Regression Analyses

Overall Impact of SUSO Family Engagement

In these first sets of analyses, negative binomial regressions are used to assess the impact of treatment for youth referred to both family engagement and youth participation. This method allows us to explore the impact of SUSO while accounting for other factors that may be important in influencing the outcome. Unfortunately, there were only a few factors that were consistently provided by DCPS which did not have a lot of missing information. These included the gender, grade, and race.[6]As noted in Table 20, 53% of treatment cases are male, 91% of treatment cases are black, and on average treatment youth are in the 3rd grade. Approximately 54% of control youth are male, 88% of control youth are black, and on average control youth are in the 2nd grade.[7] We did find that there are statistically significant differences in the percentage of white youth, black youth, and grade across the treatment and control groups, so it was important to include these factors in our statistical model (referred to as "control variables"). We also added a variable indicating that youth were "clustered" on their assigned CBO, because we believe youth within CBOs are more likely to be similar to one another than youth from another CBO.[8] In addition, youth within a CBO are also receiving a similar set of CBO-specific services.[9]

As an overall assessment of the impact of the family engagement program, negative binomial regressions were used to look at the effect of treatment on attendance over the 2014-2015 school year, specifically looking at the total number of unexcused absences, excused absences, and in-seat attendance.[10] The expectation is that youth referred to the program would experience a reduction in unexcused absences. Additionally, prior SUSO evaluation reports indicated that CBO case managers often facilitate excuse note-writing among families. These efforts arguably may lead to an increase in the number of excused absences. With respect to in-seat attendance,

[6] In addition, overall, there were a substantially smaller number of control group youth (n=492) compared to the number of youth in the treatment group (n=1,800). This was because many of the control group did not have the minimum number of unexcused absences that would have led to a referral if SUSO were present within the control school. While the size of the control group is sufficient for looking at the overall outcomes, it is more of an issue when looking at these outcomes by CBO.
[7] The grade of youth is coded such that: Pre-K (0), Kindergarten (1), 1st Grade (2), 2nd Grade (3), 3rd Grade (4), 4th Grade (5), 5th Grade (6). Hence, an average grade of 3 is actually referring to the 2nd grade.
[8] Another way to frame this idea of youth "clustering" within a CBO is to think by classroom. Youth within a classroom are likely to be more similar to each other than to youth from other classrooms – particularly when one thinks about the comparison of youth from an Advanced Placement (AP) class versus youth in a standard class.
[9] While the SUSO program has a proscribed set of implementation measures by which the CBOs conduct outreach and engagement to the families and youth, the types and intensity of services provided under the umbrella of "case management services" or by the type of youth activity club likely differs by CBO. It is important that the CBOs have this flexibility to appropriately respond to needs of the families and community that they serve.
[10] In-seat attendance is defined as the total number of days a youth is actually present in the school year. It is calculated by subtracting the total number of excused and unexcused absences from the total number of school days in which the youth is enrolled.

it is possible that overall a reduction in the number of unexcused absences leads to an increase in the in-seat attendance; however, if families get better at generating excuse notes, youth may still be as likely to *not* be in school as prior to referral to the SUSO program.

The method of analysis (negative binomial regression) generates estimates that are not intuitively simple to interpret. In order to provide more interpretable results, estimates are converted into average marginal effects. This translates into the average difference in the outcomes compared across treatment and control youth. Note that positive estimates indicate the treatment group experienced an increase in each outcome, whereas negative estimates indicate that the treatment group experienced a decline. (So for this program – which seeks a reduction in unexcused absences, we would want to see estimates that are *negative*). Finally, we include additional control variables in the analysis to account for other factors that could explain the results that we find. (For example, based on the literature, we know that youth are more likely to be truant as they grow older, so we include age in the regression model to account for differences in youth in age).

Table 20: Family Engagement Control Variables

	Treatment Youth (N=1800)		**Control Youth (N=492)**	
	N	*Mean*	*N*	*Mean*
Male	947	.53	268	.54
White	1	.01	13	.03
Black	1639	.91	431	.88
Latino	126	.07	42	.08
Other Race	33	.02	6	.01
Grade	-	2.9	-	2.4
Pre-K	11	.06	131	.26
Kindergarten	490	.27	62	.13
1st Grade	356	.19	71	.14
2nd Grade	317	.17	78	.16
3rd Grade	246	.13	60	.12
4th Grade	241	.13	43	.09
5th Grade	139	.07	47	.10

Treatment vs. Control Group by End of School Year

As revealed in Table 21, net of the control variables (in other words, after taking into account grade, gender, and race), youth referred to SUSO experienced a statistically significant *decrease* in the number of unexcused absences compared to youth in the control group by the end of the school year. Specifically, treatment youth reported approximately 3.52 fewer unexcused

absences (p<.010)[11]. Consistent with the fact that in-seat attendance is defined as the total number of days actually present in school, treatment youth reported nearly 3.54 more days of in-seat attendance (p<.010) than control youth.[12]

Treatment vs. Control Group by End of School Year, By CBO

There may also be differences in the impact of the SUSO program among youth depending on their level of engagement in the program, type of case management services that they received, or by CBO. To try to get at this issue, the next set of analyses examines these same results by CBO. Table 21 also provides the number of treatment and control youth included in these analyses. As can be seen, there are substantially different numbers of control and treatment youth within each CBO. As previously noted, although control youth were requested from DCPS to match the treatment youth, many did not have the minimum number of unexcused absences that would have led to a referral if SUSO were present within the control school. The cases included in the analyses are treatment youth that were eligible for SUSO and control youth that *would have* been referred if they had between 5-9 unexcused absences. Consequently, the results from the regression analyses should be interpreted with caution due to the small samples among control cases. Of note, there are

Again, looking at Table 21, the overall difference in attendance outcomes appears to differ depending on which CBO youth were referred to (or assigned to in the case of control youth). Compared to the control youth, treatment youth in CBO G, CBO C, CBO B, CBO D, CBO E report fewer overall unexcused absences. In contrast, compared to control youth treatment, youth associated with CBO A reported a significantly *higher* number of unexcused absences (~4.1) by the end of the year (p<.01).

Considering the number of excused absences, compared to control youth, only youth referred to CBO E had significantly less overall excused *and* unexcused absences (at p<.10). This suggests that perhaps CBO E may have been more focused on reducing absences in general, with less focus on assisting families with converting unexcused to excused absences through note writing. Consistent with this finding, treatment youth in CBO E reported significantly higher in-seat attendance compared to youth in the control group.

[11] Differences that are statistically significant include a "p-level" indicator (e.g., at p<.001). This notation means that the findings are highly unlikely (e.g., for p<.001 - less than a 1 out of 100 chance or p<.05 less than 5 out of 100 chances) to be the result of chance or coincidence.

[12] Of note, there are N=131 Pre-K youth in the control group for the analytic sample. The family engagement program was intended for K-5th grade youth, however, in some instances CBOs worked with siblings of referred youth or other children residing within a household that may have been a Pre-K youth. This resulted in a number of Pre-K being included in the control group. The analyses presented in this report were run with and without Pre-K youth and the results were substantively the same across both sets of models.

In addition, treatment youth from CBO B also reported significantly higher levels of in-seat attendance. Again, this suggests that the differences in the number of unexcused absences across the SUSO treatment and control youth appear to lead SUSO youth to have higher levels of in-seat attendance.

One possible explanation for these diverse findings may be in differences with how the program was implemented. We discussed these issues at length in the section on process evaluation above, but include a review of each CBO's overall compliance with the SUSO program standards below.

Table 21: Family Engagement - Outcome Estimates Overall and by CBO

			Outcomes		
	Total Number of Youth		Total Number of Unexcused Absences 2014-2015	Total Number of Excused Absences 2014-2015	In-Seat Attendance 2014-2015
	Treatment	*Control*			
Overall estimate of treatment effect	1800	492	-3.52**	-.04	3.54**
By CBO					
CBO A	153	53	4.11**	-1.27	-2.76
CBO G	136	10	-6.50***	3.19	4.58
CBO C	362	19	-2.96†	-2.28	5.17
CBO B	654	96	-2.05*	-.28	2.58†
CBO D	138	44	-4.01**	1.90	2.45
CBO E	178	233	-5.63***	-1.26†	6.41***
CBO F	152	37	-2.25	3.38*	.27

***p<.001, **p<.010, *p<.05, †p<.10

As indicated in the process evaluation section of this report, across CBOs, there were differences in the extent to which each CBOs complied with the SUSO process standards. Table 22 provides a summary of the percentage of cases that met compliance for each standard across all of the CBOs and indicates whether the CBOs observed statistically significant reductions in unexcused and excused absences or statistically significant increases in in-seat attendance.

We also provide the average percentage of compliance with process standards both by CBO (e.g., CBO E on average complied with standards with 63% of referrals; versus CBO F or CBO A, who both complied on average 34% of referrals) and by standard (e.g., across all CBOs, standard #3 was complied with 5% of the time or standard #5 was complied with 77% of the time). Overall, by CBO or by standard, there was an average 41% compliance with the process standards in Year 3 of the SUSO program.

As noted in Table 22 below, in general, CBO A reported a lower percent of compliance for several of the process standards compared to other CBOs. Although this is speculative and certainly may be driven by low sample size, it suggests that compliance with the implementation of the program may explain some of the observed differences.

Interestingly, CBO E reported statistically significant reductions in the number of unexcused (and excused) absences and a significant increase in in-seat attendance. With respect to compliance, CBO E tended to report larger percentages of cases where the process standards were met compared to other CBOs. For example, CBO E met standard #1 of attempting contact with the client within 48 hours in 90% of cases; for standard #2, CBO E completed a face-to-face or phone contact within 10 days of the referral in 53% of their cases, and they also had the highest percentage of cases for standard #3 – 20% of cases where they followed all the contact attempt steps.

Although there is no way to formally test this hypothesis, this information provides some evidence to suggest that fidelity to the implementation of the program model may be driving some of the differences in results across CBOs. Still, there were a number of data quality issues that inhibited our capacity to ascertain if CBOs meet the process standards, including identification of the correct date of referral, duplicate entries of contacts, and general technical issues working with ETO. In addition, these standards do not necessarily capture the *quality* of the programming offered by CBOs. Quality of services would need to be measured differently (e.g., vis-à-vis client satisfaction surveys, client and stakeholder interviews, and/or through observation of services provided).

The next section of this report reviews the SUSO Youth Participation program results.

Table 22: Summary of Compliance with Process Standards by CBO for Family Engagement

CBO	Percent of Cases Where CBO Complied with Process Standard							By CBO – Average % Compliant	Reduction in Unexcused Absences	Change in Excused Absences	Increase in In-seat Attendance
	1	2	3	4	5	6	7				
CBO A	28% 38	23% 32	1.5% 2	98% 134	83% 5	3% 1	0% 0	34%	No	No	No
CBO G	34% 115	35% 119	<1% 2	88% 298	68% 15	13% 2	13% 2	36%	Yes	No	No
CBO C	46% 178	43% 167	2% 9	82% 320	69% 70	7% 5	33% 25	40%	Yes	No	No
CBO B	52% 377	37% 268	3% 20	99% 719	90% 74	3% 1	3% 1	41%	Yes	No	Yes
CBO D	53% 74	38% 53	7% 9	89% 123	69% 9	13% 1	0% 0	38%	Yes	No	No
CBO E	90% 296	53% 175	20% 66	98% 321	82% 68	50% 2	50% 2	63%	Yes	Yes	Yes
CBO F	31% 48	30% 46	2% 3	71% 110	79% 23	11% 1	11% 1	34%	No	Yes (Increase)	No
By Standard -- Average % Compliance	48%	37%	5%	89%	77%	14%	16%	**41%**			

Overall Impact of SUSO Youth Participation

Treatment versus Control Group by End of School Year

The next set of regression analyses focus on the estimated impact of the Youth Participation program. Control variables for youth referred to the SUSO middle school program and control group youth are provided in Table 23 below. Several additional control variables were included in the middle school analyses because there was available data for both treatment and control youth, including CAS Math and Reading scores, and the percentage of youth in special education. In general, there are differences in the demographics across treatment and control youth. There are slightly more male (.52 to .49) treatment youth, and more black treatment youth (.94 to .63) compared to the control group. There are statistically significant differences in the percentage of black, white, Latino, other, and grade across the treatment and control groups. There are also substantially different numbers of eligible treatment and control youth that were included in these analyses. To be eligible for treatment, youth had to have at least 5 unexcused absences at the time of referral.

Again, in order to provide more interpretable results, estimates are converted into average marginal effects. This translates into the average difference in the outcomes compared across treatment and control youth. Note that positive estimates indicate the treatment group experienced an increase each outcome, whereas negative estimates indicate that the treatment group experienced a decline. (So for this program – which seeks a reduction in unexcused absences, we would want to see estimates that are negative).

Table 23: Youth Participation Control Variables

	Treatment Youth (N=582)		**Control Youth (N=276)**	
	N	*Mean*	*N*	*Mean*
Male	300	.52	135	.49
White	2	.01	13	.05
Black	550	.94	174	.63
Latino	20	.03	76	.27
Other Race	10	.01	13	.05
Math Score	582	2.27	276	2.23
Reading Score	582	2.32	276	2.19
Special Education	582	.26	276	.26
Grade	-	6.97	-	7.17
6^{th} Grade	193	.33	70	.25
7^{th} Grade	213	.37	90	.33
8^{th} Grade	176	.30	116	.42

As described in Table 24, treatment youth reported nearly 7.6 *more* unexcused absences ($p<.01$) and 4.2 fewer total in-seat attendance days compared to the control group ($p<.01$). There were no statistically significant differences in the total number of excused absences.

Across CBOs, results are generally consistent with the overall treatment estimate. Treatment youth across each CBO reported a higher number of unexcused absences compared to the control group. In other words, youth referred to SUSO fared worse than youth not referred to SUSO. It is also important to note the magnitude of these estimates differ across CBOs. For example, treatment youth from CBO C experienced nearly 10.5 more unexcused absences compared to control youth.

With respect to excused absences, treatment youth from CBO G, CBO C, and CBO E had significantly less *excused* absences than control youth assigned to these CBOs. Such a finding is not necessarily a positive, as treatment youth from these CBOs generally *also* had significantly less in-seat attendance compared to control youth.

Interpretation of these differences are not unconditionally conclusive, but suggest that there are differences across youth and across CBO in terms of the experience of the treatment and perhaps also differences in the characteristics of the youth themselves. However, due to both the lack of data and the quality of the data entered into ETO for the youth participation program, we were unable to conduct a process analysis for youth participation. Recall there were differences in the extent to which the CBOs complied with the Family Engagement program process standards, thus it seems likely that there would be similar differences in implementation of the Youth Participation program standards.

Another important consideration is that the CBOs were not directly responsible for all of the programming for the Youth Participation Program. Youth were assigned to Youth Service Providers (YSP) where the programs varied in content, duration, and the degree of focus on issues related to truancy.

Finally, it is important to note that schools had a different number and type of available clubs, thus it was not possible to assess differences in treatment and control by YSP because we had no way to decipher the decision process of how youth would be assigned to a particular YSP. In some schools, youth could choose to participate between different YSP programs, in other locations where there was only one program available, youth were assigned. Consequently, there are likely numerous differences between youth who opted into one club or another. Such differences could not be incorporated into the control youth because there is limited capacity to predict, if the program were available to the control group youth, which YSPs would be present in the schools that control youth attend.

Table 24: Youth Participation - Outcome Estimates Overall and by CBO

			Outcomes		
	Total Number of Youth		Total Number of Unexcused Absences 2014-2015	Total Number of Excused Absences 2014-2015	In-Seat Attendance 2014-2015
	Treatment	*Control*			
Overall estimate of treatment effect	582	276	7.63**	-1.32	-4.19**
By CBO					
CBO A	35	58	.64	2.40	-3.24
CBO G	73	144	5.31***	-7.82***	.39
CBO C	2	144	10.48***	-28.98**	-20.80*
CBO B	266	49	10.86***	1.64	-11.33*
CBO D	41	49	6.92***	-1.18	-5.78†
CBO E	69	49	8.70***	-3.61*	-3.81
CBO F	96	25	-2.76†	7.43**	-3.10

***p<.001, **p<.010, *p<.05, †p<.10

In order to try to further control for differences among the treatment and control group, we conducted a quasi-experimental design of creating more equivalent groups through a statistical technical referred to as "propensity score matching". This discussion follows.

Propensity Score Analyses

In any research endeavor, it is preferable to utilize random assignment to the treatment condition, as that is considered the scientific "gold standard". This is because when individuals are assigned to treatment by chance, it can be assumed that variations between those in the comparison and the treatment groups are random and should not influence or bias the outcomes of the study. In many instances random assignment is either not feasible (e.g., in choosing whether to sentence a person to prison or diversion) or is not desirable by the program, so it is possible that those participating in a program that were selected (or self-selected) into the treatment condition were substantially different than those who would be randomly assigned to treatment. One way to overcome this selection bias is to create a comparison group by calculating a propensity score

using logistic regression to estimate the probability that, had this intervention employed random assignment, the individual would have been assigned to the treatment group. Overall, the end result of this analysis is to utilize relevant characteristics to predict a youth's propensity to receive treatment and then assess the effect of treatment on truancy outcomes for respondents who are matched based on those propensity scores.[13]

Several sets of propensity score analyses were used to estimate the impact of the SUSO intervention. The first set of analyses evaluate the effect of treatment on the end-of-year totals of unexcused absences, unexcused absences, and in seat-attendance. Unfortunately, due to the relatively low number of matched cases that emerged within each CBO, we were unable to conduct this analysis by CBO.

Family Engagement & Youth Participation Outcomes

SUSO Outcomes Using Propensity Match

Table 25 presents the propensity score results for the estimated treatment effect for both the family engagement and youth participation programs. As seen in Table 25, youth referred to the family engagement program had significantly less unexcused absences (at a significance level of $p<.05$)[14] and marginally significantly higher levels of in-seat attendance than control youth ($p<.10$). Specifically, treatment youth had roughly 2.01 fewer unexcused absences and nearly 5 more days of in-seat attendance than the control group youth.

Consistent with the regression analysis, youth referred to the Youth Participation Program had significantly *more* unexcused absences and fewer in-seat attendance days than control youth (both at $p<.001$). Specifically, treatment youth had nearly 6.61 more unexcused absences and 6.37 fewer total in-seat attendance days than control youth. There was no statistically significant differences in the number of excused absences.

[13] There were differences in the level of complete data that could be included as variables in in the matching process therefore, the relevant characteristics used to estimate propensity scores differ across the programs. For family engagement, matching was based on gender, grade, race, ward, number of days enrolled, and the assigned CBO. For youth participation, matching was based on gender, grade, race, ward, number of days enrolled, assigned CBO, math score, reading score, and special education status.

[14] At $p<.05$ there is less than a 5 out of 100 chance that this finding is the result of chance or coincidence.

Table 25: FE & YP Program Outcomes Using Propensity Match

	Outcomes		
	Total Number of Unexcused Absences 2014-2015	Total Number of Excused Absences 2014-2015	In-seat Attendance 2014-2015
Estimate of treatment effect for Family Engagement (N=2,297)	-2.01*	-.19	4.47†
Estimate of treatment effect for Youth Participation (N=858)	6.61***	-1.09	-6.37***

***p<.001, **p<.010, *p<.05, †p<.10

SUSO Outcomes Using Propensity Match By Referral Quarter

It is important to note that there are limitations with the prior regression and propensity models. One key limitation is that there is no consideration of the *timing* of referral. For example, if a youth is referred in the first quarter, there is more time for the potential benefits of the treatment to be experienced by the youth.[15] In contrast, a youth referred in the fourth quarter has less time to experience the benefits of treatment. These differences in timing likely impact the extent to which there would be differences in the total number of unexcused absences or excused absences. For this reason, the next set of propensity score analyses identifies the quarter in which the treatment youth were referred and then looks at whether the change in unexcused absences in subsequent quarters were reduced. For example, if a youth was referred in the first quarter and had 8 unexcused absences at intake and then in the second quarter this youth had 4 unexcused absences, this would be coded as a reduction in truancy. In order to identify a comparable set of control youth, only those youth that had between 5-10 unexcused absences in a given referral quarter were selected to be included in the analyses. This ensures that these control youth were among the most likely to be referred *if* SUSO programming had been implemented in their schools. The outcome variable is coded as 1 for an increase in unexcused absences and 0 if youth reported a reduction or no change in unexcused absences.

As observed in Table 26, the estimated effect of treatment conditional on when youth were referred to the family engagement program generally indicates that treatment youth experienced less positive outcomes on a quarter-by-quarter basis compared to youth in the control group. For instance, more treatment youth compared to matched control youth who were referred in the 2nd quarter experienced an increase in the number of unexcused absences by the 4th quarter. Specifically, 29% more treatment youth referred in the 2nd quarter experienced an increase in the number of unexcused absences by the 4th quarter compared to the control group. These results

[15] Or conversely, more time for the youth to accrue absences from school.

tend to indicate that youth referred to the family engagement program experienced more negative attendance outcomes across quarters, however, there are a few caveats worth mentioning. First, we know that not all youth were engaged into the program and received the full extent of CBO services. Due to the small sample sizes, it is not feasible to assess the extent to which those youth that were fully engaged experienced different results; however, we would expect that those youth who received a higher dosage of services would be more likely to reduce their unexcused absences.

Further, one of the challenges in this type of analysis (for both the family and youth program) is identifying when a control youth *would* have been referred had their school been part of the SUSO intervention. To do so, we identified the number of unexcused absences each control youth had in a given quarter to determine whether they would have met the threshold for eligibility. For instance, if a control youth had between 5-9 unexcused absences during the 1st quarter we assumed that they would have been referred to SUSO during the 1st quarter had the intervention been offered in their school. This assumption could bias the results *against* the treatment youth because of the nature of how and when attendance data are provided by DCPS. In order to identify the timing of referral for control youth, we include control youth that meet the eligibility requirements (i.e., between 5 and 9 unexcused absences), which restricts the sample of control youth for a given quarter. This is because eligibility for treatment youth may be identified anytime during the quarter (beginning, middle or end) and youth receive services or notes assistance *prior* to the time point that we are using to identify 'eligible' control youth. This sets up a scenario where treatment youth potentially have substantially different numbers of unexcused absences from our comparison youth.

For instance, if a treatment youth was identified as eligible midway through the quarter because they had 6 unexcused absences, but by end of the quarter, three of those unexcused absences were converted into excused absences or were discrepancies that were cleared up with the attendance counselor as a result of involvement with SUSO. In this example, at the end of the first quarter, this treatment youth now has 3 unexcused absences, but the eligible matched control youth has 6 unexcused absences.

Keeping in mind that when attendance data outcomes are calculated, we are looking for the degree of *change* among all of those in the SUSO program compared to the control group. So when comparing the change in unexcused absences between the 1st quarter and 2nd quarter, the treatment youth now has *less* room to have fewer than 3 unexcused absences (they can only possibly reduce their absences by 3, 2, 1 or 0) compared to the control youth who has *more* room to have fewer than 6 unexcused absences (they could reduce their absences by 6, 5, 4, 3, 2, 1 or 0). This would suggest that control youth are *more* likely to experience a reduction in unexcused absences and thus this would contribute to results being more consistently favorable to the control group in a quarterly analysis of attendance outcomes.

Additionally, prior reports suggest that the timing of youth and families becoming engaged into the SUSO intervention does not always occur within the timing outlined by the process standards. This likely introduces substantial variation as to when CBO outreach and/or services began and end. As a result, using end-of-quarter totals of unexcused absences as a point of reference to compare changes in attendance outcomes presents challenges in the interpretability of the findings.

Nonetheless, when we examine the estimated effect of treatment for the youth program, we see similar results emerge. Treatment youth referred to SUSO experienced significantly more unexcused absences on a quarter-by-quarter basis compared to control youth. For instance, more treatment youth referred in the 2nd quarter compared to matched control youth experienced an increase in the number of unexcused absences by the 4th quarter. Specifically, 24% of treatment youth referred in the 2nd quarter experienced an increase in the number of unexcused absences by the 4th quarter. These results indicate that there seems to be consistently worse attendance outcomes across quarters when comparing treatment youth to a matched sample of control youth. It would be ideal to have information on youth attendance within-clubs, however, due to the challenges associated with club-attendance data entry in ETO this information is not complete and unreliable. Alternatively, some evidence suggests that there are negative consequences to mixing high and low-risk youth in the same intervention because it may lead to reinforcement of problem behaviors and exposure to additional risk factors (e.g., Dishion, McCord, & Poulin, 1999[16]).

[16]Available: http://www.unc.edu/~gsmunc/JoanMcCord/When%20IntervHarm1999.pdf

Table 26: FE & YP Program Outcomes Using Propensity Match by Referral Quarter

	Outcomes					
	Referred in Q1			Referred in Q2		Referred in Q3
	Change in Unexcused Absences from Q1-Q2	Change in Unexcused Absences from Q1-Q3	Change in Unexcused Absences from Q1-Q4	Change in Unexcused Absences from Q2-Q3	Change in Unexcused Absences from Q2-Q4	Change in Unexcused Absences from Q3-Q4
Estimate of treatment effect for Family Engagement	.04 (.09)	.23 (.10)	.39 (.07)***	.18 (.07)**	.29 (.08)***	.31 (.04)***
Estimate of treatment effect for Youth Participation	.063 (.09)	.28 (.09)***	.30 (.09)***	.20 (.07)**	.24 (.06)***	.40 (.04)***

SUSO Outcomes Using Propensity Match Year to Year by Quarter

An alternative approach to considering the impact of treatment would be to evaluate the extent to which youth referred in Year 3 differ across the number of unexcused absences from their prior year. This essentially uses a youth's information in a prior year as reference point to compare to the youth's current attendance outcomes. The next set of analyses uses propensity score matching to observe whether or not treatment and control group differ across the number of unexcused absences in each quarter of the school year compared to the prior school year quarter, conditional on the quarter that they were referred to SUSO. For example, if a youth was referred in the first quarter, the analyses will compare the number of unexcused absences between the first quarter of year 3 to the first quarter of year 2, second quarter of year 3 to the second quarter of year 2, etc. The analyses explicitly compare the extent to which treatment and control youth differ in attendance outcomes across years on a quarter-by-quarter basis.

If the treatment estimate is a negative number, this indicates that treatment youth in year 3 had a smaller number of unexcused absences in any given quarter compared to control youth. This approach should be viewed with some caution as there may have been other systematic differences in the control and treatment group that occurred in the prior year that we simply do not have any information on. For example, if treatment or control youth were part of SUSO or some other type of school-based intervention in the prior year this would lead to a potentially biased (or inaccurate) estimate of differences in attendance outcomes.

As observed in Table 27 for the Family Engagement program there is some evidence indicating that treatment youth had a reduction in the number of unexcused absences across year 3 and year 2 conditional on the quarter that they were referred to SUSO. In general then, treatment youth experienced significant declines in the number of unexcused absences across years compared to youth matched by propensity score that were not referred to SUSO. A cautious interpretation of these findings would suggest that during the year of participation in SUSO, youth referred to SUSO experienced fewer unexcused absences compared to the prior year relative to matched control youth not referred to SUSO.[17]

Looking the YP outcomes for youth referred in the 4th Quarter, we note that treatment youth compared to control youth had 10 fewer unexcused absences in the 4th Quarter in Year 3 compared to the 4th Quarter in Year 2. The magnitude of this finding should be viewed with some caution. There were only 66 treatment youth and 27 control youth in this analysis raising concerns over whether there is a large enough sample to generate a reliable result. Additionally, this analysis does not discern whether treatment youth were actively engaged or exposed to

[17] Of note, it is possible some treatment youth may have been involved with SUSO in the prior year. Thus, for some youth the comparison across years (and quarters) does not adequately capture the difference between a quarter in Year 3 when the youth was involved in SUSO and a quarter in Year 2 when the youth was *not* involved in SUSO.

youth activity clubs and therefore we cannot necessarily attribute the result entirely to the YP program. Because we cannot ascertain whether the observed findings persist in subsequent quarters (i.e., there are no additional quarters after the 4th Quarter), this large difference should not be treated as a definitive statement on the impact of SUSO.

Reviewing the results for the Youth Participation Program, the general pattern that emerges is that across years, treatment youth generally experienced a statistically significant increase in the number of unexcused absences in the periods examined. This suggests that conditional on the timing of the referral to SUSO in year 3, treatment youth had relatively worse attendance while engaged in the Youth Participation program than in the prior year when compared to a matched sample of control youth. Although this could be a reflection of the fact that attendance generally worsens with age, the sample of treatment youth were matched to a control sample based on grade of the youth. This should reduce the risk that the observed difference is due to the changes in attendance driven by age.

Table 27: FE & YP Program – Year to Year Outcomes by Referral Quarter

	Outcomes									
	Referred In Q1 in Year 3				Referred in Q2 in Year 3			Referred in Q3 in Year 3		Referred in Q4 in Year 3
	Difference in Q1 Unexcused Absences	Difference in Q2 Unexcused Absences	Difference in Q3 Unexcused Absences	Difference in Q4 Unexcused Absences	Difference in Q2 Unexcused Absences	Difference in Q3 Unexcused Absences	Difference in Q4 Unexcused Absences	Difference in Q3 Unexcused Absences	Difference in Q4 Unexcused Absences	Difference in Q4 Unexcused Absences
Estimate of treatment effect for Family Engagement	-2.60***	-3.01***	-1.08	-.43	-2.60***	-.82	-1.41*	-1.97†	-1.45**	-4.39***
Estimate of treatment effect for Youth Participation	3.03***	2.46*	3.85***	2.02	-.19	2.47***	.95	-1.93***	1.23**	-10.84†

***p<.001, **p<.010, *p<.05, †p<.10

DCPS Comparison to Charter School Outcomes

The above outcome analyses only pertain to youth referred to SUSO from DCPS. Although Charter Schools were involved in SUSO, CRA did not receive a comparison group for these youth. This restricts our ability to analyze the estimated treatment effect for charter youth compared to a control group. Still, it is possible to compare the relationship between the SUSO intervention and attendance outcomes across treatment youth from DCPS and Charter Schools for youth referred to the family engagement program and the youth participation program.

First, we separated out information about the referrals for youth attending charter schools to the family engagement program and youth participation program will be provided. Table 28 thru Table 31 provide characteristics about Charter School referrals for Family Engagement. After including those referrals that were eligible for the FE program, 214 youth were identified as Charter School youth. Eligible Charter School referrals were associated with CBO A, CBO C, CBO E, and CBO G.

Table 28: Charter School Referrals for Family Engagement by CBO

CBO	Number of Referrals	Percent of All Referrals
CBO A	2	1%
CBO C	49	23%
CBO E	19	8%
CBO G	144	67%
Total	214	100%

As seen in Table 29 among the 214 eligible referrals, 1% were still actively trying to be engaged, 7% were engaged into the family engagement program, 35% had no contact, 36% refused to participate, 10% of referrals were closed, and 12% of referrals received notes assistance.

Among the cases that were closed, 77 were closed because the families or youth refused to participate. Table 30 provides the breakdown of reasons for their refusal. The primary reason were the parent or child indicated that they were too busy or not interested (45 or 21%), followed by parents stating they sent notes to the school (15 or 7%).

Table 29: Status of Referrals by CBO at last Update for Family Engagement

CBO	Active Referral Still Attempting to Engage	Engaged in the Program	No Contact	Refused	Referral Closed	Notes Assistance	Total
CBO A	0 (0%)	1 (50%)	1 (50%)	0 (0%)	0 (0%)	0 (0%)	**2**
CBO C	0 (0%)	5 (10%)	5 (10%)	38 (78%)	0 (0%)	1 (0%)	**49**
CBO E	0 (0%)	0 (0%)	12 (63%)	5 (26%)	2 (11%)	0 (0%)	**19**
CBO G	2 (1%)	9 (6%)	57 (40%)	33 (23%)	19 13%	24 (17%)	**144**
Total	**2 (1%)**	**15 (7%)**	**75 (35%)**	**76 (36%)**	**21 (10%)**	**25 (12%)**	**214**

Table 30: Reasons Refused to Participate for Family Engagement, By CBO

CBO	Parent Sent Notes to School	Parent or Child Not Interested or Too Busy	Parent Doesn't Want Agency Involvement	The Child is not truant	Child has or will Transfer	Parent Promises to not miss any more days	Child has illness	Other	Total
CBO A	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	**0**
CBO C	10 (100%)	17 (30%)	4 (7%)	2 (3%)	1 (2%)	1 (2%)	7 (12%)	0 (0%)	**43**
CBO E	0 (0%)	5 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	**5**
CBO G	6 (4%)	25 (17%)	1 (1%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	**33**
Total	**15 (7%)**	**45 (21%)**	**5 (2%)**	**3 (1%)**	**1 (<1%)**	**1 (<1%)**	**6 (3%)**	**1 (<1%)**	**77**

As noted above, among the 214 eligible referrals, approximately a third refused to participate. However, among those where the notes and data indicate the referral was closed there were a myriad of reasons for those closures. Note that while there are only 21 youth classified as closed in Table 29 above, in actuality, 125 referrals have been closed since the start of the school year (see Table 31). The reason for this discrepancy (125 vs. 21) is that even if the referral was "closed", if the youth had engaged in the program that is counted as an "engagement" – regardless of whether they stopped participating.[18] Also, if the CBO indicated the status as "no contact" (or the referral was classified as such based on the case notes), then we wanted to specify the case status (no contact) rather than as "closed" in the table.

Most CBOs close out their cases because there was no response from the family or youth (approximately 34% of cases). The next largest reason for case closure is driven by the fact that truancy issues are marked as resolved by the parent (12%).

[18] Of note, 12 youth were missing information on reasons that the referral was closed other than refusal.

Table 31: Reasons Youth Participation Referral Closed for Family Engagement, by CBO

CBO	No Contact Information	No Response	Referral Withdrawn	Referred to CFSA	Completed Program	Stopped Participating Before Completion	No Consent from Parents	Youth Behavioral Issues	Truancy Issues Resolved by Parent	Other	Total Cases Closed
CBO A	0 (0%)	1 (50%)	0 (0%)	0 (0%)	0 (0%)	1 (50%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	**2**
CBO C	0 (0%)	5 (72%)	0 (0%)	0 (0%)	0 (0%)	1 (14%)	0 (0%)	0 (0%)	1 (14%)	0 (0%)	**7**
CBO E	0 (0%)	12 (92%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (8%)	**13**
CBO G	1 (<1%)	55 (53%)	0 (0%)	5 (5%)	4 (4%)	4 (4%)	0 (0%)	0 (0%)	24 (23%)	10 (10%)	**103**
Total	**1 (<1%)**	**73 (34%)**	**0 (0%)**	**5 (2%)**	**4 (2%)**	**6 (3%)**	**0 (0%)**	**0 (0%)**	**25 (12%)**	**11 (5%)**	**125**

Youth Participation Charter School Referrals

Table 32 thru Table 34 provide information about the status of referrals made to the youth participation program from Charter Schools. As can be seen in Table 32, 45 eligible referrals were made to the youth program across CBO A, CBO D, CBO E, and CBO G.

Table 32: Charter School Referrals for Youth Participation, by CBO

CBO	Number of Referrals	Percent of All Referrals
CBO A	1	2%
CBO C	4	9%
CBO E	12	27%
CBO G	28	62%
Total	45	100%

The next step in the analysis was to observe the number of youth, among eligible referrals to the CBOs, were then linked to a Youth Service Provider for participation in a youth club. Table 33 and Table 34 below provide details on the CBOs referrals to the clubs and the current status of the referral, by club, based on data entered into ETO.

Of the 45 youth referred to SUSO and were eligible Charter School participate, 19 (or 42%) were referred to one or more of the Youth Service Providers. Of those youth, they received from 1 to 2 referrals to a club, with an average number of referrals of .60 clubs, for a total of 27 referrals. As evidenced in Table 33, among the 19 youth who were referred to one or more clubs, most were referred to Jouons Soccer and MCSR WISE. It's important to note that there are extremely small sample sizes due to the lack of eligible referrals and potentially missing data for the youth participation program.

Looking at Table 34, we see that 0 youth declined to participate in the programs. Of the remaining referrals to the youth service providers, 18 out of 27 (67%) were successfully engaged into the club and 9 out of 27 (33%) were only information sessions.

Table 33: Referrals to Youth Clubs, by CBO

CBO	Atlas Fitness	Jouons Soccer	Georgetown Mentoring	Mentoring Through Athletics	Music Production	MCSR MOST	MCSR WISE	Total
CBO A	0	0	0	0	0	0	0	**0**
CBO D	3	0	0	0	0	2	1	**6**
CBO E	0	5	0	0	0	3	5	**13**
CBO G	0	4	0	0	4	0	0	**8**
Total	**3**	**9**	**0**	**0**	**4**	**5**	**6**	**27**

Table 34: Referral Status in Youth Clubs

Club	Youth Declined	Information Session Only (2)	Engaged Into Club	Total
Atlas Fitness	0	0	3	**3**
Jouons Soccer	0	3	6	**9**
Georgetown Mentoring	0	0	0	**0**
Mentoring Through Athletics	0	0	0	**0**
Music Production	0	0	4	**4**
MCSR MOST	0	1	4	**5**
MCSR WISE	0	5	1	**6**
Total	**0**	**9**	**18**	**27**

Differences in Attendance Outcomes Between Charter School and DCPS Treatment Youth

In order to evaluate whether DCPS youth or Charter school youth experienced different attendance outcomes due to SUSO, a quarter by quarter analysis was conducted in order to account for the timing of referrals. Youth who experienced a reduction or no change in the number of unexcused absences subsequent to the quarter they were referred were coded as a 1, whereas an increase in the number of unexcused absences were coded as 0. A series of t-tests (or differences in means) were conducted to determine whether there were statistically significant differences in the outcomes across DCPS and Charter School treatment youth.

Positive t-test values indicate that the proportion of DCPS treatment youth who reported a reduction in the number of unexcused absences was larger than that of DCPS treatment youth. Table 35 provides some descriptive information about DCPS and Charter School youth who are included in the analyses below. Of note, these only include youth referred in quarters 1, 2, and 3 because we are unable to assess change in attendance outcomes in the 4th quarter because there are no subsequent quarters to assess the change in unexcused absences. There are statistically significant differences in the percentage of white, black, Latino, and grade level across DCPS and Charter School youth.

Table 35: Descriptive Statistics for DCPS and Charter School Youth

	DCPS Youth (N=1603)		**Charter School Youth (N=228)**	
	N	*Mean*	*N*	*Mean*
Male[19]	842	.53	-	-
White	1	.10	8	3.50
Black	1448	90.30	170	74.60
Latino	116	7.20	42	18.40
Other Race	38	2.40	2	.9
Grade	-	1.91	-	2.00
Pre-K	12	.70	-	-
Kindergarten	460	28.70	51	22.40
1st Grade	315	19.70	55	24.10
2nd Grade	286	17.80	41	18.10
3rd Grade	212	13.20	35	15.40
4th Grade	205	12.80	14	6.10
5th Grade	113	7.00	32	14.0

[19]CRA did not request information on gender from the Charter School.

Table 36 provides descriptive information on the proportion of youth that experienced a reduction in the number of unexcused absences across each quarter for family engagement. For example, approximately 50% of DCPS youth referred in the 2nd Quarter experienced a reduction or no change in the number of unexcused absences by the 3d Quarter, whereas 44% of Charter School youth experienced a reduction or no change.

Among youth referred in the first quarter, a larger portion of Charter School youth experienced reductions or no change in truancy compared to DCPS youth at a significance value of $p<.01$. This difference may be largely due to the fact that there was a small sample of size (N=11) of referred youth from Charter Schools during the first quarter. Additionally, among youth referred in the third quarter, a larger portion of Charter School youth experienced reductions or no change in truancy compared to DCPS youth at a significance value of $p<.05$. It is difficult to make definitive conclusions on the impact of treatment across DCPS and Charter School youth, however, it appears that the program had a generally similar impact across these two sets of youth.

Table 36: FE - DCPS vs. Charter Proportion with Reduction in Unexcused Absences by Referral Quarter

	Outcome					
	Referred in Q1 (DCPS, N=214; Charter, N=11)			Referred in Q2 (DCPS, N=686; Charter, N=66)		Referred in Q3 (DCPS, N=672; Charter, N=142)
	Change in Unexcused Absences from Q1-Q2	Change in Unexcused Absences from Q1-Q3	Change in Unexcused Absences from Q1-Q4	Change in Unexcused Absences from Q2-Q3	Change in Unexcused Absences from Q2-Q4	Change in Unexcused Absences from Q3-Q4
DCPS Treatment Youth	.58	.53	.42	.50	.65	.51
Charter School Treatment Youth	.73	.45	.09	.50	.72	.63
Difference in Proportion of Charter School and DCPS Youth that Report Change in Unexcused Absences	.15	-.08	-.32	-.00	.07	.12
T-Test of Difference in Change in Unexcused Absences	1.02	-.48	-3.38**	-.211	1.16	2.71**

***p<.001, **p<.010, *p<.05, †p<.10

Table 37 provides descriptive information on the proportion of youth that experienced a reduction in the number of unexcused absences across each quarter for the Youth Participation Program. For instance, approximately 60% of DCPS youth referred in the 2nd Quarter experienced a reduction or no change in the number of unexcused absences by the 3rd Quarter, whereas 33% of Charter School treatment youth experienced a reduction or no change.

There were only marginally significant differences in the proportion of DCPS and Charter school youth that experienced a reduction/no change in the number of unexcused absences in two instances – for those referred in the 1st Quarter (Q1 to Q2) and those referred in the 3rd Quarter (Q3 to Q4); however, the differences were in the opposite direction. In the 1st Quarter, more Charter School treatment youth reported reductions or no change in the number of unexcused absences between the 1st and 2nd Quarter compared to DCPS treatment youth ($p<.10$). In the 3rd Quarter, more DCPS treatment youth reported reductions or no change in the number of unexcused absences between the 3rd and 4th Quarter compared to Charter School youth ($p<.10$).

Despite these contrasting findings, it seems to be that a larger proportion of DCPS youth tended to experience reductions/no change in the number of unexcused absences compared to Charter School youth across the school year. Still, these differences may be driven by the small sample size in Charter School youth, but also could reflect the fact that different Youth Service Providers (YSPs) could be in DCPS and Charter Schools. This will be further explored in the discussion of the results.

Table 37: YP - DCPS vs. Charter Proportion with Reduction in Unexcused Absences by Referral Quarter

	Outcome					
	Referred in Q1 (DCPS, N=127; Charter, N=16)			Referred in Q2 (DCPS, N=283; Charter, N=9)		Referred in Q3 (DCPS, N=672; Charter, N=139)
	Change in Unexcused Absences from Q1-Q2	Change in Unexcused Absences from Q1-Q3	Change in Unexcused Absences from Q1-Q4	Change in Unexcused Absences from Q2-Q3	Change in Unexcused Absences from Q2-Q4	Change in Unexcused Absences from Q3-Q4
DCPS Treatment Youth	.606	.568	.460	.601	.673	.589
Charter School Treatment Youth	.813	.689	.438	.333	.444	.375
Difference in Proportion of Charter School and DCPS Youth that Report Change in Unexcused Absences by Ref Quarter	.207	.121	-.022	-.268	-.229	-.214
T-Test of Difference in Change in Unexcused Absences	1.878†	.936	-.163	-1.580	-1.282	-1.646†

***p<.001, **p<.010, *p<.05, †p<.10

Summary and Discussion of Results

In total, multiple analytic strategies were used to understand the impact of the SUSO interventions on attendance outcomes. Each strategy comes with its own set of benefits and limitations, however, it seems that there is some consistency in the findings that enable a few general conclusions to be drawn. Figure 3 provides a summary of the finding across the analytic strategies, with a particular emphasis on the end of year of outcomes. In particular, if treatment youth reported a significantly larger number of unexcused absences, excused absences, or in-seat attendance, this finding is marked with a "+" symbol. In contrast, reductions in unexcused absences, excused absences, and in-seat attendance are marked with a "–" symbol. Non-significant findings are marked by a "~" symbol.

Figure 3: Summary of Analyses by Family Engagement and Youth Participation

Method	Family Engagement	Youth Participation
Negative Binomial Regression Models		
EOY Unexcused Absences	−	+
EOY Excused Absences	~	~
EOY In-seat Attendance	+	−
Propensity Score Analyses		
EOY Unexcused Absences	−	+
EOY Excused Absences	~	~
EOY In-seat Attendance	+	−

- Treatment Group had significant decrease in unexcused, excused, or in-seat attendance
+ Treatment Group had significant increase in unexcused, excused, or in-seat attendance
~ No Significant difference between treatment and control group.

With respect to the Family Engagement program, both the negative binomial regression and propensity score matching analyses indicated that for year-end outcomes, treatment youth reported significantly fewer unexcused absences and more in-seat attendance. This effect was observed across all CBOs except for CBO A. Once the timing of referral was accounted for in the propensity score analyses, there were generally either no observed differences or significantly negative effects of the impact of the Family Engagement program for treatment youth when compared to a control group. Because the timing of referral throughout the year captures both the length of time that youth could have experienced the SUSO program (and its benefits), these analyses attempt to provide a more methodologically rigorous set of findings. Still, as mentioned previously, as we needed to identify a proxy for referral timing among control youth, it was necessary to determine their eligibility as a control group case based on

end-of-quarter attendance records (e.g., had between 5 and 9 unexcused absences at the end the quarter, unlike the treatment group who could have been referred at any point in the quarter once they reached the required number of unexcused absences[20]). In doing so, this leads to a potentially less precise set of results that should be viewed cautiously.

A substantively different set of findings emerge for the youth participation program. For both the negative binomial regression and propensity score matching analyses, compared to control youth treatment youth reported significantly more unexcused absences and less in-seat attendance. Treatment youth from CBO F were the only ones to report a reduction in the number of unexcused absences compared to control youth. Once accounting for the timing of referral, treatment youth reported significantly worse attendance outcomes (i.e., number of unexcused absences) on a quarter-by-quarter basis. These negative outcomes suggest that youth who were referred to the youth participation program experienced increases in unexcused absences that are counter to the expected impact of the program. Still, there are a number of limitations that should be made before making such a firm conclusion against the impact of this program and the positive benefits observed for the family engagement program.

Limitations

Control Group

The findings of these analyses are largely contingent upon the quality of the control group that were provided by DCPS. If there are important differences in the control group youth (i.e., control group youth are less prone to be absent or would have never been referred to SUSO), then the results of these analyses are biased against treatment youth. There is some evidence to suggest that this is the case. First, it was clear that there were a substantially lower number of control youth were eligible to be included in the quarter by quarter analyses because they did not meet the criteria for referral to the FE or YP programs. For family engagement, of the 2,639 control youth provided by DCPS, 2,147 (~81%) were determined to be ineligible because they did have between 5 and 9 unexcused absences in any one quarter, (although they may have accrued that 5 to 9 absences over the course of the year). Similarly, for youth participation, of the 1,124 controls provided by DCPS, 829 were ineligible for referral to the program (74%) because they did not have 5+ unexcused absences in a single quarter. (To be clear, some of treatment youth themselves may have been deemed ineligible after review of their eligibility status if we had based their eligibility on reaching 5 to 9 unexcused absences in a single quarter.) Nonetheless, there are issues with comparability of the control group to the treatment group.[21]

[20] This potential bias is discussed more in depth in the "SUSO Outcomes Using Propensity Match by Referral Quarter" section of this report.

[21] This discussion is in no way intended to suggest that DCPS failed to provide good data. We believe that this situation is largely the result of two factors. First, control youth were chosen from schools did not have SUSO – see next section below for more information on this subject. Secondly, CRA agreed with the DCPS strategy to conduct their propensity match based on any youth who reached the tipping point of 5 unexcused absences at *any*