAF factor leads to a finding of 958% RBC-ACL which, based on a RBC-ACL equal to $100.3 million (GHMSI's RBC-ACL @12/31/13), equals $961 million of surplus.

3) Part of Rector's projected reduction in surplus is due to the premium growth assumption in its Pro Forma model, causing an increase in the baseline RBC-ACL to which surplus is compared. Using Rector's 12.5% weighted average 3-year non-FEP premium growth assumption, we calculated that the baseline RBC-ACL could increase by 42.4% over a 3-year period due to premium growth. Thus, *solely because of projected premium growth*, $961 million of surplus would equate to a 673% RBC ratio, when one assumes three years of 12.5% weighted average premium growth.

4) Assuming the remaining need for protective surplus (673% - 200% = 473%) in the Pro Forma model arises from the losses emerging from the Stochastic Model, the reduced amount of needed surplus due to reduced Stochastic Model losses (resulting from our modifications to the RAAF and ACA factors) above the 200% RBC-ACL threshold are calculated as 473% x 71.55% = 338%.

5) Multiplying the sum of the stochastic model loss (338%) and the baseline 200% by the premium growth factor of 1.424 (compounding 12.5% annual growth over three years) yields 766% as the needed surplus.

6) The resulting 192 percentage points (= 958% - 766%) of the $100.3 million RBC-ACL equates to $193 million in surplus at the 98th percentile – the amount that the company's surplus need calculations are reduced by changing only the RAAF loss distribution – all other assumptions being unchanged.

SECTION 2: Premium Growth Assumptions

Summary

Outside the stochastic modeling process, the assumption with the greatest impact on surplus is the premium growth assumption that Rector uses in its Pro Forma modeling. Premium growth is a proxy for claims growth; it increases the RBC-ACL, which in turn reduces the ratio of projected surplus to RBC-ACL and leads to greater projected need for surplus. Both Milliman and Rector assume premium growth rates that fail to validate with recent company experience and overstate the likely impact of ACA provisions that became effective in 2014. By creating a premium growth probability distribution that validates to recent experience and still provides a possibility of higher growth rates due to ACA, we developed a revised premium growth probability distribution that is more appropriate and reduces the amount of needed surplus by an estimated $207 million, all other assumptions being unchanged.

Details

As with other key assumptions used in the Rector Report, the values used for the premium growth assumption fail to validate against recent historical experience and, as a result, appear to inflate required surplus artificially.

Rector acknowledges the importance of premium growth rates in determining surplus needs as well as the relevance of GHMSI's historical premium growth to the analysis. On Page 27, the Rector Report states, "The amount and type of premium projected to be written by a health insurer are key determinants of the insurer's future surplus needs." On Page 28, the Rector Report states, "In order to determine appropriate premium growth level assumptions in the model, we recognize that it is important to take into account GHMSI's historical premium growth experience." Rector also explains that it is important to "differentiate growth rates between FEP and non-FEP business written by GHMSI" (for, as noted on Page 29 of the Rector Report, "The NAIC risk formula that assigns risk charges to various types of health business applies a significantly lower risk charge to FEP business"). We agree with each of these statements of principle relative to premium growth rates.

Notwithstanding Rector's acknowledgement of these principles, it proceeds to abandon all but one of them in developing its premium growth assumptions – only differentiating projected growth rates between FEP and non-FEP business. The Rector Report assumptions for premium growth are as follows:

Rector Report Premium Growth Rate Assumptions			
Non-FEP		FEP	
Probability	Growth Rate	Probability	Growth Rate
25%	9.1%	25%	6.5%
50%	12.4%	50%	7.5%
25%	16.1%	25%	8.4%
Wtd Avg:	**12.5%**		**7.5%**

These figures contrast starkly the historical experience that Rector displays in its Appendix A charts. These charts include the following information (on a combined FEP + non-FEP premium basis):

Year	GHMSI & Affilliates Earned Prem	Annual Premium Change
2008	$3,631.42	0.2%
2009	$3,830.13	5.5%
2010	$3,913.77	2.2%
2011	$4,062.77	3.8%
2012	$4,247.75	4.6%

In fact, Rector's growth rate assumptions have little to do with either the aforementioned principles or actual experience:

1) Rector fails to present **actual historical** premium growth rate experience separately for FEP and non-FEP business, even while noting that it is important to "differentiate growth rates between FEP and non-FEP". In fact, for 2008 - 2012 (the most recent data available to Rector), FEP growth rates ranged from 1.8% to 8.8%, and non-FEP growth rates ranged from 0.4% to 6.8%.

2) Rector's assumptions exclude ***any*** possibility that either FEP or non-FEP future growth rates will be as low as the highest annual premium growth rate (5.5%) over the preceding five calendar years (2008 – 2012).

3) The model results are most sensitive to non-FEP growth rates, which Rector assumes will be remarkably high. The average actual combined FEP and non-FEP premium growth rate for GHMSI from 2008 - 2012 is 3.3%. Yet the model assumes an average rate of growth of 12.5% for non-FEP and 7.5% for FEP.

The Rector Report FEP growth assumptions are high compared to historical experience; and the Report's non-FEP assumptions are unreasonable on their face when compared to historical experience. Consideration of actual 2013 experience (which was not yet available when Rector made its report) makes it even more obvious that the Rector report's non-FEP premium growth assumption is unreasonable:

Chart 5

Historical GHMSI Premium Growth From Analysis of Operations by Line of Business						
	GHMSI			CareFirst Blue Choice		
	Total Prem	FEP Prem	Non-FEP	Total Prem	FEP Prem	Non-FEP
2008	2,743,995,471	1,480,392,022	1,263,603,449	1,746,312,940	78,935,755	1,667,377,185
2009	2,876,847,117	1,518,220,867	1,358,626,250	1,876,691,270	112,850,967	1,763,840,303
2010	2,903,974,389	1,534,054,034	1,369,920,355	1,992,385,693	138,776,096	1,853,609,597
2011	3,047,639,684	1,664,323,671	1,383,316,013	2,006,609,276	160,644,289	1,845,964,987
2012	3,149,311,548	1,764,303,552	1,385,007,996	2,163,575,600	222,649,008	1,940,926,592
2013	3,141,756,018	1,797,677,671	1,344,078,347	2,399,310,580	266,352,929	2,132,957,651
	GHMSI + 50% CF BlueChoice					
		Total Prem		FEP		Non-FEP
	Total Prem	Growth Rate	FEP Prem	Growth Rate	Non-FEP	Growth Rate
2008	3,617,151,941		1,519,859,900		2,097,292,042	
2009	3,815,192,752	5.5%	1,574,646,351	3.6%	2,240,546,402	6.8%
2010	3,900,167,236	2.2%	1,603,442,082	1.8%	2,296,725,154	2.5%
2011	4,050,944,322	3.9%	1,744,645,816	8.8%	2,306,298,507	0.4%
2012	4,231,099,348	4.4%	1,875,628,056	7.5%	2,355,471,292	2.1%
2013	4,341,411,308	2.6%	1,930,854,136	2.9%	2,410,557,173	2.3%

GHMSI's 2013 premium growth rates are in line with those seen in the preceding five years. For both FEP and non-FEP business the 2013 actual premium growth rates fall ***well below the lowest possible*** premium growth assumption in the Rector Report. In contrast, the actual premium growth rates in 2013 for both FEP and non-FEP fall within the range of historic experience from 2008 - 2012, and both are in the lower part of the 2008 - 2012 historic range. These actual results are significantly lower than the lowest possible outcomes assigned in the 2013 Rector Report.

It is clear from the actual, historical results that the premium growth rate assumptions used in the Rector Report are presumptively unreasonable. Only the strongest and most clearly articulated reasons for departing from historical experience could possibly justify departures of this magnitude under good actuarial practice. Rector did not provide such reasons in its report.

Rector provided a memo dated May 16, 2013, from FTI Consulting[33] in support of its premium growth assumptions. FTI did identify certain factors that, in its view, might warrant an increase above historical premium growth levels, and that we examine further below:

1) The number of enrollees

2) Average premium per customer

3) Benefit reductions and employee cost shifting

[33]Memorandum from Jim Toole, FTI Consulting, to Rector and Associates (May 16, 2013) [hereinafter May 2013 FTI Memo]

FTI Reason #1: The Number of Enrollees before ACA adjustment

FTI acknowledges that from 2009 – 2012 GHMSI has lost membership[34], but then goes on to conclude, "If GHMSI is able to maintain its market share, then slow but steady membership gains should be assumed."

This conclusion appears to be an unwarranted hope rather than a reasoned conclusion. Rector offers no reason at all for expecting GHMSI to maintain its market share let alone increase it. The key fact is that *GHMSI's membership has been stagnant or declining since 2008* and adding in experience from the most recent year (2013) only reinforces that reality. Consideration of CF BlueChoice[35] enrollment does not significantly change GHMSI's membership trend, because CF BlueChoice's membership has itself been declining. Documented in the chart below is a 5-year look at membership as derived from the recent Annual Statements of GHMSI and CF BlueChoice.

Chart 6

Historical Change in GHMSI Membership				
		50% of		
	GHMSI	CF BlueChoice	Combined	Annual
	Total Member	Total Member	Total Member	Change in
Year	Months	Months	Months	Members
2008	10,975,857	3,499,952	14,475,809	
2009	10,297,022	3,390,374	13,687,396	-5.4%
2010	9,736,298	3,268,915	13,005,213	-5.0%
2011	9,917,712	3,152,975	13,070,687	0.5%
2012	9,754,627	3,179,917	12,934,544	-1.0%
2013	8,972,558	3,226,302	12,198,860	-5.7%
Change from 2008 to 2013	**-18%**	**-8%**	**-16%**	

GHMSI's membership has declined 18% since 2008, while membership in CF BlueChoice has declined 8%. Overall, GHMSI's own and affiliated membership has declined 16% since its peak in 2008. This is a significant multi-year trend that is not easily changed; 2013's combined 5.7% decrease represents the largest decline in membership since 2008.

After discussing membership changes in its memo, FTI does not explicitly disclose its expected membership changes. It melds it membership change assumption within the Market and Benefit Trends factor, but the result then appears to go unused[36] in the derivation of premium growth assumptions, as presented in Charts 8 and 9 of the FTI memo. By not using this factor, FTI

[34] See page 3 of the May 16, 2013 memo from FTI Consulting on premium growth.
[35] CF Blue Choice is a 50% owned subsidiary of GHMSI, Inc. and is included because its premium growth has an impact on GHMSI's RBC-ACL calculation.
[36] Note: it appears that FTI made a significant error in Chart 8 and did not in any of its scenarios multiply the Market and Benefit Trends by the other factors in deriving its total premium growth assumptions.

overstates premium growth rates. FTI uses the unlabeled chart following Chart 9 in its memo as the premium growth assumptions in the Rector report.

FTI Reasons #2, 3: Average premium per customer, benefit reductions, and employee cost shifting

We combine FTI's reasons 2 and 3 for examination because, while each affects the average premium per customer, FTI's memo presents the reasoning for considering these assumptions together: benefit reductions and cost shifting are two factors that have moderated increases in average premium per customer in recent years.

FTI cites a study by PricewaterhouseCoopers ("PwC") [37] to justify a baseline premium trend assumption of 7.5% for 2013. However, the same PwC study concludes [38] that, "Medical cost trend in 2013 will surprise the industry with another year of historically low growth. The continued slowdown is the result of a sluggish economy, medical plans with greater cost sharing, and new care models that reward value over volume." The PwC study also provides a table[39] showing current estimates of 6.0%, 6.0%, 5.5% and 5.5% (for respective years 2010-2013) for trend after benefit design changes,[40] "based on estimates from health plans, large employers, and other analysts."

Although FTI cites the PwC report as the source for their base market trend assumptions, FTI does not use the 5.5% conclusion of the report for 2013 as its central expectation for the combined medical trend and market and benefit trend. Instead, in Chart 8 of the FTI May 16, 2013 memorandum, FTI uses 7.5% as its 2013 central medical trend expectation for non-FEP and -0.2% as its central market and benefit trend[41], for a combined medical trend of 7.5%. FTI then assumes other scenarios of 6.5% and 8.5% for medical trend and 1.3% and -1.7% for market and benefit trends[42] in its other non-FEP scenarios. Even the lowest possible trend assumed by FTI is higher than the central expectation in the PWC report – before FTI applies its proposed ACA adjustment to further increase its trend assumption.

FTI's proposed ACA adjustment to Number of Members

FTI cites a March 2013 paper sponsored by the Society of Actuaries (SOA), "Cost of the Future Newly Insured under the Affordable Care Act (ACA)," as the basis for assuming a large increase in future premiums in the individual insurance markets. On page 4, the SOA paper specifically states that the model outputs assume "that ultimate enrollment in the various programs and the Exchanges is completed right away. Reality will likely result in a lag in enrollment shifts, such that not all people who are modeled to ultimately take coverage will do so immediately in 2014, as presented in this research."

[37] See page 3 of the May 16, 2013 memo from FTI Consulting on premium growth.
[38] See page 1 of "Medical Cost Trend: Behind the Numbers 2013" by PwC.
[39] See page 5 of "Medical Cost Trend: Behind the Numbers 2013" by PwC.
[40] Ibid.
[41] It may be that FTI's failure to adopt the Market and Benefit Trends from the PwC report is because they incorporated their assumed "growth" in GHMSI membership within this factor, but such is not disclosed within their report.
[42] As noted earlier, it appears that FTI did not actually use the market and benefit trends in its premium growth calculations.

Rector's ACA adjustment incorporates FTI's ACA-increased numbers, which are based on unrealistic assumptions (as documented in FTI's May 16, 2013 memo). FTI assumes that GHMSI will experience immediate and strong growth in enrollment due to the ACA. Moreover, FTI completely ignores that the SOA paper's expectation[43] that a significant portion of the increase in the individual market will come at the expense of reductions of those insured through their employer and other sources. Indeed, now that open enrollment for 2014 has concluded, a recent RAND study[44] indicates that nationwide only about 24-36 percent (or 1.4 million) of the 7.1 million who signed up have been confirmed to be previously uninsured.[45] In addition, the study found that:

- Enrollment in off-marketplace individual plans fell from 9.4 to 7.8 million.[46]
- There has been a 7.1 million person decline in the other insurance category.[47]
- More than 2 million people who previously had employer-sponsored insurance are now uninsured.[48]

Anticipating movement among sources of coverage in response to the ACA, the SOA paper cautions, "We suggest that actual per member per month figures generally should not be used, but instead focus on the change in figures between different risk classes."

In addition to anticipated changes in the number of enrollees, the SOA paper indicates a significant increase in average premium in the individual market, but shows[49] (as many studies do) that, post-ACA implementation, individual premiums (before application of the premium tax credit) will likely be lower on a per-person basis than premiums for those enrolled in employer-sponsored insurance. This means that those who are leaving employer-sponsored insurance, for example, will likely have lower insurance premiums on average when purchasing insurance through the exchange.

To examine the FTI assumption about increased enrollment due to ACA, here are the available data[50] on 2014 actual exchange enrollments in GHMSI's service area through 3/31/2014:

[43] See for example the chart on page 12.
[44] See April 8, 2014 report from the RAND Corporation at http://www.rand.org/pubs/research_reports/RR656.html.
[45] See page 4 of the Rand report.
[46] Ibid. In the Rand Report "Other Insurance" means medical insurance other than Employer-Sponsored insurance, Individual insurance and Medicaid.
[47] Ibid.
[48] Ibid.
[49] See page 13 and the example for Wisconsin premiums by source of insurance.
[50] DC and MD data are complete. VA enrollee data are through 2/28/14 then grossed up by the nationwide increase in enrollees from 2/28/2014 to 3/31/2014.

Chart 7

2014 Exchange Enrollment in GHMSI Service Area									
	DC		Maryland		Virginia		Total		
	2013 comprehensive individual and group enrollment - DC	DC Health Link enrollment as of 3/31/2014	2013 comprehensive individual and group enrollment - MD	MD Health Connection individual enrollment as of 3/28/2014	2013 comprehensive individual and group enrollment - VA	Estimated VA Exchange individual enrollment as of 3/31/2014	2013 comprehensive individual and group enrollment - DC+MD+VA	DC+MD+VA Excchange enrollment as of 3/31/2014	Increase in Enrollment due to ACA[1]
Comprehensive	90,209	22,745	98,230	49,293	96,637	124,495	285,076	196,533	
FEP+Comprehensive	184,848	22,745	254,183	49,293	216,923	124,495	655,954	196,533	
Total, all lines	209,669	22,745	284,164	49,293	234,631	124,495	728,464	196,533	
Statewide exchange enrollment adjusted to GHMSI mkt area:									
Comprehensive	90,209	22,745	98,230	15,853	96,637	21,909	285,076	60,508	5.4%
FEP+Comprehensive	184,848	22,745	254,183	15,853	216,923	21,909	655,954	60,508	2.4%
Total, all lines	209,669	22,745	284,164	15,853	234,631	21,909	728,464	60,508	2.1%

[1]Based on 50% of DC+MD+VA Exchange enrollment in GHMSI and assuming 70% (approx. market share) of previously insured were GHMSI enrolled, 30% were not previously insured, net new enrollment in GHMSI

These enrollment results indicate that 2014 ACA open enrollment ***might*** have increased GHMSI's total enrollment 2.1% -- assuming that 50% of all DC, MD and VA exchange enrollees enrolled with GHMSI, 30% of enrollees were previously uninsured, and 70%[51] of previously insured persons had been insured with GHMSI. This compares to the 13.8% that FTI assumes and spreads across the years 2013 – 2015.

Using FTI's premium growth calculation approach, but using more appropriate numbers and incorporating the Market and Benefit Trends, we restate FTI's Table 8 as follows, to derive a more reasonable, evidence-based premium trend including ACA enrollment impacts:

Chart 8 - Restated Table 8 from FTI Memo[52]

	Non-FEP				FEP			
				3-year				3-year
	2013	2014	2015	Avg	2013	2014	2015	Avg
Base Medical,Market,Premium Trend	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
Membership Trend	-8.0%	-5.8%	-5.8%	-6.5%	-3.4%	-0.1%	-0.1%	-1.2%
ACA Impact	0.0%	2.1%	2.1%	1.4%	0.0%	0.0%	0.0%	0.0%
	==========				==========			
TOTAL:	-3.0%	1.5%	1.5%	0.0%	1.9%	5.4%	5.4%	4.2%
Actual:	-3.0%				1.9%			

An Independent Premium Growth Model

Based on recent (2008 – 2013) historical experience, but still allowing for the possibility of higher premium growth due to ACA and changing market conditions, a more reasonable set of premium growth expectations for GHMSI would be centered on the evidence presented in Chart 5, resulting in something similar to the following:

[51] Assumes GHMSI's approximate market share in their service area is 70%.

[52] Notes on Chart 8:

1) Membership trend in 2013 is what is used to balance the total results to actual 2013 experience.
2) Membership trend in 2014-2015 is based on 2010-2013 actual average experience assuming a base medical trend after market and benefit trend of 5.5%.
3) ACA impact is based on Chart 7 which reflects 2014 actual exchange enrollments. A similar impact due to exchange enrollments as has occurred in 2014 is assumed for 2015.

Chart 9

Revised Growth Rate Assumptions			
Non-FEP		FEP	
Probability	Growth Rate	Probability	Growth Rate
5%	-2.0%	5%	-1.2%
20%	0.4%	20%	1.8%
40%	2.8%	40%	4.9%
20%	6.8%	20%	8.8%
15%	9.2%	15%	11.8%
Wtd Avg:	**3.8%**		**5.8%**

The revised premium growth assumptions in the above chart are derived as follows:

1) The 40% probability assumption (tied to 2.8% growth and 4.9% growth in non-FEP and FEP business, respectively) is consistent with the actual average historical growth for 2008 – 2013 and actually exceeds the results derived in Chart 5.

2) The two 20% probability assumptions support the actual low and actual high historical growth rates for 2008 - 2013.

3) Entering these assumptions in our stochastic model produces a distribution of possible future growth rates, of which 80% are between 1.8% and 8.8% for FEP and 0.4% and 6.8% for non-FEP business – reflecting GHMSI's actual recent historical growth rates. The remaining probability assumptions (15% and 5%) allow for growth rates above the historical range to be three times as likely as growth rates below. The values for the 15% above the historical range possibility are set at one standard deviation[53, 54] above the highest historical growth rate from 2008 to 2013. The values for the 5% below the historical range possibility are set at one standard deviation below the lowest historic growth rate from 2008 to 2013.

This revised approach results in:

1) Weighted average premium growth that exceeds the recent historical averages and exceeds actual 2013 experience by 65% (non-FEP) and 100% (FEP);

2) The one standard deviation increase above the historical range is actually higher than the ACA impact calculated in Chart 7; and

3) A range that validates against recent historical experience.

[53] If the historical range represents 80% of expected values as posited, adding one standard deviation to the range in each direction would encompass a 94% confidence interval.

[54] The FTI memo of February 7, 2014 posits that a growth assumption within one standard deviation of historical experience is a reasonable validation.

In short, this approach provides for the possibility that future results may be outside of recent historical results and uses the magnitude of recent variations in results (i.e., a standard deviation) to establish a reasonable variation of possible values outside the historical range.

Premium Growth Impact on Required Surplus Model

The March 6, 2014 memo from FTI Consulting observed that the Rector Report's premium growth assumptions contributed to an upward adjustment of 40 percentage points in needed surplus relative to the 2009 Rector Report's recommended surplus. Thus, not only is the recommended surplus increase in Rector's 2013 report inappropriate, but had premium growth assumptions been more consistent with recent experience, the 2013 report would likely have *lowered*, rather than raised, the recommended surplus level from the 2009 recommendation.

Owing to Rector's failure to provide all the data we requested and that is required by Actuarial Standards of Practice, we are unable to compute with precision exactly how much Rector's use of an overstated premium growth factor in the model contributed to its 958% RBC figure. However, based on the data we have and FTI Consulting's March 6, 2014 memo, we estimate that **the inappropriately high growth rates used in the Milliman and Rector reports alone contributed roughly $207 million to Rector's estimate of needed surplus**.

This estimate is calculated as follows:

1) A significant part of the projected reduction in surplus from the Pro Forma model is due to the premium growth assumption causing an increase in the baseline RBC-ACL to which surplus is compared. Using a 12.5% weighted average premium growth for non-FEP premium over three years as assumed by Rector; we calculated that the baseline RBC-ACL could increase by 42.4% over a 3-year period due to premium growth. Thus, as noted earlier, even with no change in losses or gains, $961 million of surplus would equate to an RBC ratio of just 673% after three years of 12.5% weighted average premium growth.

2) Using a revised 3.8% weighted average premium growth for non-FEP premium over three years as derived above(Chart 9), we calculated that the baseline RBC-ACL could increase by 11.8% (rather than 42.4%) over that 3-year period due to premium growth.

3) Rector's calculated needed surplus can be reduced by a ratio of the increase in RBC-ACL due to the inappropriate premium growth assumption (1/1.125^3 = 70.23%) to the increase in RBC-ACL due to the more appropriate premium growth assumption (1 / 1.038^3 = 89.41%). This calculation 70.23% divided by 89.41% yields a ratio of 78.5%.

4) Multiplying 78.5% times 958% = 752%. Thus, the change in required surplus due to lower premium growth is a reduction in surplus needed of 206% (= 958% - 752%).

5) Multiplying 206% by the 12/31/13 RBC-ACL number of $100.3 million yields a reduction of $207 million from required protective surplus at the 98th percentile due to changes in the premium growth rate – all other assumptions being unchanged.

SECTION 3: Equity Portfolio Asset Value

Summary

According to a memo from FTI Consulting[55], the assumption with the second largest contribution to the increase in required surplus from the 2009 Rector and 2008 Milliman reports to the current reports is the Equity Portfolio Asset Value factor ("EPAV"). Milliman and Rector have not disclosed how the EPAV was derived, whether or how it was validated, how the probability distributions were calculated, or the reasoning for the increase from previous reports.

We derive an EPAV probability distribution based on historical Dow Jones Industrial Average experience. We show that the EPAV impact should have declined since the 2009 Rector and 2008 Milliman reports due to GHMSI's affected assets declining as a percentage of non-FEP premiums. Our more appropriate and validated EPAV assumption reduces the amount of needed surplus by an estimated $216 million, all other assumptions being unchanged.

Milliman's and Rector's Failure to Explain their Work in Accordance with Actuarial Standards of Practice

Chart 5 in the February 27, 2014 letter from Milliman documents the EPAV factors that were used in the May 31, 2011 Milliman report[56]. The chart contains a probability distribution and, associated with each probability, a surplus change over a three-year time period. Neither the 2014 Milliman letter nor the 2011 Milliman report discloses (much less describes in detail) how these probabilities and associated factors were derived. The documentation is very general and does not "state the actuarial findings, and identify the methods, procedures, assumptions, and data used by the actuary with sufficient clarity that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary's work as presented in the actuarial report" as required by Actuarial Standard of Practice #41[57].

What limited information we have from Milliman regarding the basis for the probability distribution assumptions reflected in its May 31, 2011 report is summarized in the February 27, 2014 letter from Phyllis Doran as follows:

> "These values and probabilities are based on historical data, our observation of similar results in connection with our work at various BlueCross and BlueShield Plans, interpretation of that data in light of the current and anticipated future operating environment of GHMSI, and professional judgment."

Among the types of details that the Actuarial Standards of Practice ***requires*** to be disclosed are:

- From what source(s) was the data drawn
- From what years was the data drawn
- The raw historical results before any adjustments

[55] See pages 2 and 3 of the March 6, 2014 FTI Consulting memo.
[56] Although this factor was not mentioned by name in the 2011 Milliman report.
[57] See Section 3.2 on page 3. http://www.actuarialstandardsboard.org/pdf/asops/asop041_120.pdf.

- The specific adjustments made to the data in light of the current and anticipated future environment of GHMSI and what were the bases for such adjustments
- Where professional judgment was exercised and the impact of such exercise
- The specific reasons for and sources for the changes[58] in this factor between the 2008 and 2011 Milliman reports

Milliman does not explain the EPAV factor in either its 2008 or 2011 Report, other than to say it involves investment portfolio risks and the implications for reported surplus values. Rector does not discuss the EPAV factor in either its 2009 or 2013 Reports, despite the fact that FTI believes the EPAV factor was the second largest source of increase between Rector's 2009 and 2013 Reports[59]. Nor, apparently, did Rector attempt to validate the EPAV factor; the February 7, 2014 FTI Consulting memo explains Rector's validation approach and does not mention the EPAV factor.

Why an EPAV factor

It is not clear exactly what the EPAV factor is for, as there are very few words concerning it in all of the materials from Milliman and Rector combined. An educated guess is that the EPAV factor is intended to account for unrealized changes in invested assets in stocks that may exist at the end of a reporting period. Such changes do not run through the operational results of the company, but are recognized directly in the surplus account.

However, the distribution of potential surplus changes as contained in Chart 5 of the February 27, 2014 Milliman letter does not appear to be appropriate in light of the actual performance of equity markets. Here is a summary of 3-year changes in the Dow Jones Industrial Average over each potential 3-year period from 1/1/1975 to 12/31/2013:

[58] FTI Consulting in its March 6, 2014 memo discloses that changes in this factor between the 2008 and 2011 Milliman reports and the 2009 and 2013 Rector reports increased the required surplus by 70%. No further explanation is given.

[59] See page 3 of the March 6, 2013 FTI Consulting memo.

Chart 10

Dow Jones Industrial Average Three Year Returns using Data from 1/1/1975 - 12/31/2013	
Return	Probability
90+%	2.7%
75-89%	5.4%
60-74%	5.4%
45-59%	13.5%
30-44%	24.3%
15-29%	21.6%
0-14%	8.1%
-15 - -1%	8.1%
-30 to -16%	10.8%
-31+%	0.0%

It is clear from Chart 10 that the likelihood of a 3-year gain in GHMSI's equity portfolio is far greater than the 3-year likelihood of a loss. Indeed, over the 39-year period from 1975 to 2013, a gain for a 3-year period is more than four times as likely as a loss. Furthermore, the magnitude of the gains is far higher than the magnitude of losses: more than 50% of all observations were gains that were larger than the absolute value of the largest loss.

Rector increased the EPAV factor dramatically between its 2009 and 2013 reports, despite total assets invested in stocks having significantly declined as a percentage of non-FEP premiums since 2009. Here are values taken from GHMSI's annual statements for the last 6 years:

Chart 11

GHMSI Investments in Stock as % of Non-FEP Premium						
			% of Pension	Total		Stock as %
	Assets in	Pension	Assets	Invested	Non-FEP	of Non-FEP
Year	Stocks	Assets	in Stocks	in Stocks	Premium	Premium
2008	$ 289,187,387	$ 219,384,000	51%	$ 401,073,227	$ 1,263,603,449	31.7%
2009	$ 271,267,146	$ 264,791,000	63%	$ 438,085,476	$ 1,358,626,250	32.2%
2010	$ 118,844,948	$ 289,120,000	66%	$ 309,664,148	$ 1,369,920,355	22.6%
2011	$ 172,513,788	$ 304,005,000	60%	$ 354,916,788	$ 1,383,316,013	25.7%
2012	$ 179,646,805	$ 334,907,000	56%	$ 367,194,725	$ 1,385,008,996	26.5%
2013	$ 121,819,719	$ 367,650,000	59%	$ 338,733,219	$ 1,344,078,347	25.2%

Using the data in Chart 11 (showing stocks around 25 percent of non-FEP premiums in 2013) and the information from Chart 10 (showing the distribution of gains and losses for stocks over a 3-year period), we derive a more appropriate probability and surplus change chart as follows:

Chart 12

Revised EPAV	
	Surplus Change as a % of non-FEP
Probability	Insured Premium
13.5%	19.8%
13.5%	12.2%
24.3%	9.5%
21.6%	5.6%
16.2%	0.2%
10.8%	-4.9%

Chart 12 is derived as follows:

1) Actual 3-year returns for the Dow Jones Industrial Average for the time period are calculated for the period from 1/1/1975 to 12/31/2013. There are a total of 37 three year periods 1975-1977, 1976-1978, 1977-1979 ... 2011-2013 of historical 3-year returns.

2) The results are summarized and multiplied by GHMSI's percentage of assets in stocks at 12/31/2013 compared to 2013 non-FEP premium to get appropriate surplus impacts for the weighted average of the associated probabilities.

The Impact of a More Appropriate Equity Portfolio Asset Value

We are unable to compute with precision exactly how much Rector's use of its assumed EPAV factor contributed to its resulting 958% RBC figure – owing to Rector's failure to provide the data required by Actuarial Standards of Practice and which we requested, particularly for the Pro Forma model. But based on the data we have (Charts 10-12), we estimate that **the inappropriately high losses the Milliman and Rector reports used in this factor alone contributed approximately $216 million to Rector's estimate of needed surplus, all other factors unchanged**.

This estimate is calculated as follows:

1) We recreated the stochastic model using all the assumptions used by Rector and Associates.

2) We substituted the revised EPAV distribution of surplus losses shown in Chart 12 into the recreated stochastic model.

3) With no other changes to any other factors, the stochastic model yielded a result of -15.8% at the 98th percentile rather than the -23.2% results when using the Milliman/Rector & Associates assumptions.

4) As a result of revising the EPAV factor, the loss passed from the Stochastic Model to the Pro Forma model is reduced to approximately 68.1% (15.8% / 23.2%) of the loss calculated by using the Milliman/Rector EPAV factor.

5) The Milliman/Rector EPAV factor contributes to a 958% RBC-ACL which based on a 200% RBC-ACL equal to $100.3 million (GHMSI's RBC-ACL @12/31/13), equals $961 million of surplus. However, as described in Section 1, Rector's premium growth assumption caused the baseline RBC-ACL to increase. Using a 12.5% weighted average premium growth for non-FEP premium over three years as assumed by Rector (even with no losses or gains), $961 million of surplus would yield an RBC ratio of just 673%.

6) Assuming the remaining need for protective surplus (673% - 200% = 473%) in the Pro Forma model arises from the losses emerging from the Stochastic model, the reduced amount of needed surplus due to revised stochastic model losses above the 200% RBC-ACL threshold would be calculated as 473% x 68.1% = 322%.

7) Multiplying the sum of the stochastic model loss (322%) and the baseline 200% by the premium growth factor of 1.424 (12.5% annual premium growth compounded over 3 years) yields 743% as the needed surplus.

8) The difference, 215 percentage points (= 958% - 743%), applied to the RBC-ACL number of $100.3 million, equates to a reduction of $216 million from required protective surplus at the 98th percentile due to changes in the EPAV loss distribution – all other assumptions being unchanged.

SECTION 4: Expenses

Summary

In this section of this report, we compare GHMSI's claims adjustment and administrative expenses with those of its peers. This comparison suggests considerable inefficiency by GHMSI. Because expenses make a significant difference in the profit margins and thus the results of Pro Forma modeling that occurs after the stochastic modeling is completed, inefficiently high costs increase calculated surplus need. We demonstrate that GHMSI's expenses are significantly higher than those of its peers. Assuming a reduction in the level of GHMSI's expenses to the average among its peers in recent years, the amount of needed surplus (as calculated by 3-year Pro Forma modeling on a pre-tax basis) is reduced by an estimated $153 million, or approximately $51 million per year.

Details

Rector agrees[60] that the most important factor in the Milliman model is the Rating Adequacy and Fluctuation factor. A premium rate is adequate if the premium plus any investment earnings on its cash flow exceeds expected benefit payments and all associated expenses. Underwriting gains occur when premium revenues exceed benefits and operating expenses. It follows that underwriting gains and rate adequacy are highly correlated.

With implementation of the ACA's medical loss ratio (MLR) requirements, benefits must be at least 80% of premiums for individual and small group comprehensive insurance and at least 85% of premiums for large group comprehensive insurance. As a result, administrative inefficiency – the level of non-medical costs – becomes an even more important issue for medical insurers. As FTI Consulting noted[61], "The MLR requirements also pose a solvency threat to insurers who cannot keep their long-term expense ratios in check…. An effectively managed insurer should be able to control expenses and meet the MLR regulation, while ineffective insurers who consistently cannot control expenses will struggle."

Administrative efficiency is relevant to evaluating required surplus. Administrative *inefficiency* necessarily implies that the company incurs costs that could be avoided without a proportionate decrease, or any decrease, in revenues. Inefficient costs reduce an insurer's profit margin and thus increase the likelihood of an underwriting loss. An increased likelihood of underwriting loss affects the probabilities and associated values in the RAAF factor, and in turn increases the calculated value for required surplus at a given confidence level. Inefficient costs, therefore, increase surplus requirements unnecessarily and divert dollars that could, in the language of MIEAA, "feasibly" be directed to community health reinvestment.

Based on Annual Reports filed with state regulators, GHMSI is administratively inefficient compared to its peers. Using data from the Analysis of Operation by Line of Business page of the Annual Statement of each referenced company, here are the data (premiums, claims

[60] See page 21 of Rector & Associates, Inc., *Report to the D.C. Department of Insurance, Securities and Banking*, (December 9, 2013).
[61] See page 3 of FTI Consulting's memorandum to Rector & Associates, *ACA Reform and Surplus Requirements,* (September 12, 2013).

adjudication expense, other administration expense for non-FEP) comparing GHMSI's expenses for non-FEP business to that of its peers in 2013:

Chart 13

GHMSI & Peers Expense Efficiency					
Based on 2013 Annual Statements					
	Total	**Claims Adj**	**Admin**	**Total**	**Total Exp**
All Non-FEP	**Revenue**	**Expense**	**Expense**	**Expense**	**As % of revenue**
BCBS of GA	$990,123,211	$64,572,049	$93,514,153	$158,086,202	15.97%
BCBS of MN	$2,608,002,772	$228,374,365	$329,622,373	$557,996,738	21.40%
BCBS of RI	$1,439,998,976	$66,190,277	$142,961,310	$209,151,587	14.52%
BCBS of TN	$3,049,510,663	$166,995,734	$272,532,109	$439,527,843	14.41%
BCBS of UT	$686,140,043	$59,453,234	$67,275,562	$126,728,796	18.47%
Horizon	$4,115,504,355	$137,202,622	$310,389,549	$447,592,171	10.88%
Premera	$2,036,359,667	$141,967,033	$149,747,985	$291,715,018	14.33%
QCC	$2,002,178,404	$126,827,574	$267,757,953	$394,585,527	19.71%
Regence BCBS of OR	$1,571,736,591	$119,096,039	$126,140,752	$245,236,791	15.60%
Regence BS	$1,972,404,494	$142,645,698	$206,960,724	$349,606,422	17.72%
GHMSI	$1,347,924,011	$81,862,608	$203,572,661	$285,435,269	21.18%
Average of Peers:					16.30%
GHMSI % of Avg:					**130%**
GHMSI Rank:					**2ndHighest**

As can be seen from Chart 13, in 2013, GHMSI was significantly less efficient than all but one peer company; its expenses were higher than its average peer by almost 5% of premium.

High expenses are not a new occurrence with GHMSI as can be seen in the following data from other recent years (Charts 14 through 17):

Chart 14

GHMSI & Peers Expense Efficiency - 2012					
Based on 2012 Annual Statements					
	Total	**Claims Adj**	**Admin**	**Total**	**Total Exp**
All Non-FEP	**Revenue**	**Expense**	**Expense**	**Expense**	**As % of revenue**
BCBS of GA	$1,229,163,657	$55,750,624	$53,301,410	$109,052,034	8.87%
BCBS of MN	$2,623,876,588	$179,484,242	$257,180,012	$436,664,254	16.64%
BCBS of RI	$1,488,203,449	$81,418,574	$145,651,269	$227,069,843	15.26%
BCBS of TN	$2,819,116,803	$169,322,658	$277,554,926	$446,877,584	15.85%
BCBS of UT	$631,268,783	$59,369,811	$52,577,766	$111,947,577	17.73%
Horizon	$4,099,914,812	$130,012,858	$299,531,778	$429,544,636	10.48%
Premera	$2,068,577,502	$132,672,889	$129,643,420	$262,316,309	12.68%
QCC	$2,146,432,108	$125,869,447	$211,595,808	$337,465,255	15.72%
Regence BCBS of OR	$1,544,724,027	$119,713,942	$136,656,034	$256,369,976	16.60%
Regence BS	$1,953,544,110	$161,572,940	$220,041,075	$381,614,015	19.53%
GHMSI	$1,388,170,771	$67,755,099	$188,064,115	$255,819,214	18.43%
Average of Peers:					14.94%
GHMSI % of Avg:					**123%**
GHMSI Rank:					**2nd Highest**

Chart 15

GHMSI & Peers Expense Efficiency - 2011					
Based on 2011 Annual Statements					
	Total	**Claims Adj**	**Admin**	**Total**	**Total Exp**
All Non-FEP	**Revenue**	**Expense**	**Expense**	**Expense**	**As % of revenue**
BCBS of GA	$1,366,537,766	$28,343,672	$87,439,110	$115,782,782	8.47%
BCBS of MN	$2,507,378,271	$134,426,034	$241,694,703	$376,120,737	15.00%
BCBS of RI	$1,466,970,205	$88,857,187	$151,791,208	$240,648,395	16.40%
BCBS of TN	$2,869,507,131	$157,621,064	$290,373,162	$447,994,226	15.61%
BCBS of UT	$648,869,627	$55,949,891	$59,315,271	$115,265,162	17.76%
Horizon	$3,460,940,087	$121,813,837	$354,858,063	$476,671,900	13.77%
Premera	$2,046,669,163	$162,975,857	$123,413,170	$286,389,027	13.99%
QCC	$2,144,656,580	$81,092,836	$200,874,749	$281,967,585	13.15%
Regence BCBS of OR	$1,556,913,551	$119,643,689	$135,799,013	$255,442,702	16.41%
Regence BS	$2,007,112,786	$153,088,552	$205,451,045	$358,539,597	17.86%
GHMSI	$1,383,436,775	$60,744,139	$183,060,456	$243,804,595	17.62%
Average of Peers:					14.84%
GHMSI % of Avg:					**119%**
GHMSI Rank:					**3rd Highest**

Chart 16

GHMSI & Peers Expense Efficiency - 2010					
Based on 2010 Annual Statements					
	Total	**Claims Adj**	**Admin**	**Total**	**Total Exp**
All Non-FEP	**Revenue**	**Expense**	**Expense**	**Expense**	**As % of revenue**
BCBS of GA	$1,567,476,285	$41,604,787	$119,180,562	$160,785,349	10.26%
BCBS of MN	$2,418,984,622	$154,214,323	$233,625,320	$387,839,643	16.03%
BCBS of RI	$1,530,076,996	$85,832,092	$167,663,015	$253,495,107	16.57%
BCBS of TN	$2,970,981,811	$153,142,971	$262,684,586	$415,827,557	14.00%
BCBS of UT	$714,363,731	$56,851,188	$74,255,872	$131,107,060	18.35%
Horizon	$2,932,529,921	$116,858,087	$289,972,132	$406,830,219	13.87%
Premera	$1,949,504,925	$163,858,946	$131,765,415	$295,624,361	15.16%
QCC	$2,457,878,648	$119,143,496	$170,830,938	$289,974,434	11.80%
Regence BCBS of OR	$1,607,075,992	$109,418,475	$167,636,101	$277,054,576	17.24%
Regence BS	$2,129,431,556	$130,290,524	$240,567,369	$370,857,893	17.42%
GHMSI	$1,369,995,604	$68,957,050	$188,953,265	$257,910,315	18.83%
Avg of non-GHMSI:					15.07%
GHMSI % of Avg:					**125%**
GHMSI Rank:					**Highest**

Chart 17

GHMSI & Peers Expense Efficiency - 2009					
Based on 2009 Annual Statements					
	Total	**Claims Adj**	**Admin**	**Total**	**Total Exp**
All Non-FEP	**Revenue**	**Expense**	**Expense**	**Expense**	**As % of revenue**
BCBS of GA	$1,692,840,890	$44,678,651	$100,819,784	$145,498,435	8.59%
BCBS of MN	$2,428,711,026	$145,404,510	$241,774,224	$387,178,734	15.94%
BCBS of RI	$1,604,998,291	$87,092,810	$167,154,423	$254,247,233	15.84%
BCBS of TN	$2,778,807,175	$136,767,475	$289,963,251	$426,730,726	15.36%
BCBS of UT	$765,477,440	$56,499,516	$85,905,126	$142,404,642	18.60%
Horizon	$2,769,426,166	$103,862,837	$261,900,835	$365,763,672	13.21%
Premera	$2,046,449,202	$146,111,405	$137,105,715	$283,217,120	13.84%
QCC	$2,851,880,040	$175,361,761	$230,063,365	$405,425,126	14.22%
Regence BCBS of OR	$2,168,828,333	$116,895,057	$181,659,366	$298,554,423	13.77%
Regence BS	$2,211,566,043	$129,252,730	$242,257,614	$371,510,344	16.80%
GHMSI	$1,358,687,031	$58,734,526	$188,416,619	$247,151,145	18.19%
Avg of non-GHMSI:					14.62%
GHMSI % of Avg:					**124%**
GHMSI Rank:					**2nd Highest**

Among its peers, GHMSI has consistently been one of the three least efficient companies since 2009. From 2009 through 2013, GHMSI's expenses as a percent of premium revenue ranged 19 percent (in 2011) to 30 percent (in 2013) above the average expense ratio of its peers.

It is clear that GHMSI's expense inefficiency is extremely costly, diverting funds that would otherwise have contributed to surplus and in turn could have been used for community benefit. The following chart shows that GHSMI's high administrative expense levels relative to its peers have cost the company over $250 million over just the last five calendar years:

Chart 18

GHMSI Excess Expenses vs. Peers

Year	GHMSI Non-FEP Premium	GHMSI Expense %	Peer Expense %	GHMSI Excess Expenses
2013	$1,347,924,011	21.18%	16.30%	$65,715,750
2012	$1,388,170,771	18.43%	14.94%	$48,470,343
2011	$1,383,436,775	17.62%	14.84%	$38,450,459
2010	$1,369,995,604	18.83%	15.07%	$51,454,945
2009	$1,358,687,031	18.19%	14.62%	$48,559,270
5-year Totals	**$6,848,214,192**	**18.84%**	**15.15%**	**$252,650,767**

It is possible (depending on how Milliman and Rector derived their RAAF factor curves) that GHMSI's relative inefficiency caused Milliman and Rector to assume surplus changes that are systematically more negative than an efficient company would experience. Corrected to reflect peer-average administrative efficiency, the assumed surplus changes in the RAAF factor could be significantly higher: specifically, for any given probability, the changes in surplus shift 3.69% in the positive direction, away from losses – increasing surplus gains and reducing surplus losses.

For the Rector report, this means that each value in its RAAF factor would increase so that Rector's range of possible surplus changes for RAAF would change from (+30.1% to -18.2%) to (+33.8% to -14.5%), if GHMSI is assumed to manage its expenses only as well as the average among its peers.

To implement this adjustment, Rector could simply use reduced expenses in the Pro Forma modeling, rather than modify its RAAF factor only for this reason. If an expense level 3.69% lower (the average amount by which GHMSI's expenses exceeded its peers' expenses over the last 5 calendar years) were used in the Pro Forma model for 2012 – 2014, and the non-FEP premium growth was the actual numbers for 2012 and 2013 and 3.8% for 2014 as we have proposed in Section 2, then **the projected reduction in required surplus would be approximately $153 million on a pre-tax basis**, as calculated in the following chart:

Chart 19

Estimated Pre-tax Impact of Reduced Expenses				
			Assumed	
	GHMSI	GHMSI	Reduction in	Est. Savings
	Non-FEP	Non-FEP Prem	GHMSI	in GHMSI
Year	Premium	Growth Rate	Expense %	Expenses
2012	$1,388,170,771	Actual	3.69%	$51,223,501
2013	$1,347,924,011	Actual	3.69%	$49,738,396
2014	$1,399,145,123	3.80%	3.69%	$51,628,455
			3-year Total:	**$152,590,353**

SECTION 5: Other Risk Factors

Summary

In preceding sections we have discussed some of the factors that had the greatest impact in the Milliman/Rector modeling and how to adjust those factors to more appropriate values. Some of the remaining Risk Factors identified by Milliman also appear to have inappropriate values, or they are already accounted for in other factors, or they are not really risks to GHMSI. In this section we discuss some of the remaining risk factors and the appropriateness of the risk values selected by Milliman. We conclude that six of these factors are ultimately unneeded or they are accounted for in the development of the RAAF factor. Eliminating these unneeded or redundant risk factors in the Stochastic Model reduces the amount of needed surplus by an estimated $75 million, all other assumptions being unchanged.

Risk #3 – Change in Interest/Discount Rate – Impact on Bond Portfolio and Pension Plan

It is a remarkable proposition that the company should expect over any given 3-year period that a change in the interest/discount rate will occur, and that 90% of the time it will increase and have a negative impact on the company's bond portfolio and the value of the pension plan[62]. Milliman failed to provide any rationale or evidence of such an astounding result (or how it might validate to historical results which would suggest a 50% chance of an increase over any given time period), and Rector failed to provide any confirming analysis (much less a reasoned derivation of how the proposed impacts were calculated). Therefore, we propose that this factor be ignored until and unless such a demonstration is made.

Risk #6 - Overhead Expense Recovery and Fee Income Risks – Commercial Business

As previously noted in this report, Milliman has not disclosed the details of how they derived the Rating Adequacy and Fluctuation (RAAF) factor in accordance with Actuarial Standards of Practice. Presumably, as we have done in our alternative RAAF calculations, they derived the RAAF factor and its proposed distribution of results by looking at the historical underwriting results for GHMSI and peer companies. If so, any excess expenses or fee income shortfalls would already be reflected in underwriting results and therefore in the RAAF factor. Indeed, excess expenses or fee income shortfalls would have the effect of reducing the intended net margin in rates – which is precisely what Milliman indicates[63] the RAAF factor is for. Milliman either needs to demonstrate that it did not account for historical excess expenses and fee income shortfalls in deriving the RAAF factors from underwriting results, or this factor needs to be eliminated as duplicative to the derivation of the RAAF factors.

Risk #7 - Overhead Expense Recovery and Fee Income Risks – FEP Indemnity Business

Risk #8 - Overhead Expense Recovery and Fee Income Risks – FEP Operations Center Business

[62] See Chart 3 of Attachment A of the February 27, 2014 letter from Phyllis A. Doran of Milliman.
[63] See page 1 of Attachment A of the February 27, 2014 letter from Phyllis A. Doran of Milliman.

Milliman does not discuss either of these items specifically in its May 31, 2011 Report or June 28, 2013 response, but alludes broadly to them in item (d) on page 16 of the May 31, 2011 report which states, "Overhead expense recovery risk reflects the implications of a decrease in business and the inability to cover overhead in the short term before adequate adjustments to operations can be implemented."

As of 12/31/2013 GHMSI reported a special reserve of $681 million for GHMSI's FEP business that, per the footnotes on page 26.3 of its annual statement, "may be utilized by the participating plans in the event that funds set aside from annual premiums are insufficient or fall below certain prescribed levels by OPM." The notes go on to say:

"The Company, along with other Blue Cross Blue Shield plans who participate in the FEHBP contract, have an unrestricted right to draw funds being held in the special reserve for any valid claim or expense."

It appears that GHMSI has unfettered access to the special reserve to address any shortfalls in expenses due to FEP business. Indeed, with over $681 million currently held in the special reserve, the special reserve is equivalent to more than 40% of FEP premiums. Moreover, the Analyses of Operations by Lines of Business indicates that the combination of claim administration expenses and general administration expenses for this line of business totaled less that $123 million in 2013 and that the $681 million reserve is more than sufficient to pay **all** associated non-claim expenses for over 5 years.

The proposal that additional surplus is needed to cover the "risk" of overhead expense recovery is not credible and has not been explained or substantiated. Therefore, we propose that this factor be ignored until and unless such a demonstration is made.

Risk #11 – Provision for Impact of Catastrophic Events

Rector's analysis incorporates the proposition that 10% of the time a catastrophic event will impact a company's financial results. While Milliman has not disclosed how it derived the RAAF factor in accordance with Actuarial Standards of Practice, presumably (as we have done in our alternative RAAF calculations), its RAAF factor and distribution of results were derived by looking at the historical underwriting results for GHMSI and peer companies. If so, with such a significant probability of a catastrophic event, many catastrophic events would already be reflected in underwriting results and therefore in the RAAF factors[64]. Such excess claims or expenses would have the effect of reducing the intended net margin in rates which, again, is precisely what Milliman indicates[65] the RAAF factor is for. Milliman and Rector either need to

[64] Based on our 12-15 year review of underwriting results for GHMSI and 10 competitors, if the 10% probability of a catastrophe is correct there would be an average of 14 catastrophic events reflected in the results from which our RAAF factors were derived. Depending on how many companies Milliman examined and for how many years, they also would have a substantial number of "catastrophic" events already accounted for in their derivation of the RAAF factor. Indeed, since Milliman proposed that there would be a minimum of a 2.5% catastrophic loss in every year, the number of catastrophic losses already accounted for in Milliman's RAAF data would be equal to the total number of companies examined times the number of years examined. Although, Rector reduced the catastrophic incidence to 10%, they too would have many catastrophic losses built in their RAAF factor derivation.

[65] See page 1 of Attachment A of the February 27, 2014 letter from Phyllis A. Doran of Milliman.

demonstrate that they backed out historical catastrophic events in their derivation of the RAAF factors from underwriting results or this factor needs to be eliminated as duplicative to that work.

Risk #12 – Provision for Unidentified Development and Growth

Milliman proposed that 100% of the time that the company will have excess expenses for unidentified development and growth. Rector did not accept this certainty of excess expenses and reduced the probability of unidentified growth and development expenses to "only" 85%.

As previously noted in this report, Milliman has not disclosed the details of how it derived the Rating Adequacy and Fluctuation (RAAF) factors in accordance with Actuarial Standards of Practice; nor has Rector disclosed the details of how it derived its modified RAAF factors. Presumably, as we have done in our alternative RAAF calculations, each derived the RAAF factor and proposed distribution of results by looking at the historical underwriting results for GHMSI and peer companies. If so, any excess expenses for unidentified growth and development would have been reflected in underwriting results and therefore are already embedded in the RAAF factors. Such excess expenses would have the effect of reducing the intended net margins in rates, which (again) is precisely what Milliman indicates[66] the RAAF factor is for. Rector[67] asserts that growth in non-admitted assets, including non-admitted EDP expenditures, indicates that there is a need for funds for unidentified development and growth. Rector[68] states that, "Because non-admitted assets cannot be included in an insurer's total assets for purposes of determining the insurer's financial condition, increases in non-admitted assets results in a direct charge to an insurer's surplus position." This is an incomplete and misleading description of how non-admitted asset purchases affect an insurer: it does not address how non-admitted asset purchases affect underwriting results as shown in the Statement of Revenue and Expenses as shown on page 4 of the Statutory Annual Statement. A more complete and accurate statement would be as follows:

> Because non-admitted assets cannot be included in an insurer's total assets for purposes of determining the insurer's financial condition, purchase of (i.e., increases in) non-admitted assets results in such expenses flowing through an insurer's underwriting results in the year of purchase and the reduced underwriting results impacts the insurer's surplus position.

Expenses for non-admitted assets, including EDP expenses, flow through each year's underwriting results. As with several other risk factors identified by Milliman, Rector fails to explain how RAAF factors which are built based on historical underwriting results do not already account for such growth in non-admitted expenses. Indeed, Rector notes[69] that the growth in GHMSI's non-admitted assets averaged 20% annually between 1998 and 2012. Based on statutory accounting, these expenditures would have reduced underwriting income during these years and therefore should already have been accounted for in the development of the stochastic model's RAAF factor.

Therefore, we conclude that Milliman and Rector either need to demonstrate that they backed out historical excess expenses for unidentified development and growth in deriving their RAAF

[66] See page 1 of Attachment A of the February 27, 2014 letter from Phyllis A. Doran of Milliman.
[67] See page 27 of the December 9, 2013 Rector report.
[68] See page 26 of the December 9, 2013 Rector report.
[69] See page 26 of the December 9, 2013 Rector report.

factors from underwriting results or the Unidentified Development and Growth factor needs to be eliminated as duplicative.

The Impact of Inappropriate Other Risk Factors

We are unable to compute with precision exactly how much Rector's use of its assumed Other Risks factor contributed to its resulting 958% RBC figure – owing to Rector's failure to provide the data required by Actuarial Standards of Practice and which we requested, particularly for the Pro Forma model. We suggest that the six Other Risk factors discussed in this section are either unneeded or are accounted for in the development of the RAAF factor. Eliminating these six factors in the Stochastic Model reduces the amount of needed surplus by an estimated $75 million, all other assumptions being unchanged. This rough estimate is calculated as follows:

1) We recreated the stochastic model using all the assumptions used by Rector and Associates.

2) We eliminated the six Other Risk factors from the recreated stochastic model.

3) With no other changes to any other factors, the stochastic model yielded a result of -20.6% at the 98th percentile, rather than -23.2% when using Rector's assumptions.

4) As a result of eliminating the six Other Risk factors, the loss passed from the Stochastic Model to the Pro Forma model is approximately 88.8% (20.6% / 23.2%) of the loss using the Milliman/Rector Other Risk factors.

5) The Milliman/Rector Other Risk factors contributes to a 958% RBC-ACL which based on a 200% RBC-ACL is equal to $100.3 million (GHMSI's RBC-ACL @12/31/13), equals $961 million of surplus.

6) Part of the projected reduction in surplus from the Pro Forma model is due to the premium growth assumption causing an increase in the baseline RBC-ACL to which surplus is compared. Using 12.5% weighted average premium growth for non-FEP premium over three years as assumed by Rector; we calculated that the baseline RBC-ACL could increase by 42.4% over that 3-year period due to premium growth. Thus, even with no loss or gains, $961 million of surplus would yield an RBC ratio of just 673% RBC after three years of 12.5% weighted average premium growth.

7) Assuming the remaining need for protective surplus (673% - 200% = 473%) in the Pro Forma model arises from the losses emerging from the Stochastic model, the reduced amount of needed surplus due to revised stochastic model losses above the 200% RBC-ACL threshold would be calculated as 473% x 88.8% = 420%.

8) Multiplying the sum of the stochastic model loss (420%) and the baseline 200% by the premium growth factor of 1.424 yields 883% as the needed surplus.

Thus, 75% (= 958% - 883%) of the RBC-ACL number of $100.3 million yields a reduction of $75 million from required protective surplus at the 98th percentile at 12/31/2013 due to eliminating these six Other Risk factors – all other assumptions being unchanged.

SECTION 6: Validation

Summary

In this section of this report we focus on the need for validation of the model and its key assumptions and on Rector's failure to validate appropriately. Validation is a critical step in determining whether key assumptions are appropriate and whether a model generates reliable outcomes. Rector and Milliman have provided very little validation of assumptions and results; Rector is unable to fully explain, much less validate, the changes to its recommendation from 2009 to 2013; and FTI's attempt at validation of the model is ineffective. Due to the failure of Milliman, Rector, and FTI Consulting to comport to the requirements of Actuarial Standard of Practice #41 in this regard, we are left to evaluate a black box. We find that the results of this black box are, on their face, unreasonable; and we explain why the FTI attempt at validation is ineffective.

Details

Validation is a critical step in determining whether key assumptions are appropriate and whether a model generates reliable outcomes. Rector recognizes this to be the case and included the following statement in its 2009 report:

> "[T]he Milliman methodology does not validate GHMSI historical results over the last 13 years. Based on a statistical analysis of the Milliman loss curve, it seems highly improbable that GHMSI's actual results could have been generated using the Milliman approach, a critical test for the validity of any modeling approach." [70]

In Rector's most recent report[71] it expands upon this theme:

> "[W]e performed various tests to validate the general accuracy and completeness of the Milliman model and assumptions, as revised to take into account our findings and conclusions. The validation tests included tests both as to specific assumptions and as to the model as a whole. Those tests enabled us to conclude, as referenced elsewhere in this Report, that it is appropriate to use the Milliman model as a way of analyzing GHMSI's surplus position and that key assumptions incorporated into the model, as adjusted, are appropriate."

As the Rector report does not detail any of the validation tests referenced above that Rector may have performed, we made the following data request to Rector on January 28, 2014:

> Please state all the validation tests that were performed and provide us the data from these tests that confirm the appropriateness of the Milliman model and the assumptions used in it.

In response to this request we received a copy of a memo from Jim Toole of FTI Consulting to Rector & Associates dated February 7, 2014, with the subject heading "Milliman Pro Forma

[70] Page 5 of Rector & Assocs., Inc., *Report to the D.C. Department of Insurance, Securities and Banking: Group Hospitalization and Medical Services, Inc.* (July 21 2010).
[71] See page 34 of Rector & Associates, Inc., *Report to the D.C. Department of Insurance, Securities and Banking*, (December 9, 2013).

Projection Model Methodology Validation". On February 19, 2014, we made a second data request that included the following:

> Data Request #5: Appleseed asked for all data for all validation tests Rector performed. Please confirm that there is no additional validation information other than the FTI memo dated February 7, 2014, which was provided to us.

A letter from Commissioner McPherson was received on March 14, 2014 stating that the FTI Consulting memo of February 2014 to Rector & Associates "describes the validation methods that were used." Accordingly, the February 7, 2014 FTI Consulting memo appears to be the complete record of any validation tests that Rector may have performed – either on Rector's use of the model or on the assumptions used in the model.

The February 7, 2014 FTI Consulting memo explains its validation as follows:[72]

> FTI Consulting has compared GHMSI's historic financial results to those generated using Milliman's Pro Forma Financial Projection Model methodology to assess the reasonableness of the Milliman approach.
>
> Validation of historic results plays a significant role in confirming that a projection model is not unreasonable, and significant deviations from historic experience should be explainable.
>
> FTI has performed a model validation of overall results by comparing the historic changes in actual statutory surplus to results using the Milliman pro forma projection methodology (Appendix A).
>
> In validating the historical results to the model output, the question of what historical time period to choose is important.
>
> In more recent years GHMSI's underwriting results have been less volatile and more profitable. In the period from 1996 to 2010 the company did not experience an underwriting loss on their Non-FEP business and made significant profit margins.
>
> FTI revised the rating adequacy assumptions of the Milliman Model to more accurately reflect the lower historical underwriting variability experienced in the past 15 years.
>
> However, additional variability for ACA has been added prospectively which cannot be validated in the historical experience.

FTI Consulting's memo fails to comport to the requirements of Actuarial Standard of Practice #41[73] which requires an actuarial communication such as the FTI memo to "state the actuarial findings, and identify the methods, procedures, assumptions, and data used by the actuary with sufficient clarity that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary's work as presented in the actuarial report." None of this has been provided to us or, we assume, to the Commissioner.

[72] Pages 1, 2 of the FTI Consulting memo to Rector and Associates concerning Milliman Pro Forma Financial Projection Model Methodology Validation.

[73] See Section 3.2 on page 3. http://www.actuarialstandardsboard.org/pdf/asops/asop041_120.pdf.

Instead, we have been provided only the following summary conclusion[74]:

> FTI reviewed the actual surplus changes for one year periods 2001 through 2012 and compared these to the median one-year change estimated based upon assumptions from the Milliman model. A comparison would indicate that the median one-year estimated surplus growth for Milliman is 2% lower as a percent of Non-FEP premium than the median surplus growth of the actual experience during this period. However, the Milliman growth assumption is within one standard deviation of the actual one-year surplus changes. Given that the period from 2001 - 2012 was punctuated by a few years with unusually high underwriting results and surplus growth, the overall median output from the capital model is not unreasonable.

The above excerpts from the 2/7/2014 FTI Consulting memo support the following conclusions:

1) Validation against the last 12-15 years of GHMSI experience is appropriate:

    a. FTI's validation test was against results from 2001 to 2012.

    b. FTI acknowledged that the period of 1996 to 2010 was a less volatile period for underwriting results rather than going back to 1980.

2) Rector believes that a growth assumption within one standard deviation of the actual historical results is acceptable.

However, the memo documents critical deficiencies in FTI Consulting's validation process:

1) FTI apparently did not perform validation tests against any of the key assumptions used in the Milliman modeling process. FTI failed to do so despite the assertion in the Rector Report, already noted, that the "validation tests included tests both as to specific assumptions and as to the model as a whole."

2) FTI does not document how it used the assumptions of the Milliman model to generate 1-year historical changes in surplus to compare to GHMSI actual results – although we assume this validation was done by comparing the actual change in GHMSI surplus with Milliman pro forma projections. We have asked for, but have not been provided, any detailed Pro Forma results[75]. Therefore, there is no way to assess the reasonableness of the comparison.

3) FTI states that it "revised the rating adequacy assumptions of the Milliman Model to more accurately reflect the lower historical underwriting variability experienced in the past 15 years." However, FTI does not document the basis for the revisions or precisely what revisions were made to address this issue specifically.

4) FTI does not document the basis for or how "additional variability for ACA has been added prospectively".

[74] Page 1 of the FTI Consulting memo to Rector and Associates concerning Milliman Pro Forma Financial Projection Model Methodology Validation.

[75] The only Pro Forma results we have been provided are one final outcome associated with one loss representing each of the 98th, 95th, 85th and 75th percentiles of Stochastic Model results, respectively.

5) FTI states that, in its one performed validation test (discussed in detail below, in point #7), it validated Pro Forma results to one standard deviation below the historical median surplus change. The Median is at the 50th percentile of results; one standard deviation below the median is at the 16th percentile of results. If the Milliman model calculates a 98% confidence based on reconciliation at one standard deviation below the median, then statistically Milliman is really calculating a 99.8% confidence level of protection (i.e., 98% confidence is normally associated with 2.054 standard deviations above the mean, but 3.054 standard deviations above the mean would be associated with a 99.8% confidence level).

6) Validating the median output value may be one step in validation, but it is not sufficient. The whole purpose of the Milliman model or any model used to calculate needed surplus is not to provide protection against the median, but to provide protection against outlier results. Because it is outlier results that may endanger the surplus of the company, an appropriate dispersion of results is the most crucial requisite for validation. Yet the median says nothing about the dispersion. This can be illustrated by the following examples, showing numerical series with the same median value, 2%, but very dissimilar dispersions:

   - Example 1: -1%, 1%, 2%, 3%, 5%
   - Example 2: -40%, -30%, 2%, 3%, 6%

   Knowing that the medians are identical tells nothing about whether either example is appropriately predictive of outlier results. Example 2 would require significantly more surplus than Example 1.

7) **The one validation test FTI conducted** – comparing the historical one-year changes in surplus to one-year surplus changes estimated based on assumptions from the Milliman model – **does not in fact validate the Milliman model. That is because:**

   a. The most important assumption in the Milliman model according to Rector[76] is the RAAF factor. Rector's assumptions for this factor with respect to the magnitudes of gains and losses run from a +30.1% to a -18.1%. The testing that FTI did produced Pro Forma results that range from +9.6% to -3.4%. This variability of Pro Forma results is much less than that in their RAAF factor assumption. Because it is variability that drives the need for surplus, FTI's Pro Forma results cannot be thought to validate the model.

   b. The driver of surplus needs in the Milliman model is extreme results associated with high confidence intervals, not median results which occur at the 50th percentile of results. The Milliman model uses an extreme result (i.e., the 490,000th worst result out of 500,000 stochastic model results) to calculate the surplus needed for 98% certainty, as opposed to calculating needed surplus based on the median (i.e., 50th percentile) result.

[76] See page 21 of Rector & Associates, Inc., *Report to the D.C. Department of Insurance, Securities and Banking*, (December 9, 2013).

FTI Attempts to Reconcile the Change in Surplus Recommendations between the 2009 and 2013 Rector Reports

In a February 18, 2014 data request, Appleseed asked that Rector to explain in detail why its target surplus ratio changed from 600% (to avoid a 200% RBC level at a 99% confidence level) in its 2009 report, to 958% (to avoid a 200% RBC at a 98% confidence level) in its current report.

In response, FTI Consulting provided a memo dated March 6, 2014 that included two charts: the first chart showed the impact of changes Milliman made to its assumptions between 2008 and 2011; the second showed the impact of changes that Rector made between 2009 and 2013. However, Rector's target surplus increased 358 percentage points between 2009 and 2013, and the Rector chart only reconciles a difference of only 250 percentage points. Moreover, the 2009 Rector surplus determination was for a 99% certainty threshold and the 2013 Rector surplus determination was for a 98% certainty threshold. We estimate based on normal distributions that a 98% certainty would lower the 600% calculated in the 2009 Report by 48 percentage points, to 552%, requiring reconciliation of 406 percentage points.

We then requested that Rector provide further clarification regarding how these charts reconcile the 406 percentage point difference in light of the change in certainty threshold. Rector's response is contained within the May 13, 2014 letter to DC Appleseed from Acting DISB Commissioner Chester A. McPherson. Some highlights of this response are noted below:

1) Rector indicates that 150 basis points of the change in needed surplus from 2009 to 2013 are due to changes in the RAAF factor. On page 6 of its 2009 report, Rector states that it made no adjustments to Milliman's assumption for this risk category. On page 22 of its 2013 report Rector, provides a chart showing a significant reduction in RAAF risk from what Milliman used in its 2011 report[77]. Rector does not explain how reductions in RAAF risk vs. Milliman in 2013 produce a greater required surplus than in 2009 when it used the same RAAF factors as Milliman.

2) Rector indicates an increase of 190 basis points[78] due to eliminating Management Intervention from their analysis. Other than deleting the adjustment for reserve margins, their explanation for eliminating consideration of Management Intervention is either logically flawed or questionable. Here are comments on each aspect of Management Intervention that was incorporated in Rector's 2009 Report:

    a. Reserve margins: The 2009 report indicated[79] that these adjustments were between 0.5% and 1.5% - depending on the confidence level. We understood the 0.5% reduction was for the 95% confidence level and the l.5% reduction was for the 99% confidence level. Since the DISB directed that the reserve margins could not be released if there were a surplus squeeze, deleting consideration of reserve margins from the current analysis seems appropriate. However, this deletion

[77] See page 1 of Attachment 1 of the 2/27/2014 memo from Phyllis Doran to the DISB.
[78] See page 11 of the May 13, 2014 letter from DISB Acting Commission Chester A. McPherson to DC Appleseed.
[79] See page 8 of the 2009 Rector Report.

accounts for only 70 basis points[80] of the total 190 basis points that the 2009 Rector Report assumed for management intervention.

b. Infrastructure Investments: The 2009 report indicated[81] that these adjustments were between 0.0% and 1.0%, depending on the confidence level. Again, we understand the 0.0% reduction was for the 95% confidence level and the l.0% reduction was for the 99% confidence level. In eliminating this component of management intervention Rector claims that it was covered by reducing the probabilities and values in the "Unidentified Growth and Development" risk factor. As discussed in the Risk #12 subsection of the Other Risks section of this report, this entire risk factor is inappropriate and should be eliminated.[82]

   Moreover, in its 2009 Report, Rector made separate reductions (1.25% to 1.75%) to the Milliman Unidentified Growth and Development factors[83] so that the maximum factor was 3.75%. In the 2013 Rector Report the charge for this factor can be as much as 5%, although Rector reduced the frequency of any loss from this factor from 100% to 85%. It is not clear whether Rector has even made a net reduction to the Unidentified Growth and Development factor in its 2013 Report (or the magnitude of any reduction) from the amounts assumed in its 2009 Report.

c. Pricing Margins and Underwriting Standards - The 2009 Report indicated[84] that a 1.5% adjustment for changes in pricing margins and underwriting standards was made at each confidence level. Rector states[85] that it "recognized management's ability to increase pricing margins in its 2013 analysis of the probability distribution for the rating adequacy and fluctuation category." However, as discuss in the Rating Adequacy and Fluctuation Section of this report, Rector is unable to identify any specific changes made to the RAAF or associate them with any of the reasons it made changes to that factor.

   Rector eliminates this adjustment in its 2013 Report, explaining[86] that "it is, of course, no longer possible for insurers to employ underwriting techniques due to health care reform restrictions enacted by ACA." This explanation is applicable only to underwriting of <u>individuals</u>. Small group policies have been guaranteed issue since the early 1990's, and the ACA did not change insurer's abilities to underwrite large groups at all. Thus, Rector proposes to eliminate a factor that affects 100% of GHMSI's business due to a change that impacts less than 10% of GHMSI business.

[80] See page 13 of the May 13, 2014 letter from DISB Acting Commission Chester A. McPherson to DC Appleseed.
[81] See page 8 of the 2009 Rector Report.
[82] Which also corresponds to statements in the 2009 Rector Report that "we question whether it is appropriate to include an assumption for growth and development charges in the manner used by Milliman."
[83] See page 7 of the 2009 Rector Report.
[84] See page 8 of the 2009 Rector Report.
[85] See page 11 of the May 13, 2014 letter from DISB Acting Commission Chester A. McPherson to DC Appleseed.
[86] Ibid.

While management intervention can avert potential losses – including especially prolonged, multi-year losses, Rector now concedes no opportunity or role for management intervention. The complete lack of management intervention allows a convergence of assumptions, producing Rector's high, multi-year losses scenarios in the 2013 report. This contrasts sharply with the important role Rector gave to management intervention in its 2009 report, finding that GHMSI's needed surplus was nearly $200 million lower (i.e., 190 basis points) due to opportunities for management intervention.

Instances of management intervention to adapt to market opportunities and challenges are common, and they are the hallmark of successful companies. For example, Kaiser Foundation Health Plan, GHMSI's largest nonprofit competitor in the National Capital Area, posted record first-quarter profits in 2014. Citing efforts to reduce its cost trends while maintaining quality, Kaiser posted operating profits of $822 million for the first quarter 2014, a 49-percent increase over first quarter 2013[87].

Validation of UHAS Stochastic Model and Pro Forma Estimates

As noted elsewhere in this report, UHAS has recreated Rector's Stochastic Model and (to work around Rector's inadequate disclosure of methods and assumptions) made estimates of Pro Forma outcomes associated with the Stochastic Model estimates. We have compared the results of our recreated Stochastic Model and estimated Pro Forma outcomes to the limited data[88] that Rector has shared. The Comparison is shown below:

Chart 21

							No Chg in Prem Growth			
		Stochastic Model Loss @ Confidence Level								
	Rector						Est. Pro Forma vs. 200%			
Model	Assumptions Changed	98%	95%	85%	75%		98%	95%	85%	75%
Rector	Rector	-23.3%	-17.8%	-9.3%	-4.3%		958%	832%	571%	429%
UHAS	None	-23.2%	-17.6%	-9.1%	-4.1%		958%	795%	549%	404%
UHAS	Rector Stochastic Model results	-23.3%	-17.8%	-9.3%	-4.3%		958%	801%	555%	410%
	Ratio of Highlighted lines:	**100%**	**99%**	**98%**	**95%**		**100%**	**96%**	**97%**	**95%**

We believe the Stochastic Model comparison validates our recreated models within normal statistical fluctuation. The estimated Pro Forma outcomes also appear to reasonably correspond to those generated by the (presumably more sophisticated) Milliman/Rector Pro Forma model. Therefore, while we acknowledge that our Pro Forma estimates in this report are of necessity rough estimates, we believe they provide appropriate directional guidance to the results that would be generated by a more sophisticated model.

[87] http://www.bizjournals.com, May 9, 2014.

[88] See the data provided on pages 9 and 11 of the April 18, 2014 letter from DISB Interim Commission Chester A. McPherson to DC Appleseed.

Validation Conclusion

We believe that Rector should have undertaken significantly more validation. Appropriate validation would have included validation of *each key assumption* (such as the RAAF factor, EPAV Values, and other assumptions), in addition to appropriate validation of the model. Furthermore, Rector should fully reconcile its 2009 Report to its 2013 Report.

Due to the failure of Milliman, Rector, and FTI Consulting to fully comport with the requirements of Actuarial Standard of Practice #41 in regard to the Pro Forma model, we (and, we presume, also the Commissioner) are left to evaluate a black box without knowing the rationale for what goes in, what happens inside, and whether the output is reasonable or reliable.

Indeed our position is very much like Rector's during the first surplus review when it was asked to review the Final Lewin Group Report, which it also referred to as a black box. Specifically, Rector stated:

> "We conducted a thorough review of the Final Lewin Group Report – just as we had performed a thorough review of the initial Lewin Group report. However, the final Lewin Group report did not contain sufficient actuarial detail to allow a reader to determine exactly what the Lewin Group did or what its key assumptions were. In other words, in many ways the Final Lewin Group Report was a 'black box.' As such, there were limitations as to how much of Lewin Group's work could be used."[89]

The one validation test documented in the Rector report considered only the median Pro Forma results of the RAAF against historical experience. Such use of the median means that the attempted validation is wrong; failure to validate other key assumptions means that the attempted validation is insufficient. Moreover, the failure to provide all information about the Pro Forma part of the model, including any information on expense assumptions used, and the failure to disclose in accordance with good actuarial practice means that it remains a "black box."

The un-validated 2013 Rector Report does not provide a reliable basis for the Commissioner's decision.

[89] Page 5 of Rector & Assocs., Inc., *Rebuttal to September 3, 2010 Supplemental Report on Effects of Federal Health Care Reform as Submitted by Group Hospitalization and Medical Services, Inc.* (Sept. 20, 2010).

SECTION 7: The Pro Forma Model

Summary

The Pro Forma model is the second phase of the Milliman model. Losses corresponding to various confidence levels that are generated by the Stochastic Model are input to the Pro Forma model in order to determine what beginning surplus is needed to exceed an ending surplus target. The Pro Forma model incorporates numerous assumptions – including assumptions about policyholder growth, pricing margins, expenses, investment income, taxes, miscellaneous income, etc.

While DC Appleseed requested documentation of all the assumptions used in the Pro Forma model, some key assumptions (notably projected expenses and policyholder projections) were withheld, presumably as being proprietary to GHMSI. Instead, we were provided four outcomes from the Pro Forma model that were asserted to correspond to the only four gain/loss outcomes that were put through the Pro Forma model at Rector's request[90]. Thus, we have not been able to replicate the Pro Forma model exactly but, as shown in the "Validation of UHAS Stochastic Model and Pro Forma Estimates" subsection of the Validation section of this report, we have been able to use a simplified approach to estimating the Pro Forma outcomes that reasonably replicates the four outcomes provided to us.

Details

We were provided four outcomes from the Pro Forma model that were asserted to correspond to the only four gain/loss outcomes that were put through the Pro Form model at Rector's request[91]. However, in a memorandum dated February 7, 2014 to Rector and Associates, Jim Toole of FTI Consulting further addressed the issue, stating:

> FTI has performed a model validation of overall results by comparing the historic changes in actual statutory surplus to results using the Milliman pro forma projection methodology (Appendix A)… FTI reviewed the actual surplus changes for one year periods 2001 through 2012 and compared these to the median one-year change estimated based upon assumptions from the Milliman model.

It appears from this statement that FTI Consulting ran the Milliman model multiple times for validation purposes using some sort of historical gain/loss inputs to test the Pro Forma model's ability to replicate historical results. There should not be anything proprietary about historical data, and yet we were provided no detailed information about the assumptions used in the Pro Forma model during this validation process[92].

[90] See page 11 of the April 18, 2014 letter from DISB Interim Commissioner Chester A. McPherson to DC Appleseed.
[91] See page 11 of the April 18, 2014 letter from DISB Interim Commissioner Chester A. McPherson to DC Appleseed.
[92] We were provided the results of these Pro Forma model runs in Appendix A of the February 7, 2014 FTI memo. As discussed in the Details subsection of the Validation section of this memo, such results did not validate the Milliman Pro Forma model.

Milliman, Rector, and FTI Fail to Explain their Work in Accordance with Actuarial Standards of Practice

As noted above, many assumptions go into the Pro Forma model. The documentation of assumptions provided by Milliman, Rector, and FTI is entirely inadequate. It fails to "state the actuarial findings, and identify the methods, procedures, assumptions, and data used by the actuary with sufficient clarity that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary's work as presented in the actuarial report" as required by Actuarial Standard of Practice #41[93].

[93] See Section 3.2 on page 3. http://www.actuarialstandardsboard.org/pdf/asops/asop041_120.pdf.

Section 8: Other Considerations

Summary

Several important aspects of the modeling and estimation process have not been examined in the preceding sections: covariance, sensitivity and confidence levels. In this section we examine each of these aspects and conclude with a chart that summarizes the impact on required surplus of many of the considerations discussed in this report.

Covariance

A number of factors used in the Stochastic Model and Pro Forma model are interdependent and results for those factors vary as other factors change. As a simple example, an increase in the loss that is input from the Stochastic Model to the Pro Forma model will reduce the Pro Forma model's Investment Income result, compared to the result when a lower loss is input from the Stochastic Model.

Looking at the Stochastic Model in isolation, we can see that changes resulting from changes in one assumption cannot simply be added to results from changes in another assumption. For example, consider the chart below, which summarizes changes in the Stochastic Model. At the 95% Confidence Level, changing the RAAF in isolation has a 4.5% (17.6% - 13.1%) impact on the projected Stochastic Model loss; changing the EPAV factor in isolation has a 7.2% (17.6% - 10.4%) impact. However, changing both the RAAF and EPAV factors has an 11.4% (17.6% - 6.2%) impact — 0.3% less than the sum of the isolated impacts (4.5% + 7.2% = 11.7%). This interdependence of variables is called covariance.

Chart 22

	Stochastic Model Loss @ Confidence Level		
Assumptions	**98%**	**95%**	**90%**
Rector	-23.2%	-17.6%	-12.5%
Rector w/Modifed Other	-20.6%	-14.6%	-9.0%
Rector w/ Modified RAAF	-16.6%	-13.1%	-9.8%
Rector w/ Modified EPAV	-15.8%	-10.4%	-4.9%
Rector w/Modified RAAF & EPAV	-10.4%	-6.2%	-2.3%
Rector w/Mod RAAF,EPAV & Other	-7.7%	-3.5%	0.8%

One of the challenges we have, due to lack of complete information[94], is that we cannot fully replicate the Pro Forma model and, therefore, we are not fully able to evaluate the magnitude of the changes in certain variables that will result from potential covariance. Therefore, for this report we have of necessity made some estimates of how changes from the Stochastic Model will impact the Pro Forma model and ignored potential covariance in the Pro Forma model. Of

[94] Although our simplified approach to estimating the Pro Forma outcomes matches pretty well with the limited Pro Forma outcomes we have been provided. See the Validation Of UHAS Stochastic Model and Pro Forma Estimates subsection of the Validation section of this report.

course, our preference would be to have a model that is completely understood and vetted by all parties, and to be able to fully evaluate the impact of changes in certain variables. However, this is not possible without further disclosure by Rector/Milliman/GHMSI of certain assumptions in the Pro Forma model.

Sensitivity Testing

A good actuarial model is replicable and allows for sensitivity testing. The June 2013 draft of Actuarial Standards of Practice on Modeling states in Section 3.2.1 that the actuary should confirm the "model's ability to perform stochastic analyses or stress testing, and the model's ability to identify possible volatility around expected values." Milliman/Rector have stated that their stochastic modeling processes did not retain certain key elements (values of individual factors as well as the random numbers that created such factors). Thus, their processes preclude exact replication and hinder sensitivity testing to identify possible volatility around expected values.

When we replicated Milliman/Rector's Stochastic Model, we retained the outcomes of all 14 variables for each of the 500,000 runs. We also retained the 7 million random numbers that were used to generate each of the 14 variables for the 500,000 runs. By retaining the random numbers, we are able to exactly replicate various runs of the Stochastic Model by reusing those random numbers, identify possible volatility around expected values, and measure the impact of changes in any (or all) of the assumptions without fluctuation in results due to randomness.

To the extent that the probability distributions and associated values in the various risk factors had any degree of judgment incorporated into them, it would be poor actuarial practice to omit sensitivity testing of the impact of the judgment components. Neither Milliman nor Rector has provided information suggesting that any of the judgment decisions they incorporated in the magnitudes and probabilities of risk were subjected to sensitivity testing.

Confidence Levels

The significance of choice of confidence level is illustrated in the following chart, which shows what the model used in the 2013 Rector Report would require in terms of protective surplus (**with no changes in any of Rector's assumptions**) based on choice of confidence level:

Chart 23

Values Associated with 2013 Rector Report						
Based on a Normal Distribution						
And 12/31/2013 $100.3 million RBC-ACL						
		vs. 200%	vs. 375%		vs. 200%	
Confidence	Standard	Required	Required	Change in	Capital & Surplus	Increase
Level	Deviations	RBC Ratios	RBC Ratios	RBC Ratio	Required	Required
75%	0.676	451%	626%		452,003,570	
76%	0.707	462%	637%	12%	463,535,378	11,531,808
77%	0.739	474%	649%	12%	475,439,180	11,903,802
78%	0.772	486%	661%	12%	487,714,976	12,275,796
79%	0.807	499%	674%	13%	500,734,760	13,019,784
80%	0.842	512%	687%	13%	513,754,543	13,019,784
81%	0.878	526%	701%	13%	527,146,321	13,391,777
82%	0.914	539%	714%	13%	540,538,098	13,391,777
83%	0.956	555%	730%	16%	556,161,838	15,623,740
84%	0.996	570%	745%	15%	571,041,591	14,879,753
85%	1.037	585%	760%	15%	586,293,337	15,251,746
86%	1.080	601%	776%	16%	602,289,072	15,995,734
87%	1.127	618%	793%	17%	619,772,781	17,483,709
88%	1.175	636%	811%	18%	637,628,484	17,855,703
89%	1.224	654%	829%	18%	655,856,181	18,227,697
90%	1.282	676%	851%	22%	677,431,822	21,575,641
91%	1.341	698%	873%	22%	699,379,458	21,947,635
92%	1.405	721%	896%	24%	723,187,062	23,807,604
93%	1.474	747%	922%	26%	748,854,635	25,667,573
94%	1.555	777%	952%	30%	778,986,134	30,131,499
95%	1.645	810%	985%	33%	812,465,578	33,479,443
96%	1.751	850%	1025%	39%	851,896,922	39,431,345
97%	1.881	898%	1073%	48%	900,256,118	48,359,196
98%	2.045	958%	1134%	60%	960,566,243	60,310,124

As can be seen, each 1 percentage-point increase in the confidence level requires an increasing amount of surplus. The required increase in surplus curve is exponential in shape, with a 1% change from a confidence level of 79% to 80% only requiring a $13 million increase in surplus while an increase in confidence level from 97% to 98% requiring a $60 million increase in surplus.

A similar chart based on the 2009 Rector Report using the 600% RBC recommendation and based on its stated 99% confidence level would be as follows:

Chart 24

Values Associated with 2009 Rector Report						
Based on a Normal Distribution						
And 12/31/2013 $100.3 million RBC-ACL						
		vs. 200%	vs. 375%		vs. 200%	
Confidence	Standard	Required	Required	Change in	Capital & Surplus	Increase
Level	Deviations	RBC Ratios	RBC Ratios	RBC Ratio	Required	Required
75%	0.676	316%	491%		317,048,141	
76%	0.707	322%	497%	5%	322,391,165	5,343,024
77%	0.739	327%	502%	6%	327,906,544	5,515,379
78%	0.772	333%	508%	6%	333,594,279	5,687,735
79%	0.807	339%	514%	6%	339,626,726	6,032,446
80%	0.842	345%	520%	6%	345,659,172	6,032,446
81%	0.878	351%	526%	6%	351,863,974	6,204,802
82%	0.914	357%	532%	6%	358,068,776	6,204,802
83%	0.956	364%	539%	7%	365,307,711	7,238,936
84%	0.996	371%	546%	7%	372,201,936	6,894,224
85%	1.037	378%	553%	7%	379,268,516	7,066,580
86%	1.080	386%	561%	7%	386,679,807	7,411,291
87%	1.127	394%	569%	8%	394,780,520	8,100,714
88%	1.175	402%	577%	8%	403,053,589	8,273,069
89%	1.224	410%	585%	8%	411,499,014	8,445,425
90%	1.282	420%	595%	10%	421,495,640	9,996,625
91%	1.341	431%	606%	10%	431,664,620	10,168,981
92%	1.405	442%	617%	11%	442,695,379	11,030,759
93%	1.474	453%	628%	12%	454,587,916	11,892,537
94%	1.555	467%	642%	14%	468,548,721	13,960,804
95%	1.645	483%	658%	15%	484,060,725	15,512,005
96%	1.751	501%	676%	18%	502,330,420	18,269,694
97%	1.881	523%	698%	22%	524,736,649	22,406,229
98%	2.045	552%	727%	28%	553,002,969	28,266,320
99%	2.327	600%	775%	48%	601,607,250	48,604,281

The impact of the selection of the appropriate confidence level is illustrated in the following chart:

Chart 25

		Permissable Surplus (Using Given Confidence Levels of Avoiding 200% RBC)								
					No Chg in Prem Growth			Revised Prem Growth		
	Rector	Stochastic Model Loss @ Confidence Level			Est. Pro Forma vs. 200%			Est. Pro Forma vs. 200%		
Model	Assumptions Changed	98%	95%	90%	98%	95%	90%	98%	95%	90%
UHAS	None	-23.2%	-17.6%	-12.5%	958%	795%	647%	752%	625%	509%
UHAS	Corrected RAAF	-16.6%	-13.1%	-9.8%	766%	665%	569%	602%	522%	447%
UHAS	Corrected EPAV	-15.8%	-10.4%	-4.9%	743%	587%	427%	584%	461%	335%
UHAS	Corrected Other	-20.6%	-14.6%	-9.0%	883%	708%	546%	693%	556%	429%
UHAS	Corrected RAAF & EPAV	-10.4%	-6.2%	-2.3%	587%	465%	352%	461%	365%	276%
UHAS	Corrected RAAF,EPAV & Other	-7.7%	-3.5%	0.8%	508%	386%	262%	399%	303%	205%

This chart illustrates that four factors largely drive the Rector 958% surplus recommendation: the RAAF and EPAV risk factors, the choice of premium growth, and the confidence level selected. The magnitude of the impact of the Other Risk factors is less than half of the impact of any of the other four factors examined.

The above table indicates that, by using more reasonable (and validated) RAAF, EPAV, and other risk factor assumptions, and also revising the premium growth assumptions to a level that can be validated against GHMSI's experience, GHMSI's permissible surplus level would be much less than Rector recommends – estimated at 399% RBC-ACL. This estimate does not even account for GHMSI's expense inefficiency and the reductions in surplus that could be maintained if they could simply operate at the average efficiency level of their peer competitors. Nor does this estimate account for any reduction that would be required if the confidence level were reduced from 98%.

One other note: Looking at the 90% confidence level under the revised premium growth table and at the last line where the RAAF, EPAV and Other risk adjustments have been made, someone might ask how the company can be 90% confident of not falling below 200% if they're only at a 205% confidence level? The answer is that the stochastic model shows that with the revised assumptions of this scenario more than 90% of the time there will be a net gain vs. a loss. So, if the company's expectation after examining all its risks is that there will be a net gain, not much surplus is needed to protect against risks.

ATTACHMENT 1: CURRICULUM VITAE

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BUSINESS EXPERIENCE

UNITED HEALTH ACTUARIAL SERVICES, INC., Summerville, South Carolina
Senior Consulting Actuary, 8/08 to present

Provide life and health actuarial and management consulting services for a wide range of individual and group medical and supplemental insurance products for both insured and self-insured plans. Health products include Major Medical, Medicare Supplement, Long Term Care, Dental, Disability, Accident only, Cancer, Critical Illness and Hospital Indemnity. Services provided include:

Compliance and statutory reporting
Expert witness and litigation support
Merger & acquisition support
Peer review
Risk Management
Experience and financial analysis
Liaison and negotiation support
All aspects of company management
Product/plan development and pricing/re-pricing
Valuation/financial reporting and related support

Sample of Recent Services Provided

- Review Medical rate filings on behalf of CMS/HHS
- Review LTC rate filings on behalf of states of CA and WV
- Serve as expert witness in evaluating insurer Surplus Adequacy
- Serve as Appointed Actuary for multiple insurance companies
- Develop and file Disability, Critical Illness and Cancer products in NY
- Develop group and individual Voluntary product portfolios for filing in all 50 states
- Peer review Medicare Supplement pricing and filing work
- Serve as damages expert witness in arbitration between two insurers

ASSURANT HEALTH, MILWAUKEE WISCONSIN
Senior Vice President, Strategic Development, 4/07 to 5/08
Provide leadership of selected initiatives for future company growth including: 1) Be expert resource for new limited benefit health business; 2) Develop international opportunities for medical products; and 3) Explore M&A opportunities in the individual and small group major medical market space.

Senior Vice President and Chief Actuary, Group Markets, 11/04 to 3/07
Provide leadership of all actuarial functions (staff of 36) to support business unit including product development, product pricing, forecasting, trend analysis, risk management, advanced analytics, and data management. Oversee corporate-wide functions related to network management and pharmaceutical pricing. Review financial reporting including reserve development and make monthly presentations to corporate CEO and executive management team on business initiatives and results. Participant in corporate Compliance and Government Relations steering committees. Help lead business unit strategic planning and consumer marketing initiatives. Interact with distribution partners to encourage effective partnerships. Be the face of Group Markets to various constituencies,

Vice President, Development, 7/03 to 11/04
Create a new business for Assurant to compete with other supplemental and limited benefit health insurers such as AFLAC, Colonial, and Allstate. Responsible for developing and managing all

aspects of the business including: crafting business strategy, designing product portfolio, overseeing actuarial work, getting products approved in target states, producing marketing plan, and setting up administration through a third party administrator (TPA). Act as P&L leader in monthly financial reviews.

AFLAC INC., COLUMBUS GEORGIA
Senior Vice President, Corporate Risk Management, 5/01 to 5/03

Create and lead the worldwide risk management efforts in newly created corporate function of international insurer. Primary responsibility to consult with and help other senior officers identify, measure, evaluate, monitor, and mitigate all significant business risks. Oversee staff of 8 in Japan. Participate in corporate governance and disclosure committees. Review quarterly financial results, analysis and reporting with financial personnel. Other financial duties as assigned by President.

CONSECO, CARMEL INDIANA
Senior Vice President, Health Actuarial, 3/97 to 5/01
Interim President, Health Business Unit, 9/99 to 1/00

Built and led the newly created health division of the actuarial department to support all actuarial aspects including valuation, financial reporting, product design, pricing and administration of the $1.3 billion annual revenue Carmel-based health businesses of Conseco. Primary product lines supported: Medicare Supplement, Long Term Care, Specified Disease, Group Dental and Disability, Major Medical. Lead Product Steering Committee. Lead divisional budgeting process ($120 million annual budget). Review financial results with executive management and external auditors. Make presentations to rating agencies, analysts and investors. Assist in analyzing potential health acquisitions. Assess need for, negotiate and administer health reinsurance.

CAPITOL AMERICAN FINANCIAL CORP., CLEVELAND OHIO
Senior Vice President and Chief Actuary, 6/91 to 3/97
Vice President and Chief Actuary, 11/89 to 6/91
Vice President and Actuary, 5/88 to 11/89

Responsibility for all actuarial functions including valuation, financial reporting, product design, pricing and administration for primarily supplemental health products. Responsible for filing and seeking approval of products with state insurance departments. Built high-performing actuarial and compliance staff of 19. As member of Senior Leadership Team, a key participant in all strategic planning, budgeting and corporate-wide decision-making. Regular participant in corporate board and board committee meetings. Director of insurance subsidiaries. Frequent company representative with insurance departments and attendee/participant at NAIC meetings.

LOYAL AMERICAN LIFE, MOBILE ALABAMA
Vice President and Chief Actuary, 5/87-5/88
Chief Actuary, 4/86-5/87

First in-house actuary. Responsible for all actuarial functions for traditional and interest-sensitive life and supplemental health products sold through captive agents in credit union market, payroll deduction, direct mail and brokers. Negotiated and administered both risk-transfer and surplus-relief reinsurance. Member of three-officer team responsible for day-to-day operations of the company. Built actuarial staff of six.

EARLIER CAREER, ATLANTA GEORGIA AND KNOXVILLE TENNESSEE, *5/80-4/86*

- Designed and priced a full range of traditional and interest-sensitive life and annuity products for the brokerage market and captive agents.
- Developed and priced supplemental health products.

- Assisted with pricing of group and credit products.
- Created and programmed illustration software.
- Facilitated filing and approval of life and health products with insurance departments.
- Assisted in the pricing and administration of reinsurance.

EDUCATION/MEMBERSHIPS

GEORGIA STATE UNIVERSITY
BBA, major in Actuarial Science, 1980

SOCIETY OF ACTUARIES
Fellow (FSA), 1987
Chartered Enterprise Risk Analyst (CERA) – 2008
Chair of Enterprise Risk Management Sub-group, 2002 – 2004

AMERICAN ACADEMY OF ACTUARIES
Member (MAAA), 1984

LIFE OFFICE MANAGEMENT ASSOCIATION
Fellow (FLMI), 1981

AMERICA'S HEALTH INSURANCE PLAN (FORMERLY HEALTH INSURANCE ASSOCIATION OF AMERICA)
Chairman, Member of various committees 1995 - 2008

THE AMERICAN COLLEGE
Various CLU Credits obtained

RECENT INDUSTRY ACTIVITIES

AMERICAN ACADEMY OF ACTUARIES
Member of Health Solvency Task Force, March 2010 – present
Member of LTC Rating Group, May 2011 – present

SOCIETY OF ACTUARIES, HEALTH SECTION
Heath Watch article, "Is There Currently an Underwriting Cycle", October 2012