MILLIMAN REPORT

Independent review of Covera Health's methodology for quantifying financial impact of the Centers of Excellence program

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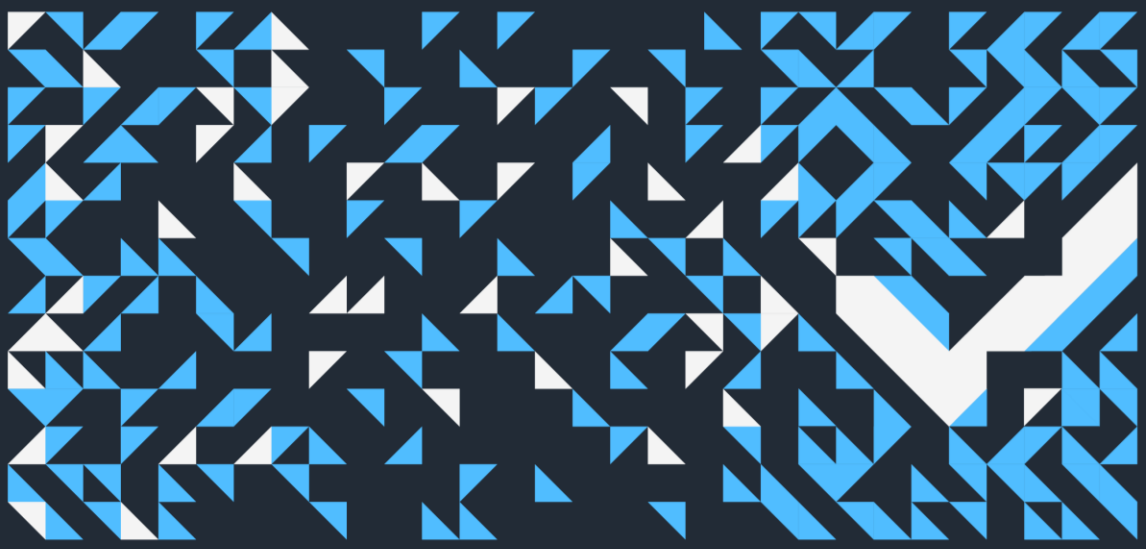

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Executive summary

Covera Health (Covera) developed a methodology to calculate the difference in total medical and pharmacy costs occurring after specific radiologic imaging for providers on a radiology Centers of Excellence (CoE) roster compared to providers not on the CoE roster. Covera engaged Milliman to conduct a review of this methodology to determine the appropriateness of this methodology for the above purpose. For ease of reference, we will refer to the costs occurring after a radiologic imaging event as the downstream costs and the difference in the downstream costs between CoE and non-CoE providers as downstream financial impacts. This report:

1) describes Covera's approach to designating CoE providers,
2) outlines Covera's approach to quantifying the financial impact of CoE providers compared to non-CoE providers,
3) discusses potential limitations of the approaches used by Covera, and
4) outlines important caveats and limitations of Milliman's review of Covera's methodology.

This report is intended to provide feedback on the actuarial appropriateness of Covera's methodology for the purpose of measuring the difference in per member per year (PMPY) downstream costs for radiologic imaging events indexed to CoE providers compared to radiologic imaging events indexed to non-CoE providers. Our review was based on a white paper from Covera entitled *Covera Health Centers of Excellence Program Claims Data Analysis,* dated November 27, 2023. This report may not be appropriate or used for any other purpose. Actual experience may differ from historical experience, and the results for any particular Covera CoE program customer may be unique to the characteristics of that customer, point in time, and other factors not considered in this assessment. We are only commenting on the general approaches provided to us by Covera for calculating estimated financial impacts attributable to CoE providers. This report does not constitute an endorsement or recommendation of the CoE program, nor does it quantify the value of the CoE program in aggregate or for any specific group or individual historically or in the future.

We conclude that Covera's methodology represents a reasonable approach to estimating the financial impact of using CoE providers compared to non-CoE providers and is appropriate for its intended purpose. As with any methodology, it is important to understand the caveats and limitations that may impact the accuracy, validity, and generalizability of the results and we have documented those considerations later in this report. We have also referenced supplemental analysis and metrics that may provide additional insight on the relative performance of CoE providers compared to non-CoE providers.

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 effect of these assumptions on the results. We recommend that all parties be aided by their own actuary or other qualified professional when reviewing this report.

Background on Covera's process for designating CoE providers

According to information provided by Covera:

> The CoE program designates high-quality, high-value imaging facilities as CoEs. CoEs are designated based on the availability of advanced imaging equipment, the radiologist roster across body parts, and the radiologist subspecialization rates across body parts. CoE providers are selected with the intent to reduce high-impact errors across brain, spine, musculoskeletal, body, and women's imaging.
>
> Covera's CoE program is intended to reduce the frequency and severity of diagnostic errors that its members may experience during the radiological diagnostic stage of care, ultimately improving overall health outcomes, reducing unnecessary healthcare costs, and avoiding complications in downstream care.

The scope of this report is limited to the methodology to quantify healthcare cost impacts only. There may be other methodologies to estimate benefits or drawbacks of the CoE program and other Covera programs which are outside the scope of this report.

Overview and assessment of Covera's CoE program impact methodology

Methodology overview

Covera's CoE program impact methodology is intended to estimate the downstream financial impact for an average member whose index event occurred with a CoE provider compared to a propensity-matched control population whose index event occurred with a non-CoE provider. The methodology used is summarized below:

- Members are eligible for the CoE case group by having their index event at a CoE. Members eligible for the control group, in addition to having their index event at a non-CoE, must also have had their index event take place at a facility within 30 miles of a CoE. Members who had their index event at a CoE are eligible for the case group even if they received subsequent imaging at a non-CoE, and vice versa for the control group.
- Prepare the claims data by verifying data quality (through Covera's defined methods including identifying missing data and ensuring fields contain standard codes) and excluding index imaging claims that occurred in settings other than a non-emergent outpatient setting, such as inpatient, critical care, or dental. Ensure members in both case and control groups have continuous medical and pharmacy coverage for 12 months prior to the index event (upstream costs) and for 12 months after the index event (downstream costs). Quintiles of the total upstream allowed cost of care are used as matching variables, while the total downstream allowed cost of care, including the cost of the index event itself, will be the primary measure used to estimate the CoE program impact.
- Assemble the list of variables to be used for matching. These include:
  - demographic information (age at the index event, gender)
  - geographic information (9-level United States (U.S.) Census division code, population density, median household income of member's ZIP code)
  - seasonality (the quarter of the year in which the index event took place)
  - insurance carrier of the member, with name masked under a generic identifier
  - comorbid conditions present in upstream claims, including but not limited to cancer, hypertension, diabetes, depression, obesity, and arthritis
  - upstream costs and utilization measures, including quintiles of the total allowed upstream cost, the number of distinct providers seen, the number of medical encounters, whether the member had the same body part imaged, and the overall number of imaging events
  - characteristics of the index event, including imaged body part and modality (computed tomography (CT), magnetic resonance (MR), and multiple)
- Apply outlier handling logic which excludes members with upstream costs above the 99th percentile and winsorizes downstream costs at the 99th percentile. Remove members with missing covariate information.
- Using the *MatchIt* package in R, implement a propensity-score matching algorithm to assign a single control to each treatment member without replacement. Exact matching is enforced on the body part imaged as well as on the quintile of upstream cost of care. After matching, assess match quality and balance via statistical significance tests for each matched variable to confirm that there are not significant differences between groups.
- Following matching, Covera ensures that the case and control groups are balanced across all variables used in the matching step. Specifically, members are removed from the analysis outside of the propensity score distribution common support and a standardized mean difference (Cohen's d[1]) between the case and control groups of less than 0.1 is required for all matching variables. If balance is not achieved, Covera will iterate on matching parameters including matching with replacement, many-to-one matching, and exact matching on imbalanced variables to achieve balance. In these circumstances Covera will demonstrate that there were shortcomings in the matching step necessitating the methodology adjustments. Covera customers should carefully consider whether the adjustments made to the methodology are appropriate and reasonable. Covera will disclose any matches with

[1] Cohen, J. (2013). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). Routledge.

significant differences between the case and control groups and adjustments performed to improve matching and will not weaken the match quality to achieve more significant results.

- Once balance is achieved between the case and control groups, Covera conducts a regression analysis to estimate the effect of CoE group participation on the total downstream healthcare costs controlling for the same variables that were used in the matching step. This is intended to control for residual imbalance between the case and control groups post-matching. Covera attributes its CoE program's impact to a statistically significant difference in average downstream costs between the cases and the controls. In addition to differences in total downstream costs between the two groups, Covera will also report the differences restricted to only medical or only pharmacy downstream costs when both medical and pharmacy claims are available.
- If the coefficient on the CoE group participation variable is statistically significant (measured as having a p-value of 0.05 or less) or marginally statistically significant (measured as having a p-value of 0.20 or less), these differences in downstream healthcare costs between the groups, including the index event, are used to develop average per-engaged member per-year (PEMPY) effects. Covera will report even those statistically significant results that correspond to negative impacts of the CoE program.

Covera has retained flexibility in approach for components of the methodology where an alternative technique may be used as Covera feels appropriate – for instance, parameter adjustments to improve match quality, the method of handling missing fields on data, or other adjustments that may depend on the specific customer data used or hypothesis of interest. As these decisions cannot be enumerated, we are unable to comment on the appropriateness of the specific methodology used for any particular customer or study, only on the general methodology outlined above.

Methodology assessment

We believe Covera's methodology for estimating impacts of the CoE program is appropriate for its intended purpose. Notwithstanding this general conclusion, each customer or organization relying on Covera's estimates should review the relevance and appropriateness of the assumptions used in Covera's studies as it applies to each population of interest. Customer financial impacts within the methodology are based on allowed dollars and are not split between the payer, any employer group, and the member. Parties relying on Covera's estimates from the CoE impact estimation methodology should consider the extent to which benefit design, retention, and other contractual terms affect their modeled impacts.

There are several potential limitations that should be considered by any party that relies on results produced by Covera's CoE program impact methodology. These limitations include, but may not be limited to:

1. **Selection bias due to self-selection of radiologic provider (or referral by physician)**. The individuals who are referred to or otherwise select a CoE provider may differ materially from individuals who do not and these differences may impact downstream results. The propensity-matching process may be effective in mitigating against these sources of bias. Individuals using a CoE provider or their physicians that refer to a CoE provider may also have differences in their view on the effectiveness of treatment options (e.g., medical treatment vs. surgical treatment) compared to individuals not using CoE providers that may also impact downstream results and these types of bias are not likely to be fully controlled for by propensity matching.
    a. For example, if individuals who choose to go to a CoE are more willing to engage in activities that will improve their healthcare outcomes and have been taking steps to manage their own care in the absence of the CoE program, this could drive a reduction in downstream healthcare costs that is difficult to control for in a program impact methodology (thus overstating the impact of the CoE interventions).
    b. As another example, if individuals who choose to go to a CoE are incentivized to go 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 downstream healthcare costs that is difficult to control for in a program impact methodology (thus understating the impact of the CoE interventions).

2. **Socioeconomic bias due to requiring non-CoE index events to be within 30 miles from a CoE.** Members with a non-CoE index event are only eligible for the control group if the index event took place at a facility within 30 miles from a CoE. This restriction attempts to mitigate the possibility that control group members did not have access to a CoE to begin with but does not eliminate the possibility entirely. For instance, if a member already had to travel a significant distance to their non-CoE index facility, a CoE that is an additional 30 miles away may not be reasonably accessible, especially for members with limited financial resources or those living in mountainous terrain, possibly introducing bias to the study. Also, this 30-mile range may be subject to change depending on different customers.
3. **Absence of potential confounding variables.** While insurance carrier/third party administrator is a variable used for matching, the particular plan or benefit design for each member may also have an impact on results that is not fully controlled for by the propensity-matching process. Furthermore, while continuous enrollment is required in the upstream and downstream periods, members may potentially switch plans or change benefit designs during the timeframe of the study, which may also influence results. Customer financial impacts are calculated by Covera based on allowed dollars which partially mitigates for variations in customer paid amounts due to member cost sharing and coordination of benefits with other payers.
4. **Unit price differences by geography**. While matching was performed using the U.S. Census division, population density of the member's ZIP code, and the median household income of the member's ZIP code, these variables may not fully account for average unit price differences by geography. Impacts of the CoE program may be higher in some regions while lower in others. Customers should consider how representative the included matched population is of the population of interest, in terms of both geography and demographics.
5. **Impact of COVID-19**. There are no specific methodology adjustments to account for impacts of the COVID-19 public health emergency on healthcare utilization – that is, the analysis assumes that the CoE and non-CoE groups are impacted similarly by the pandemic. The methodology may be biased if significant behavioral differences existed between the CoE and non-CoE groups due to restrictions on certain types of healthcare during the COVID-19 period.
6. **Potential frequent reuse of a subset of the control group in many-to-one matching**. One-to-one matching without replacement did not yield satisfactory balance in the case study we reviewed, and a two-to-one matching with replacement was used instead. This practice aligns with the heuristic for unsatisfactory post-match balance listed in Covera's methodology. In the resulting re-matching, 95% of control group members are used 5 or fewer times, but the remaining 5% (87 distinct control members) appear to be used as matches 681 times, comprising approximately 20% of the overall control group. We believe that if this small subset of members that is frequently reused has outcomes that are significantly different from the rest of the controls, it may lead to results that are disproportionally weighted. However, we also believe this possibility has been adequately controlled for in Covera's methodology by requiring balanced post-match datasets have an absolute standardized mean difference of less than 0.1 for all covariates.
7. **Variation in methodology.** We reviewed the default methodology for quantifying healthcare cost impacts of the CoE program. The methodology may be modified based on the customer data used or hypothesis of interest. Methodology modifications can include, but are not limited to, removing biased claims, excluding members with certain health conditions, handling outliers or missing data, adding additional covariates, using surrogate variables for covariates, adjusting the time period studied, using paid amounts when allowed amounts are unavailable, increasing the number of controls beyond one per case, or adjusting matching parameters. Customer-specific variations may also be present independent of any methodology change – for instance, different customers may choose to offer different types of redirection incentives.

   Covera will disclose and justify any methodology adjustments used in a particular study that vary from the default methodology we reviewed. Any party relying on Covera's results should review any adjustments on a study-by-study basis to assess their appropriateness, both for validity of the study and for whether the study is still applicable for the party's population of interest after these adjustments. Interested parties should also understand that results from different Covera studies may not be comparable due to methodology changes

or differences between customer characteristics or data used for each study. We have not reviewed the results of any particular study and make no comment on the appropriateness of any adjustments (or lack thereof) in the methodology for any other study.

Many factors impact healthcare costs, and impacts may not be fully attributable to members using CoE providers. For that reason, program impact estimates should be evaluated alongside other metrics to help validate the plausibility of results.

- Any prospective customer intending to offer benefits to members choosing CoEs should also consider the costs of providing these incentives in tandem with CoE program impacts and the feasibility of increasing the use of CoE providers beyond historical levels.
- The following types of metrics may provide additional insight on the relative performance of CoE providers:
    - Existence of a dose-response relationship – whether groups with higher use of CoE providers have better risk-adjusted financial results than groups with lower use of CoE providers.
    - Whether total cost of care results improve after increasing the proportion of CoE provider events, and whether this improvement is better than the results of groups that are not getting increased use of CoE providers.

Caveats, limitations, and qualifications

Austin Barrington and Deana Bell 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 report is intended to provide our evaluation of the Covera methodology for quantifying the healthcare cost impacts of their CoE program. It may not be appropriate, and should not be used, for other purposes. We did not assess the effectiveness or impact of Covera's CoE program and make no statement 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 Covera's calculations should take full responsibility for interpreting the results, which should be reviewed by someone knowledgeable in the areas of healthcare data and impact calculations.

We understand that Covera intends to provide public access to this report and the methodology we reviewed 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.

In completing this review, we relied on information provided by Covera in October and November 2023, which we reviewed for reasonableness, but accepted without audit. Specifically, the information we received include:

- *Covera Health Centers of Excellence Program Claims Data Analysis* document
- Pre-processed analytic dataset
- R code for data processing and matching
- Supporting literature

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. Covera customers' actual results may differ from modeled projections due to factors such as population health status, reimbursement levels, changes in Covera's programs, changing regulations, and random variation. It is important that Covera and their customers monitor actual experience and make adjustments to assumptions and methodology, as appropriate.

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 CoE program impacts performed for any Covera customer. No attempts to replicate the Covera assumptions, recalculate results, test for potential omissions, weaknesses, or biases were made. Furthermore, we did not review Covera's specific care management activities or whether those activities would produce results to demonstrate a causal relationship between care management activities and resulting cost impacts.

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