MILLIMAN CLIENT REPORT

Independent Review of Methodology for Quantifying Financial Impact of the Vori Health Musculoskeletal Care Pathways Program

Commissioned by Vori Health

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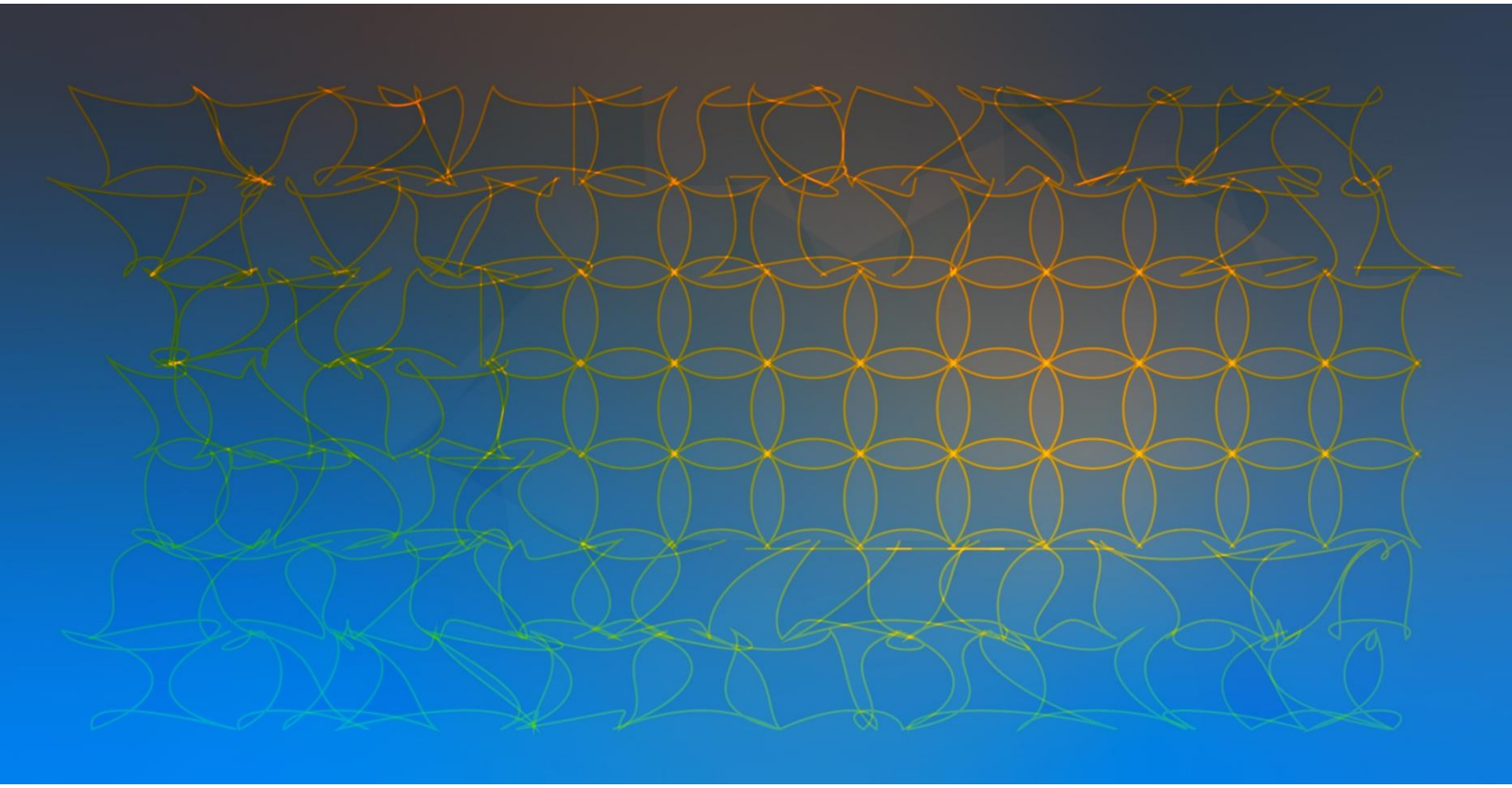

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Executive summary

Vori Health (Vori) has developed a methodology to quantify the potential financial impact of its musculoskeletal (MSK) patient management program. Vori engaged Milliman to conduct a review of this methodology to determine the appropriateness of this methodology for achieving Vori's stated purpose. This report:

1) Describes Vori's MSK patient management program,
2) Outlines Vori's approach to quantifying the financial impact of their program and their supporting data sources,
3) Discusses some limitations of the approaches used by Vori, and
4) Outlines important caveats and limitations of Milliman's review of Vori's methodology.

This report is intended to provide feedback on the actuarial appropriateness of Vori's ROI methodologies as they were presented to Milliman and may not be appropriate and should not be used for any other purpose. Actual experience will differ from historical experience, and the results for any particular Vori customer will be unique to the characteristics of that customer, point in time, and other external factors not considered in this assessment. We are only commenting on the general approaches provided to us by Vori for calculating estimated financial impact attributable to the Vori cervical spine, hip, shoulder, uncomplicated low back, and knee pain offerings. This information does not constitute an endorsement or recommendation of Vori's services, nor does it quantify the value of Vori's services in aggregate or for any specific group or individual historically or in the future.

Overall, we conclude that the methodology Vori uses to estimate the potential financial impact of its MSK programs is reasonable and appropriate, in terms of approach and assumptions used, for its intended use. Vori's approaches for quantifying impact are consistent with typical actuarial practices to estimate the net financial impact of similar programs in the absence of data available to perform an observational matched study.

Any reader of this report must possess a certain level of expertise in areas relevant to this analysis to evaluate the significance and reasonability of the assumptions and the impact of these assumptions on the illustrated results. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing this report.

Background

According to information provided by Vori, the company offers what it describes as a unique care delivery model for treating MSK conditions. Vori's program intends to integrate key components of MSK treatment including medical services, rehabilitation, physical therapy, prescription drugs, imaging and lab, health coaching, nutritional guidance, community support, and self-care content.

Vori's program splits services into five different pathways based on MSK condition:

- Cervical spine pain
- Hip pain
- Knee pain
- Shoulder pain
- Uncomplicated low back pain

While each pathway contains overlapping elements like an initial integrated visit, health coaching, and physical therapy, the pathways are specifically designed by Vori for each condition to manage health outcomes.

To quantify the estimated financial impact of its MSK patient management programs, Vori has developed what it calls a "Return on Investment (ROI) Model." Vori uses this model to support its marketing claims that its programs save customers money. For each pathway, Vori attributes savings to costs of what it deems unnecessary visits or procedures avoided as a result of Vori's managed care activities.

The scope of this report is limited to the five condition pathways noted above. There may be other potential benefits or limitations of Vori's managed care programs which are outside the scope of this report.

Vori has developed two versions of its ROI model: one for commercial health insurance and one for Medicare fee-for-service (FFS). The utilization and unit prices for the benchmark population and the unit prices for Vori's care pathways are sourced from the following two medical claims databases:

- Commercial: Medical claims incurred in 2019 from Merative MarketScan® Databases. Medical claims incurred in 2018 were used as a look back period for determining inclusion in the high severity member category.
- Medicare FFS: Medical claims incurred in 2019 from the Centers for Medicare and Medicaid Services (CMS) Limited Data Sets Medicare 5% Sample. Medical claims incurred in 2018 were used as a look back period for determining inclusion in the high severity member category.

Overview and assessment of Vori's MSK program financial return methodology

Methodology overview

Vori's MSK program financial return methodology is intended to be used to calculate what Vori terms ROI for an average member engaged with Vori compared to the benchmark population. The ROI calculation is presented in a spreadsheet model does the following:

- The methodology compares costs for services rendered for members participating in the Vori program with the average benchmark costs for services in the same categories for members who have met the claims-based criteria for Vori program identification.
- The cost and utilization for Vori program services rendered are calculated as benchmark unit prices multiplied by Vori's expectation of the utilization that occurs for members within each MSK condition care pathway.
- The benchmark population cost and utilization are calculated based on market average health claims data for members who meet the clinical trigger/identification criteria for each MSK condition modeled.
- The ROI is calculated as the average 6- or 12-month cost for a member to manage their MSK condition through Vori subtracted from the average 6- or 12-month cost for a member to manage their MSK condition through traditional market average care pathways.

The model is dynamic in order to compare similar populations between the benchmark and Vori. The adjustments to both Vori and the benchmark population are changed through toggles based on:

- Episode duration (6 months or 12 months)
  - The episode duration lengths were selected by Vori.
  - Vori's programs have the same average utilization rates for both the 6-month and 12-month episode durations.
- Member high severity
  - The high severity category is triggered if the member meets any of a variety of criteria defined by Vori as being high severity, such as having a prior spine or joint replacement surgery or having two or more emergency department visits in the last 12 months before the initial MSK diagnosis.
- The presence of various comorbidities including
  - Type 2 diabetes
  - Osteoporosis
  - Obesity
  - Hypertension
  - Mental health disorders
  - Heart disease
  - Rheumatoid arthritis
- Prevalence assumptions for the five MSK conditions and comorbidities instead of using market averages
- Distribution of age and gender

These assumptions are then used to calibrate the benchmark data. The cost and utilization for the benchmark data are then compared to the corresponding cost and utilization for the Vori members. The comparisons are made at a healthcare service category level.

The trigger criteria for a member from the benchmark dataset to be included is the same as the criteria for a member to be included as part of Vori's pathways.

Vori attributes its MSK programs' savings to reduced or avoided utilization in multiple healthcare service categories as well as reductions in unit prices in select categories relative to the average commercial and Medicare benchmarks. Not all categories shown below are applicable for all of the five pathways:

1. PCP visit / integrated visit (performed by a Medical Doctor (MD) or Advance Practice Provider (APP))
2. Imaging (e.g., X-ray, MRI, CT, ultrasound)
3. Surgeon visit
4. Surgery
5. Physical therapy
6. Therapeutic injection
7. Rx (e.g.,Percocet prescription)
8. Emergency department visits
9. Other relevant costs (such as other specialist visits)

Sample financial return calculation

The below table shows an example of the direct medical cost financial return calculation from Vori's ROI model. In the table, Vori's average cost per service and utilization are compared to the benchmark's average cost per service and utilization to calculate the returns estimated by Vori for each service category. Total financial return is the sum of the Vori savings column for each category.

The values in the table are for illustrative purposes to represent the service categories and calculation methodology for financial return for an average member in a Vori program. The financial return represents either the 6- or 12-month average per member amount initially selected, as opposed to a per member per month (PMPM) for a defined episode.

Figure 1. Illustrative calculation of Vori financial return

	(a)	(b)	(c)	(d)		(e) = (a)*(b) - (c)*(d)
Service Category	**Benchmark Average Allowed Cost per Service**	**Benchmark Average Utilization per Member**	**Vori Average Allowed Cost per Service**	**Vori Average Utilization per Member**		**Vori Savings**
PCP Visit / Integrated Visit / MD/APP	$100	3.900	$120	1.700	*visits*	$ 186.00
Imaging	$110	1.500	$180	0.200	*procs*	$ 129.00
X-ray	$40	0.700	$40	0.000	*procs*	$ 28.00
MRI	$180	0.600	$180	0.200	*procs*	$ 72.00
CT	$100	0.300			*procs*	$ 30.00
Surgeon visit	$120	0.900	$90	0.200	*visits*	$ 90.00
Surgery	$30,000	0.100	$30,000	0.070	*episodes*	$ 900.00
First Surgery	$27,500	0.075			*episodes*	
Subsequent Surgeries	$37,500	0.025			*episodes*	
Physical Therapy	$100	5.800	$85	6.000	*visits*	$ 70.00
Injection	$170	3.300	$370	0.100	*units*	$ 524.00
ED Visits	$350	1.500	$350	0.000	*visits*	$ 525.00
Other costs	$180	0.600	$160	0.010	*visits*	$ 106.40
Average Financial Return (per Vori member)						$ 2,660.40

In the sample calculation above, the benchmark episode cost for the member is $5,603.00 and the Vori episode cost for the member is $2,942.60, resulting in $2,660.40 illustrative episode savings attributable to the Vori program.

The estimated ROI is ultimately calculated as the cost savings divided by the Vori total medical cost and fixed costs from Vori's program like the platform, health coach, and administrative costs. Using $1,000 as the illustrative fixed costs from Vori's program, the estimated ROI in this example is $2,660.40/($2,942.60+$1,000) = 67.5%.

Methodology assessment

Based on our review, the calculations and methodologies underlying the estimated financial returns generated by Vori's ROI model are appropriate for the intended purpose. Notwithstanding this general conclusion, each customer or organization relying on Vori's estimates should review the relevance and appropriateness of the assumptions used in Vori's modeling as it applies to each population. Customer financial returns and expenses within the methodology are based on allowed dollars and are not split between the payer, any employer group, and the member, and thus the "savings" for any one stakeholder may be overstated. Parties relying on Vori's estimates should consider the extent to which benefit design, retention, and other contractual terms affect their modeled financial returns.

The ROI model has the functionality to incorporate non-claims based impacts on the calculated ROI, defined as indirect benefits of care management and care coordination such as fewer comorbidities or presenteeism/ absenteeism. These are manual inputs defined by the user. Users of the model should be careful to apply reasonable assumptions. The value of these indirect benefits is difficult to quantify and clearly attribute to a particular program or intervention.

The ROI model includes an ROI Sandbox tool that allows the user to apply additional utilization adjustments to the summarized traditional pathway claims to test how these would impact the calculated ROI. Users should be careful to apply reasonable and achievable utilization impacts when using or relying on results from the ROI Sandbox.

There are several possible limitations that should be considered by any party that relies on results generated by Vori's ROI model. These limitations include, but are not limited to:

1. **Selection bias due to voluntary participation in a care management program**. It is generally the case that individuals who opt to participate in a care management program have behaviors and clinical risk that differ materially from individuals who do not. This selection bias could result in higher or lower expected costs and utilization compared to average overall population costs and utilization.
    a. For example, if individuals who opt into the Vori care pathways are more willing to engage in activities that will improve their healthcare outcomes and may have been taking steps to manage their own care in the absence of Vori's program, this could drive a reduction in baseline healthcare costs that is difficult to control for in a financial return methodology (thus overstating the impact of Vori's interventions).
    b. For another example, if individuals who opt into the Vori care pathways are drawn to participate due to their higher level of clinical risk or difficulty managing their own care or costs due to its complicated nature, this could drive an increase in baseline healthcare costs that is difficult to control for in a financial return methodology.
2. **The methodology does not include any assumed medical cost or utilization trend**. In the financial return methodology, baseline costs are not adjusted for trend. The underlying costs and utilization represent data from calendar year 2019. Vori customers should expect differences in costs and utilization due to expected changes in healthcare unit prices or utilization levels that may affect the underlying modeled savings.
3. **The methodology does not vary costs by geography.** Unit prices for healthcare costs can vary materially by geography. The underlying costs represent nationwide average data. Vori customers should expect costs to differ from the nationwide average.

4. **Plausibility of results**. Many factors impact health costs, and cost reduction may not be fully attributable to Vori's interventions. For that reason, program financial returns should be evaluated alongside other metrics to help validate the plausibility of results.
    a. Vori's pathways consider the possibility of patients dropping out of their program. The ROI model contains the ability to apply a user-input percentage of total average traditional pathway annual member cost that these patients would add after dropping out of the program.
5. **Vori's actual distribution of cost and utilization may differ from the pathways that Vori defined**. We did not review any claims extracts for participants in Vori's program. Vori has defined expected service utilization for each of the five pathways. We did not perform any clinical review on Vori's utilization expectations.
6. **Statistical credibility**. The ROI model is calculating an estimated ROI based on the average patient eligible for Vori's pathways. In practice, the ROI will be calculated for more than just a single member. The reliability of results will vary with the size of the patient population whose financial returns are being calculated. With more patients, larger groups will have less claims volatility, and therefore higher statistical credibility. The opposite is true for smaller groups.
7. **Vori's patient morbidity will potentially differ from the benchmark population morbidity**. The population data from the benchmark dataset represents a level of average patient morbidity from a large sample of data. While the same trigger criteria will be used for Vori's patient population as what was used for selection from the benchmark dataset, it is likely that average patient morbidity levels will differ.

Caveats, limitations, and qualifications

Austin Barrington, Deana Bell, and Austin Levenson are members of the American Academy of Actuaries and meet the qualification standards to render the actuarial opinion contained herein. To the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices.

This Milliman report is intended to provide our evaluation of the Vori methodology for quantifying the financial return of their MSK care pathways. It may not be appropriate, and should not be used, for other purposes. Milliman did not assess the effectiveness or impact of Vori's MSK care pathways and makes no opinions about the effectiveness or impact of this program.

If distributed to third parties, the report must be shared in its entirety. We do not intend this information to benefit, or create a legal liability to, any third party, even if we permit the distribution of our work product to such third party. Those reviewing Vori's calculations should take full responsibility for interpreting the results, which should be reviewed by someone knowledgeable in the areas of healthcare data and financial return calculations.

This report is subject to the terms and conditions of the Consulting Services Agreement between Vori and Milliman dated December 20, 2021. We understand that Vori intends to provide public access to this report through an internet link, and therefore it could be viewed by its prospective customers, competitors, potential investors, or other interested parties. We consent to this distribution if the work is distributed in its entirety. Milliman does not intend to benefit and assumes no duty or liability to other parties who review this work.

In completing this review, we relied on information provided by Vori, which we reviewed for reasonableness, but accepted without audit. If any of this information is inaccurate or incomplete, the contents of this report along with many of our conclusions may likewise be inaccurate or incomplete. This review incorporates Milliman's experience in working with similar programs that rely on administrative claims data. Vori customers' actual results may differ from modeled projections due to factors such as population health status, reimbursement levels, delivery systems, changes in Vori's programs, changing regulations, and random variation. It is important that Vori and Vori's customers monitor actual experience and make adjustments to assumptions, as appropriate.

This review was conducted on the version 3.1 Medicare and Commercial ROI models prepared as of September 16th, 2022. Models used in the preparation of our analysis were applied consistently with their intended use. Where we

relied on models developed by others, we have made a reasonable effort to understand the intended purpose, general operation, dependencies, and sensitivities of those models. Milliman was involved in the technical design of the Excel models and assisted with the development of the methodology.

While we find the methodology appropriate, all methodologies, algorithms, and formulas are by nature assumption driven. We are not commenting on the assumptions chosen for any particular calculation of financial returns done for any Vori customer. No attempts to replicate the Vori assumptions, recalculate results, test for potential omissions, weakness, or biases, or employ an alternative approach were made. Furthermore, we did not review Vori's specific care management activities or whether those activities would produce results to demonstrate a causal relationship between care management activities and resulting cost differentials.

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