

MILLIMAN CLIENT REPORT

Independent Review of Maven Clinic's Methodology for Quantifying Financial Return of its Maternity Program

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Executive Summary

Maven Clinic Co. (Maven) engaged Milliman to review its methodologies for quantifying the financial return of its maternity and fertility programs. The scope of this report is limited to the maternity program, which Maven describes as encompassing access to specialized practitioners, interactive weekly action plans for each state of pregnancy, and clinical programs for high-risk management. Maven provided their return on investment (ROI) model and supporting documentation in Excel for us to review. This report describes Maven's program, their approach to quantifying financial returns of the program and their supporting data sources, discusses some considerations of the approaches used by Maven, and outlines important caveats and limitations of our review. It is intended for use by Maven to provide third-party validation of Maven's calculations for estimating customer financial returns and ROI. This report is not intended to opine on the effectiveness of Maven's programs or clinical models nor whether these programs deliver savings.

Overall, we conclude that the methodology Maven uses to estimate the financial return of its maternity program is reasonable and appropriate for its intended use. Ideally, a propensity matched observational case-control study would be used to estimate the net financial return of Maven's programs, but the company's approaches are consistent with typical actuarial practices in the absence of necessary data for such a study.

The model has limitations that result from some of the data used. The methodology relies on several assumptions that use self-reported data from Maven's members. We have not validated these assumptions, nor do we consider the use of self-reported data for metrics that can be studied through claims consistent with best practices. Several sources of model assumptions are studies or reports whose data was gathered from models of care that do not precisely match Maven's, therefore some of the study conclusions cited for assumptions may not be directly applicable to the Maven care model and thus may understate or overstate the financial return of Maven's program. Other model assumption references are internal studies conducted by Maven or summary statistics from Maven's book of business, the underlying detail of which we have not reviewed. For some business-related financial impacts, the model cites secondary sources, and we were unable to locate the referenced primary sources or verify the accuracy or appropriateness of these assumption reference sources.

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

Maven describes itself as the largest virtual clinic for women's and family health, offering continuous, holistic care for fertility, pregnancy, parenting and pediatrics, and menopause. Maven describes its digital care platform as including personalized programming and communities, 24/7 access to virtual specialists, and inclusive, integrated reimbursement support. The company affirms it "partners with global employers and health plans to reduce costs, drive better health outcomes, and enhance DE&I in benefits programs." The Maven ROI methodology assesses programmatic financial impact related to two broad categories:

1. The Maven maternity program, for which the company attributes savings from medical cost reduction (e.g., NICU admission rate reduction, ED avoidance) as well as business and productivity savings (e.g., facilitating return to work after pregnancy).
2. The Maven fertility program, for which the company estimates reductions in medical costs (e.g., avoidance of unnecessary fertility treatment) and business and productivity savings (e.g., avoiding attrition of employees during fertility treatment journeys).

Each model is comprised of clinical and business-related financial impacts. The company defines clinical savings as costs avoided due to unnecessary visits or procedures as a result of Maven's managed care services. Maven attributes business-related savings to employee retention post-maternity as well as increases in productivity and loyalty from employer-sponsored managed care services.

This report's scope is limited to the Maven maternity program and whether the methodology Maven uses to quantify the financial return of the maternity program produces credible estimates. This report does not describe, nor did Milliman assess, whether the Maven maternity program achieves the clinical or business-related returns the company attributes to this program. There may be other potential benefits of Maven's managed care programs which are outside the scope of our review. Conversely, the benefits included, particularly the business-related financial returns, may not be relevant for certain customers, and financial returns related to employee productivity and loyalty are likely to vary significantly based on the context of employment.

Overview and Assessment of the Maven Maternity Program Financial Return Methodology

Methodology Overview

Maven's maternity program financial return methodology is presented in an Excel model which is used to estimate the financial return their maternity program may have for a particular customer. The model intakes assumptions about the customer and then produces a net financial return estimate using those assumptions by comparing the costs to the customer of the Maven maternity program against the financial return of the program estimated by Maven. The model's input assumptions can be defaulted to benchmarks from public literature or other sources if customer-provided data is not available.

Required modeling inputs include:

- Number of eligible employees, pregnancy or other qualification rate, and projected enrollment rate
- Baseline rates of Cesarean delivery and neonatal intensive care unit (NICU) admissions
- Average costs from claims for NICU admissions and emergency department (ED) visits
- Average employee salary, length of parental leave provided, and the percentage of projected enrollees who are employees
- Geographic breakdown of enrollee location

CLINICAL FINANCIAL IMPACTS

Maven estimates their maternity program generates a clinical financial return in five areas:

1. **Avoidance of Cesarean deliveries in favor of vaginal deliveries**, using Maven's book of business historical Cesarean rates for members enrolling early in their pregnancies compared to later enrollment to develop a reduction rate, and using customer-provided data (or citing public studies when customer-provided data is unavailable) for the baseline Cesarean birth rate and average difference in cost between vaginal and Cesarean delivery, the latter typically being more expensive.
2. **Reductions in NICU admissions**, using Maven's book of business historical NICU admission rates for members enrolling early in their pregnancies compared to later enrollment to develop a reduction rate, and using customer-provided data (or citing external studies when customer-provided data is unavailable) for the baseline rate and average NICU admission.
3. **Reductions in ED visits**, using self-reported data from Maven's members stating that Maven helped them avoid an ED or in-person visit, and citing external studies for the baseline non-urgent ED visit rate while pregnant and the average ED visit cost.
4. **Improved behavioral health**, using self-reported data from Maven's members stating that Maven helped them manage anxiety or depression, and citing public studies for the baseline treatment rate of behavioral health conditions during pregnancy and an estimate of excess costs from untreated maternal behavioral health conditions from child's conception to child's first birthday.
5. **Increased breastfeeding duration**, using self-reported data from Maven's members stating that Maven helped them breastfeed longer, and calculating per-member breastfeeding savings from their internal book of business and a public breastfeeding savings calculator.

BUSINESS-RELATED FINANCIAL IMPACTS

Maven estimates their maternity program generates a business-related financial return in two areas:

1. **Increased percentage of enrollees returning to work postpartum**, using self-reported data from Maven's members that Maven influenced their decision to return to the workplace after maternity leave, and citing external studies for the percentage of the postpartum population that do not return to work and the attrition cost associated with replacing an employee with respect to their annual salary.
2. **Increased employee productivity**, using self-reported data from Maven's maternity program members that Maven improved their productivity at work, and citing public studies for the rate of actively disengaged employees and the cost of lost productivity from such employees with respect to their annual salary. A customer-specific input is also provided for the portion of the year a mother is on maternity leave following birth.

Methodology Assessment

We believe the calculations and methodologies underlying the estimated financial returns are appropriate for estimating the clinical and business-related financial returns of Maven's maternity program. However, each customer must review the relevance and appropriateness of the assumptions and public studies used as it applies to each population modeled. Customer financial returns and expenses within the methodology are not split between the payer, any employer group, and the member. Customers should consider the extent to which benefit design, retention, and other contractual terms affect their modeled financial returns.

The methodology for quantifying financial returns considers key areas of value generation relevant to customers (e.g., clinical savings and business-related savings) net of customer expense to participate in the program. To the extent possible, the model provides for customer-specific inputs with alternative defaults that can be used when customer-specific inputs are not available. Maven has made an effort to cite credible third-party data sources when more relevant experience is not available and to adjust baseline costs for trend and geography.

Notwithstanding the overall conclusion that Maven's customer financial returns estimation methodology is a reasonable and appropriate approach to quantification, there are several considerations and limitations any party relying on results generated by Maven's maternity customer financial returns methodology should consider. Maven acknowledges many of these limitations in the model itself. These considerations include, but are not limited to:

1. **Maven customer self-reported data**, used in five of the above categories, may be subject to certain biases, and may not necessarily be an accurate representation of Maven's actual influence over programmatic outcomes. We have not evaluated the impact of Maven intervention directly through claims analysis as these analyses have not been shared with us and thus we cannot provide an opinion on the credibility of these self-reported data. The effects of certain program impacts may be difficult or impossible to demonstrate through claims analysis (such as whether Maven impacted breastfeeding duration). The model derives the majority of financial returns from categories that use self-reported data.
 - a. A report that Maven extended the time that a member breastfed is not conclusive evidence that Maven caused this extension, since it is unknown how long this member would have breastfed without Maven's program. In the case of behavioral health and breastfeeding financial returns, different respondents will likely have different interpretations of what it means to "manage" anxiety or depression, or the range of time represented by an "extension" of breastfeeding duration.
 - b. A report that Maven helped a member avoid either an in-person visit or an ED visit does not distinguish between these two services, which have very different costs. In turn, because in-person visits generally cost less than ED visits, this may result in overestimating the savings from ED visits. The model attempts to adjust for this by citing a study claiming a certain percentage of the pregnant population have a non-urgent ED visit, and then assuming from this that the same percentage of the respondents are referring to an ED visit in their self-report. The possible results for this survey response range between 0% ED visit avoidance and 100% ED visit avoidance.

- c. A report that Maven influenced a member's decision to return to work does not necessarily mean the member would not have returned without Maven. We note that the model only applies this assumption to the baseline percentage of mothers not returning to work after four months postpartum as opposed to all mothers. This limits the application of the self-reported data to a smaller subset of the population, providing a more conservative estimate of Maven's influence.
2. **Reference applicability and appropriateness.** Customer-specific inputs are available in the Maven model for many of the assumptions that affect the calculated financial returns. When using the default cost, utilization, and frequency assumptions in Maven's model instead of customer-specific inputs, users relying on the methodology should consider the relevance of the assumptions to their population of interest.
 - a. The public study cited for the average ED visit cost is based on the overall U.S. population while average ED visit costs could vary across census regions by over 35%¹. The average ED visit cost within the pregnant population may differ from the value used, and this may further vary for non-urgent ED visits.
 - b. The public study cited for behavioral health savings is limited to Texas women, including those enrolled in Texas' Medicaid for Pregnant Women program, whose demographics may not accurately represent Maven's book of business or a specific customer, given that Maven is marketed to people with commercial insurance who tend to have more resources and access to behavioral healthcare. The cited study finds that the frequency of untreated maternity behavioral health conditions varies materially among races and ethnicities as well, highlighting potential issues of using this data with a different population.
 - c. The public study cited for the average return-to-work percentage was based on data from 2001. Given the lack of a generally accepted trend for this statistic and the effects of the COVID-19 pandemic on return-to-work behaviors, this assumption may no longer be as appropriate.
3. **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. It is possible this selection bias is controlled for to a greater extent in Maven's claims-based customer analyses.
 - a. For example, if individuals who opt into the Maven maternity program 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 Maven's program, this could drive a reduction in baseline healthcare costs that is difficult to control for in a financial return methodology.
 - b. For another example, if individuals who select into the Maven maternity program 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.
4. **Trend adjustment scope and appropriateness.** In Maven's model, baseline costs can be adjusted for trend and geography. These adjusted cost amounts serve as the expected cost levels for customers in the absence of any specific healthcare program or intervention. Adjusting for overall healthcare cost trend and geography is a reasonable way to account for underlying trends and differences in the cost of healthcare services, and the model allows for this trending to be toggled off or on for conservatism of the analysis. Trend adjustment using the Consumer Price Index (CPI) is commonly used to represent secular trends within the healthcare industry, but CPI does not fully account for how costs for the specific population enrolled in the Maven program may have been expected to develop in the absence of the Maven program. The individuals opting into Maven's program are likely to experience different cost trends through time for

¹ Moore BJ (IBM Watson Health), Liang L (AHRQ). Costs of Emergency Department Visits in the United States, 2017. HCUP Statistical Brief #268. December 2020. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/reports/statbriefs/sb268-ED-Costs-2017.pdf.

many reasons, including the nature of their health conditions, different or changing reimbursement levels, different delivery systems, changes in maternity and fertility treatment, changes in Maven's programs, changing regulations, and random variation. Financial return estimates may be biased to the extent that expected healthcare cost trends for those who enrolled in the Maven program differ from those used to develop the trend and geographic factors.

Caveats, Limitations of Third-Party Review, and Actuarial Qualifications

Austin Barrington and Kristin Houghton, Consulting Actuaries with Milliman, Inc., 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 actuarial evaluation of the Maven methodology for quantifying the financial return of Maven's maternity program. It may not be appropriate, and should not be used, for other purposes. Milliman did not assess the effectiveness or impact of Maven's maternity program 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 Maven'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. Actual experience will differ from historical experience, and the results for any particular Maven customer will be unique to the characteristics of that customer and other external factors not considered in this assessment. We are only commenting on the general approaches provided to us by Maven for calculating estimated financial returns attributable to the Maven maternity and fertility programs. This information does not constitute an endorsement or recommendation of Maven's services, nor does it quantify the value of Maven's services in aggregate or for any specific group or individual historically or in the future.

This report is subject to the terms and conditions of the Consulting Services Agreement between Maven and Milliman dated March 14, 2022. We understand that Maven 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 Maven, 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 claims and self-reported data. Maven customers' actual results may differ from modeled projections due to factors such as population health status, reimbursement levels, delivery systems, changes in maternity and fertility treatment, changes in Maven's programs, changing regulations, and random variation. It is important that Maven and Maven's customers monitor actual experience and make adjustments to assumptions, as appropriate. Potential effects of the June 24, 2022 U.S. Supreme Court decision to overturn *Roe v. Wade* on financial returns and assumptions underlying Maven's methodology have not been considered in Maven's calculations or our review.

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 Maven customer. No attempts to replicate the Maven assumptions, recalculate results, test for potential omissions, weakness, or biases, or employ an alternative approach were made. Furthermore, we did not review Maven'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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