COPD Preventive Care and Management

4bii

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CARE COMPASS NETWORK
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Introduction

Care Compass Network is a Performing Provider System formed for the purpose of administering the Delivery System Reform Incentive Payment (DSRIP) program in a nine-county area of New York, including Broome, Chemung, Chenango, Cortland, Delaware, Schuyler, Steuben, Tioga, and Tompkins. CCN is a 501(c)(6) organization with five area health systems as corporate members. In addition, CCN has approximately 175 total partners, which include providers of medical care, mental health care, substance use disorder services, as well as a wide range of community-based organizations, whose services support underserved populations in the areas of food/nutrition, transportation, substance use, mental health, material support, health literacy, care 4bii and coordination, housing, parenting and young children, etc. Through the course of the DSRIP program, CCN implemented twelve different projects with the objective of transforming the health care system into a value-driven network capable of providing high quality care and services to Medicaid members. System transformation, from the perspective of CCN and its partners, encompasses a wide range of changes, including the following:

- Greater collaboration and coordination between clinical and social care service providers
- Shift of services from inpatient and institutional settings to community and home
- A focus on addressing determinants of health, both social and clinical in nature
- Integration of services across domains, including mental/behavioral, physical, and social
- Promotion of self-management skills for both physical and mental needs
- Partner readiness for value-based contracts and development of key competencies

Now, at the conclusion of the DSRIP program, CCN is in a position to consider the lasting impacts that eleven DSRIP projects have had on Medicaid members, community members, and the health care eco-system at large. CCN's Population Health department, with input from many sources, has produced eleven project evaluation reports and score cards in order to best compare across projects, despite the differences in project objectives and reach. The findings of these report will inform CCN's next phase, including the use of CCN funding after September 2020, when the final phase of CCN partner contracts concludes.

Each project report reflects the findings from a mixed-methods evaluation. Qualitative information gathered from CCN staff, partners, Medicaid members, and community members contribute to the findings. In addition, the reports consider quantitative findings. Included in the report are findings on the scale and reach that CCN was able to achieve – the number of organizations engaged in the project and the number of Medicaid members engaged. CCN also considered the statistical relationship between project activities or services delivered to patient/clients and key patient outcomes from the DSRIP program including preventable emergency department visits, inpatient hospitalizations, and primary care engagement. Further, CCN considered the impact of the projects on several different quality indicators associated with project-specific DSRIP performance measures. All results are explained in detail throughout.

Data Sources

Information supporting this project evaluation comes from four primary sources. Each source of information contributes to the project scorecards, which allows for comparison across disparate projects.

To gather input from organizations intimately knowledgeable about the projects and their impact, we partnered with Research & Marketing Strategies to conduct structured in-depth interviews with partners who participated in the projects. In total, 21 in-depth interviews were completed. CCN Project Managers identified candidates from partner agencies for interviews based on their involvement in project implementation and their role in the project. Candidates were invited to participate and their organizations were reimbursed a nominal payment to reflect the level of effort involved. Key themes assessed include patient outcomes, cost of care, lasting partnerships with other organizations, workforce development, and system transformation. Many interview questions were open-ended and allowed the respondent to comment freely, positively or negatively, about the effectiveness of the project. The questionnaire also used scale-based questions, which can easily be compared across respondents and projects.

CCN also gathered input on the same themes from partners at large through open dialogue at the four May 2020 Regional Performing Unit meetings (all held remotely via video conference call). In addition, a follow up survey using SurveyMonkey collected broader partner feedback on workforce development and system transformation using scale-based questions.

To gather information from Medicaid and community members, CCN leveraged the on-going, periodic electronic survey administered by RMS of a panel of Medicaid Members (self-identified) and community members. A brief survey tool was developed to gather high-level input on the activities that CCN and the DSRIP program at large promoted. Overall, the response rate was 14% (consistent with industry standards); 46 Medicaid members and 72 community members responded.

To gather input on the total CCN achievements for each project, we incorporated material from structured reports written by CCN Project Managers who are responsible for managing the project implementation, maintenance, milestone reporting to NY Department of Health, and payment to partners. Project Managers summarized project progress, noting major accomplishments, barriers, and options for sustainability.

Finally, to understand the impact of each project from a statistical perspective, CCN conducted a quantitative analysis to establish, at a person level, the link between project activities and patient outcomes, such as primary care engagement, emergency department visits, and inpatient discharges. Additionally, CCN considered project specific quality indicators and their link to the project activities. In each case, a cross-sectional analysis using data from July 2016 to June 2019 and the population of Medicaid members who were DSRIP attributed to CCN during Measurement Year 5 (July 2018 to June 2019). The data sources for these analyses included CCN project data, submitted to CCN by partners contracted for each project, and Medicaid Confidential Data pulled from the Salient Interactive Miner, a proprietary data mining tool made available to Performing Provider Systems like CCN for use under the DSRIP program.

Project Summary

NYS DOH designed Project 4bii, "Increase Access to High Quality Chronic Disease Preventive Care and Management in Both Clinical and Community Settings," increase the number of New Yorkers who receive evidence-based preventive care and management for chronic disease. Based on the regional need's assessment of chronic disease prevalence, CCN elected to target the COPD population. The intent was to improve the quality of life and lower healthcare costs caused by ED visits and avoidable hospitalizations through adopted early screening through in office spirometry testing when a pulmonary function test (PFT) had not been completed. When the office spirometry identified a need for additional follow up or the provider felt that a PFT would be a more effective diagnostic tool, a referral would be placed for the Pulmonologist. It was assumed that the management of respiratory diseases would help reduce avoidable readmissions and emergency room visits.

Evaluation Results: Project Impact Scorecard

This table summarizes the evaluation results. In order to readily compare across projects, a scoring matrix was created and reflects each study component. The detailed scorecard can be found in the appendix.

Table 1*:* Scoring Matrix (Calculation Details in the Appendix)

Evaluation Elements	Possible Points	Points Received
View from the Front Line: Partners		
In Depth Interviews with Partners	25	21.66
RPU Meeting input and Survey	10	8.49
Member Voice: CCN's Medicaid and Community Member Panels		
Panel Survey conducted by RMS	15	11
Community Accomplishments: CCN Project Managers		
Structured report by PMO, Follow up Interview	25	0.5
Performance Metric Impact: Population Health		
Project Impact on Performance Metric Results	15	0
Causal Effect	6	1.5
Cost Effectiveness Analysis	4	0
Overall	100	43.15

Refer to the appendix for detailed scoring criteria

The CCN Project Management Office provided valuable input and insight about each project's major achievements, obstacles, best practices, and overall value. Project Managers have a unique perspective as a result of their knowledge of DSRIP program objectives and requirements, regular tracking of project activities and services, relationships with participating organizations, and knowledge of how project activities have been rolled out or implemented across the PPS. Despite explicit criteria from the Department of Health for project requirements, there was relatively broad latitude in how the

requirements could be implemented. A critical component of any evaluation are the insights of those who are most familiar with project management, provided that there is objectivity in the assessment.

Best Practices

1. Increasing spirometry use was very important to the project team early on. Many "suspected COPD" cases are never clinically confirmed. Since spirometry is the only diagnostic test for COPD, its general disuse was concerning. While the low engagement in this project did not increase spirometry use across the region, it was a structurally sound activity to incentivize.

2. Some of the organizations reporting often and higher volumes were already engaged in other projects (some being similar). For those that engaged in 4bii, 4bii became a natural additional report where spirometry needed to be queried as well as self-management goals for an additional population (on top of CVD patients). These partner organizations may also have had better education on self-management goals which facilitated their participation.

3. The 4bii project really required clinical skills necessitating a physician or pulmonary professional in order to participate. Therefore, the pool of potential participants was always small. With not much emphasis, actual partnerships were even more hard to come by.

Key Quotes

*Kimberly Slezak, project manager at CCN said, "*Spirometry as it is a reimbursable diagnostic test will continue though perhaps not to the extent we would like. Self-management goals should also continue as many organizations provided prescriptive goals prior to DSRIP. With trends in healthcare and the PCMH model focusing on patient-centeredness, it is likely that patient participation in goal-setting will continue without funding."

Additionally, she stated, "If this project were to continue, it should be rolled up into a VBP arrangement for Primary Care and not individually reimbursed." COPD screenings, patient driven self-management goals and tobacco cessation warm-handoffs should all be part of Care Management of a patient with COPD."

Table 2: Total Project Engagement and Total CCN Spending

CCN engaged 4 unique organizations, 1,582 unique members, provided 3,277 total services, and distributed $61 K DSRIP dollars for this project.

Table 2a: Partner Engagement by Organization Type

Unique Count of Organizations Engaged by Organization Type	DY DY2	DY3	DY4	DY5	Grand Total
Hospital System	1	2	2	2	2
Non-Hospital System	1	2	2	2	2
Grand Total	**2**	**4**	**4**	**4**	**4**

Table 2b: Volume of Services by Organization Type

Volume of Services by Organization Type	DY DY2	DY3	DY4	DY5	Grand Total
Hospital System					
A - Screen and Spirometry		32	65	47	144
A - Warm transfer to internal program		28	49	22	99
B - Record or Review Self Management Goal	68	243	393	320	1,024
B - Warm transfer to NY Quit Line		22	17	4	43
C - Warm transfer to external program		4	3	1	8
Non-Hospital System					
A - Screen and Spirometry		15	76	205	296
A - Warm transfer to internal program		77			77
B - Record or Review Self Management Goal	138	234	336	578	1,286
B - Warm transfer to NY Quit Line	42	152	60	35	289
C - Warm transfer to external program		9	2		11
Grand Total	**248**	**816**	**1,001**	**1,212**	**3,277**

Table 2c: Expenditure by Project Activity

Project > Payment Item	DY DY2	DY3	DY4	DY5	Grand Total
4bii COPD Disease Management					
COPD Screen	$1,380				$1,380
COPD Screenings		$630	$1,440	$1,560	$3,630
Disruptive Payment		$4,752			$4,752
Prepayment		$9,306			$9,306
Retro Disruptive Payment		$1,525			$1,525
Self Management Goals		$2,060	$9,600	$9,080	$20,740
Self-Management Goals		$7,100			$7,100
Sign-On Bonus		$6,746	$0	$0	$6,746
Smoking Cessation		$2,530	$1,000	$640	$4,170
Smoking Cessation Enrollment	$410				$410
Visits with documented SM goals reviewed and entered in EMR	$1,360				$1,360
Grand Total	**$3,150**	**$34,649**	**$12,040**	**$11,280**	**$61,119**

Quantitative Findings

Section 1: Cross Section and Causal Analysis

This section presents a quantitative regression analysis to establish a statistical relationship between the project activities and proxy measures for the DSRIP performance metrics. Performance metrics featured prominently in the DSRIP program, driving a significant portion of funding. The underlying question assessed in this section is: did the project make an impact on CCN's performance metric results? This is an important question as CCN considers areas of future investment and the overall return of participating in the DSRIP project.

For Community 4bii, we considered the impact of the 4bii services on the likelihood that individuals incurred potentially preventable ED services (total and among those with a behavioral health diagnosis), inpatient hospital care, and prevention quality indicators for adults. These measures are proxies for key DSRIP performance metrics, including Potentially Preventable ED Visits (total), Potentially Preventable ED Visits among members with previous Behavior Health diagnoses, and Prevention Quality Indicator (Composite), which captures potentially avoidable hospital care. These metrics were chosen for analysis based on a CCN Project Team analysis in 2016, which identified a probable impact of the project activities on the performance metrics.

The table below describes each Performance Metric and proxy measure as well as the study hypotheses. Through 4bii services, it is possible to identify the social determinants of health and address associated needs in order to support an appropriate use of health services. By engaging a broad set of partners, both clinical and non-clinical partners, CCN sought to facilitate systematic changes and standardization of 4bii, care coordination, and community health worker services. Thus, we hypothesize that the 4bii program reduced the need for emergency services that may be better addressed elsewhere (i.e. potentially preventable) as well as the need for inpatient hospital care.

Table 3: Performance Metrics and Proxy Measures

Metric Name / Proxy	Description	Study Hypothesis
Potentially Preventable ED Visits, per 100 Members **Proxy measure: Having one or more Potentially Preventable ED visits**	The number of potentially preventable ED visits (based on CPT codes reported on claims) among Medicaid Members, as defined by the NYU metric definition[1], per 100 members.	4bii services provided to individuals can help address underlying needs and direct individuals to services, thereby alleviating urgent needs which drive them to seek care in the ED. We hypothesize a decline in the likelihood that an individual has any ED visits after receiving 4bii services.
Prevention Quality Indicator – Overall Composite (#90)	The number of inpatient discharges, defined by revenue codes reported on claims.	4bii services provided to individuals can help address underlying needs and direct individuals to services, thereby alleviating urgent needs.

[1] Billings, J., Parikh, N., & Mijanovich, T. (2000). Emergency department use in New York City: a substitute for primary care? *Issue brief (Commonwealth Fund)*, (433), 1–5.

Proxy measure: Having one or more inpatient hospitalizations		We hypothesize that individuals will be less likely to require inpatient care following 4bii services.
Source: CCN Team Analysis based on input from CCN Project Teams and NY DOH DSRIP Project Toolkits.		

To test these hypotheses, we pooled data from a few sources: 1) project data submitted by partners over the course of the project, 2) Medicaid claims data received by DOH and maintained by CCN, and 3) data pulled from Salient Interactive Miner data system, which reflects Medicaid claims and administrative information. Our quantitative analysis is limited to Medicaid members who were attributed to CCN in Measurement Year 5 and who elected to enable downstream data sharing through the NY DOH opt out process. Out of total 86852 CCN Attributed Medicaid Members, 361 (0.41%) members received 4bii Services between July 2016 and June 2019. Out of these 361 members, 158(43.7%) members received 4bii services that were followed at least one PPV, 74(20.4%) were followed by one or more hospitalizations and 100% were followed by a primary care visit during the total analysis period (July 2016 through June 2019). Table 4 below describes the study population.

The regression analysis excludes a number of Medicaid members who received 4bii services under the project due to unavailable outcomes data. Out of the total 1582 members engaged, 1221 were not attributed to CCN in the final measurement year (MY5). Because this population is not attributed to CCN, CCN cannot access PHI level data on ED visits or hospitalizations. Attribution changes month to month based on a number of factors including Medicaid program enrollment and patterns in utilization. Once a member becomes unattributed, access to detailed information ceases. For this reason, we focused on the population attributed to CCN in the final measurement year. In addition, it should be noted that data on medical encounters with a primary diagnosis related to substance use disorders are excluded from the data available to CCN due to privacy reasons.

Table 4: Analysis Sample Size and Service Volume for Selected Health Care Services

	No 4bii	**Received 4bii**
Total CCN Attributed Medicaid Members	**86491**	**361**
Medicaid Members with 1+PPV	41151(47.5%)	158(43.7%)
Medicaid Members 1+ Inpatient Admission	8452(9.7%)	74(20.4%)
Medicaid Members 1+ Primary Care Visits	82587(95.4)	361(100%)
Source: CCN Team analysis using CCN project data, Salient Interactive Miner, and Medicaid Claims data from the MY5 Attributed population, July 2016 to June 2019.		

In the following sections, we consider the statistical relationship between COPD services and important health outcomes that the 4bii project is designed in impact: Potentially Preventable ED Visits, hospitalizations, and care engagement (primary care and other measures). For COPD services to have a probable causal impact on PPVs and hospitalizations, we would expect to see a negative association: PPVs and hospitalizations should be less frequent following COPD services as patient needs are addressed in other settings. Similarly, if COPD services improve care engagement, we would expect a positive

association with primary care utilization and other forms of care engagement. To test these associations, we consider utilization before and after the provision of COPD services. A cross sectional analysis allows us to control for person-level characteristics that may also impact utilization. The cross-sectional analysis tests for an overall association between project engagement and our health outcomes.

For cross sectional analysis, we used logistic regression models to statistically relate the performance metric proxy variables to the project activities – 4bii services. In this analysis, the data from July 2016 through June 2019 were pooled for cross-sectional analysis. We tested whether Medicaid members who received 4bii services were less likely to also have one or more Potentially Preventable ED visits than their counterparts, less likely to have any type of hospital admission, and/or more likely to have at least one primary care visit. The logistic model yields an Odds Ratio, which is a measure of association between an "exposure" and an "outcome". In this analysis, we consider receiving a 4bii service under the DSRIP project to be the "exposure", while having a Potentially Preventable ED visits, hospital admission, and/or a primary care visit serves as the "outcome"[2]. In this example, the Odds Ratio[3] represents the odds that a Medicaid member will experience a PPV given the member also received a 4bii service, compared to the odds of experiencing a PPV in the absence of any 4bii services.

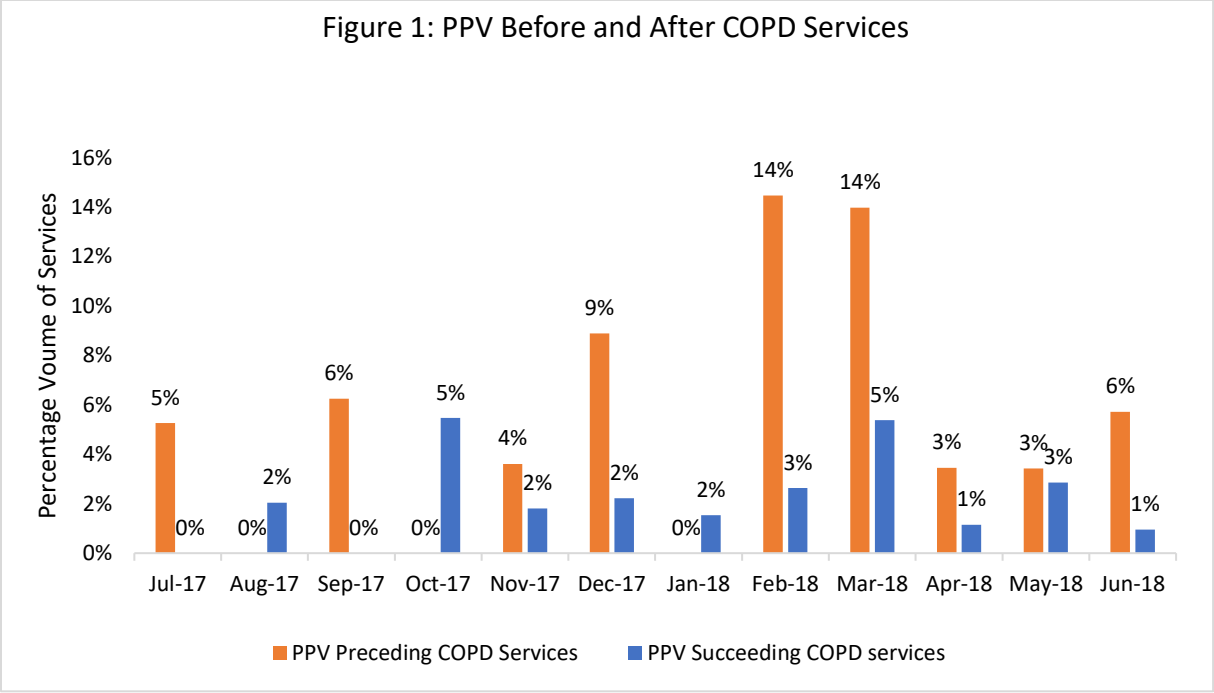
Potentially Preventable ED Visits

Pre/Post Analysis among Attributed Members who Received COPD Services

In Figure 1, we present monthly proportions of attributed 4bii services that had a PPV in the year before and after COPD services. In total, there were 1043 CCN Attributed COPD services offered to Medicaid between July 2017 and June 2018. Out of these, 52 (5%) 4bii services were preceded by PPV in the year before COPS Services and 32(3%) 4bii Services were followed by a PPV in the year following 4bii Services; PPVs had to occur within 365 days of the 4bii. The proportion varies month to month, with some outliers. The trend is not stable and varies over time. The rate differentials in most months and differing trend lines suggest that COPD services can impact potentially unnecessary or avoidable use of the Emergency Room. These differences are not regression adjusted to control for factors which may affect the PPV rate other than the project services. The rates and trends are also not statistically different.

[2] Szumilas, M. (2010). Explaining odds ratios. Journal of the Canadian Academy of Child and Adolescent, 19(3), 227–229.

[3] Refer to the appendix for details on regression analysis, model used and interpreting odds ratio



Note: Figure 1 depicts the percentages of CCN Attributed 4bii Services that were preceded and succeeded by one or more PPVs within a year of the 4bii Service, by month of 4bii Service.

Cross Sectional Analysis

A cross-sectional analysis was conducted to statistically test whether attributed Medicaid members who received COPD services under 4bii program were less likely to have a PPV (and similarly, hospitalization or primary care visit (discussed below)) than other attributed members. The comparison is made to the larger attributed population and is not limited to a subgroup. Statistically significance is noted with * (10% significance (modest)), ** (5% (medium)), or *** (1% significance (high)). The cross-sectional results indicate that PPVs are more common among those engaged in the project, which is not the desirable effect. However, this may test may be too high of a bar – it does not take the timing of PPVs and COPD services into account. This test does not narrow in on the chance of PPV after having received COPD services, but looks at all times. Moreover, PPVs may be more common among anyone with a hospital admission (which the COPD services follow) than the general population.

The following table presents the results from the statistical regression analysis. Each row represents a regression model, with the performance metric proxy as the dependent (outcome) variable and an indicator variable for having received a 4bii service as the independent (exposure) variable. Regression modeling yields the Odds Ratio, as explained above. An Odds Ratio greater than one indicates that having received at least one 4bii is positively associated with the outcome variable. In the cases of PPVs and hospital admissions, a negative association is desirable. However, in our analysis, we find positive associations between having received 4bii services.

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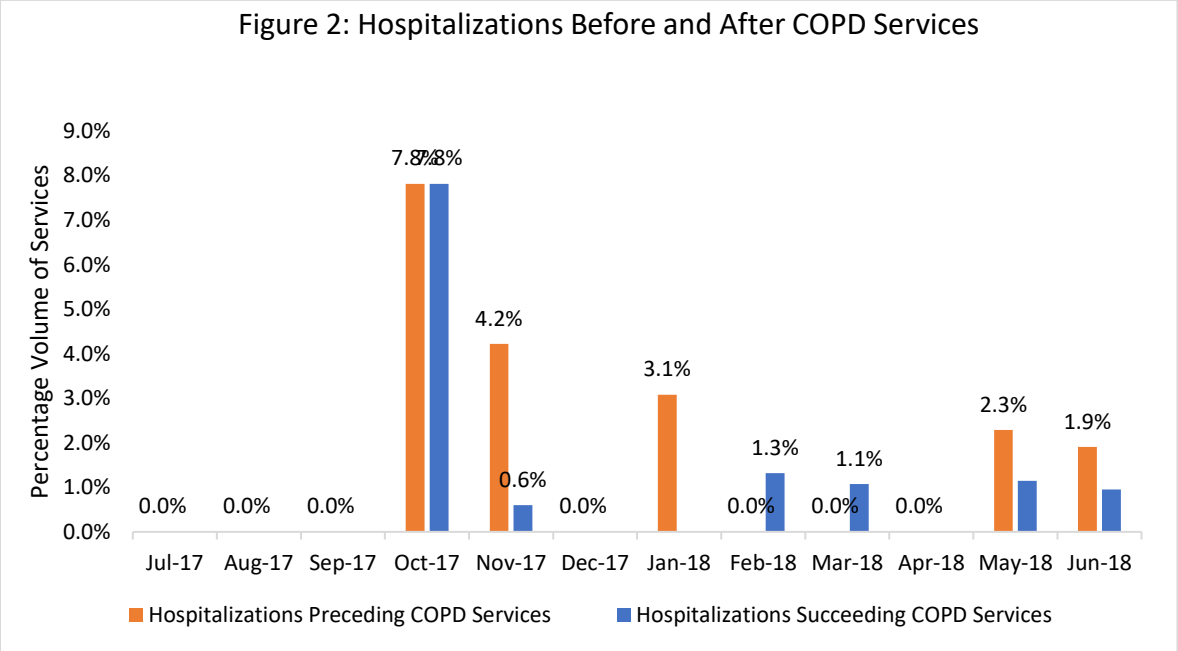
Table 5a: Cross Sectional Analysis - Potentially Preventable ED Visits				
HEDIS Measures	**Odds Ratio**	**Interpretation**	**Relationship**	**Score (15)**
Potentially Preventable ED visits	No Significance	No significant relationship between chronic disease prevention management and Potentially Preventable ED visits.	Identified through PMO Interviews	0
Source: CCN Team analysis using CCN project data, Salient Interactive Miner, and Medicaid Claims data from the MY5 Attributed population, July 2016 to June 2019. (Refer to the appendix for detailed scoring criteria)				

Hospitalizations

In Figure 2, we present a similar graph, now considering inpatient admissions which occurred before and after COPD services, within a year of a 4bii Services. In total, there were 1043 CCN Attributed 4bii services offered between July 2017 and June 2018. Out of these, there were 25 COPD (2.4%) services preceded by hospitalizations in the year before the services were offered and 16 (1.5%) 4bii services that were succeeded by hospitalizations in the year following 4bii Services. Again, month to month, the proportion of people admitted varies over time. Overall, not many hospitalizations occurred after COPD services were offered. In the month of October 2017, where a 7.8% increase is seen, 10 out of 128 COPD services were followed by a hospitalization. These 20 hospitalizations before and after COPD services were made by 13 individuals.



Note: Figure 2 depicts the percentages of CCN Attributed 4bii services that were preceded and succeeded by one or more hospitalizations within a year of 4bii services, by month of 4bii services.

Again, in the context of the positive association in the cross-sectional analysis as shown in the table below, members who received 4bii services may be more likely than others to experience hospitalizations at any time.

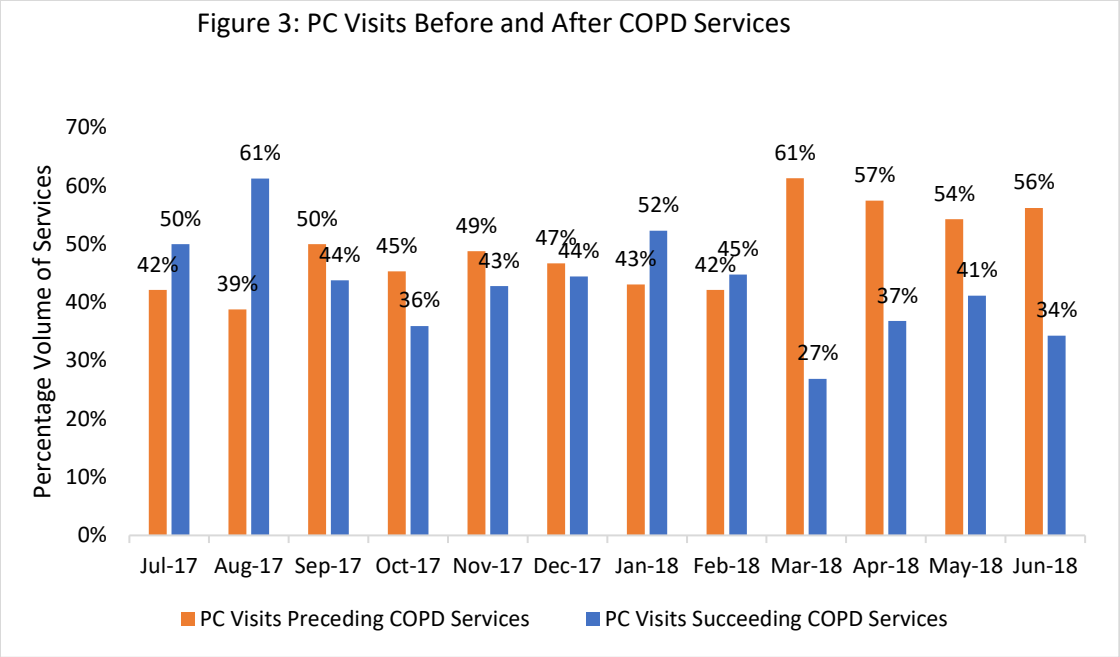
Table 5b: Cross Sectional Analysis – Inpatient Admissions

HEDIS Measures	Odds Ratio	Interpretation	Relationship	Score (15)
Inpatient Discharges	2.44***	Chronic disease prevention management is associated with an odd of 2.44 greater likelihood of Inpatient Discharges.	Identified through PMO Interviews	0
PQI 90 – Composite of all measures ±	11***	Chronic disease prevention management is associated with an odd of 11 times greater likelihood of number of admissions which were in the numerator of one of the adult prevention quality indicators.	Identified through PMO Interviews	0
Average				**0**

Source: CCN Team analysis using CCN project data, Salient Interactive Miner, and Medicaid Claims data from the MY5 Attributed population, July 2016 to June 2019. (Refer to the appendix for detailed scoring criteria)

Primary Care Visits

Finally, in Figure 3, we present the trend in the proportion of members who had primary care visits before and after COPD services, within a year. In total, there were 1043 4bii services that were provided between July 2017 and June 2018. Out of these, there were 524 (50%) COPD services were preceded by primary care visits in the year before and 426(41%) COPD services succeeded by primary care encounters in the year after 4bii services were offered. The proportion of primary care after 4bii services decline in the subsequent DSRIP months.



Note: Figure 3 depicts the percentages of CCN Attributed 4bii services preceding and succeeding one or more primary care encounter within a year of 4bii services, by month of 4bii service.

The results as shown in graph above indicate that primary care visits decline after 4bii services in the late DSRIP months. Moreover, given that the decline in primary care follow up occurs at the same time as the declines in PPVs, it appears that Medicaid members who receive 4bii services are not increasing their primary care as a substitute care setting to the emergency room.

Summarizing the relationship between 4bii and the three outcomes of interest, the effect of 4bii services is not strong enough to see in a cross-sectional analysis of PPVs or Hospitalizations (which is understandable); the trend analysis suggests the desired impact for periods of time but not necessarily across the board. We assigned four 1.5 of six possible points to the causal effect item on the Project Score Card to reflect these results.

Table 6: Cross Section and Causal Effect Score Card

	Cross Section (15)	Causal Effect (6)
Potentially Preventable ED Visits	0	1
Inpatient Hospitalizations	0	0.5
Primary Care Engagement	N/A	0
Total Points Assigned to Score Card	**0**	**1.5**

Section 3: Cost-Effectiveness Analysis

Cost effectiveness is a measure of the value of an initiative, project, or program stated in terms of its anticipated benefits. For the DSRIP projects in general, CCN sought to improve patient outcomes among those engaged in the project. Patient outcomes are measured in terms of the reduction in unnecessary use of the emergency room, a reduction in hospitalizations, and increases in primary care engagement. Therefore, cost effectiveness of the projects is defined in these terms.

The cost-effectiveness analysis builds off the pre/post analysis presented above. Total Savings reflects the value of avoided utilization of emergency room care, inpatient hospital care, and primary care due to the project. This measure is an estimate of the value of the project, comparing utilization before and after project engagement.

Total Savings is calculated by comparing utilization before and after project engagement. Total Savings is a one-year estimate of savings accruing to the health care system at large, attributed to the project activities. The estimates presented in Table 7 are on figures from DSRIP Year 4, including pre- and post-utilization among MY5 attributed Medicaid members engaged in the project between July 2017 and June 2018 and published cost estimates for ED visits, inpatient care, and primary care encounters (which reflect charges).[4,5,6] Desired result for 4bii project is that COPD services are associated with a reduction in the use of hospital Emergency Departments, a reduction in hospital admissions, and an increase in primary care engagement. For each utilization type, savings is estimated based on the change in utilization and the cost factor. Total Estimated Savings is a summation across the three measures; the reduction in ED and inpatient care is partially offset by the increase in expenditures for primary care services. Total Estimated Net Savings is calculated by subtracting the variable costs associated with operating the 4bii project in DSRIP Year 4. Net Estimated Savings per Project $ is a measure of the cost effectiveness or return on investment per dollar spent on the project. Net savings is not observed for 4bii project since none of the mean estimates of avoided utilization before and after project activity is statistically significant.

Table 7: Avoided Utilization and Net Savings Associated with 4bii Project (July 2017-June 2018)

	Avoided ED Visits	Avoided Hospital Admissions	Increased Primary Care Visits	Total Estimated Savings due to Avoided Utilization	Project Variable Costs	Total Estimated Net Savings	Net Estimated Savings, per Project $
COPD services	12	5	-52	$0	$12,040	$0	$0

Source: CCN Team analysis

[4] Health Care Cost Institute (2019). The average emergency room visit cost $1389 in 2017. Available from: Average Cost of ER Visit (2017)

[5] 2018 Hospital Adjusted Expenses per Inpatient day: Kaiser Family Foundation / State Health Facts Available from: Hospital Adjusted Expenses per Inpatient Day(2018). Data from 1999 - 2018 AHA Annual Survey, Copyright 2019 by Health Forum, LLC, an affiliate of the American Hospital Association. Note: Average length of stay in NY (2016) was 4.6 days. https://www.aha.org/system/files/2018-07/2018-aha-chartbook.pdf

[6] Health Care Cost Institute (2016-2017); Binghamton, NY Average (Office Visit – Primary Doctor – Established Patient – Moderate Complexity. Range is $69-$87. We used $78 as a point estimate. Available from: Average Cost of PC Visit in Binghamton

This cost effectiveness analysis focuses on the fully-implemented value of the project services. We exclude fixed costs from this analysis. While each DSRIP project required infrastructure investment by CCN and its partners, these investments were largely completed by DSRIP Year 4. Excluding fixed costs from the analysis is appropriate in order to make a more direct comparison of service-related variable costs between the project and their health impact. Including fixed costs may unduly weight the analysis against the projects since the fixed cost savings related to ED visits, hospitalizations and primary care utilization are not directly reflected in the service charges. We analyzed each project independently and assume the results are independent. While there was overlap in patient engagement across the projects, it was relatively minor. We do not anticipate that overlap in project engagement causes cross-contamination of results.

Table 8: Cost Effectiveness Score Card Points

	Score Card (4)
Potentially Preventable ED Visits	0
Inpatient Hospitalizations	0
Primary Care Engagement	0
Total Points Assigned to Score Card	**0**

Source: CCN Team analysis

To conclude the quantitative analysis, the cross-sectional analysis did not yield the desired results, the trend analysis suggests that over time it became less common to experience a PPV or hospitalization after receiving 4bii services. Regarding primary care engagement, in terms of cost effectiveness analysis and causal analysis, we observe that the percentage of primary care services decline after 4bii services over time.

Qualitative Findings

I. Project Specific Feedback from Partners

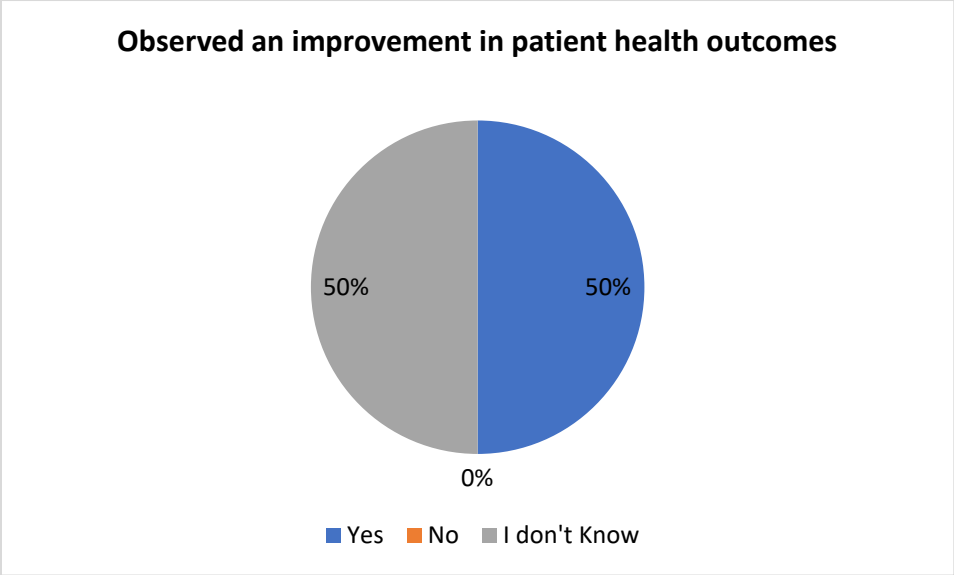
In-depth interviews were conducted with select partners who were involved in project 3ai.

a) Patient Outcomes

Table 1*: Patient Outcomes*

Interview Question	Rating	Feedback	Score
Extent project has made a positive impact on patients/clients	★★★★★	It's the engagement, especially post discharge, understanding what their needs are, and trying to navigate them to the services that they need is extremely important.	5
Extent project activities make a positive long-term impact on patients/clients	★★★★★		5
Average			5

Figure 1: Observed an improvement in patient health Outcomes: 50% of respondents said yes and 50% said they don't know. As an example, one of the partners stated that they have been able to bring medications prior to discharge to some of the patients which is an added care transitions benefit.



b) Cost of Care

Table 2*: Cost of Care*

Interview Question	Rating	Feedback	Score
Extent project activities reduction in cost of care long term	★★★★★	Partners stated that they see a reduction overall in 30-day readmissions and ED visits.	5

c) Lasting Partnerships

Figure 2*: Partnerships*

Respondents said that project 4bii provided them with opportunities to partner with others, these partnerships were successful and they would continue with these partnerships after the project concludes.

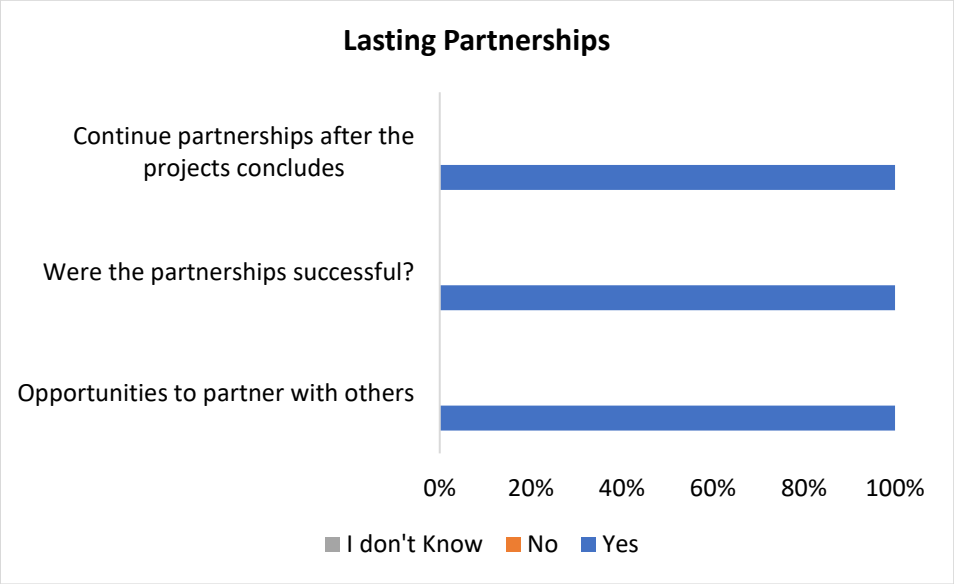


Table 3*: Lasting Partnerships*

Interview Question	Rating	Feedback	Score
Extent the project activities have improved coordination of patient care	★★★★★	By developing a protocol for post discharge medication delivery and partnership with another hospital, communication and care coordination improved between the care managers, discharge planners, and the PCPs.	5

d) Workforce Development

When asked about how many positions were involved in this project. One partner said 6 positions and the project activities consume less than half of their time. The graph below highlights the rating that respondents gave on a scale of 1 to 5 with 1 being “Not at all” and 5 being “Completely”

Figure 3: Workforce Development: When asked about whether the extent to which project activities align with the organizations mission, respondents gave it a rating of 5. Respondents said that they have the capacity to continue activities after the project concludes and gave it a rating of 5. When asked about the extent to which the organization depends on the project to maintain staff and/or revenue stream, the partners gave it a rating of 2. This is a good indication as our partner organization has the capacity and funding to continue post September 2020. They stated that the intake process and care coordination have been embedded in their system and their staff have become accustomed to it.

When asked about whether the project benefitted their organization and aligns with their organizations mission, respondents gave it a rating of 3.

Organization is Looking for Future Source of Funding

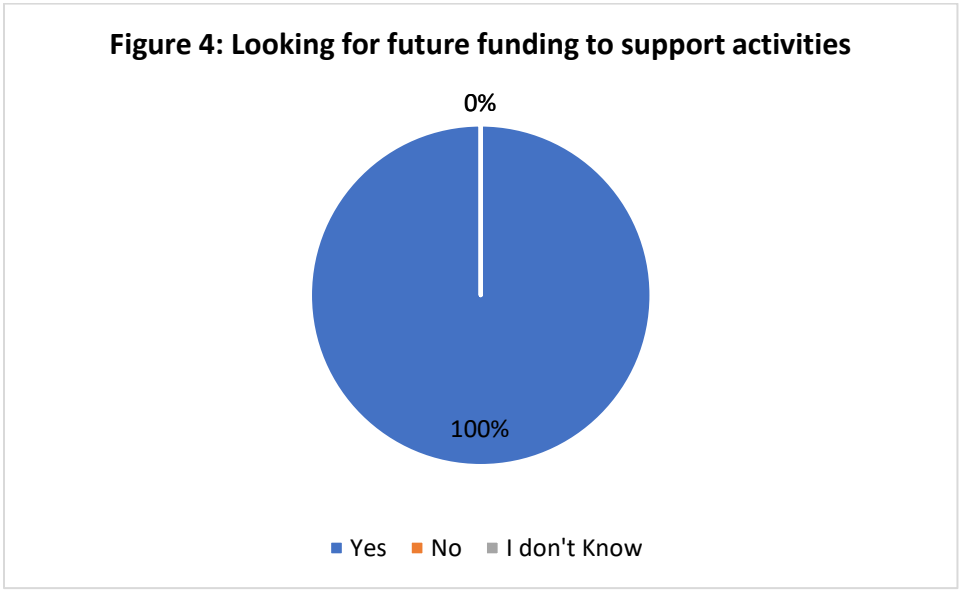


Figure 4: Future Source of Funding: When asked about whether the partners engaged with 4bii are looking for future sources of funding, respondents said yes. As a follow up question, when asked if their staff will be downsized or redeployed if the project is discontinued, respondents said they don't know.

New skills/competencies derived from project participation

Figure 5: New skills/competencies derived from project participation

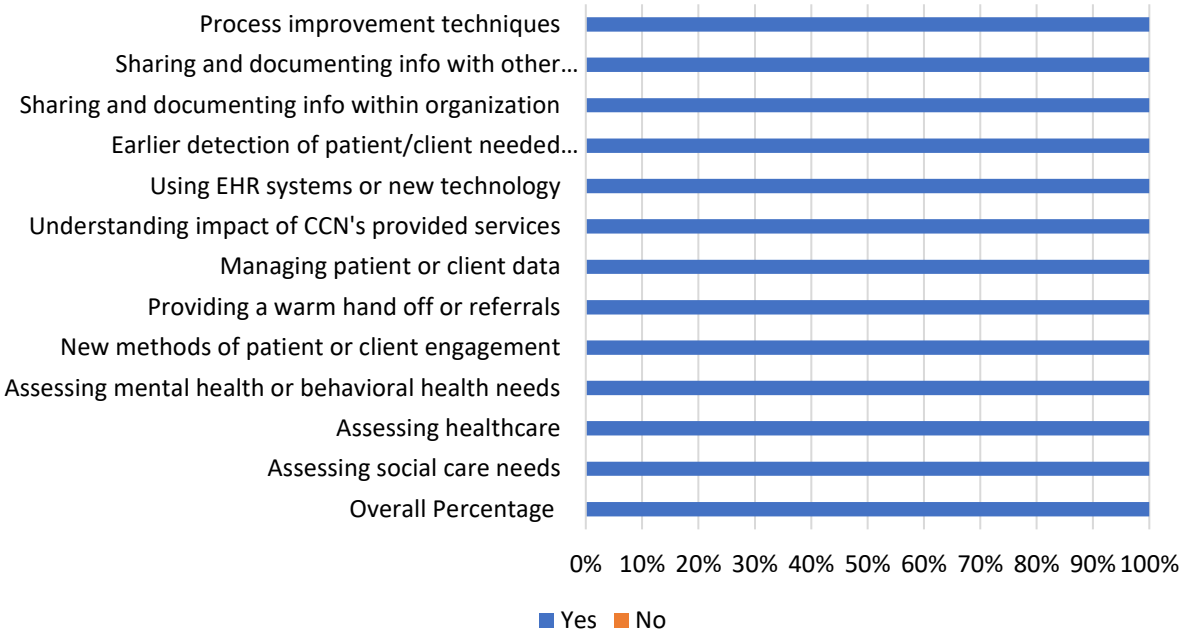


Figure 5: New Skills/Competencies: 100% of the respondents said that they developed the following new competencies and skills as a result of this DSRIP Project:

a. Assessing social care needs
b. Assessing healthcare
c. Assessing mental health or behavioral health needs
d. new methods of patient or client engagement
e. Providing a warm hand off or referrals
f. Managing patient or client data
g. Assessing and understanding impact of our organization's provided services
h. Earlier detection of patient/client needed resources
i. Sharing and documenting info within organization
j. Sharing and documenting info with other organizations
k. Process improvement techniques

Extent to which participation benefited our partner organizations

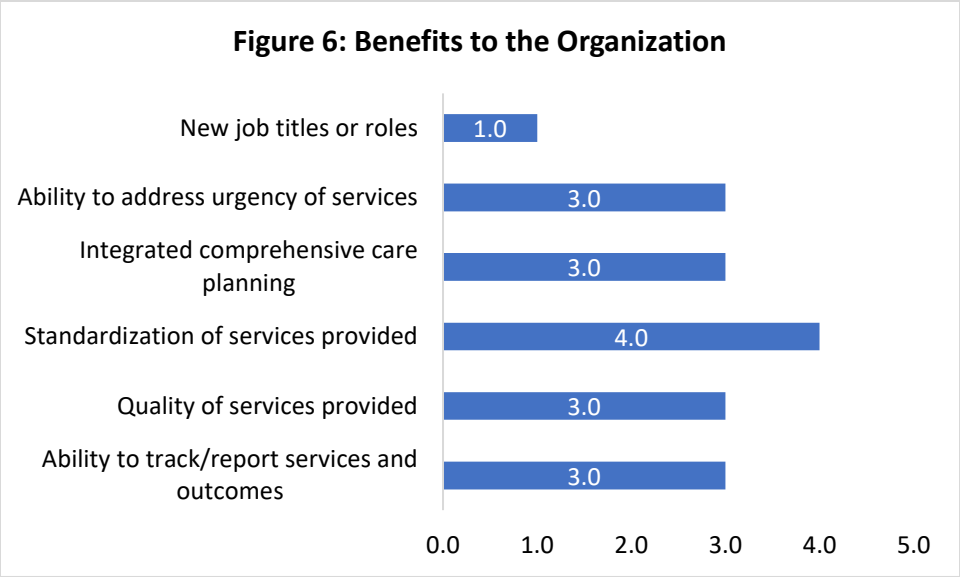


Figure 6: Benefit to the Organization: When asked to what extent participation in the project benefitted our partner organizations, the overall ranking was variable on a scale of 1 to 5 where 1 being "Not at all" and 5 being "Significant". In terms of ability to track and report on services/outcomes, respondents rated it a 3 out of 5. Regarding the quality of services provided, partners ranked it at 3. Standardization of services is ranked at 4. Integrated comprehensive care planning is rated 3. Ability to address urgency of services is ranked at 3. In terms of promotion of expanded care team and creating new job titles/roles, respondents rated it 1 out of 5.

Table 4*: Scoring of Workforce Development Questions*

Questions	Rating	Score
Project activities align with the organization's mission	★★★★★	5
Capacity to continue the activities after project concludes	★★★★★	5
Project participation benefited your organization	★★★☆☆	3
Participation helped your organization achieve its objectives	★★★☆☆	3
Ability to track/report services and outcomes	★★★☆☆	3
Quality of services provided	★★★☆☆	3
Standardization of services provided	★★★★☆	5
Integrated comprehensive care planning	★★★☆☆	3
Ability to address urgency of services	★★★☆☆	3
Promotion of expanded care team	No Rating	-
New job titles or roles	★☆☆☆☆	1
Average		**3.4**

Finally, to conclude feedback on Workforce Development, we asked a few general questions and received a rating as highlighted in the table below. Rating of 1 is "Minimal" and 5 is "Significant".

Table 5*: Workforce Development*

Questions	Rating	Score(5)
a. This DSRIP project has helped your organization prepare in performance-based contracts with payers.	★★★☆☆	3
b. This DSRIP project has helped your organization promote or develop our services.	★★☆☆☆	2
c. This DSRIP project provided funding for activities that were otherwise unfunded.	★☆☆☆☆	1
d. This DSRIP project provided funding to train and/or expand your personnel in ways you would have not done ourselves.	★★☆☆☆	2
e. This DSRIP project supported your organization to undertake activities that we see value in.	★★★☆☆	3
f. Your organization will continue the activities of this project after the DSRIP project completes.	★★★☆☆	3
g. This DSRIP project has given your organization a platform to share best practices.	★★★☆☆	3
Average		**2.42**

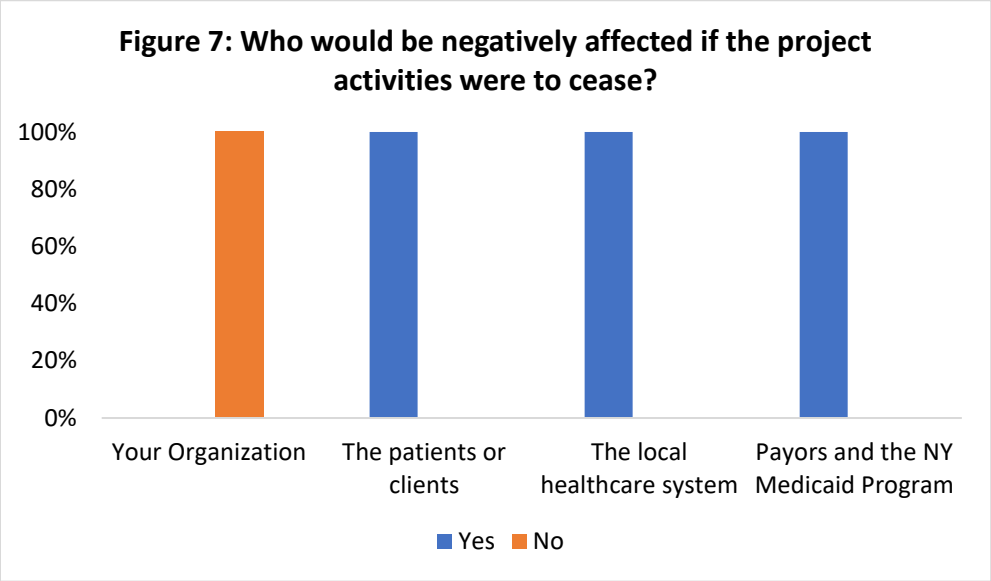
e) System Transformation

To assess system transformation, we asked the partners number of questions and got a rating as highlighted in the table below. Rating of 1 is “Not at all” and rating of 5 is “Completely”. The respondents could reply “Don’t know”.

Table 6*: System Transformation*

Questions	Rating	Feedback	Score
a. Better integration of services across settings or organizations	★★★★☆	Enhanced communication and getting to understand each organization's role as they are caring for the patients helped.	5
b. Ability to share data in real time to improve patient or client care	★★☆☆☆	No feedback	2
c. Promotion of community-based services (over institutional care)	★★★☆☆	No feedback	3
d. Promotion of team-based care (more coordinated care; cross-organizational teams)	★★★★★	Communication among the partners/ organizations involved helps in providing referrals for services.	5
e. More efficient services that reduce waste in the system	★★★☆☆	No feedback	3
f. Implementation of self-management goals	★★★★☆	All the protocols have been built around patients being able to self manage and take care of themselves.	5
g. Shift in staff mindset in addressing patient needs	★★★★☆	No feedback	5
h. New billable service development	★★☆☆☆	No feedback	2
Average			**3.75**

Figure 7: Negative Affect: When asked who would be negatively affected if the DSRIP project was to cease –respondents their organization would not be impacted. However, their patients/clients, the local healthcare system, and the payors/NY Medicaid program would be impacted.



II. Project Specific Feedback from Project Managers

a) Milestone Rating and Feedback: Success on key milestones of this project have been evaluated by Project Manager at CCN in an in-depth interview:

Table 7: Milestones

Milestone	Rating/5	Success Factors (1.5)	Gaps	Score(10)
Increase community partner participation in COPD prevention and management	★★★☆☆	Involvement from the Chronic Disease Self-Management Program.	Not having clear contact with partners and lack of referrals to the CDSMP by providers both impeded milestone success.	7
Establish PPS wide COPD screening protocols and clinical practice guidelines	★★★☆☆	Creating standardized guidelines for the organizations contracted to use them (note, some partners adhered better to those guidelines than others).	There was inconsistency in adoption of guidelines and the project would have benefited from more reliance on spirometry testing.	7
Increase pulmonary function testing (PFT) for COPD at risk adults	★★☆☆☆	N/A overall this was not a successful milestone.	There was little engagement with limited reporting. Not ideal to have partner organizations on this workforce.	2
Improve adherence to timely follow up of abnormal PFT screening results	★★☆☆☆	Avoidable hospitalizations as a cost-savings.	Inconsistency with follow-up and COPD screenings were questionable given the high rate of positive results.	2
Average				**4.5**

Overall DSRIP Gaps in Care going forward: The primary gap in care identified by the Project Management team is the use of spirometry as a diagnostic tool going forward. Additionally, PM reported this project as having very low partner engagement; future success of this project would require a significant increase in involvement from partner agencies.

Importance in improving SDOH outcomes(1.5): Reported from 4bii Project Management, project 4bii is a low impact project because the number of partners that are reporting for this project is minimal and the actual amount being reported is low. However, when COPD is managed proactively, in terms of avoiding admission and improving quality of life for these patients, this project can be extremely valuable in promoting quality care and improving patient outcomes.

III. Member Feedback from Patient Panel Survey

Online survey was administered to the Care Compass Network (CCN) panel members from Group 1: Medicaid or Uninsured and Group 4: Community Residents from **March 26, 2020 to April 20, 2020.**

- 25 questions
- **118 surveys (14% completion rate).** Average completion time 4 minutes.
- **Community Residents had a** 61% [72 out of 118 for each] proportional response rate.
- **Medicaid or Uninsured had a** 39% [46 out of 118 for each] proportional response rate.

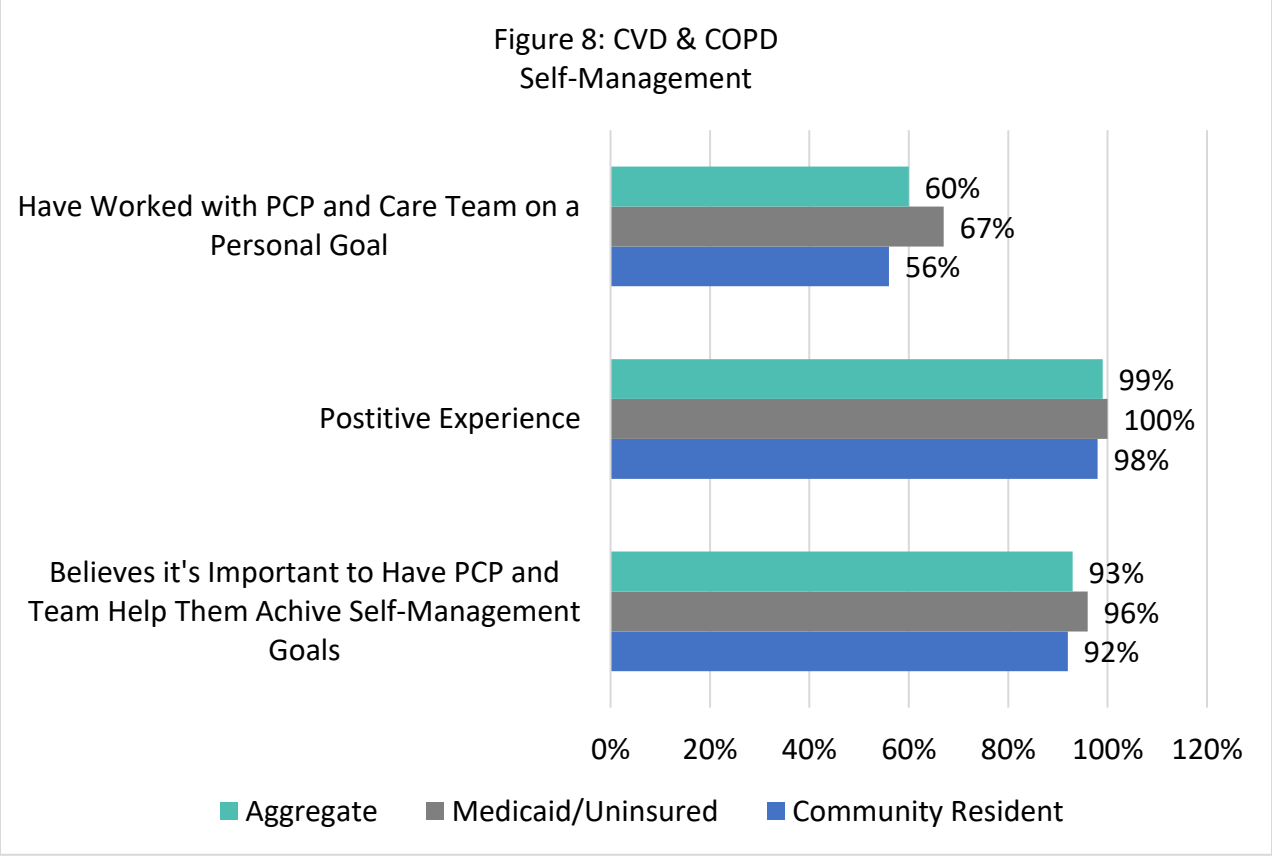


Figure 8*: Member Feedback*

- Of respondents 60% [71 out of 118] have worked with their primary care provider and care team on a personal goal to improve their overall health.
  - 67% [31 out of 46] of **Medicaid and Uninsured respondents** reported that they **have worked with their primary care provider and care team on a personal goal to improve their overall health**.
  - 56% [40 out of 72] of **Community Resident respondents** reported that they **have worked with their primary care provider and care team on a personal goal to improve their overall health**.
- Of respondents who recall have worked with their primary care provider and care team on a personal goal to improve their overall health 99% [70 out of 71] would describe this experience as **positive**.

- 100% [31 out of 31] of **Medicaid and Uninsured respondents** and 98% [39 out of 40] of **Community Resident respondents** reported this was a **positive** experience**.**

❖ Of respondents 93% [110 out of 118] believe having their primary care provider and their staff help them achieve self-management goals such as exercising, quitting smoking, losing weight, etc. is important.

- 96% [44 out of 46] of **Medicaid and Uninsured respondents** and 92% [66 out of 72] of **Community Resident respondents** reported that they believe their primary care provider and their staff help them achieve self-management goals such as exercising, quitting smoking, losing weight, etc. is important.

Scoring of Member Panel Survey

Table 8*: Scoring of Member Panel Feedback*

Questions	**Percentage**	**Score (15)**
Have worked with a PCP or care team on a personal goal?	60%	1
Had a positive experience during visit?	99%	5
Believes that its important to have PCP and team help them achieve self-management goals.	93%	5
Total		11

IV. Regional Performing Unit Feedback

During the month of May we collected survey responses from all participants at RPU Meetings on two topics: Workforce development and System Transformation. The survey was rating based from 1 to 5 with 1 being "Minimal" and 5 being "Significant". We received 38 responses in total. The table below highlights the distribution of responses across the RPU's. Approximately 2.63% (1 response out of 38) of the responses was for project 4bii.

Table 9: RPU Responses			4bii
South	47.37%	18	0
North	34.21%	13	0
West	10.53%	4	1
East	7.89%	3	0
Total	100.00%	38	1

Table 10: Scoring of Workforce Development Questions

Questions	Rating	Score(5)
Ability to track/report services and outcomes	★★★★★	5
Quality of services provided	★★★★★	5
Standardization of services provided	★★★★★	5
Integrated comprehensive care planning	★★★★★	5
Ability to address urgency of services	★★★★★	5
Promotion of expanded care team	★★★★★	5
New job titles or roles	★★★☆☆	3
Average		**4.71**

Table 11: Workforce Development

Questions	Rating	Score(5)
a. This DSRIP project has helped your organization prepare in performance-based contracts with payers.	★★★☆☆	3
b. This DSRIP project has helped your organization promote or develop our services.	★★★★★	5
c. This DSRIP project provided funding for activities that were otherwise unfunded.	★★★☆☆	3
d. This DSRIP project provided funding to train and/or expand your personnel in ways you would have not done ourselves.	★★★★★	5
e. This DSRIP project supported your organization to undertake activities that we see value in.	★★★★★	5
f. This DSRIP project has given your organization a platform to share best practices.	★★★☆☆	3
Average		**4**

Table 12: System Transformation

To assess system transformation, we asked the partners number of questions and got a rating as highlighted in the table below. Rating of 1 is “Not at all” and rating of 5 is “Completely”. The respondents could reply “Don’t know”.

Questions	Rating	Score(5)
a. Better integration of services across settings or organizations	★★★★★	5
b. Ability to share data in real time to improve patient or client care	★★★★★	5
c. Promotion of community-based services (over institutional care)	★★★★★	5
d. Promotion of team-based care (more coordinated care; cross-organizational teams)	★★★★★	5
e. More efficient services that reduce waste in the system	★★★☆☆	3
f. Shift in staff mindset in addressing patient needs	★★★★★	5
g. New billable service development	★★☆☆☆	1
Average		**4.14**

Appendix

Detailed Scoring Matrix

Scoring Matrix		
Key Elements	**Description**	**Points**
Quantitative Analysis	**Data from Projects and Salient**	**25 points**
1. Regression Analysis	**Statistical Association between Key activities undertaken during specific projects and HEDIS measures**	**15 points**
a) Key HEDIS Measures	Statistical Association between 0 and 50%	8 points
b) Key HEDIS Measures	Statistical Association between 51% and 75%	12 points
c) Key HEDIS Measures	Statistical Association between 76% and 100%	15 points
d) Causal Effect	"Negative association of project activity with ER Visits (2 pts) Negative association of project activity with Hospitalizations (2 pts) Positive association between project activity and Primary Care (2pts)"	**6 Points**
e) Cost Effectiveness Analysis	Costs averted due to reduction in ED visits (1.3 pts) Costs averted due to reduction in Hospitalizations (1.3pts) Costs spent due to increase in PC Visits (1.3pts)	**4 Points**
Qualitative Analysis	**Assessments conducted with various stakeholders involved in Speed and Scale Projects**	**75 Points**
2. Project Specific Feedback from Partners	**Interviews conducted by RMS with select partners for speed and scale projects**	**25 points**
a) Patient Outcomes	Scale of 1 to 5 - 4 and above	**5 points**
	Scale of 1 to 5 - score of 3	3 points
	Scale of 1 to 5 - score of 2 or 1	1 point
b) Cost of Care	Scale of 1 to 5 - 4 and above	**5 points**
	Scale of 1 to 5 - score of 3	3 points
	Scale of 1 to 5 - score of 2 or 1	1 point
c) Lasting Partnerships	Scale of 1 to 5 - 4 and above	**5 points**
	Scale of 1 to 5 - score of 3	3 points
	Scale of 1 to 5 - score of 2 or 1	1 point
d) Workforce Development	Scale of 1 to 5 - 4 and above	**5 points**
	Scale of 1 to 5 - score of 3	3 points
	Scale of 1 to 5 - score of 2 or 1	1 point
e) System Transformation	Scale of 1 to 5 - 4 and above	**5 points**
	Scale of 1 to 5 - score of 3	3 points
	Scale of 1 to 5 - score of 2 or 1	1 point
3. Project Specific Feedback from Project Managers	**Interviews conducted by Population Health Team with project managers for speed and scale projects**	**25 points**

a) Milestones Ratings	Scale of 1 to 5 - 4 and above	**10 points**
	Scale of 1 to 5 - score of 3	7 points
	Scale of 1 to 5 - score of 2 or 1	2 point
b) Successes specific to Milestones	Qualitative statements	**1.5 points**
c) Gaps specific to Milestones	Qualitative statements	**None**
d) Overall DSRIP Gaps in care going forward	Qualitative statements	**None**
e) Importance in improving SDoH outcomes	Qualitative statements	**1.5 points**
f) Qualitative Questions	Scale of 1 to 5 - 4 and above	**6 points**
	Scale of 1 to 5 - score of 3	4 points
	Scale of 1 to 5 - score of 2 or 1	2 point
g) Opportunities for Improvement	Scale of 1 to 5 - 4 and above	**6 points**
	Scale of 1 to 5 - score of 3	4 points
	Scale of 1 to 5 - score of 2 or 1	2 point
4. Member Panel Feedback from Patients	**Survey conducted by RMS with Member Panel regarding Speed and Scale Project**	**15 points**
a) Were asked about their health during visit	> 90% responded yes	**5 points**
	Between 75 to 89%	3 points
	Between 60 to 74%	1 point
b) Positive Experience	> 90% responded yes	**5 points**
	Between 75 to 89%	3 points
	Between 60 to 74%	1 point
c) Patient believes services provided were crucial for their well-being	> 90% responded yes	**5 points**
	Between 75 to 89%	3 points
	Between 60 to 74%	1 point
5. Regional Performing Units Feedback overall DSRIP activities	**Survey conducted by Population Health Team during RPU Meetings in May**	**10 points**
a) Workforce Development	Scale of 1 to 5 - 4 and above	**5 points**
	Scale of 1 to 5 - score of 3	3 points
	Scale of 1 to 5 - score of 2 or 1	1 point
b) System Transformation	Scale of 1 to 5 - 4 and above	**5 points**
	Scale of 1 to 5 - score of 3	3 points
	Scale of 1 to 5 - score of 2 or 1	1 point

Definitions – Statistical Associations

Direct NT: Direct Near Term - Project has a specific component (paid activity specifically) that affects the numerator of the measure in the near term (immediate impact; activity is incentivized).

Direct LT: Direct Long Term - Project has a component which encourages activities which affect the numerator of the measure. Activities may not have an immediate impact, but could encourage different future choices by members.

Mixed Direct: Project has a component which encourages activities which affect the numerator of the measure in general. Activity may not be paid; thus, although the project supports those activities, they are not specifically incentivized.

Quantitative Findings – Model Used

Regression Analysis Basics:

- The regression equation describes the relationship between the dependent variable (y) and the independent variable (x).

$$y=bx+a$$

Example: Anti-Dep Rx Fill = b_1(3ai BH screen) +b_i(Control $vars_i$)+ a

- The intercept, or "a," is the value of y (dependent variable) if the value of x (independent variable) is zero, and is referred to as the 'constant.'
- The regression results report the coefficient b that represents how a unit increase in x affect the likelihood of y, holding all other factors constant
- P value is also reported in the regression results. It shows whether the coefficient has statistically significant impact on the dependent variable or not. If the p value is 0.05, we are 95% confident that the independent variable has some effect on the dependent variable.

Model Used

Logistic regression

- Assumption: dependent variable is dichotomous and binary; in other words, coded as 0 and +1.
- We use the logit model that displays the odds ratio obtained by running the regression.
- The odds ratio is a way of comparing whether the probability of a certain event is the same for two groups.
- An odds ratio of 1 implies that the event is equally likely in both groups. An odds ratio greater than one implies that the event is more likely in the first group. An odds ratio less than one implies that the event is less likely in the first group.