

Matched Control Study

System of Care Out-of-home Placement

February, 2020
Detre Godinez, PhD



COLORADO

Office of Behavioral Health

Department of Human Services

Acknowledgements

Thank you to the COACT team and Communities of Excellence. This work could not be done without the hard work and data collection by service providers and the COACT team in Colorado. A special thanks to Jessica Starr of the Division of Child Welfare - Office of Children, Youth, and Families for assistance with the matched control sample. Thank you to Stephanie Russell, Elizabeth Brooks and Claudia Zundel for their review of this report.

Table of Contents

Executive Summary 2

Section 1 Introduction 3

Section 2 Methods 4

 Figure 1 Matched Design 4

 Table 1 Matched Demographics 4

Section 3 Results 5

 Congregate Care. 5

 Figure 2 Matched Comparison of Congregate Care..... 5

 Community Based Care 6

 Figure 3 Matched Comparison of Community Based Care. 6

Section 4 Conclusion 7

References 8

Appendix A Results by types of congregate and community based care 9

Appendix B Results for youth who successfully transitioned out of wraparound 11

Funding for this report was made possible by a cooperative agreement 5H79SM063394 from SAMHSA. The views and opinions contained in this publication do not necessarily reflect those of SAMHSA or the U.S. Department of Health and Human Services, and should not be construed as such.



COLORADO
Office of Behavioral Health
Department of Human Services



Executive Summary

Out-of-home placements into congregate care such as Residential Child Care Facilities (RCCF) or detention centers are known to result in a large financial and emotional cost. COACT Colorado has worked to build a System of Care (SOC) in Colorado to reduce these costs by keeping our youth at home, in school, and out of trouble. This care has focused on youth with a serious emotional disturbance who are at risk of or in an out-of-home placement. Specifically, COACT Colorado has utilized SOC values and principles and High Fidelity Wraparound to reduce out-of-home placements, improve school outcomes, and decrease behavioral health problems.

A matched case-control study was performed to test whether youth who participated in SOC High Fidelity Wraparound showed reduced out-of-home placement compared to youth with a similar set of risks. System of Care youth were matched with youth based on birth year, gender, race, and ethnicity. Importantly, they were also matched on year of first placement with the Office of Children, Youth, and Families (OCYF). This allowed us to compare youth who are approximately the same age and have been involved with OCYF for the same amount of time.

Youth involved with SOC consistently showed lower numbers of youth and days in congregate care placement (e.g., RCCF, detention center, Division of Youth Services (DYS) Facility, and Group Center Care) compared to the matched controls who did not participate in SOC. The same outcome was observed for youth who disengaged or ended SOC wraparound early; however, the greatest improvements were found for youth who successfully transitioned out of SOC wraparound (i.e., successfully completed the program). In contrast with congregate care placements and consistent with SOC values and principles, SOC youth showed increased placements in Foster Family Home Care and Kinship Care compared to the matched controls. Together these results show that SOC can be used to decrease congregate care placements while increasing community based care. These efforts show promising outcomes for youth with a serious emotional disturbance and who are in or at risk for out-of-home placements in line with Federal and State aspirational goals to keep youth in community based care.

A System of Care is a spectrum of effective, community based services and supports for children and youth with or at risk for mental health or other challenges and their families, that is organized into a coordinated network, builds meaningful partnerships with families and youth, and addresses their cultural and linguistic needs, in order to help them to function better at home, in school, in the community and throughout their life.¹

Section 1 Introduction

COACT Colorado utilizes System of Care (SOC) values and principles and High Fidelity Wraparound to improve outcomes for youth in Colorado. These practices are nationally known to improve behavioral health outcomes.^{1,2,3,4,5} Consistent with national data, SOC youth in Colorado show improvements in behavioral health outcomes related to school, mental health, and reduced out-of-home placement.^{6,7} While the majority of National and Colorado research show changes in behavioral health outcomes over time from baseline to discharge, the current study compared youth involved in SOC High Fidelity Wraparound to a control sample of youth matched for birth year, gender, race, ethnicity, and year of first placement with the Office of Children, Youth, and Families (OCYF). This allows us to test whether youth involved in SOC wraparound showed lower rates of out-of-home placement into congregate care compared to a matched control sample. Consistent with SOC values and principles, we also expect SOC youth to show increased placement into community based and home like placements compared to the matched controls. These results would support behavioral health improvements that have been reported by youth, their parents and the providers who work with them.



Section 2 Methods

A matched case-control design was utilized to test whether youth involved in High Fidelity Wraparound showed reduced out-of-home placements compared to a matched control sample. From a sample of over 18,000 youth, OCYF youth were matched with SOC youth by birth year, gender, race, ethnicity, and year of first OCYF placement. By matching on birth year as well as year of first OCYF placement, these youth have had approximately the same amount of time

between their first OCYF placement and the time of assessment. SOC youth cases were defined as youth who had an OCYF placement and participated in SOC wraparound. Controls were defined as youth with an OCYF placement. After the 100 matched control youth were selected, the wraparound start date for the SOC youth was yoked, such that the wraparound start date for the SOC youth was used for the matched controls. This is used to distinguish “before” and “after” time periods (see Figure 1). Therefore, this method allows us to compare days of placement and number of youth with a placement from their first OCYF placement to the wraparound start date (i.e., “before”; Mean=307 days, SD=200), as well as from the start of wraparound to the last assessment in July 2019 (i.e., “after”; Mean=3.4 years, SD=1.5). Importantly, the sample of SOC youth included youth who successfully transitioned out of wraparound, as well as youth who did not. Table 1 shows descriptive information for the variables that youth were matched on. Case-control matching was performed at 100%, as shown by the perfect matches on birth year, gender, race, ethnicity and year of first OCYF placement. For analysis we utilized paired t-tests and Related Wilcoxon Signed Rank Tests, which are preferred methods for matched control studies and account for the large distribution of days in placement.⁸

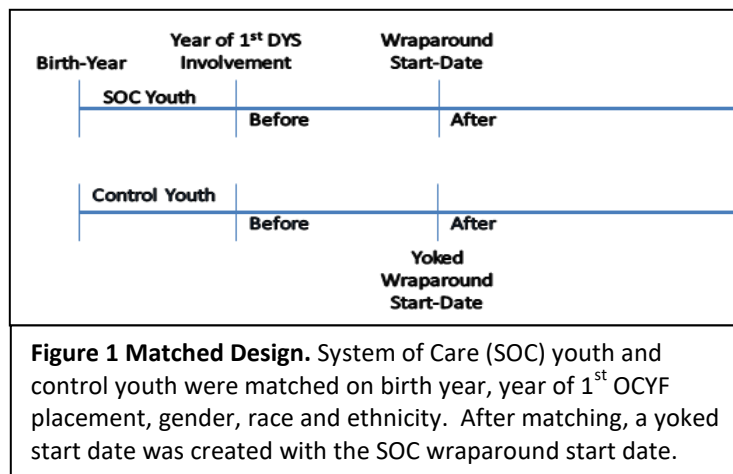


Figure 1 Matched Design. System of Care (SOC) youth and control youth were matched on birth year, year of 1st OCYF placement, gender, race and ethnicity. After matching, a yoked start date was created with the SOC wraparound start date.

Table 1. Demographics for Matched SOC and Control Youth.

Matched Variables					
		SOC Youth			Total n
Birth year	Range 1997-2008	Average birth year = 2001			100
Gender	Male n=63	Female n=37			100
Ethnicity	Hispanic/Latinx n=30	Non-Hispanic n=70			100
Race	Black/African American n=10	Asian n=3	Multiracial n=7	White n=80	100
		Matched Control Youth			Total n
Birth year	Range 1997-2008	Average birth year = 2001			100
Gender	Male n=63	Female n=37			100
Ethnicity	Hispanic/Latinx n=30	Non-Hispanic n=70			100
Race	Black/African American n=10	Asian n=3	Multiracial n=7	White n=80	100

Section 3 Results

SOC youth were matched at 100% on birth year, gender, race, ethnicity, and year of first OCYF placement with control youth who did not participate in SOC High Fidelity Wraparound. Less SOC youth were placed into congregate care after participation in High Fidelity Wraparound compared to the control group. The SOC youth that were placed in congregate care also experienced fewer days in placement. This was in contrast to community based placements, such as kinship and foster care, for which SOC youth showed higher days in community based care compared to the control group. This is consistent with the values and principles of SOC. Overall, SOC youth had fewer placements into congregate care and more placements into community/home based placements compared to the control group.

Congregate Care

Comparisons between the SOC youth and matched controls showed that SOC youth had less days and a decrease in youth placed in congregate care compared to the matched controls. SOC youth and controls did not show significant differences before the wraparound start date (paired $t(99)=0.56, p=.58$), but did show significant differences after the wraparound start date (paired $t(99)=-2.06, p=.04$). Both sets of OCYF involved youth (SOC youth and controls) showed an increase in days in congregate care placement for the full sample ($n=100:100$). However, SOC youth experienced fewer days in placement (See Figure 2) and fewer youth in placement after wraparound (57 to 54 SOC youth and 39 to 51 ctrl youth; See also Appendix, Figure A1). The related Wilcoxon Signed Rank Test, which is a nonparametric difference test for ranked differences was trending ($p=.10$). When the test was limited to youth who successfully transitioned out of wraparound (See Appendix, Figure A3; $n=32:32$), SOC youth showed a reduced number of days (1420 to 1087 days) and youth in placement (22 to 11 youth) while the matched control youth continued to show an increase in out-of-home days in congregate care (1894 to 5937 days; 18 to 16 youth; Wilcoxon difference test $p=.03$).

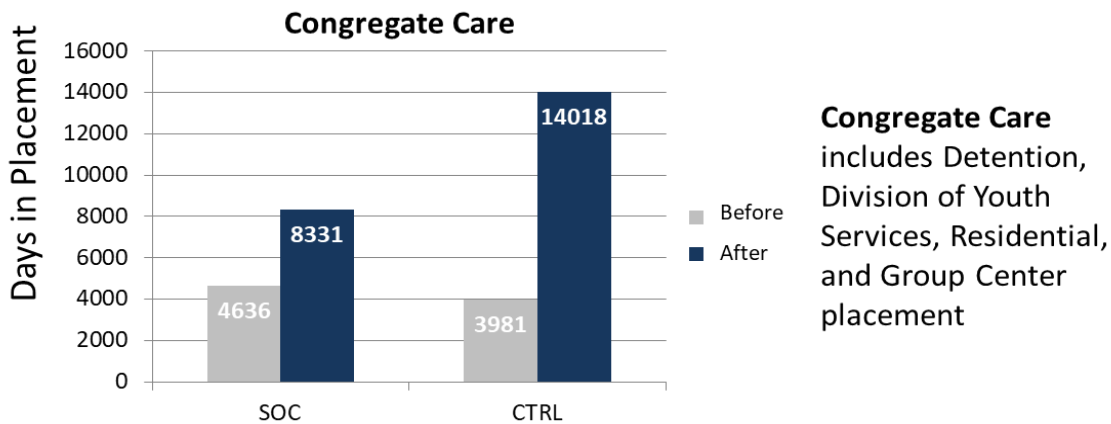


Figure 2. Matched Comparison of Congregate Care. Matched control youth showed an increase in days in congregate care placement nearly 3 times the size of the increase in youth involved in SOC Wraparound (N=100:100).

Matched Control System of Care

Specific to the types of congregate care (See Appendix, Figure A1), SOC youth showed a decrease in Division of Youth Services (DYS) placements and no change in detention (although detention numbers were low). The controls showed an increase in both DHS and detention placements. For Residential Child Care Facilities (RCCF), both SOC youth and control youth showed an increase in the number of placements; however, SOC youth showed a 56% increase compared to a 162% increase into RCCFs for the control group.

Community Based Care

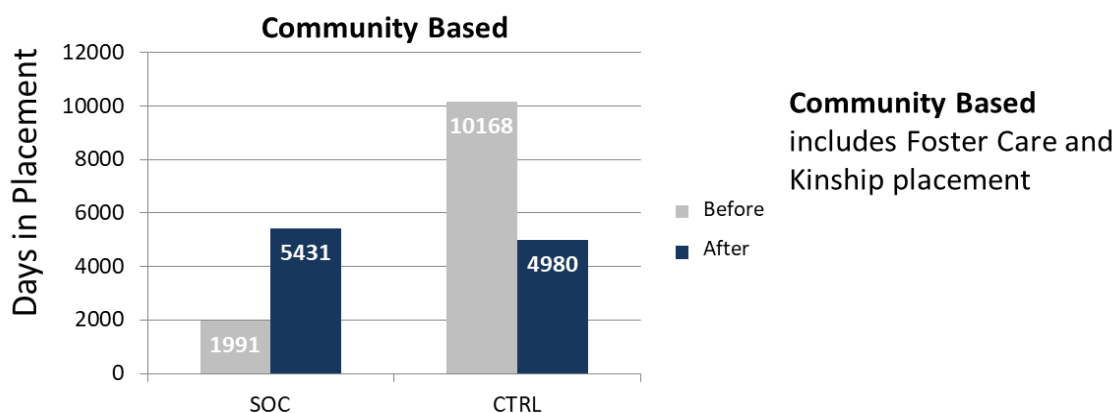


Figure 3. Matched Comparison of Community Based Care. SOC youth showed a significant increase in the number of days in community based care compared to the matched control group who showed a reduction (N=100:100).

For community based care, the opposite effect was found. SOC youth showed an increase in days (see Figure 3) and number of youth (12 to 20 youth) in community based placements while the control youth showed a decrease (32 to 25 youth; See also Figure 3). Statistical tests between the before and after periods for the SOC youth and the control youth were significant for the full sample (Wilcoxon difference test $p=.002$; $n=100:100$) as well as the sample of successful youth (Wilcoxon difference test $p=.033$; $n=32:32$). When community based care is split by type (e.g., Foster Family Home Care, Kinship Care), SOC youth showed an increase in both types of placement while the control group showed a reduction in both (See Appendix, Figure A2).

Cost Savings

While a cost savings analysis is beyond the scope of this report, the reduction in days of congregate care may have resulted in a significant cost savings. The average cost of a placement into an accredited RCCF was estimated at \$231.38 per day in the State Fiscal Year (SFY)19-20.⁹ If we take the difference in the number of days in an RCCF before and after High Fidelity Wraparound and multiply by the average per day rate for youth involved in SOC ($\$231.38 \times 2,503 \text{ days} = \$579,144.14$) compared to the controls ($\$231.38 \times 6,197 \text{ days} = \$1,433,861.86$), we arrive at an estimated cost savings of \$854,717.72 for 100 youth. If we compare only the days after wraparound in an RCCF, the estimated cost savings is \$675,860.98. This estimate does not account February 2020

for the difference in baselines since SOC youth experienced more days in RCCF before the High Fidelity Wraparound start date compared to the control group. Furthermore, these estimates are only representative of RCCFs. If the savings for DYS placements, detention and group centers were included, the cost savings would be substantial. Additionally, these estimates only represent the financial cost to human service systems, which exclude the implications to the physical and mental health of the youth that are associated with placements in highly restrictive care.

Section 4 Conclusion

SOC youth were matched with control youth who did not participate in SOC High Fidelity Wraparound based on birth year, gender, race, ethnicity, and year of first OCYF placement. Less SOC youth were in congregate care placements, and SOC youth experienced fewer days in placement after participation in High Fidelity Wraparound compared to the control sample who did not participate in High Fidelity Wraparound. Congregate care includes detention, Division of Youth Services, Residential, and Group Centers. For community based placements, SOC youth experienced a higher number of days in community based care after High Fidelity Wraparound consistent with the values and principle of SOC. Conversely, the matched control group experienced fewer days in community based care (e.g., Kinship Care, Foster Family Home Care).

While this study provides foundational information, there is a need to replicate these results as well as evaluate other programs that serve youth with serious emotional disturbances. The purpose of the Family First Prevention Services Act and the Behavioral Health Task Force are to provide youth with the best and least restrictive care. This report presents the Colorado Department of Human Services with the opportunity to improve access to community based services as well as improve data collection and assessment practices. The use of data to inform decision making is necessary to prevent youth from falling through the cracks, and to improve the capacity to provide the least restrictive care for youth in Colorado.

References

1. Stroul, B., Blau, G., & Friedman, R. (2010). Updating the system of care concept and philosophy. Washington, DC: Georgetown University Center for Child and Human Development, National Technical Assistance Center for Children's Mental Health.
2. Coldiron, J. S., Bruns, E. J., & Quick, H. (2017). A comprehensive review of wraparound care coordination research, 1986–2014. *Journal of Child and Family Studies*, 26(5), 1245-1265.
3. Bertram, R. M., Blase, K. A., & Fixsen, D. L. (2015). Improving programs and outcomes: Implementation frameworks and organization change. *Research on Social Work Practice*, 25(4), 477-487.
4. Bruns, E. J., Walker, J. S., Bernstein, A., Daleiden, E., Pullmann, M. D., & Chorpita, B. F. (2014). Family voice with informed choice: Coordinating wraparound with research-based treatment for children and adolescents. *Journal of Clinical Child & Adolescent Psychology*, 43(2), 256-269.
5. Pires, S. A., (2010). Building systems of care: A primer. Washington, DC: National Technical Assistance Center for Children's Mental Health Center for Child and Human Development, Georgetown University.
6. Godinez, D. G. (2019). COACT Colorado 2 year report: Keeping youth at home, in school and out of trouble. Denver, CO: Colorado Department of Human Services Office of Behavioral Health, January, 1-19.
7. Fox, D. R., Johnson Nagel, N., Gallager, K., & Brock-Baca, A. (2016). COACT Colorado Communities of Excellence Project Wide Report. Denver, CO: Colorado Department of Human Services Office of Behavioral Health, October, 1-19.
8. Niven, D. J., Berthiaume, L. R., Fick, G. H., & Laupland, K. B. (2012). Matched case-control studies: a review of reported statistical methodology. *Clinical epidemiology*, 4, 99.
9. Rosales, A. (2019, June 7). Provider Rate change for FY 2019-20. Informational Memorandum IM-CW-2019-0030. <https://www.colorado.gov/pacific/cdhs/current-cdhs-memos>

Appendix A. Type of Care

System of Care (SOC) youth showed less youth in all types of congregate care placements compared to the controls (Figure A1). Overall, 57 youth had a congregate care placements before SOC wraparound and 54 youth had a placement after. For the control group, 39 youth had a congregate care placement before and 51 had a placement after. This included placements into Residential Child Care Facilities (RCCF), which SOC youth showed only a 56% increase in RCCF placements compared to a 162% increase for the controls. In terms of Division of Youth Services (DYS) facilities, SOC youth showed a decrease in the number of youth placed, while controls showed an increase. The control group also showed an increase in both detention and group center placements. SOC youth showed no change in detention and a small increase for group center placements (although low numbers exist for both).

Congregate Care

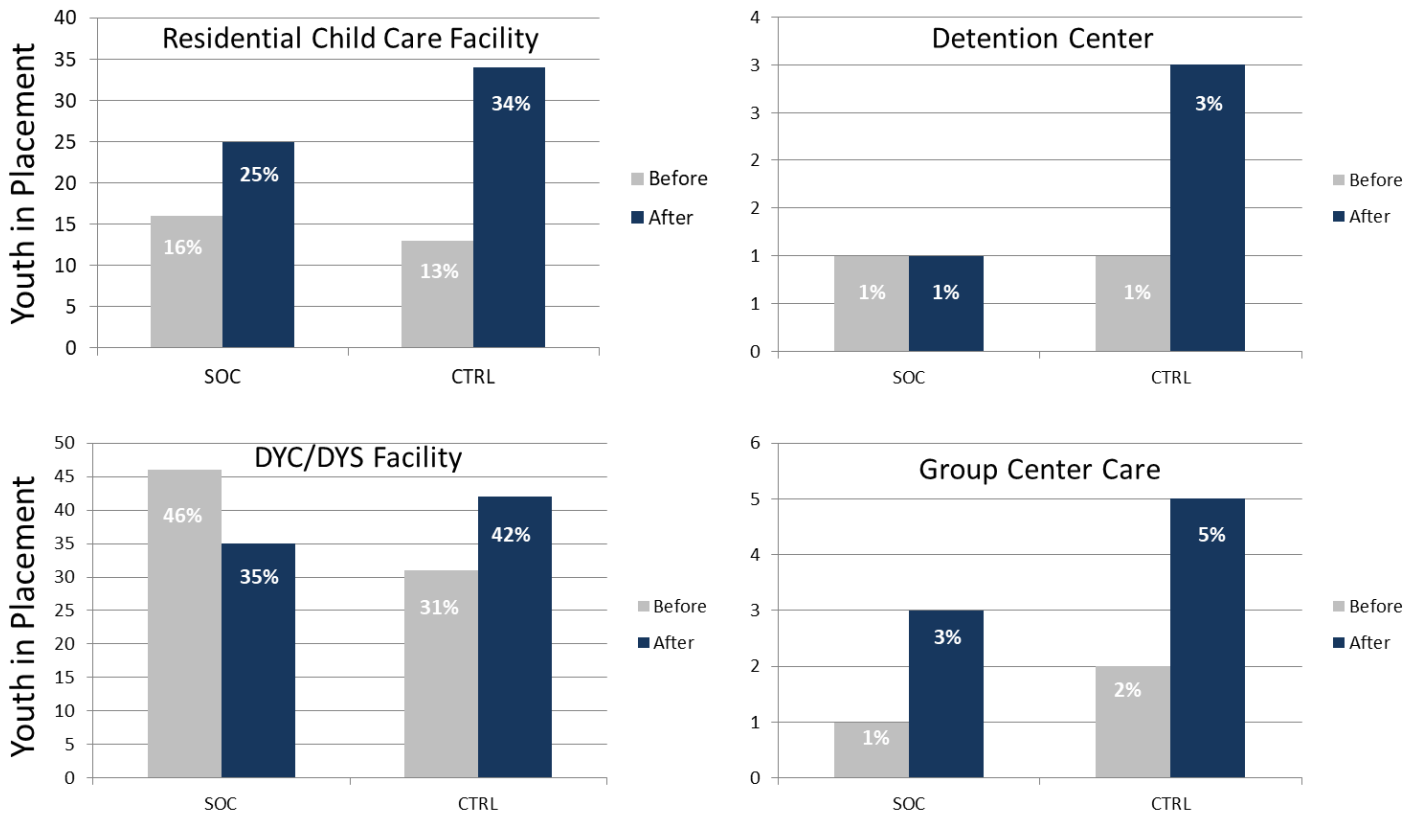


Figure A1. Matched Comparison by Type of Congregate Care. Fewer youth were placed in congregate care for all types of care including RCCF, Detention Centers, DYS Facilities, and Group Center Care after participation in wraparound compared to the matched controls (N=100:100).

Community Based Care

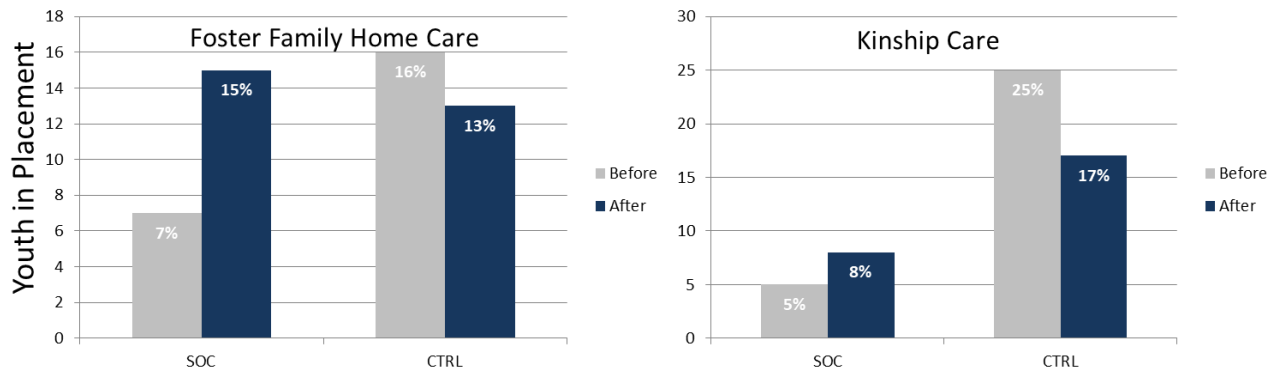


Figure A2. Matched Comparison by Type of Community Based Care. More youth were placed in community based care for Foster Family Home Care and Kinship Care after participation in wraparound compared to the matched controls (N=100:100).

SOC youth showed an increase in the number of youth placed in Foster Family Home Care and Kinship Care compared to the matched controls (Figure A2). Specifically, more SOC youth were placed in Foster Family Home Care after wraparound compared to before. The opposite was found for the matched controls, which showed a reduction in placement to Foster Family Home Care. For Kinship Care, SOC youth also showed a slight increase in the number of youth placed in Kinship Care, whereas the matched controls showed a reduction.

Overall, results for congregate and community based care broken down by type were consistent with the main results. Residential Child Care Facilities and DYS facilities accounted for the majority of youth in congregate care placements. SOC wraparound showed less youth in both of these types of placements. The results for community based care were also similar, with both Foster Family Home Care and Kinship Care showing an increase in community based placements for SOC youth compared to the matched controls which showed a reduction.

Appendix B. Successfully Transitioned

Successful Cases

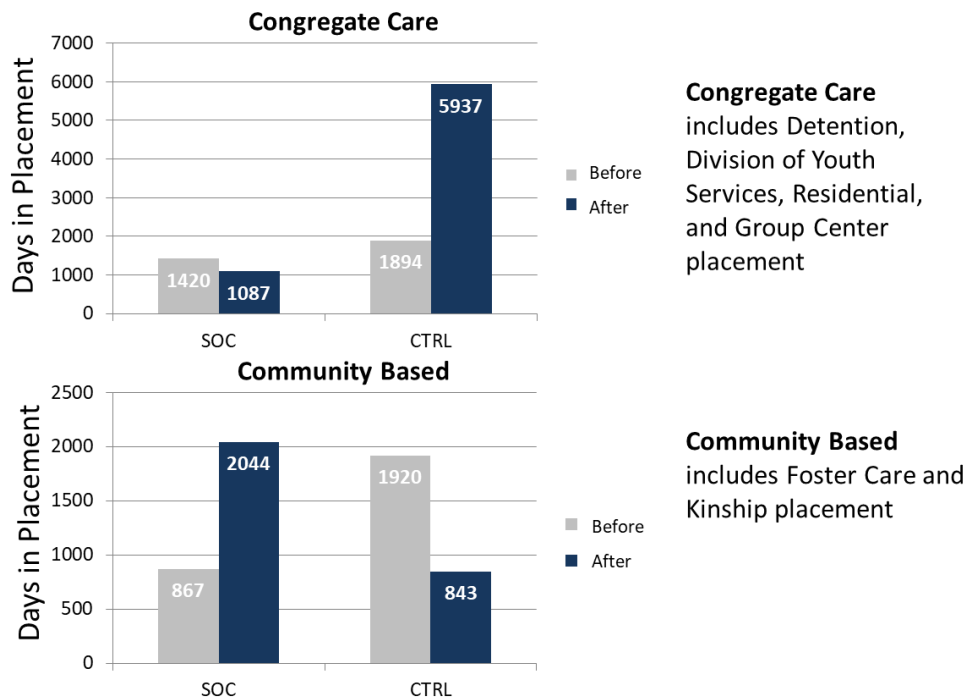


Figure A3. Matched Comparison for Congregate and Community Based Care. SOC youth who successfully transitioned out of wraparound showed a decrease in congregate care compared to controls. SOC youth also showed an increase in the number of days in community based care compared to the matched controls who showed a decrease (N=32:32).

One potential limitation of research on outcomes for youth associated with a program or process is that youth who do not successfully complete the program are often not included in analyses. Although the reasons vary from not having data to methodological issues, this may lead to a potential bias in the sample. To consider this potential bias, the main analyses included youth who successfully completed wraparound as well as youth who did not complete or successfully transition out of wraparound. While this presents the most conservative test, this does not represent outcomes for youth who successfully completed the program and would therefore be expected to have the best outcomes. Figure A3 shows the total number of days in placement for youth who successfully transitioned and their matched controls. For youth who successfully transitioned out of wraparound, there was a decrease in days in placement, while there remained an increase for the matched controls. The results for community based care were similar for the full sample and the sample of successful youth, such that SOC youth showed an increase in community care and decrease for the matched controls.