Evaluation of the Check and Connect Program in Surrey Schools

March, 2022

Surrey Schools
LEADERSHIP IN LEARNING

SD 36 | Research & Evaluation Department

A MESSAGE FROM SURREY SCHOOLS

Surrey Schools is located on the traditional, ancestral, and unceded territory of the Katzie, Kwan-tlen, Semiahmoo and other Coast Salish Peoples. It is B.C.'s largest school district where close to 12,000 employees serve almost 75,000 children in our diverse multicultural city. We have over 130 educational sites from early learning to adult education.

The District is committed to continuous improvement and success of all students through implementation of evidence-informed practices that enhance student learning, inclusivity and equity of outcomes. We welcome and honour diversity while supporting students' holistic growth —mind, body and heart—a commitment captured in our welcome video, Éy swayel / Bienvenue / Welcome to Surrey Schools.

Click to watch our welcome video, **Éy swayel / Bienvenue / Welcome to Surrey Schools**.

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OVERVIEW OF THE CHECK AND CONNECT PROGRAM

The **Check and Connect© Program** (hereafter the **C&C Program**) is a comprehensive intervention used with K-12 students who show warning signs of disengagement with school and who are at risk of dropping out. At the core of the **C&C Program** is a trusting relationship between the student and a caring, trained mentor who both advocates for and challenges the student to keep education salient. Program referrals are made when students show warning signs of disengaging from school, increased absenteeism, behavioural issues, and/or low grades.

PURPOSE OF THE CHECK AND CONNECT PROGRAM

The purpose of the **C&C Program** is to foster school completion with academic and social competence. The program is comprised of four primary components:

1. A mentor who works with students and families for a minimum of two years;

2. Regular checks, utilizing data schools already collect on students' school adjustment, behavior, and educational progress;

3. Timely interventions, driven by data, to re-establish and maintain the student's connection to school and learning and to enhance the student's social and academic competencies; and

4. Engagement with families.

Check: The systematic monitoring of alterable student performance variables.

Connect: The personalized and timely intervention focused on problem solving, skill building, and competence enhancement between a mentor, student, and family.

METHODOLOGY

To better understand the impacts of these programs and services, a Utilization-Focused Evaluation (U-FE) approach was implemented due to the participatory processes it involves.[1] The U-FE approach begins with the premise that evaluations should be judged by their utility and actual use. Therefore, in facilitating any evaluative project, the evaluators need to put careful consideration into how everything from beginning to end may affect the use of the findings.

U-FE concentrates on intended use by intended evaluation users. U-FE is a participatory evaluation approach that has been shown to promote follow up to evaluation recommendations with users (i.e., people with a direct, identifiable stake in the evaluation) becoming active participants in the evaluation process.

DATA COLLECTION AND CLEANING

As part of a project-initiation meeting, the Research and Evaluation Department was provided raw **C&C Program** data of 73 students, including program start date, school name, and attendance recorded by **C&C Program** mentors.

Attendance records were extracted from MyEd BC, including ten months of pre-enrollment attendance data, as well as attendance data during **C&C Program** enrollment until the end of the 2020/2021 school year (June) were extracted. Absence data were categorized by four types:

1. Excused-Absent
2. Excused-Late and Dismissed
3. Unexcused-Absent
4. Unexcused-Late and Dismissed

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[1] Patton, M.Q. (2002). Utilization-Focused Evaluation (U-FE) Checklist. Accessed at:
http://www.idrc.ca/uploads/user-S/10905198311Utilization_Focused_Evaluation.pdf

Some absence records were incomplete or inconsistent with absence codes, absence reasons, and the number of blocks in a school day. For example, some codes did not accurately represent a student's absence status or were contradictory, such as *AL* (Absence-Late), *AL-E* (Absence-Late-Excused), *AD* (Absent-Dismissed), and *AD-E* (Absent-Dismissed-Excused).

Inconsistencies that were identified were related to some codes of *A*, which indicated an unexcused absence, but was followed by a note that the student's absence was "Parent Excused". Codes were corrected based on the absence reasons entered into MyEd BC and matched students' daily number of blocks for the student's school on file.

Instances of absence rates exceeding 100% on some days were identified and were attributed to some blocks in a student's schedule being split into two blocks and being double counted. To clean the data, students' daily schedules were extracted from MyEd BC to determine the actual absence rates on those days.

METHODS OF DATA ANALYSIS

CONDUCTING PRELIMINARY ANALYSES

Students' monthly absence rates were calculated from the number of absent days and the number of school days for the corresponding month. As part of the data cleaning process, the total number of school days were identified and any days in which students were not in attendance were removed (e.g., holidays, professional development days, etc.).

The monthly average absence rates of the entire **C&C Program** were calculated by weighting each student's monthly absence rate with the corresponding number of school days. The average absence rates before and during the enrollment were compared to evaluate the effects of the **C&C Program** on students' attendance.

ASSIGNING STUDENTS TO PRE-ENROLLMENT ABSENCE RATE GROUPS

Due to the variation of students' pre-enrollment absence rates, students were assigned to one of four **Pre-Enrollment Absence Rate Groups**:

1. High Absenteeism Group: Pre-enrollment absence rate exceeds 20%.

2. Moderate-to-High Absenteeism Group: Pre-enrollment absence rate exceeds 15% (see Appendix A).

3. Target Population Group: Pre-enrollment absence rate is in the range 7.5% – 15%.

4. Low Absenteeism Group: Pre-enrollment absence rate is below 7.5%.

ANALYZING ABSENCE RATES BY PRE-ENROLLMENT TIMELINE

Three **Pre-Enrollment Timelines** were applied to evaluate students' pre-enrollment absence rates.

1. One Month Prior to Enrollment: Only looking at the absence rate of the month leading up to program enrollment.

2. Backtracking Month-by-Month Prior to Enrollment: Going back month-by-month until a student's absence rate fell out of the range, then calculating the average absence rate of the selected consecutive months as the pre-enrollment absence rate.

3. Three Months Prior to Enrollment: Taking the average absence rates of the three months leading up to program enrollment.

ANALYZING ABSENCE RATES BY ALL PROGRAM MONTHS AND EFFECTIVE PROGRAM MONTHS

For each group of students, pre-enrollment absence rates were paired with two **Program Absence Rates** to evaluate the average absence rates during the enrollment:

1. All Program Months: The average absence rate from the first month of program enrollment to the end of the 2020/2021 school year (June).

2. Effective Program Months: The average absence rate of consecutive effective months, which begins from the first month of program enrollment and includes each month thereafter up until a month's absence rate reflects a greater pre-enrollment absence rate for the student. The number of selected months was recorded as the number of Effective Program Months.

CARRYING OUT EXPLORATORY ANALYSES

Due to the small sample size and wide variety of the datasets, paired Wilcoxon tests were conducted instead of paired *t*-tests to measure whether students' attendance before and during their enrollment in the **C&C Program** were significantly different. Two-sided and one-sided paired Wilcoxon tests were applied due to the assumptions that program enrollment would significantly differ or decrease absence rates, respectively.

Multiple regression models were used to predict outcomes based on two or more independent variables. Multiple regression analyses were conducted within each group to determine the most reliable model for estimating the absence rates of that group of students during the effective months of their program enrollment.
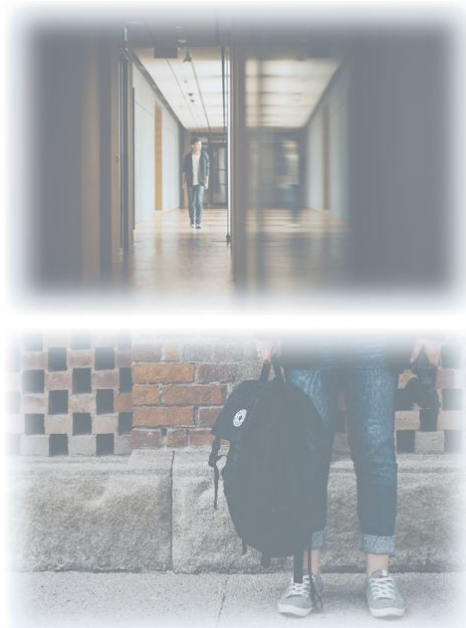
DESCRIPTIVE STATISTICS AND ATTENDANCE RECORDS
PRELIMINARY ANALYSIS

DESCRIPTIVE STATISTICS AND MONTHLY AVERAGE ABSENCE RATES

A total of 73 **C&C Program** students attending six secondary school sites were included in the analysis.

DESCRIPTIVE STATISTICS: CHECK AND CONNECT PROGRAM STUDENTS

Among the cohort of program students, six in ten (60.3%) were enrolled in Grade 8, three in ten (35.6%) were enrolled in Grade 9, and one in ten (4.1%) were enrolled in Grade 10. Seven in ten (71.2%) students were attending one of two schools upon enrolling in the program (Frank Hurt Secondary and Guildford Park Secondary).

A breakdown of grade levels of the 2020/2021 **C&C Program** student cohort and the schools they attended is provided in Table 1.

Table 1. *Grade Levels and School of 73 Check and Connect Program Students Upon Enrollment*

Secondary School	Grade 8	Grade 9	Grade 10	Total
Frank Hurt	11	4	0	**15**
Guildford Park	22	13	2	**37**
Kwantlen Park	2	0	0	**2**
L.A. Matheson	3	5	1	**9**
Queen Elizabeth	6	3	0	**9**
SD 36 Summer Learning	0	1	0	**1**
Total	**44**	**26**	**3**	*73*

OVERALL MONTHLY AVERAGE ABSENCE RATES

The monthly weighted average absence rates of all **C&C Program** students were calculated. The period starts from the tenth month before students' enrollment to the end of the 2020/2021 school year (June).

The average absence rate of the month leading up to the enrollment was 14.4%, and the fifteenth month during enrollment was 25.1%. The trend in students' average absence rates reflects an overall increase once enrolling in the program.

Students' monthly average absence rates before and during enrollment is shown in Figure 1.

Figure 1. *Program Students' Monthly Average Absence Rates Before and During Enrollment*
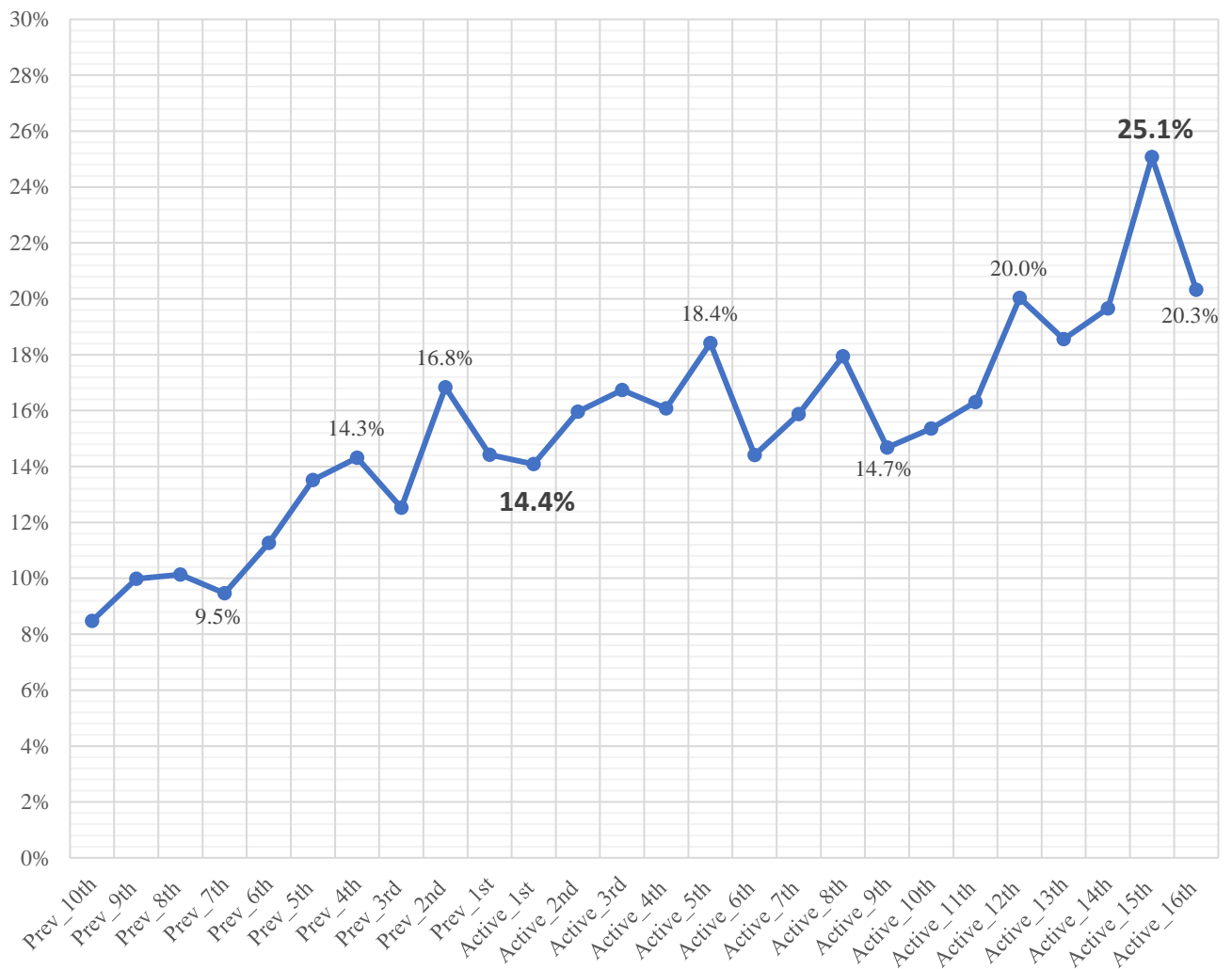
MONTHLY AVERAGE EXCUSED ABSENCE RATES

The monthly average excused absence rates of 73 **C&C Program** students were calculated. The excused absence rate includes: (1) Excused Absence, (2) Excused-Late, and (3) Excused-Dismissed.

The average excused absence rate of the month leading up to program enrollment was 2.9%, and the sixteenth month during enrollment was 3.3%. Students' average excused absence rates had no significant decline once enrolling into the program.

Students' monthly average excused absence rates before and during enrollment is shown in Figure 2.

Figure 2. Program Students' Average Excused Absence Rates Before and During Enrollment
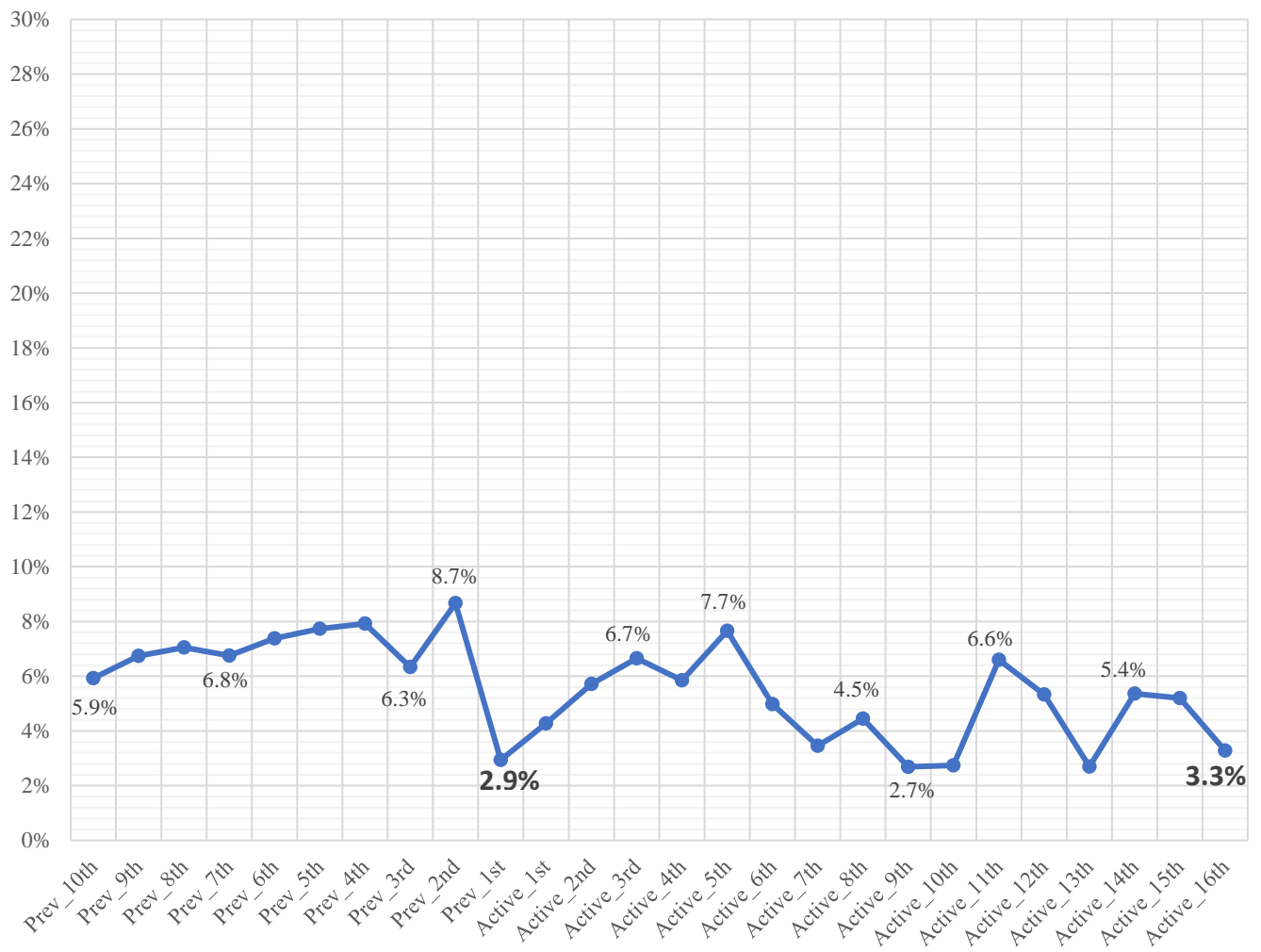
The monthly average unexcused absence rates of 73 **C&C Program** students were calculated. The unexcused absence rate includes: (1) Unexcused-Absent, (2) Unexcused-Late, and (3) Unexcused-Dismissed.

The average unexcused absence rate of the One Month Prior to Enrollment is 11.5%, and the fifteenth month during enrollment is 19.9%. Students' average unexcused absence rates had no significant decline, and instead, increased upon enrollment in the program.

Students' average unexcused absence rates pre-enrollment and during enrollment is shown in Figure 3.

Figure 3. *Program Students' Average Unexcused Absence Rates Before and During Enrollment*
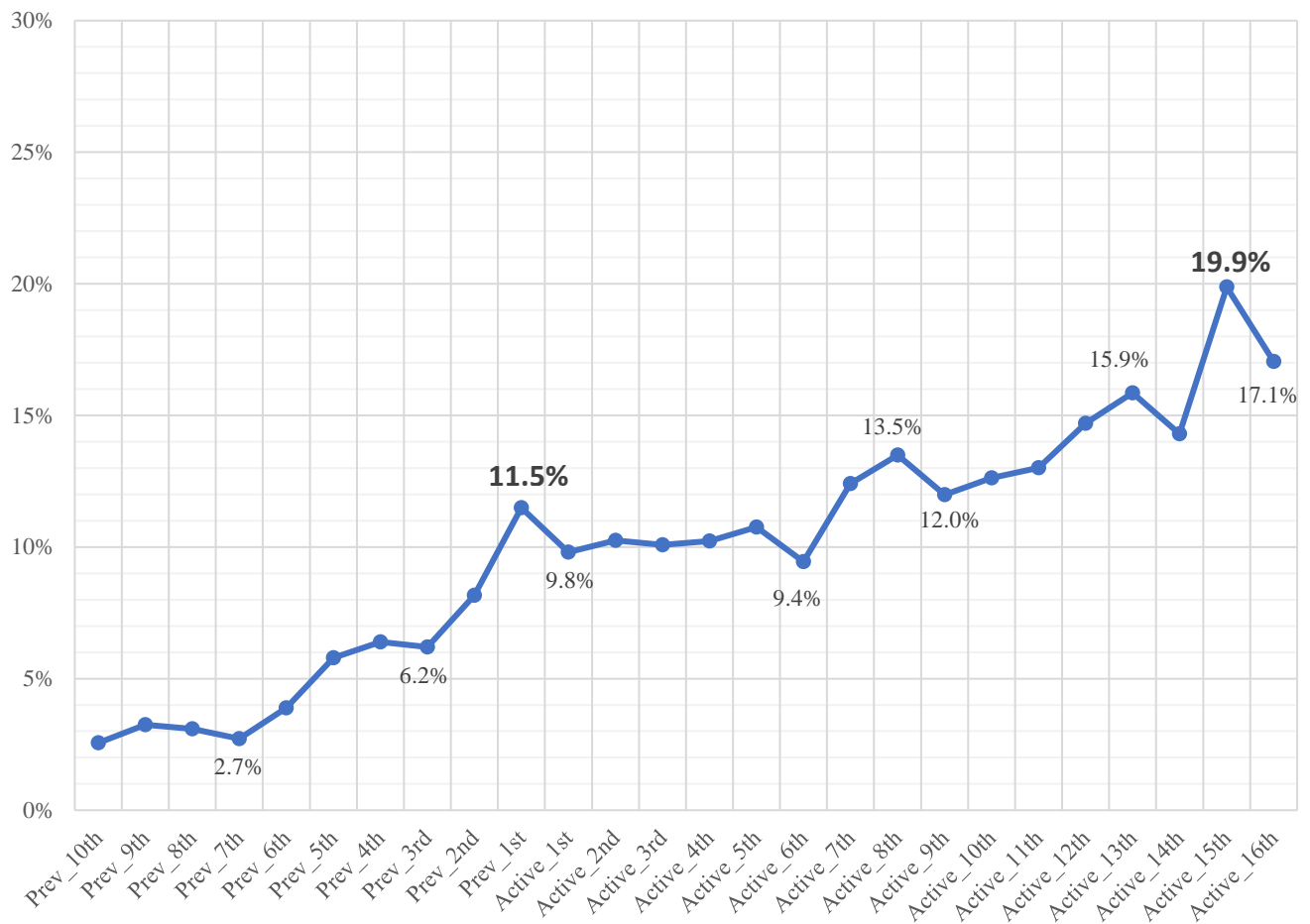
A review of student records revealed that some students were entering the **C&C Program** with low absence rates, which served as the primary rationale for creating pre-enrollment groups to better understand program impacts on student absenteeism.

The absence rate of Student 18 was selected as an example to illustrate the findings from the review of student records. The pre-enrollment absence rate for Student 18 was at its highest peak in the fifth month prior to enrollment (18.2%). From the tenth month to the fifth month prior to enrollment, the trend in absence rates increased. However, during the four months leading up to program enrollment, the student's absence rate was 0%, reducing pre-enrollment average absence rates, which can underestimate **C&C Program** effects on the student's attendance.

The monthly absence rates of Student 18 before and during enrollment are shown in Figure 4.

Figure 4. *Example of Student #18 Monthly Absence Rates*
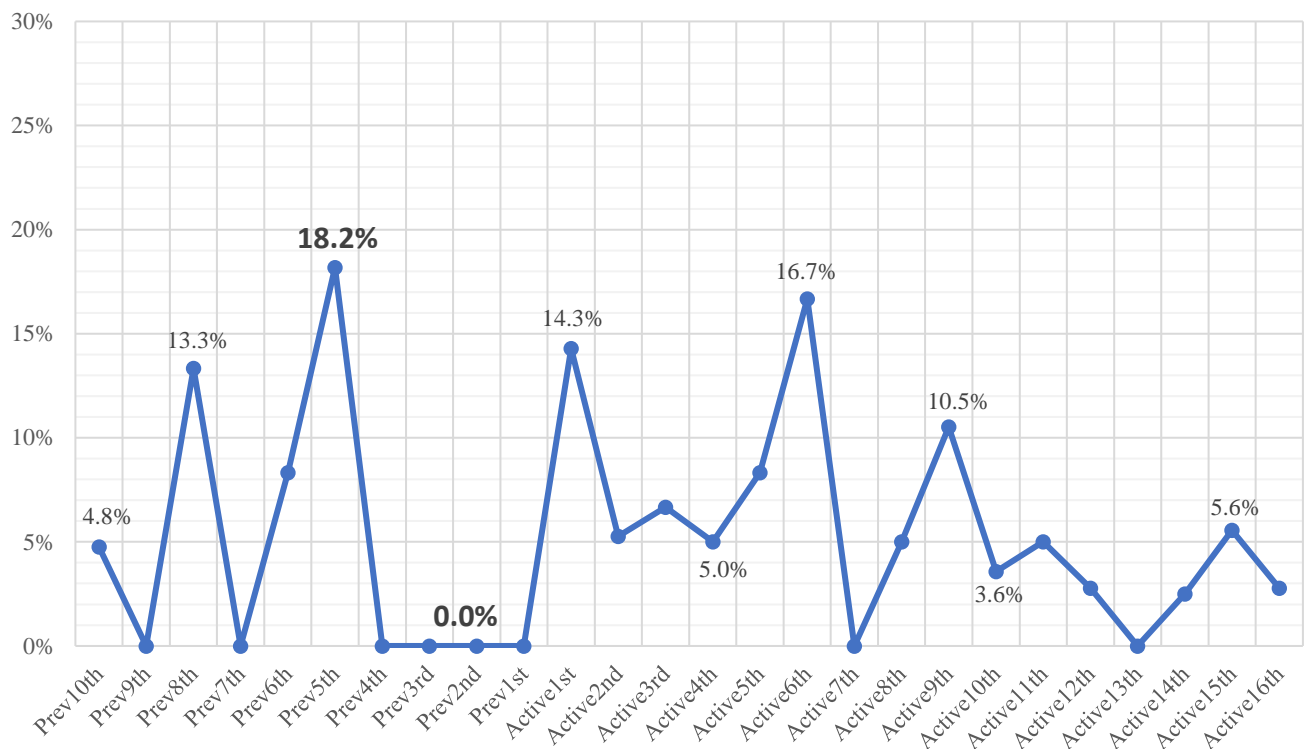
VARIATION OF PRE-ENROLLMENT ABSENCE RATES
PRELIMINARY ANALYSIS

VARIATION IN ABSENCE RATES

The preliminary analysis indicates a significant variation of the pre-enrollment absence rates of 73 **C&C Program** students.

ABSENCE RATES: ONE MONTH PRIOR TO ENROLLMENT

Close to three in ten students (28.8%) had an absence rate of 0% One Month Prior to Enrollment, and close to half (46.6%) of the students had an absence rate of less than 5%.

A breakdown of student' absence rates One Month Prior to Enrollment is shown in Figure 5.

Figure 5. *Program Students' One Month Prior to Enrollment Absence Rates*

Category	Percentage	Students
Exceeds 20%	30.1%	22 students
15-20%	4.1%	3 students
10-15%	5.5%	4 students
5-10%	13.7%	10 students
0.1-5%	17.8%	13 students
0%	28.8%	21 students
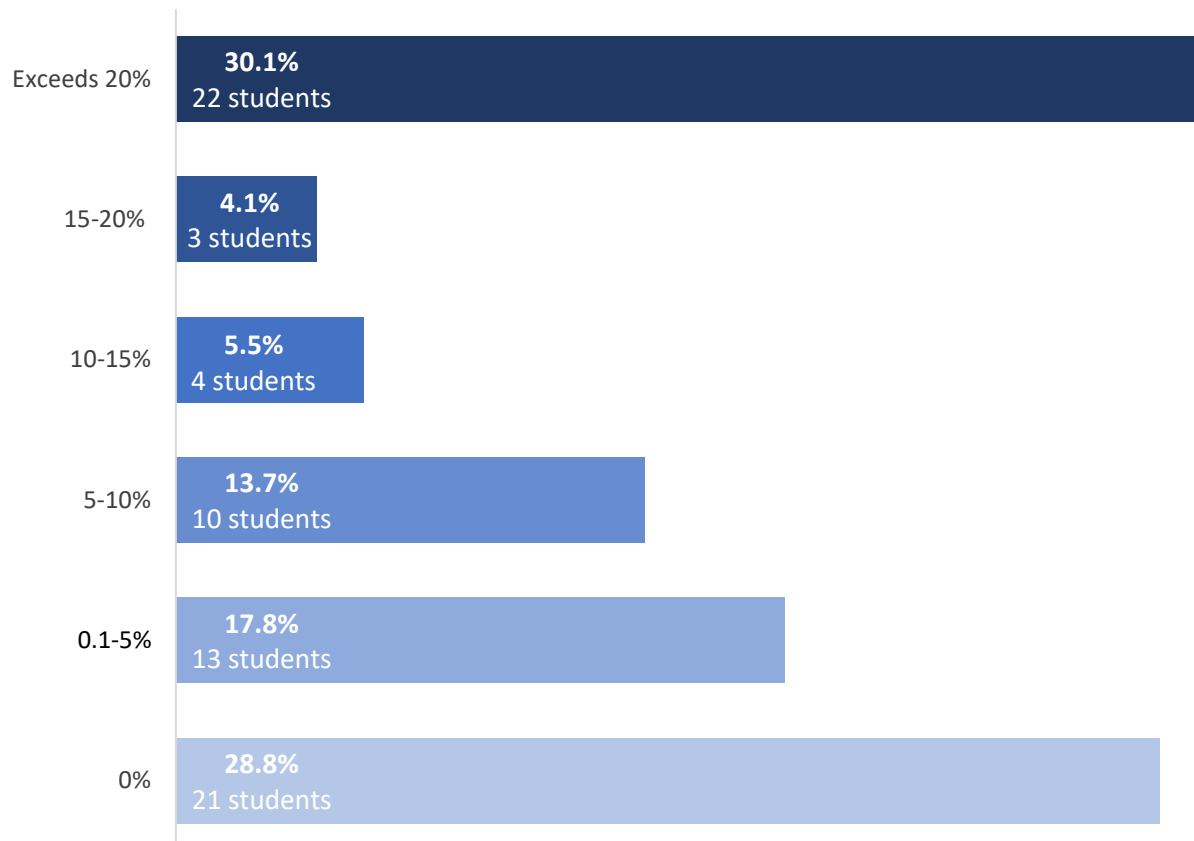
ABSENCE RATES: THREE MONTHS PRIOR TO ENROLLMENT

Students' average absence rates for the Three Months Prior to Enrollment also significantly varied. Approximately three in ten students (30.1%) had an average absence rate of less than 5% for the three months leading up to their enrollment, and more than one-third of students (34.2%) had an average absence rate exceeding 20%.

A breakdown of students' average absence rates Three Months Prior to Enrollment in the **C&C Program** is shown in Figure 6.

Figure 6. *Absence Rates of Check & Connect Students Three Months Prior to Enrollment*
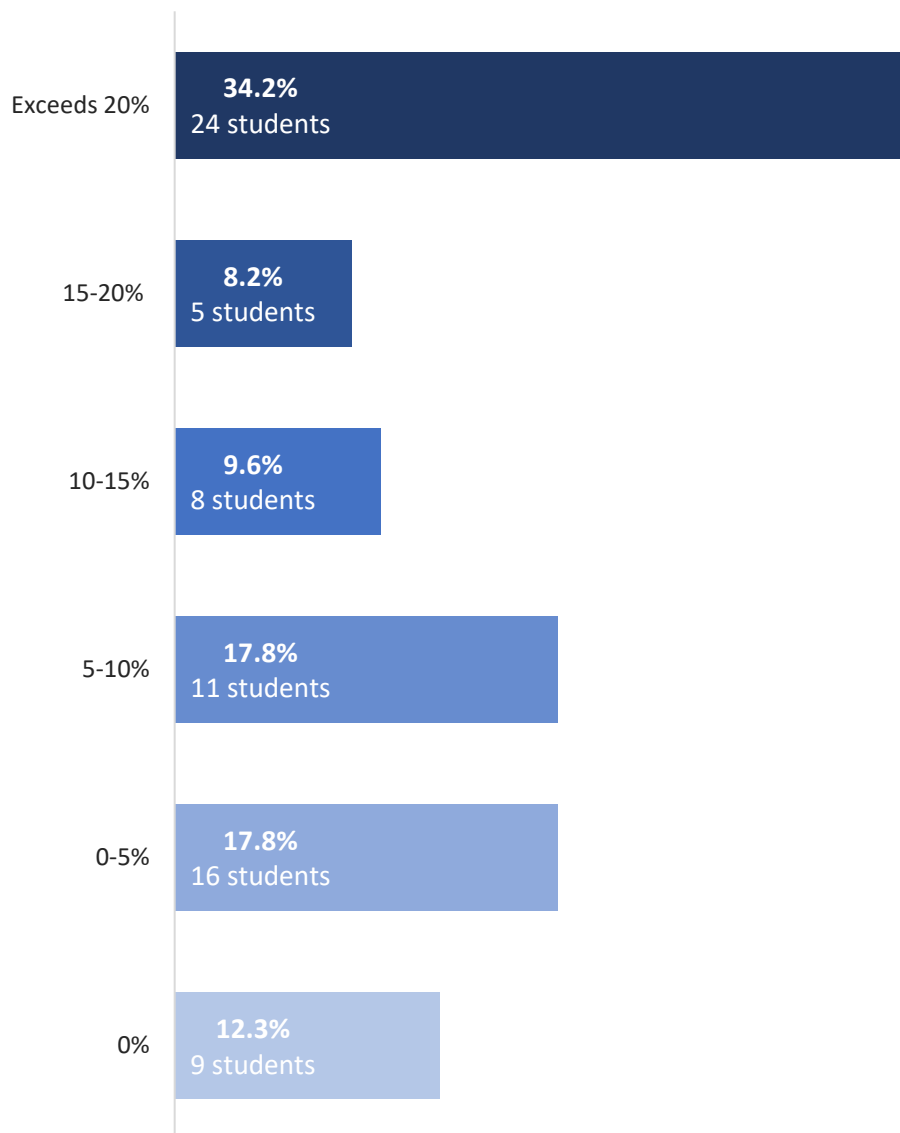
Category	Percent	Students
Exceeds 20%	**34.2%**	24 students
15-20%	**8.2%**	5 students
10-15%	**9.6%**	8 students
5-10%	**17.8%**	11 students
0-5%	**17.8%**	16 students
0%	**12.3%**	9 students

A total of 22 students whose pre-enrollment absence rate One Month Prior to Enrollment exceeded 20% were included in the High Absenteeism Group.

HIGH ABSENTEEISM GROUP RESULTS: ALL PROGRAM MONTHS

Close to one-third (31.8%) of students had an increase in their absence rates prior to and during their enrollment in the **C&C Program** compared to two-thirds (68.2%) of students who had a decrease in their absence rates (see Figure 7).

Figure 7. *Differences in Absence Rates of Students Within the High Absenteeism Group: One Month Prior to Enrollment and All Program Months*
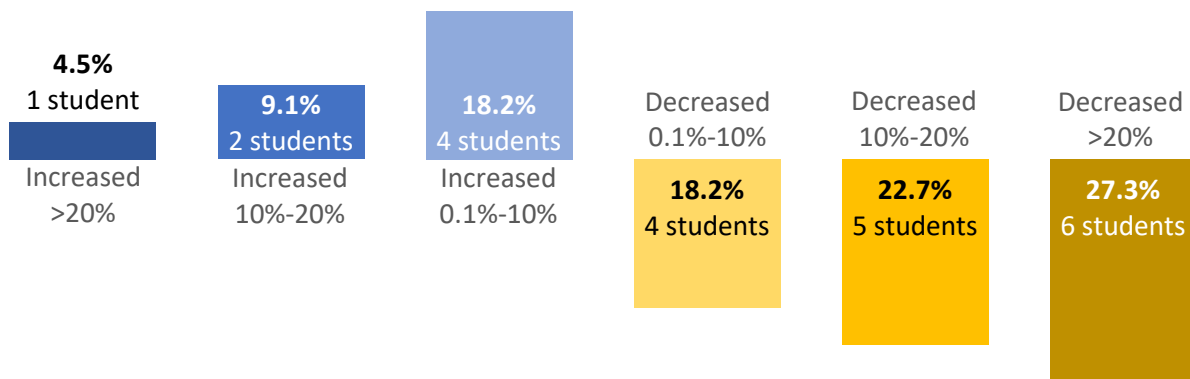
Students' pre-enrollment absence rates were paired with their absence rates for All Program Months (see Table 2). A two-sided Wilcoxon test found a significant difference in absence rates before and during enrollment ($p = 0.028$), while a one-sided test revealed that students' absence rates significantly decreased after enrolling in the program ($p = 0.0138$). The magnitude of the differences in absence rates was *moderate* (0.467).

Table 2. *Paired Absence Rates of Students Within the High Absenteeism Group (Exceeds 20%): One Month Prior to Enrollment and All Program Months*

High Absenteeism Group	One Month Prior to Enrollment (absence rate %)	All Program Months (absence rate %)
Student 1	20.0%	18.2%
Student 2	57.1%	48.4%
Student 3	25.0%	29.5%
Student 4	28.6%	25.5%
Student 5	52.6%	31.8%
Student 6	100.0%	14.6%
Student 7	32.1%	20.9%
Student 8	33.3%	2.8%
Student 9	27.4%	16.1%
Student 10	28.9%	39.3%
Student 11	63.3%	0.0%
Student 12	30.3%	11.2%
Student 13	28.6%	37.6%
Student 14	28.9%	50.0%
Student 15	21.1%	13.2%
Student 16	26.3%	45.4%
Student 17	50.0%	53.3%
Student 18	32.9%	10.1%
Student 19	21.4%	7.5%
Student 20	28.6%	16.4%
Student 21	22.2%	29.8%
Student 22	100.0%	2.8%

Four in ten (40.9%) students had an increase in their absence rates prior to and during their enrollment in the **C&C Program** compared to almost six in ten (59.1%) students who had a decrease in their absence rates (see Figure 8).

Figure 8. *Differences in Absence Rates of Students Within the High Absenteeism Group: One Month Prior to Enrollment and Effective Program Months*
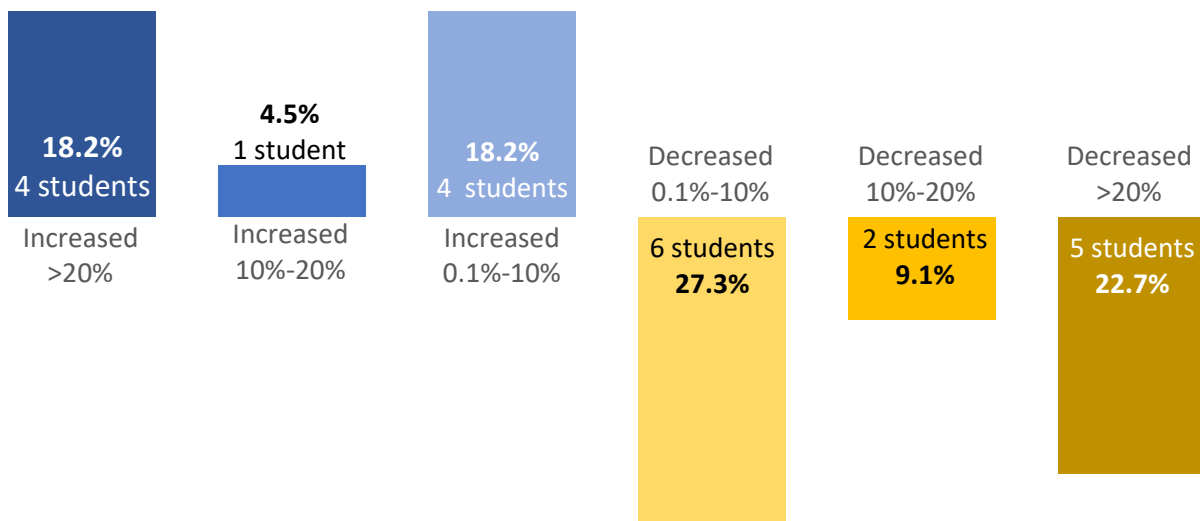
Pre-enrollment absence rates were paired with the average absence rates during Effective Program Months (see Table 3). A two-sided (p = 0.305) and one-sided Wilcoxon test (p = 0.153) found a lack of significance in the difference or decrease in absence rates prior to and during program enrollment, respectively. The magnitude of the differences in absence rates was *small* (0.225).

A multiple linear regression model was built to predict students' absence rate during the Effective Program Months. The model indicates that for students within this group, the one with a relatively lower pre-enrollment absence rate and a larger number of Effective Program Months tend to have a lower absence rate during the Effective Program Months. The R-squared represents the model's fitness to be 0.514. The equation of the regression model is shown in Table B1, Appendix B.

Table 3. *Paired Absence Rates of Students Within the High Absenteeism Group (Exceeds 20%): One Month Prior to Enrollment and Effective Program Months*

High Absenteeism Group	# of Effective Program Months	One Month Prior to Enrollment (absence rate %)	Effective Program Months (absence rate %)
Student 1	0	20.0%	28.8%
Student 2	4	57.1%	47.7%
Student 3	3	25.0%	20.2%
Student 4	0	28.6%	38.5%
Student 5	0	52.6%	82.1%
Student 6	13	100.0%	14.6%
Student 7	0	32.1%	33.3%
Student 8	9	33.3%	2.8%
Student 9	6	27.4%	10.7%
Student 10	1	28.9%	25.0%
Student 11	7	63.3%	0.0%
Student 12	0	30.3%	31.0%
Student 13	0	28.6%	50.0%
Student 14	0	28.9%	50.0%
Student 15	1	21.1%	19.0%
Student 16	4	26.3%	17.3%
Student 17	0	50.0%	75.0%
Student 18	16	32.9%	10.1%
Student 19	0	21.4%	34.6%
Student 20	5	28.6%	10.4%
Student 21	2	22.2%	12.5%
Student 22	13	100.0%	2.8%

When calculating pre-enrollment absence rates by Backtracking Month-by-Month until the absence rate fell below 20%, the number of students who fit the criteria to be included in the High Absenteeism Group was 22.

HIGH ABSENTEEISM GROUP RESULTS: ALL PROGRAM MONTHS

Two in ten (22.7%) students had an increase in their absence rates prior to and during their enrollment in the **C&C Program** compared to three-quarters (77.3%) of students who had a decrease in their absence rates (see Figure 9).

Figure 9. *Differences in Absence Rates of Students Within the High Absenteeism Group: Backtracking Month-by-Month Prior to Enrollment and All Program Months*
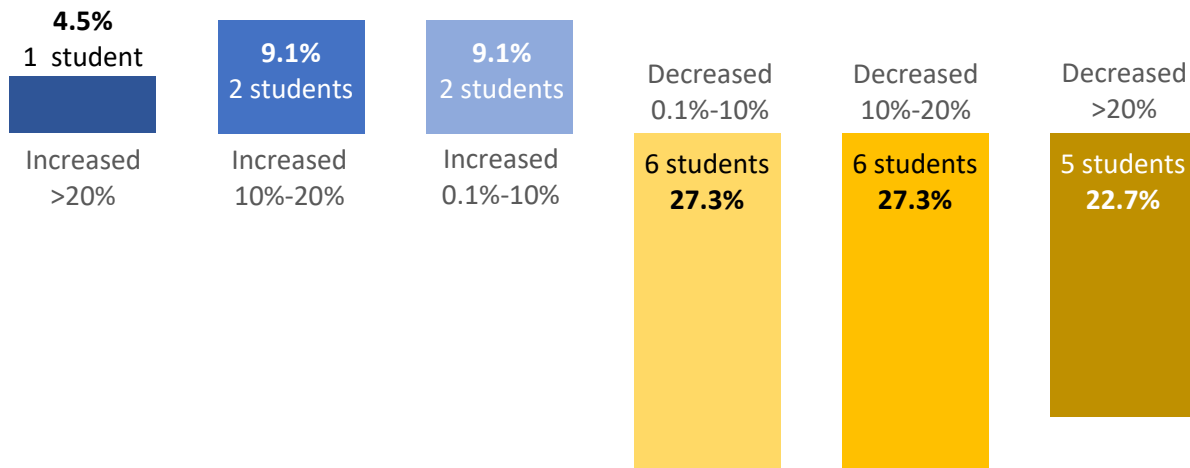
Students' pre-enrollment absence rates were paired with their absence rates across All Program Months (see Table 4). A two-sided Wilcoxon test found a significant difference in absence rates before and during enrollment ($p = 0.028$), while a one-sided test revealed that students' absence rates significantly decreased after enrolling in the program ($p = 0.0138$). The magnitude of the differences in absence rates was *moderate* (0.467).

Table 4. *Paired Absence Rates of Students Within the High Absenteeism Group (Exceeds 20%): Backtracking Month-by-Month and All Program Months*

High Absenteeism Group	Backtracking Month-by-Month Prior to Enrollment (absence rate %)	All Program Months (absence rate %)
Student 1	22.1%	18.2%
Student 2	32.0%	48.4%
Student 3	25.0%	29.5%
Student 4	39.1%	25.5%
Student 5	47.4%	31.8%
Student 6	100.0%	14.6%
Student 7	28.3%	20.9%
Student 8	30.5%	2.8%
Student 9	27.0%	16.1%
Student 10	39.7%	39.3%
Student 11	58.0%	0.0%
Student 12	26.3%	11.2%
Student 13	41.0%	37.6%
Student 14	30.8%	50.0%
Student 15	21.0%	13.2%
Student 16	25.0%	45.4%
Student 17	56.4%	53.3%
Student 18	33.0%	10.1%
Student 19	21.0%	7.5%
Student 20	29.0%	16.4%
Student 21	25.9%	29.8%
Student 22	100.0%	2.8%

Four in ten (40.9%) students within the High Absenteeism Group had an increase in their absence rates prior to and during their enrollment in the **C&C Program** compared to six in ten (59.1%) students who had a decrease in their absence rates (see Figure 10).

Figure 10. *Differences in Absence Rates of Students Within the High Absenteeism Group: Backtracking Month-by-Month Prior to Enrollment and Effective Program Months*
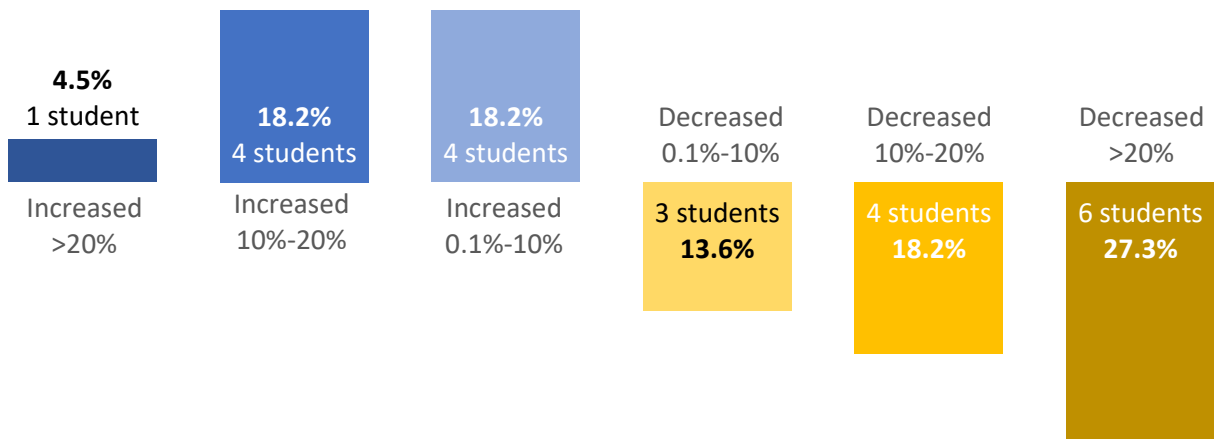
Students' pre-enrollment absence rates were paired with their average absence rates during Effective Program Months (see Table 5). A two-sided (p = 0.210) and one-sided Wilcoxon test (p = 0.105) found a lack of significance in the difference or decrease in absence rates prior to and during program enrollment, respectively. The magnitude of the differences in absence rates was *small* (0.273).

A multiple linear regression model is built to predict students' absence rate during the Effective Program Months of enrollment. The model indicates that for students within this group, the one with a relatively lower pre-enrollment absence rate and a larger number of Effective Program Months tend to have a lower absence rate during Effective Program Months of enrollment. The R-squared represents the model's fitness is 0.514. The equation of the regression model is shown in Table B1, Appendix B.

Table 5. *Paired Absence Rates of Students Within the High Absenteeism Group (Exceeds 20%): Backtracking Month-by-Month and Effective Program Months*

High Absenteeism Group	# of Effective Program Months	Backtracking Month-by-Month Prior to Enrollment (absence rate %)	Effective Program Months (absence rate %)
Student 1	0	22.1%	28.8%
Student 2	0	32.0%	50.0%
Student 3	3	25.0%	20.2%
Student 4	5	39.1%	16.1%
Student 5	1	47.4%	82.1%
Student 6	13	100.0%	14.6%
Student 7	0	28.3%	33.3%
Student 8	9	30.5%	2.8%
Student 9	6	27.4%	10.7%
Student 10	2	39.7%	32.4%
Student 11	7	58.0%	0.0%
Student 12	0	26.3%	31.0%
Student 13	0	41.0%	50.0%
Student 14	0	30.8%	50.0%
Student 15	1	21.0%	19.0%
Student 16	3	25.0%	14.1%
Student 17	0	56.4%	75.0%
Student 18	16	32.9%	10.1%
Student 19	0	21.0%	34.6%
Student 20	5	28.6%	10.4%
Student 21	2	25.9%	12.5%
Student 22	13	100.0%	2.8%

When calculating pre-enrollment absence rates to include the Three Months Prior to Enrollment, the number of students who fit the criteria to be included in the High Absenteeism Group increased to 25.

HIGH ABSENTEEISM GROUP RESULTS: ALL PROGRAM MONTHS

About one-third (32.0%) of students had an increase in their absence rates prior to and during their enrollment in the **C&C Program** compared to two-thirds (68.0%) of students who had a decrease in their absence rates (see Figure 11).

Figure 11. Differences in Absence Rates of Students Within the High Absenteeism Group: Three Months Prior to Enrollment and All Program Months
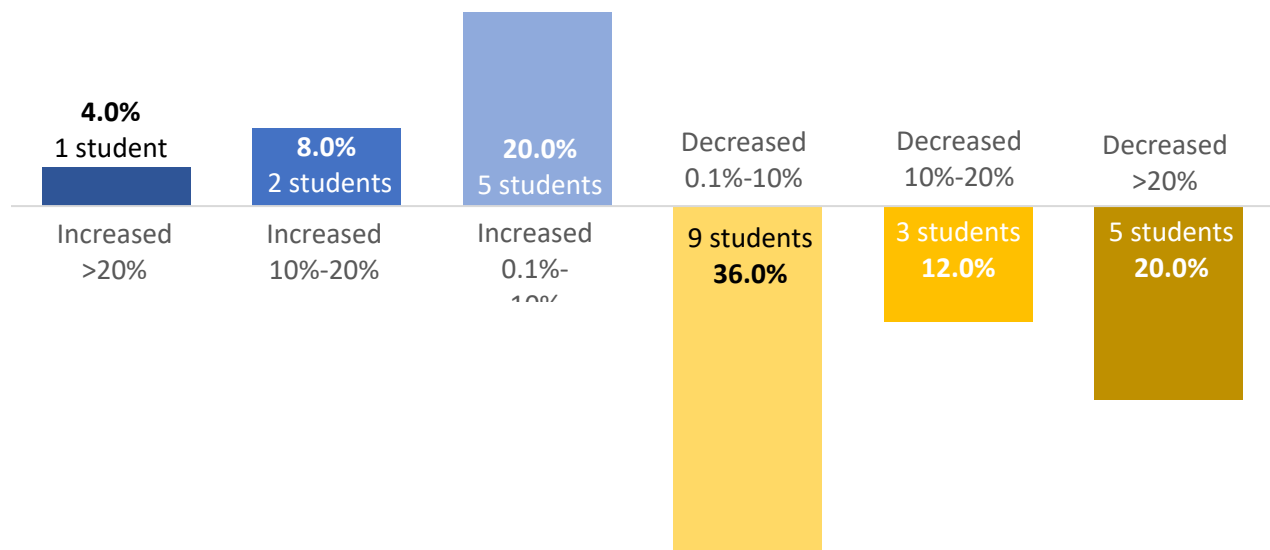
Students' pre-enrollment absence rates were paired with their absence rates across All Program Months (see Table 6). A two-sided Wilcoxon test found a significant difference in absence rates before and during enrollment (p = 0.101), while a one-sided test revealed that students' absence rates significantly decreased after enrolling in the program (p = 0.051). The magnitude of the differences in absence rates was *moderate* (0.331).

Table 6. *Paired Absence Rates of Students Within the High Absenteeism Group (Exceeds 20%): Three Months Prior to Enrollment and All Program Months*

High Absenteeism Group	Three Months Prior to Enrollment (absence rate %)	All Program Months (absence rate %)
Student 1	22.1%	18.2%
Student 2	23.9%	8.9%
Student 3	35.7%	48.4%
Student 4	25.0%	29.5%
Student 5	28.6%	25.5%
Student 6	39.1%	31.8%
Student 7	30.4%	23.3%
Student 8	36.4%	14.6%
Student 9	21.6%	30.5%
Student 10	28.3%	20.9%
Student 11	30.5%	2.8%
Student 12	20.3%	16.1%
Student 13	30.0%	39.3%
Student 14	60.5%	0.0%
Student 15	21.1%	11.2%
Student 16	40.0%	37.6%
Student 17	23.6%	50.0%
Student 18	36.5%	54.8%
Student 19	44.5%	53.3%
Student 20	21.5%	16.4%
Student 21	37.9%	43.1%
Student 22	21.7%	2.4%
Student 23	33.3%	3.5%
Student 24	33.2%	2.8%
Student 25	25.9%	5.9%

Four in ten (44.0%) students had an increase in their absence rates prior to and during their enrollment in the **C&C Program** compared to five in ten (56.0%) students who had a decrease in their absence rates (see Figure 12).

Figure 12. *Differences in Absence Rates of Students Within the High Absenteeism Group: Three Months Prior to Enrollment and Effective Program Months*
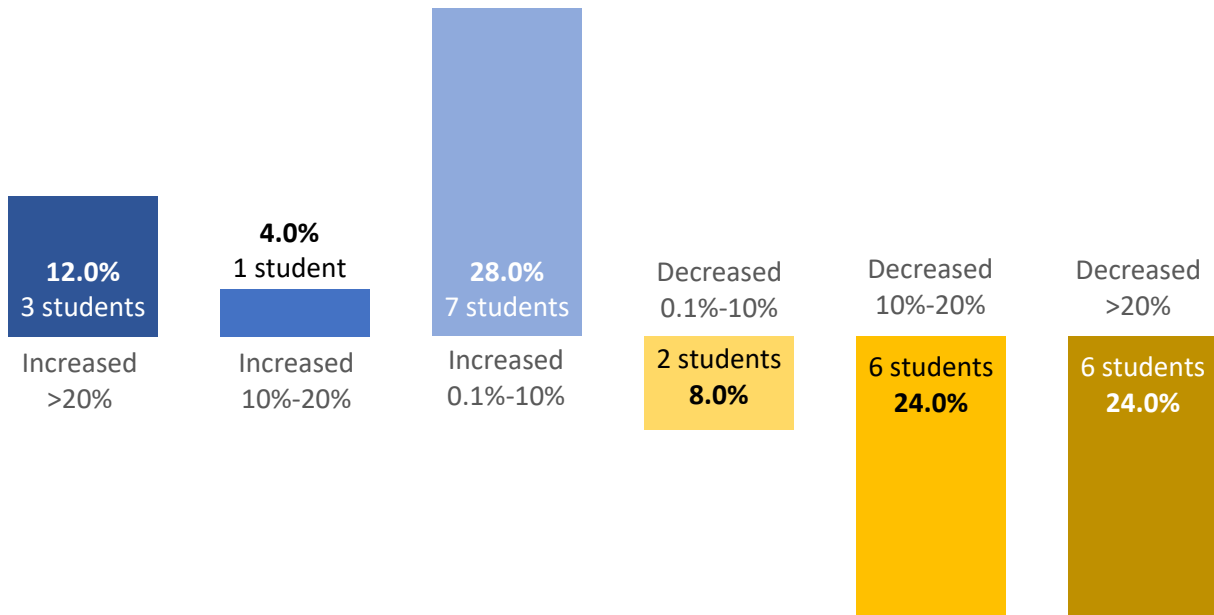
Students' pre-enrollment absence rates were paired with their average absence rates during the Effective Program Months (see Table 7). A two-sided (p = 0.210) and one-sided Wilcoxon test (p = 0.105) found a lack of significance in the difference or decrease in absence rates prior to and during program enrollment, respectively. The magnitude of the differences in absence rates was *small* (0.256).

A multiple linear regression model was built to predict students' absence rate during the Effective Program Months of enrollment. The model indicates that for students within this group, those students with a relatively lower pre-enrollment absence rate and a larger number of Effective Program Months tend to have a lower absence rate during Effective Program Months of enrollment. The equation of the regression model is shown in Table B1, Appendix B.

Table 7. *Paired Absence Rates of Students Within the High Absenteeism Group (Exceeds 20%): Three Months Prior and Effective Program Months*

High Absenteeism Group	# of Effective Program Months	Three Months Prior to Enrollment (absence rate %)	Effective Program Months (absence rate %)
Student 1	0	22.1%	28.8%
Student 2	11	23.9%	8.9%
Student 3	0	35.7%	50.0%
Student 4	3	25.0%	20.2%
Student 5	0	28.6%	38.5%
Student 6	0	39.1%	82.1%
Student 7	2	30.4%	17.3%
Student 8	13	36.4%	14.6%
Student 9	1	21.6%	7.1%
Student 10	0	28.3%	33.3%
Student 11	10	30.5%	2.8%
Student 12	5	20.3%	8.5%
Student 13	1	30.0%	25.0%
Student 14	7	60.5%	0.0%
Student 15	0	21.1%	31.0%
Student 16	0	40.0%	50.0%
Student 17	0	23.6%	50.0%
Student 18	1	36.5%	12.5%
Student 19	0	44.5%	75.0%
Student 20	0	21.5%	25.0%
Student 21	0	37.9%	39.3%
Student 22	9	21.7%	2.4%
Student 23	6	33.3%	3.5%
Student 24	13	33.2%	2.8%
Student 25	16	25.9%	5.9%

A series of comparative analyses were conducted across three **Pre-Enrollment Timelines** to find the most representative model to present the **C&C Program** effects on the attendance of students within the High Absenteeism Group.

HIGH ABSENTEEISM GROUP RESULTS: ALL PROGRAM MONTHS

Absence rates that include One Month Prior to Enrollment or include Backtracking Month-by-Month Prior to Enrollment among students within the High Absenteeism Group yielded a significant decrease in absence rate across All Program Months during enrollment. The effect size (0.467) indicates that program enrollment had a moderate impact on students' attendance.

Results suggest that pre-enrollment absence rates that include only One Month Prior to Enrollment and Backtracking Month-by-Month Prior to Enrollment are better indicators of the program's success in reducing absence rate among students within the High Absenteeism Group. Results of the paired Wilcoxon tests are provided in Table 8.

Table 8. *High Absenteeism Group: Comparison of Paired Wilcoxon Test Results (Pre-Enrollment Timelines and All Program Months)*

	One Month Prior to Enrollment	Backtracking Month-by-Month Prior to Enrollment	Three Months Prior to Enrollment
Number of students	22	22	25
***p*-Value (two-sided)**	0.028	0.028	0.101
***p*-Value (one-sided)**	0.014	0.014	0.051
Effect Size	0.467	0.467	0.331

* The p-value represents the likelihood that random sampling would result in a median change far from zero. The p-value < 0.05 indicates the medians of the populations are different (two-sided) or decreased (one-sided); the p-value > 0.05 would be unable to conclude a significant difference or decrease between medians.

** Effect size evaluates the level of the impact. 0.1 – 0.3 (small impact), 0.30 – 0.5 (moderate impact) and > 0.5 (large impact)

*** Comparative analyses of paired Wilcoxon tests for the Moderate-to-High Absenteeism Group (exceeds 15%) is shown in Table A1, Appendix A.

HIGH ABSENTEEISM GROUP RESULTS: EFFECTIVE PROGRAM MONTHS

With small effect sizes, the *p*-values of three **Pre-Enrollment Timelines** are all greater than 0.05, which unable to suggest a significant difference or decrease in absence rates during the Effective Program Months.

Comparing the results to All Program Months during enrollment, the absence rates decreased less significantly. The reason may be due to students' absence rates dropping off considerably after the Effective Program Months. Results of the paired Wilcoxon tests are compared and shown in Table 9.

Table 9. *High Absenteeism Group: Comparison of Paired Wilcoxon Test Results (Pre-Enrollment Timelines and Effective Program Months)*

	One Month Prior To Enrollment	Backtracking Month-by-Month Prior to Enrollment	Three Months Prior to Enrollment
Number of students	22	22	25
***p*-Value (two-sided)**	0.305	0.210	0.210
***p*-Value (one-sided)**	0.153	0.105	0.105
Effect Size	0.225	0.273	0.256

* The p-value represents the likelihood that random sampling would result in a median change far from zero. The p-value < 0.05 indicates the medians of the populations are different (two-sided) or decreased (one-sided); the p-value > 0.05 would be unable to conclude a significant difference or decrease between medians

** Effect size evaluates the level of the impact. 0.1 – 0.3 (small impact), 0.30 – 0.5 (moderate impact) and > 0.5 (large impact)

HIGH ABSENTEEISM GROUP: MULTIPLE LINEAR REGRESSION MODEL

The absence rates calculated by including only One Month Prior to Enrollment yielded a model with the greatest R-squared, the lowest *p*-value and residual standard error.

The results suggest that One Month Prior to Enrollment is the best model to predict the absence rates of students within the High Absenteeism Group during the Effective Program Months based on their pre-enrollment absence rates and the number of Effective Program Months.

Overall, the comparative analyses indicate that calculating pre-enrollment absences One Month Prior to Enrollment can select the most representative students within the High Absenteeism Group. At a slightly better rate than Backtracking Month-by-Month Prior to Enrollment.

Moreover, the **C&C Program** had a significant impact on improving the attendance rates of students within the High Absenteeism Group. Results of the three regression models are compared and shown in Table 10.

Table 10. *High Absenteeism Group: Comparative Analyses of Multiple Regreesion Model Equations Across Pre-Enrollment Timelines*

	One Month Prior to Enrollment	Backtracking Month-by-Month Prior to Enrollment	Three Months Prior to Enrollment
Number of students	22	22	25
Multiple R-Squared*	0.514	0.514	0.469
Adjusted R-Squared	0.463	0.463	0.421
p*-Value	0.001	0.001	0.001
Residual Standard Error*	0.163	0.164	0.172

* Multiple R-Squared and Adjusted R-Squared both measures how well the data fit the regression model. A higher R-Squared indicates a better model fitness

** The p-value < 0.05 means at least one of the predictor variables (pre-enrollment absence rate and the number of Effective Program Months) is significantly related to the outcome variable (Program-enrollment absence rate)

*** Residual Standard Error (RSE) estimates the predicted error. A lower RSE indicates a more accurate model

PRE-ENROLLMENT TIMELINE
ONE MONTH PRIOR TO ENROLLMENT

When only including absence rates of students within the Target Population Group (7.5% – 15%) One Month Prior to Enrollment in the **C&C Program** until the pre-enrollment absence rate fell out of the absence range of 7.5% – 15%, the Target Population Group reduced to 11 students.

TARGET POPULATION GROUP RESULTS: ALL PROGRAM MONTHS

Eight in ten (81.8%) students had an increase in their absence rates prior to and during their enrollment in the **C&C Program** compared to about two in ten (18.2%) students who had a decrease in their absence rates (see Figure 13).

Figure 13. *Differences in Absence Rates of Students Within the Target Population Group: One Month Prior to Enrollment and All Program Months*

| 18.2% 2 students Increased >20% | 45.4% 5 students Increased 10%-20% | 18.2% 2 students Increased 0.1%-10% | Decreased 0.1%-10% 2 students 18.2% |
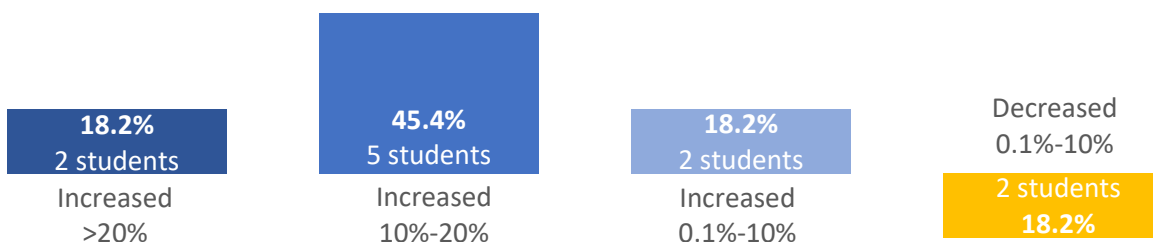
Absence rates One Month Prior to Enrollment were paired with their average absence rates during All Program Months (see Table 11). A two-sided (p = 0.01) and one-sided Wilcoxon test (p = 0.997) found a significant difference in absence rates prior to and during program enrollment, respectively. However, the p-value of the one-sided Wilcoxon test – which assumes absence rates would decrease upon enrollment – revealed a significant difference, but in the opposite direction as absence rates significantly increased during enrollment. The magnitude of the differences in absence rates was *large* (0.751).

Table 11. *Paired Absence Rates of Students Within the Target Population Group (7.5% – 15%): One Month Prior to Enrollment and All Program Months*

Target Population Group	One Month Prior to Enrollment (absence rate %)	All Program Months (absence rate %)
Student 1	7.7%	21.8%
Student 2	11.8%	53.6%
Student 3	12.5%	23.3%
Student 4	10.5%	23.2%
Student 5	13.2%	6.6%
Student 6	9.2%	23.8%
Student 7	10.5%	7.0%
Student 8	13.2%	14.8%
Student 9	14.3%	54.8%
Student 10	8.3%	17.4%
Student 11	14.5%	34.3%

TARGET POPULATION GROUP RESULTS: EFFECTIVE PROGRAM MONTHS

Four in ten (45.5%) students had an increase or no change in their absence rates prior to and during their enrollment in the **C&C Program** compared to five in ten (54.5%) students who had a decrease in their absence rates (see Figure 14).

Figure 14. *Differences in Absence Rates of Students Within the Target Population Group: One Month Prior to Enrollment and Effective Program Months*

9.1% 1 student	27.3% 3 students	9.1% 1 student	Decreased 0.1%-10%
Increased 10%-20%	Increased 0.1%-10%	No Change 0%	6 students 54.5%

Absence rates of students within the Target Population Group (7.5% - 15%) One Month Prior to Enrollment were paired with their average absence rates during Effective Program Months (see Table 12).

A two-sided ($p = 0.625$) and one-sided Wilcoxon test ($p = 0.313$) found a lack of significance in the difference or decrease in absence rates prior to and during program enrollment, respectively. The magnitude of the differences in absence rates was *small* (0.177).
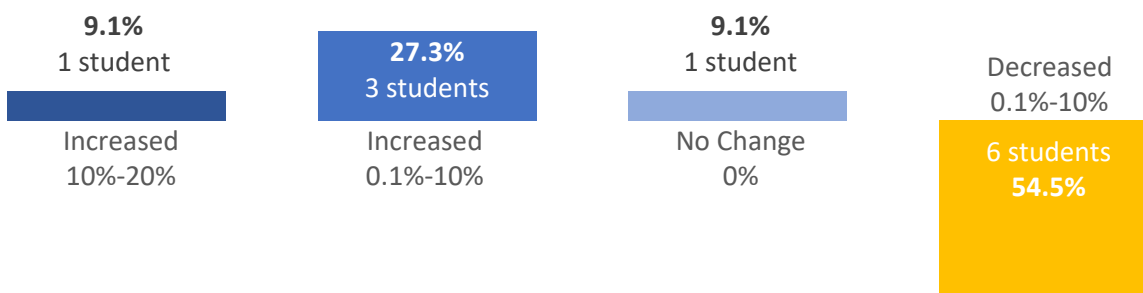
Table 12. *Paired Absence Rates of Students Within the Target Population Group (7.5% – 15%): One Month Prior to Enrollment and Effective Program Months*

Target Population Student	# of Effective Program Months	One Month Prior to Enrollment (absence rate %)	Effective Program Months (absence rate %)
Student 1	1	7.7%	0.0%
Student 2	0	11.8%	16.7%
Student 3*	1	12.5%	12.5%
Student 4	0	10.5%	17.9%
Student 5	1	13.2%	11.9%
Student 6	1	9.2%	0.0%
Student 7	4	10.5%	5.7%
Student 8	0	13.2%	14.3%
Student 9	1	14.3%	12.5%
Student 10	0	8.3%	22.2%
Student 11	1	14.5%	7.1%

* Student 3 was removed from the analysis as a paired Wilcoxon test cannot be conducted on datasets or individual data where the differences would be equal to 0

When Backtracking Month-by-Month Prior to Enrollment until the pre-enrollment absence rate fell out of the absence rate range of 7.5%-15%, students within the Target Population Group reduced to 11 students.

TARGET POPULATION GROUP RESULTS: ALL PROGRAM MONTHS

Eight in ten (81.8%) students had an increase or no change in their absence rates prior to and during their enrollment in the **C&C Program** compared to nearly two in ten (18.2%) students who had a decrease in their absence rates (see Figure 15).

Figure 15. *Differences in Absence Rates of Students Within the Target Population Group: Backtracking Month-by-Month Prior to Enrollment and All Program Months*

| **18.2%** 2 students | **45.4%** 5 students | **18.2** 2 students | Decreased 0.1%-10% |
| Increased >20% | Increased 10%-20% | Increased 0.1%-10% | 2 students **18.2%** |
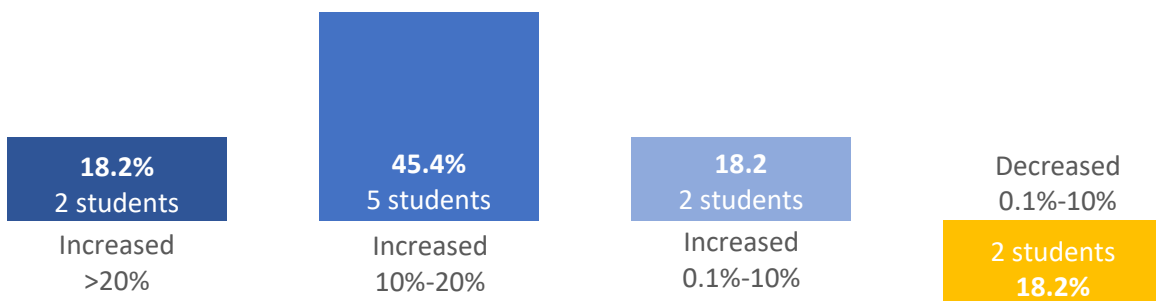
The new pre-enrollment absence rates of students within the Target Population Group when Backtracking Month-by-Month were paired with their absence rates for All Program Months (see Table 13).

A two-sided (*p* = 0.007) and one-sided Wilcoxon test (*p* = 0.998) found a significant difference in absence rates prior to and during program enrollment, respectively. However, the *p*-value of the one-sided Wilcoxon test – which assumes absence rates would decrease upon enrollment – revealed a significant difference, but in the opposite direction as absence rates significantly increased during enrollment. The magnitude of the differences in absence rates was *large* (0.777).

Table 13. *Paired Absence Rates of Students within the Target Population Group (7.5% – 15%):*
Backtracking Month-by-Month Prior to Enrollment and All Program Months

Target Population Student	Backtracking Month-by-Month Prior to Enrollment (absence rate %)	All Program Months (absence rate %)
Student 1	7.7%	21.8%
Student 2	11.8%	53.6%
Student 3	12.5%	23.3%
Student 4	10.5%	23.2%
Student 5	13.2%	6.6%
Student 6	9.2%	23.8%
Student 7	10.5%	7.0%
Student 8	10.5%	14.8%
Student 9	14.3%	54.8%
Student 10	8.3%	17.4%
Student 11	14.5%	34.3%

TARGET POPULATION GROUP RESULTS: EFFECTIVE PROGRAM MONTHS

Four in ten (45.5%) students had an increase or no change in their absence rates prior to and during their enrollment in the **C&C Program** compared to five in ten (54.5%) students who had a decrease in their absence rates (see Figure 16).

Figure 16. *Differences in Absence Rates of Students Within the Target Population Group:*
Backtracking Month-by-Month Prior to Enrollment and Effective Program Months

9.1%
1 student
Increased
10%-20%

27.3%
3 students
Increased
0.1%-10%

9.1%
1 student
No Change
0%

Decreased
0.1%-10%
6 students
54.5%

The new pre-enrollment absence rates of students within the Target Population Group when Backtracking Month-by-Month Prior to Enrollment were paired with their absence rates across Effective Program Months (see Table 14).

A two-sided ($p = 0.77$) and one-sided Wilcoxon test ($p = 0.385$) found no significant difference or decrease in absence rates prior to and during program enrollment, respectively. The magnitude of the differences in absence rates was *small* (0.113).
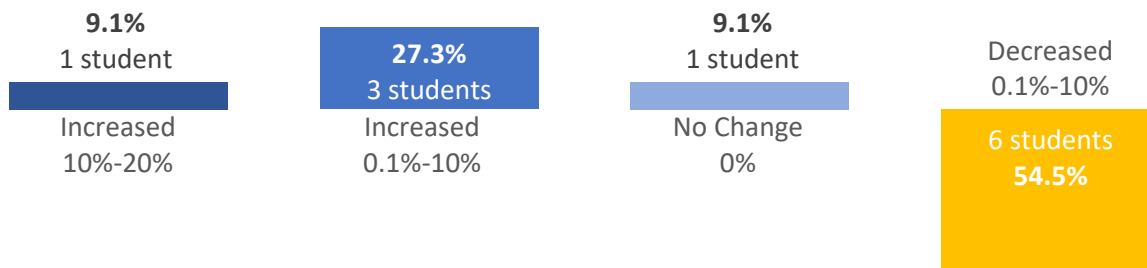
Table 14. *Paired Absence Rates of Students Within the Target Population Group (7.5% – 15%): Backtracking Month-by-Month and Effective Program Months*

Target Population Student	# of Effective Program Months	Backtracking Month-by-Month Prior to Enrollment (absence rate %)	Effective Program Months (absence rate %)
Student 1	1	7.7%	0.0%
Student 2	0	11.8%	16.7%
Student 3*	1	12.5%	12.5%
Student 4	0	10.5%	17.9%
Student 5	1	13.2%	11.9%
Student 6	1	9.2%	0.0%
Student 7	4	10.5%	5.7%
Student 8	0	10.5%	14.3%
Student 9	1	14.3%	12.5%
Student 10	0	8.3%	22.2%
Student 11	1	14.5%	7.1%

Student 3 was removed from the analysis as a paired Wilcoxon test cannot be conducted on datasets or individual data where the differences would be equal to 0
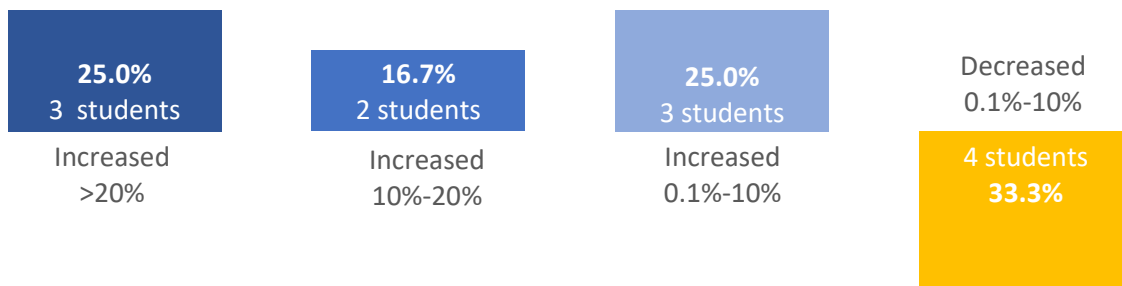
When only including students' absence rates Three Months Prior to Enrollment in the **C&C Program** until the pre-enrollment absence rate fell out of the absence range of 7.5% - 15%, the Target Population Group reduced to 12 students.

TARGET POPULATION GROUP RESULTS: ALL PROGRAM MONTHS

Two-thirds (66.7%) of students had an increase or no change in their absence rates prior to and during their enrollment in the **C&C Program** compared to one-third (33.3%) of students who had a decrease in their absence rates (see Figure 17).

Figure 17. *Differences in Absence Rates of Students Within the Target Population Group: Three Months Prior to Enrollment and All Program Months*

25.0% 3 students	**16.7%** 2 students	**25.0%** 3 students	Decreased 0.1%-10%
Increased >20%	Increased 10%-20%	Increased 0.1%-10%	4 students **33.3%**

The new pre-enrollment absence rates of students within the Target Population Group when including only Three Months Prior to Enrollment were paired with their absence rates across All Program Months (see Table 15).

A two-sided paired Wilcoxon test (*p* = 0.052) found no significant difference in absence rates prior to and during program enrollment. However, the *p*-value of the one-sided Wilcoxon test (p = 0.979) – which assumes absence rates would decrease upon enrollment – revealed a significant difference, but in the opposite direction as absence rates significantly increased during enrollment. The magnitude of the differences in absence rates was *large* (0.566).

Table 15. *Paired Absence Rates of Students Within the Target Population Group (7.5% – 15%):*
Three Months Prior to Enrollment and All Program Months

Target Population Student	Three Months Prior to Enrollment (absence rate %)	All Program Months (absence rate %)
Student 1	7.6%	21.8%
Student 2	10.8%	53.6%
Student 3	7.6%	3.1%
Student 4	7.8%	23.2%
Student 5	10.3%	7.0%
Student 6	9.1%	33.1%
Student 7	10.8%	18.3%
Student 8	12.9%	14.8%
Student 9	7.8%	12.3%
Student 10	10.8%	10.1%
Student 11	14.3%	7.2%
Student 12	13.4%	34.3%

TARGET POPULATION GROUP RESULTS: EFFECTIVE PROGRAM MONTHS

One-third (33.3%) of students had an increase or no change in their absence rates prior to and during their enrollment in the **C&C Program** compared to two-thirds (66.6%) of students who had a decrease in their absence rates (see Figure 18).

Figure 18. *Differences in Absence Rates of Students Within the Target Population Group: Three Months Prior to Enrollment and Effective Program Months*

8.3%
1 student
Increased
10%-20%

25.0%
3 students
Increased
0.1%-10%

Decreased
0.1%-10%
7 students
58.3%

Decreased
10%-20%
1 student
8.3%

New pre-enrollment absence rates among students within the Target Population Group when including only Three Months Prior to Enrollment paired with their absence rates across Effective Program Months (see Table 16).

A two-sided (p = 0.176) and one-sided Wilcoxon test (p = 0.088) found no significant difference or decrease in absence rates prior to and during program enrollment, respectively. Still, the magnitude of the differences in absence rates was *large* (0.408).
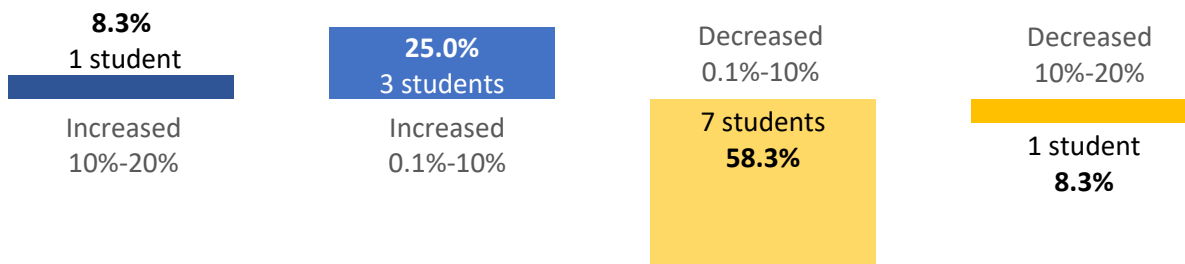
Table 16. *Paired Absence Rates of Students Within the Target Population Group (7.5% – 15%): Three Months Prior to Enrollment and Effective Program Months*

Target Population Student	# of Effective Program Months	Three Months Prior to Enrollment (absence rate %)	Effective Program Months (absence rate %)
Student 1	1	7.6%	0.0%
Student 2	0	10.8%	16.7%
Student 3	9	7.6%	3.0%
Student 4	0	7.8%	17.9%
Student 5	4	10.3%	5.7%
Student 6	2	9.1%	1.3%
Student 7	0	10.8%	11.9%
Student 8	0	12.9%	14.3%
Student 9	2	7.8%	4.4%
Student 10	1	10.8%	7.1%
Student 11	6	14.3%	3.9%
Student 12	1	13.4%	7.1%

A series of comparative analyses are conducted across three groups to find the most representative group and model to present the **C&C Program** effects on the attendance of students within the Target Population Group.

TARGET POPULATION GROUP RESULTS: ALL PROGRAM MONTHS

With large effect sizes, all three **Pre-Enrollment Timelines** that were developed for calculating absence rates of students within the Target Population Group revealed that there was a significant increase in absence rates across All Program Months during enrollment. Results of the paired Wilcoxon tests are provided in Table 17.

None of the methods showed a decrease in the absence rate. With the largest effect size, the pre-enrollment absence rates when Backtracking Month-by-Month Prior to Enrollment most significantly reflects the changes in absence rates of students within the Target Population Group before and during program enrollment.

Table 17. *Target Population Group: Comparison of Paired Wilcoxon Test Results (Pre-Enrollment Timelines and All Program Months)*

	One Month Prior to Enrollment	Backtracking Month-by-Month Prior to Enrollment	Three Months Prior to Enrollment
Number of students	11	11	12
***p*-Value (two-sided)**	0.010	0.007	0.052
***p*-Value (one-sided)**	0.997	0.998	0.979
Effect Size	0.751	0.777	0.566

* The p-value represents the likelihood that random sampling would result in a median change far from zero. The p-value < 0.05 indicates the medians of the populations are different (two-sided) or decreased (one-sided); the p-value > 0.05 would be unable to conclude a significant difference or decrease between medians

** Effect size evaluates the level of the impact. 0.1 – 0.3 (small impact), 0.30 – 0.5 (moderate impact) and > 0.5 (large impact)

TARGET POPULATION GROUP RESULTS: EFFECTIVE PROGRAM MONTHS

A multiple linear regression model was built to predict the absence rates of students within the Target Population Group across **Pre-Enrollment Timelines** during Effective Program Months of enrollment. The model indicates that for students within this group, those students with a relatively lower pre-enrollment absence rate and a larger number of Effective Program Months tend to have a lower absence rate across Effective Program Months of enrollment. The equation of the regression model is shown in Table B2, Appendix B.

Results suggest that the absence rates calculated across Three Months Prior to Enrollment is the best model to predict absence rates of students within the Target Population Group during the Effective Program Months based on their pre-enrollment absence rates and the number of Effective Program Months. Overall, there is no evidence to illustrate a significant impact of the program on improving the attendance of students within the Target Population Group (see Table 18)

Table 18. *Target Population Group: Comparison of Paired Wilcoxon Test Results (Pre-Enrollment Timelines and Effective Program Months)*

	One Month Prior to Enrollment	Backtracking Month-by-Month Prior to Enrollment	Three Months Prior to Enrollment
Number of students[1]	10*	10*	12
Multiple R-Squared[2]	0.625	0.770	0.176
Adjusted R-Squared	0.313	0.385	0.088
***p*-Value[3]**	0.177	0.113	0.408
Residual Standard Error[4]	0.066	0.066	0.054

[1] *Student 3 was removed from the analysis as a Paired Wilcoxon test cannot be conducted on datasets or individual data where the differences would be equal to 0*

[2] *Multiple R-Squared and Adjusted R-Squared both measures how well the data fit the regression model. A higher R-Squared indicates a better model fitness*

[3] *The p-value < 0.05 means at least one of the predictor variables (pre-enrollment absence rate and the number of Effective Program Months) is significantly related to the outcome variable (Program-enrollment absence rate)*

[4] *Residual Standard Error (RSE) estimates the predicted error. A lower RSE indicates a more accurate model*

[5] *Comparative analyses of regression models for the Moderate-to-High Absenteeism Group (exceeds 15%) is shown in Table A2, Appendix A*

RECOMMENDATIONS

Below are a set of recommendations based on the review of **C&C Program** data and results of the analyses.

Recommendation One
Enrolling Students Who Best Fit C&C Program Criteria

a. Continue working with mentors to identify students who best fit the criteria – in accordance with **C&C Program** recommendations - for inclusion in the program.

b. Identify non-attendance criteria mentors are using to enroll students in the **C&C Program** (e.g., school disengagement, behavioural issues, and low grades).

Recommendation Two
Aligning Intervention Intensity with Absenteeism Rates

a. Evaluate the need for establishing pre-enrollment target groups based on absence rates (7.5% – 15%, 15% – 20%, and >20%) to support mentors' implementation of appropriate intervention activities.

b. Provide regular check-ins with mentors (monthly, per semester) to ensure the intensity of intervention methods mentors select are appropriate to **C&C Program** students' absence rates and risk for school dropout (i.e., as students' absence rates improve or worsen, intervention activities should be adjusted).

Recommendation Three
Improving and Streamlining Existing Data Collection Methods and Sources

a. Continue to collect meaningful data to evaluate effects of the **C&C Program** on students' attendance

b. Explore data collection methods and sources that can reduce potential error rates in **C&C Program** data entry (i.e., using MyEd BC as the primary source for attendance data rather than mentors using their own data as the primary source).

c. Improve the accuracy of attendance records of students enrolled in the **C&C Program** by investigating and resolving inconsistencies in attendance records on MyEd BC regarding absence codes, absence reasons, and the number of blocks in a school day.

Recommendation Four
Selecting Additional Data Collection Methods and Sources

a. Explore opportunities to include the voices of students and families by integrating them into the data collection process or as sources of information

b. Enhance quantitative data by highlighting the stories and experiences of mentors through interviews and focus groups

c. Identify additional sources of information that would reflect **C&C Program** impacts when students are enrolled in the program for non-attendance reasons (e.g., behavioural issues, low grades)

   ➢ Teacher-developed behaviour reports

   ➢ Records related to disciplinary actions taken (MyEd BD)

   ➢ Grades/Transcripts

d. Review and assess potential indicators for students' success in the **C&C Program** in addition to attendance records, which may include student self-reports related to:

   ➢ Social-emotional wellbeing and health

   ➢ Feelings of connection and belonging to school

   ➢ Social support network quality and satisfaction

   ➢ Mentor-student relationship quality

   ➢ Family-student relationship quality

   ➢ Positive experiences, skills learned, and challenges faced while enrolled

   ➢ Recommendations for **C&C Program** activities (i.e., what works to improve school engagement, improve grades , and pro-social behaviours and what doesn't work)

MODERATE-TO-HIGH ABSENTEEISM GROUP
COMPARATIVE ANALYSIS ACROSS PRE-ENROLLMENT TIMELINES

A series of comparative analyses were conducted across three groups to find the most representative group and model to present the **C&C Program** effects on the attendance of students within the High Absenteeism Group.

MODERATE-TO-HIGH ABSENTEEISM GROUP RESULTS: ALL PROGRAM MONTHS

One-sided paired Wilcoxon tests of pre-enrollment absence rates calculated by including One Month Prior to Enrollment and Backtracking Month-by-Month Prior to Enrollment yielded *p*-values lower than 0.05, suggesting a significant decrease in absence rates of students within the Moderate-to-High Absenteeism Group. Results of the paired Wilcoxon tests are provided in Table A1.

Table A1. *Moderate-to-High Absenteeism Group: Comparison of Paired Wilcoxon Test Results (Pre-Enrollment Timelines and All Program Months)*

	One Month Prior to Enrollment	Backtracking Month-by-Month Prior to Enrollment	Three Months Prior to Enrollment
Number of students	25	25	31
***p*-Value (two-sided)**	0.067	0.048	0.182
***p*-Value (one-sided)**	0.033	0.024	0.091
Effect Size	0.369	0.396	0.243

* The p-value represents the likelihood that random sampling would result in a median change far from zero. The p-value < 0.05 indicates the medians of the populations are different (two-sided) or decreased (one-sided); the p-value > 0.05 would be unable to conclude a significant difference or decrease between medians

** Effect size evaluates the level of the impact. 0.1 – 0.3 (small impact), 0.30 – 0.5 (moderate impact) and > 0.5 (large impact)

*** Paired Wilcoxon test cannot be conducted on datasets or individual data where the differences would be equal to 0

MULTIPLE LINEAR REGRESSION MODEL

The model with the greatest R-squared, lowest *p*-value, and residual standard error was based on pre-enrollment absences calculated One Month Prior to Enrollment.

The results suggest that including only the absence rates One Month Prior to Enrollment is the best model to predict the absence rates of students within the Moderate-to-High Absenteeism Group during Effective Program Months based on their pre-enrollment absence rates and the number of Effective Program Months.

Overall, the **C&C Program** has had a significant impact on improving the attendance of students in the Moderate-to-High Absenteeism Group. Compared with students in the High Absenteeism Group (Exceeds 20%), the absence rate of students within the Moderate-to-High Absenteeism Group decreased less significantly because the 15% – 20% of students doesn't substantially differ in absence rate during enrollment. Results of the paired Wilcoxon tests are provided in Table A2.

Table A2. *Moderate-to-High Absenteeism Group: Comparison of Paired Wilcoxon Test Results (Pre-Enrollment Timelines and Effective Program Months)*

	One Month Prior to Enrollment	Backtracking Month-by-Month Prior to Enrollment	Three Months Prior to Enrollment
Number of students	25	25	31
Multiple R-Squared	0.519	0.516	0.465
Adjusted R-Squared	0.475	0.471	0.427
***p*-Value**	0.00032	0.00034	0.00016
Residual Standard Error	0.154	0.156	0.158

*Multiple R-Squared and Adjusted R-Squared both measures how well the data fit the regression model. A higher R-Squared indicates a better model fitness

** The p-value < 0.05 means at least one of the predictor variables (pre-enrollment absence rate and the number of Effective Program Months) is significantly related to the outcome variable (program-enrollment absence rate)

*** Residual Standard Error (RSE) estimates predicted error. A lower RSE indicates a more accurate model

Covariance was used to measure how two variables change together and is represented as $Cov(A, B)$. The range of covariance is from positive infinity to negative infinity. A positive covariance means that both variables tend to be high or low at the same time. A negative covariance means that when one variable is high, the other tends to be low.

For each population group, the covariances and linear regression equations for the three **Pre-Enrollment Timelines** are shown in Tables B1 through B3 as references.

Table B1. *High Absenteeism Group Results: Comparative Analyses of Multiple Regression Model Equations Across Pre-Enrollment Timelines*

	Linear Regression Equation	Covariance Between *X* and *M*
One Month Prior to Enrollment	$Y = 0.267 + 0.422 * X - 0.040M$	$Cov(X, M) = 0.667$
Backtracking Month-by-Month Prior to Enrollment	$Y = 0.262 + 0.426 * X - 0.040M$	$Cov(X, M) = 0.621$
Three Months Prior to Enrollment	$Y = 0.200 + 0.536 * X - 0.029M$	$Cov(X, M) = 0.002$

* Y is the predicted variable, representing the absence rate during the Effective Program Months

** X is the predictor variable, representing the pre-enrollment absence rate

*** M is the predictor variable, representing the number of Effective Program Months

**** Cov(X, M) are relatively low, the equations do not need to add a parameter

Table B2. *Target Population Group Results: Comparative Analyses of Multiple Regression Model Equations Across Pre-Enrollment Timelines*

	Linear Regression Equation	Covariance Between *X* and *M*
One Month Prior to Enrollment	$Y = 0.077 + 0.553 * X - 0.033M$	$Cov(X, M) = -0.0009$
Backtracking Month-by-Month Prior to Enrollment	$Y = 0.077 + 0.570 * X - 0.034M$	$Cov(X, M) = 0.001$
Three Months Prior to Enrollment	$Y = 0.063 + 0.387 * X - 0.012M$	$Cov(X, M) = -0.005$

* Y is the predicted variable, representing the absence rate during the *Effective Program Months*

** X is the predictor variable, representing the pre-enrollment absence rate

*** M is the predictor variable, representing the number of *Effective Program Months*

**** Cov(X, M) are relatively low, the equations do not need to add a parameter

Table B3. *Moderate-to-High Absenteeism Group Results: Comparative Analyses of Multiple Regression Model Equations Across Pre-Enrollment Timelines*

	Linear Regression Equation	Covariance Between *X* and *M*
One Month Prior to Enrollment	$Y = 0.248 + 0.445 * X - 0.039M$	$Cov(X, M) = 0.602$
Backtracking Month-by-Month Prior to Enrollment	$Y = 0.252 + 0.449 * X - 0.040M$	$Cov(X, M) = 0.613$
Three Months Prior to Enrollment	$Y = 0.122 + 0.738 * X - 0.028M$	$Cov(X, M) = 0.062$

* Y is the predicted variable, representing the absence rate during the *Effective Program Months*

** X is the predictor variable, representing the pre-enrollment absence rate

*** M is the predictor variable, representing the number of *Effective Program Months*

**** Cov(X, M) are relatively low, the equations do not need to add a parameter