SCHOOL OF SOCIAL WORK
COLORADO STATE UNIVERSITY

Collaborative Management Program (CMP) Evaluation Report

State Fiscal Year 2018

Submitted to the Division of Child Welfare, Colorado Department of Human Services

COLORADO
Office of Children, Youth & Families
Division of Child Welfare

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Collaborative Management Program Evaluation State Fiscal Year 2018 Report

Executive Summary

The Division of Child Welfare (DCW) in the Office of Children, Youth, and Families at the Colorado Department of Human Services (CDHS) contracted with the Social Work Research Center (SWRC) in the School of Social Work at Colorado State University (CSU) and 2M Research (2M) to serve as the evaluation team to conduct the evaluation of the Collaborative Management Program (CMP) in Colorado. Although the Collaborative Management Program was evaluated from 2004-2014, the State Fiscal Year 2018 (SFY18) report presents the methods, findings, and implications of a full-scale implementation of the CMP evaluation. This year's report builds on SFY15 (planning year), SFY16 (pilot year), and SFY17 (implementation year) in which the process, outcome, and cost evaluations were developed, tested, and implemented.

Overview

In SFY18, 31 sites (representing 43 counties) participated in CMP. The CMP population is considered to be at higher risk for negative outcomes in the juvenile justice, child welfare, health/mental health, and education systems. For example**,** the prior Division of Youth Services (DYS) involvement rate in SFY18 for youth from the CMP population was 9.0 percent compared to 2.9 percent for youth from the overall child protection population in Colorado. Furthermore, 2.8 percent of CMP involved youth had a prior adoption compared to 1.3 percent for youth from the overall child protection population.

To determine if the CMP is working as designed, the evaluation seeks to answer the following key questions:

1. Is the CMP meeting legislative intent in key population, systems, services, and outcome components?
2. Are CMP structures/processes improving cross-agency collaborations at the local level?
3. What are the outcomes for CMP involved children/youth?
4. Which CMP models/components are most effective?
5. Is there cost effectiveness associated with the CMP?
6. How are CMPs realizing systems improvements?

Collectively, the results of the process, outcome, and cost evaluations provide an understanding of the Collaborative Management Program so the evaluation team can answer the identified evaluation questions. Each component also addresses other relevant evaluation questions to explore how the CMP is implemented at the county level, and to better understand the contextual and practice factors contributing to child/youth and system outcomes.

Process Evaluation

The process evaluation examines three key topic areas related to CMP implementation: (1) collaborative structures and processes; (2) system integration; and (3) family engagement. The design for the process evaluation consists of primary and secondary data collection and analysis to track process measures and metrics for Interagency Oversight Group (IOG) and Individualized Services and Support Teams (ISST) implementation, coordinated service provision, and interagency collaboration. The evaluation team implemented new surveys to ensure that the most reliable and valid data are being collected to capture the key processes of the CMP.

The following summarizes the results for CMP process measures:

- 100% of CMPs achieved the goal of having 75% of their agencies contribute resources.
- 97% of CMPs achieved the goal of using Continuous Quality Improvement (CQI) by IOGs.
- The use of evidence-based practices was achieved by 95% of CMPs.
- Family participation in IOGs was achieved by 94% of CMPs.
- Attendance by mandatory members of the IOGs was achieved by 53% of CMPs.
- There was evidence of cost sharing in 36% of CMPs.

Outcome Evaluation

To more rigorously evaluate the program's effectiveness, the evaluation team employed matched quasi-experimental evaluations of CMP clients involved with the child welfare and health/mental health systems. Similar to SFY17, the child welfare quasi-experimental evaluation found that there is an overall neutral impact on the majority of outcomes and small negative effects on child welfare re-involvement and placement stability outcomes. Notably, the magnitude and significance of the findings on subsequent involvements and placement stability have decreased from last year. Accordingly, these findings demonstrate notable improvement in these outcomes over the past two years and provide supporting evidence that CMP is making important progress in improving client outcomes.

Cost Evaluation

The cost evaluation paints a picture of the resources being used to facilitate collaboration, and subsequently more efficient services to children, youth, and families. This efficiency is demonstrated by the results from the child welfare cost comparison analysis, which indicates that there are no statistically significant differences on out-of-home placement and service costs during a one-year follow-up period between children/youth who received CMP and otherwise eligible children/youth who did not. Similar to the outcome evaluation, the program's impact may be more clearly realized when costs from juvenile justice, education, and health/mental health services are considered.

Conclusions

Overall, for this higher risk population, the program appears to have moderate to high levels of success in performance measures across the four CMP domains. Among CMP clients involved with the child welfare system, the program appears to have high levels of success in increasing safety, preventing subsequent involvement, and keeping clients in their homes, but more moderate success in achieving placement stability and establishing permanency. For CMP clients involved with the juvenile justice system, the program appears to have high levels of success in decreasing commitments to DYS and preventing involvement with the juvenile justice system, but more moderate success in increasing successful involvements with the juvenile justice system. For the health/mental health domain, the program had moderate levels of success in increasing child/youth health and decreasing substance abuse. Finally, the program was associated with high levels of success in increasing successful graduation rates, decreasing disciplinary problems at school, increasing school stability, and increasing academic achievement, but more moderate levels of success in increasing school attendance. Although these findings provide preliminary insight into the effectiveness of the program, they should be interpreted with caution because of the limitations inherent to the non-experimental, descriptive evaluation.

The results of a quasi-experimental research design indicate that there is an overall neutral and small negative effect on child welfare re-involvement and placement stability outcomes. The findings from the inaugural evaluation of health/mental health outcomes suggest the program has mixed effectiveness in improving client outcomes. CMP clients were found to have a significantly lower probability of decreasing problem severity, but a significantly higher probability of having increased health through established linkages to health/mental health providers, and were not significantly more or less likely to have decreased substance abuse.

Overall, collaboration survey results indicate that CMP is greatly supported by participants and that IOG and ISST members value and benefit from engaging in the program. Many survey respondents identified multiple benefits that draw them to participate in CMP, such as the effectiveness of collaborating to coordinate resources and serve multi-system involved families. Respondents also pointed to CMP participation as a valuable opportunity to stay informed on issues regarding their community, learn from other partner agencies, and support one another.

The results from the cost comparison analysis indicate that there are no statistically significant differences on out-of-home placement and service costs during a one-year follow-up period between children/youth who received CMP and otherwise eligible children/youth who did not. Similar to the outcome evaluation, the program's impact may be more clearly realized when costs from juvenile justice, education, and health/mental health services are considered.

1. Overview

The Division of Child Welfare (DCW) in the Office of Children, Youth, and Families at the Colorado Department of Human Services (CDHS) contracted with the Social Work Research Center (SWRC) in the School of Social Work at Colorado State University (CSU) and 2M Research (2M) to serve as the evaluation team to conduct the evaluation of the Collaborative Management Program (CMP) in Colorado. Although the Collaborative Management Program was evaluated from 2004-2014, the State Fiscal Year 2018 (SFY18) report presents the methods, findings, and implications of a full-scale implementation of the CMP evaluation. This year's report builds on SFY15 (planning year), SFY16 (pilot year), and SFY17 (implementation year) in which the process, outcome, and cost evaluations were developed, tested, and implemented.

1.1. CMP Program

In 2004, the Colorado General Assembly passed House Bill 04-1451 (referred to as HB 1451) to establish optional collaborative management programs at the county level that would improve outcomes for children, youth, and families involved with multiple agencies. The CMP population is considered to be at higher risk for negative outcomes in the juvenile justice, child welfare, health/mental health, and education systems. For example, the prior Division of Youth Services (DYS) involvement rate in SFY18 for youth from the CMP population was 9.0 percent compared to 2.9 percent for youth from the overall child protection population in Colorado. Furthermore, 2.8 percent of CMP involved youth had a prior adoption compared to 1.3 percent for youth from the overall child protection population.

The General Assembly determined that the "development of a uniform system of collaborative management is necessary for agencies at the state and county levels to effectively and efficiently collaborate to share resources or to manage and integrate the treatment and services provided to children and families who benefit from multi-agency services."[1] The legislative intent of HB 1451 was to address the increasing number of families served by more than one agency or system, which has placed significant demands on agencies' resources. The resulting CMP is designed to improve both the quality and cost-effectiveness of interventions for Colorado children, youth, and families involved with multiple governmental programs and community agencies stemming from contact with the health/mental health, education, child welfare, and juvenile justice systems.

The legislation reflects a long history of system reform in Colorado based on Systems of Care principles. Core elements include community collaboration, family involvement in service planning and delivery, and culturally competent services tailored to the unique needs of different populations. These elements are used to engage stakeholders outside state and local government in consensus-oriented efforts to manage public resources and collectively solve problems. In part, community collaboration has become a hallmark of social services reform in Colorado due to research indicating its effectiveness in engaging

[1] Colorado Revised Statute, Title 24, Article 1.9. (2010). Retrieved from http://www.lexisnexis.com/ hottopics/Colorado

diverse disciplines to address issues that have multiple causes and solutions.[2] The specific goals of the legislation are to:

1. develop a uniform system of collaborative management that includes the input, expertise, and active participation of parent advocacy or family advocacy organizations
2. reduce duplication and eliminate fragmentation of services provided to children or families who would benefit from integrated multi-agency services
3. increase the quality, appropriateness, and effectiveness of services delivered to children or families who would benefit from integrated multi-agency services
4. encourage cost sharing among service providers
5. lead to better outcomes and cost-reduction for the services provided to children and families in the child welfare system, including the foster care system

For those counties/communities choosing to participate in the CMP, the legislation requires the development of local collaborative management structures and processes that bring together agencies and service providers. Local stakeholders participate in the CMP through membership in an Interagency Oversight Group (IOG). To be eligible to receive earned incentive funding in support of the collaboration, the statute requires that IOGs:

- include all 10 mandatory partners: county departments of human/social services, local judicial districts, health departments, school districts, community mental health centers, Behavioral Health Organizations, probation departments, DYS, domestic violence service providers, and managed service organizations for the treatment of drugs and alcohol
- establish a collaborative process that addresses risk sharing, resource pooling, performance expectation, outcome monitoring, and staff training
- implement Individualized Services and Support Teams (ISST) through which integrated services are delivered to children and families who would benefit from integrated multi-agency services

1.2. CMP Evaluation

Research has demonstrated that interagency collaboration yields important benefits including: increased probability of improvement in child, youth, and family outcomes; maximization of available resources for the provision of services; increased coordination within and among service delivery systems; and shared responsibility across systems and service providers.[3] In 2008, House Bill 08-1005 outlined specific reporting requirements for local CMPs and authorized an annual external evaluation of the CMP. The legislation requires that local sites report on the: (a) number of children and families served through their individualized service and support teams and the outcomes of the services

[2] U.S. Department of Health and Human Services. (2010). *Guiding principles of systems of care*. Retrieved June 1st, 2010 from http://www.childwelfare.gov/pubs/soc/socc.cfm
[3] California Department of Education. (2007). *Handbook on developing and evaluating interagency collaboration in early childhood special education programs.* Retrieved June 1st, 2010 from http://www.cde.ca.gov/sp/se/fp/documents/eciacolbrtn.pdf

provided; (b) estimated costs and cost-shifting or cost-saving related to CMP efforts; and (c) information relevant to improving the delivery of services to persons who would benefit from multi-agency services. To determine if the CMP is working as designed, the evaluation seeks to answer the following key questions:

1. Is the CMP meeting legislative intent in key population, systems, services, and outcome components?
2. Are CMP structures/processes improving cross-agency collaborations at the local level?
3. What are the outcomes for CMP involved children/youth?
4. Which CMP models/components are most effective?
5. Is there cost effectiveness associated with the CMP?
6. How are CMPs realizing systems improvements?

2. Process Evaluation

The process evaluation examines the implementation of the Collaborative Management Program to provide practitioners, policymakers, and stakeholders with essential information about how CMPs are working together to achieve the goals and outcomes outlined in the legislation. The evaluation team utilizes quantitative and qualitative methods that build upon previous CMP process measures. In addition, the process evaluation explores program successes and challenges, and provides contextual information for interpreting the results of the outcome and cost evaluations.

2.1. Process Evaluation Plan

The process evaluation examines three key topic areas related to CMP implementation: (1) collaborative structures and processes; (2) system integration; and (3) family engagement. The design for the process evaluation consists of primary and secondary data collection and analysis to track process measures and metrics for IOG and ISST implementation, coordinated service provision, and interagency collaboration. The primary data sources for the process evaluation are the Efforts to Outcomes (ETO) database, Memoranda of Understanding (MOUs), Trails, collaboration surveys, and family surveys.

2.1.1. Examining Factors of Collaboration in CMP

Identifying strengths and barriers to improve collaboration is a critical part of demonstrating the effectiveness of the CMP. Previous years' evaluations focused on exploring commonly identified factors of collaboration to better understand the collaborative processes across CMP sites, including shared vision, interpersonal relationships, and leadership and team dynamics.[4] Findings from the FY18 CMP Collaboration Survey indicated largely positive views of the collaborative process across CMP sites, with greater disagreement or challenges identified in selected areas. Informed by these findings, a new survey was developed and administered to IOG and ISST members for the current FY18 evaluation. The survey aimed to gather more in-depth information regarding implementation and buy-in to CMP and the collaborative process, how decisions are made, and approaches to leadership. Data were analyzed employing an inductive, thematic approach[5] where data were first coded by two researchers and then examined more in-depth to identify relevant themes emerging from the data.

2.1.2. Assessing System Integration

System improvements that result in streamlined, coordinated, and high-quality services for families are at the heart of the CMP approach. Given the complexity of systems, the variation in local approaches, and the voluntary nature of the program, statewide progress in these areas can be difficult to quantify. Process measures developed for the CMP evaluation are used as proxy indicators to assess system

[4] Hicks, D., Larson, C., Nelson, C., Olds, D. L., & Johnston, E. (2008). The influence of collaboration on program outcomes: The Colorado Nurse-Family Partnership. *Evaluation Review, 32*, 453-477.
[5] Thomas, D.R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation, 27*(2), 237-246.

integration. These data are used to address the question of whether CMPs are affecting positive changes throughout their social service delivery systems. Each CMP was required to meet three of the following six process measures in order to receive the meaningful minimum:[6]

1) **IOG meeting attendance**. Members of the IOG will be present at 75% of the meetings in a fiscal year. Sign-in sheets and meeting minutes will confirm attendance.
2) **Family agency or member participation on the IOG as a voting member**. A voting family agency or member will be in attendance at 50% of all IOG meetings held within the fiscal year. Sign-in sheets and meeting minutes will confirm attendance.
3) **Seventy-five percent (75%) of the agencies contribute resources at service level, either in-kind or actual monies**. Memorandum of Understanding (MOU) will show that 75% of the agencies listed in the Funding Resources Table are contributing in-kind or actual monies.
4) **Use of evidence-based or evidence-informed practices.** At least one evidence based or evidence informed practice will be implemented under the IOG, as reflected in the expenditures section of the annual report.
5) **Process of continuous quality improvement (CQI) used by the IOG.** IOG will meet no less than quarterly and meeting minutes will reflect the continuous quality improvement practices used to inform and improve efforts.
6) **Evidence of cost-sharing among IOG members.** Cost-sharing will be reflected in the expenditures section of the annual report.

2.1.3. Evaluating Family Engagement

To measure family engagement in the CMP context, the evaluation team worked with DCW staff, the CMP Evaluation Subcommittee, and the CMP Family Voice Subcommittee to develop an instrument that is a user-friendly and efficient approach to evaluating family engagement (e.g., communication between providers and parents) in ISST activities. Data from the family engagement survey were not collected during the SFY18 evaluation reporting period. The following describes the plan for survey administration and data collection for the period from April 1, 2019 to October 31, 2019.

- Site coordinators have agreed to assist with administration of the survey(s) to families
- There are two surveys: one for the initial family meeting and one for the subsequent review family meeting
    - Both surveys have an English and Spanish version
- To support family engagement in this evaluation, it is vital that families have multiple access points for the survey so they may choose the access route that is most convenient to them. As such, three options (with several access points) for taking the survey will be available:

[6] Because of challenges in accurately measuring the "evidence of cost-sharing among IOG members" process measure, results for this measure were not included in this year's evaluation report.

    - Option #1: postcard that is given to families after the initial and review meetings by the meeting facilitator. The meeting facilitator will verbally invite the family to take the survey and express support of the project. The postcard will include:
        - Email link to survey; QR code to survey; text code to receive a link to the survey via text (family will then take survey in mobile web browser)
        - A request to please complete the survey within two weeks of the meeting
        - Information about the gift card incentive
        - Postcards will be available in English and Spanish. One postcard will be used for the initial meeting survey and one postcard for the review meeting survey.
        - The meeting facilitator will be asked to also write the name of the meeting on the back of the postcard to help families when they go to fill out the survey.
    - Option #2: the family can choose to take the survey on a tablet or computer provided by the site following their meeting, as appropriate. Sites will be asked to have a tablet or computer available with the survey links bookmarked. Meeting facilitators will be asked to use their discretion as to when this option is appropriate (such as a family with limited internet access/text access at home or for families who task immediacy is important for success).
    - Option #3: if the site uses email communication with the family, a reminder email invitation with survey link will be embedded into the next email communication sent to the family.
- Families will be offered a $10 gift card as gratitude for taking the survey. Each survey has a separate $10 incentive. The incentives will be processed once a week by CSU
- The evaluation team will provide a Zoom support and training webinar to site coordinators and meeting facilitators to review the approach. The webinar will also be recorded and disseminated to all site coordinators and their staff. A site coordinator/meeting facilitator handout will also be circulated as a reminder of approach and evaluation needs.
- Survey submissions will be monitored and the approach will be re-visited as needed:
    - A monthly report from Trails that identifies the number of family meetings conducted at each site/county will be provided to the evaluation team. Every three months, the evaluation team will compare this information with responses received for each county for the same months. If the average estimated response rate appears low, the evaluation team will discuss with sites what might be going on and will also call on the Family Voice subcommittee to provide support to counties in administering the survey and receiving responses. The evaluation team will re-visit course as needed to enhance family engagement in the survey.
- The Family Voice subcommittee will also be asked to help support roll out of the survey and will provide ongoing targeted support to counties in administering the survey. They will be used by the evaluation team as a sounding board for ensuring family engagement and family-friendly approaches.

2.2. Process Evaluation Results

The results from the process measures and collaboration survey are presented in this section of the report.

2.2.1. Process Measures Achievement

Table 1 presents a summary of the percentage of CMP sites meeting the process measures they selected in their MOUs. The contribution of resources at the service level by seventy-five percent of agencies was achieved by 100 percent of CMPs that selected that process measure; the use of CQI by IOGs was achieved by 97 percent of CMPs; the use of evidence-based practices was achieved by 95 percent of CMPs; family participation in IOGs was achieved by 94 percent of CMPs; attendance by mandatory members of the IOGs was achieved by 53 percent of CMPs; and evidence of cost sharing was achieved by 36 percent of CMPs. The overall high level of achievement for process measures was consistent from SFY17 to SFY18.

Table 1: ***SFY18 Process Measures Achieved by CMPs***

Process Measures	CMPs Achieving	
	Number	**Percent (%)**
Seventy-five percent (75%) of the agencies contribute resources at service level, either in-kind or actual monies (*n* = 32)	32	100.0
Process of CQI used by the IOG (*n* = 34)	33	97.1
Use of evidence-based or evidence-informed practices (*n* = 22)	21	95.2
Family agency or member participation on the IOG as a voting member (*n* = 33)	31	94.0
IOG meeting attendance (*n* = 30)	16	53.3
Evidence of cost-sharing among IOG members (*n* = 14)	5	35.7

2.2.2. Collaboration Survey Administration

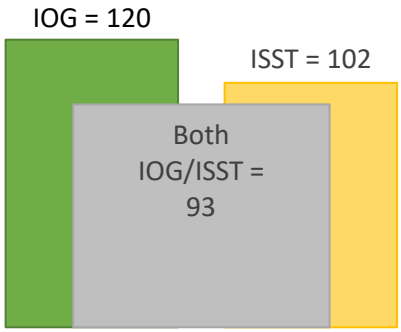
The CMP Collaboration Survey was administered to all 31 CMP sites for the FY19 evaluation and data collection took place from mid-October through mid-November of 2018. Survey links were emailed to CMP coordinators, who then forwarded the link to IOG and ISST members from their site. Coordinators were asked to share the survey with IOG members from each of the 10 mandated partners, and a representative sample from their most frequent ISST participants.

2.2.3. Survey Respondent Characteristics

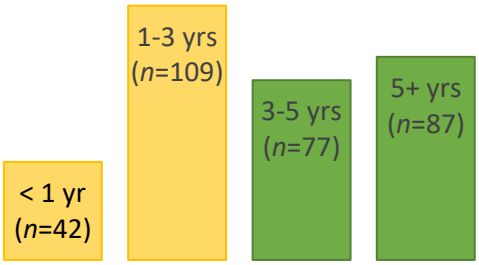
As shown in the figures on the following pages, 315 respondents completed the survey. Please note that not all survey respondents answered each question. Slightly more than one-third of the sample (38 percent) identified as IOG members only, about one-third identified as ISST members only (32 percent), and the remaining one-third identified as participating in both IOG and ISST meetings (30 percent).

About half of respondents (52 percent) reported being involved with CMP for over three years, while the remaining 48 percent of respondents cited having less than three years of involvement.

Survey respondents' were near evenly split in identifying as a **member** of an **IOG, ISST or both**.

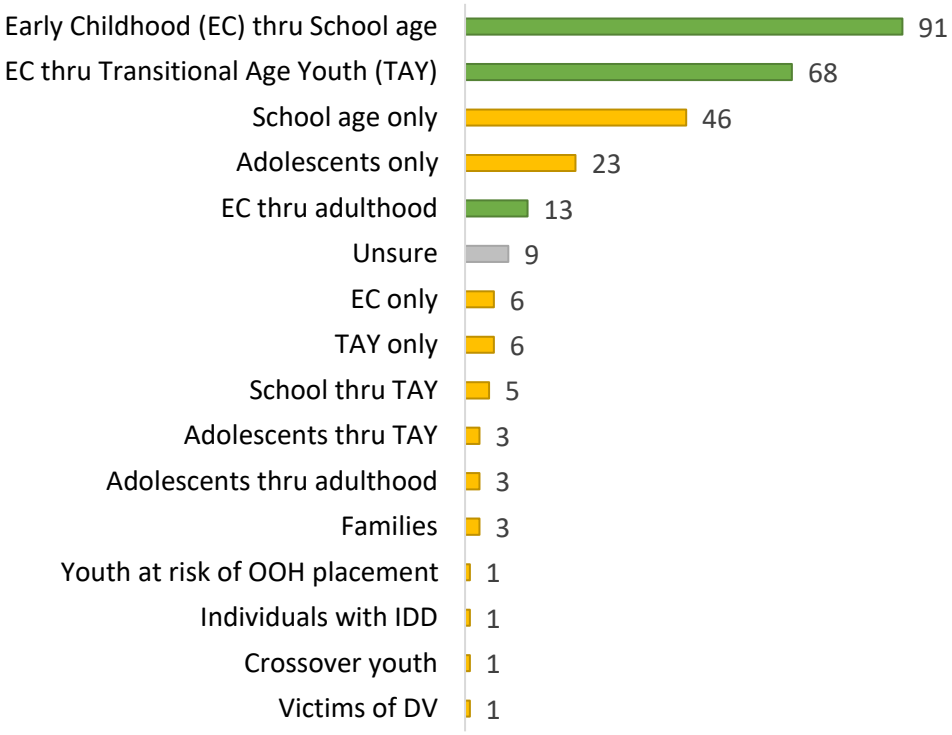


About half (48 percent) of survey respondents reported less than 3 years' **involvement with CMP**, and half reported more than 3 years.



Of the 280 respondents who responded to this question, close to two-thirds (61%) indicated a CMP focus area broadly encompassing early childhood through adulthood, as shown in the figure below.

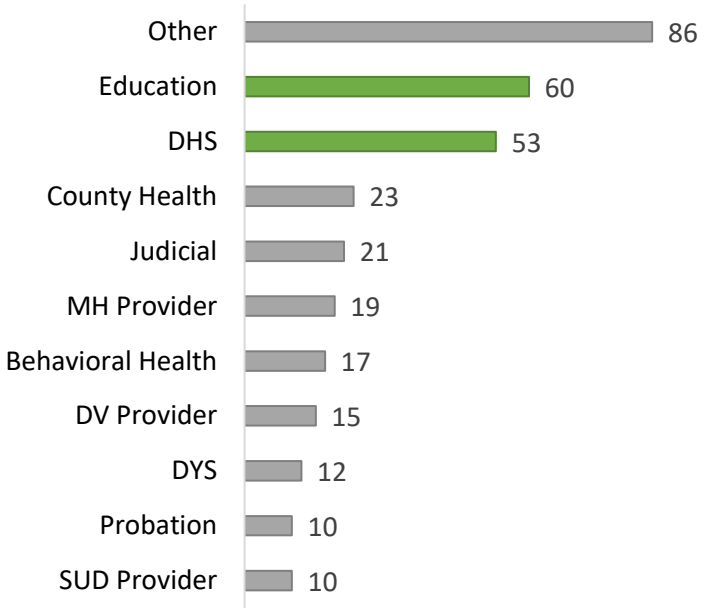
Most CMP focus areas are broadly aimed, as shown below.



County		County	
Represent > 1 county	37	Adams	6
Mesa	20	Park	6
Larimer	16	Sauguache	6
Garfield	15	Huerfano	5
Grand	13	Las Animas	5
Montrose	12	Bent	4
Boulder	11	Lake	4
Gunnison	11	Lincoln	4
Eagle	10	Kit Carson	3
Logan	10	Routt	3
Pitkin	9	Teller	3
Rio Grande	9	Cheyenne	2
Alamosa	8	Elbert	2
El Paso	8	Jefferson	2
Douglas	7	Prowers	2
La Plata	7	Archuleta	1
Moffat	7	Baca	1
Morgan	7	Kiowa	1
Otero	7	San Miguel	1
Pueblo	7		

As shown in the figure to the left, respondents represented **38 individual counties** with 37 respondents representing multiple counties.

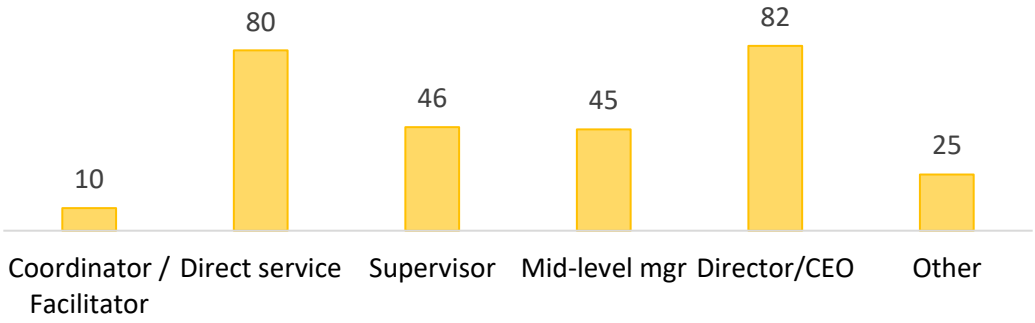
Survey respondents' **agency/system affiliations**



Respondents were asked to indicate their affiliated agencies related to their involvement with CMP. Respondents were able to indicate more than one agency affiliation.

As shown in the figure on the left, **Education** and **DHS** were the two most common agencies indicated, representing just over half of the 288 respondents for this question.

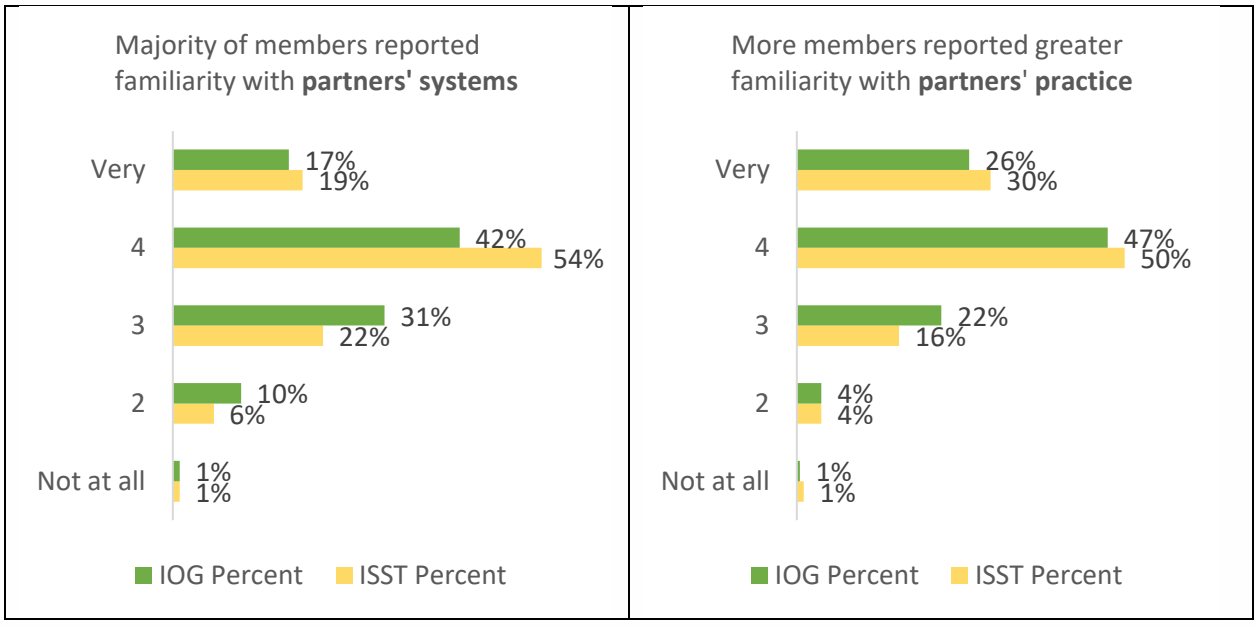
In terms of roles or positions with their affiliated agencies, most commonly identified being in **direct service** (28 percent) or a **director/CEO** (28 percent) position, as shown in the figure below.



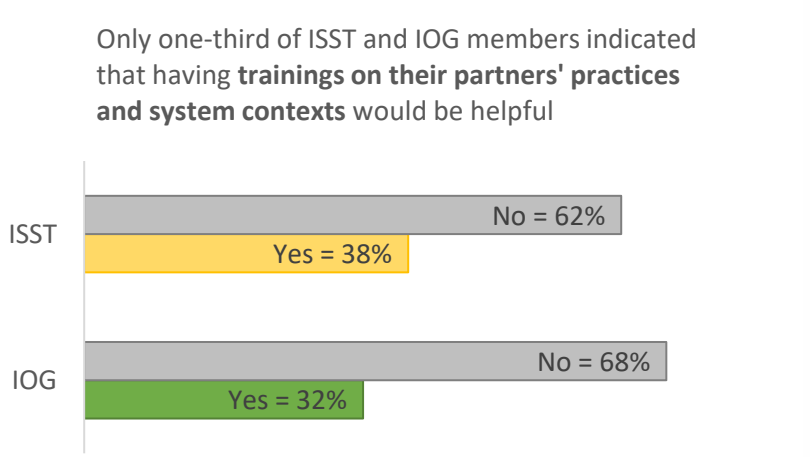
Leadership. Respondents were also asked to indicate who leads their IOG. Most named specific individual(s) or affiliated role(s), such as, "CMP coordinator," "CMP executive team" or "head of agency X." Close to one-fifth described their IOG leadership more impersonally, listing a name of one or more agencies instead of individuals, for example, "DHS" or "local MH center."

Individual, CMP role	Fellow IOG members	Agency(s)	Co-leads, CMP roles	Individual, Unknown	Individual, non-CMP role	No Lead / Unsure	Co-leads, non-CMP roles
64	60	49	32	28	13	7	4

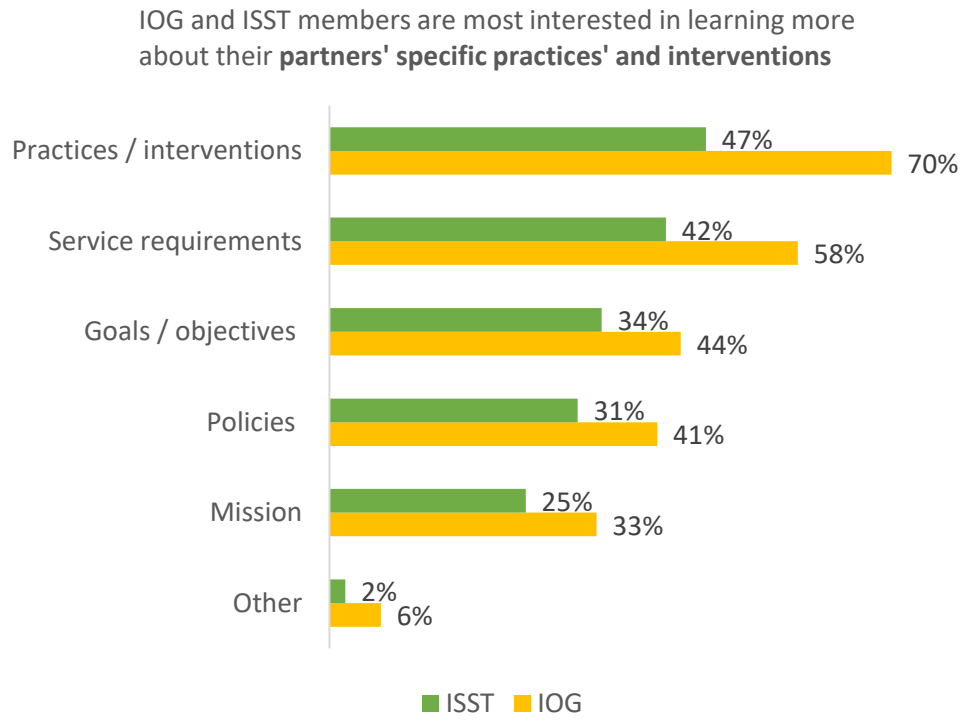
Familiarity with partners' practices and system contexts. As shown in the figure below, respondents (on a five-point scale from "not at all" to "very") reported fairly high levels of familiarity with their partners' practice and system contexts, with a greater number of respondents indicating more familiarity with partners' practices, compared to system contexts.



Training. Related to the high levels of familiarity regarding their partners' practice and system contexts, most respondents indicated that having trainings on their partners' practices and agencies was unnecessary.



As shown in the figure below, respondents who did report interest in receiving training indicated the greatest interest in learning more about their partners' specific practices or interventions, service requirements and agency goals and objectives.



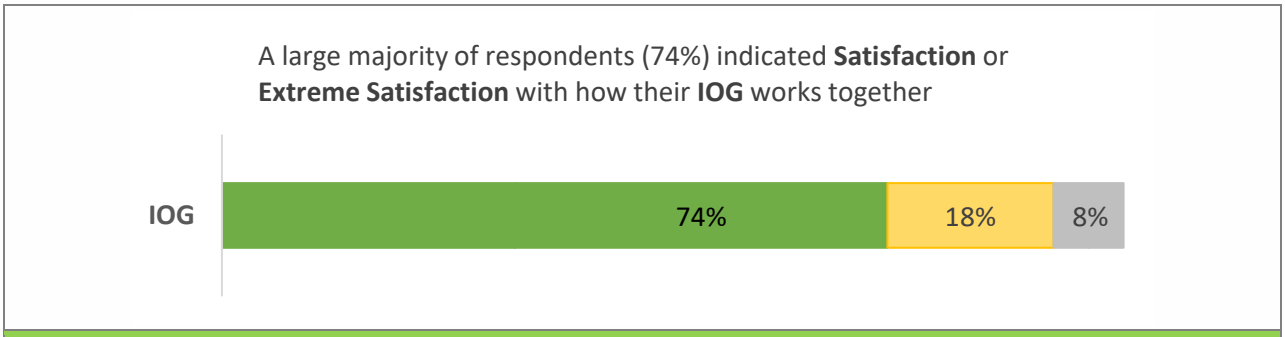
2.2.4. Collaboration Survey – Descriptive Findings

This section presents findings from questions on the survey specific to CMP implementation. A total of 315 respondents completed the survey, however not all participants responded to every survey question and response numbers differ across questions.

Satisfaction with IOG: Overall, most respondents expressed satisfaction with how their IOG works together, with 74 percent (*n*=152) of responding IOG members indicating extreme satisfaction or satisfaction with their IOG, 18 percent (*n*=38) indicating both satisfaction and dissatisfaction, and eight percent (*n*=16) indicating dissatisfaction. A total of 206 members responded to the question regarding their IOG.

As displayed in Table 1, the **top three positive aspects** respondents identified about their IOG include how communication is handled, leadership of the group, and ways in which group members collaborate. Conversely, for the **top three areas of improvement** for IOGs, respondents pointed to inactive or absent group members, a lack of clarity in focus in purpose, and inconsistent follow through after a plan or decision is made as reasons for their dissatisfaction.

Table 1: ***Satsifaction with IOG***

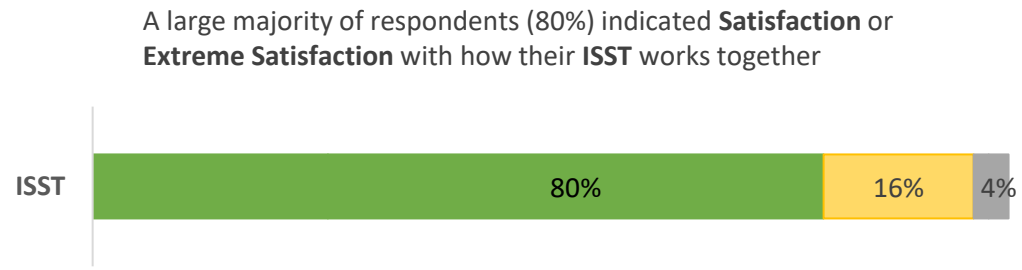


What are some specific things you like about how your IOG works together?	
Communication (*n*=38)	*"Open" "Transparent" "Consistent" "Clear"*
Leadership (*n*=30)	*"Shared, collaborative" "Inclusive" "Open" "Solution-focused"*
Collaborative (*n*=25)	*"Willingness to work together instead of against each other"*
What could be done to move your rating up?	
Greater participation and engagement (*n*=11)	*"More active involvement from more members"*
Focused leadership and purpose (*n*=8)	*"Stronger leadership, clearer definition of responsibilities and mission"*
Greater follow through and action (*n*=7)	*"Continually see no follow through, action or impact"*

Satisfaction with ISST: Overall, most respondents expressed satisfaction with how their ISST works together, with 80 percent (*n*=146) of ISST members indicating extreme satisfaction or satisfaction with their ISST, 16 percent (n=30) indicating both satisfaction and dissatisfaction, and four percent (*n*=7) indicating dissatisfaction. A total of 183 members to the question regarding their ISST.

As displayed in Table 2, the **top three positive aspects** respondents identified about their ISST include members' commitment to involving and helping families, the collaborative nature of their ISST, and members' mutual respect for one another. Similar to IOGs, two of the **top areas of improvement** for ISSTs include inactive or absent group members and inconsistent follow through. Better integrating family voice was also identified as an aspect for improvement.

Table 2: ***Satisfaction with ISST***



What are some specific things you like about how your ISST works together?	
Commitment to families (*n*=37)	*"Value voice and involvement of the family"*
Collaborative, not individualistic (*n*=29)	*"Open communication and willingness to help each other"*
Mutual respect for one another (*n*=24)	*"Respect of each participants' expertise, including the family"*
What could be done to move your rating up?	
Greater participation and engagement (*n*=10)	*"Need more partners to value and use this method of collaboration"*
More consistent follow through (*n*=5)	*"More follow through with what member commit to doing"*
Better integration of family voice (*n*=4)	*"Struggles with integrating family voice and choice"*

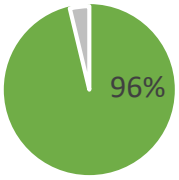
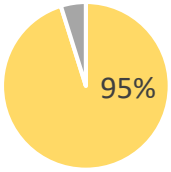
Participating in CMP. As displayed in Table 3 on the following page, respondents most commonly indicated that their participation in IOG or ISST meetings was required or assigned to them (*n*=132). Many respondents also elaborated further and stated that they participate as a means to help or best support children and families (*n*=109) or to do their part as an active group member (*n*=76). Other respondents cited their commitment to the CMP process and the value of collaborating to provide services and supports (*n*=67), as well as the opportunity to learn and receive support from other agencies and partners (*n*=44).

Table 3: ***Reasons for Participating in IOG and ISST Meetings***

Why do you participate in an IOG or ISST?	
Mandated or assigned (*n*=132)	*"Mandatory representative" "Required of my position" "Court ordered"*
To help or best support families (*n*=109)	*"Valuable opportunity to actually help families/kids."* *"To work with children, families and community…and work better as a community to help the population we serve."*
Do part as a group member / partner (*n*=76)	*"To represent [my agency] and collaborate with other entities to best serve youth and families…"* *"To bring to the table resources my organization can offer as well as others I may be aware of."* *"To bring [my] voice to the table, and see what I have to offer to help."*
Value collaboration; committed to process (*n*=67)	*"Our organization, and more importantly, our services to youth, are better because of the collaboration."* *"I believe we do better work due to this collaboration."* *"It is a powerful meeting that gathers the most leaders in one location in our area. We get a lot done."* *"'I am committed to this partnership within our County and have seen and experienced the value of this collaborative model."*
Learn and/or receive support (*n*=44)	*"To stay involved in the process and informed of what's going on."* *"To learn something at every meeting… It is a place to be a valuable resource and to find valuable resources and to improve diverse relationships."* *"To stay up to date on community programs and opportunities for youth and families."*

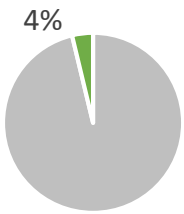
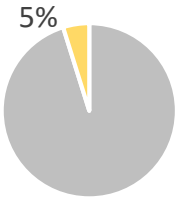
Collaborative versus Individual efforts: As displayed in Table 4 on the following page, 96 percent of IOG (*n*=205) and 95 percent of ISST (*n*=186) members, agreed that collaborating to serve children and families is more valuable than individual efforts. Respondents most commonly pointed to more integrated and comprehensive service plans (*n*=75), having input from multiple parties (*n*=49) and better coordination of resources (*n*=48) as aspects they value about working together. Respondents also highlighted better service experiences for families (*n*=44), working across silos (*n*=42) and more creative and productive brainstorming (*n*=41).

Table 4: ***Benefits of Collaborative Efforts***

96% of responding IOG members agreed that collaborating to serve children and families is more valuable than individual efforts 	
 **95% of responding ISST members agreed** that collaborating to serve children and families is more valuable than individual efforts	
Which tasks (in the context of CMP) do you think require collaboration to achieve best results?	
Developing integrated service plans (*n*=75)	*"Our agencies together are able to help families navigate several different systems in one meeting…build on what each other agency is doing and ensure services are not duplicated or thrown at a family unnecessarily."*
Gathering multiple perspectives (*n*=49)	*"It allows multiple agencies to look at a family from a broad view."* *"Families and children are very complex and almost always have more than one area of need. No one agency is an expert in all areas."*
Coordinating, conserving multiple resources (*n*=48)	*"Working together can create capacity, ensure quality, reduce costs."* *"It helps to streamline services to families so that they aren't overwhelmed and agencies aren't duplicating services."*
Better service experience for families (*n*=44)	*"Collaboration can help to spread resources wider and connect youth and families to more resources and trusted adults."* *"Fewer children fall through the cracks when agencies partner up and share the work."* *"Working together simplifies things for clients and helps everyone be on the same page about progress, barriers…and how to move forward."* *"It builds a community message that entities are working together and supportive of families."*
Facilitates work across systems (*n*=42)	*"Streamlining communication/referrals; accountability for agencies' responsibilities as well as families' responsibilities."* *"Sharing data, sharing goals, having a common release of information."*
Brainstorming ideas, solutions for families (*n*=41)	*"When all are present at the table, ideas are offered that would never be possible when we work on our own."* *"It is often helpful when people are willing to have conversations and be creative in the ways they can continue to work together."*

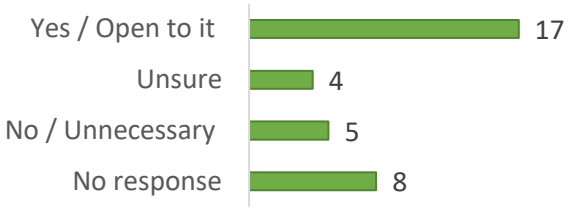
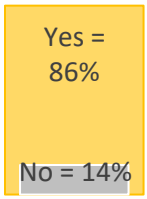
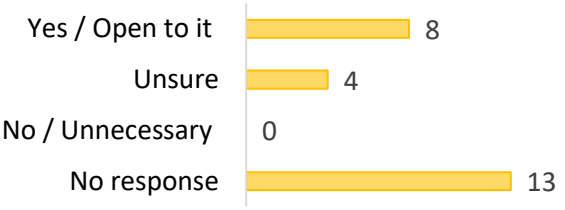
As displayed in Table 5, four percent of IOG (*n*=8) and five percent of ISST (*n*=9) respondents disagreed that collaborative efforts are more valuable than individual efforts, pointing to inefficiency as the primary reason for their view. These handful of respondents indicated that working together often seemed less productive (*n*=4), and leads to underutilization of individual agency resources (*n*=3) and expertise (*n*=2).

Table 5: ***Challenges of Collaborative Efforts***

4% of responding IOG members disagreed that collaborating to serve children and families is more valuable than individual efforts 	
 **5% of responding ISST members disagreed** that collaborating to serve children and families is more valuable than individual efforts	
Why not? Please say more.	
Under or uneven utilization of resources (*n*=5)	*"I do think some families need more help than my program can give and it is great to link with other agencies…but I think each individual program serves its dynamic need and skill set and that should not be underplayed."* *"My agency ends up paying for things. Funding isn't as "braided" as CMPs claim."*
Inefficient use of time (*n*=4)	*"The process is very labor intensive and inefficient."*

Strategies to promote collaboration: As displayed in Table 6 on the following page, 84 percent of IOG (*n*=176) and 86 percent of ISST (*n*=159) respondents reported actively employing strategies to promote collaboration among their members. Respondents who disagreed were mixed about having their IOG (*n*=34) or ISST (*n*=25) do so. Specific strategies that IOG and ISST members use to promote collaboration include effective communication (*n*=72), meeting regularly (*n*=53), sharing information and resources with members (*n*=43), and aiming to be inclusive (*n*=35).

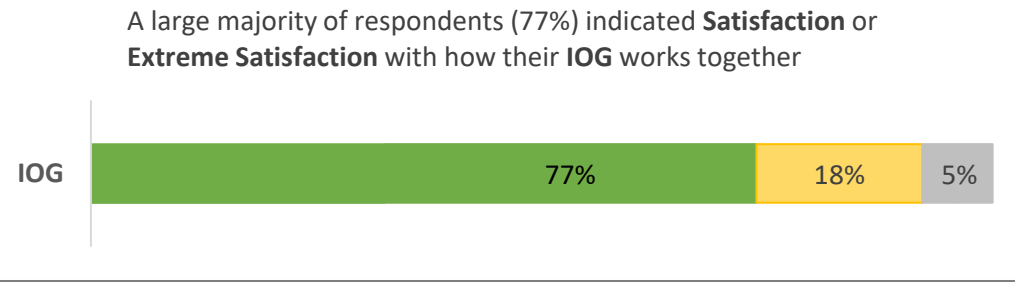
Table 6: ***Collaboration Strategies***

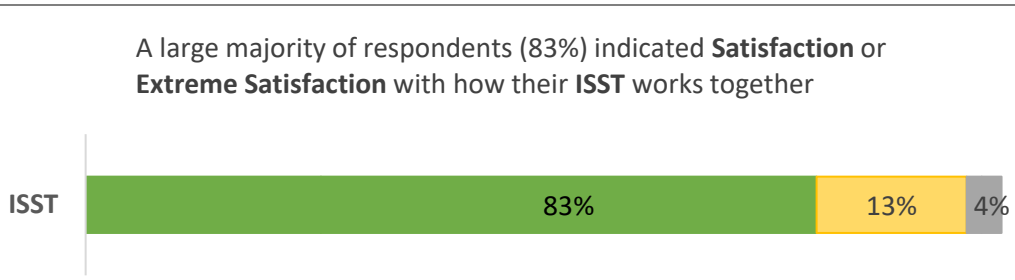
<table>
<tr><td>Are there strategies your IOG actively employs to encourage collaboration?
  </td><td>What are your thoughts about having your IOG do this?
  </td></tr>
<tr><td>Are there strategies your ISST actively employs to encourage collaboration?
  </td><td>What are your thoughts about having your ISST do this?
  </td></tr>
<tr><td colspan="2">Describe the strategies your IOG/ISST employs to encourage collaboration among members:</td></tr>
<tr><td>Employ communication that is (n=72)</td><td>“comprehensive” “consistent & rapid” “open & honest” “welcome [to] suggestions” “[happens] regularly” “feel listened to” “communication is guided, recorded and disseminated”</td></tr>
<tr><td>Meet regularly (n=53)</td><td>“consistent meetings” “regular meetings”</td></tr>
<tr><td>Share info, resources with group members (n=43)</td><td>“We take time to share agency updates; these often lead to partnerships”
“sharing of resources” “share our area of expertise, policies and services among ourselves”</td></tr>
<tr><td>Aim for inclusivity (n=35)</td><td>“Everyone has a voice” “taking all people's input as equal”
“Bring together individuals so we can all be at the table as plans are discussed”
“All members asked to give [an] opinion”</td></tr>
<tr><td>Invite relevant parties, active participation (n=13)</td><td>“regular participation” “have decision makers in the room”</td></tr>
<tr><td>Work in sub-groups (n=11)</td><td>“breakout meetings” “smaller workgroups” “small teams”</td></tr>
</table>

Satisfaction with decision-making: As displayed in Table 7 on the following page, 77 percent of IOG (*n*=158) and 83 percent of ISST (*n*=148) respondents reported extreme satisfaction or satisfaction with their IOG or ISST decision-making process. About 18 percent of IOG members (*n*=36) and 13 percent of ISST members (*n*=24) indicated both satisfaction and dissatisfaction, while five percent of IOG members (*n*=10) and four percent of ISST members (*n*=7) reported dissatisfaction. Decision-making processes that are inclusive and made collectively (*n*=114), were most commonly praised by respondents. Respondents

also appreciate having a discussion before a decision is made (*n*=41), voting on decisions (*n*=25) and centering decisions on the family (*n*=22).

Table 7: ***Satisfaction with Decision-Making***





What are some specific things you like about your IOG/ISST decision-making process?	
Inclusive, participatory, collective process (*n*=114)	*"Every agency has a voice including the family."* *"All ideas and opinions are welcomed, heard, considered, and valued."* *"No one is excluded from the process unless they choose to refrain."*
Discussion of issues before decision is made (*n*=41)	*"There is a brainstorming time where there are no bad ideas…"* *"There is plenty of room for discussion and opportunity for input, clarification and influence on the decision"*
Members work well together (*n*=26)	*"I feel valued and listened to."* *"We work well as a team; rely on each other's expertise to help families."* *"We can openly agree to disagree…without fear of retaliation."*
Vote on decisions (*n*=25)	*"Do our best to reach consensus and then vote on any major decisions."* *"Clear process. Decisions are made by a vote."*
Decisions are family-centered (*n*=22)	*"Partners respect client voice/choice."* *"The family is at the center of the decision-making process."*

As displayed in Table 8, reasons that respondents gave for dissatisfaction with the decision-making process include lack of clarity regarding the process (*n*=11), challenging discussion process (*n*=9) and challenges related to including families in the process (*n*=5).

Table 8: *Concerns with Decision-Making*

What could be done to move your rating up?	
Develop clear, more organized process (*n*=11)	*"Clear understanding of how decisions are made." "More of a structure."*
Have more active, open, inclusive discussion (*n*=9)	*"Make sure all voices are heard not just the loudest or most popular."* *"Discussion is met with defensiveness, which is not productive."* *"Partners are not engaged or informed in the decision-making."*
Include families in process more thoughtfully (*n*=5)	*"I really like that families participate in the process however, this has hindered people from making truthful, blunt statements especially if the family has not done well working with an agency. While I think it is valuable to have the family participate, sometimes it hinders how truthful the process is and you do not get all the information necessary to make decisions."* *"Financial approval decisions are often made in front of the family and this can feel uncomfortable or awkward."* *"Include the family in more decisions or strengthen the power of their voice in these decisions."*

Decision-making processes. As displayed in Table 9 on the following page, 90 percent of IOG (*n*=183) and 89 percent of ISST (*n*=161) members indicated that the decision-making process for their IOG or ISST is clear. Specifically, IOG members indicated that decisions are promptly communicated (*n*=83), a vote is taken (*n*=74) and issues are discussed before a decision is made (*n*=21). ISST members reported that it is clear when a decision has been made because an action or service plan has been developed (*n*=39), decisions are documented and communicated (n=37), the group aims for consensus (*n*=28), discussion takes place (*n*=27) or a vote is taken (*n*=23).

Table 9: *Decision-Making Processes*

From your perspective, is it typically clear when your ISST / IOG has made a decision?	
IOG **Yes = 90% (*n*=183)**	**ISST** **Yes** = 88% (*n*=161)
IOG: How do you know when a decision has been made?	
Decisions promptly communicated (*n*=83)	*"[A decision] is quickly and clearly shared with all of members via email and discussed at the next meeting."*
Vote taken (*n*=74)	*"We have a clear voting process."*
Issues discussed before decision is made (*n*=21)	*"Pending decisions are discussed ahead of time; members are notified of decisions to be made at meetings."*
ISST: How do you know when a decision has been made?	
Plan is developed (*n*=39)	*"An action plan is developed." "It is written in next steps"* *"People are assigned tasks and expected to do them"*
Decisions are communicated / documented (*n*=37)	*"Emailed updates" "It is clearly stated at the end of each staffing"*
Consensus reached (*n*=28)	*"When everyone is on board with the plan"* *"The team reaches consensus at weekly meetings"*
Discussion before decision made (*n*=27)	*"Open discussion at meetings regarding decisions"* *"Discussion occurs and consensus is reached. A vote is taken"*
Vote taken (n=23)	*"When voting is done"* *"We have a voting process at the end of each of the meeting when the review is for a higher level of service or placement, and the voting members provide their opinion on the best next step and the reasoning. This is a recommendation that goes to the judge, who makes a final decision."*

2.2.5. Collaboration Components

Survey findings also helped to highlight five key themes relevant to CMP practice. This section discusses common themes found across the survey responses presented above, and examines them more in-depth in the context of CMP implementation. Survey responses highlighted five broad themes relevant to CMP practice, including Focus, Facilitation, People, Planning and Follow Through, as presented below. As displayed in Table 10 on the following page, these "Fs and Ps of CMP," represent factors pertinent to facilitating or hindering CMP implementation, as identified by survey respondents.

Table 10: ***The Fs and Ps of CMP***

Focus	Facilitation	People	Planning	Follow through
• Leadership • CMP mission & goals	• Meetings • Communication • Brainstorming • Decision-making • Inclusivity • Mutual respect	• Relevant parties invited • Attendance • Participation & engagement	• Developing action plans • Identifying & coordinating resources	• Decisions followed through • Plans implemented • Costs & resources shared

Each of the five themes are discussed in further detail below, highlighting current CMP process measures where relevant.

Theme 1: Focus. This theme includes factors related to CMP's mission, goals, leadership and guidance. As displayed in Table 11, respondents highlighted ways in which leadership and attention, or lack thereof, to CMP's mission or goals, impacted their satisfaction or engagement in the program. For example, when discussing satisfaction with their IOG, leadership of the group was given both as a reason for satisfaction and dissatisfaction with their IOG. Similarly, ISST respondents listed CMP's mission of serving children and families as a reason for both satisfaction and dissatisfaction with their ISST.

Table 11: ***Collaboration Focus***

Theme	**Focus** **Attention to CMP's mission and goals, and supported by leadership**
CMP Process Measure(s)	N/A
Implementation Factors	**Leadership** • Respondents value *"shared, collaborative, open"* leadership • Dissatisfied respondents requested *"Stronger leadership, clearer definition of responsibilities and purpose"* **CMP mission and goals** • Respondents value including the *"voice and involvement of the family"* in discussions and decision-making • Many respondents view CMP as an effective way to help or best support families • Dissatisfied respondents requested better integration of family voice and choice
Relevant Data/Survey Question	• Satisfaction with IOG/ISST • Dissatisfaction with IOG/ISST • Why do you participate in IOG/ISST meetings? • What are specific things you like about decision-making?

Theme 2: Facilitation. This theme refers to factors that respondents discussed as helping to facilitate or hinder implementation of CMP. As displayed in Table 12, respondents pointed to the utility of having protocols in place to facilitate consistent decision-making processes or procedures for sharing information and resources. Group dynamics that help to encourage or discourage CMP implementation are also included under this theme, such as aiming for inclusivity or respecting each members' expertise and perspectives.

Table 12: ***Collaboration Facilitation***

Theme	**Facilitation** **Factors that help to promote / facilitate CMP implementation**
CMP Process Measure(s)	Continuous Quality Improvement (CQI) used by the IOG
Implementation Factors	**Meetings –** Respondents value • Meeting regularly • Having relevant parties at meetings for discussion, decisions • Regularly sharing information and about resources • Working in sub-groups or small teams **Communication –** Respondents value • *"Open, consistent, clear, rapid"* communication • Also communication that is *"guided, recorded and disseminated"* **Brainstorming ideas, solutions as a group** • *"When all are present at the table, ideas are offered that would never be possible when we work on our own."* **Decision-making –** Respondents value • Discussing issues before making a decision ○ Also discussions that are inclusive and welcome all concerns and suggestions • Aiming for consensus • Taking a vote • Documenting and disseminating decisions that are made **Inclusivity** • Respondents value group processes (e.g., discussion, decision-making) that are inclusive, participatory, collective **Mutual respect** • *"Respect of each participants' expertise, including the family"*
Relevant Data/Survey Questions	• Satisfaction with IOG/ISST • Working together is more valuable than individual efforts • Strategies to encourage collaboration • Dis/Satisfaction with decision-making

Theme 3: People. This theme refers to the invitation and participation of individual IOG and ISST members, particularly as they relate to implementing CMP. As displayed in Table 13, respondents pointed to the value of having members who consistently attend meetings and actively engage in the process, and the difficulty of moving forward when members are absent or participate infrequently.

Table 13: *Collaboration Participants*

Theme	**People** **IOG/ISST member invitation, participation and engagement**
CMP Process Measure(s)	IOG meeting attendance Family member or agency as IOG voting member
Implementation Factors	**Involving relevant members** • Respondents highlighted the importance of having relevant parties at the table for discussions and decision-making **Attendance, participation, engagement** • Respondents value active, engaged members due to having access to multiple perspectives and expertise • Respondents also value fellow members who contribute to the process via discussions and decision-making • Respondents are challenged by members who do not attend meetings regularly or actively engage in the process
Relevant Data/Survey Questions	• Dissatisfaction with IOG/ISST • Working together is more valuable than individual efforts • Strategies to encourage collaboration

Theme 4: Planning. As displayed in Table 14, this theme involves factors and processes related to the initial stages of CMP's work with children, youth and families, including developing service plans and documenting decisions made.

Table 14: Collaboration Planning

Theme	**Planning** **Preparation for implementation, including plan development**
CMP Process Measure(s)	N/A
Implementation Factors	**Developing integrated action / service plans** • Integrated action/service plans help provide a roadmap for implementing work with children and families **Planning for how to access and coordinate relevant resources** • Developing a plan for which resources to access and how also helps prepare for successful implementation
Relevant Data/Survey Questions	• Working together is more valuable than individual efforts • Strategies to encourage collaboration

Theme 5: Follow Through. The final theme highlighted among survey responses relates to the actual implementation of CMP efforts. As displayed in Table 15, respondents discussed following through with decisions, implementing action plans, and sharing costs and resources as factors that contribute to implementation and their own satisfaction or dissatisfaction with the program.

Table 15: ***Collaboration Follow Through***

Theme	**Follow through** **Following through with decisions, implementing plans**
CMP Process Measure(s)	75% of agencies contribute resources, either in-kind or monies Use of Evidence Based/Informed Practices Evidence of cost-sharing among members
Implementation Factors	**Following through with decisions** • Respondents dissatisfied with their IOG/ISST pointed to a lack or inconsistent follow through with decisions • Not committing to decisions and reopening decisions to discussion was also cited as a dissatisfying factor **Implementation of plans, sharing costs and resources** • Respondents value implementing plans developed, including sharing information/resources, or making service referrals • Respondents voiced dissatisfaction when resources and costs are not distributed or shared as planned
Relevant Data/Survey Questions	• Dissatisfaction with IOG/ISST • Decision-making processes are clear – Yes/No

3. Outcome Evaluation

In combination with the process and cost evaluations, the SFY18 outcome evaluation is designed to answer critical questions pertaining to the outcomes of clients served by CMP. The outcome evaluation is designed to provide an improved understanding of the various client populations served by the program. The evaluation also is designed to answer the critical question of whether CMP is effective in improving the outcomes of clients involved in multiple systems, by comparing their outcomes against children/youth not involved in CMP. CMP serves two distinct subpopulations, characterized by whether clients are served by a CMP prevention program (i.e., "Prevention population") or via a traditional CMP program (i.e., "ISST population"). The prevention population comprises children/youth who are served by CMP prevention programs designed to prevent child/youth involvement in multiple systems. In contrast, the ISST population consists of children/youth who are dually involved in the child welfare, juvenile justice, education, or health/mental health systems and are served in a collaborative manner through an ISST meeting.

Previous evaluations[7,8] have documented the difficulties in accessing outcome data for the prevention and ISST populations and the associated challenges in rigorously evaluating CMP. These difficulties included challenges in accessing outcome data across various domains and disparities in the ability to access data on comparison populations of children/youth who were eligible but not served by the program. Given these difficulties, for the SFY18 outcome evaluation, the evaluation team once again employs a combination of research designs. The evaluation team used a non-experimental, descriptive research design to provide preliminary insight into outcomes across multiple client subpopulations, while using a quasi-experimental research design to examine the program's effectiveness in improving child welfare and health/mental health outcomes. The evaluation team utilized a similar period of analysis for both research designs consisting of children/youth who were served by CMP in SFY17, while the team used a collection of performance measures to examine outcomes one year later.

The SFY18 outcome evaluation comprises five parts: (3.1) review of the SFY17 CMP performance measures; (3.2) overview of the outcome evaluation's research design; (3.3) descriptive analyses of the CMP populations and the program performance measures; (3.4) detailed overview of the quasi-experimental research designs and the associated findings; and (3.5) discussion of next steps for subsequent outcome evaluations of the program.

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[7] Winokur, M., Holmquist-Johnson, H., Lee, C., Timpe, Z., Elgin, D. J., Smith, J., & Barbosa, J. (2017). *Collaborative Management Program evaluation state fiscal year 2016 evaluation report*. Retrieved from: http://www2.cde.state.co.us/artemis/huserials/hu118internet/hu1182016internet.pdf

[8] Winokur, M., Lee, C., Timpe, Z., Holmquist-Johnson, H., & Elgin, D. J. (2018). *Collaborative Management Program evaluation state fiscal year 2017 evaluation report*. Retrieved from: https://drive.google.com/file/d/1sVLuGO3a_nq7v7xRRnW2Gp9909XFBx_O/view

3.1. Performance and Outcome Measures

Throughout the history of CMP, a collection of performance measures has been used by CDHS to examine the program's effectiveness. These performance measures were developed by CDHS and program stakeholders to examine the intermediate outcomes of children/youth in the ISST population who were served by the program under the four domains: child welfare, juvenile justice, education, or health/mental health. In SFY17, CMPs were required to select from among 19 performance measures spread across the four domains that would be used to assess performance in achieving key intermediate outcomes for CMP clients. The CMPs were required to select a minimum of three performance measures that they would have to meet. The SFY17 performance measures are presented in Table 16 on the following page.

The difficulties in accessing performance data for all four CMP domains pose a formidable challenge to rigorously evaluating the program. As part of the SFY15 and SFY16 evaluations, the evaluation team conducted a series of interviews with CMP Site Coordinators, focusing on how CMPs collect, analyze, and report performance data. Throughout the interviews, CMP Site Coordinators relayed that accessing performance data within the education domain continues to be significantly challenging. Most notably, the extent to which data within this domain are collected and reported is subject to considerable variance across the CMPs, with many CMPs unable to effectively measure educational performance outcomes. As the evaluation team has noted within previous evaluation plans, the challenges in accessing education data have resulted in the education domain receiving comparatively less attention than the other three domains. The cumulative effect of these data and reporting issues is a minimized ability to effectively evaluate the CMP program against all 19 of the performance measures.

3.1.1. Data Sources

The evaluation team extracted client-level administration data from the Trails and the ETO databases. Children/youth who were involved with child welfare were included within the Trails database, which serves as the State Administered Child Welfare Information System (SACWIS) and as the official case record for children served by the child welfare system. In contrast, the ETO database provides data for children/youth who were served by CMP but were not necessarily served by the child welfare system (and included within the Trails database). Some overlap between the two databases exists and a de-duplication process was used to remove clients represented within both databases.

In subsequent steps, the evaluation team organized, cleaned, and matched the administrative data. This multistep process involved matching and de-duplicating clients from the ETO and Trails databases, generating the outcome variables, constructing a comparison pool of children/youth who could serve as potential matches for CMP clients, and pulling the requisite variables for the matching process. An overview of this process is documented in Appendix A. Upon completion of this process, the evaluation team provided the combined evaluation dataset to the Colorado Judicial Department's Office of the State Court Administrator (Colorado Judicial) and DYS to obtain juvenile justice outcomes for CMP clients, as well as to the CDHS Office of Behavioral Health (OBH) to obtain health and mental health outcomes for CMP clients.

Table 16: *SFY17 Performance Measures*

Performance Measure	Data Source(s)	# of CMPs Selecting
Child Welfare		
Increase safety of child and youth. Percent of CMP youth with no substantiated abuse finding after CMP services began.	Trails/ETO Data	**28**
Increase the number of children/youth who remain home. Percent of children/youth who remained safely in their home during CMP involvement.	Trails/ETO Data	**12**
Decrease number of children/youth involved with child welfare. Percent of CMP children/youth with no new open involvements in Trails after CMP services began.	Trails/ETO Data	**6**
Increase permanency of children/youth involved in child welfare. Percent of CMP children/youth discharged to a permanent home (adoption, reunification, legal guardianship).	Trails/ETO Data	**2**
Increase placement stability of children/youth. Percent of CMP children/youth who experienced two or fewer moves while in out-of-home placement.	Trails/ETO Data	**1**
Juvenile Justice		
Increase successful involvement with juvenile justice system. Percent of CMP youth who successfully completed probation or parole.	Trails/ETO/Judicial Data	**7**
Decrease commitment to the Division of Youth Services. Percent of CMP youth diverted from being committed to the Division of Youth Correction.	Trails/ETO Data	**4**
Prevent involvement with juvenile justice system. Percent of children/youth who did not enter into detention due to CMP involvement while involved with the CMP.	Trails/ETO Data	**4**
Decrease children/youth involved with truancy court. Percent of CMP children/youth who were diverted from involvement with truancy court while involved in the juvenile justice system.	Trails/ETO Data	**0**
Health/Mental Health		
Increase children/youth's health. Percent of children/youth with established linkages to (a) primary care provider; (b) oral care provider; (c) substance abuse provider; (d) mental health provider; or e) health insurance provider.	Trails/ETO/OBH Data	**16**
Decrease problem severity. Percent of CMP children/youth with (a) decreased problem severity, and (b) improved level of functioning on Colorado Client Assessment Record (CCAR) or similar tool while involved with CMP services.	Trails/ETO/OBH Data	**1**
Increase psychological, social, cognitive and physical functioning. Percent of children/youth with decreased concerns according to the Trauma Screening Tool.	Trails/ETO/OBH Data	**1**
Increase wellbeing. Percent of families with improved MST outcome indicators or successful completion of mental health treatment.	Trails/ETO/OBH Data	**1**

Table 16: *SFY17 Performance Measures*

Performance Measure	Data Source(s)	# of CMPs Selecting
Decrease substance abuse. Percent of children/youth who successfully completed 90-day inpatient substance abuse treatment or intensive outpatient treatment.	Trails/ETO/OBH Data	**1**
Education		
Increase school attendance. Percent of children/youth with improved school attendance rates while involved with CMP services.	Self-Reported by CMPs	**21**
Increase academic achievement. Percent of children/youth with improved academic performance while involved with CMP services.	Self-Reported by CMPs	**7**
Decrease disciplinary problems at school. Percent of children/youth with fewer disciplinary actions (referrals, suspensions, or expulsions) while involved with CMP services.	Self-Reported by CMPs	**3**
Increase school stability. Percent of children/youth who had two or fewer school moves while involved with CMP services.	Self-Reported by CMPs	**3**
Increase successful graduation rates. Percent of children/youth who remained in school or increase ability to graduate within four years.	Self-Reported by CMPs	**0**

3.2. Outcome Evaluation Design

As summarized in Table 17 on the following page, the design of the outcome evaluation consists of three parts, with the associated findings presented in Sections 3.3–3.5. The first part (Section 3.3) consists of a descriptive analysis of the CMP prevention and ISST populations. Section 3.4 then details the descriptive, non-experimental evaluation designs used to examine the outcomes of the ISST population via the SFY17 performance goals. A non-experimental evaluation design does not rely on a comparison group for causal attribution of program impact but instead uses descriptive statistics to examine the outcomes of clients served by the program. The lack of a comparison group precludes causal inference on the program's effectiveness, but the analysis of outcomes provides preliminary evidence on changes in the performance outcomes of program clients. Given the ability to access data for CMP clients with child welfare and health/mental health involvement and comparable populations of children/youth who were eligible but not served by the program, the evaluation team used a quasi-experimental design (Section 3.5) to more rigorously evaluate the program's effectiveness at improving outcomes within the two domains.

Table 17: ***Overview of the Outcome Evaluation***

Section 3.3: Descriptive Analysis of CMP Clients
A descriptive analysis of the client population served by CMP, consisting of two parts: 1. Prevention population 2. ISST population
Section 3.4: Descriptive, Non-Experimental Evaluation of the ISST Population
A description of the ISST population by the following: 1. Program domain 2. Performance measure outcomes
Section 3.5: Quasi-Experimental Evaluation of Child Welfare and Health/Mental Health Outcomes
Quasi-experimental evaluations of child welfare and health/mental health outcomes, consisting of two parts: 1. Detailed overviews of the quasi-experimental designs 2. Quasi-experimental evaluations comparing the outcomes of children/youth served by CMP to comparison groups of children who were eligible but not served by the program

3.2.1. Data Collection

The population of children/youth included in the outcome evaluation was served by the program (via an initial ISST meeting) during SFY17, which ran from July 1, 2016, to June 30, 2017. Outcomes of CMP clients served in SFY17 were evaluated one year later during the period of SFY18 (July 1, 2017 to June 30, 2018) (hereafter referred to as "SFY18 CMP clients"). The evaluation datasets consisted of pertinent demographic and case information, along with the 19 performance measures, which were measured one year after the initial ISST meeting.

The population of clients served by CMP prevention programs was included within a separate section of the ETO database that was distinct from the population of clients included in the broader ETO and Trails databases. More specifically, children/youth included in the ETO prevention database were at higher risk of involvement in multiple systems and were served by CMP prevention programs designed to prevent multisystem involvement. Collectively, these three databases provide the outcome evaluation data for the SFY18 evaluation.

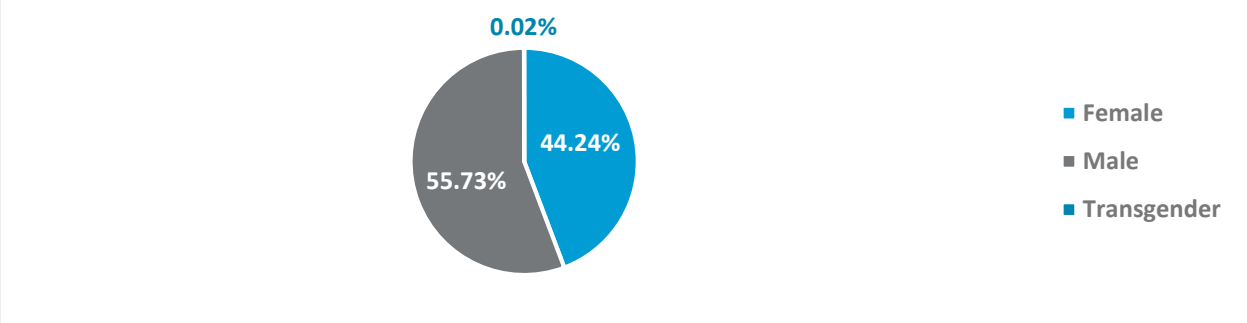
3.3. Descriptive Analysis of CMP Clients

The descriptive analysis of the population served by the CMP program is presented in two parts. The first part provides an overview of the client population served by CMP prevention programs, while the second describes the population of CMP clients served by an ISST meeting.

3.3.1. Prevention Population

In SFY18, 4,558 children/youth were served by a CMP prevention program designed to prevent involvement in multiple systems. Figure 1 on the following page shows that 56 percent of prevention population clients were male, and 44 percent were female. Figure 2 on the following page shows that the ages of prevention population clients at the time of entry ranged from less than age 1 to age 21, with a mean age of 10.

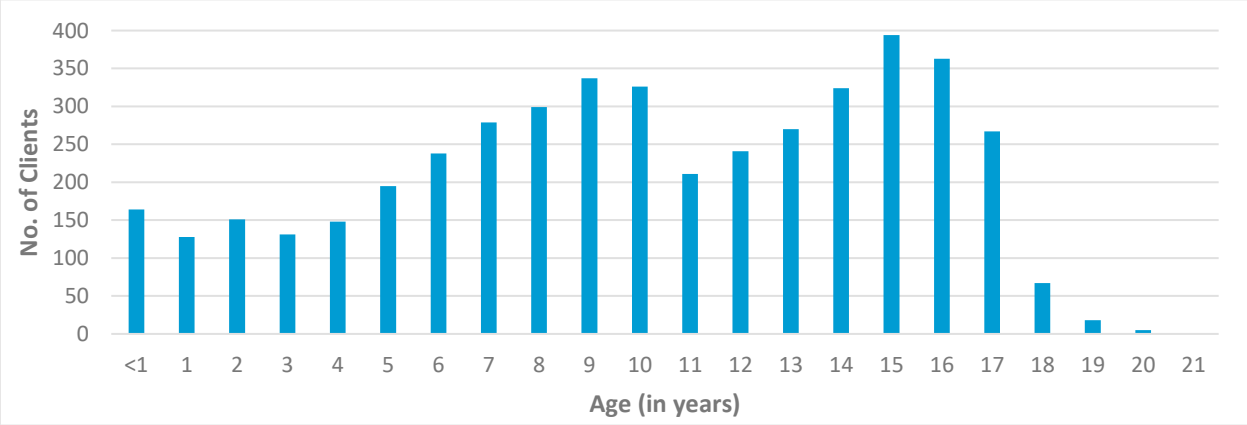
Figure 1: ***Prevention Population by Gender (N = 4,326)***[9]



Source: ETO CMP database.

The data collected on the prevention population are currently limited to the aforementioned demographic variables. Because performance measures for the prevention population have not been established, the analysis is limited to examining the characteristics of the prevention population. This brief descriptive analysis provides initial insight into the demographics of the clients served by CMP prevention programs, and the preliminary findings can provide important context as DCW and CMP stakeholders work to develop a set of performance measures for CMP prevention programs. Together, these efforts can serve as important steps toward designing future evaluations that examine the effectiveness of these programs in preventing multisystem involvement.

Figure 2: ***Age Distribution of Children/Youth in the Prevention Population (N = 4,557)***[10]



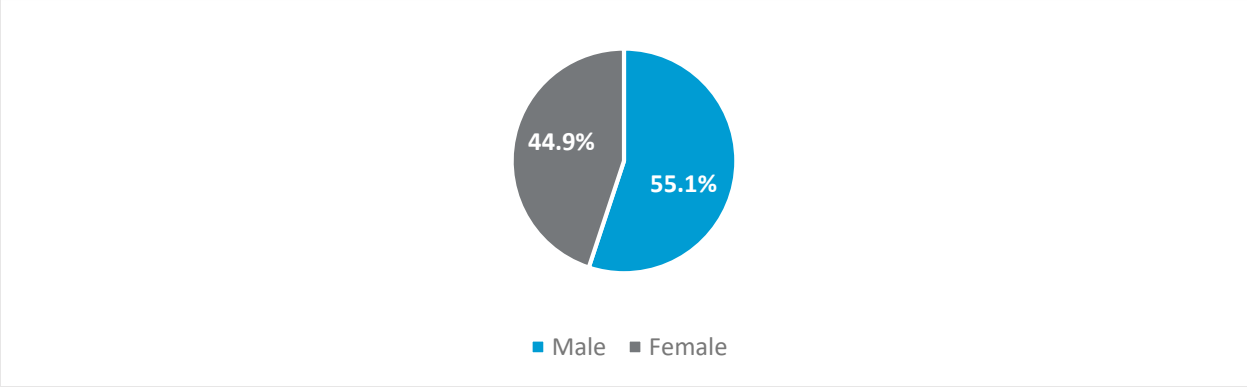
Source: ETO CMP database

[9] Gender was missing for 232 clients in the dataset.
[10] The client's age at the time of entry into a prevention program was calculated by subtracting the client's date of birth from the program start date and dividing by 365.25 days.

3.3.2. ISST Population

During SFY18, the 31 CMPs (representing 43 counties) served 8,909 distinct children/youth via ISST meetings. This population is notably larger than the prevention population served by CMP (*N* = 4,558). As Figure 3 shows, the gender demographics of clients served by ISST meetings are similar to previous years, as 55 percent of ISST clients were male, while 45 percent were female.

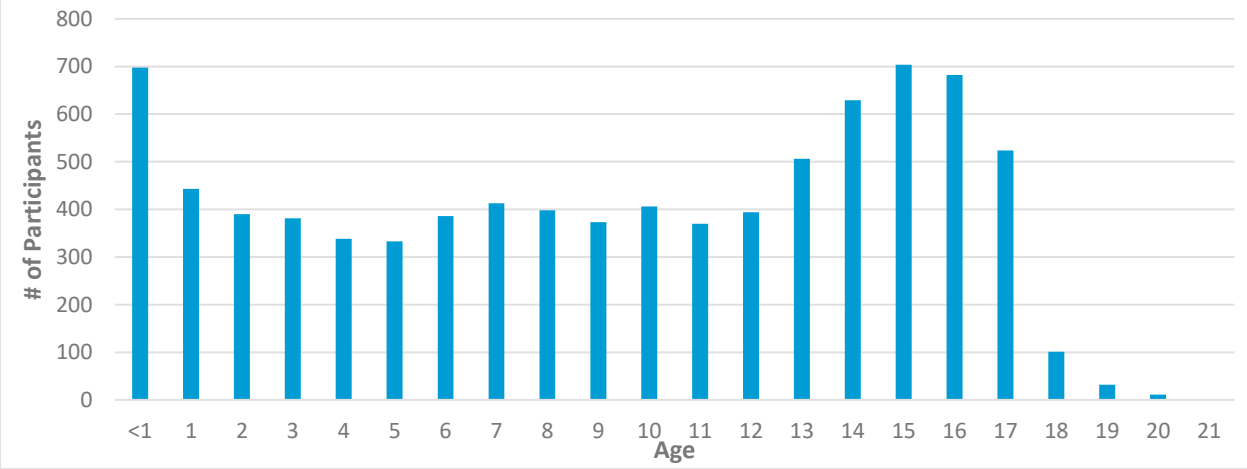
Figure 3: ISST *Population by Gender (N = 8,528)*[11]



Source: Trails and ETO CMP databases.

As displayed in Figure 4, the ages of CMP clients ranged from less than age 1 to age 21, while the mean age was 9.2.

Figure 4: *ISST Population by Ages (N = 8,513)*[12]

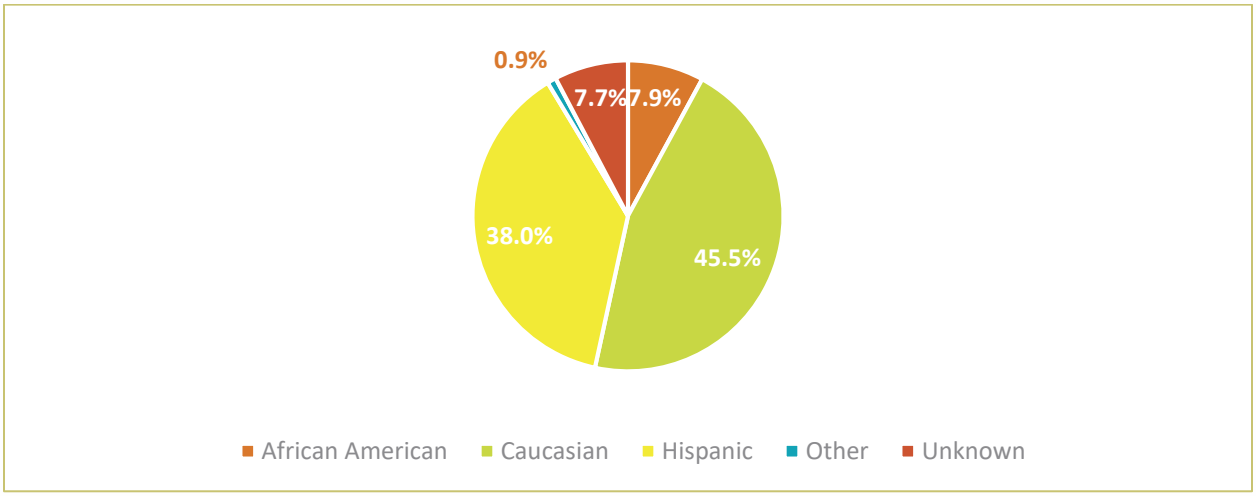


Source: Trails and ETO CMP databases

[11] The sample size is lower than the total ISST population of 8,909 clients because gender data were missing for 381 clients.
[12] The sample size is lower than the total ISST population of 8,909 because age data were missing for 396 clients.

As shown in Figure 5, 46 percent of clients were Caucasian, 38 percent were Hispanic, eight percent were African American, and eight percent were clients from "other" racial and ethnic backgrounds.[13] These percentages are similar to those of previous ISST populations, demonstrating consistency in the racial and ethnic composition of the ISST population.

Figure 5: ***ISST Clients by Race and Ethnicity (N = 8,462)***[14]



3.3.3. ISST Population by Performance Goal Type

As Table 18 shows, the majority of SFY18 CMP ISST clients had performance goals under the child welfare domain (96 percent). Considerably fewer CMP ISST clients were served under the other three domains, with education (38 percent) serving the second largest percentage of clients, followed by health/mental health (28 percent), and juvenile justice (nine percent).

Table 18: ***Number of ISST Clients by Performance Goal Type (Duplicated Counts)***

Program	# of Clients
Child Welfare	8,529 (95.7%)
Education	3,358 (37.7%)
Health/Mental Health	2,366 (27.7%)
Juvenile Justice	817 (9.2%)
Total CMP ISST Population	**8,909***

Source: Trails and ETO CMP databases.
*Percentages do not sum to 100 because a CMP ISST client may have performance goals under multiple domains.

[13] The "other" category consists of children/youth identified as having the following racial and ethnic backgrounds: Asian, Hawaiian, or Native American.
[14] The sample size is lower than the total ISST population of 8,909 because race and ethnicity data were missing for 447 clients.

Nearly all CMP ISST clients had child welfare performance goals (95.7 percent), warranting an examination of key variables pertaining to involvement with the child welfare system. The SFY18 evaluation previously demonstrated that CMP ISST clients have higher risk levels than the general population of children/youth served by Colorado's child welfare system. This year's evaluation once again confirms that CMP ISST clients are higher risk. Table 19 presents the differences in risk and presenting factors between CMP ISST clients and the full population of children/youth who were involved in the child protection system at the assessment level or higher.

Table 19: ***Differences in Risk and Presenting Factors between CMP ISST and Child Welfare***

Factor	CMP ISST Population	Child Protection Population
Family Structure	(*N* = 3,771)	(*N* = 53,458)
Single Parent	54.8%	41.7%
Married Couple	25.3%	38.7%
Unmarried Couple	19.9%	19.5%
Primary Caregiver's Age	35.5	34.4
Prior Adoption	2.8%	1.3%
Prior Food Assistance	(*N* = 8,309)	(*N* = 64,658)
Yes	76.5%	75.5%
No	23.5%	24.5%
Previously on Medicaid	(*N* = 8,309)	(*N* = 64,658)
Yes	85.1%	85.0%
No	14.9%	15.1%
Number of Prior Referrals	5.51	5.36
Number of Prior Assessments	2.66	2.59
Number of Prior Cases	0.48	0.42
Number of Prior Removals	0.19	0.17
Prior DYS Involvement	8.97%	2.91%
Population Size	**8,529**	**64,735**

*The differing population sizes (represented by *N*) reflect the varying extent to which data were available for each variable.

CMP ISST clients come from diverse family structures, with the majority coming from single-parent families (55 percent), followed by married (25 percent) and unmarried couples (20 percent). The average age of primary caregivers among CMP ISST clients was 35.5 years old. CMP ISST clients were considerably more likely to have been previously adopted (three percent) than children/youth within the broader child protection population (one percent). Similar to the broader child protection population, CMP ISST clients were likely to have previously received food assistance (77 percent) or to have previously been on Medicaid (85 percent).

CMP ISST clients also had considerably higher levels of previous involvement with the child welfare and DYS systems. CMP ISST clients had an average of five and a half prior referrals and three prior child welfare assessments. In addition, CMP ISST clients had a higher average number of prior child welfare cases and a higher number of cases involving a removal from the home (0.48 and 0.19, respectively) than the broader CMP ISST population. Finally, a notably higher percentage of CMP ISST clients had also been previously involved with DYS (nine percent versus three percent for the broader population).

3.4. Non-experimental Evaluation of ISST Population

This section presents the findings from a descriptive, non-experimental evaluation that examines the outcomes of the ISST population (subsequently referred to as "CMP clients") via the performance goals within the four program domains. The evaluation team used a non-experimental, single group evaluation design to examine outcomes, given the historical "data silo" challenges in accessing the requisite outcome data across all four domains, as well as accessing data on comparison populations. As previously noted, a non-experimental evaluation design does not rely on a comparison group for causal attribution of program impact and instead uses descriptive statistics to examine the outcomes of CMP clients. The lack of a comparison group prevents causal inference on the program's effectiveness, but the analysis of outcomes provides preliminary evidence on changes in the outcomes of children/youth served by CMP.

3.4.1. Child Welfare Clients

As shown in Table 20, CMP appears to have had varying levels of success in improving the child welfare outcomes of its clients. The program was associated with high levels of success in increasing the safety of clients, with 94 percent having no substantiated abuse findings after CMP services began; decreasing the number of clients involved with the child welfare system (93 percent); and increasing the number of clients that remained home (91 percent). In contrast, the program appeared to have more moderate success in achieving placement stability, with 88 percent of CMP clients having two or fewer placement moves while in out-of-home care. Finally, the program appeared to have notably less success in increasing permanency, with 63 percent of CMP clients discharged to a permanent home. Collectively, these findings provide preliminary insight into CMP's effectiveness in improving child welfare outcomes.

Table 20: ***Child Welfare Performance Goals***

Performance Measure	# Children and Youth with Goal	# Achieving Goal	Percentage Achieving Goal in SFY18	Percentage Achieving Goal in SFY17
Increase safety of children/youth	8,529	8,032	**94.2%**	95.0%
Decrease number of children/youth involved in child welfare	8,529	7,936	**93.1%**	93.0%
Increase number of children/youth who remain home	6,586	6,003	**91.2%**	90.0%
Increase placement stability of children/youth	2,633	2,325	**88.3%**	80.8%
Increase permanency of children/youth	2,633	1,669	**63.4%**	61.5%

Source: Trails and ETO CMP databases.

3.4.2. Education Clients

Performance goals under the education domain were the second most common type of goal for CMP clients, with 38 percent of CMP clients involved in this program domain. Unlike the other three domains, the data for calculating education performance goals were obtained via the annual reports CMP counties submitted. As displayed in Table 21, self-reported data suggest that CMP appears to have high to moderate levels of success in improving the educational outcomes of its clients. The program was associated with high levels of success in increasing academic achievement (96 percent) and increasing school stability (91 percent). The program was associated with more moedate success in decreasing disciplinary problems (81 percent) and increasing school attendance (64 percent).

Table 21: ***Education Performance Goals***

Performance Measure	Number of Children and Youth with Goal	Number of Achieving Goal	Percentage Achieving Goal in SFY18	Percentage Achieving Goal in SFY17
Increase academic achievement	582	559	**96.0%**	79.2
Increase school stability	542	491	**90.6%**	85.6
Decrease disciplinary problems at school	328	264	**80.5%**	91.2
Increase school attendance	362	272	**64.1%**	68.4
Increase successful graduation rates**	N/A	N/A	**N/A**	92.3

Source: Self-reported by CMP counties via the CMP Annual Report SFY17–18.
**None of the CMP counties selected the "Increase Successful Graduation Rates" performance goal.

3.4.3. Health/Mental Health Clients

As shown in Table 22 on the following page, CMP appears to have had varying levels of success in improving client health and mental health outcomes. The program was associated with moderate success in decreasing substance abuse, as 54 percent of applicable clients successfully completed 90-day inpatient substance abuse treatment or intensive outpatient treatment. The program also demonstrated moderate success in decreasing problem severity, with 49 percent of clients having improved levels of functioning on the CCAR while receiving CMP services. CMP appeared to have notably less success in increasing the health of children/youth. Among applicable CMP clients, 27 percent were provided linkages to primary care, oral care, substance abuse, mental health, or health insurance providers.

Table 22: ***Health/Mental Health Performance Goals***

Performance Measure	Number of Children and Youth with Goal	Number Achieving Goal	Percentage Achieving Goal
Decrease substance abuse	139	75	**54.0%**
Decrease problem severity	2,366	1,150	**48.6%**
Increase children/youth health	8,905	2,396	**26.9%**
Increase psychological, social, cognitive, and physical functioning**	Data Not Available		
Increase wellbeing**	Data Not Available		

Source: Trails, ETO CMP, and OBH databases.
Note: Performance figures for SFY17 are not provided as a result of concerns about comparability between the years due to reporting aggregated numbers in SFY17, while client-level data were used to generate performance figures for SFY18.
**The requisite data were not available for measuring the "Increase psychological, social, cognitive, and physical functioning" and "Increase wellbeing" goals.

3.4.4. Juvenile Justice Clients

The juvenile justice domain was the smallest of the four program domains, with nine percent of CMP clients involved in the juvenile justice system. As displayed in Table 23, CMP appears to have had varying levels of success in improving the outcomes of its clients involved with the juvenile justice system. The program was associated with high levels of success in decreasing commitments to DYS (98 percent) and preventing involvement with the juvenile justice system (93 percent). The program appeared to have notably less success in increasing successful involvement with the juvenile justice system, with 56 percent of CMP clients successfully completing probation. None of the CMP counties selected the fourth performance goal of decreasing involvement in truancy court.

Table 23: ***Juvenile Justice Performance Goals***

Performance Measure	Number of Children and Youth with Goal	Number Achieving Goal	Percentage Achieving Goal in SFY18	Percentage Achieving Goal in SFY17
Decrease commitment to DYS†	8,909	8,764	**98.4%**	97.1%
Prevent involvement with juvenile justice system†	8,909	8,265	**92.8%**	90.4%
Increase successful involvement with juvenile justice system (probation only)^	297	167	**56.2%**	57.3%
Decrease children/youth involved in truancy court*	N/A	N/A	N/A	N/A*

Source: Trails, ETO CMP, DYS, and Colorado Judicial databases.
†Denotes data provided by DYS.
^Denotes data provided by Colorado Judicial.

3.5. Quasi-experimental Evaluation of Child Welfare and Health/Mental Health Outcomes

To more rigorously assess CMP's effectiveness in improving client outcomes, the evaluation team employed quasi-experimental designs in the outcome evaluation to increase the statistical rigor and obtain causal empirical evidence on the program's effectiveness in improving child welfare and health/mental health outcomes. Quasi-experimental designs replicate the counterfactual conditions of the experimental approach embedded in randomized controlled trials as closely as possible by comparing outcomes for a treatment group and a comparison group. Under the quasi-experimental evaluation, the treatment groups consisted of the children/youth who were involved with the child welfare system and the health/mental health domains and who were served by CMP via an initial ISST meeting in SFY17. In contrast, the comparison groups consisted of children/youth who were newly involved with the child welfare and health/mental health systems in SFY17, resided in a CMP county, and were eligible for CMP but were not served by the program.

The development of a robust quasi-experimental design is dependent upon the ability to identify an appropriate comparison group. The ideal CMP comparison group would consist of children/youth who resided in CMP counties and were eligible for CMP but who were not served by the program. During the SFY17 evaluation, the evaluation team engaged in conversations with members of the CMP Evaluation Subcommittee regarding the feasibility of identifying children/youth who were eligible but not served by the program. The Evaluation Subcommittee confirmed that capacity issues were the primary basis for otherwise eligible children/youth not being served by their county's CMP and that members of the proposed comparison group would have similar risk profiles as the treatment group.

3.5.1. Constructing Comparison Groups using Matching Methods

In the next step, the evaluation team constructed separate matched treatment and comparison groups in accordance with the populations associated with the child welfare and health/mental health performance goals. For the child welfare evaluation, the evaluation team constructed three matched groups with the first matched group used to examine the decreased involvement and increased safety performance goals. The second matched group consisted of the subpopulation of children/youth who were removed from their homes; the evaluation team used this group to examine the placement stability and permanency performance goals. The final matched group consisted of the subpopulation of children/youth who entered into a child welfare case but remained in their homes; the evaluation team used this group to examine the remain-home performance goal.

Similarly, the evaluation team constructed three matched groups to evaluate the health/mental health outcomes of CMP clients. The evaluation team used the first matched groups to examine whether CMP clients had decreased problem severity. The second groups examined whether clients had decreased levels of substance abuse due to successful completion of substance abuse treatment. The evaluation team used the final matched groups to examine whether CMP clients had increased levels of health via establishing linkages to an array of health and mental health service providers.

Within each of the matched groups, the treatment group consisted of children/youth in CMP counties who had child welfare or health/mental health performance goals and who were served by the program

(by an initial ISST meeting) during the period of SFY17. The comparison group consisted of children/youth with child welfare or health/mental health involvement residing in the same CMP counties who were eligible for CMP but not served by their county's program. Table 24 provides an overview of the unmatched treatment and potential comparison groups that were associated with each of the child welfare performance goals.

Table 24: ***Unmatched Treatment and Comparison Groups Associated with the Child Welfare and Health/Mental Health Performance Goals***

Performance Goal	Number of CMP Clients (Treatment Group)	Number of Children/Youth Who Could Serve as Potential Matches (Comparison Group)
Child Welfare		
Decrease number of children/youth involved in child welfare	7,161	39,312
Increase safety of children/youth	7,161	39,312
Increase placement stability of children/youth	2,466	1,150
Increase permanency of children/youth involved in child welfare	2,466	1,150
Increase number of children/youth who remain home	5,335	38,757
Health/Mental Health		
Decrease problem severity	1,692	4,847
Decrease substance abuse	97	57
Increase children/youth health	5,791	39,301

Notably, two of the counties, Boulder and Larimer, enroll all eligible children in their CMPs. Accordingly, the evaluation team could not identify comparison groups for these counties because a comparable population of children who were not served by the program did not exist. In addition, a subpopulation of 11 CMP clients was served not by a CMP county but was instead served by DYS. Along with the population of CMP clients from Boulder and Larimer Counties, the evaluation team excluded the subpopulation of CMP clients served by DYS from the quasi-experimental analysis. Excluding this subset of CMP clients from the quasi-experimental evaluation is likely to have minimal impact on the evaluation's findings. As detailed in **Appendix B**, subsequent sensitivity analyses revealed that outcome achievement on each of the child welfare and health/mental health performance goals differed by no more than two percent when CMP clients served by Boulder and Larimer Counties and DYS were excluded.

The evaluation team constructed the matched groups using a collection of pretreatment variables that were included in the matching process based on having statistically significant relationships with the

treatment assignment and/or the outcome variables.[15] Demographic variables included a child's age, gender, race, and family structure, and the age of the child's primary caregiver. Variables pertaining to a child's previous involvement with the child welfare system included the number of previous referrals, assessments, cases, and removals, and whether the child was previously adopted. Finally, other matching variables included whether the child was previously involved with DYS, previously received food assistance, or was previously covered by Medicaid. Prior to matching, the evaluation team conducted initial analyses of the imbalance between the groups on the aforementioned variables. This analysis used descriptive statistics and bivariate statistical tests to assess imbalance on factors associated with receiving treatment and the associated outcomes.

The evaluation team then constructed the matched comparison groups using the Coarsened Exact Matching (CEM) methodology.[16,17] The CEM methodology approximates a randomized block experimental design, in which members of the treatment and comparison groups are assigned to strata defined by the covariates, thereby ensuring exact multivariate balance across all observed covariates. The evaluation team first assessed the imbalance between the treatment and comparison groups using a multivariate imbalance measure and a collection of univariate measures of imbalance across the selected covariates. After assessing the initial levels of imbalance, the evaluation team used the CEM algorithm to match children in the treatment group to all members of the comparison group with the same covariate values.[18] In the ensuing steps, the evaluation team "coarsened" covariates with considerable imbalance into substantively indistinguishable values and created a collection of strata with identical values. The evaluation team dropped from the sample strata that did not contain a minimum of one member of the treatment and comparison groups. In the next step, the evaluation team used multivariate and univariate measures to assess imbalance among the matched groups.

The evaluation team then compared matched samples to the population characteristics to comprehensively assess sample size, variance, and imbalance. Given the bias-variance tradeoff, through which minimization of bias can come at the expense of sample variance, the evaluation team constructed and examined alternative samples with varying levels of variance and bias. In each instance, the evaluation team selected matched samples that minimized bias between the treatment and comparison groups, to the greatest extent possible. This in turn provides greater confidence in the

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[15] Rubin, D. B., & Thomas, N. (1996). Matching using estimated propensity scores: relating theory to practice. *Biometrics, 52*, 249–264.

[16] Iacus, S. M., King, G., & Porro, G. (2011). Multivariate matching methods that are monotonic imbalance bounding. *Journal of the American Statistical Association, 106(493),* 345–361.

[17] Iacus, S. M., King, G., & Porro, G. (2012). Causal inference without balance checking: Coarsened exact matching. *Political Analysis, 20*(1), 1–24.

[18] In contrast to propensity score matching (PSM), the CEM methodology allows for the improvement of balance for one covariate without affecting the maximum imbalance of the other covariates. More specifically, CEM uses a monotonic imbalance bounding matching method. Under this method, the balance between the treatment and comparison groups is chosen prior to the matching process. In contrast, PSM and other greedy matching methods determine balance after matching, which often results in multiple iterations of the matching process.

design and findings of the quasi-experimental evaluation. An overview of the matched groups is included in Table 25 while detailed descriptions of the matched groups are included in **Appendix C.**

Table 25: Matched Treatment and Comparison Groups Associated with the Child Welfare and Health/*Mental Health Performance Goals*

Performance Goal	Number of CMP Clients	Number of Children/Youth in Matched Comparison Group
Child Welfare		
Decrease number of children/youth involved in child welfare	5,010	5,010
Increase safety of children/youth	5,010	5,010
Increase placement stability of children/youth	829	613
Increase permanency of children/youth involved in child welfare	829	613
Increase number of children/youth who remain home	3,792	3,792
Health/Mental Health		
Decrease problem severity	509	509
Decrease substance abuse	50	50
Increase children/youth health	4,145	4,145

3.5.2. Estimating Program Impacts

To estimate the effect of CMP on child welfare outcomes, the evaluation team calculated the differences in outcomes for the treatment groups and the matched comparison groups. The impact of CMP on each outcome variable (indicated as ΔY) was estimated via the following equation:

$$\Delta Y = \frac{1}{T}\sum_{i=1}^{T}\left[Y_{1i} - \overline{Y_{0iJ}}\right]$$

This equation allows for the estimation of the average treatment effect on the treated. On the right-hand side of the equation, the terms in brackets represent the difference in the outcome of interest between individual i in the treatment group and the mean of the outcome variable over all of the matched comparison group members (j) for individual i. Linear probability models were used to estimate the average treatment effect while controlling for associated covariates. As 1-to-k matching was used to match treatment and comparison members within the out-of-home subpopulation, weighted linear probability models were used for the placement stability and permanency outcome

models. Within these weighted linear probability models, observations were weighted according to the number of observations within their corresponding strata. [19]

Matching covariates that were not exactly matched or had statistically significant differences even after matching were included in the regression models. Matching methods and regression adjustments are complementary methods and have been shown to work best in combination.[20] Including those variables that were not exactly matched provides a second opportunity to control for important differences between the treatment and comparison groups. Several post-treatment covariates associated with whether a child was served by CMP were included in the models to further control for differences between the groups. These variables included the child's program area, risk level, level of involvement, and DYS involvement. Finally, county fixed effects were included to account for policy and practice differences within each of the CMP counties and robust county-clustered standard errors were included to account for intra-correlation of the error term within counties (i.e., that the outcomes of children within each county are likely to be correlated).

Child Welfare Outcome: Subsequent Involvement in Child Welfare

On the following page, Table 26 provides the results for the linear probability model that the evaluation team used to examine whether CMP clients were more or less likely than a comparison population to have a new involvement with the child welfare system (i.e., a traditional or Family Assessment Response case) in the year after receiving services. **The results show that CMP clients had a 2.3-percentage point increase in the probability that they would have a new involvement ($p < 0.05$) compared to youth who were eligible but were not served by the program**. While the magnitude of this effect is small, it provides statistically significant evidence that CMP clients are more likely to have a new involvement than a comparison group of children/youth who were eligible but were not served by CMP.

[19] Iacus, S. M., King, G., & Porro, G. (2008). *Matching for causal inference without balance checking*. Retrieved from: https://ssrn.com/abstract=1152391 or http://dx.doi.org/10.2139/ssrn.1152391

[20] Stuart, E. A. (2010). Matching methods for causal inference: A review and a look forward. *Statistical Science, 25*(1), 1–21.

Table 26: ***New Child Welfare Involvement Linear Probability Model***

Outcome: New Child Welfare Involvement	
Treatment: CMP	**0.023 (0.011)***
Program Area (Base: PA3 – Prevention)	
PA4 – Youth in Conflict	0.023 (0.022)
PA5/6 – Abuse/Neglect	0.0089 (0.025)
PA Missing	0.025 (0.021)
Risk Level (Base: High)	
Low	-0.041 (0.013)**
Moderate	-0.024 (0.009)**
Not Available	-0.006 (0.013)
Child Welfare Level of Involvement (Base: Assessment)	
Case	– 0.053 (0.012)***
Prevention	0.019 (0.023)
Referral	0.005 (0.023)
DYS Involvement	0.101 (0.020)***
Age at Beginning of Involvement	5.65e-07 (8.63e-07)
Primary Caregiver's Age	-5.44e-06 (8.13e-07)***
Number of Prior Referrals	0.002 (0.001)
Number of Prior Assessments	-0.004 (0.003)
Prior Food Assistance (Base: No)	
Yes	-0.004 (0.007)
Unknown	-0.042 (0.013)**
County Fixed Effects	*Yes*
Constant	0.066 (0.029)*
Observations	10,020
R-Squared[21]	0.039

Note: Robust standard errors clustered by CMP county in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Sensitivity analyses were subsequently conducted to examine the robustness of the model's findings. Additional models were run on a matched group with a larger number of observations but a higher degree of imbalance and on the full treatment group and a randomly sampled comparison group. In these instances, CMP clients were found to have between a 3.9 and 6.6 percentage point increase in the probability of having a new involvement ($p < 0.001$). Together, these results provide consistent supporting evidence that CMP clients are more likely to have a subsequent involvement than children/youth who were eligible but were not served by the program.

[21] Note: The R-Squared values, which quantify the percentage of variance explained by each linear probability model, should be interpreted cautiously. Logistic or Probit regression models are more commonly used to estimate effects for dichotomous outcome variables. However, logistic or Probit models that use fixed effects to control for fixed or non-random differences (such as the differences across CMP counties) typically drop large numbers of observations due to the fixed-effects variables often "predicting failure perfectly." To avoid this limitation, linear probability models are often used to model dichotomous variables with fixed effects. In addition, linear probability models also facilitate a more effective interpretation of the effects of key explanatory variables as coefficients represent the probability of observing an outcome in a given case (whereas logistic and Probit models rely on odds ratios). As the estimated probabilities of linear probability models are not bounded on the unit interval, the R-Squared values are less indicative of the model's explanatory power.

Child Welfare Outcome: Subsequent Founded Assessment of Abuse and/or Neglect

Table 27 provides the results for the model the evaluation team used to examine whether CMP clients are more or less likely to have a subsequent founded assessment in the year after receiving services. **The results show that CMP clients were not significantly more or less likely to have a subsequent founded assessment compared to youth who were eligible but were not served by the program.**

Table 27: *Subsequent Founded Assessment Linear Probability Model*

Outcome: Subsequent Founded Assessment	
Treatment: CMP	**0.005 (0.012)**
Program Area (Base: PA3 – Prevention)	
PA4 – Youth in Conflict	-0.003 (0.023)
PA5/6 – Abuse/Neglect	0.005 (0.025)
PA Missing	0.045 (0.039)
Risk Level (Base: High)	
Low	-0.034 (0.014)*
Moderate	-0.019 (0.006)**
Not Available	-0.020 (0.010)
Child Welfare Level of Involvement (Base: Assessment)	
Case	-0.008 (0.011)
Prevention	0.005 (0.031)
Referral	-0.019 (0.019)
DYS Involvement	-0.019 (0.011)
Age at Beginning of Involvement	-1.02e-06 (1.30e-06)
Primary Caregiver's Age	-4.91e-06 (6.44e-07)***
Number of Prior Referrals	-0.001 (0.001)
Number of Prior Assessments	-0.000 (0.002)
Prior Food Assistance (Base: No)	
Yes	0.011 (0.009)
Unknown	-0.020 (0.011)
County Fixed Effects	*Yes*
Constant	0.062 (0.028)*
Observations	10,020
R-Squared	0.027

Note: Robust standard errors clustered by CMP county in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

The evaluation team conducted sensitivity analyses to examine the robustness of the model's findings. The evaluation team ran subsequent models on a matched group with a larger number of observations but a higher degree of imbalance and on the full treatment group and a randomly sampled comparison group. In these instances, CMP clients were found to have between a 0.4 and 3.0 percentage point increase in the probability of having a subsequent founded assessment (with only one of the models producing statistically significant findings of $p < 0.05$). As these effects were not consistently significant across models, the results suggest that CMP clients are not significantly more or less likely to have a subsequent founded assessment.

Child Welfare Outcome: Placement Stability for Children Removed from Their Homes

Table 28 provides the results for the model used to examine whether CMP clients who were removed from their homes experienced placement stability (i.e., three or fewer placement settings/removals) in the year after receiving services. **The results show that CMP clients had a 6.6-percentage point decrease in the probability that they would experience placement stability ($p < 0.05$) compared to youth who were eligible but were not served by the program.** The magnitude of this effect is small, but provides statistically significant evidence that CMP clients are less likely to experience placement stability than a comparison group of children/youth who were eligible but not served by CMP.

Table 28: *Placement Stability Weighted Linear Probability Model*

Outcome: Placement Stability	
Treatment: CMP	**-0.066 (0.026)***
Risk Level (Base: High)	
Low	0.028 (0.023)
Moderate	-0.008 (0.009)
Not Available	-0.033 (0.023)
DYS Involvement	-0.123 (0.0712)
Previously Adopted	0.111 (0.073)
Male	-0.032 (0.013)*
Race and Ethnicity (Base: Caucasian)	
African American	0.029 (0.013)*
Hispanic	0.001 (0.015)
Other	0.009 (0.047)
Unknown	0.003 (0.013)
Family Structure (Base: Married Couple)	
Single Parent	-0.032 (0.023)
Undetermined	-0.027 (0.049)
Unmarried Couple	-0.012 (0.011)
Age at Beginning of Involvement	-0.002 (0.002)
Primary Caregiver's Age	5.87e-06 (4.47e-06)
Number of Prior Referrals	0.001 (0.006)
Number of Prior Assessments	-0.008 (0.012)
Number of Prior Cases	-0.048 (0.029)
Number of Prior Removals	0.053 (0.031)
Prior DYS Involvement	0.056 (0.075)
Prior Food Assistance	-0.018 (0.012)
Previously on Medicaid	0.023 (0.017)
County Fixed Effects	*Yes*
Constant	2.098***(0.065)
Observations	1,442
R-Squared	0.112

Note: Robust standard errors clustered by CMP county in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

The evaluation team conducted sensitivity analyses using a matched group with a larger number of observations and a higher degree of imbalance, and on the full, unmatched treatment and comparison groups. In these instances, CMP clients were found to have between a 7.8 and 8.4 percentage point decrease in the probability of experiencing placement stability ($p < 0.01$ or lower). Together, these

results provide strong, consistent evidence that CMP clients are less likely to experience placement stability than children/youth who were eligible but were not served by the program.

Child Welfare Outcome: Permanency for Children/Youth Removed from Their Homes

As displayed in Table 29, the evaluation team used the fourth model to examine whether CMP clients were more or less likely to achieve permanency in the year after they began receiving services. **The results show that CMP clients were not significantly more or less likely to have achieved permanency.** The evaluation team conducted sensitivity analyses to examine the robustness of the model's findings, using the same groups used in the sensitivity analyses for the placement stability model. In these analyses, CMP clients were found to have between a 2.8- and 5.8-percentage point decrease in the probability of achieving permanency (with only one of the variations of the models producing statistically significant findings of $p < 0.05$). Together, these results provide further support for the conclusion that CMP clients were not significantly more or less likely to achieve permanency.

Table 29: *Permanency Weighted Linear Probability Model*

Outcome: Permanency	
Treatment: CMP	**-0.009 (0.024)**
Risk Level (Base: High)	
Low	0.385 (0.069)***
Moderate	0.115 (0.049)*
Not Available	0.026 (0.033)
DYS Involvement	-0.254 (0.083)**
Previously Adopted	-0.189 (0.268)
Male	-0.044 (0.026)
Race and Ethnicity (Base: Caucasian)	
African American	0.024 (0.080)
Hispanic	0.022 (0.041)
Other	0.142 (0.115)
Unknown	-0.145 (0.096)
Family Structure (Base: Married Couple)	
Single Parent	-0.054 (0.048)
Undetermined	0.116 (0.113)
Unmarried Couple	-0.056 (0.034)
Age at Beginning of Involvement	0.006 (0.005)
Primary Caregiver's Age	-0.000 (9.80e-06)***
Number of Prior Referrals	0.004 (0.007)
Number of Prior Assessments	-0.017 (0.021)
Number of Prior Cases	– 0.005 (0.037)
Number of Prior Removals	-0.009 (0.044)
Prior DYS Involvement	0.083 (0.081)
Prior Food Assistance	0.106 (0.039)*
Previously on Medicaid	0.058 (0.070)
County Fixed Effects	*Yes*
Constant	1.554 (0.137)***
Observations	1,442
R-Squared	0.116

Note: Robust standard errors clustered by CMP county in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Child Welfare Outcome: Children/Youth Involved in a Child Welfare Case Who Remain Home

As displayed in Table 30, the evaluation team examined the final child welfare model to determine whether CMP clients were more or less likely to remain in their homes in the year after they began receiving services. **The results show that CMP clients were not significantly more or less likely to remain home.**

The evaluation team conducted sensitivity analyses using a matched group with a larger number of observations but a higher degree of imbalance and on the full, unmatched treatment and comparison groups. In these models, CMP clients were found to have between a 0.5 percentage point increase and a 6.2 percentage point decrease in the probability of remaining home, and these effects were not consistently significant. Together, these results suggest that CMP clients were not significantly more or less likely to remain home than children/youth who were eligible but were not served by the program.

Table 30: *Remain Home Linear Probability Model*

Outcome: Remain Home	
Treatment: CMP	**-0.002 (0.009)**
Program Area (Base: PA3 – Prevention)	
PA4 – Youth in Conflict	-0.043 (0.015)**
PA5/6 – Abuse/Neglect	-0.038 (0.014)**
PA Missing	-0.029 (0.017)
Risk Level (Base: High)	
Low	0.040 (0.010)***
Moderate	0.030 (0.008)***
Not Available	0.003 (0.010)
DYS Involvement	-0.146 (0.013)***
Age at Beginning of Involvement	-1.54e-07 (1.13e-06)
Primary Caregiver's Age	5.06e-06 (7.56e-07)***
Number of Prior Referrals	0.000 (0.001)
Number of Prior Assessments	0.008 (0.002)
Previously on Medicaid (Base: No)	
Yes	-0.005 (0.009)
Unknown	-0.002 (0.011)
County Fixed Effects	*Yes*
Constant	1.977 (0.013)***
Observations	7,584
R-Squared	0.058

***Note**:* Robust standard errors clustered by CMP county in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Health/Mental Health Outcome: Decrease Problem Severity

The evaluation team used the "decrease problem severity" model to examine whether CMP clients had improved levels of functioning on the CCAR or a similar clinical instrument designed to assess the behavioral health status of clients. The findings shown in Table 31 on the following page, **demonstrate that CMP clients had a 12.7 percentage point decrease in the probability that they would experience improved levels of functioning ($p < 0.05$) when compared to children and youth who were eligible but not served by the program.**

The evaluation team conducted sensitivity analyses on the full, unmatched population and on a matched group with a larger number of observations but a higher degree of imbalance. In these models, CMP clients were shown to have between a 7.1 and 11.0 percentage point decrease in the probability of improving their level of functioning (with both of these findings significant at the $p < 0.05$ level). Together, these results produce considerable supporting evidence that CMP clients were significantly less likely to decrease their problem severity.

Table 31: ***Decrease Problem Severity Linear Probability Model***

Outcome: Decrease Problem Severity	
Treatment: CMP	**-0.127 (0.046)***
Program Area (Base: PA3 – Prevention)	
PA4 – Youth in Conflict	0.151 (0.103)
PA5/6 – Abuse/Neglect	0.029 (0.080)
PA Missing	-0.259 (0.100)*
Prior Food Assistance (Base: No)	
Yes	-0.037 (0.055)
Unknown	0.539 (0.143)**
Previously on Medicaid (Base: No)	
Yes	0.086 (0.042)*
Age at Beginning of Involvement	0.006 (0.002)**
Primary Caregiver's Age	-0.000 (5.30e-06)*
Number of Prior Referrals	0.009 (0.004)*
Number of Prior Assessments	-0.011 (0.0.010)
Number of Prior Removals	-0.049 (0.054)
County Fixed Effects	*Yes*
Constant	0.394 (0.126)**
Observations	1,018
R-Squared	0.095

***Note**:* Robust standard errors clustered by CMP county in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

An important contextual caveat is that despite not improving their level of functioning, many CMP clients are successfully maintaining their current levels of functioning. Additional analysis[22] revealed that approximately 91 percent of clients in the matched treatment and comparison groups were measured as already functioning at moderate to high levels at the time of their first CCAR assessment. Furthermore, approximately 46 percent of those clients with moderate to high levels of functioning showed no change in their level of functioning. However, the current operationalization of the performance measure would characterize these clients as having an adverse outcome. Given this consideration, there may be a need to reconsider the operationalization of this performance measure to more accurately measure decreases in problem severity based on the number of children and youth who are maintaining or improving their level of functioning.

[22] Based upon additional analysis provided by OBH staff

Health/Mental Health Outcome: Decrease Substance Abuse

The evaluation team used the decrease substance abuse model to examine whether CMP clients successfully completed a 90-day inpatient substance abuse treatment or intensive outpatient treatment. As shown in Table 32, **the findings demonstrate that CMP clients were not significantly more or less likely to achieve lower levels of substance abuse.**

The evaluation team conducted sensitivity analyses to examine the robustness of the findings, via running similar models on the unmatched population and on another matched group with a larger number of observations but a higher degree of imbalance. In these models, CMP clients were found to have between a 7.9 and 12.4 percentage point increase in the probability of successfully completing substance abuse treatment, though neither of these effects were statistically significant.

Table 32: ***Decrease Substance Abuse Linear Probability Model***

Outcome: Decrease Substance Abuse	
Treatment: CMP	**0.264 (0.163)**
Race and Ethnicity (Base: Caucasian)	
African American	-0.500 (0.149)*
Hispanic	-0.300 (0.093)*
Male	0.257 (0.141)
Family Structure (Base: Married Couple)	
Single Parent	0.299 (0.189)
Unknown	-0.018 (0.210)
Risk Level (Base: High)	
Low	0.336 (0.167)
Moderate	0.097 (0.248)
Not Available	0.322 (0.200)
Child Welfare Level of Involvement (Base: Assessment)	
Case	-0.148 (0.176)
DYS Involvement	-0.284 (0.089)*
County Fixed Effects	*Yes*
Constant	0.115 (0.301)
Observations	100
R-Squared	0.328

Note: Robust standard errors clustered by CMP county in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Health/Mental Health Outcome: Increased Children/Youth Health

For the final outcome in the health/mental health quasi-experimental evaluation, the evaluation team examined whether CMP clients had increased levels of health by way of establishing linkages to various health and mental health providers. As displayed in Table 33 on the following page, **the findings demonstrate that CMP clients had a 5.9 percentage point increase in the probability that they would have increased levels of health through established linkages to health and mental health care providers ($p < 0.01$).**

To examine the robustness of this finding, the evaluation team conducted sensitivity analyses on the full, unmatched population and on a matched group with a larger number of observations but a higher degree of imbalance. In these models, CMP clients were shown to have between an 8.4 and 12.2

percentage point decrease in the probability of improving their level of functioning (with both of these findings significant at the $p < 0.01$ or lower levels). Together, these results produce strong supporting evidence that CMP clients were significantly more likely to have increased health.

Table 33: ***Increase Children/Youth Health Linear Probability Model***

Outcome: Increase Children/Youth Health	
Treatment: CMP	**0.059 (0.018)****
Prior Food Assistance (Base: No)	
Yes	0.030 (0.014)*
Unknown	0.027 (0.037)
Previously on Medicaid (Base: No)	
Yes	0.067 (0.017)***
Primary Caregiver's Age	-5.00e-06 (2.35e-06)*
Number of Prior Referrals	0.012 (0.002)***
Number of Prior Assessments	-0.003 (0.005)
Program Area (Base: PA3 – Prevention)	
PA4 – Youth in Conflict	0.201 (0.051)***
PA5/6 – Abuse/Neglect	-0.010 (0.040)
PA Missing	0.013 (0.090)
Risk Level (Base: High)	
Low	-0.014 (0.022)
Moderate	0.007 (0.009)
Not Available	-0.015 (0.016)
County Fixed Effects	*Yes*
Constant	0.013 (0.042)
Observations	8,290
R-Squared	0.079

***Note**:* Robust standard errors clustered by CMP county in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

3.6. Outcome Evaluation Summary

The results of the descriptive, non-experimental evaluation demonstrate that, for this higher risk population, CMP appears to have largely moderate to high success in achieving performance measures across four program domains within one year of entering the program. Among CMP clients involved in the child welfare system, the program appears to have high success in increasing safety, preventing subsequent involvements, and keeping clients in their homes but more moderate success in achieving placement stability and establishing permanency. For clients involved with the education system, the program appears to have high success in increasing academic achievement and school stability, but more moderate success in decreasing disciplinary problems and increasing school attendance. Among clients involved in the health/mental health system, CMP appears to have moderate success in decreasing substance abuse and problem severity, and more limited success in increasing children and youth health. Finally, CMP clients involved in the juvenile justice domain appear to have high success in decreasing DYS commitments and preventing involvement with the juvenile justice system, and more moderate success in successfully completing probation. While these descriptive findings provide preliminary insight into the program's effectiveness, they should be interpreted with caution due to the inherent limitations of non-experimental, descriptive evaluation designs.

To more rigorously evaluate the program's effectiveness, this year the evaluation team employed matched quasi-experimental evaluations of CMP clients involved with the child welfare and health/mental health systems (as shown in Table 34). Similar to last year, the child welfare quasi-experimental evaluation found that there is an overall neutral impact on the majority of outcomes and small negative effects on child welfare re-involvement and placement stability outcomes. Notably, the magnitude and significance of the findings on subsequent involvements and placement stability have decreased from last year. Accordingly, these findings demonstrate notable improvement in these outcomes over the past two years and provide supporting evidence that CMP is making important progress in improving client outcomes.

Table 34: ***Summary of the Quasi-Experimental Evaluation's Findings for Child Welfare and Health/Mental Health Outcomes***

Outcome (Performance Goal)	Finding	Statistically Significant Finding
Child Welfare		
Subsequent Involvement	CMP clients had a 2.3 percentage point increase in the probability that they will have a new involvement compared to youth who were eligible but not served by the program.	✓ ($p < 0.05$)
Subsequent Founded Assessment	CMP clients are not significantly more or less likely to have a subsequent founded assessment compared to youth who were eligible but not served by the program.	
Placement Stability	CMP clients had a 6.6 percentage point decrease in the probability that they would experience placement stability compared to youth who were eligible but not served by the program.	✓ ($p < 0.05$)
Permanency	CMP clients were not significantly more or less likely to have achieved permanency compared to youth who were eligible but not served by the program.	
Remain Home	CMP clients were not significantly more or less likely to remain home compared to youth who were eligible but not served by the program.	
Health/Mental Health		
Decrease Problem Severity	CMP clients had a 12.7 percentage point decrease in the probability that they would have decreased problem severity and improved functioning.	✓ ($p < 0.05$)
Decrease Substance Abuse	CMP clients were not significantly more or less likely to have successfully completed 90-day inpatient substance abuse treatment or intensive outpatient treatment.	
Increase Children/Youth Health	CMP clients had a 5.9 percentage increase in the probability of having increased health through established linkages to primary health care providers, oral care providers, substance abuse providers, mental health providers, or health insurance providers.	✓ ($p < 0.01$)

4. COST EVALUATION

The cost evaluation examines the potential cost-effectiveness of CMP by comparing child welfare costs for families who receive CMP and those that receive services as usual.

4.1. Cost Comparison Approach

The CMP potentially generates cost savings through two processes: 1) reduction of costs associated with integration of services across agencies; and 2) improvements in treatment outcomes to children/youth, resulting in decreased recidivism. Thus, it is hypothesized that serving dually involved youth through CMP will generate cost savings and improved outcomes by having cross-system meetings, integrated service plans, and streamlined services. The difference between costs for the CMP and non-CMP groups serve as an estimate of the cost savings that CMP provides.

Similar to the quasi-experimental outcome evaluation, the evaluation team conducted a cost comparison between CMP-involved children/youth and the comparison group of children/youth in CMP counties who were eligible but did not receive an ISST meeting. Specifically, service and OOH placement costs during involvement with the CMP and costs up to one year following exit of the program were collected for both the treatment and comparison groups. Although meeting costs may also differ between CMP-involved youth who meet with multiple systems at the same time and youth from the comparison group who meet with each system independently, there is currently no data available to estimate the cost or frequency of non-ISST meetings. Thus, meeting costs were not considered in the cost comparison approach. However, it should be noted that having multiple meetings across systems does carry a real cost for families in regard to childcare, transportation, and missing work.

Given that families are not randomly assigned to CMP, potential treatment biases in comparing costs between groups were accounted for by estimating variants of the Heckman selection model.[23] The Heckman selection model accounts for hidden bias through a two stage sequence: first, the probability of receiving CMP is calculated by estimating a regression model with treatment as a binary outcome and model predictors being covariates, such as race, prior involvement with child welfare, or age; and second, the *predicted probability of treatment* is included in the regression equation, replacing the treatment indicator. The log of costs are treated as the outcome of interest.

4.2. Cost Comparison Results

On the following page, Table 35 provides results with separate models run for OOH and service costs during involvement with child welfare, and one year following exit. Overall, the results of these analyses were in line with the outcomes analyses. **After accounting for selection bias, there was not a**

[23] Heckman, J., Ichimura, H., & Todd, P. (1998). Matching as an econometric evaluation estimator. *Review of Economic Studies, 65*, 261–294.

statistically significant difference between treatment and comparison groups in service and OOH placement costs during the one-year follow-up period. However, families participating in CMP had OOH costs trending higher, and service costs being slightly lower, than comparison families. Importantly, families who were deemed "high risk" or "moderate risk" were more likely to be in the CMP than families who were not classified as "at risk." Additionally, families with prior involvement with DYS, or receipt of government services, such as food assistance, were more likely to be in the CMP. These results suggest that, overall, families having more risks and having prior system costs are more likely to be selected into the CMP.

Table 35: ***Results of Cost Comparison Analysis from Heckman Selection Model***

Covariates	OOH Cost during Treatment	OOH Cost 1-year Follow-up	Service Cost during Treatment	Service Costs 1-year Follow-up
CMP (Treatment effect)	**2.41 *(.00)***	**0.06 (.88)**	**2.44 *(.00)***	**-0.49 (.50)**
High risk status	-0.05 (.77)	-0.06 (.68)	-.15 (.34)	-0.21 (.48)
Moderate risk status	-0.17 (.26)	0.06 (.68)	-0.09 (.57)	-0.26 (.40)
African American	-0.17 (32)	0.29 (.07)	0.17 (.41)	-0.34 (.49)
Hispanic	-0.32 *(.01)*	-0.1 (0.29)	-0.13 (.23)	0.02 (.92)
Caucasian	-0.10 (.56)	0.23 (.17)	0.07 (.69)	-0.49 (.25)
Number DYS involved cases	0.54 *(.01)*	0.46 *(.05)*	0.04 (.84)	0.15 (.75)
Prior case count	0.37 *(.00)*	-0.02 (.86)	-0.02 (.80)	0.00 (.99)
Prior assessment count	0.08 (.11)	0.08 *(.02)*	0.02 (.56)	-0.09 (.19)
Prior referral count	-0.05 *(.03)*	-0.01 (.58)	0.01 (.60)	0.08 *(.01)*
Prior Medicaid	-0.02 (.92)	-0.40 *(.01)*	-0.37 (.03)	-0.06 (.88)
Food Stamps	-0.10 (.50)	0..20 (.21)	0.16 (.27)	0.04 (.91)
Adopted	-0.15 (.50)	-0.38 (.07)	0.92 (.21)	0.56 (.31)
Age	0.05 *(.00)*	0.03 *(.01)*	0.01 (.30)	-0.02 (.47)

*p-values in parentheses

5. DISCUSSION

Overall, for this higher risk population, the program appears to have moderate to high levels of success in performance measures across the four CMP domains. Among CMP clients involved with the child welfare system, the program appears to have high levels of success in increasing safety, preventing subsequent involvement, and keeping clients in their homes, but more moderate success in achieving placement stability and establishing permanency. For CMP clients involved with the juvenile justice system, the program appears to have high levels of success in decreasing commitments to DYS and preventing involvement with the juvenile justice system, but more moderate success in increasing successful involvements with the juvenile justice system. For the health/mental health domain, the program had moderate levels of success in increasing child/youth health and decreasing substance abuse. Finally, the program was associated with high levels of success in increasing successful graduation rates, decreasing disciplinary problems at school, increasing school stability, and increasing academic achievement, but more moderate levels of success in increasing school attendance. Although these findings provide preliminary insight into the effectiveness of the program, they should be interpreted with caution because of the limitations inherent to the non-experimental, descriptive evaluation.

The results of a quasi-experimental research design indicate that there is an overall neutral and small negative effect on child welfare re-involvement and placement stability outcomes. This year's evaluation continued to build on previous evaluations and increase the overall analytical rigor of the evaluation by expanding to the health/mental health domain. The findings from the inaugural evaluation of health/mental health outcomes suggest the program has mixed effectiveness in improving client outcomes. CMP clients were found to have a significantly lower probability of decreasing problem severity, but a significantly higher probability of having increased health through established linkages to health/mental health providers, and were not significantly more or less likely to have decreased substance abuse.

Overall, collaboration survey results indicate that CMP is greatly supported by participants and that IOG and ISST members value and benefit from engaging in the program. Many survey respondents identified multiple benefits that draw them to participate in CMP, such as the effectiveness of collaborating to coordinate resources and serve multi-system involved families. Respondents also pointed to CMP participation as a valuable opportunity to stay informed on issues regarding their community, learn from other partner agencies and support one another.

The results from the cost comparison analysis indicate that there are no statistically significant differences on OOH placement and service costs during a one-year follow-up period between children/youth who received CMP and otherwise eligible children/youth who did not. Similar to the outcome evaluation, the program's impact may be more clearly realized when costs from juvenile justice, education, and health/mental health services are considered.

5.1. Process Evaluation Considerations

The themes from the CMP collaboration survey surfaced factors that may be helping to facilitate or hinder implementation of CMP in the form of collaborative interventions and integrated service plans. Reviewing the themes against the current process measures used to evaluate the implementation of CMP suggest that expanding or targeting different measures may be helpful in better monitoring and assessing which processes of CMP implementation are going well and which may need greater attention and improvement.

5.1.1. Process Evaluation Next Steps

The primary next step for the process evaluation is to administer the Family Voice Survey to all CMP sites. Another key next step is to develop, pilot, and implement a new survey that explores CMP program components. The results could inform which program components to use for conducting sub-analyses for the outcome evaluation.

5.2. Outcome Evaluation Considerations

Two factors are important to consider in light of the evaluation's findings. First, the program's impacts could be attributed to the considerable differences in the design and implementation of programs across CMP counties. As detailed in the legislation, the program explicitly requires all counties to involve 10 mandatory partners; to establish collaborative processes for risk sharing, resource pooling, performance expectation, outcome monitoring, and staff training; and to implement an ISST to deliver integrated, multiagency services. Outside of these requirements, CMP counties are given considerable discretion in the design and implementation of their programs. CMP coordinators and other stakeholders have consistently highlighted the ability to tailor their programs to meet the individual needs of their clients as a key strength of the program. At the same time, these county-specific adjustments to the implementation and administration of the program could exert a notable impact on the program's overall effectiveness.

Second, it is important to consider the program's impact on the juvenile justice and education domains. Given the program's emphasis on well-being, it is hypothesized that CMP will improve outcomes for children/youth involved in these systems; thus, the overall determination of the program's effectiveness should be assessed only when client outcomes across all four domains are fully considered. Accordingly, the need to access outcome data across all four domains, along with the ability to construct comparison groups within each domain, will be an important task within subsequent evaluations of the program.

5.2.1. Outcome Evaluation Next Steps

Drawing up the findings from this year's evaluation, the evaluation team describes below a collection of recommended next steps for the SFY19 evaluation. These recommendations support the evaluation team's ongoing evaluation capacity-building efforts by furthering efforts to understand the effective components of the program, expanding access to critical client outcome data, and expanding the quasi-experimental evaluation to additional program domains.

Conduct Additional Analysis to Identify Effective CMP Components

Further analysis is needed to determine which programs components are associated with improved client outcomes. Accordingly, the evaluation team will conduct exploratory analyses to determine whether particular process measures and ISST meeting types are associated with improved outcomes, and to identify whether there are "high-performing CMP counties" that could serve as models for their peer counties. These analyses, along with subsequent dissemination, training, and technical assistance efforts, could play a pivotal role in informing subsequent efforts to improve CMP's overall effectiveness. The evaluation team will plan to share the results of these exploratory analyses by the end of this fiscal year.

Continue Evaluation Capacity-Building Efforts

Accessing program and outcome data remains a critical need for effectively evaluating CMP. Through collaboration with Colorado Judicial, DYS, and OBH, this year's evaluation was able to once again expand access to outcome data for CMP clients involved in the child welfare, juvenile justice, and health/mental health systems. However, data for clients who are at risk for adverse educational outcomes continue to remain elusive. Accordingly, the evaluation team will continue to engage members of the CMP Steering Committee, the CMP Evaluation and Data Subcommittees, and the Colorado Department of Education to identify opportunities for addressing existing data silos and improving data collection and matching across the CMP outcome domains. This process will continue to focus on exploring possible options, such as the development of memoranda of understanding (MOUs) and formal data use agreements (DUAs), which can be used to obtain the requisite education outcome data.

Expand the Quasi-Experimental Evaluation to a Third Program Domain

This year's evaluation expanded the quasi-experimental evaluation to include health/mental health outcomes. Notably, this expansion has continued to further the analytical rigor of the evaluation while providing causal empirical evidence of the program's impact on child welfare and health/mental health outcomes. However, evaluating the program's overall effectiveness is dependent on the ability to conduct quasi-experimental evaluations for all four program domains. For next year's evaluation, the evaluation team will work closely with DCW, CMP stakeholders, and staff from Colorado Judicial and DYS to identify appropriate comparison groups for the juvenile justice domain. The evaluation team has already made notable progress in this task by accessing Colorado Judicial outcome data for clients involved in the probation system. In addition, this year's evaluation marked the first year that the evaluation team was able to access client-level outcome data for CMP clients involved with DYS. For next year's evaluation, a critical task will consist of updating the existing MOUs/DUAs between DCW and DYS so that the evaluation team can access the requisite outcome data on the comparison population of DYS clients who were eligible for CMP but not served by the program. Accomplishing this task within a timely manner and conducting the subsequent quasi-experimental evaluation would represent yet another critical step in the evaluation by providing a more comprehensive understanding of the program's overall effectiveness.

5.3. Cost Evaluation Considerations

Testing the cost-savings hypothesis assumed in the legislation is complicated given the range and diversity of existing programs, processes, and outcomes. In many CMPs, services have not become standard enough or implemented with sufficient fidelity to enable accurate cost assignment to efforts or to savings associated with achieving outcomes directly from those efforts. Furthermore, calculation of cost savings through collaboration and prevention of child welfare re-involvement is dependent on the ability of all CMP systems to estimate service costs for children/youth involved in each respective domain. In addition, it is important to note that collaboration is a complex process, with little published research on its costs and benefits.

5.3.1. Cost Evaluation Next Steps

There are options that the evaluation team can explore to move the CMP a step closer to measuring cost savings. For example, the cost evaluation may pilot actual measurement of service costs and outcomes with a subset of CMP sites with clear service models with multiple years of statewide indicator data available in future years, the evaluation will be positioned to analyze change from year to year in a select set of indicators (e.g., out-of-home placements) to provide estimated costs associated with identified changes. With continued investment in model specification and aligned cost measurement through evaluation in this area, it is hoped that over time, there will be an opportunity to specify a cost model and conduct related analyses.

The current evaluation is able to measure many of the resources in use with ISST meetings, but is currently unable to answer questions on *how* the cost efficiencies are emerging. Thus, the current study is limited to examining the efficiency of services rendered between children/youth from CMP counties and those from comparison counties, which may not be similar enough to obtain adequate comparisons. More in-depth study at the agency level is needed to understand the processes that lead to streamlining of services.

APPENDIX A: ORGANIZING, CLEANING, MERGING, AND MATCHING OF EVALUATION DATA

This Appendix provides an overview of the processes associated with compiling the dataset used in the outcome evaluation.

1. Construct the population of CMP clients with child welfare involvement using the Trails database. Children and youth that are involved in the child welfare system are required to be included within the Trails database, which serves as the official case record for all children served by the child welfare system. CMP clients within Trails were identified using the parameters that the client had an initial ISST meeting during SFY17 that was documented within Trails via the "Facilitated Family Meeting/ISST" framework.

2. Match the list of clients from the ETO database to the Trails database. This process was used to match the SFY17 records from the ETO database to the population of CMP clients in the Trails database. The ETO database provided data for children and youth who were served by CMP but not necessarily served by the child welfare system. As some CMP clients were recorded in both ETO and Trails, a matching and deduplication process was used to remove children and youth who were represented within both databases. Children and youth were then matched using a multistep matching algorithm. Duplicated clients were subsequently removed, with the client records from the Trails database being retained, while duplicated records in ETO were discarded.

3. Combine the cleaned ETO and Trails datasets into a unique dataset. Under this step, the cleaned datasets were merged into a single dataset ("CMP Outcome Evaluation Dataset") consisting of all CMP clients that had an initial ISST meeting in SFY17.

4. Construct a pool of children and youth that were eligible, but not served by CMP. This process was used to identify child welfare-involved children and youth residing within the CMP counties that were eligible for CMP but were not served by the program. This process established a "comparison pool" of children and youth that could serve as potential matches for members of the treatment group. The following parameters were used to identify children and youth that were eligible for the comparison pool:

a. Children and youth were served within a new child welfare assessment, case, prevention, or new removal in an existing adoption case during SFY17.
b. Children and youth did not have prior CMP involvement or an ISST meeting. In addition, children and youth did not have CMP involvement or an ISST meeting at any point during SFY17. Finally, children and youth were verified to not have been identified in ETO as a CMP client, and to not have had CMP involvement or an ISST meeting in SFY18.
c. Children and youth were served by systems in the 41 CMP counties for SFY17, excluding Larimer and Boulder Counties, and those served by DYS.
d. For children and youth with multiple events, the event used was the first eligible event in SFY17.

5. Match the CMP Outcome Evaluation Dataset to records within the Colorado Benefits Management System. Members of the treatment and comparison groups were subsequently matched to records within the Colorado Benefit Management System. This matching process provided additional demographic data for the treatment and comparison groups, as well as data on all food, cash, and medical assistance applications and eligibility determinations.

6. Integrate pretreatment variables. Under this step, a collection of 14 pretreatment variables were integrated into the dataset. These variables were measured prior to children and youth becoming involved with multiple systems and were used to match members of the treatment and comparison groups.

7. Construct the child welfare outcome variables. In the seventh step, the SFY17 performance measures were used to construct outcome variables for members of the treatment and comparison groups. Under this process, the five child welfare outcome variables were calculated for all children that were involved with the child welfare system, including those within the Trails database, and any children that were originally included within the ETO database and had a child welfare performance goal. All outcomes were calculated one year from the date of the child or youth's entry into the child welfare system. For CMP clients, this consisted of one year after the date of the initial ISST meeting date. For members of the comparison group, this consisted of one year after the date that the child or youth first became involved with child welfare in SFY17. Table A1 on the following page details the operationalization of the five child welfare outcomes.

Table A1: ***Child Welfare Outcome Variables***

Outcome Measure	Numerator	Denominator (Population Size)	Assumptions
Decrease number of children and youth involved with child welfare	Children and youth who did not have a new involvement in the child welfare system in the year after they began receiving services	Children and youth served by the child welfare system in SFY18 (*N* = 8,529)	▪ New involvements were defined as a subsequent case (traditional or Family Assessment Response with services) within one year of the ISST date, or within one year of the involvement open date (for members of the comparison group).
Increase safety of children and youth	Children and youth with no substantiated findings of abuse in the year after they began receiving services	Children and youth served by the child welfare system in SFY18 (*N* = 8,529)	▪ No substantiated abuse finding was defined as no subsequent abuse/neglect finding within one year of the ISST date, or within one year of the case open date (for members of the comparison group).
Increase placement stability of children/youth	Children and youth with less than three completed removals in the year after they began receiving services, and who were receiving out-of-home services	Children and youth who were in an out-of-home placement in SFY18 (*N* = 2,633)	▪ The measure includes all child welfare clients who were in an out-of-home placement at some point during SFY18. ▪ The number of placements was calculated within one year of the ISST meeting or the removal date, whichever was later.
Increase permanency of children and youth involved in child welfare	Children and youth who were receiving out-of-home services, and whose most recent removal resulted in a permanent outcome (adoption, guardianship, reunion) in the year after they began receiving services	Children and youth who were in an out-of-home placement in SFY18 (*N* = 2,633)	▪ The measure includes all child welfare clients who were in an out-of-home placement at some point during SFY18. ▪ Permanency outcomes were calculated within one year of the ISST meeting or the removal date, whichever was later. ▪ Achieving permanency was defined as reunification, living with relatives, adoption, or a guardianship.
Increase the number of children and youth who remain home	Children and youth who had not been removed from their homes while receiving child welfare services in the year after they began receiving services	Children and youth receiving child welfare services who remained in their homes in SFY18 (*N* = 6,586)	▪ The measure includes all child welfare clients who were not in an out-of-home placement within 60 days of the ISST meeting or the opening of the case (used to account for lags in removal times) ▪ Whether the client was removed from the home was determined within one year of the ISST meeting or the date the case was opened. ▪ For the comparison group, only children and youth that were served in a case were included (I.e., children served via an assessment or referral were excluded).

8. Match judicial outcomes to the CMP Outcome Evaluation Dataset. In the next step, the dataset of CMP clients (but not members of a comparison group) were sent to Colorado Judicial and the DYS for outcome matching. This process provided the juvenile justice outcomes for all CMP clients with performance measures under the juvenile justice domain. Table A2 details the operationalization of the four juvenile justice outcomes.

Table A2: *Juvenile Justice Outcome Variables*

Outcome Measure	Numerator	Denominator (Population Size)	Assumptions
Prevent involvement with juvenile justice system	Children and youth who did not enter into detention	Children and youth served by CMP in SFY18 (*N* = 8,909)	N/A
Increase successful involvement with juvenile justice system (probation only)	Children and youth who were also served by the juvenile justice system and had a "successful termination of probation or parole" in the year after they began receiving services	Children and youth served by CMP in SFY18 that were also served by the juvenile justice system **and** had a probation termination outcome in the year after they began receiving services (*N* = 297)	Successful termination of probation consisted of the following outcomes: Terminated – successful, Terminated – unsatisfactory, and Successful Discharge – interstate compact. Unsuccessful termination of probation consisted of the following outcomes: Revocation – new felony offense, Revocation – new misdemeanor offense, Revocation – technical violation, Absconded, Absconded – warrant outstanding, and Community Corrections.
Decrease commitment to the Division of Youth Corrections	Children and youth who were not committed to the Division of Youth Services	Children and youth served by CMP in SFY18 (*N* = 8,909)	N/A
Decrease children and youth involved with truancy court	Children and youth who were diverted from involvement with truancy court while involved in the juvenile justice system	Children and youth served by CMP in SFY18 (*N* = N/A)	None of the CMP counties selected the 'Decrease children and youth involved in truancy court' performance goal.

9. Match health and mental health outcomes to the CMP Outcome Evaluation Dataset. In the next step, the dataset of CMP clients (but not members of a comparison group) were sent to CDHS, OBH for outcome matching. This process provided the outcomes for all CMP clients with performance measures under the health/mental health domain. Table A3 details the operationalization of the five health/mental health outcomes.

Table A3: *Health/Mental Health Outcome Variables*

Outcome Measure	Numerator	Denominator (Population Size)	Assumptions
Decrease Problem Severity	Children and youth with (a) decreased problem severity, and (b) improved level of functioning on CCAR or a similar tool	CMP clients that were involved with the health/mental health system and had a minimum of two level of functioning measurements within the CCAR (*N* = 2,366)	Measuring changes in level of functioning required a minimum of two measurements. Clients with less than two measurements were excluded from the measure.
Increase psychological, social, cognitive, and physical functioning	Children and youth with decreased concerns according to the Trauma Screening Tool	CMP clients that were involved with the health/mental health system	*Note:* The requisite data were not available to calculate this measure for SFY18.
Increase wellbeing	Children and youth with improved Multisystemic Therapy (MST) outcome indicators or successful completion of mental health treatment	CMP clients receiving mental health services	*Note:* The requisite data were not available to calculate this measure for SFY18.
Decrease substance abuse	Children and youth who successfully completed 90-day inpatient substance abuse treatment or intensive outpatient treatment	CMP clients receiving substance abuse or intensive outpatient services (*N* = 139)	The CMP client population was matched to substance use treatment records in the Drug and Alcohol Coordinated Data System (DACODS) for patients receiving intensive residential, transitional residential, or intensive outpatient services during SFY18.
Increase children and youth's health	Children and youth with established linkages to (a) primary health care provider, (b) oral care provider, (c) substance abuse provider, (d) mental health provider or (e) health insurance provider	CMP clients in need of health services (*N* = 8,905)	The CMP client population was matched to DACODS and CCAR records. The measure currently uses a broad denominator that assumes all clients are in need of health services. However, a more specific denominator would consist of only those clients who explicitly needed a linkage. Additional consideration may be needed for how this measure is operationalized.

APPENDIX B: SENSITIVITY ANALYSIS – IMPACT OF EXCLUDING BOULDER AND LARIMER COUNTIES AND DYS CLIENTS

An important factor to consider is whether dropping children/youth served by Boulder and Larimer Counties and DYS had a notable impact on the populations used to construct the matched comparison groups. Children/youth served by Boulder and Larimer Counties and DYS were dropped from the quasi-experimental evaluation on the basis that comparison groups could not be identified. As shown in Table B1, excluding these clients from the analysis had minimal impact, with performance goals between the two populations differing by no more than two percentage points. Accordingly, these results cast doubt on the likelihood that excluding these clients had a considerable impact on the quasi-experimental evaluation's findings.

Table B1: ***Comparison of Performance Goal Achievement with and without Clients Served by Boulder and Larimer Counties and DYS***

Outcome (Performance Goal)	Percentage Achieving Goal (Full Population)	Percentage Achieving Goal (Excluding Boulder and Larimer Counties and DYS)
Child Welfare Performance Goals		
Increase safety of children/youth	94.2% (*N* = 8,529)	94.0% (*N* = 7,183)
Decrease number of children/youth involved in child welfare	93.1% (*N* = 8,529)	93.2% (*N* = 7,183)
Increase number of children/youth who remain home	91.2% (*N* = 6,586)	90.2% (*N* = 5,355)
Increase placement stability of children/youth	88.3% (*N* = 2,633)	88.2% (*N* = 2,469)
Increase permanency of children/youth	63.4% (*N* = 2,633)	63.6% (*N* = 2,469)
Health/Mental Health Performance Goals		
Decrease problem severity	48.6% (*N* = 2,366)	49.2% (*N* = 2,158)
Decrease substance abuse	54.0% (*N* = 139)	55.2% (*N* = 134)
Increase children/youth health	26.9% (*N* = 8,905)	28.9% (*N* = 7,561)

APPENDIX C: DETAILED OVERVIEWS OF THE MATCHES USED IN THE CHILD WELFARE AND HEALTH/MENTAL HEALTH QUASI-EXPERIMENTAL EVALUATIONS

This appendix expands on the information provided in Section 3.5.1. (***Constructing Comparison Groups Using Matching Methods***) by providing detailed descriptions of the processes used to construct the six matched groups used in the child welfare and health/mental health quasi-experimental evaluations.

Child Welfare Outcomes: Subsequent Involvements and Safety

To examine the subsequent involvement and safety performance goals, the evaluation team matched 5,010 members of the treatment group to 5,010 members of the comparison group. As shown in Table C1 on the following page, the matching process considerably reduced imbalance between the two groups, with the matched groups having no statistically significant differences across the 13 matching variables.

In comparison to the broader CMP population, the matched groups had notably fewer prior adoptions, had a mean age that was approximately a year younger, and differed in their family structure. In addition, the matched groups had fewer child welfare referrals, assessments, cases, and removals and fewer DYS involvements. Overall, this suggests that the matched groups had a slightly lower level of risk than the broader population of CMP clients based upon a comparison of the key covariates between the groups.

Table C1: ***Differences in Key Covariates within the Matched Child Welfare Groups Used to Examine Subsequent Involvements and Safety Outcomes***

Covariate	Matched CMP Clients	Matched Comparison Group	CMP Population
Prior Adoption	0.58%	0.58%	2.78%
Prior Food Assistance			
Yes	76.43%	76.11%	74.50%
No	21.26%	21.58%	22.92%
Unknown	2.32%	2.32%	2.58%
Previously on Medicaid			
Yes	85.13%	85.17%	82.94%
No	12.55%	12.51%	14.48%
Unknown	2.32%	2.32%	2.58%
Age at Beginning of Involvement	8.61	8.03	9.22
Gender			
Female	47.07%	47.07%	44.92%
Male	52.93%	52.93%	55.08%
Race and Ethnicity			
African American	7.31%	7.31%	7.92%
Caucasian	43.97%	43.97%	45.50%
Hispanic	41.48%	41.48%	37.95%
Other	0.90%	0.90%	0.93%
Unknown	6.35%	6.35%	7.71%
Family Structure			
Single Parent	20.40%	20.40%	52.21%
Married Couple	7.03%	7.03%	24.03%
Undetermined	65.77%	65.77%	4.80%
Unmarried Couple	6.81%	6.81%	18.96%
Primary Caregiver's Age	34.53	34.18	35.48
Number of Prior Referrals	4.58	4.45	5.51
Number of Prior Assessments	2.20	2.14	2.66
Number of Prior Cases	0.30	0.30	0.48
Number of Prior Removals	0.12	0.12	0.19
Prior DYS Involvement	3.33%	3.33%	8.97%
Number of Observations	**5,010**	**5,010**	**8,529**

Note: *Statistically significant at the $p < 0.05$ level.

Child Welfare Outcomes: Placement Stability and Permanency

Unlike the broader CMP population, the subpopulation of children/youth with placement stability and permanency outcome performance goals had notably fewer members within the comparison group. As a result, 1-to-1 matching could not be performed without excluding a sizable proportion of the treatment group. Accordingly, the evaluation team used 1-to-k matching to match multiple members of the treatment and comparison groups to one another. The use of 1-to-k matching does not necessarily result in a less balanced matched group but requires a slightly different outcome model that weights

observations by the number of treatment and comparison groups within each matched stratum.[24] In total, 829 members of the treatment group were matched to 613 members of the comparison group. As shown in Table C2, the matching process significantly reduced imbalance between the two groups, though fewer of the 12 covariates were exactly matched.[25]

Table C2: Differences in Key Covariates within the Matched Child Welfare Groups Used to Examine Placement Stability and Permanency Outcomes

Covariate	Matched CMP Clients	Matched Comparison Group	CMP Population
Prior Food Assistance			
Yes	63.19%	67.05%	75.66%
No	36.81%	32.95%	24.34%
Unknown	0.00%	0.00%	0.00%
Previously on Medicaid			
Yes	79.84%	79.77%	85.35%
No	20.16%	20.23%	14.65%
Unknown	0.00%	0.00%	0.00%
Age at Beginning of Involvement	3.85	4.45	7.61
Gender*			
Female	38.58%	45.02%	44.95%
Male	61.42%	54.98%	55.05%
Minority***			
Yes	44.55%	38.01%	53.96%
No	55.45%	61.99%	46.04%
Family Structure***			
Single Parent	58.35%	57.91%	52.66%
Married Couple	11.65%	15.01%	22.88%
Undetermined	0.62%	4.08%	5.15%
Unmarried Couple	29.38%	23.00%	19.31%
Primary Caregiver's Age	30.43	30.71	35.04
Number of Prior Referrals	2.73	2.97	5.89
Number of Prior Assessments	1.53	1.45	2.90
Number of Prior Cases	0.11	0.12	0.44
Number of Prior Removals	0.03	0.04	0.21
Prior DYS Involvement	3.7%	3.4%	8.76%
Number of Observations	**829**	**613**	**2,465**

Note: *Statistically significant at the $p < 0.05$ level. **Statistically significant at the $p < 0.10$ level. ***Statistically significant at the $p < 0.001$ level.

[24] Blackwell, M., Iacus, S., King, G., & Porro, G. (2009). CEM: Coarsened exact matching in Stata. *The State Journal, 9*, 524–546. The article includes the following helpful description: "By default, CEM uses maximal information, resulting in strata that may include different numbers of treated and control units. To compensate for the differential strata sizes, CEM also returns weights to be used in subsequent analyses. Although this is generally the best option, a user with enough data may opt for a k-to-k solution to avoid the slight inconvenience of needing to use weights" (p. 536).

[25] Variables that were not exactly matched were subsequently included in the placement stability and permanency models.

After matching, statistically significant differences persisted for race-ethnicity ($p < 0.001$), family structure, ($p < 0.001$), and gender ($p < 0.05$). The difficulty in removing statistically significant imbalances across these three variables is largely attributed to the pre-matching imbalance between the number of treatment group members (2,466) and comparison group members (1,150). A comparison group that is approximately half the size of the treatment group limits the overall size of the comparison group and renders the matching process a more arduous task (though the evaluation team used 1-to-k matching to mitigate this imbalance by matching multiple members of the treatment and comparison groups to one another). The associated matches reduced overall imbalance between these groups by 20.8 percent while also removing statistically significant differences among nine of the 12 variables. To further account for the effects of these remaining imbalances, the evaluation team includes these covariates within each of the linear probability models. Including these variables in both the matching process and the subsequent multivariate models provides a "double robustness" approach, which is commonly used within randomized experiments and matched designs and allows the evaluation team to further control for covariate imbalance between the matched groups.

In comparison to the broader CMP population, the matched groups had lower levels of receiving food assistance, had a mean age that was approximately four years younger, and had a younger mean age for the child's primary caregiver. In addition, the matched groups had fewer child welfare referrals, assessments, cases, and removals, and DYS involvements. Once again, this suggests that the matched comparison groups had a slightly lower level of risk than the broader population of CMP clients.

Child Welfare Outcome: Remain Home

To examine the remain home performance goal, the evaluation team matched 3,792 members of the treatment group of children/youth who had a child welfare case but remained in their homes to 3,792 members of the comparison group. As shown in Table C3 on the following page, the matching process considerably reduced imbalance between the two groups, with the 13 matching variables having no statistically significant differences. In comparison to the broader CMP population, the matched groups had notably fewer prior adoptions and a lower percentage of prior DYS involvements. Overall, this suggests that the matched comparison groups had a slightly lower level of risk than the broader population of CMP clients.

Table C3: ***Differences in Key Covariates within the Matched Child Welfare Groups Used to Examine the Remain Home Outcome***

Covariate	Matched CMP Clients	Matched Comparison Group	CMP Population
Prior Adoption	0.32%	0.32%	2.91%
Prior Food Assistance			
Yes	77.77%	75.47%	75.76%
No	20.07%	22.36%	20.41%
Unknown	2.16%	2.16%	3.82%
Previously on Medicaid			
Yes	85.63%	83.73%	82.79%
No	12.21%	14.11%	13.38%
Unknown	2.16%	2.16%	3.82%
Age at Beginning of Involvement	8.97	9.02	9.81
Gender			
Female	47.02%	47.02%	45.00%
Male	52.98%	52.98%	55.00%
Race and Ethnicity			
African American	5.78%	5.78%	7.69%
Caucasian	45.97%	45.97%	43.11%
Hispanic	40.95%	40.95%	39.87%
Other	0.74%	0.74%	1.07%
Unknown	6.57%	6.57%	8.27%
Family Structure			
Single Parent	11.87%	11.87%	18.09%
Married Couple	4.09%	4.09%	8.53%
Undetermined	80.30%	80.30%	67.40%
Unmarried Couple	3.74%	3.74%	5.98%
Primary Caregiver's Age	34.79	34.72	35.77
Number of Prior Referrals	5.01	4.94	5.45
Number of Prior Assessments	2.42	2.43	2.66
Number of Prior Cases	0.30	0.30	0.42
Number of Prior Removals	0.09	0.09	0.17
Prior DYS Involvement	3.93%	3.93%	10.07%
Number of Observations	**3,792**	**3,792**	**5,335**

Note: *Statistically significant at the $p < 0.05$ level.

Health/Mental Health Outcome: Decrease Problem Severity

Within the health/mental health domain, the evaluation team examined the decrease problem severity goal using matched groups consisting of 509 members for each of the treatment and comparison groups. Table C4 on the following page shows that the matching process considerably reduced imbalance between the two groups, with the matched groups having no statistically significant differences across 12 of the 13 matching variables. Compared to the broader CMP population involved in the health/mental health domain, the matched groups had notably fewer prior adoptions and higher levels of previous Medicaid involvement, and they differed in their family structure. In contrast, the matched groups had lower rates of minority clients, slightly lower levels of previous child welfare

involvement, and notably fewer prior DYS involvements. Accordingly, the matched groups are considered to have more mixed levels of risk.

Table C4: ***Differences in Key Covariates within the Matched Health/Mental Health Groups Used to Examine the Decrease Problem Severity Outcome***

Covariate	Matched CMP Clients	Matched Comparison Group	CMP Population
Prior Adoption	0.20%	0.20%	4.26%
Prior Food Assistance*			
Yes	83.30%	89.19%	81.68%
No	16.50%	10.61%	18.03%
Unknown	0.20%	0.20%	0.30%
Previously on Medicaid			
Yes	93.52%	95.68%	88.71%
No	6.29%	4.13%	10.99%
Unknown	0.20%	0.20%	0.30%
Age at Beginning of Involvement	10.58	10.63	11.03
Gender			
Female	49.71%	49.71%	44.86%
Male	50.29%	50.29%	55.14%
Race and Ethnicity			
African American	3.73%	3.73%	10.82%
Caucasian	51.67%	51.67%	46.75%
Hispanic	43.42%	43.42%	38.71%
Other	--	--	1.00%
Unknown	1.18%	1.18%	2.72%
Family Structure			
Single Parent	20.24%	20.24%	41.02%
Married Couple	4.13%	4.13%	17.85%
Undetermined	72.69%	72.69%	31.38%
Unmarried Couple	2.95%	2.95%	9.75%
Primary Caregiver's Age	36.14	36.04	37.81
Number of Prior Referrals	6.79	6.71	7.79
Number of Prior Assessments	3.13	3.14	3.70
Number of Prior Cases	0.30	0.30	0.57
Number of Prior Removals	0.11	0.11	0.29
Prior DYS Involvement	4.52%	4.52%	15.90%
Number of Observations	**509**	**509**	**1,692**

Note: *Statistically significant at the $p < 0.05$ level.

Health/Mental Health Outcome: Decrease Substance Abuse

The evaluation team examined the decrease substance abuse goal using notably smaller matched groups consisting of 50 members of the treatment and comparison groups (as shown in Table C5 on the next page). The smaller size of these matched groups is attributed to a fewer number of children and youth involved in substance abuse treatment and, in particular, imbalance between the number of CMP children and youth who received services (97 clients) and the number of non-CMP children and youth receiving services (57 clients). While imbalance existed between the number of children and youth in

the two groups prior to matching, there were notably fewer statistically significant differences between the two groups that necessitated matching. Accordingly, only three of the 13 pretreatment variables significantly related to treatment assignment or substance abuse treatment outcomes were involved in the matching procedure.

Table C5: ***Differences in Key Covariates within the Matched Health/Mental Health Groups Used to Examine the Decrease Substance Abuse Outcome***

Covariate	Matched CMP Clients	Matched Comparison Group	CMP Population
Gender			
Female	42.00%	42.00%	39.18%
Male	58.00%	58.00%	60.82%
Race and Ethnicity			
African American	4.00%	4.00%	6.19%
Caucasian	38.00%	38.00%	44.33%
Hispanic	58.00%	58.00%	48.45%
Other	--	--	--
Unknown	--	--	1.03%
Family Structure			
Single Parent	46.00%	46.00%	55.67%
Married Couple	6.00%	6.00%	13.40%
Undetermined	48.00%	48.00%	28.87%
Unmarried Couple	--	--	2.06%
Number of Observations	**50**	**50**	**97**

Note: *Statistically significant at the $p < 0.05$ level.

Health/Mental Health Outcome: Increase Children/Youth Health

Finally, the evaluation team examined the increased children/youth health outcome using robust treatment and comparison groups consisting of 4,145 members each. As shown in Table C6 on the next page, the matching process considerably reduced imbalance between the two groups, with the matched groups having no statistically significant differences across the 12 matching variables. The matched groups had notable differences in family structure and the age of the primary caregiver, along with lower rates of prior adoptions and prior child welfare and DYS involvements. Therefore, the matched group could be considered as having a slightly lower level of risk than the broader CMP population involved in the health/mental health domain.

Table C6: ***Differences in Key Covariates within the Matched Health/Mental Health Groups Used to Examine the Increase Children/Youth Health Outcome***

Covariate	Matched CMP Clients	Matched Comparison Group	CMP Population
Prior Adoption	0.63%	0.63%	2.92%
Prior Food Assistance			
Yes	75.08%	75.75%	74.96%
No	23.81%	23.14%	23.97%
Unknown	1.11%	1.11%	1.07%
Previously on Medicaid			
Yes	84.61%	85.43%	83.82%
No	14.28%	13.46%	15.11%
Unknown	1.11%	1.11%	1.07%
Gender			
Female	47.72%	47.72%	45.86%
Male	52.28%	52.28%	54.14%
Race and Ethnicity			
African American	8.08%	8.08%	9.83%
Caucasian	45.02%	45.02%	45.12%
Hispanic	41.74%	41.74%	39.56%
Other	1.06%	1.06%	1.21%
Unknown	4.10%	4.10%	4.28%
Family Structure			
Single Parent	22.80%	22.80%	29.49%
Married Couple	7.91%	7.91%	13.42%
Undetermined	61.25%	61.25%	46.40%
Unmarried Couple	8.03%	8.03%	10.69%
Primary Caregiver's Age	41.26	41.26	35.16
Number of Prior Referrals	4.40	4.32	7.16
Number of Prior Assessments	2.13	2.07	4.37
Number of Prior Cases	0.29	0.29	2.13
Number of Prior Removals	0.11	0.11	1.92
Prior DYS Involvement	3.14%	3.14%	8.55%
Number of Observations	**4,145**	**4,145**	**5,791**

Note: *Statistically significant at the $p < 0.05$ level.