



# Measuring employer cost savings from network changes

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## Introduction

Large employers are increasingly looking to develop their own provider networks or a more customized network of providers to provide care for their employees. Key factors driving this change are a need to reduce the total cost of care and a desire to improve quality by leveraging their size. Often the predominant measure for evaluating and contracting with providers from a cost (or savings) perspective has been comparing provider fee schedules for physicians, diagnosis-related group (DRG) or per diem rates for inpatient hospitals, and case rates or fee schedules for outpatient hospitals. A more sophisticated approach might use the Milliman GlobalRVUs<sup>1</sup> to better account for differences in the intensity of services provided across all types of healthcare spending. However, while this approach can be very effective in measuring differences in cost per unit of service, by itself it does not address differences in the levels of utilization among providers.

Healthcare costs in very simple terms are a function of unit cost and utilization. While fee schedule comparisons allow employers to evaluate providers from a unit-cost perspective, they do not allow comparisons of providers based on treatment effectiveness, which may impact utilization, or take into account other intrinsic characteristics of the patients being treated. Of course, it is the total cost of care, reflecting both unit cost and utilization differences, which ultimately affects an employer's bottom line.

This white paper presents a methodology for total cost of care comparisons in the self-insured employer market using longitudinal analysis of risk-adjusted costs. Properly applied, such an analysis can be a reasonable way to compare provider networks, which aims to address potential shortcomings of traditional unit-cost comparisons. Other methodological choices and frameworks to measure savings from switching providers may also be appropriate.

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<sup>1</sup> For more on the GlobalRVUs, see <http://www.milliman.com/uploadedFiles/Solutions/Products/2011-globalrvus-whitepaper.pdf>.

The process or methodology to evaluate claim experience from providers (or provider contracts) can take different forms, as outlined below. Each may be appropriate depending on the purpose of the analysis:

- Comparing fee schedules or other reimbursement information for unit-cost comparisons.
- Repricers and relative value unit (RVU) assignment software such as the GlobalRVUs can be effective in separating unit cost versus utilization efficiency
- Using risk-adjusted allowed per member per month (PMPM) cost to measure savings from a total cost of care perspective

In this paper, we will discuss the third approach—risk-adjusted allowed costs—in the context of large self-insured employers that are looking to identify efficient providers and directly contract with them to reduce costs and/or improve employee health outcomes.

## **Risk adjustment in the large group market**

Risk adjustment in the form of payment adjustments based on risk scores is a well-developed concept in the Medicare Advantage and Medicaid markets. The Patient Protection and Affordable Care Act (ACA) has used a risk adjustment mechanism in the commercial individual and small group markets since 2014 to transfer funds from plans with high-risk enrollees to plans with low-risk enrollees. The use of risk

adjustment is relatively less common in the large group employer market. Because self-insured large employers bear most of the costs for providing healthcare to their employees directly, the applications of risk adjustment in these markets are less obvious.

However, risk adjustment can be a powerful tool for large employers, who meet certain size thresholds for credibility (described in more detail later in this report), looking to identify and contract with the most efficient and highest-quality providers. We will describe one way that this might be accomplished.

## **Methodology**

For any large self-insured employer switching provider networks—say, from Network A to Network B—the key considerations in the methodology to measure savings from switching will consist of:

- Proper understanding or interpretation of historical claim costs for patients receiving treatment from Network A and Network B
- Separating the impact of intrinsic patient characteristics on allowed claim costs as compared with the impact of the provider network on total allowed claim costs.

For this paper, we assume the following situation, although there are others where our method could be used with minor modifications.

- Network A is the only network used by the employer in Year 1.
- The employer chooses to offer Network B in parallel with Network A in Year 2.
- In Year 3, the employer wishes to determine whether Network B was more or less costly than Network A. Were there any savings, and if so, how much?

Our methodology assumes that the employer (or its outside consultant if it hires one to do the savings calculations) can obtain detailed historical claim and enrollment data for its own members under both networks in the same benefit year (Year 2). We are also assuming that there are no significant differences in plan richness and coverage for employees who select Network A versus Network B that would cause adverse selection issues. Although risk adjusters are supposed to normalize for differences in health status, they are not perfect and should be used with caution when there are significant known differences in underlying populations selecting one network over the other. There may be situations where the claim costs for employees using Network A may not be available for the second year. In these situations, historical claims prior to Year 2 for employees utilizing Network B can be used for benchmarking.

The data should include information for individuals who utilize services and those who do not. One reason this is important is because efficient providers may sometimes do a better job of avoiding unnecessary utilization than less efficient providers. Removing non-utilizers from the data could

potentially hide the possibility of this interpretation.

Total healthcare costs for a large self-insured employer (or, in general, for any payer) can be represented by a simple formula:

$$\text{Healthcare Cost} = \text{Unit Cost} * \text{Utilization}$$

Unit cost is impacted by various forms of reimbursement such as provider fee schedules, discounts off billed charges, DRG rates, case rates, and per diems.

Utilization for the most part is impacted by the age and gender mix of the patient group, its health status, and provider efficiency. Benefit plan richness can also affect utilization levels.

Analyzing allowed claim costs on a risk-adjusted basis potentially allows for a more even playing field to compare providers and measure expected savings from switching networks.

### ***Why allowed cost?***

Focusing the analysis on allowed claim costs will minimize the impact of differences in cost sharing or plan design, assuming that the populations being compared have essentially the same covered benefits and that cost-sharing levels do not vary materially. This contrasts with the paid amounts (after accounting for member cost sharing), which is directly affected by benefit design.

To the extent the benefit designs do vary considerably between the networks, additional consideration must be given to the impact of increased utilization on overall cost. If induced demand increases

significantly under a very generous benefit offering, then the increased utilization could offset the lower unit cost differences in the narrow network.

### ***What's a risk score?***

A risk adjustment model is an algorithm that uses information about an individual—typically age, gender, diagnosis codes, and other fields on administrative claim data—and assigns a number to that individual representing his or her expected relative healthcare resource use. This number is known as a risk score. Risk scores can be averaged across individuals in a population, and the average risk scores can be compared with one another or used to normalize other quantities for morbidity differences between populations.

### ***Putting together the pieces***

Fundamentally, calculating a risk-adjusted cost for each network is a relatively simple process.

1. Calculate the *total allowed cost (TAC) PMPM*:

$$\text{TAC PMPM} = \text{TAC} / \text{total member months}$$

2. Calculate the *weighted average risk score*, weighting on the member months of exposure associated with each individual in the population:

$$RS = \frac{\sum_i RS_i \times MM_i}{\sum_i MM_i}$$

3. Calculate the risk-adjusted (RA) allowed cost PMPM by dividing #1 by #2:

$$\text{RA TAC PMPM} = \text{TAC PMPM} / \text{RS}.$$

In this calculation, TAC represents the total allowed cost, which includes inpatient, outpatient, physician, pharmacy, and other healthcare costs.

This calculation will need to be repeated for each population of interest. In our example, that means the cohort of members covered under Network A and the cohort covered under Network B.

### ***Risk adjustment creates an even playing field for comparison***

If individuals across two different provider networks A and B were homogeneous, with the same demographics, medical conditions (diagnosis codes), and receiving the same treatment using the same medical procedures and prescription drugs, then comparing total allowed costs of patients over a period of time would likely be sufficient to identify efficient provider networks. However, this is rarely the case. Risk adjusting allowed costs accounts (at least partially) for differences in intrinsic patient characteristics.

Risk adjuster models are not perfect. Other factors (described in more detail later in this report), such as random effects, data accuracy, and provider coding, may also impact the results of the comparison. However, a risk-adjusted comparison is significantly better than comparing costs across providers without making any attempt to account for differences in the populations treated (which providers may have no control over). For example, even the best interventions, care management, and provider efficiency are generally not able to overcome the biological fact that an

older and less healthy patient panel will need to utilize more services relative to a younger and healthier panel.

A simple example in Figure 1 illustrates the need for accounting for intrinsic patient characteristics.

Figure 1: Example of Risk-Adjusted Allowed PMPM Comparison				
	Network A	Network B	Network C	Network D
<b>Total Unadjusted Allowed Cost</b>				
PMPM (A)	\$520	\$506	\$423	\$823
Ranking	3	2	1	4
Risk Score (B)	1.00	1.13	0.71	1.51
<b>Total Risk-Adjusted Allowed Cost</b>				
PMPM (C) = (A) / (B)	\$520	\$448	\$596	\$545
Revised Ranking	2	1	4	3

In Figure 1, Network C is ranked first, with an unadjusted allowed PMPM that is approximately 50% lower than Network D. But Network D is treating patients with a much higher average risk score, more than double that of Network C. After accounting for these risk score differences, Network B actually results in the lowest cost of care, with Network C falling to last.

### ***Monitoring over a cumulative time period***

In the situation described earlier in this paper, employers generally put the second network in place in Year 2 after careful consideration of fee schedules or based on analysis by an employer's actuarial consultants. In Year 3, employers are evaluating and comparing the Year 2

experience of the two networks. While some employers may be ready to make a decision (from a financial standpoint) on whether to discontinue one of the networks, many may want more evidence before taking that step. The decision to terminate a network can be especially difficult if the data does not show significant differences in financial performance. In this situation, we recommend monitoring risk-adjusted allowed cost PMPM<sup>2</sup> over a cumulative time period (that is, for two or more years) if data is available. Doing so will help to smooth out the potential impact of random effects (that is, it will tend to increase the credibility of the measurements by increasing the size of the patient panel measured for each provider network). It may also help to smooth out any transient differences in data quality in the study.

Of course, including more than one year of claim experience for comparison can introduce new sources of variation, such as benefit changes and trend. For example, if there are material changes in covered benefits or cost-sharing levels that will impact utilization, then these differences should be adjusted for as part of the study.

Under most models currently in use, risk scores implicitly assume that claim costs are uniformly spread throughout the measurement period. In reality, many events are acute in nature, and this is particularly true for a commercial population. Also, the timing of when a diagnosis is recognized in claim data can result in significant risk score fluctuations for

<sup>2</sup> Generally, risk scores and risk-adjusted costs should be calculated separately for each year and then combined (rather than feeding all three years of data combined through the risk

adjustment model). This is because risk adjustment models usually are designed to take in at most one year of data on each individual at a time.



a given member from year to year. As an example to support the need for reviewing multiple years of risk-adjusted claims experience, consider the following hypothetical scenario. A person who is diagnosed with cancer late in Year 1 and is coded for the condition receives a high risk score in Year 1. Because the condition was diagnosed late in the year, there may not be high claim costs associated with the patient in Year 1 but they will come through in Year 2. This results in a high risk score and low claims associated with the person in Year 1 but high risk scores and high costs in Year 2.

### ***Network fees and other expenses***

Employers should also consider the expenses associated with contracting with providers and the impact it has on potential savings. Even if the risk-adjusted allowed costs for Network A are lower than Network B, Network B may be a better option once all other expenses and fees associated with using a particular network are considered.

## **Analysis**

In order to understand some of the practical considerations in implementing the methodology described above, we present a hypothetical case study.

An employer has its workforce distributed in three different markets: Chicago, Atlanta, and Los Angeles. Population sizes vary from 2,000 members<sup>3</sup> in the smallest market (Chicago) to 30,000 members in the largest market (Atlanta). The employer offered a

preferred provider organization (PPO) plan option in the three cities in 2012, 2013, and 2014 and was experiencing high healthcare cost trends during those three years. In 2015, based on advice from its consultant, it also offered a customized local narrow network option (NNO) to its employees in each of the three cities as a means of lowering healthcare costs without making substantial cuts to plan benefits or increasing employee contributions. Half of the employees switched to the NNO from the PPO in 2015. In 2016, the employer asked its consultant to estimate the financial impact resulting from this network shift, and the potential savings that may result if the NNO was the only network option in 2017.

We expect the consultant to consider the following steps for its engagement with this employer:

1. Obtain allowed claim costs separately for each city, preferably separated by medical and pharmacy, for all individuals in Year 1 under the PPO network and for all individuals in Year 2 for both the PPO and NNO networks. Non-utilizers should also be included.
2. Obtain member month information for all years and networks where allowed claim costs are available.
3. Obtain the necessary data fields to generate a risk score. They typically include member-level age, gender, and diagnosis data, but can vary

<sup>3</sup> Please note that the Chicago group is not fully credible and an employer should treat the calculations as directional guidance only.



based on the risk adjuster software used.

For example, some risk adjustment models also use prescription drug information to make predictions instead of or in addition to medical diagnoses. Regardless of which model is used, we recommend that the same model be used for all cohorts compared.

If some model inputs or portions of claim costs are unavailable for certain subsets of the population, adjustments may need to be factored in the analysis. For example, if prescription drug claims are not available for a portion of the population, adjustments will be necessary to account for that in the claim cost comparisons and the risk adjustment process.

4. Calculate unadjusted allowed claim cost PMPM (or TAC PMPM) for members under the PPO in Year 1 and Year 2 and unadjusted allowed claim costs in Year 1 and Year 2 for members who elected the NNO in Year 2.
5. Calculate risk-adjusted allowed cost PMPM (or RA TAC PMPM) for all combinations mentioned in Step 4.
6. Adjust for other factors before comparisons. Some of these factors

include credibility, random effects, large claims, and availability of data which are discussed in more detail in the “Other Considerations” section below.

7. Compare the trend in RA TAC PMPM for employees who switched to the NNO in Year 2 with those who did not switch.
8. If claim costs for employees who did not switch to the NNO are not available, consider using claims prior to Year 1 for the cohort with the NNO in Year 2 for benchmarking purposes.
9. When information to do a comparison as described in Steps 7 and 8 is not available, the consultant may consider using a benchmark trend assumption as a starting point. There are a number of potential trend indices that might serve as a reasonable starting point: a couple of options for benchmarking RA TAC PMPM trends, such as the S&P Healthcare Claims Indices,<sup>4</sup> or recent trend in employer-sponsored health insurance premium from Kaiser Study in partnership with the Journal of the American Medical Association<sup>5</sup> or another external trend source. Whatever trend is used, it is important that it be determined in advance of the performance analysis. It is also vital

<sup>4</sup> S&P Dow Jones Indices. Healthcare Claims. Retrieved May 3, 2016, from <http://us.spindices.com/index-family/healthcare-claims/all>.

<sup>5</sup> Kaiser Family Foundation (January 5, 2016). Visualizing Health Policy: Recent Trends in

Employer-Sponsored Health Insurance Premiums. Private Insurance. < Retrieved May 3, 2015, from <http://kff.org/infographic/visualizing-health-policy-recent-trends-in-employer-sponsored-health-insurance-premiums./>>

for the employer and any other stakeholders to understand and agree with the trend approach in advance. This should include agreeing on any adjustments that need to be made to the raw trend to account for differences in risk-adjusted versus raw trend rates.

The numerical example illustrated in Figures 2 and 3 shows calculations for the estimated savings based on the hypothetical scenario described above in the case study.

Figure 2: Sample Case Study Experience				
	Member Months	Avg Risk Score	TAC PMPM	RA TAC PMPM
<b>Year 1: PPO (Stayed in PPO in Year 2)</b>	A	B	C	D
Chicago	12,000	1.03	\$359.00	\$348.54
Los Angeles	108,000	1.01	\$500.00	\$495.05
Atlanta	180,000	1.08	\$362.00	\$335.19
<b>Year 1: PPO (Switched to NNO in Year 2)</b>	E	F	G	H
Chicago	12,000	1.00	\$363.00	\$363.00
Los Angeles	108,000	1.02	\$475.00	\$465.69
Atlanta	180,000	1.07	\$358.00	\$334.58
<b>Year 2: PPO</b>	I	J	K	L
Chicago	12,000	1.04	\$369.77	\$355.55
Los Angeles	108,000	1.02	\$515.00	\$504.90
Atlanta	180,000	1.09	\$372.86	\$342.07
<b>Year 2: NNO</b>	M	N	O	P
Chicago	12,000	0.99	\$355.74	\$359.33
Los Angeles	108,000	1.00	\$465.50	\$465.50
Atlanta	180,000	1.05	\$350.84	\$334.13

Figure 3: Sample Case Study Network Savings Calculation		
	Amount	Formula
<b>PPO Risk-Adjusted Trend (Year 2 / Year 1)</b>	Q	
Chicago	2.01%	Q= L/D-1
Los Angeles	1.99%	
Atlanta	2.06%	
<b>NNO Risk-Adjusted Trend (Year 2 / Year 1)</b>	R	
Chicago	-1.01%	R= P/H-1
Los Angeles	-0.04%	
Atlanta	-0.13%	
<b>Risk-Adjusted Trend Difference</b>	S	
Chicago	-3.02%	S= R-Q
Los Angeles	-2.03%	
Atlanta	-2.19%	
<b>Total Estimated Allowed Cost / (Savings)</b>	T	
Chicago	(\$131,539)	T= S*G*M
Los Angeles	(\$1,041,491)	
Atlanta	(\$1,410,192)	
<b>Total Allowed Savings</b>	<b>(\$2,583,221)</b>	

This analysis estimates the allowed cost savings associated with the members who switched to the NNO in Year 2. A similar approach could be used to estimate the potential savings if the remaining members had also switched to the NNO in that year. Of course, the employer's actual savings will not equal the full allowed cost savings, because a portion of the savings will instead be received by the members directly in the form of lower cost-sharing payments. The employer's actual savings must also take into account any increased costs associated with the NNO relative to the existing PPO.

## Other methodologies

Other methodologies to compare providers on a level playing field may be appropriate. For example, the detailed data required to apply the risk adjustment method we have outlined is not always available.

We have already discussed unit-cost comparisons earlier in this paper. Some additional methodologies are briefly described in this section, namely *stratification* and *observed to expected*.

## **Stratification**

If detailed diagnosis data is not available, it is usually<sup>6</sup> impossible to assign a risk score to members. As an alternative, stratifying the population based on age-gender, specific medical conditions, and/or employer group size may help make the comparison of providers more equitable and accurate than a comparison of unadjusted total costs.

However, stratifying the population on too many characteristics may result in very small cohorts and may not yield credible results.

## **Observed to expected costs**

Comparison of observed to expected costs can be useful for setting a benchmark comparison by utilizing publicly available data sources.

In a scenario where two different networks do better or worse than their expected costs, it is difficult to compare networks by just taking the difference from observed to expected or taking the ratio of observed to expected. For example, a Network X whose expected costs are \$200 PMPM comes in at \$300 PMPM and another Network Y whose expected costs are \$500 PMPM comes in at \$700 PMPM. A simple difference of observed to expected would imply Network X (\$100 difference from observed to expected) is better than Network Y (\$200 difference from observed to expected), but based on an observed to expected ratio, Network Y (40% higher) did better than Network X (50% higher).

<sup>6</sup> There are some ways to get around this, for instance by purchasing publicly available

Employers and other stakeholders will have to use this information along with other facts to determine which providers they would prefer to contract with for business.

Other more theoretical and sophisticated methodologies using hierarchical and multivariate models can be used but these methodologies may not be practical when comparing them with the risk-adjusted allowed PMPM methodology described earlier. Risk adjuster models are relatively easy to use and readily available for the commercial population. Creating a risk adjuster model is an expensive and time-consuming process and likely not a good use of an employer's resources.

## **Other considerations**

All methodologies that could be used to compare provider networks will have advantages and disadvantages. Comparing risk-adjusted allowed cost PMPM is no exception. However, employers and their consultants can take certain steps to ensure that the comparison of providers is as fair as possible. The following are some key factors stakeholders may need to consider in this regard.

## **Practical use**

A theoretically sound methodology that cannot be used in practice because it is too complicated to implement, or not transparent enough for an employer, clinician, or other decision maker to trust, is less likely to gain traction with employers and providers versus one that is. Prior agreement among all stakeholders on

marketing or other data on members and creating a risk model that can assign scores using that.

methodology that will be used for evaluating savings can be considered a general best practice approach and will save time and effort.

### ***Availability of data***

Using the risk-adjusted allowed PMPM methodology to compare providers would require access to one or more years of claim, demographic, and diagnosis data for the population treated by these providers. If diagnosis data is not available, a risk adjustment based on age-gender may be useful as a proxy and can be combined with other stratification methodologies to make the comparison as close to risk adjustment as possible. In situations where certain benefits such as prescription drugs and behavioral services are carved out for some or all of the population, adjustments may need to be made to account for the missing data. This is particularly important when data is missing for only part of the population of interest. It will result in a subset of the population that has claims for these benefits and a subset that does not. Adjusting for coverage differences and choosing the right risk adjustment model becomes critical in these situations. Otherwise, the analysis supporting the employer's network decisions may be subject to material distortions.

### ***Credibility***

The size of the patient population for any given provider will impact the credibility of the measured claims and risk scores for the population associated with that provider. If multiple years of data are available, the threshold (number of members) to assign full credibility will generally be lower when

compared with the threshold required when a single year of data is available.

In general, risk-adjusted costs should be more credible at a given number of members than claim costs prior to risk adjustment. This is because the risk adjustment process removes a portion of the variability of claim costs. The increase in credibility will depend on the statistical power of the risk adjustment model used.

In our experience, it is sometimes tempting for stakeholders to apply the threshold of 2,000 members (or 24,000 member months), published by the Centers for Medicare and Medicaid Services (CMS) of experience in the Medicare Advantage market, to the commercial market. However, the commercial market is different from the Medicare Advantage market in that there are a lot more chronic members within the Medicare population compared to commercial population and thus more of the Medicare member costs are relatively stable from year to year. The threshold for member months for full credibility in the commercial market could therefore be higher than Medicare.

There are many considerations that must be weighed to determine the credibility level to use. These include but are not limited to: a) turnover rate, b) desired confidence levels, c) inclusion or exclusion of pharmacy claims in the data, and d) whether pooling levels are applied to limit impact of large claims. Based on research in the Milliman Commercial Health Cost Guidelines™, a range of 4,000 to 5,000 members for one year of data that is not risk-adjusted can be considered fully credible. The threshold on a risk-adjusted basis or for multiple years of

data would be somewhat lower and dependent on the specific circumstance.

### ***Providing coding and data quality***

Coding initiatives at a medical group or provider system may result in higher relative risk scores. This would result in a lower measured risk-adjusted allowed PMPM for providers taking up these initiatives even if there isn't a substantial difference in efficiency or intentional intervention from one provider to another. These differences cannot be avoided or easily adjusted for. Given the general prevalence of diagnosis-based risk adjustment in the Medicare Advantage, Medicaid, and ACA markets, coding initiatives are becoming quite common. If there is factual or other evidence of better coding with one provider compared to another provider, an adjustment may need to be made before comparisons are made.

Similar effects can happen when there is a difference in data quality across providers.

### ***Geographic differences***

Generally, employers are looking to compare providers within geographic areas with comparable healthcare costs. If comparisons of costs across different areas with widely varying unit costs are desired, then additional adjustments may be needed in the analysis. For instance, because starting hospital and physician charges vary widely from one locale to another, comparison of a risk-adjusted allowed PMPM for a provider in New York with a provider in Utah is not appropriate, given the inherent differences in unit costs in these two areas of the country. Combining risk adjustment with a unit-cost study using

tools such as the Milliman GlobalRVUs can help stakeholders understand the various drivers of differences in care in different locations.

### ***Randomness and large claims***

Random fluctuations and large claims can affect estimates and skew results that are being used to compare provider efficiency. It is advisable to examine the distribution of allowed costs across risk score for patients for different providers to get a sense of the variability of costs.

It may also be useful to compare risk-adjusted allowed PMPMs by including and excluding large claims over certain thresholds. For example, \$200,000 per member per year in allowed charges could be used as a threshold for excluding or truncating large claimants, although other thresholds may also be appropriate (if the employer purchases stop-loss reinsurance, it may wish to truncate claims above the stop-loss attachment point for instance). However, large claims may trigger different reimbursement rates for a provider, and may also be important in distinguishing how well providers manage complex cases. Hence it is often best to review results with and without high claimants. When large claims are removed or truncated, it may be appropriate to increase the credibility assigned to the data. Consideration must also be given to the risk score of these high cost claimants where exclusions or limits are placed on their high dollar claims.

Computing basic statistics and reviewing risk-adjusted allowed costs for the top 1% of the population based on dollar volume and similarly the top 10% and top 25% may

provide useful insights to decision makers on how the large claims impact the results.

### ***Out-of-network claims***

Out-of-Network (OON) claims directly affect employers' bottom-line costs just like In-Network claims. Although OON claims form a significantly smaller portion of total employer costs, we recommend that these costs be included in total risk adjusted allowed cost comparisons.

## **Summary**

Measuring risk-adjusted allowed claim costs PMPM, and the trend in those costs over time, will allow employers to be more confident in contracting with providers while trying to manage the overall healthcare benefit costs for their workforces. Risk adjusters normalize for age-gender and morbidity. No risk adjustment model or algorithm is perfect in predicting future costs, and employers should ideally take steps to mitigate the potential shortcomings of this approach. One example of such a step is to use risk-adjusted costs over three years to compare providers, which mitigates the impact of random fluctuations, large claims, and other data issues. Properly applied, risk adjustment can be a great tool for employers and providers in making fair comparisons of total costs for caring for a population.

## **Contact and acknowledgments**

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employees in a single geographic area. The methodology and analysis in this white paper reflect the research and opinion of the authors; Milliman does not intend to endorse any product or organization. As with any economic or actuarial analysis, it is not possible to capture all factors that may be significant. Different data sets, time periods, and methodologies will produce different results. The findings in this white paper should be interpreted carefully before they are applied to any particular situation. If this report is reproduced, we ask that it be reproduced in its entirety, as pieces taken out of context can be misleading.

If you have any questions or comments on this document, please contact the authors. The opinions in this white paper represent those of the authors and not Milliman as a whole. Troy, Hans, and Shyam are members of the American Academy of Actuaries and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

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