

THE IMPACT OF THE MIB CHECKING SERVICE ON HEALTH INSURANCE UNDERWRITING

LOSS RATIO AND PROTECTIVE VALUE ANALYSIS



ABSTRACT

Medical underwriting is the cornerstone in the evaluation of individual medical risks. The information health carriers gather through the medical underwriting process allows them to stay competitive and profitable. Healthcare costs vary significantly within a population, and most claim costs are concentrated in a few individuals. Milliman Health Cost Guidelines estimate that the most costly 15% of insured individuals generate 80% of healthcare costs. Accurate identification of the individuals with the highest expected costs has a significant impact on loss ratios. Reliable risk classification requires accurate health information. MIB's Checking Service protects insurers from attempts to conceal, omit or misrepresent information material to the sound and equitable underwriting of health insurance.

EXECUTIVE SUMMARY

This analysis was based upon 894 uses of the MIB Checking Service on individual medical health insurance applications from USHEALTH Group, Inc., one of MIB's clients. The study results indicate that USHEALTH's ultimate loss ratio was improved by approximately six percentage points as a result of using the MIB Checking Service. Additionally, Milliman found the protective value accrued to USHEALTH from using MIB in their health underwriting process was between \$43 and \$51 for each dollar it spent on MIB services

including the internal costs associated with using MIB. These protective value figures are consistent with Milliman's analysis of the MIB Checking Service in life insurance underwriting at \$46:\$1.

The changes in loss ratio and the protective value may vary depending upon the additional sources of information available to a company for underwriting decisions, the underwriting actions and the efforts taken by a company to further develop information received from MIB. A detailed description of the study is presented below.

METHODOLOGY

A. Data Gathering Approach

The protective value analysis was based upon 894 uses of the MIB Checking Service by one of MIB's clients, USHEALTH Group, Inc. The loss ratio analysis calculated projections of premiums and claims, both with and without using the MIB Checking Service. The difference between the loss ratio in these two scenarios represents the improvement from using the MIB Checking Service.

The statistical method used to select cases was reviewed by Milliman. Each use was reviewed to determine whether information from MIB was returned, whether the information was useful and/or not otherwise available to the company, and the expected value of this information to the

insurer. For cases where MIB returned information that was deemed useful, an independent underwriting consultant prepared a description of illnesses/impairments for each case. Milliman then estimated the present value of savings the company realized as a result of their underwriting actions. The data and information for the analysis was supplied by MIB. This information included data on the number of cases where MIB information was and was not found and the underwriting results for the cases where information was found. MIB, in turn, relied on USHEALTH for policy data such as premiums, age, sex and other census data. The independent underwriting consultant provided descriptions of the conditions uncovered by MIB, the estimated usefulness of the MIB results and the indirect costs associated with submitting a case to MIB. USHEALTH provided information on profitability data for the product – expected loss ratios, lapse rates, commissions and other expense data as well as the marginal underwriting costs associated with acting on information found by MIB.

B. Study Sample

MIB selected cases for this investigation from applications underwritten by USHEALTH during the period October 2004 to March 2005. There were 894 cases sampled and accumulated in order to find those 296 cases for use in this study. An independent underwriting consultant separately hired by MIB reviewed these 296 cases. Both samples (894 and 296) were tested for unintentional age bias to ensure the age demographics were equal to the company's entire book of business. Of the 296 cases, 31 were eliminated because the applicant and the person for whom MIB returned the information did not match. Of the 265 remaining cases, 189 cases were eliminated, because in the underwriting consultant's judgment, MIB provided no new information. Thus, in the underwriting consultant's judgment, MIB returned useful and exclusive information in 76 cases. In twelve of these cases, their opinion was that MIB's information was only partially new information. In the process described below, Milliman only applied 50% of the estimated savings for these cases. In all of the 76 cases,

the underwriter compiled descriptions of the conditions considered by the company. USHEALTH applied five possible underwriting decisions:

- 8 cases were issued as applied for;
- 51 cases were declined;
- 9 cases were issued with an exclusion rider;
- 5 cases were charged an additional premium; and
- 3 cases were filed incomplete, indicating clarifying medical information requested from the proposed insured was never returned and a policy was never issued.

Therefore, 68 cases (all except the eight which were issued as applied for) were considered to have received "useful" information from MIB, which appeared to have changed the action taken by the insurer. The savings associated with declined cases and those issued with an exclusion rider are described in the next section. Cases filed incomplete are cases that were never issued and were treated as declined cases. The savings for cases with additional premium equal the additional premium, less commissions and premium tax.

C. Underwriting Analysis

With current underwriting information about height, weight, age, gender, tobacco use, medical tests, and medical conditions, Milliman used the Milliman Individual Medical Underwriting Guidelines to estimate annual costs over the term of the analysis. After using the Guidelines to retrospectively medically underwrite all of these 68 applicants, Milliman calculated what the expected savings would be.

The Milliman Individual Medical Underwriting Guidelines are based on a combination of 8 years of longitudinal claims analysis and clinical and actuarial judgment. The Guidelines contain expected claim costs for initial underwriting, based on information gathered by the underwriter. Using information about age, gender, height, weight, tobacco use, medical history, and prescription drug use, the Guidelines give an expected claims cost for one year of coverage. The detailed claims data used to develop the



Guidelines include all individuals in a group population, including those who might not have been issued coverage as an individual because of their apparent risk. Using detailed data for a large group population allows better access to what costs would have been for individuals with a certain medical history, regardless of the likelihood of receiving coverage had they applied for individual coverage.

Declined Applicants

Fifty-one applicants were declined coverage, after the insurer verified additional information from MIB. For each of the 51 of these applicants, Milliman calculated the savings to the company as the present value of the additional excess costs above the expected claims for the person over a seven-year savings horizon. The excess costs were calculated assuming a constant 60% loss ratio for this product. The present value of the total expected excess costs for these applicants was \$349,641, using an 8% discount rate and other assumptions described below. The impact on the loss ratio calculations is to remove both the standard premium and the claim costs associated with these applicants.

Rated Up Applicants

For five applicants, the insurer decided to increase the premium charged to the applicant because of information verified from MIB. For these cases, the value to the insurer of the additional information from MIB was the present value of the amount of excess premium they received, net of commissions and premium taxes. Milliman estimated the total additional net premium received on these cases to be \$20,765, using an 8% discount rate. The impact on the loss ratio calculations is to add the additional premium collected. The claims are unchanged in this calculation because the insurer remained at risk for these claims.

Rider Applied to Applicant

For nine applicants, the insurer decided to apply exclusionary riders to applicants after they learned of pre-existing conditions from MIB and separately confirmed these conditions. These

riders exclude a portion of coverage for these applicants. Milliman used analysis from its development of the Individual Medical Underwriting Guidelines, which calculates the expected value associated with various riders, to estimate the portion of costs that were now excluded, which they would have previously covered. The present value of these costs for these cases was estimated at \$12,801, using an 8% discount rate. The impact on the loss ratio calculation is to remove the excess claims covered by the rider.

D. Development of Loss Ratio Improvement and Protective Value

The improvement to the loss ratio (the ratio of expected claims to premium) can be measured by comparing the loss ratios with and without receiving additional information from the MIB Checking Service. Expected claim costs were reduced for declined coverages and for riders applied. Premium was reduced at standard rates for declined coverages, and increased for rated-up cases. For simplicity, we used a 60% expected loss ratio when there was no assumed usage of the MIB Checking Service, and did not include expenses, reserves, investment income, taxes or cost of capital. The cost savings can be measured by calculating the protective value of the MIB Checking Service.

The protective value of an underwriting action can be measured by determining the excess of the savings generated by the action less the cost of the action. With regard to individual health insurance, savings from results of the screening service are a function of the underwriting response elicited by the result. The most obvious cost associated with the screening service is the fee charged by the service. Other indirect costs occur when information is returned from the screening test. These are the costs associated with the time spent reviewing the results, and deciding on what action to take. Also, indirect costs include any additional underwriting that would not otherwise have been performed such as the costs associated with adding and asking further questions to the personal history interviews (PHI), gathering further

laboratory analysis, and obtaining attending physician statements. It should be noted that the costs associated with a screening test will also vary among insurance companies depending on the level of follow-up underwriting that is generated by the result of the test. While the costs associated with a screening test occur when the policy is applied for, the savings occur over the lifetime of the policy. For this reason, a present value of savings is calculated. Thus, the equation for protective value is as follows:

$$\text{Protective Value} = \text{Present Value [future expected savings generated by screening]} - \text{Cost of the Screening}$$

The savings-to-cost ratio is similarly calculated as:

$$\text{Savings/Cost Ratio} = \frac{\text{Present Value [future expected savings generated by screening]} / \text{Cost of the Screening}}$$

The loss ratio calculation, without the MIB Checking Service information is:

$$\text{Loss Ratio} = \frac{\text{Present Value (Claims)}}{\text{Present Value (Premium)}}$$

The loss ratio calculation, after the impact of the MIB Checking Service information is:

$$\text{Loss Ratio} = \frac{\text{Present Value (Claims)} - \text{Present Value (Declined Claims)} - \text{Present Value (Riddered Claims)}}{\text{Present Value (Premium)} + \text{Present Value (Rated Up)} - \text{Present Value (Declined Premium)}}$$

There are a number of assumptions required in order to calculate the present value of the future expected savings and changes in loss ratios. These assumptions include excess morbidity levels associated with the findings of the test, policy termination rates, medical trend rates, exclusivity ratios and the discount rates to use in the present value calculation. These assumptions are described briefly below:

1. Excess morbidity levels were estimated by Milliman, using the Individual Medical Underwriting Guidelines, as described above.

2. The policy termination rates were assumed to be 20% at the first policy anniversary, 17.5% at the second policy anniversary, grading down to an ultimate rate of 15%. In the base assumption, at the end of three years, 43.9% of the policies had been terminated. Non-impaired policyholders were expected to have higher termination rates than impaired policyholders.

3. Medical trend rates were set at 8% per year as determined reasonable from the Milliman Health Cost Index™. Higher trend rates would result in a greater protective value.

4. The exclusivity ratio was selected by the independent underwriting consultant and measures to what degree the MIB Checking Service report impacted the final underwriting decision for each policy. As noted previously, this was set to 100% in 64 cases, and 50% in 12 cases.

5. The protective value was calculated at four discount rates: 6%, 8%, 12%, and 15%.

Certain cost assumptions had to be made as well. The cost of the fee for providing the MIB Checking Service was assumed to be \$2.42 per policy, which was the actual cost per policy for USHEALTH. MIB fees are based on a combination of fixed and variable costs. For a smaller company they would be higher than stated above, since the observed company can be characterized as a medium-size client company for MIB. For policies that generated a return of information from MIB that was found to be useful and exclusive to any degree, a \$50 per policy cost was assumed for additional underwriting activities undertaken due to this information. For policies that generated a return of information from MIB that was found not to be useful or exclusive to any degree, a \$10 per policy cost for the time taken to review the results are assumed. Based on these assumptions, the cost of the MIB service for this particular study were as follows:

Milliman Protective Value Study

Base Assumptions

| Cohort of Policies | Number of Policies | Cost per Policy | Cost |
|-----------------------|--------------------|-----------------|---------|
| All policies | 894 | \$2.42 | \$2,163 |
| Useful MIB result | 68 | \$50.00 | \$3,400 |
| Not useful MIB result | 228 | \$10.00 | \$2,280 |

Total \$7,843

FINDINGS

Our calculations show that the MIB Checking Service projects a reduction in the overall loss ratio by 6.0% at a 15% discount rate to 6.3% at a 6% discount rate. Other companies or other samples from this company would produce differing results. These reductions in loss ratio are based on our protective value calculations. The projected loss ratios, with and without the MIB Checking Service, are shown in Table 1 (see below).

| Table 1 | | | | |
|---|---------------|--------------|--------------|--------------|
| MIB Group, Inc. | | | | |
| Protective Value Study of the MIB Inquiry Service | | | | |
| Summary of Projected Loss Ratios | | | | |
| Base Assumptions | | | | |
| Projected Loss Ratio - without usage of MIB Checking Service | | | | |
| | Discount Rate | | | |
| | 6.00% | 8.00% | 12.00% | 15.00% |
| Present Value (Claims) | 4,804,591 | 4,568,310 | 4,153,985 | 3,885,976 |
| Present Value (Premium) | 8,007,321 | 7,613,538 | 6,923,029 | 6,476,367 |
| Projected Loss Ratio - without MIB Checking Service | 60.0% | 60.0% | 60.0% | 60.0% |
| Projected Loss Ratio - with usage of MIB Checking Service | | | | |
| | Discount Rate | | | |
| | 6.00% | 8.00% | 12.00% | 15.00% |
| Present Value (Claims) | 4,804,591 | 4,568,310 | 4,153,985 | 3,885,976 |
| - Present Value (Declined Claims) | (882,410) | (829,819) | (739,095) | (681,513) |
| - Present Value (Ridered Claims) | (13,121) | (12,318) | (10,937) | (10,063) |
| Present Value (Net Claims) | 3,909,061 | 3,726,173 | 3,403,953 | 3,194,400 |
| Present Value (Premium) | 8,007,321 | 7,613,538 | 6,923,029 | 6,476,367 |
| + Present Value (Rated Up Net Premium) | 30,570 | 28,708 | 25,500 | 23,467 |
| - Present Value (Declined Premium) | (754,851) | (708,878) | (629,660) | (579,451) |
| Present Value (Net Premium) | 7,283,040 | 6,933,368 | 6,318,869 | 5,920,383 |
| Projected Loss Ratio - with MIB Checking Service | 53.7% | 53.7% | 53.9% | 54.0% |



The results of the MIB protective value calculation, for four discount rates, are shown in Table 2 below. There is no one correct discount rate. The reader should choose a discount rate appropriate to them based upon their desired hurdle rate, their cost of capital, and their view of the potential variance of results. Milliman believes the range of 6-15% for discount rates is appropriate for these results.

| | Present Value at | | | |
|--|------------------|----------------|----------------|----------------|
| | 6.00% | 8.00% | 12.00% | 15.00% |
| MIB Savings | \$399,656 | \$383,207 | \$354,443 | \$335,894 |
| <u>MIB Costs</u> | <u>\$7,843</u> | <u>\$7,843</u> | <u>\$7,843</u> | <u>\$7,843</u> |
| MIB Protective Value | \$391,813 | \$375,364 | \$346,599 | \$328,050 |
| Policies Reviewed | 894 | 894 | 894 | 894 |
| MIB Protective Value per Policy Reviewed | \$438 | \$420 | \$388 | \$367 |
| Savings / Cost Ratio | \$51 | \$49 | \$45 | \$43 |

As shown, the per-policy MIB protective value ranges from \$367 at a 15% discount rate to \$438 at a 6% discount rate. The savings/cost ratio ranges from \$43 of savings for every \$1 of cost at a 15% discount rate to \$51 of savings for every \$1 of cost at a 6% discount rate. As previously indicated, results will be expected to vary from company to company and even with different sample data for the same company.

The report that is summarized in this article was developed solely for MIB. Results may vary. Other companies may experience a different impact on loss ratio and protective value depending on several variables, and it is not intended to be relied upon by other parties.