



Recommended Surplus Range for GHMSI: Approach and Considerations for Determining the Appropriate Range of Surplus

Prepared for GHMSI

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October 29, 2009

Table of Contents

EXECUTIVE SUMMARY	1
Our Approach.....	1
Prospective Surplus Modeling and Model Results	2
Comparable Blue Plan Modeling and Outcome	2
Conclusion.....	3
BACKGROUND	4
Purpose of Our Analysis	4
MINIMUM SURPLUS REQUIREMENTS VERSUS A WORKING SURPLUS RANGE.....	6
History and Limitations of the RBC Calculation	6
Development of a Working Surplus Range.....	7
SURPLUS CONSIDERATIONS FOR GHMSI	10
Access to Capital	10
Economic Concentration Issues	10
Regulatory and Legislative Issues	11
Business Risks	11
SURPLUS RANGES IN THE CONTEXT OF PROSPECTIVE MODELING	13
Model Characteristics	13
Cyclicality	15
Modeling Trend Assumptions	17
Modeling Underwriting Outcomes	18
Model Results	19
SURPLUS NEEDS IN THE CONTEXT OF COMPARABLE PLANS	22
CONCLUSION	24

Executive Summary

Over the past several months, the District of Columbia Department of Insurance, Securities and Banking (DC DISB) along with the Maryland Insurance Administration (MIA) have initiated two separate analyses into the level of surplus retained by CareFirst's subsidiary, Group Hospital and Medical Services, Inc (GHMSI). Although the amount of surplus retained by CareFirst, and its subsidiaries, has been under scrutiny by both jurisdictions for several years, recent events, particularly those undertaken in DC, have raised the issue of the "appropriate" amount of surplus to the forefront of the current discussion.

The Lewin Group (Lewin) has been retained by CareFirst/GHMSI to model the "appropriate" range of Risk Based Capital (RBC) that GHMSI executives and leadership could consider in managing the company. The purpose of this report is to identify a recommended surplus range, and to discuss the risks, unique market considerations, and other factors that Lewin has taken into account to calculate the recommended RBC range.

Our analysis includes development of working surplus ranges based on current company financial information and interviews with company staff, as well as an examination of the historical surplus levels of similar Blue plans.

Our Approach

The NAIC developed the concept of RBC to assist with the monitoring of insurers in order to be forewarned of potential insolvency. By designating a minimum solvency level known as the authorized control level (ACL), the NAIC created a standardized approach to insurance company monitoring. The development of the RBC and ACL give regulators objective tools to monitor minimum amounts of capital needed to maintain financial viability; however, the RBC and ACL thresholds were not developed as tools for determining adequate or excess capital to be held by an insurer. Appropriate surplus must be held by an insurer to withstand the risks faced and to provide for capital needs that are above that of which can be paid for with current earnings. This report describes the amount of capital or 'working surplus' needed to maintain and thrive as an insurance company.

We developed our range of working surplus by using a projection model which estimates surplus requirements specific to GHMSI operations. The projection model uses the same broad categorization of risk as employed in RBC development, resulting in a range of risk outcomes.

The four categories of risk considered follow the RBC formula:

1. Underwriting Risk,
2. Asset Risk,
3. Cost of Capital and Credit Risk, and
4. Operational and Business Risk.

In addition to the risk categories listed above, surplus must also cover costs that maintain the insurer's business vitality:

1. Planned Capital Expenditures,
2. Anticipated Business Plan Changes,
3. Direct Subsidization of the Health Care Marketplace, and
4. Social Mission Philosophy and Obligation.

Our modeling took these considerations into account and modeled them in the specific context of GHMSI’s business, while also comparing GHMSI to historically similar Blue plans to verify the range of surplus fluctuations.

Prospective Surplus Modeling and Model Results

The projection of GHMSI experience was accomplished by estimating the underwriting losses and gains using Monte-Carlo simulation techniques. We also took into account the impact of trends, incurred claims, regulatory factors, investment income, expenses and changes in membership. The model uses experience from previous years to determine future premiums charged to customers that results in cyclical experience, which is similar to what occurs naturally in the health insurance market, known as the underwriting cycle.

The results of our Monte-Carlo simulations were compared with two important RBC thresholds – 375%, which is used by the Blue Cross Blue Shield Association to maintain a company’s trademark status, and, 200%, which is the NAIC’s company action level. Reaching either of these thresholds signals to the market that a carrier is under financial duress and would likely result in a loss of customer confidence and a subsequent loss of business.

Our analysis gave us the recommended range of surplus, which is noted below.

GHMSI’s Working Surplus Range	Low	High
% of RBC Level	750%	1000%
Months In Reserve (Excluding FEP)	3.9	5.2

Comparable Blue Plan Modeling and Outcome

To validate the analysis of the prospective model, we also conducted a comparison of GHMSI’s surplus to other Blue plans to interpret whether the levels of surplus held by GHMSI are reasonable

To examine historically similar Blue plans we examined the financial results of 10 similar non-profit Blue plans over the period 1992 – 2008. We compared capitalization levels by calculating surplus as a percent of revenue (SAPOR) for each of the plans and determining how the SAPOR changed over time. The number of cumulative down years of SAPOR was measured during any 10 year period to determine the magnitude of loss cycles recently experienced by similar plans. The down cycles ranged from 2 to 7 years in length. When we analyzed these cycles further and compared them to the same RBC discussed above, we attained a range of surplus that was comparable to the range attained by prospectively projecting GHMSI’s business.

Conclusion

Based on our surplus modeling, which includes both a projection of GHMSI's specific business conditions and a review of historical experience of similarly situated Blue plans, we conclude that an appropriate range of working surplus for GHMSI to hold is 750% - 1000% of the ACL. Our modeling indicates that GHMSI is currently holding an appropriate amount of working surplus.

Background

Over the past several months, the District of Columbia Department of Insurance, Securities and Banking (DC DISB) along with the Maryland Insurance Administration (MIA) have initiated two separate analyses into the level of surplus retained by CareFirst. Although the amount of surplus retained by CareFirst, and its subsidiaries, has been under scrutiny by both jurisdictions for several years, recent events, particularly those undertaken in DC, have raised the issue of the “appropriate” amount of surplus to the forefront of the current discussion.

As a result of the Medical Insurance Empowerment Amendment Act (MIEAA) in DC, the DC Insurance Commissioner is required to perform an annual assessment to determine if the amount of surplus retained by CareFirst’s subsidiary Group Hospital and Medical Services, Inc. (GHMSI) and attributable to DC is excessive or not.¹ The DC Insurance Commissioner, Ms. Gennet Purcell, held a public hearing on September 10, 2009 as a part of this assessment. The purpose of this hearing was to listen to testimony and commentary from CareFirst executives and their actuaries (Milliman), as well as from other interested organizations and stakeholders, that may assist the DC Insurance Commissioner in determining if the surplus retained by GHMSI is excessive. The Lewin Group (Lewin) testified at that hearing on behalf of CareFirst.

Mr. Ralph Tyler, MD Insurance Commissioner, was also present at the hearings and testified that Maryland was undertaking a similar review of GHMSI’s surplus levels. While acknowledging that the MIA’s and the DC DISB’s schedules do not coincide, Mr. Tyler asked “whether something could be done to accommodate the two reviews.”

Following the hearing, the DC DISB issued a determination and order stating that, in order to avoid conflict that could arise out of two separate determinations, that the DC DISB will “work with the MIA to coordinate both surplus reviews...”² The DC DISB has stated that it will release its findings by December 31, 2009.

Purpose of Our Analysis

Lewin was initially retained by CareFirst to perform an independent assessment of the range of risk based capital (RBC) suggested by Milliman for CareFirst’s subsidiary, GHMSI. In this analysis, Lewin stated:

“Our review of the development of surplus targets set forth by the Milliman report suggests that the approach and range of potential targets developed is generally reasonable. We have several models we might apply, and exercises such as the loss cycle model that can produce a range of answers based on input assumptions and output parameters. We might, therefore differ as to the precise RBC percentages recommended. However, the model applied is consistent with an approach we might undertake, the

¹ Under the Medical Insurance Empowerment Amendment Act (MIEAA), which was effective in March 2009, the DC DISB Insurance Commissioner is required to annually review the surplus “of any DC chartered hospital and medical services corporation” and determine whether the portion of the surplus attributable to the District is excessive.

² Order Enlarging time for the DISB to Issue Surplus Determination and Extension of Hearing Record, available at <http://disb.dc.gov/dizr/frames.asp?doc=/dizr/lib/dizr/pdf/09-mie-001.pdf>,

outcomes do not differ significantly from those we might expect, and the choice of probability for sufficiency among potential outcomes seems appropriate."

Our initial work did not provide the time needed for our own independent surplus modeling exercise to determine a Lewin-recommended "appropriate" level of RBC for GHMSI. Given the extension in the DC DISB timeline, Lewin has subsequently been asked to model the "appropriate" range of RBC that GHMSI executives and leadership could consider in managing the company. The purpose of this report is to identify a recommended surplus range, and to discuss the risks, unique market considerations and other factors that Lewin has taken into account to calculate the recommended RBC range.

Our analysis includes developing projected surplus ranges based on current company financial information and interviews with company staff, as well as an examination of the historical surplus levels of similar Blue plans.

Minimum Surplus Requirements Versus a Working Surplus Range

History and Limitations of the RBC Calculation

In the early 1990's, the National Association of Insurance Commissioners (NAIC) led the development of RBC standards to develop a formula-based measure reflecting the risks assumed by a Life and Annuity carrier. The result was the RBC Model Act. Health care insurers were not subject to many of the interest and investment matching risks of the Life and Annuity carriers. However, regulators were concerned about an increasing number of insolvencies among smaller health maintenance organizations (HMOs) and other health carriers. Additionally, regulators came to recognize that the nature of a carrier's contracts for the reimbursement of health care services, products offered, and general business operations introduced a fairly wide range of risks.

Recognizing the limitations of the original RBC Model Act when applied to health insurers, the NAIC developed the Health RBC Model Act in the late 1990's. The Health-based RBC calculations offer a standardized approach to developing a minimum solvency indicator, known as the authorized control level (ACL). This is a valuable metric because it is derived from, and included in, the NAIC annual statements. It provides regulators a consistent benchmark across a variety of carriers to take action based on risks as identified by a common formula. However, it is important to recognize that the formula was developed as an indicator of minimum acceptable surplus levels. In both its development and application, the RBC benchmark was developed and tested to provide regulators with an indication that an insurer's financial condition requires immediate monitoring and possible intervention.

Unfortunately, the fact that a recently computed RBC value is documented for each carrier offers a "common denominator" for comparison among carriers. Just as "months in reserve" or percent of revenue had been used to rank companies by relative levels of surplus, RBC-multiples have been used to develop broad rankings of financial strength. However, use of the RBC value for any measure other than as a regulatory minimum surplus is inappropriate:

- The RBC formula computes a static measure of currently required minimum surplus in the context of solvency requirements at a single point in time. It measures nothing with regard to issues long-term solvency in connection with future cash flows or vitality and other surplus requirements connected with long-term management of the plan.
- The RBC triggers were modeled only in terms of the ability to suggest that a carrier might not remain solvent should surplus fall below a trigger level.
- The development of the RBC formula included no consideration of a specific multiple of RBC as representing either "optimal" or "excessive" surplus.
- RBC values were designed to be computed from a finite set of entries available in NAIC reporting formats. The exact allocation of some of the reported elements and applicable factors can vary from entity to entity based on business mix and possibly allocation and reporting judgments on the part of those doing the reporting.
- Both in creating a common formula, and selecting the appropriate RBC factors for the formula, compromises were made which allow the formula to provide an adequate

determination of potential insolvency. However, these compromises were at the expense of a generalization that may not reflect specific surplus issues for a given carrier.

This in no way detracts from the RBC measure as a valuable tool in identifying problem situations which may require intervention from regulators. It merely suggests that while RBC measures are appropriate for identifying carriers with solvency problems, other metrics are more valuable for developing optimal working surplus targets.

Development of a Working Surplus Range

Given the limitations of the RBC in establishing an appropriate amount of surplus, we have employed an approach that is aimed at identifying a working surplus range. A working surplus range is defined as the surplus a specific insurer needs to maintain operations, and ranges are unique to an individual insurer and the market in which the insurer operates. Working surplus ranges can be developed by using a projection model which estimates surplus requirements specific to a plan's operations. The projection model uses the same broad categorization of risk as employed in RBC development, yet the end result is a quantification of the probabilities of a range of risk outcomes instead of a single factor to estimate the minimally acceptable surplus levels of the RBC formula.

In developing a working surplus range, we will follow the general risk categories used in the RBC formula³:

1. **Underwriting Risk.** This is the largest risk component creating surplus demands for health care insuring entities. Historical results, confirmed by an understanding of the general health care business model, show that surplus must be available to absorb potential multi-year adverse underwriting results.
 - Surplus is required for maintaining solvency in the face of anticipated long-term fluctuations in underwriting results for health care operations.
 - It is modeled in such a way as to reflect the unique underwriting characteristics and mix of business for the GHMSI products being offered.
 - Surplus requirements must also address non-routine catastrophic risks such as epidemics or natural disasters. Many of these non-routine risks can be categorized as “low probability / high impact” events.
2. **Asset Risk.** While the issue of matching assets to liabilities is not as significant as for life or property and casualty carriers, health care insurers face specific risks associated with their investments portfolio. Since health care insurer profit margins are relatively thin, investment income on accumulated surplus can be relatively significant.

³ The broad major categories of risk are addressed in the RBC formula and are therefore implicitly included to that extent in the historical comparisons of surplus held by other carriers. Underwriting and Asset risk can be modeled in a relatively straightforward set of scenarios. Operational and Business risks are more difficult to quantify, as they tend to represent low probability events, but with high impact. Part of the reason for establishing a working surplus range is to assure that some surplus might still be available under more common scenarios to cover these events.

- Working surplus must be available to handle the risk of short-term liquidity requirements in the face of adverse cash flow.
- Risk quantification must consider the impact of interest changes on investment contribution to surplus and on the value assigned to the assets which form the basis for surplus determination.

3. Cost of Capital and Credit Risk

- Surplus requirements must consider the impact of solvency and cash flow issues stemming from contracts with health care providers, self-funded employers, and other vendors.
- Surplus may have to absorb changes in the demand for capital expenditures and the cost of funding such initiatives.

4. Operational and Business Risk. Even “risk-free” products such as administrative services only include risks which surplus may be required to fund. Additionally, there are risks associated with the general business operations which may create adverse outcomes and resulting surplus drain.

- Litigation costs,
- Regulatory and Tax changes, including possible health care reform,
- Dramatic changes in membership distribution between products,
- Expense recovery as impacted by business and portfolio changes, and
- Business recovery costs associated with natural disasters.

Determination of working surplus levels can be achieved by modeling these risks using the specific risk parameters of GHMSI. The goal is to develop the probability of aggregate negative outcomes, and then, to establish sufficient surplus to weather these outcomes.

In addition to the above risk-based outcomes associated with solvency objectives, a working surplus range must include an allocation of surplus required to maintain the vitality of an insurer’s operations. These are not necessarily current liabilities, and may be somewhat flexible in terms of timing and scope. However, they characterize known future allocations of surplus required to maintain a specific insurer’s role in health care insurance and delivery. These vitality-related considerations include:

1. Planned Capital Expenditures

- Capital must be allocated to specific known or anticipated business initiatives which require a long-term horizon for completion and funding.
- These items are usually distinct from potential risk-based expenditures in that they tend to have very high probabilities of execution.
- These expenditures are typically multiple year commitments and are usually too costly to be directly included as operating expenses in rate development for any single year. Most not-for-profit plans finance such large-scale expenditures from surplus and investment returns on surplus.

2. Anticipated Business Plan Changes

- There can be significant long-term costs associated with product development required to react to market changes (e.g., operational changes to support consumer-driven health care).
- In addition to administrative cost, competitive pressures can impact product morbidity levels.

3. **Direct Subsidization of the Health Care Marketplace.** Plans with dominant market share in regulated markets are often constrained in their ability to fully charge for their cost of services. This can take the form of either regulatory constraints or an inability of employers and individuals to accept sizeable increases. In such cases, there may be a known subsidy in terms of a difference between known costs and rates charged. This scenario is particularly true for certain types of BCBS plans, such as GHMSI, who have a large market share within their respective markets.

4. **Social Mission Philosophy and Obligation.** BCBS and other non-profit plans tend to be more deeply involved in the overall social and economic aspects of their markets than plans with geographically diverse markets and relatively modest market share. In some markets, there is an explicit community benefit function that certain health insurers must meet, such as direct giving targets and open enrollment campaigns. Other markets lack explicit targets, but the plans, in and of themselves, have adapted a social mission philosophy which outlines community giving priorities and commitments. These social mission obligations can go well beyond the more narrow concerns of a for-profit or geographically diverse health care insurer and in order to meet these obligations in the future, must be considered in analysis of working surplus targets.

Surplus Considerations for GHMSI

Prior to modeling GHMSI's target surplus level, we needed to first assess the risks and capital demands, discussed above, within the context of GHMSI. GHMSI, like all insurers, faces certain constraints and issues specific to its operations. Identification and quantification of these risks and capital demands are the determining factors in establishing appropriate working surplus targets.

Access to Capital

If GHMSI is to remain competitive with their large commercial competitors, it must address technology and market initiatives with its own response.

One current example is the needed large-scale update to computer systems used for GHMSI administration of its insurance products. Recent market demands include improvements in technology to service new trends such as consumer driven health care products. Along with the rest of the health care industry, GHMSI faces the need for additional investment to allow it to offer members medical homes, communications improvements, data to feed consumer reporting related to quality and access, and the internal analysis to keep track of the emerging operational and cost data.

Since GHMSI lacks publicly-traded access to equity markets, funding for these initiatives places a demand on accumulated surplus and future gains from underwriting and investment. Even with the exception of "up-cycle years", market constraints limit the margin in rates available in any given year and thereby limit funding for these capital investments – even over a multi-year period. Therefore, working surplus targets must include the need for such capital investments as a means of spreading the cost over longer periods.

Economic Concentration Issues

Due to their geographical market limitations, GHMSI faces more concentrated economic risks than their geographically diverse competitors. Since the timing and depth of problems in a local economy can vary from region to region, geographically diverse carriers have some ability to shift marketing emphasis to weather a local downturn.

The ability of GHMSI to raise rates or sell new business can be significantly undermined by a downturn in the local economy, as we are now experiencing. Such downturns are doubly damaging, since they are typically associated with poorer investment returns. The contraction of the economy reduces the number of new employees being added to accounts and can often cause insured businesses to fail or drop their coverage. These lapses can increase overall claims cost morbidity as young healthy members are terminated, exactly at the worst possible time to increase rates.

In the metro-Washington DC area, the local economy is steadier because of having the Federal government within GHMSI's territory and the large FEP contract that GHMSI holds. The current economic downturn is expected to be slightly less severe in GHMSI's geographical footprint than it is in other parts of the country. Therefore, we do not expect to see the same

growth as experienced for the last five years, rather we expect flat commercial enrollment growth for the next three years.

Regulatory and Legislative Issues

GHMSI tends to become the “carrier of last resort” when the local or state government is faced with the problem of access to coverage. In the metro-DC area, GHMSI is required to offer guaranteed issue contracts to locally uninsurable residents. Additionally, GHMSI is required to pay premium tax in Virginia and in the District. Maryland requires GHMSI to provide community benefits equal to two percent of revenue. GHMSI generally meets the Maryland requirement through financial support of community benefits programs rather than direct payment of premium taxes.

Business Risks

All insurers face certain business risks in terms of changes in contractual relationships and risks being insured. In addition to the general potential business risks, several specific situations can be identified which might require a call on surplus while GHMSI adjusts to a change in these risk arrangements.

Federal Employees are covered under a unique arrangement.

GHMSI is a participant in a consortium of BCBS plans contracting with the federal government to offer benefit options to federal employees. The current GHMSI program involves consortium rate stabilization reserves with sufficient backing to render this a relatively low risk business. However, it consequently offers lower margins and therefore means that GHMSI cannot generate needed surplus on a third of its revenue. This program represents about 53% of GHMSI’s annual revenue and would clearly be a major shift in risk if contractual changes were made. When comparing results against other plans for either surplus levels or the ability to quickly generate needed contribution to surplus, the Federal program impact needs to be factored into the assessment of GHMSI.

Several situations regarding this program represent more unique risks, but are nonetheless issues which must be considered in GHMSI strategic and surplus planning:

- Events triggering a loss cycle for GHMSI will typically impact other carriers, and usually most of the BCBS plans providing coverage for FEP. In cases of significant plan losses due to trend pricing misses, the ability of the collective risk stabilization reserve to spread losses across plans will be jeopardized and GHMSI may actually have to fund losses from surplus.
- The FEP program is often quoted as a baseline for reform initiatives. Any changes to the program – whether as an expansion by extension to new members or some other restructuring – represent a potential change in RBC status for GHMSI. We did not consider these specifically, but most scenarios would represent a demand for higher surplus without any mechanism for funding such demand in the short term.
- CareFirst provides services for the administration of the entire FEP program for the coverage consortium. GHMSI and its sister companies enjoy a favorable

administrative expense arrangement through this plan by spreading general expense overhead as well as certain systems technology costs. The administrative arrangement may be revoked by the Blue Cross Blue Shield Association (BCBSA) if CareFirst should lose the BCBS trademark or fail in certain other service standard. These again represent issues that must be addressed in setting working surplus targets because they represent singular, but still potential, high-end surplus drawdown scenarios.

Investments and Pension Obligations

As noted previously, GHMSI's surplus serves to meet the company's RBC requirements. The investment of these funds provides an important additional source of revenue for the organization, returns on invested assets. GHMSI's investment portfolios are a key contributor to its profitability and cash flow; however, in economic downturns it can further exacerbate the organization's losses. Investment decisions are implemented by Management as directed by the Board Committee approved Investment Policy which is also used for other CareFirst entities.

GHMSI maintains an extremely conservative asset allocation, predominantly holding investment grade bonds. Despite the more conservative investment approach, in 2008 the organization still experienced investment losses that resulted in material reductions to surplus. In particular, surplus was reduced as a result of Other Than Temporary Impairment (OTTI) as well as pension funding necessities related to the organization's defined benefit pension plan.

Going forward in 2010 and beyond, GHMSI continues to be exposed to potential downturns in equity markets and further downgrades within fixed income securities that could result in material realized losses through OTTI. Lower bond and dividend yields could reduce projected investment income that has traditionally been used to offset premium rate increases in its various products. Furthermore, market declines could lead to additional funding requirements of the pension plan.

Surplus Ranges in the Context of Prospective Modeling

To prospectively model GHMSI's working surplus range for GHMSI management, we employed an actuarial model which uses the same broad categorizations of risk as employed in RBC development. However, the end result is a range of surplus outcomes rather than a specific minimum threshold.

In this case, we began with the pro-forma projections GHMSI employs to develop budgets. The model focuses on a multi-year projection based on a number of input variables typically used by actuaries and underwriters to model most likely financial outcomes. In many cases, unforeseen events or trends emerge which vary from these projections. Depending on the triggering event, these variances can range from minor to quite extreme.

Model Characteristics

One of the most significant surplus requirements is related to underwriting risk. This demand on surplus can be approximated by the amounts required to absorb accumulated underwriting losses during a multi-year loss cycle. These loss cycles are actually cause and effect outcomes of the dynamics of pricing reaction to a triggering event. Therefore, our stochastic model is designed to develop a probability-weighted set of outcomes resulting from such triggering events based on the mechanics by which GHMSI must rate its business.

Our model develops an estimate of income statement underwriting gains and losses, since this is the major component of GHMSI's contribution to surplus. Some of the variables and operational elements employed in our model include:

1. **Impact of Trend Estimates.** Differences from projected estimates of anticipated cost trends are the substantial contributor to the development of future losses or gains. As described above, the combination of the length of time to recognize an error and to implement changes tends to create a multi-year impact.
2. **Incurred Claims Estimates.** Since incurred claims estimates are based on projections from historical data, differences between projected unpaid claims liabilities and the ultimate payments made against those claims are commonplace. Such misstatements of the liability do not create an absolute loss in the context of a multi-year cycle. The understatement or overstatement in a given year is a timing issue which distorts earnings by year, but does not misstate them across several years. However, the estimates also form the basis for an understanding of incurred claims levels used in pricing decisions. Therefore, an error in unpaid claims estimates will directly impact the projection of subsequent costs used for pricing. The need to complete claims is therefore a very common cause for a delay in recognizing changes in emerging cost trends and resultant pricing mismatches.
3. **Unique Morbidity Events.** GHMSI faces the potential of significant increased morbidity due to influenza or other large-scale disease outbreaks. Such episodes offer low probability, but high-cost, impacts that one would not typically load into projected costs used in pricing. These are also difficult to model, since it is difficult to assign a probability of occurrence or dollar impact. One aspect of choosing a confidence level for

targeted working surplus is to make certain that appropriate consideration is given to the to the very real impact of such low-probability / high cost events.

4. **Regulatory and Marketplace Limits.** The ability to charge targeted rates can come into play when projected cost increases exceed the ability to effectively recover these costs. We have recently observed rate increase denials in Maryland, with the result being higher losses in various products.
5. **Investment Income.** We used current surplus levels as our starting base and increased or decreased surplus by any investment income produced by the asset mix underlying the organization's Corporate Investment Portfolio at its anticipated rates of return for each year. To the extent that our model simulates an underwriting loss in any given year, investment income (if greater than the underwriting loss) is reduced to offset the loss. If the underwriting loss exceeds the investment income, surplus is reduced to offset the excess loss. As such, returns on investment assets are based on the net assets in any given year. Since we do not believe the current economic recession will persist materially into our projection period and asset earnings yields are slowly returning to their long-term historical averages, we did not attempt to make investment return a stochastic variable in our model. Instead, we have assumed CareFirst's Corporate Investment Portfolio average rate of return will be based on a CareFirst dollar-weighted average of each asset classes' historical average rates of return. In light of this assumption, we did not attempt to project write-ups, write-downs or AFTAP adjustments resulting from unfavorable rate of return scenarios; however, in actuality those events may still occur. We did test and incorporate dynamic return scenarios in developing our estimate of working surplus levels.
6. **Expenses.** We used current expense loads as reflected in pricing as well as projected capital expenditures since GHMSI is currently updating their IT systems. We did not reflect income tax as an expense since our focus was on underwriting losses and their impact on accumulated surplus.
7. **Membership.** Based on discussions with GHMSI management we have held overall enrollment flat for the next four years, with some migration from traditional levels of coverage to lower coverage plans, such as consumer directed health plans. The RBC calculation is to some degree scalable and is expressed as a percentage of current volume values. This makes the growth in membership a less critical assumption.

Most significant in setting working surplus ranges are potential underwriting losses. In general, this risk is categorized by a mismatch between the claims costs incurred by insured members and the plan's ability to charge a rate sufficient to cover this risk. Clearly, if the carrier can achieve matching of rates to expense then there is no drain on surplus. In fact, most health care rates are established with a goal of achieving a profit as contribution to accumulated surplus. The exact matching of projected claims costs to those realized, however, is seldom precise. Most of the rate a plan charges its members is used to pay for medical and drug claims. GHMSI employs as much analysis and insight as available to estimate future claims costs. However, actual claims costs will almost always show some degree of variation from those expected. The causes are common to all insurers:

- Unanticipated changes in the cost of services as billed by providers;
- Increasing variability in cost per service – driven by new treatments and technologies; and
- Variation in the frequency in which members seek these services.

However, results can vary greatly due to the extent to which each of these factors and their multiplicative impact has been shown to change over time. Quite often, the cause for the variation is simply not something which GHMSI could foresee early enough to factor it into projected rates.

Cyclical

Historical underwriting results for most health insurers have been somewhat cyclical, characterized by several years of gains and then several years of losses. For many years, collective underwriting results across the health insurance industry showed such a steady three-year “underwriting cycle” that they were treated as if automatic. This actually confuses cause and effect – ignoring the fact that a commonality of pricing methodology and marketing actions in response to changes in risk and cost actually created this cycle.

The unforeseen events that create a mismatch between pricing and claims costs are actually somewhat cyclical themselves. The overall business economy impacts the revenue providers feel they must generate and the perceived ability of employers and members to pay increased rates for coverage. Such changes in economic cycles are typically multi-year events. Similarly, new technology, drugs, and treatments tend to roll out gradually often raising the cost to a new plateau rather than having a quick impact. Claims cost changes tend to have a multi-year impact rather than a one-year variance.

The processes of analysis and implementation of health care insurance pricing in reaction to these above changes in cost actually explain the second major contributor to this historical cyclical.

1. Historical Data and Analysis Lag

- a. The insurer’s primary basis for projecting future costs for a block of business is their own emerging experienced PMPM cost trends. This can be adjusted for anticipated changes in cost and utilization based on benefits and contract negotiations with providers. Such adjustments, however, are judgmental and must include potential changes in morbidity due to aging and/or lapses, as well as the members’ response to the anticipated changes.
- b. To make emerging PMPM experience trends as current as possible, the analysis must include an estimate of unpaid claims (IBNR). This recognizes the delay between the incurral of a claim and the date it is actually processed and paid. Unless this estimate is included, the recognition of emerging trends based on fully incurred claims is delayed by an additional 3-6 months. However, the addition of IBNR is again judgmental, and actually somewhat circular. The most recent months in most IBNR estimates rely on PMPM trend estimates, which are the near-term goal of the trend-setting exercise.

- c. Identifying a shift in emerging fully incurred PMPM costs can be difficult. PMPM claims costs often exhibit seasonal patterns, random fluctuations, and shifts in the underlying morbidity of the membership exposure. All of these can obscure the true cost pattern developing. In general, pricing trends are established by attempting to understand the emerging patterns and determining if they can be projected to future periods.

2. Recognition and Movement to Action

- a. Given the above uncertainties, insurers may often detect a potential shift in cost but may not be ready to act immediately. Increases in rates are very disruptive to the membership and are typically not undertaken until the insurer is fairly certain there are not statistical problems or temporary spikes.
- b. Even if relatively confident of an emerging trend, new rates are only as achievable as the insurer's ability to convince clients of the correctness of the estimate. An insurer might feel it is necessary to raise rates, but if no other carriers are raising rates or if the employers do not perceive the change as valid, most insurers have been forced to modify or defer the increase. This is one reason why such downturns in results impact the entire health care sector.
- c. Significant changes in rates may not be possible. If the claims cost change is dramatic, the resulting increases in rates may be larger than the employers can handle on short notice. Similarly, rates may have to be submitted for approval by regulators who do not feel the evidence is credible or believe the increase required is in the best public interest.
- d. Very large rate increases can actually be counter-productive. If the increase is large enough, many clients will seek other insurance carriers in hopes of cheaper or more manageable increases. Among smaller employers and individuals, the choice may be to drop coverage altogether. Besides lowering the overall revenue, many times the members lost are actually the healthy insureds – as they can go without coverage or gain coverage easier elsewhere.

3. Implementation of New Rating Assumptions

- a. Rates are most commonly increased on a contract effective date for each client under a 12-month rate guarantee. Full implementation of new rate levels therefore requires waiting until all the clients have come to their renewal date. With the need for notification of new rates, and sometimes regulatory approval, it can commonly take 18-24 months to complete the process going from the determination of new rates to complete implementation for an entire block of business.
- b. Given that the events causing increases in claims costs are typically multi-year phenomenon, the above cycle of analysis-recognition-implementation may actually be underway for the currently anticipated cost level while a new, higher cost level is still emerging.

The aggregate result of these processes is a sizeable delay between the occurrence of an event or shift in cost, recognition of the event and its pricing impact, and full implementation of rate changes in response. As a result, history has shown that health care insurance losses experienced in a given year are most often followed by even deeper losses in the second year as

rates are being adjusted. If the events triggering the losses are fully appreciated, and not compounded by another unanticipated cost increase, some reduction of losses begin in the third year as rate increases take hold.

While not guaranteed, it is clear that underwriting cycles do not “just happen”, but are caused by the collective pricing actions of the marketplace in response to unforeseen events. Most importantly to our exercise in establishing appropriate working surplus targets is the recognition that these multi-year earnings troughs constitute one of the primary drains on an insurer’s accumulated surplus level.

Modeling Trend Assumptions

It is important to note that the “trend miss” which triggers such loss cycles is really a function of the differential between the current pricing trends and the potential trend outcomes. We have therefore modeled our scenarios on current GHMSI pricing and anticipated trends. In reviewing current GHMSI trends, however, we have noted certain local market conditions:

- Trends used in this exercise are “net trends” and cover all services. This means they are impacted by changes in member cost sharing – also referred to as “benefit buy-downs”. This temporarily reduces the unit cost component in the plan trend by shifting some of that cost to the insured.
- A number of the trends used in this modeling exercise appear low compared to expected market averages because of what we believe had been significant benefit buy down. This has modeling implications because such increased cost sharing cannot continue over extended periods and will eventually result in a resumption of expected trend levels when underlying trends reassert themselves.
- Other products exhibit somewhat higher trends due to “trend leveraging” or “deductible leveraging”. As the average benefit content of such products reflects greater member cost sharing, the base cost against which overall medical trend is applied reduces. Additionally, the numbers of members satisfying a given higher deductible level increases and more members reach maximum out of pocket limits. In these plans, it is common to therefore see plan-specific trends which exceed the secular average trends.
- GHMSI provided trend data including medical, dental, and vision components. We have made the general assumption that the mix of these various business components will not change.
- Net trends were simulated assuming a “random walk” with a mean-reversion process. A random walk is a mathematical formalization of a trajectory that consists of taking successive random steps, also known as Brownian motion. The random walk is used in simulating net trends based on the assumption that trend rate changes are independent of one another. Mean reversion can be thought of as a modification of the random walk, where trend rate changes are not completely independent of one another but are related. Mean reversion assumes that the net trend rate will continue to return to an average value over time, despite fluctuations above and below the average value. We assumed the average net trend rate value over time, and its associated volatility, are consistent

with the historical average annual trend rate produced by the private component of the national health expenditure amounts. In addition, we assumed a speed of reversion factor (i.e., the speed in which the simulated net trend rate returns to the average net trend rate value) that is consistent with the historical values simulated from the national health expenditure annual trend rates.

Modeling Underwriting Outcomes

Our model produces underwriting gains and losses over a typical underwriting loss cycle based on stochastic modeling of potential outcomes associated with various percentile levels. We chose to focus on outcomes at the 90th and 95th percentile level.

Since underwriting risk is a dominant factor in both RBC and working surplus targets, we examined the outcome of our model against historical results. Below we discuss our retrospective analysis which analyzes surplus needs of other Blue plans since 1992.

One would assume that prospective actuarial model, having properly reflected GHMSI business dynamics, would produce outcomes that are explainable in terms of historical results. Model results which are consistent with prior industry experience tend to validate the general reasonability of the modeling exercise. The model produces outcomes which reflect a loss cycle of approximately 11% of revenue at the 90th percentile of all outcomes, and 15% of revenue at the 95th percentile, which is similar to the results we obtained when we analyzed other Blue plans' experience. The loss cycles exhibited by GHMSI since 1980 are shown in the table below⁴, and show that GHMSI has historically had more severe loss cycles than we attained at our percentiles.

	Cumulative Loss Cycles		
	1980 - 1982	1986 - 1988	1992 - 1995
GHMSI Plus Subsidiaries	-12.5%	-44.5%	-23.6%

The specific historical loss cycles experienced by GHMSI since 1980 include two cycles that are more severe than we have recommended in our working surplus target range. The working range will not cover every conceivable threat to GHMSI's solvency, which is why it is imperative for GHMSI to be able to react to a fall in surplus and to try to maintain surplus toward the middle of the working range. The model variables and mechanics were designed independently of GHMSI's historical cycle data, and we believe that this model provides a less biased range than relying on GHMSI's historical loss cycles.

Credit and Asset Risk

Investment decisions are implemented by Management as directed by the Board Committee approved Investment Policy, which is also used for other CareFirst entities. CareFirst's Corporate Investment Portfolio contains a significant investment in fixed income vehicles (e.g.,

⁴ Information received from CareFirst.

investment grade bonds) and the balance in equities, convertibles, and cash-or-cash equivalents. While not subject to the risk of “matching” against benefit obligations as in life insurance products, GHMSI surplus levels will be impacted by a change in asset rates of return based on the market values of the invested assets. We have considered the potential impact of interest rate changes on assets and surplus generation when setting our targeted working surplus.

Discussions with GHMSI management suggest that the company is undergoing significant upgrades and additional capabilities related to information systems. For purposes of this analysis, we have not included specific credit or cost of capital impacts as a modeling issue. However, we have included their potential impact as a factor when choosing an appropriate level of confidence in our targeted working surplus.

Business Risk

Some catastrophic and related business risks are reflected in the medical expense projections discussed above. Other risks, such as litigation and business changes can again be considered to be low probability / high cost incidents. As such, they are best reflected by using conservatism when finalizing targets in terms of confidence ranges.

Capital Expenditure and Planned Business Changes

We have not included any specific planned business or capital expenditures directly in our model. While not specifically known, we must be prepared for events which will force GHMSI to call upon accumulated surplus to react to changing business environments. We did not attempt to develop specific scenarios, but would instead have attempted to reflect some conservatism in our targets and further suggest that surplus targets should be conservative to recognize these contingencies.

Market Subsidy

We included provision for the required market subsidization in Washington, DC and Maryland. The Maryland subsidization is in lieu of a two percent premium tax, and the Washington, DC subsidization is on top of existing premium taxes. The amount of subsidization in Washington, DC is currently being evaluated, and may result in an increased amount of subsidization, however we did not incorporate any future increase in subsidy requirements.

Model Results

We established recommended a working surplus range for GHMSI’s management to consider based on the above stochastic model, the results of historical observations of GHMSI results, and a broad general reasonability comparison against other carriers. This range reflect the requirements for underwriting losses from our stochastic model, the probability of other risk-related surplus requirements, and the need for surplus as a funding vehicle for vitality and other market-demand expenditures.

RBC targets traditionally focus on a minimum surplus known as the ACL. Since we are attempting to develop “working surplus”, our focus is a minimal level which:

- Prevents GHMSI from dropping below 375% of ACL as required for normal operations under the BCBSA trademark agreement 90% of the time;
- Prevents GHMSI from dropping below 200% of ACL as required for normal operations by most state insurance regulators following NAIC guidelines 95% of the time;
- Provides a reasonably high degree of likelihood that GHMSI can sustain anticipated underwriting losses;
- Provides for business, asset, and other risks in addition to the potential drain of underwriting losses; and
- Offers some residual surplus to fund capital expenditures, required new business ventures, and overall GHMSI mission statement obligations.

As discussed above, the stochastic modeling exercises allow us to develop a range that provides both a “low” to “high” level of certainty that surplus will be adequate. These depend upon the items to be included as surplus concerns and the probability of outcomes in the surplus model. Observations of most health care insurers suggest that surplus levels can be quite volatile. We have seen carriers at or below the 200% RBC level who exceeded 600% after a two-year favorable gain cycle. We have also seen dramatic drops in surplus levels in equally short periods.

In general, we believe that below the 90th-percentile level is too low to be adequately certain that potential events over a long-term period will not create problems with working surplus levels – or even solvency surplus levels. Conversely, the dollar requirements increase dramatically as one seeks to become more and more certain that all contingencies have been covered. It is likely to be theoretically impossible to have sufficient surplus to be 100% certain that events will not cause the level to be below a chosen target range.

We have therefore chosen to establish a recommended range which approximates something between a 90% and 95% likelihood of surplus adequacy based on our models and on other surplus requirements. A higher level helps offset the risk of the low probability / high risk events, which are very difficult to reflect in stochastic modeling. This level is also consistent with our observations of GHMSI historical results and the level of surplus being held by other BCBS plans.

As one would suspect from the above development discussion, we believe this is a management decision which is clearly not quantifiable in absolute terms. The choice of a working surplus range should be based on management’s comfort level with the uncertainties of the current business environment and with the knowledge of likely non-risk-related demands on surplus for capital investment and other expenditures.

We have quantified these outcomes using several of the metrics we have seen applied at GHMSI and elsewhere. All of our observations are in terms of statutory financial reporting, since this provides the best common metric between carriers and in terms of ongoing monitoring.

GHMSI's Working Surplus Range	Low	High
% of RBC Level	750%	1000%
Months In Reserve (Excluding FEP)	3.9	5.2

Overall, this GHMSI working surplus range appear to offer a reasonable level of certainty of surplus sufficiency while addressing capital needs and other uses of surplus.

Surplus Needs in the Context of Comparable Plans

To validate the analysis of the prospective model, we also conducted a comparison of GHMSI's surplus to other Blue plans to interpret whether the levels of surplus held by GHMSI are reasonable. The comparison with other Blue plans is relevant since GHMSI and other Blue plans:

- Tend to have a large market share in their geography;
- May cover a disproportionate percentage of the individual and small group markets;
- Are unable to spread risk across a wider geography;
- Tend to be subject to additional scrutiny, either through regulation or indirectly through their level of market penetration, within their respective jurisdictions; and
- Lack access to equity markets.

In addition to our GHMSI-specific modeling of surplus, we compared GHMSI's surplus to ten similarly sized not-for-profit members of the BCBSA. The financial history of each plan was analyzed in order to quantify a range of surplus that GHMSI would need to have in order to protect itself against future losses, maintain and upgrade technological capability, and withstand competitive pricing pressures, assuming that its financial conditions and performance was similar to those plans.

The plans used in this analysis all had total revenue of at least \$2.2 billion in 2008, and none had more than \$ 4.9 billion in total revenue. The average total revenue of these ten Blue Cross Blue Shield plans was \$3.1 billion, which lends to their comparability to GHMSI, which had total revenue in 2008 of about \$2.8 billion.

From this financial data, we calculated surplus as a percent of revenue (SAPOR) for each year (1992-2008), surplus as a percent of Authorized Control Level (RBC ratio) for the years 1998-2008, and the year-to-year absolute changes in SAPOR and RBC ratios. Our analysis consisted of examining the size and distribution of year-to-year changes in surplus ratios. In other words, we established a data point for each company each year and analyzed this data as a group to see how the changes are distributed. We used the resulting distribution to make statistical inferences.

We focused on SAPOR changes rather than RBC changes because:

- The distribution of SAPOR changes is very close to a normal distribution and the successive changes in SAPOR for an individual company appear to be relatively independent.
- We had 17 years of SAPOR values, but only 11 years of RBC since RBC for health insurers was implemented in 1998. Additionally, the two are very closely related and it is possible to derive an approximation of the RBC ratio from a SAPOR value with a simple calculation.
- The use of SAPOR is more instructive in answering the question of the appropriate level of excess surplus than RBC which focuses on the types of assets and their liquidity should a short term critical need arise.

From our statistical analysis, we can determine the likelihood that a health insurance company's surplus will drop by a given amount (expressed as a percentage of revenue) over a specified period. Clearly, as we extend the horizon for our analysis further into the future, the potential variation of the cumulative change in surplus becomes greater, if we assume that the variations from year to year are independent. Yet, this is a questionable assumption as we project over a larger number of years. We would expect a plan's management to take some sort of corrective action based on negative results in former years, although the success of such actions is never guaranteed. Either as a result of the change in the underwriting cycle, or because of corrective actions, we would expect that a string of down years would be followed by a string of up years.

We sought to address the remaining question of how long a string of down years reasonably could be expected to last. To answer this, we looked at the cumulative changes in SAPOR over periods ranging from 2 to 10 years (all between 1992 and 2008) for our comparator plans. For each company, we found the maximum cumulative loss that occurred during this timeframe and noted the number of years over which this loss took place. Brief results are shown below.

Historical Number of Years Peer Plans Experienced Cumulative Downturns

Number of Years in a Cumulative Downturn	Number of Plans
2	3
3	1
4	2
5	2
7	2

We decided to apply our statistical model to periods of up to seven years in assessing the probability that specified decreases in surplus would occur. Most plans had experienced successive surplus declines of at least three years, so we concluded that it would not be prudent to suggest levels commensurate for a shorter length than three years.

We considered two benchmarks for minimum surplus levels: BCBSA's "Early Warning Level" of 375 percent of ACL and NAIC's "Company Action Level" of 200 percent of ACL. We considered two confidence levels: 90 percent and 95 percent. That is, we wanted to determine the level of surplus that a company should have in order to be:

- 90 percent confident that SAPOR would not fall below the Early Warning Level over time periods ranging up to 7 years, and
- 95 percent confident that SAPOR would not fall below the Company Action Level over time periods ranging up to 7 years.

The results of the comparable plan analysis were used as a reasonability check to make sure our estimated range was reasonable in a historical context.

Conclusion

Based on our surplus modeling, which includes both a projection of GHMSI's specific business conditions and a review of historical experience of similarly situated Blue plans we conclude that an appropriate range of working surplus for GHMSI to hold is 750% - 1000% of the ACL. Our modeling indicates that GHMSI is currently holding an appropriate amount of working surplus.

The working surplus range of 750% - 1000% of ACL represent the appropriate way of looking at GHMSI's long-term surplus needs. These needs clearly exceed the minimum surplus levels defined by RBC calculations. In fact, the process of setting such a range differs sufficiently from RBC calculations that working surplus ranges cannot be developed simply by using a multiplier of the RBC level. However, for the sake of comparison, we have adopted the common practice of expressing a independently developed working surplus range as a percentage of the RBC level.

We have examined the specific GHMSI surplus range in terms of historical precedent and through a stochastic modeling exercise. This process has attempted to reflect business factors which are common to the industry and those which are unique to GHMSI. The objective of this range is to provide a reasonable degree of confidence that GHMSI can remain above the 375% of RBC target set by BCBSA for unencumbered operations as a holder of the BCBS trademark with reasonable (90%) certainty, and remain above the 200% of RBC set by regulators with more (95%) certainty.