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Colorado Gynecologic Cancer Alliance

Health Care Savings Associated with Enrollment in Carol's Wish

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Navigation

Executive Summary

At the heart of the Colorado Gynecologic Cancer Alliance (CGCA) is Carol's Wish (CW), a program that stands as a beacon of hope for patients diagnosed with gynecologic cancer. CW is not just a program but a mission to provide financial navigation services that empower patients to overcome economic barriers to their treatment. CGCA focuses the program's limited resources on supporting chronically under-resourced populations. Through participation in Carol's Wish (CW), these patients are expected to have increased access to treatment by significantly reducing their financial burden. This evaluation demonstrated that CGCA participants pay a lower proportion of their total health care costs out-of-pocket in the six months after their diagnosis than their non-participant peers. The findings suggest that Carol's Wish financial navigation services help reduce the financial burdens associated with gynecologic cancer. Overall, Carol's Wish participants had significantly higher total health care spending but a lower out-of-pocket proportion than their non-participant peers, which could indicate that members participating in Carol's Wish are more able to afford their out-of-pocket deductibles, copays, and coinsurance, thereby experiencing much-needed financial relief. However, more investigation is required to understand what drives this increased spending.

Background

Carol's Wish (CW) is a Colorado Gynecologic Cancer Alliance (CGCA) program that provides financial navigation services for patients diagnosed with gynecologic cancer. The program strives to help patients navigate financial challenges to accessing treatment to ensure that no patient receives substandard care for their condition or chooses not to seek treatment due to cost. They achieve this through advocacy, insurance enrollment or optimization, connection with grants, and negotiation on behalf of the patient for free/reduced-cost treatment or medications.

Since its inception in 2018, CW has collected case studies and survey results demonstrating reduced financial and emotional stress for patients. Ample anecdotal evidence suggests that the program eases the path through cancer treatment and beyond, increasing overall access to health care through insurance enrollment and optimization for patients and their families. These benefits and their associated health outcomes are difficult to quantify using the available program data. Quantifying the program's financial and treatment benefits could benefit the organization's efforts to expand and diversify financial support for this program.

CGCA partnered with the Center for Improving Value in Health Care (CIVHC) to evaluate the program using the Colorado All Payer Claims Database (CO APCD). This project compared the total health claim costs and member out-of-pocket spending in the six months following a gynecologic cancer diagnosis for CW participants against a group of peers.

This report summarizes the findings of this evaluation project and outlines the next steps for CGCA. Appendix 1 describes the composition, benefits, and data sources used in this project. Refer to Appendix 2 for a Detailed Methodology summarizing the project design, definitions, cohort selection, and analytic approach.

Results

This section describes the project cohorts and summarizes results from the Per-Member-Per-Period (PMPP) Allowed Amounts, Member Out-of-Pocket, and Percent Member Out-of-Pocket spending. Costs were total for each member from their diagnosis date through six months and adjusted for their total months of insurance eligibility within that period. These measures are compared between CW Program Participants and a randomly selected 1:1 comparison group of comparable patients who did not participate in the program. The effects of members' Resource Utilization Band (RUB) and Medicaid insurance or dual eligibility were included as covariates in the analysis, as these can significantly affect member out-of-pocket costs and overall spending.

Project Cohort Summary

The final CW Participant Cohort comprised 234 individuals. Using the same inclusion criteria, data for 12,544 control non-participants was extracted.

Compared to non-participants, CW participants were more likely to have Medicaid insurance before their diagnosis (46% and 23%, respectively). CW participants were also more likely to have one or more social needs recorded in their claim history, trended younger than non-participants, and tended to have higher RUBs, indicating they were less healthy overall.

CIVHC randomly sampled non-participants at a 1:1 match with CW Participants on combined RUB, Age Group, and Dual Eligibility for the final balanced CW participant and non-participant comparison cohort.

Spending Summary

CW participants spent more overall on health care than non-participants. These differences were similar among claims associated with gynecologic cancer treatment but were not reflected in pharmacy prescription fills. Figure 1 summarizes t-test results comparing participant and non-participant total claim costs by category.

Similarly, the total member out-of-pocket spending among CW participants was higher than spending by non-participants. However, there was no significant difference between cohorts in the total dollars spent out-of-pocket on claims associated with gynecologic cancer treatment or pharmacy claims (Figure 2).

The difference in the total medical spending among program participants compared to non-participants increased more than their out-of-pocket expenses. Carol's Wish Participants were liable for a significantly lower proportion of all health care costs than their non-participant peers (Figure 3).

Figure 1 – T-Test Results: Health Claims Spending by Category and Cohort[1]

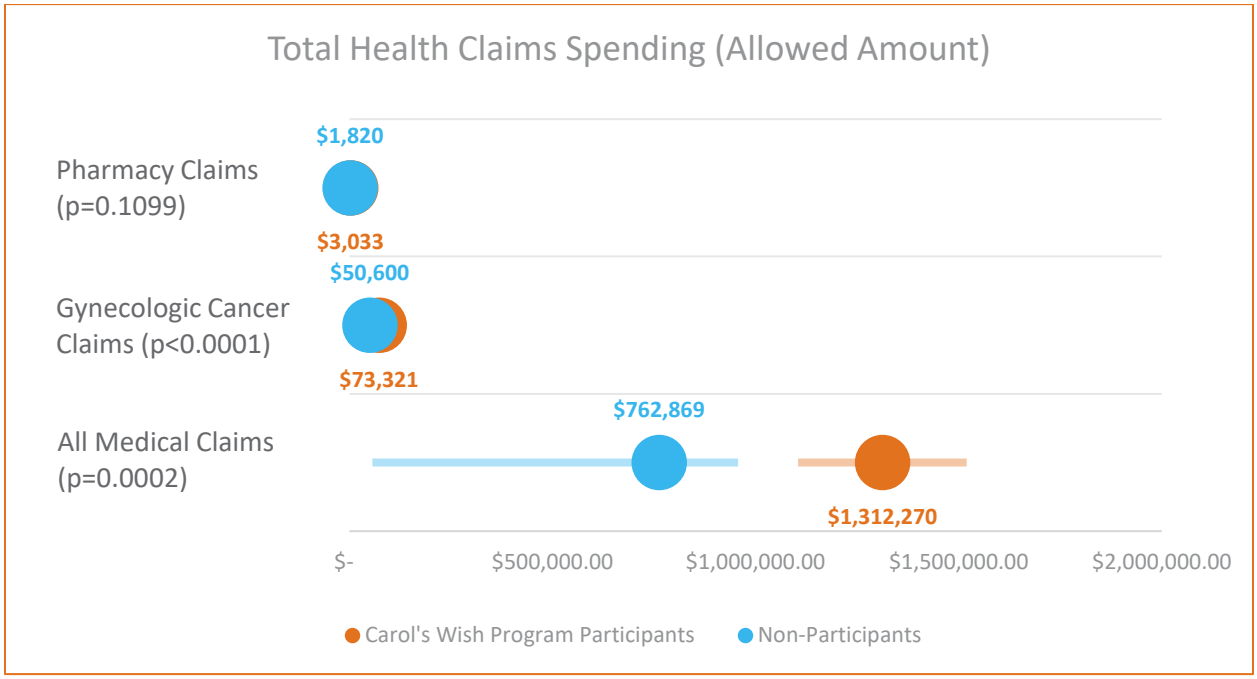
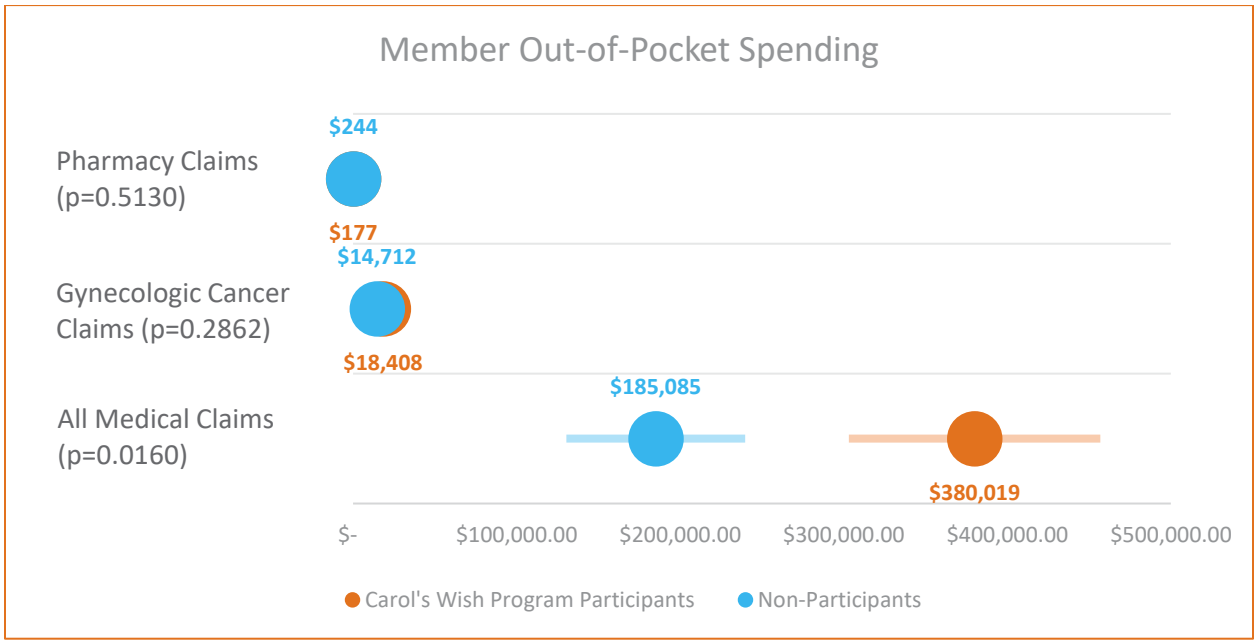
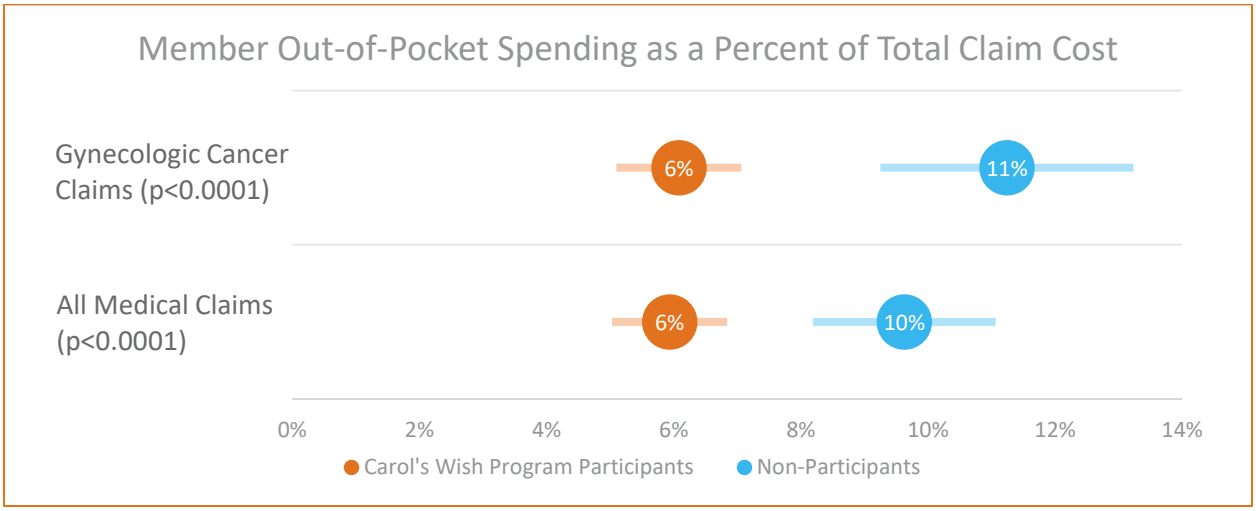


Figure 2 – T-Test Results: Member Out-of-Pocket Spending, by Category and Cohort



[1] Depict Data Studio. "How to Visualize Margin of Error Data in Excel with Slider Plots." Accessed May 28, 2024. https://depictdatastudio.com/how-to-visualize-margin-of-error-data-in-excel-with-slider-plots/.

Figure 3 – T-Test Results: Member Out-of-Pocket Spending as a Percentage of Allowed Amount by Category and Cohort



Regression Results

CIVHC performed multiple generalized linear regression models to estimate the effects explicitly associated with Carol's Wish participation, including estimates for RUB, SES Proxy Flag, and the combined interaction between the two.

Table 1 summarizes the estimated impact of participation in CW on the PMPP allowed amount of health care claims in the six months following diagnosis. Holding all else constant, PMPP health care spending was $611,789 higher among CW Participants than their non-participant peers. Their estimated PMPP member out-of-pocket spending was $30,131 higher as well. Conversely, program participants' PMPP out-of-pocket proportion of total spending was 2.4 percentage points (14.9%) lower than the proportion paid by non-participants.

As summarized in Table 2, the PMPP Allowed Amount for medical claims with a corresponding gynecologic cancer ICD-10 code was similarly higher. Holding all else constant, the PMPP Allowed Amount was $223,720 higher among CW Participants than non-participants. Interestingly, participants' out-of-pocket spending was not significantly different from non-participants (p=0.07). Accordingly, the member liability proportion of costs for gynecologic cancer claims was 3.8 percentage points (21.3%) lower for CW participants than non-participants.

Lastly, the model demonstrated that members with an SES Proxy Flag had significantly lower out-of-pocket costs and total spending than members with Commercial or Medicare insurance before their diagnosis. Conversely, members of the highest RUB had higher allowed amounts, member liability totals, and out-of-pocket proportions. The interaction of the RUB 5 and SES Proxy flag lessened these effects. Members in RUB 5 with an SES Proxy Flag experienced a significant increase in the member out-of-pocket percent of total costs (5.5 percentage points, p=0.01). All other combinations differed insignificantly from each other (data not shown).

Most cancer medications are administered during patient visits. Thus, medications filled at the pharmacy are more likely associated with comorbid conditions. Because the comparison cohort was selected 1:1 with CW Participants based on RUB and member age, pharmacy utilization is expected to be comparable between groups. It is, therefore, unsurprising that the overall prescription drug spending did not significantly differ between cohorts.

Table 1 – Estimated Impact of Carol's Wish on Medical Claims Spending

Parameter	Estimated Impact of Carol's Wish	Standard Error	P-Value	Adjusted R-Squared
PMPP Allowed Amount	$611,789	$140,165	<0.0001	0.10
PMPP Member Out-of-Pocket Amount	$30,131	$9,044	0.0009	0.10
PMPP Member Out-of-Pocket %	-2.4 percentage points	0.7	0.0012	0.32

Table 2 – Estimated Impact of Carol's Wish on Medical Claims Spending Associated with a Gynecologic Cancer Diagnosis

Parameter	Estimated Impact of Carol's Wish	Standard Error	P-Value	Adjusted R-Squared
PMPP Allowed Amount	$223,720	$46,837	<0.0001	0.09
PMPP Member Out-of-Pocket Amount	$6,182	$3,386	0.0685	0.07
PMPP Member Out-of-Pocket %	-3.8 percentage points	1.0	0.0002	0.22

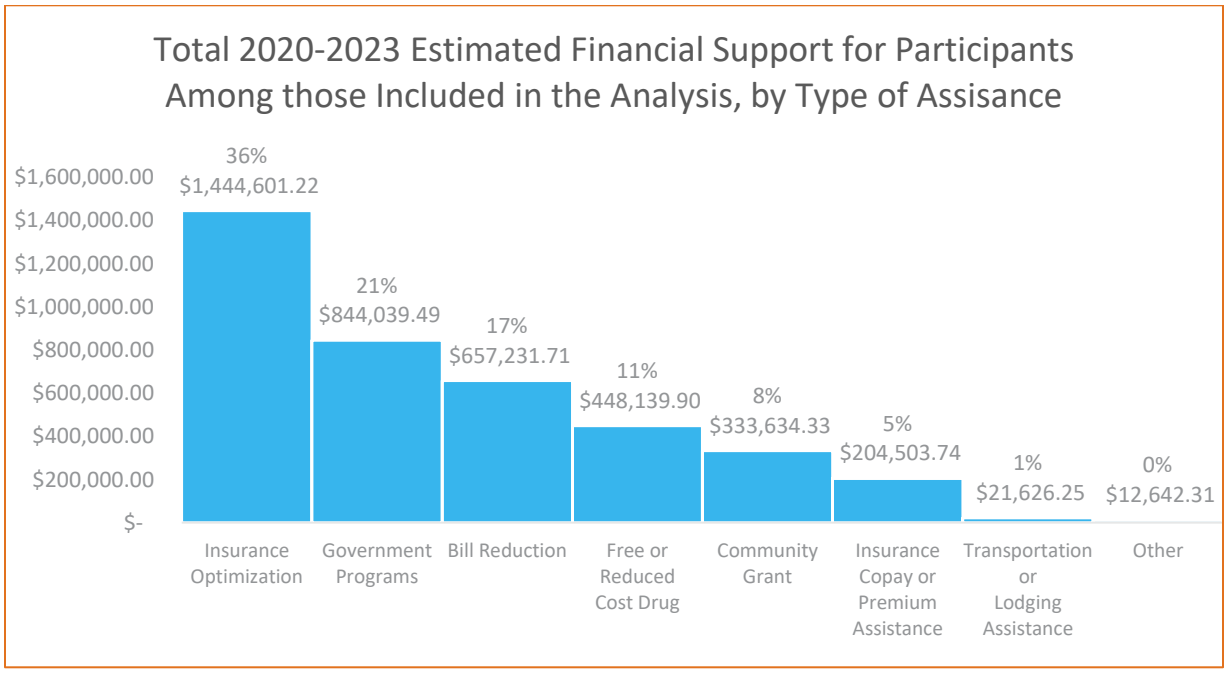
Monetary Assistance Summary

Monetary assistance data provided by CGCA is summarized here for contextual information. Assistance descriptions were categorized into eight (8) core assistance categories, including:

- Insurance Enrollment or Optimization
- Government Programs
- Bill Reduction
- Free or Reduced Cost Drugs
- Community Grants
- Insurance Copay or Premium Assistance
- Transportation or Lodging Assistance, and
- Other Supports

Program assistance with insurance enrollment or optimization has the highest financial impact on participants compared to other types of assistance (Figure 4). Given the substantial financial commitment associated with cancer treatment, however, affordable insurance premiums and copays alone are unlikely to reduce financial toxicity sufficiently. From 2020 to 2023, CGCA connected members with over $2.5M in additional financial resources.

Figure 4 – Summary of Monetary Assistance Provided to Carol's Wish Participants



Discussion

CGCA focuses the program's limited resources on supporting chronically under-resourced populations. Through participation in Carol's Wish (CW), these patients are expected to have increased access to treatment through reduced personal financial burden. Before cohort selection, the Carol's Wish program had a higher percentage of members with one or more social needs listed and who had Medicaid insurance before their diagnosis (Appendix 2). This suggests that CGCA successfully reaches members who are more likely to experience financial hardship.

Individuals who have higher social needs typically qualify for benefit programs that help reduce their out-of-pocket medical costs. However, the interaction observed between RUB and SES Proxy Flag suggests that individuals with higher social needs who also require the highest health resources (RUB 5) tend to have higher out-of-pocket costs regardless of these benefits. The CW participant population trended towards this combination of high health and social needs more than non-participants.

The higher total and member out-of-pocket spending among program participants could indicate increased health care utilization over that of non-participants, suggesting that CGCA's financial navigation services and additional monetary assistance increased access for these individuals. It may indicate that CW participants who contributed a much lower member out-of-pocket proportion of total costs could seek more care overall when necessary. Anecdotal reports from program staff support this theory, noting that participants have expressed the ability to address other health concerns for themselves or family members after CW helped them with insurance optimization.

Health care utilization rate was not the focus of this evaluation. However, CIVHC conducted a brief follow-up analysis to test this interpretation of the cost results. The analysts calculated the per member per 6-month period (PMPP) utilization rate for the project cohorts and compared these using t-tests. They compared rates for claims across all payer types and found that CW participants had significantly more health claims per eligible member in the six months following diagnosis than for non-participants (p-value < 0.0001). The difference remained when the test was limited to Medicaid members (p-value $= 0.0041$). Although this supports the interpretation that CW participants may be accessing more care, a more thorough analysis should be completed to understand the factors at play.

Cohort members ranged from moderate to very high health care resource utilizers (RUBs 3-5), indicating disproportionately poor health status compared to the general population. Thus, while this evaluation did not account for the health care services provided, it is presumed that the increase in health care spending was attributed to necessary care rather than higher charges or low value care.

While this evaluation is limited in attributing outcomes to a specific behavior or type of assistance, supplemental information supplied by CGCA suggests that the financial navigation support provided by CGCA offers significant benefits beyond the direct provision of monetary assistance. Insurance optimization is a critical factor that benefits program participants. Jenny's Story highlights the complex environment through which Carol's Wish guides participants.

Jenny is a 70-year-old retired business owner living on Social Security income. She selected her Medicare Advantage Plan when she turned 65, was healthy, and had a business income. Although it was affordable when she enrolled, the out-of-pocket maximum associated with her plan was nearly half her annual income at the time of her diagnosis. Adding to that, Jenny was diagnosed late in the year…she reached her maximum out-of-pocket in late 2018 with testing and surgery, only for it to reset on January 1st, 2019, before she even began chemotherapy. CGCA helped Jenny enroll in a Medicare Savings Program, which covered her Medicare Part B Premiums ($1,626); the Medicare Extra Help Program, which helped her pay costs associated with her Medicare Part D prescription drug program (>$11,000 annually); and connected her with an open foundation Copay Assistance Fund (up to $3,500 annually). Her enrollment in the Extra Help Program triggered a special insurance enrollment period, during which CGCA referred her to a Medicare broker to optimize her insurance plan to one with a significantly lower out-of-pocket maximum (saving $1,400 - $2,900 in 2019).

"Jenny had never heard of any of these programs and had no idea she was eligible for them…When we met Jenny, she was looking at medical costs…in 2019 of over $18,000. That's 125% of her entire annual income just for the cost of treating her cancer. As a retiree scraping by on Social Security retirement as her only income, she absolutely would not have been able to afford her cancer treatment. Our work with her (so far) will save her over $16,000, bringing lifesaving medical care within her financial reach."

Limitations

The results from this study may not be generalizable to other cancer financial navigation programs in other states outside of Colorado. Pre-post evaluations are designed to provide a snapshot of changes between the two time periods of interest. Additionally, pre- and post-evaluations are constrained by the maturation effect; changes over time may reflect an aging population rather than changes from the intervention. Unmeasured environmental and historical factors may have impacted outcomes.

CGCA requested that CIVHC highlight the impact Carol's Wish has had on historically under-resourced or underendowed populations, who are often the most impacted by the financial burdens associated with cancer treatment. While considering how best to demonstrate this impact, CIVHC considered the possibility of identifying members who were uninsured before their diagnosis date to include CGCA's impact on uninsured patients. However, the complexity and novelty of this approach extended beyond the feasible scope for this analysis. CIVHC instead developed the SES Proxy Flag as a potential low-income indicator based on Medicaid and/or Dual Eligibility.

The CO APCD does not capture individuals insured by TRICARE or ERISA plans or uninsured Colorado residents. Thus, the analysis is limited in estimating the impact of Carol's Wish services on these populations. Additionally, without information on the uninsured population, assessing the full extent of insurance optimization services is challenging. Lastly, the CO APCD does not contain income information for members. CIVHC considered using American Community Survey estimates by census tract, but this analysis required a more personalized estimate.

Next Steps for CGCA

CGCA expressed interest in partnering with CIVHC to disseminate the evaluation project results. Specifically, the organization wishes to connect with thought leaders around leveraging these results to expand and sustain funding for Carol's Wish. Upon submission of this report, CIVHC will support CGCA in interpreting the results and collaboratively present the findings with CGCA through webinars and conferences. CIVHC will also continue to engage CGCA in networking with similar partner organizations or when relevant funding opportunities arise.

Opportunities for further analysis could include comparing member lines of business after diagnosis to compare insurance optimization between participants and non-participants. Additionally, assessing the effect of this program on members' choice to proceed with treatment was beyond the scope of this analysis. It is notable, however, that program participants were more likely to have an ACG® cancer treatment flag in their diagnosis year. Further investigation surpassed the scope of this project. Many factors could influence whether a patient receives treatment in the same year as their diagnosis, including the timing and cancer stage at diagnosis. However, considered within the context of the total health care and gynecologic cancer care spending, these results could suggest that program participants are more likely to proceed with cancer treatment than non-participants. CGCA may wish to investigate this further in future studies.

Appendix 1 – Data Sources

The Colorado All Payer Claims Database

This evaluation was completed using data from the CO APCD. The CO APCD is a robust dataset comprised of over 1 billion medical, dental, and pharmaceutical claims from approximately 74% of covered lives in Colorado. Information contained in the CO APCD includes claims from Medicare Fee for Service, Medicare Advantage, Medicaid, and voluntarily submitted self-pay plans.

The Johns Hopkins ACG® System

The Johns Hopkins ACG system identifies risks aside from race, ethnicity, and insurance type by generating a member-level risk score utilizing health diagnoses and care utilization with claims over the previous year. The ACG system is composed of the industry-standard group ACG (adjusted clinical groups) with a combination of ADG (aggregated diagnosis groups) and EDG (expanded diagnosis clusters). This project used the Johns Hopkins ACG® System to identify individuals with a gynecologic cancer diagnosis and extracted the ACG® System Resource Utilization Band (RUB), Age Group, Cancer Treatment, and Social Needs markers for these individuals.

Supplemental Information

CGCA submitted to CIVHC a supplemental dataset documenting the total monetary assistance provided through CW from 2020-2023. CIVHC extracted records for the 234 participants in this analysis and summarized their collective financial assistance estimates.

This information was not used in the analysis. It is included to enhance CGCA's contextual interpretation of the analytical outputs. Selected comments from case studies provided by CGCA are also included here to highlight additional benefits that are difficult or impossible to quantify.

Appendix 2 – Detailed Methodology

Evaluation Design

CIVHC conducted a retrospective evaluation of health care spending from the diagnosis date through six months among individuals diagnosed between 2018 and 2022, as the first year CGCA was established and the year in which the CO APCD contains complete claims information for all lines of business. On the recommendation of CGCA Subject Matter Experts, the analytic timeframe was limited to six months to avoid incidental inclusion of costs associated with recurrent cases.

CIVHC analyzed the allowed amount, member out-of-pocket amount, and member out-of-pocket amount as a percentage of the total allowed amount among patients diagnosed with gynecologic cancer. They compared Carol's Wish program participants to a sampled cohort of non-participants matched 1:1 to CW participants on Resource Utilization Band (RUB), age group, and insurance dual eligibility. Costs for all medical claims, claims associated with gynecologic cancers, and all pharmacy claims were compared.

Project Definitions

The following project definitions were selected and applied to the final cohorts based on a literature review, through consultation with CGCA Subject Matter Experts, and in consideration of the primary use of the CO APCD and ACG® System.

Gynecologic Cancer

Members who had both an ICD-10 Diagnosis Code in the CO APCD between C51 and C58 and an ACG® System Expanded Diagnosis Cluster (EDC) Code of MAL05 or MAL06 (malignant neoplasms of the cervix, uterus, ovary) were included in the final analysis.

CIVHC's ACG® coding implements the *stringent diagnostic certainty* option when assigning EDC codes. The method requires that an individual have two or more claims, including a related ICD-10 Diagnosis Code, to avoid errors introduced by potential provisional diagnosis coding. Thus, not all members identified using ICD-10 codes within the CO APCD had a matching EDC code. The ACG® System does not have an EDC relating to vulvar or vaginal cancers, which further limited the total population represented in this analysis. However, these are the least common of the five gynecologic cancer types.

Diagnosis Date

Health care claims do not include diagnosis dates, so a proxy date was defined as the start date of the first claim in which an ICD-10 Diagnosis Code between C51 and C58 first appeared in the member's claim history. The initial extract included claims from 2017 through 2023, then limited the final cohort to members with a diagnosis date between 2018 and 2022.

Per Member Per Period

PMPP costs reflect the sum of each member's costs from their diagnosis date through six months, adjusted for insurance eligibility within that period. For this adjustment, CIVHC tallied the months of insurance eligibility for the specific claim type (medical or pharmacy). The total cost is divided by the number of member months for each individual's per-insured-month average, then multiplied by 6.

$$PMPP\ Total = \left(\frac{\sum_{0\ months}^{6\ months} Claim\ Amounts}{\sum_{0\ months}^{6\ months} Eligibile\ Months} \right) x\ 6\ months$$

Social Needs Flag

The ACG® System assigns Social Needs Codes to members based on ICD-10 Z-Codes reported in claims. This set of codes provides a method for providers to indicate a person's health-related social needs that may impact their health outcomes and inform care coordination or case management needs. Project Cohort members are flagged as having one or more social needs reported or none listed. Because Z-Codes are not consistently used by all providers, the reader cannot assume that members in the "none listed" category do not have any social needs. The ACG social needs marker was extracted and summarized in the cohort descriptions; however, the completeness of this marker limits broad conclusions about these populations. Medicaid providers are historically the most likely to use these codes, possibly because providers are encouraged to use them to indicate a need for care management and coordination. The higher proportion of Medicaid insurance in the CW participant group could be why these patients were more likely to have a Social Needs marker.

Socioeconomic Status Proxy Flag

CGCA is particularly interested in understanding their impact on health equity. Because the Social Needs Flag is incomplete, CIVHC applied a Socioeconomic Status Proxy (SES Proxy) Flag for use in the regression. The ACG® System Line of Business was used to assign member insurance type.

To capture member insurance status before participation in Carol's Wish, CIVHC selected the most recent ACG® System insurance type before the member's diagnosis year. The CO APCD monthly insurance eligibility tables were used to identify members with dual eligibility at any point before their diagnosis month. Members with dual eligibility or Medicaid insurance were assigned an SES Proxy Flag before their diagnosis date.

Resource Utilization Band (RUB)

Their overall health significantly influences a member's total cost of care. Not only does an individual's age and stage at which they are diagnosed influence their cancer treatment costs, but concurrent conditions can also influence their total cost of care. ACG® System Resource Utilization Band (RUB) is an aggregate score estimating concurrent resource use across broad co-morbidity groupings.

RUB	Estimated Health Care Cost (Description)
0	No or Only Invalid Diagnoses
1	Healthy Users
2	Low Resource Utilization
3	Moderate Resource Utilization
4	High Resource Utilization
5	Very High Resource Utilization

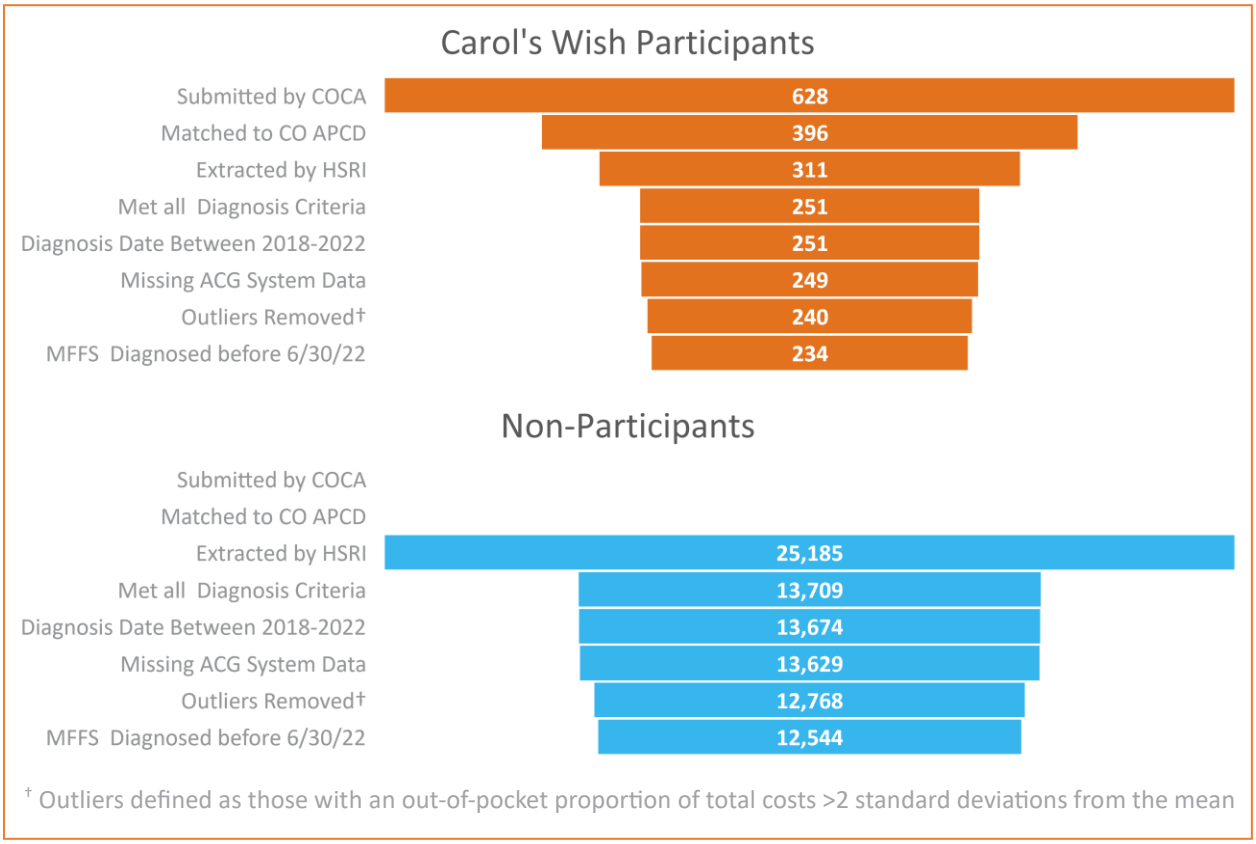
Cohort Selection

Of the 628 submitted by CGCA, 234 (37%) Carol's Wish Program Participants were matched to members in the CO APCD. They met all project inclusion criteria, including a Johns Hopkins ACG® System Resource Utilization Band (RUB) and Cancer Treatment Flag for their diagnosis year (Figure 5).

Members of the Carol's Wish Participant group submitted by CGCA all belonged to RUBs ≥3, trended younger, and were more likely to be dually eligible or have Medicaid insurance. CIVHC randomly sampled a Comparison Cohort from the larger non-participant group, matching CW participants 1:1 on each distinct RUB, Age Group, and Dual Eligibility combination.

Members of this Comparison Cohort were equally likely to have a social need listed as the CW participants (19% and 25%, respectively, p=0.15). A higher proportion of CW Participants had Medicaid insurance before diagnosis than the Comparison Cohort (Figure 6). Because these groups were sampled with equal proportions of Dual Eligibility, this difference is attributed to the proportion of members with Medicaid insurance before diagnosis. The SES Proxy Flag, which identifies members with Medicaid insurance or Dual Eligibility before their diagnosis, was used in the model to control for differences in member out-of-pocket costs associated with these insurance options (Figure 7). A smaller proportion of the Comparison Cohort had an ACG® System cancer treatment flag during their diagnosis year than CW Participants (Figure 8).

Figure 5 – Final Cohort Selection by Inclusion Criterion



† Outliers defined as those with an out-of-pocket proportion of total costs >2 standard deviations from the mean

Figure 6 – Member Insurance Type After Comparison Cohort Sampling

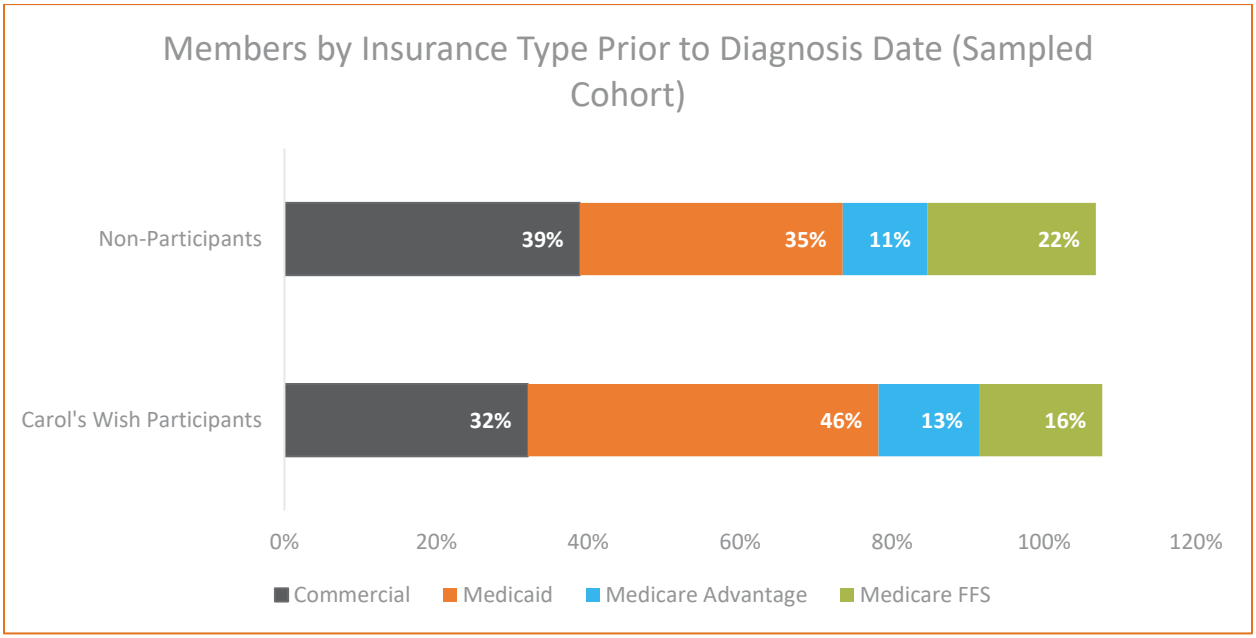


Figure 7 – SES Proxy Flag Distribution After Comparison Cohort Sampling

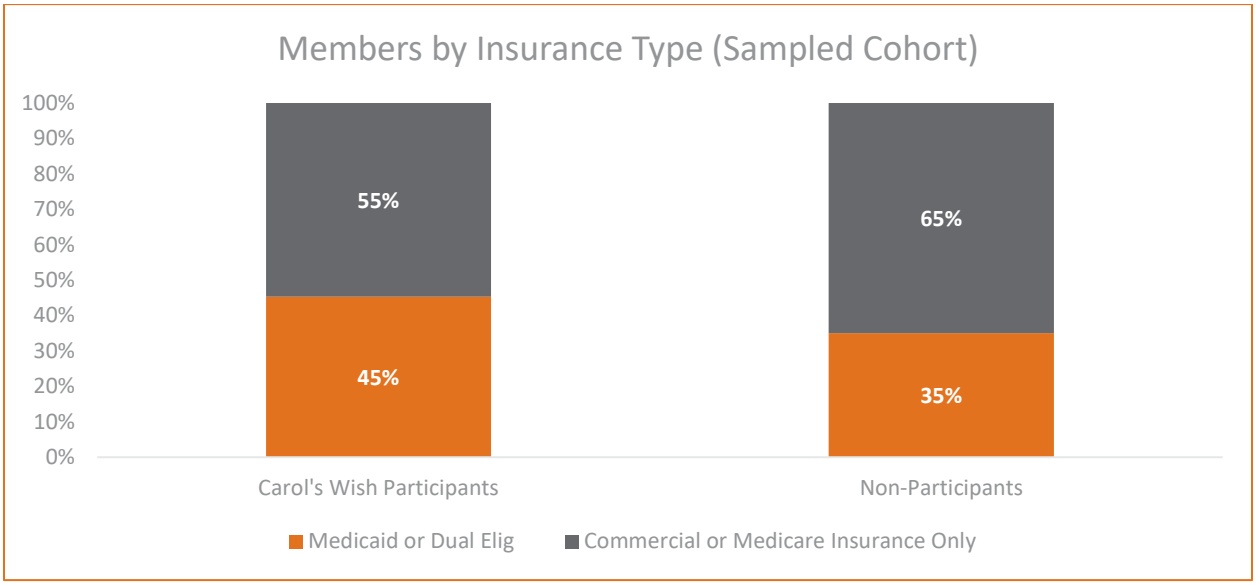
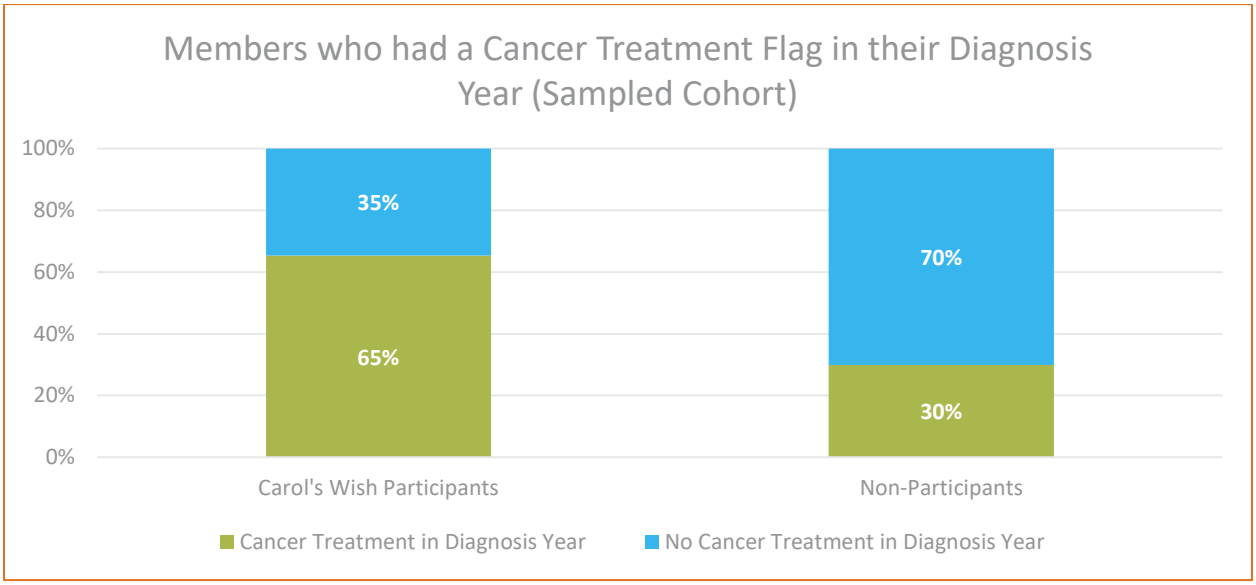


Figure 8 – ACG® System Cancer Treatment Flag in Year of Diagnosis Date, by Cohort



Analysis

A preliminary comparison of health care spending between groups was completed by performing t-tests using the Satterthwaite approximation for unequal variances. A linear regression model was performed to estimate the total impact of participation in Carol's Wish on health care spending and member out-of-pocket expenses.

Model variables included Program Participation, SES Proxy Flags, and member RUB. Considered variables included a COVID flag, member age band at the time of diagnosis, social needs, and cancer treatment flag. Although these factors likely influenced total costs, they were all highly correlated with the SES Proxy Flag (COVID flag) or the Resource Utilization Band (all other covariates).

The analysts elected not to include modeling of the pharmacy cost outcomes. It is unexpected that program impacts on prescription spending would show in pharmacy claims. For example, programs to assist with pharmacy costs for Medicare Parts B and D, free or reduced-price drug programs such as Good Rx, grants, and other forms of assistance all directly support individuals and are not recorded in claims data. The insignificant t-test results and poor model fit likely reflect this.

Data extraction and cleaning were completed using SQL in DBeaver version 23.3.5. Statistical analyses were performed using SAS for Windows version 9.4.