Results

An Evaluation of School-Based Health Centers
Final Evaluation Report

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Executive Summary

The United Way of Greenville County (UWGC) received an award in the 2014 Social Innovation Fund (SIF) grant competition to support its OnTrack Greenville initiative, a collective impact dropout-prevention program for middle grades students. Greenville Health System (now known as Prisma Health - Upstate), a Sub-Grantee, implemented School-Based Health Centers (SBHC). Staffed by a team of nurses and physicians, these centers were integrated into the existing school health room framework and provided a variety of medical services not otherwise available in schools. The Riley Institute at Furman University served as the third-party evaluation contractor for the SIF-funded evaluation of OnTrack Greenville, including the School-Based Health Centers. Greenville Health System established School-Based Health Centers at four middle schools in the White Horse Community of Greenville County, South Carolina.

In each of the four OnTrack Greenville middle schools, the School-Based Health Centers provided services such as non-emergent care, treatment of acute illnesses, physicals, and other screening services. In addition, School-Based Health Center staff conducted Hallways to Health activities, which addressed various health-related topics. For example, students might receive information about ways to prevent the spread of illnesses or create visual displays regarding the aspects of healthy relationships. The primary intended impact of the School-Based Health Centers was improved student attendance. The intended secondary outcomes of the program were an increased number of students having an identified medical home, more students returning to class after a visit to the School-Based Health Center, and an increase in staff awareness of the School-Based Health Center's purpose and services.

There is a growing body of literature that documents the positive relationship between the implementation of School-Based Health Centers and school attendance (Gall, Pagano, Desmond, Perrin, and Murphy 2000; Webber, Carpiniello, Oruwariye, Burton, and Appel 2003; Van Cura 2010; Walker, Kerns, Lyson, Bruns, and Cosgrove 2010). Links also have been made between the implementation of School-Based Health Centers and increases in academic performance (McCord et al. 1993; Gall et al. 2000; Walker et al. 2010; Strolin-Goltzman 2010; Strolin-Goltzman, Sisselman, Melekis, and Auerback 2014). Strolin-Goltzman, Sisselman, Melekis, and Auerbach (2014) examined the relationship between School-Based Health Center use, school connection, and academic performance among 793 K5-12 students in a large northeastern city. Similar to the study presented here, Strolin-Goltzman (2010) utilized a retrospective, quasi-experimental design using matched comparison groups to study the relationship between School-Based Health Centers and the school learning environment at 416 public schools in a city in the northeast (208 treatment schools with a School-Based Health Center and 208 schools without a School-Based Health Center selected through propensity score matching). The study found that the presence of a SBHC at a school was related to higher academic expectations and increased school engagement compared to schools without a School-Based Health Center.

The School-Based Health Center model's incoming level of evidence was preliminary and this study targeted a moderate level of evidence. A broad and positive body of literature on the benefits of school health models substantiated a preliminary incoming level of evidence for the model. With the availability of administrative data to measure student impacts in attendance, behavior, and course performance for students across the district and state, researchers were confident that a quasi-experimental design would provide more robust and technically sound results to expand the evidence base for the model. Due to the limited geographic scope of the initiative and the inability to randomly

assign students to treatment and control conditions, researchers were not able to design a study to target a strong level of evidence. The impact evaluation builds additional evidence for the model's impact on student attendance. In addition, the evaluation examines additional outcomes, including course grades and behavior. The results of the evaluation contribute to the national conversation on the relationship between health and educational outcomes and the effectiveness of integrating health services within community-based settings.

In order to achieve a moderate level of evidence, this study utilized a single-site non-randomized group design with groups formed by propensity score matching. For confirmatory impact research questions, there were three comparison groups. Treatment students were matched to (1) other students in the _treatment schools_ who did not participate in the intervention; (2) other students in the _same school district_ attending non-treatment schools; and (3) other students attending _Title I schools across the state_ of South Carolina. The use of these multiple comparison groups improved the overall internal and external validity of the study, as each comparison group presented different threats to validity. Researchers matched students using a propensity score model that included race, gender, grade level, English proficiency, special education status, free and reduced meal eligibility, and baseline outcome variables. Researchers conducted separate matching procedures for each data source, administrative data and survey data. At the conclusion of the matching process, researchers ensured that there were no significant differences between the treatment and comparison groups on pre-treatment covariates.

In total, 767 students utilized services at the School-Based Health Centers in academic years 2016-17 and 2017-18. Of the students enrolled in academic year 2016-17, 170 students met the criteria for inclusion in the impact study treatment group. In academic year 2017-18, 96 students met the criteria for inclusion in the treatment group.

To assess the impact of the School-Based Health Centers on student attendance, as well as exploratory outcomes, researchers created nine matched comparison groups. It was necessary to create nine distinct, matched comparison groups due to (1) the three different comparison school populations (treatment schools, district schools, and state schools), (2) the two different sources of outcome data (administrative data and student survey data), and (3) two years of analysis (2016-17 and 2017-18).[1] Table 1 below shows the final sample size numbers of all treatment and comparison groups.

The study drew on administrative data and survey data to measure impacts and secondary outcomes. Through data-sharing agreements with Greenville County Schools and the South Carolina State Department of Education (SCDE), researchers received access to student administrative data to measure academic impacts. The primary intended impact of School-Based Health Center utilization was to improve student attendance. Drawing on quantitative administrative data, researchers used the following measures of student attendance: _average daily attendance and chronic absenteeism status_. There were two sources of survey data: (1) a school-wide student pre- and post-survey administered at treatment and within-district comparison schools; and (2) an end-of-year educator survey administered at treatment schools. To measure the program's secondary outcomes, the student survey included measures of student medical home and student perceptions of physical and mental health. In addition, the educator survey included several measures of educator awareness of School-Based Health Center purpose and services.

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[1] Only 2016-17 administrative data were available for the state match.

Table 1. Final Sample Size Numbers of Treatment and Comparison Groups

Academic Year	Type of School Comparison Group	Group	Administrative Data	Survey Data
2016-17	Treatment Schools	Treatment Students	132	58
		Comparison Students	496	236
	Within-District Schools	Treatment Students	126	57
		Comparison Students	474	233
	State Schools	Treatment Students	73	---
		Comparison Students	347	---
2017-18	Treatment Schools	Treatment Students	82	44
		Comparison Students	322	184
	Within-District Schools	Treatment Students	82	46
		Comparison Students	338	192

Note: This table shows the number of unique students matched for each comparison.

The ***confirmatory impact research question*** for the study was: *Did students who utilized School-Based Health Center services have higher attendance rates than matched comparison students?* One positive significant result allowed researchers to confirm the hypothesis that students who utilized School-Based Health Center services would have higher rates of school attendance than matched comparison students. After adjusting for multiple comparisons, however, this result was no longer significant at a p-value of 0.10. Confirmatory impact results for student attendance included:

- When compared to matched students at treatment schools, there were no significant differences between School-Based Health Center students and comparison students in average daily attendance or chronic absenteeism in academic year 2016-17 or 2017-18, as measured by school district administrative records.
- When compared to matched students at district schools, School-Based Health Center students were significantly less likely to be chronically absent in academic year 2016-17 (p < 0.10). There were no significant differences in average daily attendance outcomes between School-Based Health Center students and comparison students at district schools in either academic year.
- There were no significant differences in attendance between treatment students and matched comparison students attending state schools in academic year 2016-17.
- There were 10 total tests (average daily attendance and chronic absence for the five matches using the administrative data). Before adjustments for multiple comparison were made, one of the tests indicated statistically significant differences between School-Based Health Center students and comparison students. After adjusting for multiple comparisons, this result was no longer statistically significant.

The ***exploratory impact research questions*** were: *Did students who utilized School-Based Health Center services demonstrate improved course performance in ELA and math? Did students who utilized School-Based Health Center services have fewer behavioral incidences than matched comparison students?* While these impacts did not appear in the School-Based Health Center logic model, they were primary impact areas of the OnTrack Greenville initiative. Results varied by outcome and academic year. Key findings included:

- Students who utilized services at a School-Based Health Center showed significant growth in MAP assessment math scores when compared to matched comparison students at treatment (p < 0.10) and district schools (p < 0.05) in academic year 2016-17.

- In academic year 2017-18, School-Based Health Center students had significantly lower scores on the SC READY math assessment than matched comparison students at treatment ($p < 0.01$) and district schools ($p < 0.01$). School-Based Health Center students also had significantly lower scores on the SC READY ELA assessment than matched comparison students at treatment schools ($p < 0.10$).
- Students who utilized the School-Based Health Center received, on average, 0.84 fewer days of out-of-school suspension ($p < 0.01$) and 3.10 fewer hours of in-school suspension ($p < 0.01$) than matched comparison students at district schools in academic year 2016-17. In academic year 2017-18, School-Based Health Center students received 3.55 fewer hours of in-school suspension that matched students at district schools ($p < 0.001$).
- School-Based Health Center students were more likely to have received any in-school suspension than matched comparison students at state schools in academic year 2016-17 ($p < 0.05$) and more likely to have received any out-of-school suspension than matched comparison students at treatment schools in academic year 2017-18 ($p < 0.05$).

The ***exploratory research questions related to secondary outcomes*** were: *Were students who utilized School-Based Health Center services more likely to have an identified medical home than matched comparison students? Following implementation of the School-Based Health Center Primary Care Model, was there an increase in the number of students who returned to class after a health visit at treatment middle schools? Following implementation of the School-Based Health Center Primary Care Model, was there an increase in the awareness of the School-Based Health Center's purpose and services offered among school staff members at treatment middle schools.* Key findings included:
- Results from a school-wide student survey showed different patterns in health care utilization between School-Based Health Center students and matched comparison students, suggesting treatment students were starting to establish medical homes. At the end of academic year 2016-17, School-Based Health Center student survey responses showed that treatment students were less likely to primarily seek medical care at the emergency room than matched students at treatment schools ($p < 0.10$). In addition, School-Based Health Center students reported that they were more likely to primarily seek medical care at the school health room than matched students at district schools ($p < 0.05$).
- In academic year 2017-18, there were no significant differences in reported medical home between treatment and comparison students at district schools.
- In academic year 2016-17, 94 percent of student visits to the School-Based Health Centers resulted in students returning to class. The following year, 97 percent of student visits resulted in students returning to class.
- Responses to a school-wide educator survey showed that educator awareness of the School-Based Health Center purpose and services increased from academic year 2015-16 to academic year 2017-18. The percentage of educators reporting they were familiar or very familiar with the School-Based Health Center increased to 82.7 percent in academic year 2017-18, up from 67.1 percent in academic year 2015-16.

The ***additional exploratory research questions*** were: *Did students who received treatment at a School-Based Health Center report higher levels of physical and mental health than comparison students? Were students who utilized School-Based Health Center services more likely to report higher levels of self-confidence than comparison students? Were students who utilized resources at School-Based Health centers more likely to report positive relationships with teachers and adults in their schools than matched comparison students? Did students who utilized resources at School-Based Health Centers report higher levels of school engagement than comparison students? Did students who utilized resources at School-Based Health Centers report a more positive attitude toward learning than*

comparison students? In general, the findings did not support the hypotheses for the additional exploratory research questions. Findings included:

- There were no significant differences in perceived physical or mental health between treatment and comparison students.
- There were no significant differences in student self-confidence between treatment and comparison students.
- School-Based Health Center students reported weaker relationships with teachers (p < 0.05) and caring adults (p < 0.10) at their school than matched comparison students at treatment schools in academic year 2016-17.
- There were no significant differences in school engagement between treatment and comparison students.
- There were no significant differences in student attitude toward learning between treatment and comparison students.

The ***implementation research questions related to program context and reach*** were: *What factors influenced implementation? What proportion of students participated in School-Based Health Center activities? What proportion of students utilized specific services? What access trends were observed among subgroups of students?*

- In academic year 2016-17, the OnTrack Greenville schools had between 16-20 percent of their student population using the School-Based Health Center. School 2 utilized the program on an as-needed basis as opposed to having a School-Based Health Center provider at the site each week; thus, their reach was much lower. The second year of implementation, 13 percent of students attending School 1, 6 percent of School 2, 23 percent of School 3, and 26 percent of School 4 utilized services at the School-Based Health Center.
- During both years of implementation, slightly more males made visits to the SBHC (55%) than females (45%), and Hispanic students were the most served population (37% in 2016-17 and 38.4% in 2017-18). Most referrals to the School-Based Health Center originated from coaches and athletic directors for completion of pre-participation physicals.
- Sport physicals were the reason for almost half of student visits to School-Based Health Centers in 2016-17 (42%) and 2017-18 (49%).

The ***implementation research questions related to implementation planning and outputs*** were: *To what extent were* School-Based Health Center *services planned and implemented? What resources were provided? To what extent were partners collaboratively planning services? Did teachers and school staff know about* School-Based Health Center*s? What services were offered? Which services were utilized by students? What utilization trends were observed among subgroups of students?*

- Resources provided at the School-Based Health Centers included: basic first aid, acute care services, sports physicals, chronic care management, psychosocial services, immunization management, ADHD evaluations, referrals for specialty care, referrals to medical homes, and treatment of illness with over-the-counter and prescription medications from school, and comprehensive evaluations with the identified students to identify potential health concerns leading to absences or concerning behavior.
- A higher percentage of teachers reported being familiar with School-Based Health Centers each year of implementation.

The **implementation research question related to implementation fidelity and completeness** were: *To what extent were School-Based Health Center services implemented as planned? How well were activities following the School-Based Health Center plans and protocols? To what degree were output goals reached?*

- Researchers concluded that the program was implemented with fidelity in academic years 2016-17 and 2017-18.

Students who utilized services at the School-Based Health Center did not demonstrate significantly better attendance outcomes when compared to matched comparison students at treatment and district schools in the same school district. As student use and educator awareness of the School-Based Health Centers continue to rise, attendance outcomes may improve in future years of the study. Also, changes to the process of obtaining parental permission for the sharing of student health data will increase the sample size of the study in future analyses. The lower than expected sample size, broad treatment definition, and broad outcome measures for student attendance were limitations of this study, among others.

Looking ahead, academic year 2018-19 will be one of change for the Bradshaw Institute School-Based Health Centers. Due to funding changes, the School-Based Health Centers no longer will be financially supported by the Social Innovation Fund through the United Way of Greenville County. However, the collaboration and engagement with the OnTrack Greenville initiative will continue. In August 2017, the Bradshaw Institute was awarded a $3.38 million grant from the Greenville Health Authority's Healthy Greenville 2036 initiative. This grant funds the Bradshaw Institute to create a streamlined comprehensive health initiative that serves West Greenville students from preschool through high school.

The School-Based Health Centers will continue in the current four OnTrack Greenville schools. In addition, a School-Based Health Center has been added to a high school in the White Horse Community for academic year 2018-19. To accommodate the increase in sites, the School-Based Health Center clinical team has hired another nurse practitioner and registered nurse to provide care. Adding this high school site will allow nurse practitioners to provide continuous care for many students as they transition from middle to high school.

There were few key updates to the evaluation timeline, budget, program, or research team. The major update was the change in evaluation timeline due to the lack of Social Innovation Fund continuation funds to complete the final two years of program implementation and evaluation. As such, researchers executed a contingency plan to end the study after Year 3 (AY 2017-18). Members of the research teams at the Riley Institute at Furman University and Clemson University remained constant, as did staff members on the Greenville Health System team. There was some turnover among school-based program staff at program sites, which was not unexpected. Researchers did not encounter any challenges related to key timeline elements or dates.

This final report satisfies evaluation requirements for United Way of Greenville County's Social Innovation Fund grant award. Local leaders have committed to funding the initiative and evaluation for the final two years of the project in the absence of Social Innovation Fund continuation funding; therefore, evaluation next steps include the continuation of data collection and analysis as planned for academic years 2018-19 and 2019-20. Researchers will begin to disseminate preliminary results as early as 2019, but expect final results and a more robust dissemination plan to be available in March 2021.

I. Introduction

This report describes the implementation and impact evaluation of School-Based Health Centers (SBHC), a Sub-Grantee intervention within United Way of Greenville County's SIF-funded OnTrack Greenville initiative. This is a final report submitted to the Social Innovation Fund to satisfy grant evaluation requirements and it addresses all implementation and impact research questions from the Sub-Grantee Evaluation Plan (SEP). The intended audience of this report is the Social Innovation Fund as well as Grantee and Sub-Grantee stakeholders.

Leaders from nonprofits, the school district, and the community implemented OnTrack Greenville, a collective impact approach that includes the implementation of an Early Warning and Response System (EWRS) in four target middle schools. The EWRS uses real-time data to identify and flag students at-risk of disengaging from school. An EWRS team, also known as an OnTrack Team, meets weekly and includes a team of educators and student support specialists who discuss the unique needs of identified students and match them with appropriate response interventions, tracking each student's progress over time. OnTrack Greenville's federally supported Social Innovation Fund (SIF) portfolio has funded five Sub-Grantee interventions to ensure students have access to evidence-based interventions and supports. These five interventions include (1) a summer learning program for rising sixth grade students; (2) student case management; (3) a semester-long character development course; (4) School-Based Health Centers; and (5) literacy coaching for teachers. This report examines one of these Sub-Grantee interventions: Greenville Health System's School-Based Health Centers.

A. Program Background and Problem Definition

1. Description of Community and Program Need

Since United Way of Greenville County applied for this Social Innovation Fund grant in 2014, the local community has continued to experience significant growth and development. After the biennial census in 2010, the population of Greenville County grew by 12.7% to more than 500,000 people.[2] With a blossoming downtown, the city of Greenville has appeared on several national lists of best cities to live in or visit (D. Walker, 2018). The unemployment rate in the county has dropped from 5.6% in February of 2014 to 2.5% in May of 2018.[3] At the same time, the county-wide poverty rate has decreased from 15.2% in 2014 to 12.4% in 2018.[4] A broad look at community indicators suggests many county residents are experiencing improved economic conditions.

A closer look reveals that not all residents have shared in this growth, especially in the White Horse Community, the geographic area targeted by OnTrack Greenville. As community developers have worked to revitalize neighborhoods close to the city center, low-income residents have continued to relocate to the White Horse Community, which straddles the edge of the city of Greenville. A recent assessment of neighborhood needs and assets revealed that many neighborhoods located in the White Horse Community, despite their wealth of community assets, continue to face challenges with

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[2] U.S. Census Bureau 2018 Population Estimates
[3] U.S. Department of Labor 2018 Labor Force Statistics
[4] U.S. Census Bureau 2018 Small Area Income and Poverty Estimates (SAIPE)

unemployment, family poverty, income inequality, housing, and access to healthcare and childcare, among others (Cohen et al., 2017).

There is a well-established relationship between social conditions and health (e.g. Marmot, 2005). Across Greenville County, and especially in the White Horse Community, residents experiencing challenging social conditions also face many health-related challenges. For example, in Greenville County, 14% of all residents and 5% of children do not have health insurance coverage.[5] More than a quarter (28%) of adults are obese, with a BMI of 30 or higher, and 21% of adults report that they do not engage in any leisure-time physical activity.[6] An estimated 17% of adults are current smokers and another 17% describe their health as poor or fair.[7]

OnTrack Greenville serves four middle schools located in the White Horse Community. These middle schools serve a higher proportion of low-income and minority students than other schools in the district.[8] In academic year 2017-18, each of these OnTrack Greenville sites had at least 79% of students living in poverty and 100% of students eligible for free or reduced-price meals. Three of the four treatment middle schools receive Title I funds, while the fourth site is technically a school program and ineligible for Title I funds despite a high proportion of students living in poverty. Across these three sites, the Title I funds have been used for expenses such as: teacher salaries, instructional technology, instructional materials, social workers, nurses, parent and family engagement coordinators, translators, tutoring, and other student services. The Title I funding also can enable schools to reduce the size of some classrooms and provide additional support staff.

The demographic characteristics of OnTrack Greenville treatment school student populations varied from the characteristics of the entire district.[9] In academic year 2017-18, OnTrack Greenville treatment schools were home to a high percentage of Hispanic or Latino students. The percentage of Hispanic students attending OnTrack Greenville treatment schools ranged from 27% to 55%, higher than the district average of 18%. In addition, OnTrack Greenville schools generally had a higher percentage of Black or African American students (23% to 55%) than the district average of 23%. OnTrack Greenville schools also had a higher poverty index than the overall district poverty index. The percentages of male and female students attending OnTrack Greenville treatment schools were reflective of the district average.

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[5] U.S. Census Bureau 2015 Small Area Health Insurance Estimates

[6] Centers for Disease Control 2014 Diabetes Interactive Atlas

[7] 2016 Behavioral Risk Factor Surveillance System

[8] Public schools in the White Horse Community are part of the Greenville County Schools district. The largest district in the state of South Carolina and 45th largest district in the nation, Greenville County Schools consists of 101 schools and centers serving 76,900 students with 6,000 teachers. Approximately half of Greenville County Schools students are living in poverty (52%) and/or eligible for free or reduced-price meals (52%).

[9] Greenville County Schools Population Statistics 2017-18 180th Day Enrollment Summary
https://www.greenville.k12.sc.us/About/main.asp?titleid=statistics1718

Table 2. School Enrollment by Gender, Race or Ethnicity AY 2017-18, 180th Day

Site	Enrollment (2017-18)	Gender		Race/Ethnicity				Poverty Index
		F	M	Black	White	Hispanic	Other	
District	75,220	49%	51%	23%	54%	18%	8%	53
Treatment School - Maximum	746	55%	57%	55%	26%	55%	9%	88
Treatment School - Minimum	109	43%	45%	23%	16%	27%	1%	79

One key academic indicator for predicting early disengagement among middle school students is course performance (Balfanz & Fox, 2011). Overall, students attending OnTrack Greenville middle schools placed well behind their peers on the South Carolina standardized assessment in ELA and math (SC READY) in academic year 2017-18. As shown below in Table 3, the percentage of students who met or exceeded state standards in ELA ranged from 6.3% to 25.7% at OnTrack Greenville schools, while the percentage of students who met or exceeded state standards in math ranged from 3.6% to 25.7%.[10] These ranges of scores were well below the district and state averages in both subject areas.

Table 3. Percentage of Students who Met or Exceeded State Standards in ELA and Math: AY 2017-18

	Number of students	SC READY ELA	SC READY Math
State of South Carolina	340,478	41.7%	44.6%
District	34,220	48.9%	52.5%
Treatment School - Maximum	654	25.7%	25.7%
Treatment School - Minimum	112	6.3%	3.6%

Source: SC School Report Cards, 2019

Early adolescence is a time period that is marked by significant physical, intellectual, and emotional change (Caskey & Anfara, 2007). It is a time for students to begin exploring their strengths and thinking about their future. It is also a time when too many students fall off track and lose the momentum needed to complete high school, causing them to be unprepared for post-secondary success. Research shows that an individual's educational attainment is one of the most important determinants of his or her opportunities in terms of employment, income, and housing status (Levin, Belfield, Muennig, & Rouse, 2007). In addition, high school dropouts are more likely to become teenage parents and suffer from adverse health conditions, incurring major costs to society (Alliance for Excellent Education, 2011).

To help improve student health and academic outcomes, Greenville Health System's Bradshaw Institute for Community Child Health & Advocacy[11] implemented the School-Based Health Centers at OnTrack Greenville Schools. The School-Based Health Centers worked to increase the number of students who could attend school by providing on-site opportunities for students to access primary care, receive vaccinations, be treated for acute illness, receive sports physicals, and receive help managing chronic

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[10] South Carolina Department of Education 2018 South Carolina College- and Career-Ready Assessments (SC READY) Test Scores https://ed.sc.gov/data/test-scores/state-assessments/sc-ready/2018/
[11] In January 2019, Greenville Health System formally changed its name to Prisma Health - Upstate. The present study examines program implementation prior to this name change; therefore, this report continues to refer to the organization as Greenville Health System.

diseases. In addition, School-Based Health Center staff provided nutrition counseling, health prevention/illness care education, and prescriptions for medication. The primary intended impact of the School-Based Health Centers was to improve attendance and reduce the rate of chronic absenteeism at treatment schools. A full description of the program model follows.

2. Description of Program Model

In an effort to reduce the number of absences due to health issues among low-income populations, Greenville Health System, now known as Prisma Health - Upstate, proposed to open a School-Based Health Center in each of the four targeted middle schools in the White Horse Community of Greenville, SC. The School-Based Health Centers worked to improve student attendance by providing on-site opportunities for students to receive acute illness services, chronic care management, and screenings for psychosocial health (including depression, anxiety, and other traumas). In addition, they provided sports physicals, nutrition counseling, health prevention education, and prescriptions for medication.

In addition to increasing middle school attendance rates, GHS also hoped to increase the number of students who had identified medical homes by providing referrals to community resources, GHS primary care providers/practices, and specialist services. Some of these referrals connected students with agencies to get required immunizations to attend school and Medicaid services to obtain health insurance. In addition, the program aimed to increase awareness among school staff of the purpose and services offered by the School-Based Health Centers through education and training.

The four GHS-sponsored School-Based Health Centers operated using the *Primary Care Model* in which a Pediatric Nurse Practitioner (NP) staffed the clinics and received medical supervision by a physician. In addition, the medical director for the School-Based Health Centers saw patients on an as-needed basis (most often for ADHD evaluations). Along with a registered nurse (RN), the NP was on-site from 8:00 am to 3:30 pm at each of the four schools at least one day per week, conducting a maximum of 24 health visits per day.

Inputs

As shown in the program logic model (Appendix B), the implementation of GHS's School-Based Health Centers involved six different inputs: (1) GHS program staff, including their knowledge and experience with School-Based Health Centers; (2) schools and staff that collaborated with GHS and the School-Based Health Centers; (3) the medical equipment, supplies, and equipment needed to stock each School-Based Health Center; (4) financial resources from UWGC Social Innovation Fund Sub-Grant, Greenville Partnership for Philanthropy, and other match sources; (5) Early Warning and Response System and internal data system to identify eligible students, track students' progress, and provide ongoing feedback; and (6) OnTrack Greenville collective impact resources and support.

> (1) The overall program was managed by GHS's Bradshaw Institute for Community Child Health & Advocacy (formerly GHS Children's Advocacy department), which aims to reduce health inequalities among children by providing community outreach, health literacy, public policy advocacy, prevention, and chronic disease management through partnerships between the medical community and the Upstate of South Carolina. GHS program staff who were critical to the successful implementation of School-Based Health Centers in the four target middle schools

included School-Based Health Center clinical staff, the Bradshaw Institute's Manager of School Health, and the Bradshaw Institute's Manager of Community Pediatrics.

(2) Developing relationships with the schools that implemented School-Based Health Centers was critical to ensuring their success. GHS worked with the school nurse and staff to identify children who were at risk, as well as those who needed a medical home. GHS collaborated with Greenville County Schools to collect data, within certain patient privacy guidelines, from school records and the Early Warning and Response System.

(3) In order for the School-Based Health Centers to increase student access to medical care, including student contact with providers when needed, the School-Based Health Centers needed to be stocked with the appropriate medical equipment and supplies to treat students on-site, including telemedicine carts for each of the schools. These carts, which use interactive video conferencing and other tools, such as otoscopes and electric stethoscopes, were not functional at schools until academic year 2018-19 due to technical difficulties. In addition, pharmacy kits stored at each school included basic over the counter medications.

(4) The successful implementation of School-Based Health Centers in each of the four target schools required $374,528 per fiscal year. The Social Innovation Fund Sub-Grant contributed $187,264, with the remaining $187,264 coming from match sources in the Greenville community.

(5) The EWRS allowed schools to identify quickly and regularly students who were at risk of, or who already were, sliding off track. Using a color-coded dashboard, the EWRS helps school staff members easily recognize early warning signals for their students, such as a decrease in attendance or increase in disciplinary incidences. In addition, the data provided by the EWRS can be aggregated to show trends across the school, across grade levels, and across student subgroups. By giving teachers and other school staff members access to real-time data related to attendance, behavior, and course performance, the EWRS is an essential tool for assessing individual students' strengths and needs, and then using that information to provide students with the appropriate interventions.

(6) OnTrack Greenville is a community-wide initiative to ensure middle school students stay on track toward high school graduation. The initiative works with focus schools, implementation partners, nonprofits, community members, government officials, funders, and other stakeholders to achieve the common goal of keeping students on track towards high school graduation and future success. OnTrack Greenville consistently convenes school leadership, implementation partners, and funders to coordinate and implement key aspects of the initiative for the coming school year, while also building a shared vision, governance, and accountability for OnTrack Greenville. Engaging with the community, families, students, other nonprofits, and grassroots organizations contributes to the overall collective impact of the initiative.

GHS worked to increase middle school attendance rates through the School-Based Health Centers by: (1) providing primary healthcare services one to two days per week at each of the targeted middle schools; and (2) educating school staff members on the purpose of School-Based Health Centers, how they differ from the school and Title I nurses that already operate in each of the target schools, and the specific services the School-Based Health Centers will offer.

> (1) The School-Based Health Centers offered primary care services that included non-emergent acute health care, chronic disease management, health prevention/illness care education, immunizations, medical referrals, prescriptions and OTC medications, and hearing and vision screenings.

> (2) Staff knowledge of the purpose and services of the School-Based Health Centers was critical to student participation. GHS staff coordinated with school leadership to promote School-Based Health Centers among staff at each school via faculty meetings and promotional materials, such as flyers and brochures explaining services and health promotion events. For academic year 2015-16, which was the pilot year, GHS provided flyers at Back-to-School Nights and with the OnTrack bags given to staff that included information on all OnTrack Greenville partners.

The provision of primary healthcare services during school hours at each middle school and the education of school staff members on the purpose of and services offered by the School-Based Health Centers was expected to result in: (1) initial student health assessments; (2) student health care visits; (3) chronic disease management plans for students; (4) referrals for outside care, specifically for (a) medical homes; (b) specialty care; (c) mental health services; and (d) dental care; (5) medications provided from on-site pharmacy; (6) telemedicine encounters; (7) staff educational events; and (8) student consents for treatment.

> (1) The number of initial student health assessments was the number of intakes or initial (first time) visits to the School-Based Health Center.

> (2) The maximum number of student health care visits in a day was 24; intakes were considered a student health care visit, as were repeat visits to the School-Based Health Center.

> (3) Asthma, diabetes, and ADHD were the main chronic diseases that were targeted and addressed with chronic disease management plans through the School-Based Health Center.

> (4) GHS sought to refer students who did not have a medical home to local primary care providers/practices, to specialty care practices for specific conditions, to mental health services for mental health issues, and dental care for oral health. The School-Based Health Center also followed-up on referrals by contacting the place of referral after the scheduled appointment.

> (5) There was an on-site pharmacy at each school so that over-the-counter (OTC) medications could be dispensed for headaches, fever, and pain (one-time administration). If a student required prescription based on a healthcare diagnosis, it would be e-scribed to the local pharmacy.

(6) The number of telemedicine encounters was intended to be the total amount of uses of telemedicine equipment to treat and diagnose students who visit the School-Based Health Center. While telemedicine carts were present at schools, they were not fully functional until academic year 2018-19 due to technical difficulties and insufficient internet access.

(7) Staff educational events were critical to increasing student participation in the School-Based Health Center. These health promotion events/activities were coordinated outside the walls of the School-Based Health Center to boost health literacy. For the 2015-16 pilot year, GHS staff attended a teacher rally at the beginning of the year and made sure that parents/guardians of children at each school received School-Based Health Center flyers and a brief overview of how the School-Based Health Center staff would help with healthcare in the schools.

(8) The number of students consented was the number of consents signed by a parent allowing GHS to treat their child through the School-Based Health Center when necessary.

Outcomes and Impacts

The success of GHS in achieving the outputs described above through the implementation of the School-Based Health Centers affected the ability to increase: (1) the number of students who had an identified medical home; (2) the likelihood that students would return to class after a health visit; and (3) staff and teacher awareness of the purpose of and services offered by the School-Based Health Centers.

(1) As a result of referrals from the School-Based Health Centers to primary care providers/practices, it was anticipated that the number of students with an identified medical home (a consistent, primary care provider) would increase. One of GHS's goals was to decrease student visits to the Emergency Department by having a primary care provider to use for non-emergent and well-care. GHS primary care providers/practices and identified community medical providers with which GHS had working relationships were used for students and families at each of the four target middle schools.

(2) Due to the limited scope of practice of a school nurse, sending a child home often is the only option when they report to the health room. With an NP and RN on site, the School-Based Health Center staff was able to assess a student and determine if he/she was able to return to class or really needed to be sent home. Even if a child had to be sent home, it was anticipated that the amount of time before returning to class would decrease because the student would have seen a practitioner sooner than if there had been no School-Based Health Center at the school. In addition, the School-Based Health Center staff could e-scribe a prescription to a pharmacy if needed for the child so that he/she could start on the medication right away, keeping the student out of school for less time.

(3) It was anticipated that a greater promotion of School-Based Health Center services would lead to an increase in school staff's awareness of the School-Based Health Center's purpose and mission, and that this would lead to higher number of referrals to the School-Based Health Center via school staff.

By achieving these outcomes, the School-Based Health Center logic model aimed for an ultimate program impact of improving student attendance.

B. Overview of Prior Research

School-Based Health Centers have been used all over the country to minimize the effects of poverty on student success. The detrimental effects of poverty on student health are numerous. For example, low-income children are more likely to be uninsured or underinsured, and thus lack a consistent source of primary health care, often leading to inadequate health care access, increased healthcare costs due overuse of Emergency Departments, and, ultimately, increased numbers of school absences as parents try to help their children access care (Dey, Schiller, & Tai, 2004). Providing access to health services at school is a growing approach to ensure students living in poverty have access to care.

There is a growing body of literature that documents the positive relationship between the implementation of School-Based Health Centers and school attendance (Gall, Pagano, Desmond, Perrin, & Murphy, 2000; Van Cura, 2010; Walker, Kerns, Lyon, Bruns, & Cosgrove, 2010 ; Webber et al., 2003). For example, Van Cura (2010) studied the relationship between School-Based Health Centers, early dismissal, and loss of seat time for 764 students who walked into the school nurses' office over the course of three weeks in two urban high schools in the state of New York. The study found that treatment students who received School-Based Health Center services had a reduced number of early dismissals and lost less seat time in comparison to students who received only traditional school nursing services.

Links also have been made between the implementation of School-Based Health Centers and increases in academic performance (Gall et al., 2000; McCord, Klein, Foy, & Fothergill, 1993; Strolin-Goltzman, 2010; Strolin-Goltzman, Sisselman, Melekis, & Auerbach, 2014; S. C. Walker et al., 2010). Strolin-Goltzman et al. (2014) examined the relationship between School-Based Health Center use, school connection, and academic performance among 793 K5-12 students in a large northeastern city, finding that School-Based Health Care users had higher GPAs, a higher rate of grade level promotion, and fewer tardies than non-users. A similar study found that the presence of a School-Based Health Center at a school was related to higher academic expectations and increased school engagement compared to schools without a School-Based Health Center (Strolin-Goltzman, 2010).

In addition to helping improve student attendance and academic performance, research has shown that students who utilized School-Based Health Centers developed trusting relationships with a medical home. For example, a study found that School-Based Health Center users were more likely to have three or more primary care visits, more likely to have received a health maintenance visit, and less likely to have used emergency care, all indicators of having a medical home (Allison et al., 2007). Other research has shown that many students preferred to utilize their School-Based Health Center instead of their primary care practice because they perceived it to be more trustworthy, compassionate, and of higher quality when compared to their primary care provider (Albright et al., 2016). These findings suggest that School-Based Health Centers can provide coordinated, competent care to students and may be perceived as more trustworthy and/or convenient than traditional primary care settings.

C. Overview of Impact Study

The School-Based Health Center model's incoming level of evidence was preliminary. This study targeted a moderate level of evidence by utilizing a single-site non-randomized group design with groups formed by propensity score matching. The impact evaluation aimed to build additional evidence for the model's

impact on student attendance and examine other exploratory impact variables, such as behavior, course performance, and other social-emotional outcomes related to character development and school success.

Researchers were not able to target a strong level of evidence for several reasons. First, the geographic scope of OnTrack Greenville was not large enough to support a national- or state-wide multi-site research design that typically is required to achieve a strong level of evidence. Second, the Early Warning and Response System (EWRS) used to identify and match students to interventions did not lend itself to conditions in which randomization was feasible. The EWRS uses a wrap-around approach in which educators match a student to an intervention given the student's unique early warning indicators and needs. The identification and matching process is time intensive and intended to provide the best array of services to students. Initiative stakeholders expressed ethical concerns about withholding treatment to identified students in order to support random assignment, as the collective portfolio-level goals of the initiative were to improve academic achievement and engagement for all identified students at the target schools. Further, the number of students potentially identified for treatment through the EWRS was relatively small. Randomly assigning identified students to treatment and control groups would have decreased the sample size and threatened the study's statistical power.

For confirmatory impact research questions, there were three comparison groups. Treatment students were matched to (1) other students in the *treatment schools* who did not participate in the intervention; (2) other students in the *same school district* attending four non-treatment district schools; and (3) other students attending *Title I schools across the state* of South Carolina. The use of multiple comparison groups improved the internal and external validity of the study, as each comparison group presented different threats to validity. Researchers matched students using a propensity score model that included race, gender, grade level, English proficiency, special education status, free and reduced meal eligibility, and baseline outcome variables. Researchers conducted separate matching procedures for each data source, administrative data and survey data. At the conclusion of the matching process, researchers ensured that there were no significant differences between the treatment and comparison groups on pre-treatment covariates.

Researchers assessed exploratory secondary outcome research questions using (1) a pre/post school-wide survey at treatment and district comparison schools, with data collection occurring in October and May of each academic year; and (2) an end-of-year survey for all educators working at OnTrack Greenville treatment schools administered in May of each academic year. The school-wide survey included items measuring students' self-reported medical home, perceptions of physical health, and perceptions of mental health. The Educator Survey included measures of awareness of School-Based Health Center purpose and services.

D. Research Questions

1. Impact Research Questions

Researchers designed this study around the following types of research questions: (1) confirmatory impact research questions; and (2) exploratory research questions related to secondary outcomes.

a. Confirmatory Impact Research Questions

The question below is the *confirmatory impact research question*:

RQ1. *Did students who utilized School-Based Health Center services have higher attendance rates than matched comparison students?*

b. Exploratory Impact Research Questions

The questions below are *exploratory research questions* related to the impacts:

RQ2. *Did students who utilized School-Based Health Center services demonstrate improved course performance in ELA and math?*

RQ3. *Did students who utilized School-Based Health Center services have fewer behavioral incidences than matched comparison students?*

c. Exploratory Outcome Research Questions

The next set of questions are *exploratory research questions* related to the *secondary outcomes*:

RQ4. *Were students who utilized School-Based Health Center services more likely to have an identified medical home than matched comparison students?*

RQ5. *Following implementation of the School-Based Health Center Primary Care Model, was there an increase in the number of students who returned to class after a health visit at treatment middle schools?*

RQ6. *Following implementation of the School-Based Health Center Primary Care Model, was there an increase in the awareness of the School-Based Health Center's purpose and services offered among school staff members at treatment middle schools.*

d. Additional Exploratory Research Questions

The next set of questions are *additional exploratory research questions*:

RQ7. *Did students who received treatment at a School-Based Health Center report higher levels of physical and mental health than comparison students?*

RQ8. *Were students who utilized School-Based Health center services more likely to report higher levels of self-confidence than comparison students?*

RQ9. *Were students who utilized resources at School-Based Health centers more likely to report positive relationships with teachers and adults in their schools than matched comparison students?*

RQ10. *Were students who utilized resources at School-Based Health centers more likely to report positive relationships with teachers and adults in their schools than matched comparison students?*

RQ11. *Did students who utilized resources at School-Based Health Centers report higher levels of school engagement than comparison students?*

RQ12. *Did students who utilized resources at School-Based Health Centers report a more positive attitude toward learning than comparison students?*

2. Implementation Research Questions

The implementation study research questions examine the context and reach of implementation, implementation planning and outputs, and fidelity of implementation.

Focus Area #1: Context and Reach

RQ13. *What factors influenced implementation?*

RQ14. *What proportion of students participated in School-Based Health Center activities? What proportion of students utilized specific services? What access trends were observed among subgroups of students?*

Focus Area #2: Implementation Planning and Outputs

RQ15. *To what extent were School-Based Health Center services planned and implemented? What resources were provided? To what extent were partners collaboratively planning services? Did teachers and school staff know about the School-Based Health Center? What services were offered? Which services were utilized by students? What utilization trends were observed among subgroups of students?*

Focus Area #3: Implementation Fidelity and Completeness

RQ16. *To what extent were School-Based Health Center services implemented as planned? How well were activities following the School-Based Health Center plans and protocols? To what degree were output goals reached?*

E. Contribution of the Study

1. Level of Evidence Generated by the Study

The design of this study targeted a moderate level of evidence and the use of multiple comparison groups helped reduce threats to internal and external validity. After adjusting for multiple comparisons, the one significant positive result for student attendance was no longer statistically significant; therefore, this study was not able to achieve a moderate level of evidence.

One barrier to achieving a moderate level of evidence was the shortened timeframe of the impact study. Originally, the impact study of the School-Based Health Centers was designed to cover four academic years. With the loss of Social Innovation Fund continuation funding, researchers executed a contingency plan to conclude the impact study after only two years. The intended program impacts in student attendance are long-term in nature and it is possible the shorter study timeline did not allow researchers enough of an opportunity to examine the long-term effects of utilizing services at the School-Based Health Center. Further, some challenges with gaining parental permission for the sharing of students' limited health data for the study resulted in a lower sample size than expected. In academic year 2018-19, program staff have modified the process for requesting parent permission for the sharing of health data and researchers expect to include more students in the study in future years. With a larger sample, it will be possible to reexamine the treatment definition and consider including students who received a deeper level of School-Based Health Center services. With a refined treatment definition and a larger sample size, it is possible that this study ultimately will achieve a moderate level of evidence in the next two years as it continues without support from the Social Innovation Fund.

2. Strengths and Limitations of the Study

There were many strengths to this study. The use of multiple comparison groups improved the overall internal and external validity of the study, as each comparison group presented different threats to validity. The majority of positive significant findings were detected with the matched students attending district comparison schools. One strength is that these schools shared the same district and community context. Moreover, students in this comparison group were likely to have utilized services at a School-Based Health Centers if it had been available to them at their school. These schools did not share the same school or neighborhood contexts, though, presenting a threat to internal validity.

In addition, a thorough implementation study strengthened the implementation of the program and allowed researchers to confirm a sufficient degree of model fidelity. While maintaining their role as third-party evaluators, researchers were embedded in the project team and were able to create valuable feedback loops that supported data-driven decision-making. The lessons learned through the implementation study were valuable to project stakeholders and helped shine a light on program strengths and possible areas of improvement.

However, there were several limitations to the study. First, researchers were not able to identify a subset of state Title I middle schools with student population demographics similar to the treatment schools. The Sub-Grantee Evaluation Plan called for including only state comparison schools with a poverty index of 85% or higher and Hispanic students representing 10% of the student body. Only 13 schools met these inclusion criteria to be considered as state comparison schools—many were charter

schools or special designation schools serving students with disabilities and were substantially different from the treatment schools. Researchers opted to loosen the inclusion criteria and include all Title I middle schools in South Carolina in the state school comparison group.

Another limitation of the study is that researchers did not have the ability to assess if comparison students at district and state schools had received similar program services, such as other health promotion programs or interventions. Similarly, researchers could not confirm that state comparison schools did not offer School-Based Health Centers. While it is possible that a number of schools in the state comparison group offered a School-Based Health Center, the number of matched students who attended these schools likely was very small and the inclusion of these students as matches would not have influenced the results of the study significantly.

In addition, the treatment schools were simultaneously implementing formal and informal school-wide initiatives to improve student attendance. These school-wide efforts were confounding factors that may explain the lack of significant effects when comparing School-Based Health Center students to in-school matched comparison students. These school-wide efforts also increased the likelihood that the positive significant effects of the program identified when examining district school matches may not be fully attributable to the School-Based Health Center.

Further, the absence of positive significant findings for in-school matches may be related to missing data on student participation in other OnTrack Greenville interventions. Apart from the school-wide models discussed above, OnTrack Greenville includes four other formal implementation partners and several informal partners, some of whom are working to improve the same student outcomes as the School-Based Health Centers. It is possible that some of the in-school matches selected for the present study participated in other OnTrack Greenville support programs that influenced student behavior. This study originally intended to control for participation in other OnTrack Greenville support programs to address this limitation; therefore, this represents a deviation from the Sub-Grantee Evaluation Plan.

The lower than expected sample size posed additional limitations to the study. Active parental consent was required in order for program staff to share School-Based Health Center utilization data with researchers for this study. Program staff and implementation study researchers worked to gain consent for as many students as possible, but there were challenges in the process and timeline for requesting parental consent that resulted in fewer students participating in the study than anticipated. For example, the first priority was to receive parental consent to treat students at the School-Based Health Centers, with a request for consent to participate in the study sometimes coming as a follow-up after students received treatment. Many parents did not return phone calls or had changed phone numbers by the time follow-up occurred. The small sample size for some confirmatory analyses reduced the study's ability to detect significant effects.

Finally, there were limitations with the administrative data used for propensity score matching and outcome measures in the study. First, there were very few demographic or pre-treatment variables in the administrative data related to student health. Though the propensity score matching process yielded good matches based on the socio-demographic variables included in the model, the lack of a strong health-related variable in the matching process means it is possible that some of the matches were not ideal. Also, the current administrative data available for the primary outcome measures, average daily attendance and chronic absenteeism, were very broad measures of attendance. Researchers received these data in just one time interval, the entire academic year, making it impossible to examine attendance outcomes over shorter periods of time, like academic semesters or quarters. Students with

chronic health conditions who began utilizing School-Based Health Center services mid-year may have improved their attendance rate over the course of the academic year due to the School-Based Health Center's involvement in managing their health condition. Researchers were not able to measure these differences in attendance throughout the academic year based on the structure of the data.

3. Connection of this Study to Future Research

The results of this study connect to several promising opportunities for future research in the field of school-based health. More importantly, this study will continue for two additional years, allowing researchers to explore new research questions. First, the telemedicine component of the program, originally intended to launch in academic year 2016-17, now is functional at schools starting in academic year 2018-19. Future years of the study will be able to explore how the availability of telemedicine equipment at schools influences services and the overall utilization rate.

With the addition of new grant support, the School-Based Health Centers scaled to two high schools in the OnTrack Greenville feeder pattern in academic year 2018-19. Researchers will be able to track student use of School-Based Health Center services over several years. An additional research opportunity exists around students' long-term use of School-Based Health Centers and their health and attendance outcomes as they transition to high school.

Researchers also added several health-related measures to the OnTrack Greenville Student Survey in academic year 2018-19. These measures fell into three categories: healthy eating, physical activity, and self-efficacy. The data-sharing agreements for this study allow researchers to merge a variety of academic and health variables, creating several opportunities for researchers to explore the relationships between these constructs in a way that meaningfully contributes to the knowledge base of school health.

In addition, stakeholders and implementation study researchers are considering using a case study approach in academic year 2019-20 to learn more about the types of students who utilize services at the School-Based Health Center. This qualitative approach would complement and add depth to the impact study results. Program staff anecdotally have identified different types of student users. For example, some students already are chronically absent when they begin utilizing the School-Based Health Center and have complex medical and/or social issues that contributed to their chronic absenteeism. As researchers move forward with the impact study and refine the treatment definition, future research efforts may include additional qualitative and quantitative analyses for these subgroups of student users. This research will help the School-Based Health Center better identify and serve diverse groups of student users.

Lessons learned about the consent to treat process will be useful to the development of best practices for School-Based Health Centers. Over the course of this study, the percentage of students with signed contents to treat on file increased significantly. In academic year 2018-19, additional changes to the consent to treat process at one treatment middle school unintentionally created an experiment that will allow researchers to learn more about if and how the consent process leads to actual visits to the School-Based Health Center. Continued research on best practices around obtaining consent to treat for students will be a valuable contribution to the field of school-based health.

Researchers also intend to conduct a higher-level impact analysis of the comprehensive OnTrack Greenville initiative to attempt to tease out which significant findings are attributable to individual interventions and which are related more to broader school-wide policy and culture change at treatment schools. The School-Based Health Centers surely are an important component of the OnTrack Greenville initiative and future research should consider how the School-Based Health Centers, other response interventions, and a broader collective impact framework work together to support student academic and social-emotional learning.

4. Changes to Sub-Grantee Evaluation Plan

The primary change to the SEP was the loss of a key outcome measure of course performance, MAP assessment scores in ELA and math. Prior to academic year 2017-18, the local school district administered the MAP assessment in grades 3 through 8 at least two times per year, in the fall and spring. Some schools opted to administer the assessment a third time, in winter. The district opted to end its contract with MAP and began administering Mastery Connect in fall of 2017. At present time, researchers do not have access to Mastery Connect data and remain uncertain if data from this assessment will serve as an acceptable outcome measure in the study. Researchers only were able to examine end-of-year SC READY assessment scores in math and ELA for academic year 2017-18.

One modification was made to the treatment definition for the study. Previously, researchers proposed that students would need to be enrolled at least 51% of the academic year at the treatment schools in order to be included in the treatment group. It proved challenging to measure this given the structure of the attendance data; therefore, researchers removed this inclusion criteria from the treatment definition.

The outcome measures for the behavior variables were modified slightly. Originally in the SEP, researchers proposed including continuous behavior variables: number of behavioral referrals, number of hours of in-school suspension, and number of days of out-of-school suspension. In additional to these continuous measures of student behavior, researchers also added dichotomous categorical variables: any behavioral referral, any in-school suspension, and any out-of-school suspension.

Researchers modified the student survey outcome measure for the exploratory secondary outcome of student attitude toward learning. Researchers originally proposed using a four-item scale *Valuing School* that measured a student's beliefs about the importance of school (Rockman et al, 2013). Researchers also included a similar scale on the student survey from a prior evaluation of Communities In Schools (Corrin, Parise, Cerna, Haider, & Somers, 2015). After the first wave of data collection, researchers assessed the psychometric properties of both scales and ultimately opted to retain the entire latter scale with the addition of one item from the former scale. Researchers conducted exploratory factor analysis to examine the factor structure of the new scale, discussed later in this report in Section II.B.2.

There was a change in the timeline for receiving administrative data from the South Carolina Department of Education for the state comparison group analyses. Researchers anticipated receiving the state dataset in October or November for the prior academic year. However, the dataset for academic year 2016-17 was not available until February 2018 and researchers still do not have access to data from academic year 2017-18. This delay in receiving state data prohibited researchers from conducting the state comparison group analyses for this report.

Researchers also had to alter the inclusion criteria for state comparison schools. In the SEP, researchers originally proposed to select state schools with a poverty index of 85 or higher and a Hispanic student

population of at least 10%. At the time of writing the SEP, South Carolina calculated the poverty index based on the number of students eligible for free or reduced meals. After the introduction of the community provision for free and reduced meals, state officials introduced a new measure of poverty that included students who met any of the criteria: homeless or migrant during the academic year; Medicaid enrollment at any time during a three year period; SNAP enrollment at any time during a three year period; TANF enrollment at any time during a three year period; or foster care enrollment at any time during a three year period. This change in the poverty index affected and, in general, reduced the reported poverty levels of treatment schools and all schools across the state. When researchers searched for state comparison schools using these two criteria, only 13 schools appeared as possible comparison schools from which to draw matched comparison students. Of these schools, several were charter schools or schools serving exceptional learners and were not appropriate to serve as comparison schools. As such, researchers relaxed the inclusion criteria for state comparison schools and included all Title I middle schools in the state of South Carolina outside of the local district.

In addition, researchers were not certain if they would be able to administer the OnTrack Greenville Student Survey outside of the treatment schools when preparing the SEP. The local district allowed researchers to administer this pre- and post-survey at the four district comparison schools, allowing researchers to analyze student survey outcomes using matched comparison students at these schools. This change to the SEP strengthened the study's design for the analysis of secondary research questions. Survey administration proceeded as described in the SEP, though it was not possible to administer the pre-survey in September of each academic year due to the testing schedule and the amount of time needed to distribute parent opt-out letters before preparing survey materials. Instead, the student survey administration window occurred typically the first two weeks of October each academic year of the study.

To examine possible attrition from the study, researchers proposed in the SEP assessing how students who attrited from the study through leaving the state dataset differed from students who remain in the study. Students were to be compared based on demographics, pre-treatment outcomes measures, and post-treatment outcome measures when possible. Evaluators proposed examining the possibility of differential attrition between treatment and control groups based on these factors as well. Researchers did not conduct these comparisons as proposed, as the structure of the data files and the matching procedure meant there were very few students for whom attrition occurred after students were matched. A comparison of the number of students matched and the number of students in each regression with the matched sample demonstrated that attrition of this type was not a widespread challenge for this study.

There were some additional modifications to the matching procedure. The SEP noted that researchers would trim observations with propensities less than 0.1 and greater than 0.9, if sample size permitted. This was not done to ensure larger sample sizes. In order to increase balance and overlap, researchers used matching with replacement, rather than matching without replacement which was specified in the SEP. This necessitated the use of frequency weights in the matched analyses.

Further changes were made to the impact analysis plan. While the SEP stated that the main analyses would focus on the "treatment-on-the-treated" (TOT) effect, the researchers also suggested an "intent-to-treat" analysis might also be performed if data were available. The evaluation team did not have access to the EWRS data in a form that would allow the researchers to compare those who were identified to receive School-Based Health Center services, as opposed to those who actually received them. Therefore, an ITT analysis was not possible. In addition, there were some challenges in estimating

the proper standard errors in the regression analyses post-match. Researchers used a bootstrapping method, rather than clustered standard errors. The bootstrap standard errors were very similar to robust standard errors. Other modifications were implemented to maximize the number of observations to be included in the analyses.

The proposed first-stage propensity equation and the final regression model in the SEP included pre-treatment, or baseline, measures of the outcome as a covariate. The analyses presented here used that approach for the attendance, behavior, and test score analyses. For the 2016-17 survey matches, baseline measures of students' self-reported mental and physical health were included in the propensity score estimation and the outcome analyses. These variables were not included in the 2017-18 matching and regression analyses, as doing so would have required students to have complete "pre" and "post" survey data. Given the response rates for the surveys, this would have limited severely the sample size. Therefore, pretreatment outcome measures were not controlled for in the 2017-18 survey outcome analyses.

In the SEP, researchers stated that they would use one-tailed tests with a significance level of $\alpha \leq .05$ to determine statistical significance. In this evaluation, researchers also considered the possibility that receiving School-Based Health Center services could decrease student academic performance. Therefore, researchers used a two-tailed, 0.10 alpha level. In terms of identifying a positive School-Based Health Center effect to support a moderate level of evidence, the two approaches are equivalent.

This evaluation was complicated by the presence of multiple, simultaneous interventions occurring in the OnTrack Greenville schools. In the SEP, researchers suggested that participation in the other student-level interventions could be controlled for in the final regression models. Data on the timing of participation in the various interventions was not detailed enough to ensure that participation in these other programs occurred before receiving School-Based Health Center services. Given that controlling for post-treatment covariates can bias estimates of causal impacts (Montgomery, Nyhan, & Torres, 2018), researchers did not adjust for participation in the other OnTrack programs. A full analysis of the effects of participating in different intervention combinations is better suited for the cumulative impact study, rather than this evaluation.

II. Study Approach and Methods

A. Impact Evaluation Design

This study used quasi-experimental methods to examine the effect of utilizing services at School-Based Health Centers. While a randomized control trial (RCT) would have been ideal, it was not feasible for this study. Instead, researchers used nearest neighbor propensity score matching to estimate the effect of the School-Based Health Centers on students at the four treatment schools. Matching techniques are popular in observational education research when a RCT is not feasible, and previous research has found that the results from matching can replicate RCT results if a number of assumptions are met (Bifulco, 2012; Cook, Shadish, & Wong, 2008; Fortson, Verbitsky-Savitz, Kopa, & Gleason, 2012).

This analysis compares School-Based Health Center students to three different comparison groups. First, School-Based Health Center students were matched to other students attending OnTrack Greenville middle schools who did not participate in the program. This is the "treatment school" comparison group. A second matching procedure compared the School-Based Health Center students to students in four other Greenville County public schools that did not participate in OnTrack Greenville. This is the "district school" comparison group. Lastly, a third matching procedure compared the School-Based Health Center students to public school students who attended Title I schools across the state of South Carolina. This is the "state school" comparison group. Table 4 presents a summary of these groups and the threats to internal validity posed by each group.

At the first stage of the matching process, the "treatment" was defined. Researchers used internal program records from the School-Based Health Centers to generate a total pool of students who received services. Then, researchers limited inclusion in the treatment group to students in the treatment schools who met the following parameters: (1) the student's parent(s)/guardian(s) agreed to their child participating in the study, and (2) the student received health services at the School-Based Health Center at least one time in academic year 2016-17 or 2017-18.

In order to estimate the true effect of the School-Based Health Centers, researchers considered the observed and unobserved factors that may have affected participation in the program and the outcomes of interest. This "first-stage" regression model included race, gender, free and reduced meal status, special education status, English proficiency, grade, average daily attendance, student behavior measures (i.e., if the student had an in-school suspension, out-of-school suspension, or any other type of discipline incident), and a variety of standardized test scores, covering multiple subjects. Researchers pulled data for each of these variables from the academic year prior to student participation in the School-Based Health Centers to ensure that the data were not affected by School-Based Health Center service utilization.

Researchers estimated a logistic regression using these covariates to produce a predicted probability of receiving treatment for each student separately for the treatment school group, the district school group, and the state school group. After creating propensity scores, treatment students were matched to comparison students. Like the estimation of the propensity scores, the matching of students occurred independently for each comparison group. Each School-Based Health Center treatment student was matched to five comparison students.

Table 4. Summary of Treatment and Comparison Groups

	Inclusion	**Schools**	**Similarity to Treatment Group**	**Threats to Internal Validity**
Treatment Group	Participates in School-Based Health Center	Four Title I OnTrack Greenville treatment schools		
Within-school Comparison Group	Matched to treatment student Does not participate in School-Based Health Center	Four Title I OnTrack Greenville treatment schools	Share same school context From similar neighborhoods Equal access to participate in School-Based Health Center Access to all outcome measures	Possibility that selection bias is exacerbated by having few high propensity students in comparison group EWRS may encourage all high propensity students to participate in School-Based Health Center leaving few good matches in comparison group Possibility of spillover effects
Within-district Comparison Group	Matched to treatment student	Four schools identified by the district to serve as comparison schools Schools do not offer the School-Based Health Center	Share same district and community context Students who would have participated in SBHC if it was available to them would be in the control group	Do not share the same school or neighborhood contexts
State Comparison Group	Matched to treatment student	Any Title I middle school in the state	Students who would have participated in SBHC if it was available to them would be in the control group	Do not share the same school or neighborhood contexts Did not have access to some outcome measures

Once the propensity scores were estimated and student matches made, researchers examined the strength of the matches. Ideally, the samples of treatment and district students should be similar to each other, or *balanced*, in terms of the variables used to estimate the propensity score. When samples were not similar, the researchers estimated a new propensity score model using interactions and higher order terms, continuing this process until proper balance was achieved.

At the conclusion of the matching process, researchers ensured that there were no significant differences between the treatment and comparison groups on pre-treatment covariates. Importantly, researchers examined the standardized mean difference and variance ratios between the treatment and comparison groups. Researchers then performed multivariate analyses to provide an estimate of the causal effect of utilizing services at the School-Based Health Centers.

As detailed below, the matched analyses examined outcomes from both administrative and survey databases. Because of survey nonresponse, the populations of students with complete data were different for the analyses of the outcomes from administrative data and those from the survey data. Therefore, researchers performed separate matching procedures for the outcomes from these different sources. In total, this evaluation included nine matched comparisons: (1) 2016-17 School-Based Health Center students vs. treatment school comparison students on administrative data outcomes, (2) 2016-17 School-Based Health Center students vs. treatment school comparison students on survey data outcomes, (3) 2016-17 School-Based Health Center students vs. district school comparison students on a administrative data outcomes, (4) 2016-17 School-Based Health Center students vs. district school comparison students on survey data outcomes, (5) 2016-17 School-Based Health Center students vs. state comparison students on administrative data outcomes, (6) 2017-18 School-Based Health Center students vs. treatment school comparison students on administrative data outcomes, (7) 2017-18 School-Based Health Center students vs. treatment school comparison students on survey data outcomes, (8) 2017-18 School-Based Health Center students vs. district school comparison students on administrative data outcomes, and (9) 2017-18 School-Based Health Center students vs. district school comparison students on survey data outcomes.

B. Sampling, Measures, and Data Collection

1. Sampling

Sampling Plan

This evaluation is an analysis of School-Based Health Centers in high-poverty schools with a significant population of Hispanic students. The average poverty index for the treatment schools was 83 in academic year 2017-18.[12] The results of this study are generalizable to similar high-poverty schools. The inclusion of two external comparison groups, which consisted of students in moderate-poverty schools in the same school district and high-poverty schools across the state of South Carolina, increased the external validity of this study. Further, this evaluation focused on middle school students, so the results

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[12] The SC State Department of Education poverty index is based on Medicaid Enrollment, TANF Enrollment, SNAP Enrollment or Foster Care Services within three years (February 2014 to January 2018) or flagged as migrant or homeless in PowerSchool for academic year 2017-18 (135 Day Census Count).

of the evaluation may not apply to the introduction of the School-Based Health Centers in elementary or high schools.[13]

Researchers first defined the "treatment" for this study. The School-Based Health Center treatment group consisted of all students in the four treatment schools who met the following parameters: (1) the student's parent(s)/guardian(s) agreed to their child participating in the study, and (2) the student received health services at the School-Based Health Center at least one time in academic year 2016-17 or 2017-18.

The School-Based Health Centers served 767 students across the four schools and two academic years of the study. Some students did not have parental permission to have their limited health data shared with researchers for this evaluation; therefore, 170 students were eligible to participate in the study in academic year 2016-17 and 96 students were eligible in academic year 2017-18.

Students in the within-school comparison group also were enrolled in the four treatment schools and these students also had parental permission to participate in the study. However, to be eligible for the within-school comparison group, students could not have ever utilized services at the School-Based Health Center. Final inclusion in the within-school comparison group was determined by the matching process described above.

The population of potential external comparison group students consisted of students in: 1) four other Greenville County Schools middle schools and 2) Title I schools throughout the state of South Carolina. In partnership with researchers, district leaders at Greenville County Schools selected the four within-district schools to serve as comparison schools for the evaluation. There were 19 middle schools in the district during project implementation and the only Title I schools in the district were participating in OnTrack Greenville. Absent other high-poverty middle schools, Greenville County Schools selected the four middle schools with student demographics most similar to OnTrack Greenville schools and a moderate level of student poverty. In academic year 2016-17, 3,398 middle school students attended the district comparison schools, while in academic year 2017-18, 3,568 students attended these schools.[14]

The state comparison students attended Title I schools in districts across South Carolina. Students in Greenville County Schools were excluded from the population of potential state matches, as the presence of OnTrack Greenville programs in the district did not create a "business as usual" comparison and district Greenville County Schools were included in the first external comparison group. In academic year 2016-17, 16,526 middle school students attended a Title I school in South Carolina.

The population of possible external comparison group students included those students who did not have missing data on the variables used in estimating the propensity score. Following the matching

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[13] It is important to note that only students in the treatment and comparison groups with similar propensity scores were included in the analysis. This analysis examines the effect of School-Based Health Centers for students in which there is overlap in the propensities of participating in the School-Based Health Centers. The estimate of the effect may be different than the overall effect of the School-Based Health Centers for the full sample. This may limit somewhat the external validity of the results, but the comparison between students with similar propensity scores increases the internal validity of the study design.

[14] Greenville Count Schools Population Statistics for 180th day of attendance, https://www.greenville.k12.sc.us/About/main.asp?titleid=statsarchives

procedure described above, external comparison students were matched with treatment students. It is important to remember that this evaluation was a student-level, not a school-level, analysis. However, as a means to increase the internal validity of the study, schools were selected such that external comparison students attended somewhat similar schools as the treatment students attended.

For each year of the study, comparison group, and data source, study participants flowed through several stages in which they either were included or excluded from the study. First, researchers received the roster data for the entire treatment and district school population. Then, researchers received the roster of students who participated in the intervention from the Sub-Grantee. Researchers only included program students moving forward who met the treatment definition used in the study. The resulting treatment roster was merged with the school population roster. In rare occasions, treatment students did not appear on the school roster and were excluded from the study. Researchers then checked to see which remaining treatment students had complete data for the variables used in propensity score matching. Not all students were successfully matched, as discussed later in this report. Finally, each regression analysis only included students who had data for the outcome variable. Table 5 presents the flow in study participants in academic year 2016-17 for students matched to comparison students in treatment schools using administrative data. Given missing data on the dependent variable, the total number of students included in the final analyses varied somewhat. The values in Table 5 and the other flow charts for the number of students included the final analyses pertain to the most common sample size for the confirmatory analyses. The sample sizes for the other outcomes can be seen in the individual results tables. Similar flow charts for other years, comparison groups, and data sources appear in Appendix C.

Table 5. SBHC Participant Flow Chart at Treatment Schools AY 2016-17 (Administrative Data)

Study Time-point	Total number students	Number students included	Number students not included	Notes
Treatment Students				
1. Program Roster	179	---	---	Used SBHC Services
2. Appeared on School Roster	179	170	9	
3. Had Full Matching Data	170	135	35	
4. Matched	135	132	3	
5. Included in Analysis	132	132	0	
Comparison Students				
1. School Rosters	5,267	---	---	
2. Met Treatment Inclusion Criteria	5,267	1,710	3,557	Treatment School, Didn't receive SBHC services
3. Had Full Matching Data	1,710	1,420	290	
4. Matched	1,420	496	924	Unique students (note: matching was done with replacement)
5. Included in Analysis	496	496	0	

Researchers performed a power analysis to assess the relationship between sample size and the minimum detectable effect size (MDES), given a number of assumptions, as part of the Sub-Grantee Evaluation Plan. In the evaluation presented here, the smallest number of School-Based Health Center

students included in the main confirmatory impact analyses was 73 for the 2016-17 state administrative data analyses.[15] The sample size values included in the SEP power analysis ranged from 607 to 25. A major reason for the smaller than anticipated sample sizes was the need for active parental consent for the sharing of limited student health data for the evaluation. Post hoc power analyses are uninformative, but one can perform sensitivity analyses that provide the minimum effect size a study could detect given the actual study sample size and a number of assumptions (Perugini, Gallucci, & Costantini, 2018). Using G*Power, a power analysis software program, researchers produced two sensitivity analyses (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007). Researchers assumed a one-tailed test with an alpha level of 0.05 and power of 0.80. First, researchers assumed a sample size of 146, which would entail a one-to-one control to treatment ratio. Using this value, researchers estimated that the MDES is d = 0.41. Second, researchers adjusted for the fact that five comparison students were matched to each School-Based Health Center student in this study. Using this five-to-one control to treatment sample size ratio, researchers estimated that the MDES for the study design is 0.24. The small sample sizes in the evaluation limits the study's ability to identify a statistically significant effect of receiving School-Based Health Center services.

Recruitment and Retention

Due to the design of the intervention, there was no need for evaluators to actively recruit study participants. Rather, students were considered part of the treatment group if: (1) the students' parents agreed to participate in the study, and (2) the student received services from their school's School-Based Health Center. Students were referred to the School-Based Health Center for services by school nurses, although teacher and staff awareness and knowledge of what the School-Based Health Center could offer was critical in making sure that students who could take advantage of the clinic did so. If students did not utilize services from the School-Based Health Center, they were automatically eligible to be a part of the within-school matched comparison group, the process of which is described below.

Since receiving services from the School-Based Health Center once (regardless of what service was received) made a student eligible for inclusion in the treatment group (if the other criteria listed above were also met), there was no need for the evaluation team to provide incentives to retain study participants.

The evaluation team could not fully predict how many of the approximately 1,800 students in the treatment schools would receive services from the School-Based Health Center. Evaluators did recognize that if too many students received services from the School-Based Health Center, there could be a shortage of possible within-school comparison students.

Attrition and Missing Data

Attrition is a challenge for all longitudinal evaluations. This evaluation used a number of means to minimize the effect of attrition. The evaluation team was able to track students who transferred to any other public school in the state. Therefore, these students continued in the study as treatment or comparison students. Further, since the main outcomes of interest were available in PowerSchool, the state's data system, regardless of the school a student was attending, there were few cases of attrition within comparison groups due to students transferring schools. If study participants were no longer in

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[15] It should be noted that the number of School-Based Health Center students included in analyses was significantly larger for the 2016-17 treatment and district administrative matched results, as seen in Table 1.

the state dataset, however, they were considered attrited from the study. Given that consent was a precondition for participating in the treatment group, the evaluators found that consent had little effect on attrition. Parental consent was not needed for the external comparison students, and consent from parents of the within-school comparison group was an opt-out consent, which maximized the number of students participating in this study.

Missing data poses a challenge in every evaluation. The goal of the evaluation team was to limit the amount of missing data, as all adjustments for missing data are suboptimal and impose tradeoffs. Missing data could have occurred in three ways for this study.

First, data could be missing on the receipt of treatment. Researchers believe that this threat was small, as staff at the School-Based Health Center staff was trained on correctly recording interactions with students. Further, unlike other treatments that may occur over a long period of time and are threatened by attrition, the definition of treatment in this evaluation is receiving services from a School-Based Health Center at least once. Therefore, the challenges associated with determining if a subject received enough of the treatment to be considered "treated" were not a problem for this study.

Second, data could be missing on the main independent variables, including those used for the propensity score analysis. The covariates used in this study, including race, gender, low-income status, and baseline test scores, were all available to the evaluation team in the statewide database for all public school students. Using unique student identification numbers, the evaluation team was able to find the vast majority of students in their dataset regardless of what school(s) a student had previously attended. The state dataset had a few missing cases on the demographic variables, and the evaluators were able to "backfill" any missing data for the permanent demographic variables with datasets from subsequent years. Analyses of some of the secondary outcomes required students to fill out a "baseline" questionnaire. School staff ensured that students completed these questionnaires.

Third, incomplete data could exist on the dependent variable. As the outcomes of greatest interest in this evaluation were included in the statewide, public student records database (e.g., attendance, suspensions, and test scores), the evaluators encountered few instances of missing data on the dependent variable when using the administrative database. Incomplete data was a greater issue when examining the survey outcomes. When such cases occurred, the observations were dropped from the analysis (i.e., listwise deletion). Using U.S. Department of Education's What Works Clearinghouse standards, Puma et al. (2009) recommends case deletion in instances in which post-test or outcome data are missing.

2. Measures

Socio-Demographic Variables

The following socio-demographic variables were used for propensity score matching and as covariates in impact analyses: (1) poverty status, (2) race, (3) gender, (4) English proficiency, and (5) disability status.

Poverty status. Student poverty status was measured through free and reduced meal eligibility. As determined by the National Free Lunch Program, students with a family income at or below 130% of the poverty threshold are eligible for free meals, while students with a family income between 130% and 185% of the poverty threshold are eligible for reduced meals (United States Department of Agriculture,

2015). Despite the known limitations for using free and reduced meal eligibility as a proxy for poverty status (Harwell & LeBeau, 2010), this measure was tracked easily by Greenville County Schools and was readily available for use. Using free and reduced meal eligibility, researchers categorized students as "eligible for free meals or reduced meals" or "not eligible for free or reduced meals." Data on student free and reduced meal eligibility was recorded in district and state administrative records.

Race. Researchers used four categories for student race: "African American," "Caucasian," "Hispanic," and "Other." Student race was recorded in district and state administrative records.

Gender. Student gender was split into two groups, "male" and "female." Student gender was recorded in district and state administrative records.

English proficiency. English proficiency consisted of two primary categories, "English language learners" and "non-English language learners." Student English proficiency was recorded in district and state administrative records.

Disability status. The South Carolina Department of Education (SCDE) defines child disability status in accordance with the Individuals with Disabilities Education Act (IDEA) as "having an intellectual disability, a hearing impairment (including deafness), a speech or language impairment, a visual impairment (including blindness), a serious emotional disturbance (referred to in this part as ''emotional disturbance''), an orthopedic impairment, autism, traumatic brain injury, another health impairment, a specific learning disability, deaf-blindness, or multiple disabilities, and who, by reason thereof, needs special education and related services." In the present study, students were categorized as "no identified disability" and "identified disability." Student disability status was recorded in district administrative records.

Independent Variables

Treatment. The treatment group consisted of all students in the treatment schools who met the following parameters: (1) the student's parent(s)/guardian(s) agreed to their child participating in the study, and (2) the student utilized services at the School-Based Health Center at least once in academic year 2016-17 or 2017-18. This categorical measure consisted of two groups, "student received treatment" and "student did not receive treatment."

Primary Impact Variables: Confirmatory

Average daily attendance. This measure of school attendance is a calculation of the number of days of school attended divided by the number of days of school enrolled. Average daily attendance was captured in district and state administrative records.

Chronic absenteeism. Chronic absenteeism occurs when a student is absent more than 10% of the academic year, including both excused and unexcused absences. At the school level, the number of chronically absent students is often more telling than the average daily attendance rate, as a school could boast an acceptable attendance rate and still have a large number of students chronically absent given the distribution of absences (Balfanz & Byrnes, 2012). Though not commonly tracked by school districts, this measure is growing in popularity, especially due to its utility as an early warning indicator (Balfanz, Herzog, & Iver, 2007). In the present study, chronic absenteeism is a dichotomous categorical variable with students either "chronically absent" or "not chronically absent."

Behavioral referrals. The primary measure of student behavior was the total *number of behavioral referrals* per student. The number of behavioral referrals was available in the district dataset. The state dataset included the number of discipline incidents, so that is the outcome used for the state analyses. Previous research has found office behavioral referrals to be a meaningful source of data for designing and evaluating behavior interventions (Putnam, Luiselli, Handler, & Jefferson, 2003; Sugai, Sprague, Horner, & Walker, 2000). Gottfredson & Gottfredson (1999) found that the test-retest reliability of office discipline referrals (r = 0.56, p < 0.01) exceeded that of teacher reports using a behavior checklist (r = 0.36, p < 0.01). In addition to a student's total number of behavioral referrals, researchers used a dichotomous categorical variable for student behavioral referrals, with students either having "no behavioral referrals" or "one or more (any) behavioral referral(s)." The present study examined these measures over each academic year. Greenville County Schools tracks disciplinary referrals in an online Incident Management System (IMS). Researchers accessed student behavioral data through this system.

In-school suspensions. This measure included the total *number of hours of in-school suspension* served by the student within the academic year. The number of hours of in-school suspension was available in the district dataset. The state dataset included the number of in-school suspensions, so that is the outcome used for the state analyses. In addition, researchers slightly modified the SEP to use a dichotomous categorical variable for student in-school suspension in the analysis, with students either having "no in-school suspensions" or "one or more in-school suspensions."

Out-of-school suspensions. This measure included the total *number of days of out-of-school suspension* served by the student within the academic year. For the state analyses, the total number of out-of-school suspensions was used. In addition, researchers slightly modified the SEP to include a dichotomous categorical variable for student out-of-school suspension in the analysis, with students either having "no out-of-school suspensions" or "one or more out-of-school suspensions."

Math and English/language arts course performance. Data from two standardized tests measured math and English/language arts course performance: SC READY and Measures of Academic Progress (MAP).

The SCDE began administering the SC READY assessment to students in grades 3 through 8 in Spring 2016. This standardized test serves as the state's primary measure of proficiency in Math and English/language arts. Scale scores are generated individually for each of the subjects. In addition, scores are classified into categories, "exceeds," "meets," "approaches," and "does not meet." Researchers accessed SC READY scores through district and state administrative records.

Northwestern Evaluation Association's (NWEA) MAP assessment is a computerized adaptive test for students in grades 2 – 10. Administered up to three times per year, the MAP assessment measures student math and reading achievement and provides immediate results to teachers on student capabilities. Both content area scale scores have shown strong marginal and test-retest reliability in the middle grades and strong concurrent validity when compared to state assessment scale scores (Northwest Evaluation Association, 2004). Further, a confirmatory factor analysis of MAP scale scores across grades and states provided additional support for the construct validity of the instrument (Wang, McCall, Jiao, & Harris, 2012). Through academic year 2016-17, Greenville County Schools administered the MAP assessment to all students in grades 6 – 8 two times per year, in September and April.

However, the district stopped administering this assessment at the beginning of academic year 2017-18. MAP assessment data were available for most district treatment and comparison students.

The research team originally planned to use students' scores on the ACT Aspire Math and Reading assessments as an outcome measure. A state-mandated assessment, the SCDE ceased administering this test to students after the spring of 2015, transitioning instead to SC READY in academic year 2015-16. Thus, researchers were unable to use ACT Aspire assessment scores in the study. This represents a change to the SEP.

Secondary Outcome Variables: Exploratory

Students have an identified medical home. The existence of an *identified medical home* was tracked within School-Based Health Center records. When completing the School-Based Health Center intake form, the student/caregiver provided the name of the student's medical home. The two categories for this variable were "student has an identified medical home" and "student does not have an identified medical home."

In addition, one item on the OnTrack Student Survey asked students to identify where they most often went when they needed health care services. Students were asked "Where do you usually go when you need to see a doctor or nurse?" Response categories included "doctor's office," "emergency room," "school health room," "somewhere else," and "I don't know."

Students return to class after a health visit. After each health visit, a student either returns to class, is sent home due to illness, or seeks immediate medical care. School-Based Health Center staff members tracked this outcome in student medical records. The two categories for this variable were "student returned to class after health visit" and "student did not return to class after health visit." The measure for the outcome was available only for treatment students who utilized School-Based Health Center services.

School staff members increase awareness of School-Based Health Center purpose and services. An educator survey distributed to all personnel at treatment schools included survey items that measured awareness of School-Based Health Center purpose and services. The three following sets of measures were used to assess school staff member awareness:

(1) Familiarity with School-Based Health Center was measured with a two items. First, one item asked educators to rate their familiarity with the School-Based Health Center at their school on a four-point Likert-type scale ranging from "very familiar" to "not at all familiar." An additional item asked educators who participated on an OnTrack Team to rate the frequency with which their team referred students to the School-Based Health Center at their school. This item was measured on a five-point Likert-type scale ranging from "never or rarely" to "all the time."

(2) Awareness of School-Based Health Center referrals was measured with five categorical items that rated educators' knowledge of School-Based Health Center referral processes available at their school. Sample items included "A parent may make a request for their child to be seen at my school's School-Based Health Center health care provider" and "A teacher, staff member, or administrator may refer a student to the School-Based Health Center health care provider." Response categories included "Yes, available at my school," "No, not available at my school," and "Unsure if available at my school."

(3) Awareness of School-Based Health Center services was measured with a checklist of 16 health-related services. Educators indicated which of the services were available at their school, marking "Yes, available at my school," "No, not available at my school," and "Unsure if available at my school." Sample health-related services included "immunization management," "assistance with Medicaid eligibility application," and "basic first aid."

Additional Exploratory Outcomes

In order to reduce data collection activities across multiple OnTrack Greenville studies, researchers included additional outcome measures not related directly to the School-Based Health Center on student survey instruments. The following outcomes were not part of the School-Based Health Center logic model, but data were available and included in exploratory analyses.

Student self-reported health. Two items on the OnTrack Greenville Student Survey asked students to rate their overall physical and mental health. For physical health, students were asked, "The term 'physical health' refers to your diet and exercise, how often you are sick or healthy, and how your body feels. In general, how would you describe your physical health?" For mental health, students were asked, "The term 'mental health' refers to how you think and feel emotionally on a daily basis. In general, how would you describe your emotional or mental health?" The response categories for both self-reported health questions were "excellent," "good," "fair," and "poor."

Students increase self-confidence. This construct was measured by two scales, the Academic Perseverance scale and the Academic Self-Confidence scale (Rockman et al, 2013).

The six-item Academic Perseverance scale measured having a hopeful outlook on studying and completing schoolwork and included items such as "I keep doing schoolwork even when it is hard" and "When I study, I set goals for myself." Items were scored on a four-point Likert-type scale ranging from "not true" to "true." This scale demonstrated strong internal reliability in prior studies (α = 0.79) and in the current study (α = 0.76).

The six-item Academic Self-Confidence scale measured the ease with which students felt they were learning and included items such as "Homework is easy for me" and "I understand what we are learning in school as much as my friends." Items were scored on a four-point, Likert-type scale ranging from "not true" to "true." This scale demonstrated strong internal reliability in prior studies (α = 0.75) and in the current study (α = 0.78).

Student improve relationships with adults. This construct was measured by two scales, Relationships with Caring Adults (Corrin et al., 2015) and Positive Relationships with Teachers (Corrin, Sepanik, Rosen, & Shane, 2016). The six-item Relationships with Caring Adults scale measured the extent to which students related to school personnel and included items such as "At my school there is an adult who really cares about me" and "At my school there is an adult who always wants me to do my best." Items were scored on a four-point, Likert-type scale ranging from "not true" to "true." This scale demonstrated strong internal reliability in prior studies (α = 0.89) and in the current study (α = 0.89).

The eight-item Positive Relationships with Teachers scale measured the perceived relationships of students with their teachers and classmates and included items such as "Students at my school get along well with teachers" and "My teachers really listen to what I have to say." Items were scored on a

four-point, Likert-type scale ranging from "not true" to "true." This scale demonstrated strong internal reliability in prior studies (α = 0.86) and in the current study (α = 0.85).

Students are more engaged at school. This construct was measured using the School Engagement scale (Rockman et al, 2013) and the School Belonging scale (Corrin et al., 2015).

The four-item School Engagement scale measured the degree to which a student felt connected to his or her school and education (Rockman et al, 2013). It included items such as "I like school" and "I participate a lot in class." Items were scored on a four-point, Likert-type scale ranging from "not true" to "true." This scale demonstrated strong internal reliability in prior studies (α = 0.68) and in the present student (α = 0.74).

The five-item School Belonging scale measured the extent to which a student felt accepted and supported within the school environment (Corrin et al., 2015). It included items such as "I feel close to people at my school" and "I feel like I am a part of my school." Items were scored on a four-point, Likert-type scale ranging from "not true" to "true." This scale demonstrated strong internal reliability in prior studies (α = 0.84) and in the present student (α = 0.83).

Students improve their attitude toward learning. This construct was measured by a modified version of the Valuing Education scale (Corrin et al., 2015). Originally, this was a six-item scale measuring a student's beliefs about the importance of school and included items such as "My education will be valuable in getting the job I want" and "Being a good student is important to me." Researchers added one additional item on the importance of attending college to make this a seven-item scale. Items were scored on a four-point, Likert-type scale ranging from "not true" to "true." The original scale demonstrated strong internal reliability in prior studies (α = 0.79). In the present study, the modified scale was tested using exploratory factor analysis with oblimin rotation and was found to have a unidimensional factor structure, as predicted, with strong internal reliability (α = 0.84).

3. Data Collection Activities

The measures used in the impact study for propensity score matching, covariates, independent variables, and primary impact variables were collected routinely by Greenville County Schools using the PowerSchool data management platform. The impact study drew on student data from both Greenville County Schools and the South Carolina Department of Education. Researchers collected data to explore the secondary outcomes via the administration of two electronic student surveys.

Student data from the South Carolina Department of Education. The South Carolina Department of Education (SCDE) mandates the use of PowerSchool and provides districts technical manuals and support to improve the internal reliability of data collected. The SCDE routinely collects and aggregates data from all districts and houses it in the South Carolina Education Data System (SCEDS). The Riley Institute currently has a Memorandum of Agreement with SCDE that dictates the terms and conditions of the transfer of PowerSchool data from SCDE to the Riley Institute, including provisions for maintaining, protecting, and destroying datasets. The inclusion of these data allowed researchers to examine a group of comparison students from schools across the state of South Carolina.

Student data from Greenville County Schools. A research and data sharing agreement (RDSA) with Greenville County Schools also provided administrative data for the study. This data sharing agreement

describes (1) the research and information usage terms and conditions; and (2) the purpose and design of the study, including type(s) of data requested, data collection schedule, plan for reviewing and sharing results, and methods of securing and destroying data.

OnTrack Greenville Student Survey. The research team administered the OnTrack Greenville Student Survey to collect data for secondary outcome measurement. Teachers administered the survey to students electronically in October and May of academic years 2016-17 and 2017-18. The Research Team obtained passive parental permission by sending home an opt-out letter at the beginning of the academic year. Opt-out consent was sufficient, as the survey did not include any identifiable information.

In order to link the survey data to the PowerSchool dataset, researchers created a unique survey ID number for each student who was not opted-out by their parents. Researchers maintained a separate database that linked the survey ID numbers with each student's PowerSchool ID number. In preparation for survey administration, the researchers created individual notecards for each student, which included the student's name and unique survey ID. Researchers organized the notecards in packets by school and teacher and distributed the packets to the schools in-person, along with survey administration instructions, before the survey administration window opened. Teachers passed out the notecards to each student whose parents did not opt them out of the survey (teachers were provided a list of those students who had been opted out) and provided oral instructions on how to complete the survey. To begin, students navigated to the electronic survey on a computer and entered their unique survey ID to link their answers to their PowerSchool data. Students then were given permission to opt themselves out of the survey if they decided they did not want to take it. Survey completion took between 10 and 20 minutes, with an average student completion time of 12 minutes. Following administration, the teacher collected all survey ID cards and returned them to their survey packet. Researchers then destroyed all of the ID cards. The OnTrack Greenville Student Survey is located in Appendix D.

Information on the response rate of the OnTrack Greenville Student Survey appears in Tables 6 and 7. All students attending treatment and district schools within Greenville County were invited to participate in the pre- and post-survey. The parent opt-out rate was slightly higher at treatment schools than comparison schools, largely due to differences in distributing the passive parental permission form. At treatment schools in academic year 2016-17, the permission form was sent home with students at the beginning of the academic year along with other first-day-of-school forms. Many of these forms had to be returned with a parent signature, so researchers suspect that many parents signed and returned the opt-out form to decline their child's participation in the study without reading the form completely. At comparison schools, however, the passive parental permission form was sent home with students a few weeks after the start of the academic year and fewer forms were returned. For that suspected reason, the rate of student opt-out was 5% at treatment schools and 1 – 2% at comparison schools in the 2016-17 academic year.

Students who were absent the day of survey administration did not have an opportunity to complete the survey at a later date. In addition, individual schools decided not to offer the survey to students with severe learning and/or intellectual disabilities. When cleaning the data, researchers used list-wise deletion to eliminate cases with missing data. In academic year 2016-17, after excluding these students and cases, the total percentage of valid survey responses for each treatment group at each survey administration ranged from 65 – 72% at treatment schools and was 79% at comparison schools in the 2016-17 academic year. Treatment school students took an average of 13 minutes to complete the survey, while district school students took an average of 11 minutes to complete the survey.

Table 6: Response Rate of OnTrack Greenville Student Survey AY 2016-17

	Pre-Survey Fall Semester 2016				Post-Survey Spring Semester 2017			
	Treatment Schools (n = 4)		Comparison Schools (n = 4)		Treatment Schools (n = 4)		Comparison Schools (n = 4)	
Total # Invited to Participate	1921	100%	3369	100%	1886	100%	3368	100%
Parent Opt-Outs	212	11%	91	3%	195	10%	208[1]	6%
Student Opt-Outs	89	5%	47	1%	90	5%	65	2%
Excluded Cases[2]	238	12%	560	16%	384	20%	445	13%
Total # Valid Survey Responses	1382	72%	2671	79%	1217	65%	2650	79%
Average Completion Time	13 minutes		11 minutes		13 minutes		11 minutes	

[1]Mid-year transfer students who never received a parental permission form were treated as parent opt-outs at comparison schools.
[2]Excluded Cases includes students who were absent the day of the survey, duplicate survey starts, incomplete survey responses, etc.

In academic year 2017-18, the total percentage of valid survey responses for each treatment group at each survey administration ranged from 70 – 75% at treatment schools and from 71 – 81% at comparison schools in the 2017-18 academic year. Treatment students took an average of 12 minutes to complete the OnTrack Greenville Student Survey in academic year 2017-18, while district students took an average of 10 minutes.

Table 7: Response Rate of OnTrack Greenville Student Survey AY 2017-18

	Pre-Survey Fall Semester 2017				Post-Survey Spring Semester 2018			
	Treatment Schools (n = 4)		Comparison Schools (n = 4)		Treatment Schools (n = 4)		Comparison Schools (n = 4)	
Total # Invited to Participate	2040	100%	3692	100%	2069	100%	3498	100%
Parent Opt-Outs	45	2.2%	82	2.2%	43	2.1%	292[1]	8.3%
Student Opt-Outs	127	6.2%	91	2.5%	168	8.1%	117	3.3%
Excluded Cases[2]	348	17.0%	536	14.5%	397	19.2%	599	17.1%
Total # Valid Survey Responses	1520	74.5%	2983	80.8%	1461	70.1%	2490	71.1%
Average Completion Time	11m 45s		10m 45s		12m 15s		9m 30s	

[1]Mid-year transfer students who never received a parental permission form were treated as parent opt-outs at comparison schools.
[2]Excluded Cases includes students who were absent the day of the survey, duplicate survey starts, incomplete survey responses, etc.

OnTrack Greenville Educator Survey. Researchers administered an electronic survey to educators at each of the OnTrack Greenville treatment schools. The purpose of this survey was to collect information related to educators' perceptions, awareness, and/or usage of each of OnTrack Greenville's Sub-Grantee interventions. Researchers estimated that educators would need approximately 15 – 25 minutes to complete the survey. In academic year 2016-17, educators at the treatment schools accessed the survey through an online link received via email. There was an approximate response rate of 75% and the average survey completion time was 26 minutes. In academic year 2017-18, educators at the treatment schools again accessed the survey through an online link received via email. The response rate was 65% and the average survey completion time was 21 minutes. The OnTrack Greenville Educator Survey is located in Appendix E. A summary of the demographic characteristics of OnTrack Greenville educators appears below in Table 8.

Table 8. Demographic Characteristics of Educators

	Educators – Academic Year 2015-16 (n = 161)	Educators – Academic Year 2016-17 (n = 161)	Educators – Academic Year 2017-18 (n = 157)	Total (n = 487)
Black	18.7%	20.2%	17.5%	17.5%
White	48.9%	50.6%	51.7%	51.7%
Other race / Prefer not to say	32.4%	29.2%	30.8%	30.8%
Female	77.9%	80.4%	77.6%	78.8%
Teacher	73.2%	63.2%	64.6%	66.9%
Administrator / Other role	26.8%	36.8%	35.4%	33.1%
Employed 1 year at school	32.9%	25.7%	19.7%	26.2%
Employed 2 – 4 years at school	33.5%	42.1%	43.9%	29.9%
Employed 5+ years at school	33.5%	32.2%	36.3%	33.9%
OnTrack Team Participant	59.7%	53.2%	63.1%	58.5%

Looking at all three academic years combined, 17.5% of educators were Black, 51.7% were White, and 30.8% were some other race or preferred not to say. Nearly 80% of educators were female. Two thirds (66.9%) of educators were teachers and 58.5% participated on the OnTrack Team at their school. Many educators were relatively new to their school, with 26.2% reporting that it was their first year of employment at their school, 29.9% reporting two to four years of employment at their school, and 33.9% reporting five or more years of employment at their school.

III. Implementation Evaluation

A. Implementation Study Design

Researchers conducted an in-depth implementation evaluation of the School-Based Health Center model and strived to achieve two goals: (1) to assess the level of fidelity to the specific model that was proposed and (2) to provide implementation recommendations in order that interventions become as closely aligned to the proposed model as possible, thus maximizing the impact of services provided to students.

This implementation evaluation used a Utilization Evaluation approach and was designed to be both formative (providing "real time" feedback to help facilitate program progress) and summative (assessing and reporting the extent to which the project was implemented as planned; factors contributing to implementation fidelity, and contribute to assessment of relationship between program actions and outcomes). The implementation team viewed the evaluators as team members who served a role as questioner, observer, facilitator, and reviewer. As the external evaluators, the researchers provided a candid perspective that contributed to a constructively critical assessment of progress.

This evaluation used a mixed methods approach, utilizing both qualitative and quantitative methods to assess reach, context, service delivery, service received, fidelity, and completeness. In general, the evaluation utilized a combination of interviews/focus groups, observations, record reviews, and surveys to answer the implementation evaluation research questions and collect assessment data. Each of these methods contributed to the overall understanding of how the School-Based Health Centers were performing at each site.

Data Collection Methods

The various data collection methods used in this implementation study are summarized below. Where available, survey response rates and basic demographics of participants are also included.

Participant Observation/Site visits included researcher attendance and participation at School-Based Health Center and OnTrack Greenville meetings and trainings as appropriate. Researchers took detailed field notes as appropriate to document the planning process and essential contextual information related to partnerships, communication, referral processes, School-Based Health Center integration into school, etc. Researchers also made regular visits to each School-Based Health Center site to observe services and interact with staff while also reviewing records.

Enrollment Records. A review of School-Based Health Center enrollment records assessed the number of students with parental consent for School-Based Health Center services. As available, the Research Team assessed this information by student demographic characteristics within each school. These data were used to assess reach within the schools.

Medical Record Review occurred on two levels. The first level assessed de-identified daily encounter data by students seen, services provided, and diagnoses. This review examined the daily activity/encounter log. This information was compared to school enrollment demographics to assess reach. Additionally, a review of the number of encounters, diagnoses, and actions during each encounter was used to assess services delivered and services received.

The second level of review included a review of the patient medical records, assessing quality indicators for: student screenings and assessment; chronic disease management; referral processes; and medication management. Beginning in Year 2, a random sample of 25% of records was reviewed each month for quality. Reviews were conducted by the study PI and/or the Graduate Assistant. This review process followed standard medical record review guidelines for pediatrics and community medicine. It is important to note that these reviews were not to assess clinical quality. Reviews focused on evidence to assess what extent services/activities were following planned protocols and processes for implementation. The Medical Record Review Tool is located in Appendix F.

Parent Interviews. The Research Team conducted interviews with a sample of parents from each participating school to assess their impressions of factors that facilitated or hindered access and utilization of School-Based Health Center services and associated referrals. Interviews were conducted twice a year (mid-year and end-of-year) with parents to learn about their perceptions of School-Based Health Center services. These short, informal interviews helped researchers understand how much parents knew about the School-Based Health Centers, what health services they wanted at school, and (if applicable) how they felt about their experiences with the School-Based Health Center. The Parent Interview Protocol appears in Appendix G.

OnTrack Greenville Educator Survey. This online survey was administered at the end of each Academic Year to assess staff awareness of School-Based Health Center services and processes. The OnTrack Greenville Educator Survey is located in Appendix E.

Student Satisfaction Survey. Satisfaction surveys were available for students to complete after each encounter. This was a short survey that allowed the students to provide the School-Based Health Center staff and evaluation team their anonymous feedback. The Student Satisfaction Survey is located in Appendix H.

B. Implementation Context and Reach

RQ13. *What factors influenced implementation?*

Implementation Reach

To assess School-based Health Center reach, the implementation evaluation focused on assessing educator and parent awareness of School-Based Health Center services, proportion of students who consented for services, and proportion of students who were seen in each school.

The first step towards use of a service is being aware of its existence. In an effort to raise parent and educator awareness, the School-Based Health Center staff participated in and hosted several events at all four middle schools. In the beginning of the school year, the nurse practitioner and registered nurse attended back to school nights at School 1, School 3, and School 4 with approximately 100 attendees at each event. Additionally, a folder with information about the School-Based Health Center and the consent-to-treat packet was distributed to every child at School 1, 3, and 4 before November. As a means to increase visibility and awareness of the School-Based Health Center and its staff throughout

the year, the School-Based Health Center team had at least one member present at the following events:

- School 3 Jamboree with 50 or so families from School 1, School 3, & School 4 present
- Curriculum nights for incoming 6th graders with up to 70 attendees at each school
- Four Family Nights with Let's Talk (teen pregnancy prevention) activities with approximately 50 participants each
- Literacy Night at School 4 with 30 participants as well as the School 4 Carnival with over 75 people present

Additionally, the School-Based Health Center staff worked with School 2's administration to include information about the School-Based Health Center on the school's website. Within the school, the nurse practitioner sent a calendar monthly to school administration and support staff of when the School-Based Health Center would be available at each school. When the School-Based Health Center was open, school administrators placed a sign out outside of the school or in the front office.

Parent awareness was assessed through mid-year and end of year focus groups and/or intercept interviews at each school. Educator awareness was assessed through the annual educator survey conducted as part of the overall OnTrack evaluation. Findings from parents and educators point to opportunities to increase awareness about School-Based Health Center services.

Permission to Treat Forms

For students to be seen at the School-Based Health Center, permission to treat paperwork needs to be signed by a parent or guardian. These forms ask for medical history, insurance information, and agreement to potential services so that a student visit can occur. Permission to treat consent forms are essential to seeing students in the School-Based Health Center. These forms provide crucial medical information and consent to receive services from the School-Based Health Center team. GHS requires updated forms for patients each year. In academic year 2017-18, School 1, School 3, and School 4 students received the forms with their back-to-school paperwork. School-Based Health Center team members also attended back-to-school nights to help families with the forms. School 2 did not distribute the paperwork to all their students because students were seen on an as-needed basis. A total of 1,130 students were consented between the four schools, an 89% increase from academic year 2016-17. Having the forms on file allowed the School-Based Health Center team to see students faster and more efficiently. Students only can be seen one time with just verbal consent by a guardian, so these forms are crucial to providing timely, continuous care.

Educator Awareness

Creating a culture of health in schools requires action from students, parents, and school staff. A survey administered to educators at the end of the school year provided information on how much the school staff knew about the School-Based Health Centers and their thoughts on reducing barriers to students using the services.

Approximately 85.4% of surveyed educators in 2017-18 reported being familiar or very familiar with the School-Based Health Centers; this is a 12.4% increase from academic year 2016-17 (73% familiarity). Further, 68% of educators reported interacting with the School-Based Health Center staff in academic year 2017-18. Of those 103 educators, 64 (62%) could name the pediatric nurse practitioner and/or the registered nurse as part of the School-Based Health Center clinical care team. Only five educators (5%)

incorrectly named a school nurse as the School-Based Health Center provider, compared to 13% in academic year 2016-17. This suggests that educator awareness has increased from the prior year and that there was less confusion between the School-Based Health Center care team and the school nurses.

Referrals were the main source of School-Based Health Center visits. In academic year 2017-18, educators were mostly aware that the Early Warning and Response System (EWRS), school nurses, teachers, administrators, staff members, and parents could refer students to the School-Based Health Center. However, teachers were unsure if students could refer another student to the School-Based Health Center. Students can encourage other students to go to the School-Based Health Center, but there is no formal referral process for students. More teachers reported that they referred a student to the School-Based Health Center in 2017-18 (48%) compared to 2016-17 (41%). Continuing to increase educator knowledge about the services that are offered in the School-Based Health Center and how to make a referral to the School-Based Health Center will increase educator referrals.

In academic year 2016-17, educators were most aware that basic first aid (87.2%) was available at their school. Educators were less aware of many services provided only by the School-Based Health Center staff, like immunization management (39%), ADHD evaluations (33.7%), referrals for specialty care (37.8%), referrals to medical homes (37.8%), and treatment of illness with over-the-counter (36%) and prescription (38.4%) medications from school.

In academic year 2017-18, most educators were aware that the School-Based Health Center team could provide basic first aid (93%), make back-to-class decisions (84%), complete sports physicals (81%), and deliver care for acute illnesses (77%). However, even school administrators had doubts about whether the School-Based Health Center provided immunization management, over the counter (OTC) medications, and ADHD evaluations. While these numbers suggest more work needs to be done to increase service awareness, almost all service awareness categories improved from academic year 2016-17. More educators were aware the School-Based Health Center could provide wound care (38% increase), administer OTC medication to students (25% increase), and provision prescription medication (24% increase) than last year.

Parent Interviews

Parent interviews were conducted twice a year, at mid-year and end-of-year. These meant to learn about parents' perceptions of School-Based Health Center services. In 2016-17, a total of 17 parents from three of the four schools participated in mid-year focus groups or intercept interviews. At these mid-year interviews, there was a lot of confusion about what was offered everyday by the school nurse versus what the School-Based Health Center offered. The end-of-year focus groups and interviews were conducted during school events for Schools 3 and 4 while the focus group at School 1 was conducted as part of the May lunch and learn meeting. More parents at Schools 3 and 4 reported knowing about the School-Based Health Center at the end-of-year interviews than at the mid-year interviews. However, the level awareness among School 1 parents stayed about the same as it was during the mid-year discussions

In 2017-18, of the 29 parents interviewed at School 1, most remembered seeing the School-Based Health Center permission to treat form at the beginning of the school year. Few parents interviewed had children who used School-Based Health Center services, but those who used it described good communication with the School-Based Health Center staff and receiving referrals for specialist care. When asked about services provided by the School-Based Health Center, parents often mentioned

services provided by the school nurses such as eye exams, first aid, or assistance with a headache. Only four School 2 parents were interviewed about the School-Based Health Center. Half of the parents interviewed knew about the School-Based Health Center because their child had a sports physical. School 2 students can play sports at the school for which they are zoned. Most of the 16 parents for School 3 interviewed remembered seeing or completing the GHS permission to treat paperwork. Also, most of the parents could list or describe at least one or two School-Based Health Center services offered. Half of the parents interviewed had children who used the School-Based Health Center; of these, almost all had a sports physical completed through the School-Based Health Center. Of these parents, only a few (n = 3) were able to describe other types of services available through the School-Based Health Center. The majority of parents interviewed at School 4 knew there were School-Based Health Center services available at school (n = 16) and most of those parents were aware of the permission to treat paperwork (n = 14). Almost half of the interviewed parents had a child seen in the School-Based Health Center (n = 10). Parents mentioned they wanted more information about services offered. Hispanic parents at School 4 appreciated the forms in Spanish, but still wanted additional information in Spanish.

RQ14. *What proportion of students participated in School-Based Health Center activities? What proportion of students utilized specific services? What access trends were observed among subgroups of students?*

Program Implementation

In academic year 2016-17, the OnTrack Greenville schools had between 16-20% of their student population using the School-Based Health Center. School 2 utilized the program on an as-needed basis as opposed to having an School-Based Health Center provider at the site each week. Thus, their reach was much lower. During academic year 2017-18, 13% of the student population at School 1, 6% of the student population at School 2, 23% of the student population at School 3, and 26% of the student population at School 4 accessed the School-Based Health Center.

Clinic Visit Summary

Certain months of the year saw percentage increases in the number of clinic visits for OnTrack Greenville students. See Figure 1. During the 2016-17 school year, the School-Based Health Center completed 495 student visits with 361 students. In 2016-17, the months with the most visits were October (n = 112) and January (n = 81). The increase in student visits in October and January for this school year was due to sports physicals. In January and February, the flu accounted for many visits as well. A downward trend in the spring reflects a typical pediatric practice trend with visits decreasing as the weather gets warmer.

There were 578 visits to the School-Based Health Center made by 406 different students during academic year 2017-18. January had the most visits (n = 108). Of these, 82 (76%) were sports physicals completed ahead of spring sports tryouts. The month with the most non-sports physical visits was April (n = 42 total visits). No sports physical visits were completed this month.

Almost half of the visits (49%) to the School-Based Health Center in 2017-18 were for sports physicals. Students were seen for a variety of concerns, evaluations, and assessments, with 24% of visits for acute care, like headaches, ear infections, and respiratory infections. Comprehensive screening visits (n = 78),

typically for students referred through EWRS, made up 14% of visits. Students also were seen for chronic issues, such as asthma, and psychosocial concerns, such as anxiety and depression.

Figure 1. Clinical Visits by Month and Year

Total Number of Visits by Month and Year
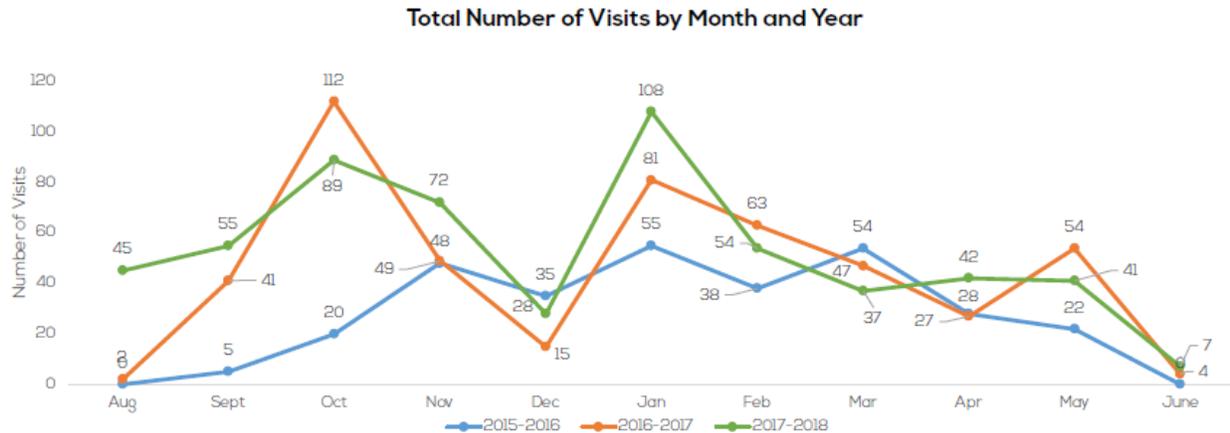
Student demographics for Academic Year 2017-18

In academic year 2017-18, more visits were made to the School-Based Health Center by male students (n = 225, 55%) compared to females (n = 176, 43%). Hispanic students visited the School-Based Health Center more frequently than other racial groups (n = 156, 38.4%). There were 129 Black/African American students seen this year (31.8%) and 88 White/Caucasian students (21.7%). Thirty-three students of other or unknown races made School-Based Health Center visits (8%). Medicaid was the primary insurance type for most students (n = 246, 60%). Approximately 32% of students had no or unknown insurance (n = 127). Thirty-three students had private insurance (8%). Approximately 65% of students have an identified medical home and a primary care provider (n = 265). Also, 141 students either did not have a medical home or did not identify their primary care provider (35%).

Most referrals to the School-Based Health Center originated from coaches and athletic directors for completion of pre-participation physicals 42% (n = 495) in 2016-17. Of the 208 sports physicals completed this year, 24 students were referred to additional health services. Twenty-one of those were to medical homes and 3 were to specialists (2 to orthopedics and 1 to pediatric cardiology). In academic year 2017-18, sports physicals made up 47% (n = 273) of School-Based Health Center visits. Follow-up referrals from previous visits (14%, n = 81) and school nurses (12%, n = 71) also made up many School-Based Health Center referrals. There were 26 teacher referrals this year (5%). As previously mentioned, the School-Based Health Center team should focus on increasing educator knowledge of services to increase referrals during the 2018-2019 school year.

There were a total of 140 referrals to outside care during the 2017-18 school year. Referrals to a medical home were the most common (50%, n = 70). There were 40 referrals made to Greenville Mental Health or other mental health services (29% of all outside referrals). Students were referred to other specialists

and agencies such as pediatric cardiology, pediatric gastroenterology, pediatric neurology, adolescent gynecology, New Impact (pediatric weight management), and Communities In Schools (CIS) of Greenville. CIS has school-based staff who coordinate with community partners to bring outside resources to students.

In academic year 2016-17, students returned to class after 94% of the student visits. Similarly, almost all students went back to class after their visit (97%) in academic year 2017-18. In the last year of implementation, 100% of students receiving a sports physical went back to class, whereas 94% (277 of 296) of students returned to class after a non-sports physical visit. Sixteen visits (3%) resulted in students being sent home until they felt better, per Greenville County Schools' protocol.

Students can be administered over-the-counter (OTC) medications and receive prescriptions following a visit to the School-Based Health Center. OTC medicines were given in 11% in academic year 2017-18, in comparison to 24% the previous year. During both years, prescriptions were given in about 20% of visits. In May 2018, the South Carolina legislature increased the prescribing power of nurse practitioners. This allowed nurse practitioners to prescribe additional medications (such as stimulants to manage ADHD). However, for the 2018-2019 school year, the School-Based Health Center clinical team plans to continue the current protocol in which the medical director sees students for their initial ADHD evaluation while the nurse practitioner manages follow-up visits.

There were 850 unique students seen in 1,391 student visits since the School-Based Health Centers began seeing students in September 2015. In academic year 2017-18, the School-Based Health Center had more student visits than any previous year with 578 visits to the School-Based Health Center made by 406 different students (compared to 305 visits in academic year 2015-16 and 495 visits in the 2016-17 school year). School 4 students made the most visits to the School-Based Health Center over the past three years (513 visits). School 3 students made 482 visits, School 1 students made 373 visits, and School 2 students made 23 visits.

Sports Physicals

Sports physicals are required for students to try out for a school sports team. The School-Based Health Center team offered physicals at no cost to students to reduce barriers for student participation in sports. Participating on a school sports team has been found to increase student engagement at school. Studies have shown that participating on a school sports team is associated with increased academic performance, positive self-concept, social support, and sense of belonging at school. Students are required to have a sports physical to try out for a sports team. The School-Based Health Center provided sports physicals at no cost to students to increase access to physical activity.

There were 281 sports physicals completed during the 2017-18 school year (49% of total visits to the School-Based Health Center), bringing the overall total completed by the School-Based Health Center team over the last three years to 551 (39% of all visits during the three-year period). There was a 34% increase in sports physicals from the 2016-17 school year (208 sports physicals completed) to 281 in academic year 2017-18.

In 2017-18, sports physicals were 1.8 times more likely to be completed for a Hispanic student than a non-Hispanic student (p = 0.001). More male students had a sports physical (n = 155, 57%) than female students (n = 119, 43%).

After having a sports physical this year, 69 students (14% of sports physicals, n = 489) were referred to outside care between 2016 and 2018. In total, 61 referrals were made to medical homes and 8 to a specialist or other care. Also, 40 students who were first seen in the School-Based Health Center for a sports physical in 2017-18 were later seen for other visits.

EWRS Referrals

The Early Warning & Response System (EWRS) is a system that monitors attendance, behavior, and grades to identify students who need additional support. EWRS teams at each school can refer students for a comprehensive health assessment if there are psychosocial concerns. EWRS is a real-time data dashboard that monitors attendance, behavior and grades; it gives each student a score at the beginning of each school year. When a student's score declines, this triggers an intervention meeting matched to the needs of the student, which the School-Based Health Center nurse practitioner attends. Students with behavior changes and grade declines which may be caused by a psychosocial issue are recommended for a School-Based Health Center referral. Each student referred by the EWRS to the School-Based Health Center is provided a comprehensive assessment. This assessment focuses on socio-emotional well-being and screens for risks associated with social determinants of health. In 2016-17, 49% of non-sport physical visits were EWRS students. In 2017-18, 46% of non-sports physical visits were EWRS students.

Each EWRS team is responsible for identifying cases where a comprehensive health evaluation is needed; the protocol is for students flagging 'orange' or 'red' because of behavior or grades. In 2017-18, both School 3 (32 total students referred) and School 4 (52 total students referred) followed this protocol. School 3 adopted the process in 2017-18 and referred 25 new EWRS students. School 1 did not follow this protocol and only referred 12 EWRS students (5 in 2016-17, 7 in 2017-18). Students flagged by the EWRS system often face complex mental and behavioral issues that may require active case management and referrals to outside care that the School-Based Health Center can provide.

C. Implementation Planning and Outputs

RQ15. *To what extent were School-Based Health Center services planned and implemented? What resources were provided? To what extent were partners collaboratively planning services? Did teachers and school staff know about School-Based Health Center? What services were offered? Which services were utilized by students? What utilization trends were observed among subgroups of students?*

School Based Health Alliance Clinical Performance Measures

The School Based Health Alliance challenges School-Based Health Centers across the United States to submit measures in clinical performance, business measures, and quality measures. There were five clinical performance measures collected during academic year 2017-18:
1. Annual well-child visit - The School-Based Health Center clinical team did not perform well-child checks, but did review if students had a well-child check (completed for 86%, n = 19 reviewed students) and made recommendations accordingly to parents for appointments with their medical home.
2. Annual risk assessment – Completed for EWRS and other high-risk student referrals. 78 screening visits were made this school year (13 of them were included in this review).

3. Body mass index (BMI) assessment and nutrition & physical activity counseling – In the medical chart review sample, 100% (n = 22) students had a BMI measure in their chart. For overweight and obese BMIs, appropriate referrals were made, including one to New Impact.
4. Depression screening and follow-up plan for a positive screen – Depression screenings were completed as needed (59%, n = 13 of reviewed students). The School-Based Health Center clinical team plans to add a PHQ-2 depression screening for all students for the 2018-2019 school year.
5. Chlamydia screening – Not completed because of clinic set-up.

Student-reported Health

At the beginning and end of each academic year, the Riley Institute at Furman University administered a student survey to students in OnTrack Greenville schools. Responses from Fall were compared to responses in the Spring. Students were asked to rate their physical and mental health on a scale from poor to excellent. In 2017-18, the student responses to these questions (mostly positive) were similar to other surveys that ask the same questions. Compared to male students, female students were 1.4 times more likely to report fair or poor physical health (p = 0.03). Compared to students of other races, white students were more likely to report fair or poor mental health (OR=1.66, p = 0.09).

Figure 2. Student-Reported Physical Health Status, 2018

Spring 2018 - Student-Reported Physical Health Status
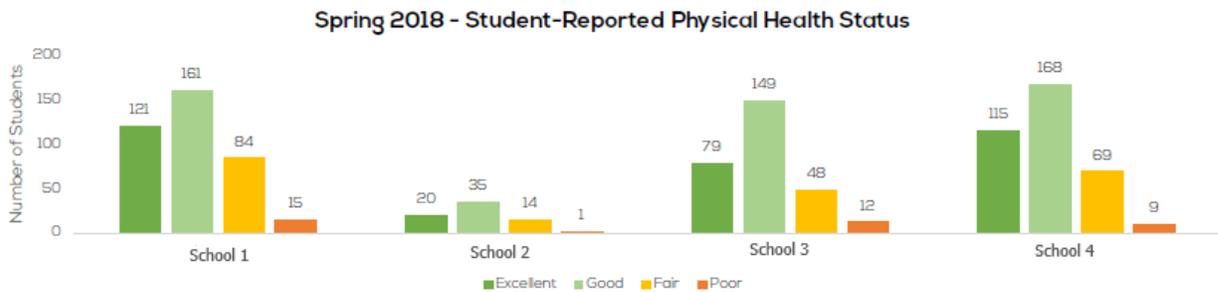
Trauma-Informed Schools

In academic year 2017-18, The Bradshaw Institute began working with Greenville County Schools to bring trauma-informed practices into the classroom to help administrators and staff to recognize, assist, and protect students from Adverse Childhood Experiences (ACEs).

Adverse childhood experiences (ACEs) are events before the age of 18 that have been linked to risky health behaviors, chronic health conditions, low life potential, and early death. ACEs are events of physical abuse, sexual abuse, emotional abuse, emotional neglect, intimate partner violence, substance misuse in the household, household mental illness, violent treatment of mother, parent separation or divorce, or having an incarcerated household member. ACEs lead to disrupted neurodevelopment, which causes social, emotional, and cognitive impairment and can lead to peer rejection and victimization.

The risks of later life issues increase as the number of ACEs increases; ACEs are measured on a scale from 0 to 10 for the number of events or experiences had during childhood. Addressing ACEs early can have a preventative effect on later life outcomes.

The trauma-informed schools program focuses on increasing administrator and school staff awareness of ACEs and how students can be positioned to heal and protect themselves from trauma. With the hiring of social worker who is also a trauma-informed specialist in March 2018, the program has worked to organize staff trainings for academic year 2018-2019, develop relationships with community partners, set up group student sessions, and develop a monthly trauma-informed professional development series with seven to eight speakers on topics such as poverty and the brain, LGBTQI, domestic violence, and mental health issues faced by students.

From May to July, OnTrack Greenville's trauma-informed specialist logged over 27 community partner meetings, 13 school meetings, nine staff trainings, and five student group sessions. These sessions led to 362 community member interactions, 282 school staff interactions at school meetings, 390 school staff interactions at trainings, 159 student interactions in group sessions, and 615 student interactions at extracurricular activities.

The Bradshaw Institute focused on improving the school climate and increasing teacher self-efficacy with trauma. Figure 3 presents items are from a collective efficacy scale included in the OnTrack Greenville Educator survey administered to school educators each spring. These numbers provide an understanding of the school climate in 2018 and an opportunity for educators to expand their awareness and understanding of these issues.

D. Implementation Fidelity and Completeness

RQ16. To what extent were School-Based Health Center services implemented as planned? How well were activities following the School-Based Health Center plans and protocols? To what degree were output goals reached?

Implementation Fidelity and Completeness/Medical Visit Fidelity

Visit fidelity was assessed by medical chart reviews to determine the degree to which each visit followed a predetermined protocol for assessments and referral. These reviews used a checklist developed by the School-Based Health Center clinical team and Clemson researchers to best identify and assess the components of clinical visits.

Medical record reviews were completed to assess School-Based Health Center fidelity to national guidelines established by the School Based Health Alliance, as well as GHS identified best practices for care delivery through the School-Based Health Center. The 2016-17 review included approximately 27% of all student visits; including 72 different students seen in 136 visits. The 2017-18 review was conducted with the records of 22 randomly selected students seen in 55 visits (5% of all students, 10% of all visits).

Figure 3. Findings from Trauma-Informed School Educator Efficacy Survey, AY 2017-18

91% think educators at their school have the neccessary skills to meaningfully teach

85% think educators at their school believe every student can learn

44% think students come to school ready to learn

47% think students at their school are not motivated to learn

61% think educators at their school have the skills to deal with disciplinary problems

34% think learning at their school is difficult because students are worried about safety

61% think drugs and alcohol abuse in the community make it difficult for students

56% think opportunities in their community ensure that students will learn

83% think educators at their school develop strategies based on analyzed data

83% think educators at their school analyze information together to inform practices

83% think educators at their school have effective practices to work together

65% think their school's schedule alllows enough time for educator collaboration

74% think educators at their school can get through to the most difficult students

75% think educators at their school can motivate their students

77% do not think educators at their school give up when a child doesn't want to learn

Source: OnTrack Greenville School-Based Health Centers 2017-18 Implementation Report

In 2016-17, the process involved a random selection of student visitors to the School-Based Health Center and closely documented that all protocols were followed during each visit to the School-Based Health Center. It also involved following student referrals and checking to see if measures for national reporting to the School-based Health Alliance were completed. The reviews found that appropriate care protocols were documented in 100% of School-Based Health Center visits and documentation for who referred the student to the School-Based Health Center was completed in 88% of visits. A HEADSSS (home, education, activities, drugs, suicidality, sex, and safety) assessment was conducted during 100% of screening visits (primarily EWRS students). Twenty-seven screenings were included in the sample.

Guardian follow-up was completed in 95% of visits that needed one. If medication was provided, use and adherence was discussed with the student and parent in 95% of screenings.

During the 2017-18 school year, the clinical care team used a template in the electronic medical record to measure if referral source, care process, and HEADSSS assessments were documented consistently. The template and electronic medical record helped facilitate high documentation completion for child physical history (100%, n = 22) and well child check review (86%, n = 19). Assessments such as the PHQ-2 depression screening (59%, n = 13), SCARED anxiety screening (64%, n = 14), and CRAFFT adolescent substance-related screening (50%, n = 11) were completed on an as-needed basis. It is important to note that 10 students (45%) referred by the EWRS were included in the sample; this was expected given they were more likely to have more complex cases and a greater number of visits.

Student Satisfaction

Patient satisfaction with delivered services is an important health care metric; patients who are more satisfied with their health care services are more likely to improve their health and implement reform. During academic years 2016-17 and 2017-18, student satisfaction was measured with a brief paper survey at the end of each visit.

In academic year 2016-17, students reported a high level of comfort with the School-Based Health Center staff; 95% (n = 203) stated that they were very comfortable or comfortable going to the School-Based Health Center. Similarly, 93% (n = 199) of students said that it was very easy or somewhat easy to talk to the School-Based Health Center staff. Approximately 47% of students completing the survey said they would have sought care elsewhere if the School-Based Health Center were not at their school.

For academic year 2017-18, students also were generally positive about how they were treated by the School-Based Health Center care providers. Almost all (97%, n = 290) students responded that they were definitely treated with courtesy and respect during their visit. Students' lowest ratings were for how much time the School-Based Health Center team spent with them; 87% (n = 261) of students said they were definitely sure the care team spent enough time with them. The School-Based Health Center clinical team strove for efficient student visits that returned students to class as soon as possible. Most students (70%) reported missing one class or less to go to the School-Based Health Center, and less than 4% of students said their visit took more than two class periods.

Through the student satisfaction survey, researchers sought to understand where students would go to receive care if there was not a School-Based Health Center at their school. Of all students responding to the satisfaction survey in academic year 2017-18, 45% (n = 134) reported they would have stayed in school instead of seeking other care, while 22% (n = 67) of students said they would have gone home until they felt better. This survey did not distinguish how many of these students visited the School-Based Health Center for sports physicals compared to other healthcare visits. The School-Based Health Center provides a healthcare option for students that prevents them from having to seek care elsewhere.

IV. Statistical Analysis of Impacts

A. Unit of Assignment and Analysis

The unit of assignment for this study was the individual student. Researchers adjusted their analysis on the effects of the School-Based Health Center utilization to match the unit of assignment by using propensity matching at the student-level. For each student utilizing School-Based Health Center Services up to five "match" students were selected from each comparison group based on several covariates and background conditions. Thus, comparison and treatment groups were comprised of individual matches and the unit of analysis reached the student-level.

B. Analysis Approach

The analysis described here followed a Treatment on Treated (TOT) framework, as utilization of School-Based Health Center services defines the treatment. It compared those who utilized the School-Based Health Center to students in the within-school, within-district, and state comparison groups. This study examined whether students who utilized the School-Based Health Center exhibited improved attendance compared to students who did not participate in the program. Evaluators also examined the relationship between the School-Based Health Center and student achievement and behavior. Differences between the treatment and the within-school comparison group were estimated separately from the treatment and the external comparison groups.

C. Formation of Matched Groups

In order for matching techniques to approximate a random experiment, important assumptions have to be met. The first was strongly ignorable treatment assignment. This means that conditional on observed covariates (X) the treatment (W) was independent of the outcomes (Y_0, Y_1), or $(Y_0, Y_1) \perp W|X$ (Rosenbaum & Rubin, 1983; Guo and Fraser 2014, p. 209). For this assumption to hold, the selection process had to be derived from covariates used in the model. Previous research indicates that results from matching designs only reflect randomized control trial results when the covariates in the propensity score model accurately predict treatment assignment (Bifulco, 2012; Cook et al., 2008; Fortson et al., 2012). Matching methods work the best when pretreatment outcome measures are used in estimating the propensity score. For this analysis, the propensity score ($P(X)$) was equivalent to:

$$P(X) = \Pr(T_i = 1|\boldsymbol{X}_i),$$

where T_i = 1 if the student, i, utilizes services from the School-Based Health Center and $\boldsymbol{X}_i$ is a vector of covariates that predict School-Based Health Center utilization. Evaluators selected the covariates that best predicted treatment assignment and imbalance between treatment and control groups. Given the importance of pretreatment outcome measures, attendance (percentage of days attended), behavior (in school and out of school suspensions), and academic performance (math, ELA, social studies, and

science test scores) from the previous academic year were used.[16] The 2016-17 survey data matching procedure also included baseline measures of students' reported mental and physical health. In addition to these factors, the propensity score model included students' race, gender, English-language learner status, disability status, low-income indicator, and grade. Previous research indicates that these variables are related to student attainment and student achievement (e.g., Goldschmidt & Wang, 1999; Laird, Kienzi, DeBell, & Chapman, 2007; Reardon & Robinson, 2007; Reschly & Christenson, 2006; Rumberger & Lim, 2008; Stetser & Stillwell, 2014). Therefore, these factors were included in the propensity model, as they could have been predictive of the likelihood of students being identified by the EWRS, the likelihood of utilizing School-Based Health Center services, and the outcomes of interest.

Researchers estimated a logistic regression using these covariates to produce a predicted probability of receiving treatment for each student separately for the within-school comparison group and the external comparison groups. The model used by evaluators was:

$$\Pr(T_i = 1|X) = \exp(\beta X_i)/(1 + \exp(\beta \boldsymbol{X}_i)),$$

where $\boldsymbol{X}_i$ is a vector of covariates discussed above.

After creating propensity scores, treatment students were matched to comparison students. Like the estimation of the propensity scores, the matching between treatment and within-school comparison students and between treatment and external comparison students occurred independently. Evaluators used nearest neighbor matching, which is a form of greedy matching. Treatment students were matched to the comparison students with the closest absolute propensity score, as long as the distance between the propensity scores fell within a caliper of .25σ_p, where σ_p is the standard deviation of the propensity scores (Guo & Fraser, 2014, p. 147). This was done to ensure good matches between treatment and comparison students.

Ideally, each School-Based Health Center treatment student was matched to five comparison students to boost sample size. Matching was done with replacement. However, there were instances in which treatment students could not be matched. First, if a student had missing data for any of the variables included in the first stage regression, the student was excluded from the analysis. Second, treatment students who did not have any potential matches within the caliper described above were not included in the analyses presented in this report, as researchers were not able to identify suitable matches.

Another assumption of the matching methods is that there is proper overlap in the propensity scores between the treatment and control group (Rosenbaum & Rubin, 1983; Stuart & Rubin, 2008). In order to ensure that this assumption is met, evaluators performed bivariate tests, such as a *t*-tests or chi-square tests, before and after matching. If these tests revealed a significant level of imbalance or a lack of overlap, then evaluators, following Rosenbaum and Rubin (1984, 1985), re-estimated the propensity model using higher-order polynomial terms and interactions between the covariates. When considering the balance of the matches, researchers examined the statistical significance of the bivariate differences in the post-matching covariates between the treatment and control groups, the standardized mean differences between the two groups, and the variance ratio. The goal was to have no statistically significant differences, standardized mean differences below 0.1, and variance ratios near 1.0 (Steiner & Cook, 2013).

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[16] When available, test scores were from both MAP and SC READY exams were used. Collinearity between predictors is generally not a threat when estimating the propensity score (Stuart, 2010).

The pre-matching differences between School-Based Health Center students and the comparison students are presented below, followed by data on the effectiveness of the matching procedure.

1. Characteristics of School-Based Health Center Students: Pre-Matching

This study examined students who utilized School-Based Health Center services in academic years 2016-17 and 2017-18. In total, 361 students utilized services at the School-Based Health Center in the 2016-17 academic year. Among these, 170 students met the criteria for inclusion in the impact study. In academic year 2017-18, 406 students utilized services at the School-Based Health Center, but only 96 students met the inclusion criteria for the study. Tables 9 and 10 below examine the pre-matching demographic characteristics of these treatment students, as well as the overall student population of treatment, district, and state schools. These data include all non-School-Based Health Center students in the comparison group populations, allowing for a comparison of demographic characteristics before the matching process.

Table 9. Pre-Matching Demographic Characteristics AY 2016–17

	School-Based Health Center Participants (n = 170)	Student Population: Treatment Schools (n = 1,742)	Student Population: District Schools (n = 3,330)	Student Population: State Schools (n = 44,949)
Black	29.4%	31.6% (0.05)	28.8% (-0.02)	**48.8%*** (0.42)
Hispanic	37.7%	40.2% (0.05)	**16.3%*** (-0.49)	**9.6%*** (-0.70)
White	26.5%	22.2% (-0.10)	**48.2%*** (0.47)	**37.3%*** (0.23)
Other Race	6.5%	6.0% (-0.02)	4.8% (0.01)	4.3% (-0.10)
Free/Reduced Meals	77.7%	77.5% (0.00)	**54.0%*** (-0.51)	**74.9%** (-0.18)
Female	44.7%	46.4% (0.03)	47.7% (0.06)	48.6% (0.07)
Special Education	25.9%	**19.5%*** (-0.15)	**13.0%*** (-0.33)	**15.1%*** (-0.19)
ESL	34.1%	31.9% (-0.05)	**11.8%*** (-0.55)	**6.6%*** (-0.73)
6th grade	32.4%	37.3% (0.11)	35.0% (0.06)	36.8% (0.09)
7th grade	37.1%	33.0% (-0.08)	33.6% (-0.08)	31.5% (-0.08)
8th grade	30.6%	29.6% (-0.03)	31.4% (0.02)	31.7% (0.01)

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

*Note: Standardized mean differences are reported in parentheses. Significance tests are in comparison to the SBHC group.

As shown in Table 9, 29% of students receiving support from the School-Based Health Center in 2016-17 were Black, 38% were Hispanic, 27% were White, and 7% were some other race. School-Based Health Center students in academic year 2016-17 were more likely to be Hispanic than students in the district schools (p < 0.001) and state schools (p < 0.001). In addition, School-Based Health Center students were less likely to be White than students in district schools (p < 0.001) and state schools (p < 0.001). Over 75% of both the School-Based Health Center students and the treatment school students were low-income students, as measured by free and reduced meals, while only 54% of students in the district schools (p < 0.001) and were low-income in academic year 2016-17. School-Based Health Center students were more likely to be designated as special education than students in treatment schools (p < 0.05), district schools (p < 0.001), and state schools (p < 0.001) in academic year 2016-17. School-Based Health Center students also were more likely to be English Language Learners than students in district schools (p < 0.001) and state schools (p < 0.001). As shown in Table 10, many of these significant differences in pre-matching student demographic characteristics remained present in academic year 2017-18.

Table 10. Pre-Matching Demographic Characteristics AY 2017–18

	School-Based Health Center Participants (n = 96)	Student Population: Treatment Schools (n = 1,880)	Student Population: District Schools (n = 3,448)
Black	21.9%	**30.4%†** (0.19)	28.8% (0.16)
Hispanic	53.1%	**43.3%†** (-0.20)	**16.7%*** (-0.82)
White	18.8%	20.5% (0.04)	**47.2%*** (0.64)
Other Race	6.3%	5.9% (-0.02)	7.3% (0.04)
Free/Reduced Meals	78.1%	83.0% (0.12)	**57.5%*** (-0.45)
Female	46.9%	46.6% (-0.01)	47.5% (0.01)
Special Education	24.0%	**15.7%*** (-0.21)	**10.1%*** (-0.38)
ESL	39.6%	**30.0%*** (-0.20)	**9.9%*** (-0.73)
6th grade	35.4%	34.2% (-0.02)	34.0% (-0.03)
7th grade	34.4%	31.4% (-0.06)	32.4% (-0.04)
8th grade	30.2%	31.9% (0.04)	31.7% (0.03)

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
*Note: Standardized mean differences are reported in parentheses. Significance tests are in comparison to the SBHC group.

Researchers used prior year academic outcomes in the matching process and as covariates in regression models; therefore, it is important to examine the pre-matching prior year academic outcomes of treatment students and comparison school populations. Table 11 presents a selection of the academic year 2015-16 pre-matching outcomes for School-Based Health Center students and comparison group populations. School-Based Health Center students had 2015-16 behavior, attendance, and course performance outcomes that were very similar to students attending treatment and state schools. The School-Based Health Center students were more likely to have received any behavioral referral than were students at treatment schools (p < 0.05) and state schools (p < 0.01). School-Based Health Center students' prior year behavior and attendance outcomes were significantly different from the overall student population of district schools. School-Based Health Center students were more likely to have had any behavioral referral (p < 0.001) than students attending district schools. School-Based Health Center students also had a lower average daily attendance (p < 0.001) and were more often chronically absent than the general population of district schools (p < 0.001).

Table 11. Pre-Matching Prior Year Academic Outcomes AY 2016-17

	School-Based Health Center Participants (n = 170)	Student Population: Treatment Schools (n = 1,742)	Student Population: District Schools (n = 3,330)	Student Population: State Schools (n = 44,949)
Any Behavioral Referral	47.1%	**38.6%*** (0.18)	**27.9%*** (0.41)	**38.3%*** (0.20)
SC READY – Math	1636	1630 (-0.05)	1644 (0.10)	1635 (0.01)
SC READY – ELA	1630	1627 (-0.09)	1642 (0.14)	1628 (0.08)
Average Daily Attendance	95.1%	95.7% (0.13)	**96.5%*** (0.30)	95.6% (0.09)
Chronic Absenteeism	12.3%	8.8% (0.12)	**5.0%*** (0.26)	10.7% (0.04)

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
*Note: Standardized mean differences are reported in parentheses. Significance tests are in comparison to the SBHC group.

The prior year academic outcomes for academic year 2017-18 analyses appear in Table 12. As shown below, School-Based Health Center students had prior year course performance outcomes that were similar to those of the student population at treatment schools and district schools. There were significant differences in attendance and behavior prior year pre-matching outcomes, however. School-Based Health Center students were more likely to have received any behavioral referral, had lower average daily attendance, and were more likely to be chronically absent than the general student population at treatment and district schools in academic year 2017-18. All of the differences were significant at a p-value less than 0.001.

Table 12. Pre-Matching Prior Year Academic Outcomes AY 2017-18

	School-Based Health Center Participants (n = 96)	Student Population: Treatment Schools (n = 1,880)	Student Population: District Schools (n = 3,448)
Any Behavioral Referral	52.1%	**35.7%**** (0.33)	**28.5%***** (0.49)
SC READY – Math	1635	1635 (0.00)	1644 (-0.11)
SC READY – ELA	1627	1631 (-0.05)	1640 (-0.17)
Average Daily Attendance	93.4%	**95.1%***** (0.34)	**95.4%***** (0.42)
Chronic Absenteeism	22.9%	**11.3%***** (0.31)	**9.0%***** (0.39)

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

*Note: Standardized mean differences are reported in parentheses. Significance tests are in comparison to the SBHC group.

2. Effectiveness of the Matching Procedure

To assess the impact of School-Based Health Center utilization on student attendance and student health outcomes, researchers created nine matched comparison groups. It was necessary to create nine distinct, matched comparison groups due to (1) the three different comparison school populations (treatment school, district, and state), (2) the two different sources of outcome data (administrative data and student survey data), and (3) two years of analysis (academic years 2016-17 and 2017-18).

Researchers re-estimated the propensity model until balance was achieved between the treatment and comparison groups. Balance was determined by examining the statistical significance of the bivariate differences, the magnitude of the standardized mean differences, the variance ratios, and the distribution of the propensity scores between the two groups. Below are the results for the 2016-17 match between School-Based Health Center students and the within-school treatment school comparison students using administrative data.

Figure 4 demonstrates that the matching process produced two similar groups in terms of standardized differences. For all the 23 variables in the analysis, none have a standardized mean differences larger than 0.1. Figure 5 provides evidence that the two groups are also similar in terms of the variance of the variables. Further, there is substantial overlap between the School-Based Health Center students and the treatment school matches in terms of their propensities to utilize the School-Based Health Center as is evident in Figure 6. Given these results, researchers are confident that the two groups are similar on these observable characteristics.

Figure 4. AY 2016-17 Treatment School Comparison Matches (Administrative Data): Standardized Mean Differences
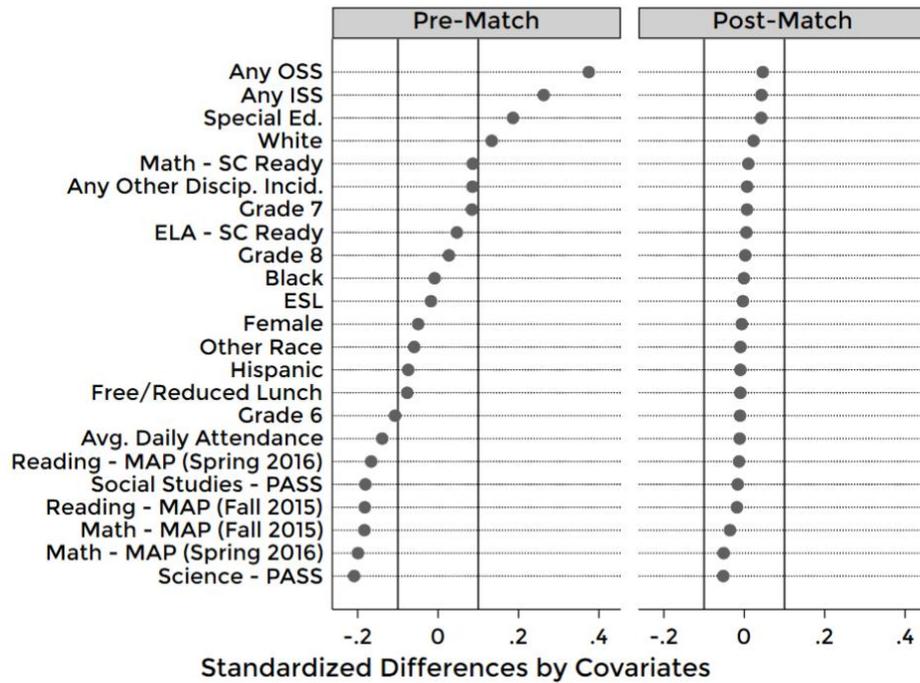
Figure 5. AY 2016-17 Treatment School Comparison Matches (Administrative Data): Variances
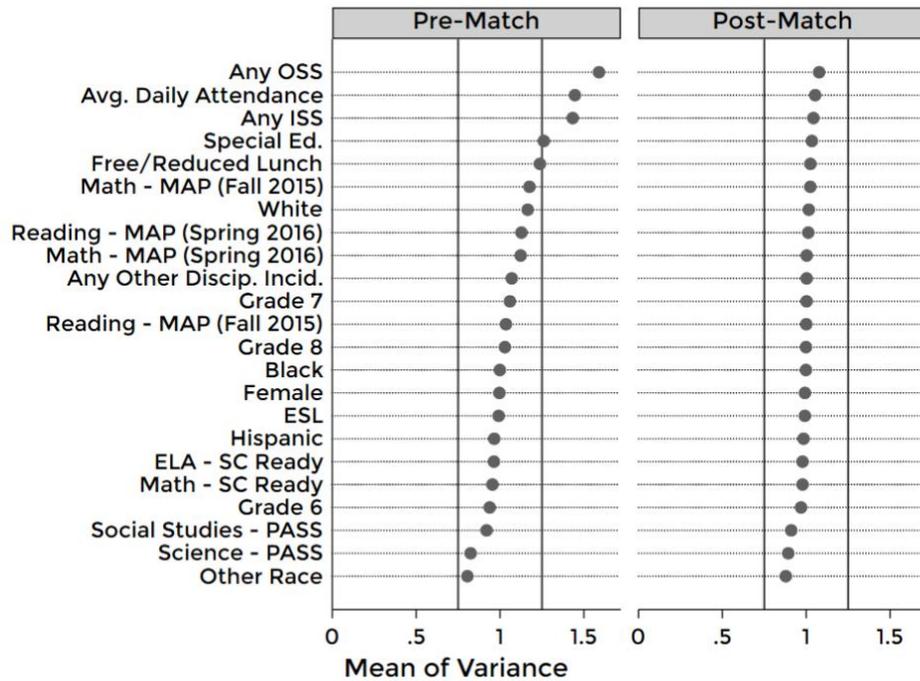
Figure 6. AY 2016-17 Treatment School Comparison Matches (Administrative Data): Overlap
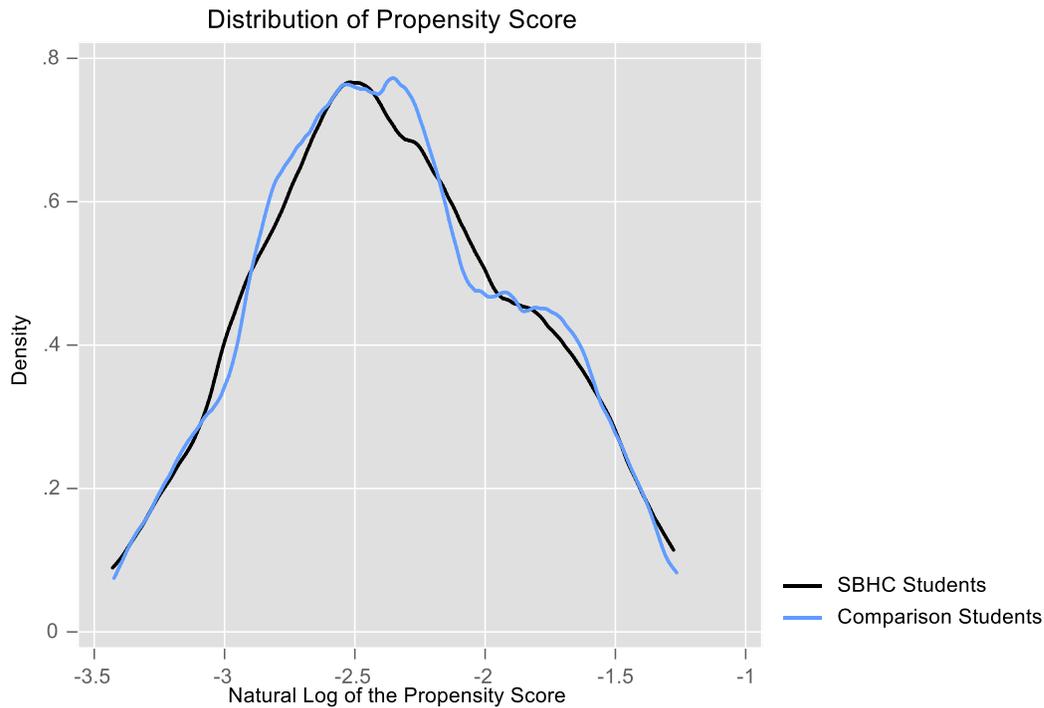
A similar method was used for the eight other matching procedures. In the instances in which ideal matches were not possible, the differences were often marginal. For the results of the other matches, see the Appendix C.

3. Characteristics of School-Based Health Center Students: Post-Matching

The following series of tables presents the demographic characteristics of School-Based Health Center students and their matched counterparts for each school (treatment, district, or state) and each data source (administrative or survey).

As noted below in Table 13, no significant differences were present between treatment students and matched comparison students attending treatment, district, or state schools on demographic factors in academic years 2016–17 and 2017-18. The lack of significant differences here indicates that the propensity score matching process resulted in balanced samples. More sophisticated analyses of standardized differences and variance ratios between the treatment and comparison students confirmed that the samples were balanced when examining demographic factors, as well as the baseline attendance, behavior, and achievement outcomes used in the propensity score model. For more information on the effectiveness of the matches for other data sources and academic years, see Appendix C.

Table 13. SBHC Participants vs. Student Matches 2016-17 (Administrative Data Matches)

	SBHC Participants (n = 132)	Student Matches: Treatment Schools (n = 660)	SBHC Participants (n = 126)	Student Matches: District Schools (n = 630)	SBHC Participants (n = 72)	Student Matches: State Schools (n = 360)
Black	31.8%	30.8% (0.02)	33.3%	35.1% (-0.04)	45.8%	46.7% (-0.02)
Hispanic	32.6%	33.0% (-0.01)	29.4%	26.3% (0.07)	20.8%	22.8% (-0.05)
White	30.3%	31.1% (-0.02)	31.7%	32.7% (-0.02)	29.2%	26.4% (0.06)
Other Race	5.3%	5.2% (0.01)	5.6%	5.9% (-0.01)	4.2%	4.2% (0.00)
Free/Reduced Meals	92.4%	91.2% (0.04)	92.1%	93.0% (-0.04)	93.1%	92.8% (0.01)
Female	44.7%	45.6% (-0.02)	45.2%	49.7% (-0.09)	30.6%	34.2% (-0.08)
Special Ed.	26.5%	24.7% (0.04)	25.4%	26.2% (-0.02)	27.8%	23.6% (0.09)
ESL	29.5%	29.7% (-0.00)	26.2%	22.4% (0.09)	20.8%	22.2% (-0.03)
6th grade	32.6%	30.5% (0.05)	34.1	36.2% (-0.04)	22.2%	23.6% (-0.03)
7th grade	36.4%	36.8% (-0.01)	34.9%	31.3% (0.08)	41.7%	43.9% (-0.04)
8th grade	31.1%	32.7% (-0.04)	31.0%	32.5% (-0.03)	36.1%	32.5% (0.08)

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

*Note: Standardized mean differences are reported in parentheses. Significance tests are in comparison to the SBHC group. Frequency weights were used to account for matching with replacement.

Researchers were not able to identify suitable matches for some School-Based Health Center students due to the parameters of the propensity score matching process. This means that not all School-Based Health Center students were included in the analyses presented in this report. Tables 14 and 15 below describe how many School-Based Health Center students were matched for each comparison group and each set of outcome data during each academic year. The total number of students listed in the table includes all School-Based Health Center students who met the inclusion criteria and have full matching data.

In academic year 2016-17, 135 School-Based Health Center students had complete administrative data; 98% of treatment students were matched to comparison students at treatment schools, 93% were matched to comparison students at district schools, and 49% were matched to comparison students attending state schools. One explanation for the lower number of state matches is that the propensity score model for these matches did not include as many rich covariates, such as MAP assessment scores, as the other matching models did. In academic year 2017-18, there were 88 School-Based Health Center students in the treatment group and 93% were matched to comparison students at treatment schools and 93% were matched to comparison students at district schools. When looking at the 65 School-Based

Health Center students with complete pre- and post- OnTrack Student Survey data in academic year 2016-17, 89% of School-Based Health Center students were matched to comparison students at treatment schools and 88% were matched to comparison students at district schools. In academic year 2017-18, there were 51 treatment students with complete survey data; 86% of these students were matched to comparison students attending treatment schools and 90% were matched to comparison students at district schools.

Table 14. Number and Percent of SBHC Participants Matched (Administrative Data)

| | Academic Year 2016-17 | | | | | | Academic Year 2017-18 | | | |
	Treatment Schools		District Schools		State Schools		Treatment Schools		District Schools	
Matched	132	98%	126	93%	73	49%	82	93%	82	93%
Not Matched	3	2%	9	7%	75	51%	6	7%	6	7%
Total	135	100%	135	100%	148	100%	88	100%	88	100%

Table 15. Number and Percent of SBHC Participants Matched (Survey Data)

| | Academic Year 2016-17 | | | | Academic Year 2017-18 | | | |
	Treatment Schools		District Schools		Treatment Schools		District Schools	
Matched	58	89%	57	88%	44	86%	46	90%
Not Matched	7	11%	8	12%	7	14%	5	10%
Total	65	100%	65	100%	51	100%	51	100%

It is important to note that the estimated effects of the program only pertain to those students included in the analyses. It is possible that utilizing services at the School-Based Health Center had different effects on those students who were not matched. However, the research team was able to match the majority of School-Based Health Center students to lessen this problem. To examine how representative the matched set of School-Based Health Center students is, researchers compared the student demographics between the matched School-Based Health Center students and those School-Based Health Center students who could not be matched because they did not have full matching data (refer to Table 5) or did not have a proper match within the given caliper. The results for the 2016-17 administrative data match with the treatment school comparison group appears in Table 16 below.

One can see that students who received free and reduced meals were overrepresented in the matched data. Similar analyses were performed for the other matches. Appendix C provides information on the demographic differences between those School-Based Health Center students who were matched and those who were not.

Table 16. Which School-Based Health Center Students Were Matched? Post-Match Demographics, AY 2016-17 Treatment School (Administrative Data Match)

	SBHC Not Matched - Mean	SBHC Matched - Mean	Difference	S.E. of Diff.
Black	0.28	0.32	-0.04	0.10
Hispanic	0.48	0.33	0.15	0.10
White	0.16	0.30	-0.14	0.10
Other Race	0.08	0.05	0.03	0.05
Free/Reduced Meals	0.76	0.92	**-0.16**[*]	0.07
Female	0.40	0.45	-0.05	0.11
Special Ed.	0.28	0.27	0.01	0.10
ESL	0.42	0.30	0.12	0.10
Grade 6	0.32	0.33	-0.01	0.09
Grade 7	0.39	0.36	0.03	0.09
Grade 8	0.29	0.31	-0.02	0.09

[†] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

D. Impact Analysis Results

There are many competing matching procedures. Researchers for this study employed greedy matching. While other approaches, such as optimal matching, have their strengths, greedy matching allowed researchers to perform multivariate analyses on the samples after matching. This feature is one of the reasons why greedy matching is so popular across many disciplines (Guo & Fraser, 2014, p. 148). When propensity scores are used with a regression adjustment, the estimates are "doubly robust," which helps with robustness against misspecification in the propensity score model or the regression model (Imbens & Wooldridge, 2009).

As specified above, researchers ensured that there were no significant differences between the treatment and comparison groups on pre-treatment covariates. For each outcome, the basic model to estimate the impact effects of utilizing the School-Based Health Center was as follows:

$$Y_{t,i} = \beta_0 + \beta_1 T_i + \beta_2 Y_{Baseline,i} + \beta_3 G_i + \beta_4 R_i + \beta_5 F_i + \beta_6 I_i + \beta_7 D_i + \beta_8 E_i + e_i$$

In this equation, $Y_{t,i}$ is the outcome for student i at time t. β_1 represents the impact of utilizing the School-Based Health Center (T = 1). A statistically significant estimate of β_1 indicates that utilizing the School-Based Health Center is related the outcome of interest. When estimating impact effects using a quasi-experimental design, inclusion of a pretreatment outcome measure decreases selection bias and increases precision (e.g, Bifulco, 2012). β_2 is the impact of the pretreatment, or baseline outcome.[17] For example, the regression model predicting 2017-18 math SC READY test scores will include the 2016-17 math SC READY score as a covariate. β_3 represents a vector of grade (7th and 8th with 6th the omitted category) specific effects. R_i represents a set of dummy variables for race (Black, Hispanic, and other

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[17] Whenever possible, the same measure will be used for both the outcome and the pretreatment control variable. When that is not possible, a pretreatment or baseline measure from the same domain as the outcome variable will be used. No pretreatment measures of the outcome were controlled for the analyses of the survey data.

with white the omitted category). β_5 represents the difference between female and male students, and I_i is a dummy variable indicating if a student is eligible for free or reduced priced lunch. Dummy indicators for disability status (D_i) and English as a second language status (E_i) were also included in the model.

The student-level random error is denoted as e_i in the above model. One assumption of a traditional OLS model is that the residuals are uncorrelated with the covariates. Since this assumption of homoscedasticity does not necessarily hold, the models were estimated with robust standard errors. Bootstrap methods were used to estimate the standard errors. This approach relies on sampling from the analysis sample and replicating the analysis. This study used 500 replications to produce the standard errors of the School-Based Health Center coefficients.

The Stata software program was used to perform the matching procedure and outcome analyses (StataCorp, 2017). The above model was used for interval dependent variables, such as test scores, while a logistic regression was estimated for dichotomous dependent variables, like whether or not a student was chronically absent during a given semester or school year. The student self-reported physical and mental health measures were ordinal; therefore, ordered logistic regression was used for these outcomes.

While the main impact analyses compared School-Based Health Center students to matched comparison students, researchers also estimated regressions using the population of comparison students. These unmatched regression results allow one to compare the overall student populations in each comparison group to students who received SBHC services in 2016-17 or 2017-18. These unmatched analyses provide context when assessing the impact of the matching procedure on the overall conclusions of the study. The results of these unmatched regression analyses are provided in Appendix I.

1. Estimates of Effect Size

Evaluators of education programs should consider the substantive impact of interventions in addition to their statistical significance. For the impact analyses presented below, researchers converted the multivariate regression coefficients into covariate-adjusted, standardized effect sizes (Cohen's d). This was a straightforward process for the OLS regression coefficients (Lipsey & Wilson, 2000). To convert the binary and ordered logistic regression results to Cohen's d estimates, researchers first transformed the coefficients to odds ratios. Following Borenstein, Hedges, Higgins, and Rothstein (2009), these odds ratios were then converted into estimates of Cohen's d (p. 47). A benefit of Cohen's d is that it allows for comparisons of substantive impacts across outcomes and studies. However, there is no agreed upon definition of a "meaningful" effect size. Cohen (1988) suggested that an effect size of 0.2 should be considered small, 0.5 moderate, and 0.8 large. However, effect sizes of this magnitude are quite rare in education evaluations. Perhaps, a more appropriate threshold is the What Works Clearinghouse's (2017) statement that an effect size of 0.25 or greater should be considered "substantively important."

2. Confirmatory Impact Analyses

Confirmatory Impact RQ1. *Did students who utilized School-Based Health Center services have higher attendance rates than matched comparison students?*

In this study, confirmatory impact analyses show the effect of utilizing services at the School-Based Health Center on two measures of student attendance: average daily attendance and chronic

absenteeism. In the following tables, the outcomes of students who utilized services at the School-Based Health Center in academic year 2016-17 are compared to matched comparison students in treatment schools, district schools, and state schools. The outcomes of students who utilized services at their School-Based Health Center in academic year 2017-18 are compared to matched comparison students at treatment schools and district schools only. Two different sets of data are presented in the following tables. The "Matched Regression" columns show the School-Based Health Center regression coefficients from the post-match multivariate regressions and the bootstrapped standard errors. The regression coefficients from the OLS regressions are directly interpretable. For analyses of dichotomous and ordinal dependent variables, binary and ordered logistic regression was used, and the "Matched Regression" column presents the log odds and associated bootstrapped standard errors. The "Effect Size" column displays the Cohen's d estimate associated with the School-Based Health Center regression coefficient.

For the analyses examining average daily attendance, positive values in the table indicate that the School-Based Health Center students exhibited a more desirable outcome than the matched comparison students, or a higher average daily attendance rate. For the analyses examining chronic absenteeism, negative values in the table indicate that the School-Based Health Center students exhibited a more desirable outcome than the matched comparison students. Statistically significant differences between the groups are denoted by asterisks in the tables.

Table 17 presents the differences in student attendance between students who utilized services at the School-Based Health Center in academic year 2016-17 and matched comparison students at treatment schools, district schools, and state schools. As shown in Table 17, there were no significant differences in attendance between School-Based Health Center students and matched comparison students at treatment schools or state schools in academic year 2016-17. When compared with matched students at district schools, however, School-Based Health Center students were significantly less likely to be chronically absent (p < 0.10).

Table 17. Confirmatory Impact Results for Student Attendance AY 2016-17

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools		SBHC Students vs. Comparison Students: State Schools	
	Matched Regression (n = 792)	Effect Size	Matched Regression (n = 756)	Effect Size	Matched Regression (n = 438)	Effect Size
Average Daily Attendance	-0.37 (0.43)	-0.06	0.55 (0.47)	0.10	-0.16 (0.65)	-0.02
Chronically Absent	-0.33 (0.44)	-0.18	**-0.66†** (0.39)	-0.36	0.12 (0.34)	0.06

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

Table 18 presents the differences in student attendance between students who utilized services at the School-Based Health Center in academic year 2017-18 and matched comparison students at treatment schools and district schools. As shown in Table 18, there were no significant differences between School-Based Health Center students and matched students at treatment and district schools for either measure of attendance in academic year 2017-18.

Table 18. Confirmatory Impact Results for Student Attendance 2017-18

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools	
	Matched Regression (n = 492)	Effect Size	Matched Regression (n = 492)	Effect Size
Average Daily Attendance	-0.16 (0.45)	-0.03	0.50 (0.54)	0.08
Chronic Absenteeism	0.52 (0.42)	0.28	-0.08 (0.49)	-0.05

$^{†}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

3. Exploratory Impact Analyses

Exploratory Impact Research Questions RQ2. *Did students who utilized School-Based Health Center services demonstrate improved course performance in ELA and math?*

In addition to exploring confirmatory impact measures, researchers also examined the effect of School-Based Health Centers on student course performance. Tables 19 and 20 present the differences in ELA and math course performance between School-Based Health Center students and matched comparison students at treatment schools, district schools, and state schools during the 2016-17 and 2017-18 academic years. In the tables below, positive numbers indicate that students who utilized the School-Based Health Centers had higher test scores than matched students, and thus had more desirable results.

As shown in Table 19, in academic year 2016-17, there were no statistically significant differences in SC READY math or ELA test scores between School-Based Health Center students and matched comparison students at treatment, district, or state schools. Students who utilized the School-Based Health Center had significantly higher spring MAP assessment scores in math than matched comparison students at both treatment schools ($p < 0.10$) and district schools ($p < 0.05$). There were no other significant differences between School-Based Health Center students and matched comparison students on the spring MAP reading assessment.

Table 20 presents the difference in SC READY math and ELA test scores between students who utilized services at the School-Based Health Center in the 2017-18 academic year and matched comparison students at treatment schools and district schools. School-Based Health Center students had significantly lower scores on the SC READY math assessment when compared to matched students at treatment schools ($p < 0.001$) and district schools ($p < 0.01$). School-Based Health Center students had lower SC READY ELA scores when compared to treatment comparison students ($p < 0.10$).

Table 19. Exploratory Impact Results for Student Course Performance AY 2016-17

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools		SBHC Students vs. Comparison Students: State Schools	
	Matched Regression (n = 768)	Effect Size	Matched Regression (n = 750)	Effect Size	Matched Regression (n = 432)	Effect Size
MAP RIT - Math	**1.43†** (0.78)	0.09	**1.72*** (0.77)	0.11	---	---
MAP RIT - Reading	0.21 (0.90)	0.01	-0.53 (0.82)	-0.03	---	---
SC Ready - Math	1.15 (1.11)	0.01	-0.30 (1.02)	-0.00	-2.20 (1.59)	-0.03
SC Ready - ELA	-0.15 (1.07)	-0.00	1.22 (0.98)	0.02	-1.54 (1.44)	-0.02

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

Table 20. Exploratory Impact Results for Student Course Performance AY 2017-18

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools	
	Matched Regression (n = 462)	Effect Size	Matched Regression (n = 468)	Effect Size
SC Ready - Math	**-0.16**** (0.06)	-0.22	**-0.19**** (0.05)	-0.26
SC Ready - ELA	**-0.10†** (0.06)	-0.11	-0.06 (0.06)	-0.08

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

Exploratory Impact RQ3. *Did students who utilized School-Based Health Center services have fewer behavioral incidences than matched comparison students?*

Researchers examined the impact of utilizing services at the School-Based Health Center on student behavior. Tables 21 and 22 present the differences in student behavior between treatment students and matched comparison students at treatment, district, and state schools during academic years 2016-17 and 2017-18. For the analyses in the table, negative numbers indicate that School-Based Health Center students exhibited a more desirable outcome (e.g., received fewer hours of in-school suspension) than matched comparison students.

As shown in Table 21, there were no significant differences in behavior outcomes between School-Based Health Center students and matched comparison students at treatment schools in academic year 2016-

17. When compared to matched students at district schools, students utilizing services at School-Based Health Centers displayed more desirable outcomes on several measures. School-Based Health Center received 0.84 fewer days of out-of-school suspension (p < 0.01) and 3.10 fewer hours of in-school suspension (p < 0.01) than matched comparison students at district schools. When compared to matched students at state schools, School-Based Health Center students were more likely to have received any in-school suspension in academic year 2016-17 (p < 0.05).

Table 21. Exploratory Impact Results for Student Behavior AY 2016-17

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools		SBHC Students vs. Comparison Schools: State Schools	
	Matched Regression (n = 792)	Effect Size	Matched Regression (n = 756)	Effect Size	Matched Regression (n = 438)	Effect Size
Any Behavioral Referral	0.09 (0.22)	0.05	-0.06 (0.26)	-0.03	0.25 (0.36)	0.14
# Behavioral Referrals	-0.09 (0.33)	-0.02	-0.12 (0.36)	-0.02	-0.00 (0.45)	-0.00
Any ISS	0.32 (0.25)	0.18	-0.12 (0.27)	-0.07	**0.57*** (0.27)	0.31
# Hours ISS	0.60 (0.81)	0.07	**-3.10**** (1.19)	-0.19	---	---
Any OSS	0.04 (0.28)	0.02	-0.37 (0.27)	-0.20	0.08 (0.30)	0.04
# Days OSS	-0.36 (0.27)	-0.11	**-0.84**** (0.32)	-0.18	---	---

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

As shown in Table 22, there were few significant differences in behavior outcomes between School-Based Health Center students and matched comparison students at treatment schools and district schools in academic year 2017-18. When compared to matched students at treatment schools, students utilizing services at School-Based Health Centers were significantly more likely to receive at least one day of out-of-school suspension during academic year 2017-18 (p < 0.05) and had more days of out-of-school suspension (p < 0.10). When compared to matched students at district schools, students utilizing services at School-Based Health Centers received an average of 3.55 fewer hours of in-school suspension during the 2017-18 academic year (p < 0.001).

Table 22. Exploratory Impact Results for Student Behavior AY 2017-18

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools	
	Matched – Regression (n = 492)	Effect Size	Matched – Regression (n = 492)	Effect Size
Any Behavioral Referral	-0.18 (0.29)	-0.10	0.23 (0.33)	0.12
# Behavioral Referrals	0.07 (0.52)	0.01	0.12 (0.52)	0.03
Any ISS	0.36 (0.32)	0.20	-0.17 (0.34)	-0.14
# Hours ISS	0.32 (0.71)	0.05	**-3.55***** (1.04)	-0.25
Any OSS	**0.65†** (0.34)	0.36	0.51 (0.32)	0.28
# Days OSS	**0.86*** (0.42)	0.24	0.50 (0.47)	0.11

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

4. Exploratory Secondary Outcome Results

Exploratory Outcome RQ4. *Were students who utilized School-Based Health Center services more likely to have an identified medical home than matched comparison students?*

This exploratory secondary outcome for the School-Based Health Center was measured using a student pre- and post-survey administered at the beginning and end of academic years 2016-17 and 2017-18. Students were asked to identify their medical home. This categorical variable was converted into a set of dichotomous variables for logistic regression analyses. Comparison student survey data were available for this outcome for matched students at treatment schools and district schools. For the analyses examining Student Medical Home, positive values indicate that students were more likely to select that place of health care services as their medical home. These results appear in Table 23 and Table 24.

The results for Student Medical Home for academic year 2016-17 appear in Table 23. Students who utilized services at the School-Based Health Center were less likely to report that they primarily received medical care at the emergency room than matched students at treatment schools ($p < 0.10$). Additionally, students receiving treatment at a School-Based Health Center were more likely to report that they primarily received medical treatment at the school health room than matched comparison students attending district students ($p < 0.05$). In academic year 2017-18, shown in Table 24, there were no significant differences in Student Medical Home between School-Based Health Center students and comparison students at treatment and district schools.

Table 23. Exploratory Secondary Outcome Results for Student Medical Home AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched – Regression (n = 348)	Effect Size	Matched – Regression (n = 342)	Effect Size
Doctor's Office	0.21 (0.36)	0.11	-0.49 (0.33)	-0.27
Emergency Room	**-1.51†** (0.85)	-0.83	-0.25 (0.79)	-0.14
School Health Room	0.34 (0.36)	0.19	**1.18*** (0.47)	0.65
Somewhere Else	**-1.33†** (0.72)	-0.74	**-1.81*** (0.84)	-1.01
Do not know	0.43 (0.56)	0.24	0.46 (0.57	0.25

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

Table 24. Exploratory Secondary Outcome Results for Student Medical Home AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 264)	Effect Size	Matched Regression (n = 276)	Effect Size
Doctor's Office	0.04 (0.42)	0.02	-0.48 (0.37)	-0.26
Emergency Room	0.72 (0.68)	0.40	0.86 (0.68)	0.48
School Health Room	0.47 (0.46)	0.26	0.66 (0.46)	0.35
Somewhere Else	-1.34 (1.09)^	-0.74	-0.94 (0.58)	-0.52
Do not know	-0.55 (0.53)	-0.30	-0.15 (0.52)	-0.08

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. ^ The bootstrapping method did not converge for this outcome. The original SEs are presented.
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

In addition to the student survey data reported above, the School-Based Health Center tracked the existence of student medical home on student intake records. According to internal program data available for 324 students, 65% of students who utilized services at the School-Based Health Center in academic year 2016-17 had an identified medical home. In academic year 2017-18, another 65% of the 407 served at the School-Based Health Center had an identified medical home. These data were available at the aggregate level for all students who received services, not just those students with parental consent to participate in the study through the sharing of limited access student-level health data.

Students Return to Class after Health Visits at the School-Based Health Center

School-Based Health Center staff members tracked the outcome of each student health visit, noting if students returned to class, went home, or sought immediate medical attention. Among 495 total student visits to the School-Based Health Center in academic year 2016-17, 94% of health visits resulted in the student returning to class, 5% resulted in the student going home, and 1% resulted in the student seeking immediate medical attention off-site. Among 578 total student visits to the School-Based Health Center in academic year 2017-18, 97% of health visits resulted in the student returning to class and 3% resulted in the student going home.

Educator Awareness of School-Based Health Center Purpose and Services

Familiarity with the School-Based Health Center. Most educators at treatment schools reported being familiar with the School-Based Health Center at their school. As shown below in Table 25, level of familiarity increased from academic year 2015-16 to academic year 2017-18 (χ^2 (6) = 33.25, p < 0.001). In academic year 2016-17, 42.7% of educators reported being "very familiar" with the School-Based Health Center, compared to only 23.4% of educators in academic year 2015-16. Only 2.3% of educators reported being "not at all familiar" with the School-Based Health Center in academic year 2016-17 and 1.3% in academic year in 2017-18, down from 8.2% in academic year 2015-16. By academic year 2017-18, 82.7% of educator respondents reported that they were "familiar" or "very familiar" with the School-Based Health Center, up from 67.1% in academic year 2015-16.

Table 25. Exploratory Secondary Outcome Results for Educator Familiarity with the SBHC

	Not at all familiar	Somewhat familiar	Familiar	Very Familiar
Academic Year 2015-16 (n = 158)	**8.2%**	24.7%	43.7%	**23.4%**
Academic Year 2016-17 (n = 171)	**2.3%**	24.6%	30.4%	**42.7%**
Academic Year 2017-18 (n = 157)	**1.3%**	**13.0%**	43.2%	**39.5%**

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

As educator familiarity with the School-Based Health Center increased, OnTrack Team members also reported referring students for School-Based Health Center services more frequently (χ^2 (10) = 23.40, p < 0.01). Depicted below in Table 26, 44.0% of educators who participated in an OnTrack Team reported referring students to the School-Based Health Center "all the time" in academic year 2016-17, up from

just 19.8% of educators in academic year 2015-16. The frequency of OnTrack Team referrals to the School-Based Health Centers remained relatively steady between academic year 2016-17 and 2017-18.

Table 26. Exploratory Secondary Outcome Results for OnTrack Team Student Referrals to the SBHC

	Never or Rarely	Once in a while	Sometimes	Often	All the time
Academic Year 2015-16 (n = 81)	**8.6%**	2.5%	23.5%	45.7%	**19.8%**
Academic Year 2016-17 (n = 91)	**0.0%**	4.4%	14.3%	37.4%	**44.0%**
Academic Year 2017-18 (n = 97)	2.1%	3.1%	13.4%	48.5%	**33.0%**

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Awareness of School-Based Health Center Referrals. Most educators were aware of the multiple sources of student referrals to the School-Based Health Center, as shown below in Table 27. In academic years 2016-17 and 2017-18, around three quarters of educators correctly identified that parents, the school nurse, school staff members, and the Early Warning team were possible referral sources to the School-Based Health Center. Just over 30% of educators, however, identified that other students could refer their peers to the School-Based Health Center. The remaining educators reported that they were unsure about the referral sources. When comparing the distribution of responses across the three academic years, there were no significant increases in educator awareness of School-Based Health Center referral sources.

Table 27. Exploratory Secondary Outcome Results for Educator Awareness of SBHC Referral Sources

	Academic Year 2015-16 (n = 139)			Academic Year 2016-17 (n = 171)			Academic Year 2017-18 (n = 153)		
	Yes	No	Unsure	Yes	No	Unsure	Yes	No	Unsure
Parent	69%	2%	27%	73%	1%	26%	77%	1%	22%
School nurse	76%	2%	21%	79%	1%	22%	81%	1%	18%
School staff member	69%	3%	27%	74%	1%	26%	77%	1%	22%
Early Warning Team	75%	3%	21%	77%	0%	23%	80%	1%	20%
Another student	25%	11%	64%	32%	12%	57%	31%	11%	59%

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Awareness of School-Based Health Center Services. Educators reported varying levels of awareness of specific health services provided by the School-Based Health Center and the school nurse. Since, in many ways, the School-Based Health Center extends the work of the school nurse, educators simply were asked to identify if sixteen distinct health services were available at their school (all health services were indeed available at their school). By academic year 2017-18, as shown in Table 28, educators were most aware that basic first aid (93.4%) was available at their school. There also was a high level of awareness that decision-making around sending a child back to class or home (84.4%), sports physicals (82.1%), care for acute illness (77.6%), and administration of prescription medicine with a doctor's note (77.6%) were available at their school.

Table 28. Exploratory Secondary Outcomes for Educator Awareness of Health Services

	Academic Year 2015-16			Academic Year 2016-17			Academic Year 2017-18		
	Yes	No	Unsure	Yes	No	Unsure	Yes	No	Unsure
Basic first aid*	**74.8%**	1.5%	23.7%	**87.1%**	0.6%	12.3%	**93.4%**	0.7%	5.9%
Decision-making around sending a child back to class or home**	64.1%	0.7%	35.0%	74.1%	0.6%	25.3%	**84.4%**	1.3%	13.9%
Sports physicals**	**62.4%**	7.1%	30.5%	**78.5%**	3.5%	17.4%	**82.1%**	6.0%	11.9%
Care for acute illness*	65.2%	4.3%	30.4%	74.3%	2.9%	22.8%	**77.6%**	6.6%	15.8%
Administration of prescription medicine sent to school with doctor's note	66.4%	2.2%	31.4%	71.2%	2.9%	25.9%	77.6%	3.9%	18.4%
Assistance with accessing community health resources	54.7%	1.5%	43.8%	58.5%	1.8%	39.8%	67.5%	1.3%	31.1%
Chronic illness management*	**47.9%**	4.3%	47.9%	**59.6%**	0.6%	39.8%	**63.2%**	2.0%	34.9%
Treatment of illnesses with OTC medicines sent from home†	46.3%	5.9%	47.8%	50.9%	2.9%	46.2%	61.8%	3.3%	34.9%
Diagnosis and treatment of illnesses with a prescription medicine†	32.4%	8.1%	59.6%	38.2%	4.7%	57.1%	47.0%	4.6%	48.3%
Diagnosis and treatment of illnesses with OTC medicines at school	30.7%	7.3%	62.0%	35.9%	8.8%	55.3%	44.7%	7.9%	47.4%
Referral to primary care practice*	39.7%	3.5%	56.7%	38.0%	3.5%	58.5%	**43.6%**	2.7%	53.7%
Referrals for specialty care*	**25.5%**	6.4%	68.1%	**37.4%**	4.7%	57.9%	**43.3%**	4.7%	52.0%
Wound care	40.0%	5.9%	54.1%	31.8%	7.6%	60.6%	43.3%	7.3%	49.3%
Immunization management	44.3%	7.1%	48.6%	39.0%	7.6%	52.9%	40.7%	10.7%	48.7%
ADHD evaluations with physicians**	**16.3%**	9.2%	74.5%	**33.9%**	8.2%	57.0%	**37.3%**	8.7%	61.7%
Assistance with Medicaid eligibility application	28.4%	5.7%	66.0%	34.1%	2.9%	62.9%	37.1%	3.3%	59.6%

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Educators were less aware of many services provided solely by the School-Based Health Center staff, such as immunization management (40.7%), referrals for specialty care (43.3%), ADHD evaluations (37.3%), referrals to medical homes (43.6%), and treatment of illness with over-the-counter (44.7%) and prescription (47.0%) medications at school.

When comparing awareness of services from academic year 2015-16 to academic year 2017-18, awareness of the availability of services significantly increased for certain health services. Among services already well known at the school, awareness of the availability of basic first aid was 93.4% in academic year 2017-18, an increase from 74.8% in academic year 2015-16 (χ^2 (4) = 20.80, p < 0.001). Further, awareness of the availability of sports physicals increased from 62.4% to 82.1% (χ^2 (4) = 19.62, p < 0.01). Among lesser known services, awareness of the availability of ADHD evaluations with a physician was 37.3% in academic year 2017-18, up from 16.3% in academic year 2015-16 (χ^2 (4) = 18.16, p < 0.01). Awareness of referrals for special care also increased from 25.5% to 43.3% (χ^2 (4) = 10.47, p < 0.05).

5. Additional Exploratory Outcomes

Exploratory Outcome RQ7. *Did students who received treatment at a School-Based Health Center report higher levels of physical and mental health than comparison students?*

Using student survey responses, researchers assessed students' self-reported levels of physical and mental health, as measured by the OnTrack Greenville Student Survey. For the analyses examining Student Self-Reported Health, positive values in the table indicate that School-Based Health Center students reported a higher level of health than the matched comparison students.

The results for Student Self-Reported Health in Table 29 and Table 30. Overall, students who utilized services at the School-Based Health Center had similar levels of physical and mental health when compared to matched comparison students in both the treatment and district schools during academic year 2016-17 and 2017-18.

Table 29. Exploratory Outcome Results for Student Self-Reported Health AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 348)	Effect Size	Matched Regression (n = 342)	Effect Size
Physical Health	0.39 (0.33)	0.22	0.06 (0.31)	0.03
Mental Health	-0.05 (0.31)	-0.03	-0.06 (0.30)	-0.03

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

Table 30. Exploratory Outcome Results for Student Self-Reported Health AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 264)	Effect Size	Matched Regression (n = 276)	Effect Size
Physical Health	0.06 (0.35)	0.04	-0.11 (0.36)	-0.06
Mental Health	0.20 (0.32)	0.11	0.07 (0.32)	0.04

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measures. Frequency weights were used to account for matching with replacement.

Exploratory Outcome RQ8. *Were students who utilized School-Based Health Center services more likely to report higher levels of self-confidence than comparison students?*

Using student survey responses, researchers assessed the impact of School-Based Health Centers on Student Self-Confidence. Students in the treatment and district schools completed surveys in fall and spring of the 2016-17 and 2017-18 academic years. For the analyses examining Student Self-Confidence, positive values in the table indicate that School-Based Health Center students exhibited a more desirable outcome than the matched comparison students.

The results for Student Self-Confidence appear in Table 31 and Table 32. Overall, School-Based Health Center students had similar outcomes in both measures of Student Self-Confidence when compared to matched comparison students in both treatment and district schools in academic year 2016-17 and academic year 2017-18.

Table 31. Exploratory Outcome Results for Student Self-Confidence AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 348)	Effect Size	Matched Regression (n = 342)	Effect Size
Academic Perseverance	-0.05 (0.09)	-0.08	0.04 (0.10)	0.05
Academic Self-Confidence	-0.06 (0.09)	-0.09	-0.05 (0.09)	-0.07

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics and grade. Frequency weights were used to account for matching with replacement.

Table 32. Exploratory Outcome Results for Student Self-Confidence AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 264)	Effect Size	Matched Regression (n = 276)	Effect Size
Academic Perseverance	-0.11 (0.12)	-0.16	-0.06 (0.12)	-0.10
Academic Self-Confidence	-0.02 (0.11)	-0.02	-0.06 (0.10)	-0.10

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics and grade. Frequency weights were used to account for matching with replacement.

Exploratory Outcomes RQ10. *Were students who utilized resources at School-Based Health Centers more likely to report positive relationships with teachers and adults in their schools than matched comparison students?*

Researchers also examined the impact of School-Based Health Centers on Students' Relationships with Adults. Measures for this outcome were included on the OnTrack Greenville Study Survey; therefore, comparison data were available for these analyses. For the analyses examining Student Relationships with Adults, positive values in the table indicate that School-Based Health Center students exhibited a more desirable outcome than the matched comparison students.

The results for Student Relationships with Adults appear in Table 33 and Table 34. School-Based Health Center students reported poorer relationships with teachers (p < 0.05) and adults at their school (p < 0.10) when compared to matched comparison students at treatment schools in academic year 2016-17. When compared to matched comparison students at district schools, however, there were no significant differences in relationships with adults. In academic year 2017-18, there were no significant differences in student perceptions of relationships with adults between treatment students and comparison students, shown in Table 37.

Table 33. Exploratory Outcome Result for Relationships with Adults AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 348)	Effect Size	Matched Regression (n = 342)	Effect Size
Relationships with Teachers	**-0.23*** (0.11)	-0.32	0.11 (0.12)	0.13
Relationships with Caring Adults	**-0.18†** (0.10)	-0.25	-0.03 (0.10)	-0.05

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics and grade. Frequency weights were used to account for matching with replacement.

Table 34. Exploratory Outcome Results for Relationships with Adults AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 264)	Effect Size	Matched Regression (n = 276)	Effect Size
Relationships with Teachers	-0.04 (0.15)	-0.05	-0.01 (0.15)	-0.01
Relationships with Caring Adults	0.00 (0.15)	-0.00	0.09 (0.15)	0.11

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics and grade. Frequency weights were used to account for matching with replacement.

Exploratory Outcomes RQ11. *Did students who utilized resources at School-Based Health Centers report higher levels of school engagement than comparison students?*

In addition, researchers assessed the impact of School-Based Health Centers on Student Engagement at School through questions asked on the OnTrack Greenville Student Survey. For the analyses examining Student Engagement at School, positive values in the table indicate that School-Based Health Center students exhibited a more desirable outcome than the matched comparison students.

The results for Student Engagement at School appear in Table 35 and Table 36. School-Based Health Center students had similar outcomes in both measures of School Engagement when compared to matched comparison students at both treatment and district schools in academic year 2016-17 and academic year 2017-18.

Table 35. Exploratory Outcome Results for School Engagement AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 348)	Effect Size	Matched Regression (n = 342)	Effect Size
School Engagement	-0.11 (0.12)	-0.14	0.04 (0.12)	0.05
School Belonging	-0.10 (0.12)	-0.12	0.07 (0.12)	0.08

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics and grade. Frequency weights were used to account for matching with replacement.

Table 36. Exploratory Outcome Results for School Engagement AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 264)	Effect Size	Matched Regression (n = 276)	Effect Size
School Engagement	0.03 (0.14)	0.04	0.04 (0.14)	0.05
School Belonging	0.14 (0.15)	0.16	0.14 (0.14)	0.17

$^{†}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics and grade. Frequency weights were used to account for matching with replacement.

Exploratory Outcome RQ12. *Did students who utilized resources at School-Based Health Centers report a more positive attitude toward learning than comparison students?*

Researchers also examined the impact of School-Based Health Centers on Student Attitude toward Learning, as measured by the OnTrack Greenville Student Survey. For the analyses examining Student Attitude toward Learning, positive values in the table indicate that School-Based Health Center students exhibited a more desirable outcome than the matched comparison students.

The results for Student Attitude toward Learning appear in Table 37 and Table 38. School-Based Health Center students reported similar levels of valuing education when compared to matched comparison students at both treatment and district schools in academic years 2016-17 and 2017-18.

Table 37. Exploratory Outcome Results for Student Attitude toward Learning AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 348)	Effect Size	Matched Regression (n = 342)	Effect Size
Valuing Education	-0.08 (0.09)	-0.14	0.07 (0.09)	0.10

$^{†}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics and grade. Frequency weights were used to account for matching with replacement.

Table 38. Exploratory Outcome Results for Student Attitude toward Learning AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 264)	Effect Size	Matched Regression (n = 276)	Effect Size
Valuing Education	0.09 (0.11)	0.14	0.13 (0.11)	0.19

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Note: Table presents the regression coefficients of the SBHC variable and bootstrap SEs in parentheses from multivariate regressions that also control for student demographics and grade. Frequency weights were used to account for matching with replacement.

6. Adjustment for Multiple Outcomes

This evaluation examined the effects of utilizing School-Based Health Center services on multiple outcomes. However, as the number of comparisons in a study increases, so does the possibility of committing a Type I error. There are many ways to deal with this challenge. As seen above in section II, this evaluation examined outcomes in a number of different domains. Following Schochet (2008), the impacts and outcomes of interest were classified as confirmatory or exploratory. The confirmatory analyses for school attendance were the focus of this evaluation and adjustments for multiple outcomes were necessary. Within this domain, the Benjamni-Hochberg adjustment was used. Researchers ordered the p-values from the tests from smallest to largest and compared each to an adjusted p-value that took the number of tests in the domain into account.

There were 10 total tests (average daily attendance and chronic absence for the five matches using the administrative data). See Table 39. Before adjustments for multiple comparison were made, one of the tests indicated statistically significant differences between School-Based Health Center students and comparison students. After adjusting for multiple comparisons, this result was no longer statistically significant.

Table 39. Adjustment for Multiple Outcomes

Outcome	Year	Comparison Group	Coefficient	Original p-value	Significant at p < 0.10
Chronically Absent	2017	District	-0.66	0.09381228	No

V. Findings, Lessons Learned, and Next Steps

A. Summary of Implementation Study Findings

Based on collection and analysis of data from document review, interviews, and surveys of educators and students, researchers concluded that the School-Based Health Centers were implemented in treatment middle schools with a relatively high degree of fidelity to the program logic model.

Academic year 2017-18 was a productive year for the School-Based Health Centers of the Greenville Health System's Bradshaw Institute for Community Child Health & Advocacy. For the first time in three years, at least 50% of the student body at all middle schools were consented to be seen in the School-Based Health Centers. This was a substantial increase from past years. In addition, the School-Based Health Center team made efforts to reach more Hispanic families through partnerships with Hispanic community organizations, enhanced visibility of Spanish speaking staff, and assistance with processing paper work. These efforts yielded a 149% increase in Hispanic students seen in the School-Based Health Centers. There was also a significant increase in sports physicals.

This school year also brought greater integration of School-Based Health Center staff in the Early Warning and Response System (EWRS) at each school. The School-Based Health Center pediatric nurse practitioner joined each EWRS team and provided more in-depth clinical screening, care, and referrals for students at high risk for problems resulting from attendance, behavior, or poor grades. The School-Based Health Center team had a very high return to class rate, with 97% of students seen in the School-Based Health Center treated and returned to class in academic year 2017-18.

Academic year 2017-18 was the final year of School-Based Health Center funding through the Social Innovation Fund with OnTrack Greenville and the first year of support by the Greenville Health Authority (GHA) Healthy Greenville 2036 Initiative. With funding from the GHA grant and the United Way of Greenville County, Greenville County Schools hired a trauma-informed social worker in March 2018. This enabled the OnTrack Greenville schools to adopt trauma-informed approaches. To help support this initiative, teachers from three of the four middle schools participated in a Compassionate Schools summit.

School staff and parents were increasingly aware of the School-Based Health Center services at the OnTrack Greenville Schools. Hallways to Health had 4,685 student encounters with over 800 students receiving health promotion education. These programs helped to increase visibility of school health efforts, build trust, and lay a foundation for more sustained efforts as the program moves forward in the next phase under GHA support.

B. Summary of Impact Study Findings

In order to achieve a moderate level of evidence, this study utilized a single-site non-randomized group design with groups formed by propensity score matching. For confirmatory impact research questions, there were three comparison groups. Treatment students were matched to (1) other students in the *treatment schools* who did not participate in the intervention; (2) other students in the *same school district* attending district schools; and (3) other students attending *Title I schools across the state* of South Carolina. The use of multiple comparison groups improved the overall internal and external validity of the study, as each comparison group presented different threats to validity. Researchers

matched students using a propensity score model that included race, gender, grade level, English proficiency, special education status, free and reduced meal eligibility, and baseline outcome variables. Researchers conducted separate matching procedures for each data source, administrative data and survey data. At the conclusion of the matching process, researchers ensured that there were no significant differences between the treatment and comparison groups on pre-treatment covariates.

Confirmatory Impact Results – Attendance

Researchers examined the impact of utilizing services at the School-Based Health Centers on student attendance, as measured by average daily attendance and chronic absenteeism. There were no significant differences in average daily attendance outcomes between School-Based Health Center students and comparison students at treatment, district, or state schools in either academic year of the study.

School-Based Health Center students were significantly less likely to be chronically absent than matched comparison students at district schools in academic year 2016-17 ($p < 0.10$, $d = -0.36$). All other analyses examining chronic absenteeism failed to detect statistically significant differences between treatment students and matched comparison students.

There were ten total tests (average daily attendance and chronic absence for the five matches using the administrative data). Before adjustments for multiple comparison were made, one of the tests indicated statistically significant differences between School-Based Health Center students and comparison students. After adjusting for multiple comparisons, this result was no longer statistically significant.

Exploratory Impact Results – Course Performance and Behavior

Researchers also included some exploratory impact analyses of behavior and course performance that were not in the School-Based Health Center logic model. These exploratory analyses aligned with the primary impact areas of OnTrack Greenville. The results varied by outcome and academic year.

Students who utilized services at a School-Based Health Center showed significant growth in MAP assessment math scores when compared to matched comparison students at treatment ($p < 0.10$, $d = 0.09$) and district schools ($p < 0.05$, $d = 0.11$) in academic year 2016-17. MAP assessment data were not available in academic year 2017-18.

In academic year 2017-18, School-Based Health Center students had significantly lower scores on the SC READY math assessment than matched comparison students at treatment ($p < 0.01$, $d = -0.22$) and district schools ($p < 0.01$, $d = -0.26$). In addition, School-Based Health Center students had significantly lower scores on the SC READY ELA assessment than matched comparison students at treatment schools in academic year 2017-18 ($p < 0.10$, $d = -0.11$).

Students who utilized the School-Based Health Center received, on average, 0.84 fewer days of out-of-school suspension ($p < 0.01$, $d = -0.18$) than matched comparison students at district schools in academic year 2016-17. School-Based Health Center students had 3.10 fewer hours of in-school suspension than matched comparison students at district schools in academic year 2016-17 ($p < 0.01$, $d = -0.19$) and 3.55 fewer hours of in-school suspension in academic year 2017-18 ($p < 0.001$, $d = -0.25$).

School-Based Health Center students were more likely to have received any in-school suspension than matched comparison students at state schools in academic year 2016-17 ($p < 0.05$, $d = 0.31$) and more

likely to have received any out-of-school suspension than matched comparison students at treatment schools in academic year 2017-18 ($p < 0.10$, $d = 0.36$). School-Based Health Center students also received 0.86 more days of out-of-school suspension than matched students at treatment schools in academic year 2017-18 ($p < 0.05$, $d = 0.24$).

Exploratory Secondary Outcome Results

Researchers also looked at the impact of School-Based Health Centers on secondary outcomes including students' likelihood of having an identified medical home, the percentage of students who returned to class after a health visit, and whether there was an increase in the awareness among school staff members at treatment schools of the School-Based Health Center's purpose and services offered.

Results from a school-wide survey showed different patterns in health care utilization between School-Based Health Center students and matched comparison students, suggesting treatment students were starting to establish medical homes. At the end of academic year 2016-17, School-Based Health Center student survey responses showed that treatment students were less likely to primarily seek medical care at the emergency room than matched students at treatment schools ($p < 0.10$, $d = -0.83$). In addition, School-Based Health Center students reported on a survey that they were more likely to primarily seek medical care at the school health room than matched students at district schools ($p < 0.05$, $d = 0.65$). In academic year 2017-18, there were no significant differences in reported medical home between treatment and comparison students at district schools.

Overall, results showed that a large majority of students returned to class after visiting the School-Based Health Center. In academic year 2016-17, 94% of student visits to the School-Based Health Center resulted in students returning to class. The following year, 97% of student visits resulted in students returning to class.

Responses to a school-wide educator survey showed that educator awareness of the School-Based Health Center purpose and services increased from academic year 2015-16 to academic year 2017-18. The percentage of educators reporting they were familiar or very familiar with the School-Based Health Center increased to 82.7% in academic year 2016-17, up from 67.1% in academic year 2015-16. Findings showed that educator awareness of the purpose and services offered by the School-Based Health Center improved. Comparing educator survey responses from Year One to Year Two of the OnTrack Greenville initiative shows that educators were more likely to report that they were familiar with the School-Based Health Center and that their OnTrack Teams were more often referring students to the School-Based Health Center. While awareness of the many referral pathways to the School-Based Health Center remained relatively high and steady, educators reported increased awareness of some of the school health room services, like basic first aid, sports physicals, chronic disease management, and ADHD evaluations with physicians. Awareness of some services remained low overall, however, increased awareness of services offered will play a critical role in ensuring that educators are referring the right students to the School-Based Health Center and communicating well with families about these services.

Additional Exploratory Outcomes Results

Researchers examined some additional exploratory outcomes of utilizing services at the School-Based Health Centers. In general, the findings did not support the hypotheses for the additional exploratory research questions. The only significant finding for these additional exploratory outcomes was found in academic year 2016-17 for relationships with teachers and caring adults; School-Based Health Center

students reported weaker relationships with teachers ($p < 0.05$, $d = -0.23$) and caring adults ($p < 0.10$, $d = -0.18$) at their school than matched comparison students at treatment schools in academic year 2016-17.

There were no significant differences in perceived physical or mental health between treatment and comparison students. There were no significant differences in student self-confidence between treatment and comparison students. There were no significant differences in student school engagement between treatment and comparison students. There were no significant differences in student attitude toward learning between treatment and comparison students.

Evidence Level Determination and Discussion of Results

The design of this study targeted a moderate level of evidence and the use of multiple comparison groups helped reduce threats to internal and external validity. After adjusting for multiple comparisons, the one significant positive result for student attendance was no longer statistically significant; therefore, this study was not able to achieve a moderate level of evidence.

One barrier to achieving a moderate level of evidence was the shortened timeframe of the impact study. Originally, the impact study of the School-Based Health Centers was designed to cover four academic years. With the loss of Social Innovation Fund continuation funding, researchers executed a contingency plan to conclude the impact study after only two years. The intended program impacts in student attendance are long-term in nature and it is possible the shorter study timeline did not allow researchers enough opportunity to examine the long-term effects of utilizing services at the School-Based Health Center. Further, some challenges with gaining parental permission for the sharing of students' limited health data for the study resulted in a lower sample size than expected. In academic year 2018-19, program staff have modified the process for requesting parent permission for the sharing of health data and researchers expect to include more students in the study in future years. With a larger sample, it will be possible to reexamine the treatment definition and consider including students who received a deeper level of School-Based Health Center services. With a refined treatment definition and a larger sample size, it is possible that this study ultimately will achieve a moderate level of evidence in the next two years as it continues without support from the Social Innovation Fund.

Results did provide initial support that students who used the School-Based Health Center were establishing medical homes, an important exploratory secondary outcome of the model. Students who utilized services at the School-Based Health Center were less likely to report primarily seeking healthcare at the emergency room than matched comparison students at treatment schools. This is consistent with prior research that found that School-Based Health Center users were less likely to have used emergency care, an indicator of having a medical home.

Treatment students also were more likely to report primarily seeking healthcare at the school health room than matched comparison students at district schools. While the goal of the program is not necessarily for the School-Based Health Center to become a student's medical home, prior research has shown that many students preferred to utilize their School-Based Health Center instead of their primary care practice because they perceived it to be more trustworthy, compassionate, and of higher quality when compared to their primary care provider (Albright et al., 2016). Non-treatment schools in the district only provide students access to a school nurse who is able to offer a very limited number of services. The finding that treatment students more frequently identified the school health room as their

primary place to seek medical care likely indicates that students perceived broader access to health services and were establishing trusting relationships with the School-Based Health Center staff.

The establishment of a medical home is an important step to improving student attendance in the School-Based Health Center logic model. This early significant finding provides preliminary support that the model is working as intended. In this multi-year impact study, researchers will continue to examine the establishment of a medical home and its relationship to student health and attendance.

One potential explanation for the lack of significant findings in school attendance is a lower-than-expected sample size. For example, internal School-Based Health Center records showed that 361 students made a total of 495 visits to the School-Based Health Center in academic year 2016-17. However, only 170 students had parental permission to participate in the study and also were not missing any administrative data from the district, allowing for inclusion in the impact analyses. Out of the five OnTrack Greenville impact studies, this is the only study that requires active parental permission due to the sharing of HIPAA-protected limited health data between the School-Based Health Center and research team. The IRB-approved process for obtaining active parental permission to share student health data was new to School-Based Health Center staff and was more complex than anticipated. Now that there is a more streamlined process in place for requesting parental permission to participate in the study, researchers anticipate that the pool of treatment students eligible for matching will grow, increasing the likelihood of detecting significant effects of the model.

The small sample size also resulted in researchers setting a very broad definition of treatment. Students were included in the treatment group if they had made at least one visit to the School-Based Health Center, a relatively low bar to meet. With a larger sample of treatment students in future years of the study, researchers will assess more carefully the number of visits per student, potentially increasing the minimum number of visits required for inclusion in the treatment group due to increased exposure to the treatment. While it is possible that students who visit the School-Based Health Center more often are in poorer health and miss more school than other students, the goal is for these students to receive better, more consistent care that will lead to improved health and attendance outcomes over time.

In addition to small sample size, researchers identified a handful of limitations with the administrative data used in the study. First, there were very few demographic or pre-treatment variables in the administrative data related to student health. Though the propensity score matching process yielded good matches based on the socio-demographic variables included in the model, the lack of a strong health-related variable in the matching process means it is possible that some of the matches were not ideal. Researchers have access to student BMI data and will consider using that in the matching process in the future, but will need to consider additional pre-treatment health measures to strengthen the matching process.

Further, the current administrative data available for the primary outcome measures, average daily attendance and chronic absenteeism, are very broad measures of attendance. Researchers received these data in just one time interval, the entire academic year, making it impossible to examine attendance outcomes over shorter periods of time, like academic semesters or quarters. Students with chronic health conditions who began utilizing School-Based Health Center services mid-year may have improved their attendance rate over the course of the academic year due to the School-Based Health Center's involvement in managing their health condition. Researchers were not able to measure these differences in attendance throughout the academic year based on the structure of the data. Initial conversations with the local school district about the availability and structure of certain variables have

indicated some promising areas for modifying data sharing agreements in future years of the study to allow for more nuanced measures of student attendance.

In sum, as educator and student awareness of the School-Based Health Centers continues to improve, the number of students utilizing services at the School-Based Health Center will continue to grow, as will the frequency of visits. These increases in awareness and utilization, coupled with an increased number of students with parental permission to participate in the study, will increase the likelihood of detecting significant effects of the model on student attendance in future years. These impact results, though not yet sufficient to increase the model's level of evidence to moderate, show that the School-Based Health Centers are becoming established at school sites and providing essential health services to an undeserved portion of the student population.

Changes to the SEP - Impact Study Design

One modification was made to the treatment definition for the study. Previously, researchers proposed that students would need to be enrolled at least 51% of the academic year at the treatment schools in order to be included in the treatment group. It proved challenging to measure this given the structure of the attendance data; therefore, researchers removed this inclusion criteria from the treatment definition.

There was a change in the timeline for receiving administrative data from the South Carolina Department of Education for the state comparison group analyses. Researchers anticipated receiving the state dataset in October or November for the prior academic year. However, the dataset for academic year 2016-17 was not available until February 2018, and researchers still do not have access to data from academic year 2017-18. This delay in receiving state data prohibited researchers from conducting the state comparison group analyses for this report.

Researchers also had to alter the inclusion criteria for state comparison schools. In the SEP, researchers originally proposed to select state schools with a poverty index of 85 or higher and a Hispanic student population of at least 10%. At the time of writing the SEP, South Carolina calculated the poverty index based on the number of students eligible for free or reduced meals. After the introduction of the community provision for free and reduced meals, state officials introduced a new measure of poverty that included students who met any of the criteria: homeless or migrant during the academic year; Medicaid enrollment at any time during a three year period; SNAP enrollment at any time during a three year period; TANF enrollment at any time during a three year period; or foster care enrollment at any time during a three year period. This change in the poverty index affected and, in general, reduced the reported poverty levels of treatment schools and all schools across the state. When researchers searched for state comparison schools using these two criteria, only 13 schools appeared as possible comparison schools from which to draw matched comparison students. Of these schools, several were charter schools or schools serving exceptional learners and were not appropriate to serve as comparison schools. As such, researchers relaxed the inclusion criteria for state comparison schools and included all Title I middle schools in the state of South Carolina outside of the local district.

In addition, researchers were not certain if they would be able to administer the OnTrack Greenville Student Survey outside of the treatment schools when preparing the SEP. The local district allowed researchers to administer this pre- and post-survey at the four district comparison schools, allowing researchers to analyze student survey outcomes using matched comparison students. This change to the SEP strengthened the study's design for the analysis of secondary research questions. Survey

administration proceeded as described in the SEP, though it was not possible to administer the pre-survey in September of each academic year due to the testing schedule and the amount of time needed to distribute parent opt-out letters before preparing survey materials. Instead, the student survey administration window occurred typically the first two weeks of October each academic year of the study.

To examine possible attrition from the study, researchers proposed in the SEP assessing how students who attrited from the study through leaving the state dataset differed from students who remain in the study. Students were to be compared based on demographics, pre-treatment outcomes measures, and post-treatment outcome measures when possible. Evaluators proposed examining the possibility of differential attrition between treatment and control groups based on these factors as well. Researchers did not conduct these comparisons as proposed, as the structure of the data files and the matching procedure meant there were very few students for whom attrition occurred after students were matched. A comparison of the number of students matched and the number of students in each regression with the matched sample demonstrated that attrition of this type was not a widespread challenge for this study.

There were some additional modifications to the matching procedure. The SEP noted that researchers would trim observations with propensities less than 0.1 and greater than 0.9, if sample size permitted. This was not done to ensure larger sample sizes. In order to increase balance and overlap, researchers used matching with replacement, rather than matching without replacement which was specified in the SEP. This necessitated the use of frequency weights in the matched analyses.

Further changes were made to the impact analysis plan. While the SEP stated that the main analyses would focus on the "treatment-on-the-treated" (TOT) effect, the researchers also suggested an "intent-to-treat" (ITT) analysis might also be performed if data were available. The evaluation team did not have access to the EWRS data in a form that would allow the researchers to compare those who were identified to receive School-Based Health Center services, as opposed to those who actually received them. Therefore, an ITT analysis was not possible. In addition, there were some challenges in estimating the proper standard errors in the regression analyses post-match. Researchers used a bootstrapping method, rather than clustered standard errors. The bootstrap standard errors were very similar to robust standard errors. Other modifications were implemented to maximize the number of observations to be included in the analyses.

The proposed first-stage propensity equation and the final regression model in the SEP included pre-treatment, or baseline, measures of the outcome as a covariate. The analyses presented here used that approach for the attendance, behavior, and test score analyses. For the 2016-17 survey matches, baseline measured of students' self-reported mental and physical health were included in the propensity score estimation and the outcome analyses. These variables were not included in the 2017-18 matching and regression analyses, as doing so would have required students to have complete "pre" and "post" survey data. Given the response rates for the surveys, this would have limited severely the sample size. Therefore, pretreatment outcome measures were not controlled for in the 2017-18 survey outcome analyses.

In the SEP, researchers stated that they would use one-tailed tests with a significance level of $\alpha \leq .05$ to determine statistical significance. In this evaluation, researchers also considered the possibility that receiving School-Based Health Center services could decrease student academic performance.

Therefore, researchers used a two-tailed, 0.10 alpha level. In terms of identifying a positive School-Based Health Center effect to support a moderate level of evidence, the two approaches are equivalent.

This evaluation was complicated by the presence of multiple, simultaneous interventions occurring in the OnTrack Greenville schools. In the SEP, researchers suggested that participation in the other student-level interventions could be controlled for in the final regression models. Data on the timing of participation in the various interventions was not detailed enough to ensure that participation in these other programs occurred before receiving School-Based Health Center services. Given that controlling for post-treatment covariates can bias estimates of causal impacts (Montgomery et al., 2018), researchers did not adjust for participation in the other OnTrack programs. A full analysis of the effects of participating in different intervention combinations is better suited for the cumulative impact study, rather than this evaluation.

C. Lessons Learned

Throughout the course of this study, program staff and researchers learned several valuable lessons related to implementation and the process of evaluation.

Program Implementation

Program leaders experienced early challenges related to the distribution of the consent to treat forms. It is a best practice to distribute consent to treat forms to families early in the academic year, as more students are able to seek treatment when needed if they have a signed parental consent to treat already on file. In academic year 2015-16, the first year of the initiative, the Greenville Health System and school district legal teams spent a great deal of time preparing the required documents for the consent to treat packets. These documents were lengthy and technical. When parents received the form the first year, they knew very little about the School-Based Health Center and the services offered. Program staff learned quickly that trust and communication with parents and principals would be key to obtaining signed consent to treat forms. In academic year 2016-17, the first full year of the implementation study, program staff used quality improvement memos prepared by researchers as a tool to engage school principals in productive conversations around the importance of the consent to treat forms. These memos included data on the year-to-date percent of the student body with returned consents to treat on file by school. These data-driven conversations with principals led to immediate action and an incremental increase in the percent of students with consent to treat forms on file. By academic year 2017-18, there was an 89% increase in the number of students with consent to treat forms on file.

Additional awareness efforts targeted parents and school staff members, as program staff learned that an ongoing, multi-faceted communications plan was necessary to reach as many stakeholders as possible. Throughout the year, the School-Based Health Center team had at least one member present at school Jamborees, curriculum nights, family nights, literacy nights, and school carnivals. Additionally, the School-Based Health Center staff worked with school administration to include information about the School-Based Health Center on the schools' websites. Within the school, the nurse practitioner sent a calendar to school administration and support staff monthly of when the School-Based Health Center would be available at each school. When the School-Based Health Center was open, school administrators placed a sign out outside of the school or in the front office. Program staff learned that

the frequent communication with stakeholders about the purpose and services of the School-Based Health Center helped build awareness and trust.

School-Based Health Center leaders also learned that it was necessary to deviate slightly from the logic model activities in order to gain an entry point to serving students. While sports physicals were not one of the intended School-Based Health Center activities, school administrators expressed that many students were not able to participate in school sports due to a lack of a sports physical. As such, the School-Based Health Centers began offering sports physicals to students in the fall and winter, during periods of athletics try-outs. Many students took advantage of the availability of sports physicals, which led to several benefits. First, students and parents completed the consent to treat paperwork in order to receive a sports physical, allowing students to return to the School-Based Health Center for non-emergent care with greater ease later in the academic year. Second, students and parents became more aware of the services offered at the School-Based Health Center and developed initial relationships with the RN and NP. Finally, many of these sports physicals resulted in referrals for follow-up care with primary care physicians. The provision of sports physicals, while not an intended activity at the beginning of the initiative, proved to be fruitful for the program and met a need at treatment schools.

Evaluation Process

There were several lessons learned related to the evaluation itself. First, there were lessons learned about the importance of data-sharing agreements and school-community partnerships. OnTrack Greenville is a collective impact initiative that created a culture of trust and learning with Sub-Grantee and school partners. Among the six formal guiding values of the partnership, two values helped foster a strong culture that supported the evaluation: (1) operating as an innovative learning community and (2) having a results-oriented mindset. Partners' commitment to these shared values and the ongoing efforts of United Way of Greenville County serving as the collective impact backbone helped strengthen relationships between researchers, district stakeholders, and partners. For that reason, partners grew more comfortable over time with evaluation and embraced learning opportunities rather than fearing potentially negative or unexpected findings. This helped ensure that implementation and impact study findings and recommendations translated into programmatic changes more quickly.

Researchers also learned valuable lessons around fostering the early stages of a research-practice partnership with the school district. Greenville County Schools is the 45th largest school district in the nation and receives numerous requests from researchers to serve a research site in studies. In order to protect students' time in the classroom from research activities, Greenville County Schools must be very selective about the research activities it permits at its schools through formal Research and Data Sharing Agreements. Due to the district's deep commitment to the partnership values and intended outcomes of OnTrack Greenville, the district and researchers were able to engage in thoughtful conversations around the study design and data collection activities, successfully establishing and maintaining a complex multi-party Research and Data Sharing Agreement with the Riley Institute and five distinct implementation study research teams.

Lastly, the student survey administration process used in this study required a great level of detail and resulted in a high response rate among students. The initial challenge was identifying a way to link survey data with the administrative data used in the study that also maximized participation in the study. Having students put any identifiable information on their survey, such as their name or student ID number, would have required active parental consent. In order to use passive parental consent, researchers created unique student IDs for the survey that were linked to student PowerSchool

numbers, allowing students to access their electronic survey easily and researchers to connect the survey to attendance, behavior, and course performance data through the embedded PowerSchool number linked to their unique student ID for the survey. This entailed creating more than 5,000 student ID note cards two times per year and delivering and collecting classroom-specific survey packets to eight schools just for the OnTrack Greenville Student Survey.

D. Limitations

There were several limitations to this study. First, researchers were not able to identify a subset of state Title I middle schools with student population demographics similar to the treatment schools. The Sub-Grantee Evaluation Plan called for including only state comparison schools with a poverty index of 85% or higher and Hispanic students representing 10% of the student body. Only 13 schools met these inclusion criteria to be considered as state comparison schools—many were charter schools or special designation schools serving exceptional learners and were substantially different from the treatment schools. Researchers opted to loosen the inclusion criteria and include all Title I middle schools in South Carolina in the state school comparison group.

Another limitation of the study is that researchers did not have the ability to assess if comparison students at district and state schools had received similar program services, such as other health promotion programs or interventions. Similarly, researchers could not confirm that state comparison schools did not offer School-Based Health Centers. While it is possible that a select number of schools in the state comparison group offered a School-Based Health Center, the number of matched students who attended these schools likely was very small and the inclusion of these students as matches would not have influenced the results of the study significantly.

In addition, the treatment schools were simultaneously implementing formal and informal school-wide initiatives to improve student attendance. These school-wide efforts were confounding factors that may explain the lack of significant effects when comparing School-Based Health Center students to in-school matched comparison students. These school-wide efforts also increased the likelihood that the positive significant effects of the program identified when examining district school matches may not be fully attributable to the School-Based Health Center.

Further, the absence of positive significant findings for in-school matches may be related to missing data on student participation in other OnTrack Greenville interventions. Apart from the school-wide models discussed above, OnTrack Greenville includes four other formal implementation partners and several informal partners, some of whom are working to improve the same student outcomes as the School-Based Health Centers. It is possible that some of the in-school matches selected for the present study participated in other OnTrack Greenville support programs that influenced student behavior. This study originally intended to control for participation in other OnTrack Greenville support programs to address this limitation; therefore, this represents a deviation from the Sub-Grantee Evaluation Plan.

The lower than expected sample size posed additional limitations to the study. Active parental consent was required in order for program staff to share School-Based Health Center utilization data with researchers for this study. Program staff and implementation study researchers worked to gain consent for as many students as possible, but there were challenges in the process and timeline for requesting parental consent that resulted in fewer students participating in the study than anticipated. For

example, the first priority was to receive parental consent to treat students at the School-Based Health Centers, with a request for consent to participate in the study sometimes coming as a follow-up after students received treatment. Many parents did not return phone calls or had changed phone numbers by the time follow-up occurred. The small sample size for some confirmatory analyses reduced the study's ability to detect significant effects.

Finally, there were limitations with the administrative data used for propensity score matching and outcome measures in the study. First, there were very few demographic or pre-treatment variables in the administrative data related to student health. Though the propensity score matching process yielded good matches based on the socio-demographic variables included in the model, the lack of a strong health-related variable in the matching process means it is possible that some of the matches were not ideal. Also, the current administrative data available for the primary outcome measures, average daily attendance and chronic absenteeism, were very broad measures of attendance. Researchers received these data in just one time interval, the entire academic year, making it impossible to examine attendance outcomes over shorter periods of time, like academic semesters or quarters. Students with chronic health conditions who began utilizing School-Based Health Center services mid-year may have improved their attendance rate over the course of the academic year due to the School-Based Health Center's involvement in managing their health condition. Researchers were not able to measure these differences in attendance throughout the academic year based on the structure of the data.

E. Next Steps

Given the findings presented in this report, researchers and program and initiative stakeholders have several possible next steps.

School-Based Health Centers should continue to increase communication with parents regarding the services offered in the School-Based Health Center. This may include attending events such as Back-to-School nights, and ensuring that School-Based Health Center related materials are routinely translated into Spanish. Similarly, researchers recommend that the School-Based Health Center ensure consistent communication with school employees regarding School-Based Health Center hours and availability, as well as services offered. This includes building relationships with the Early Warning and Response System staff at each school, so that they have a clear understanding of how the School-Based Health Center can help students prosper in school.

As program staff begin to use the telemedicine equipment as intended, it will be important to monitor closely any challenges with implementation in order to support school and program staff members tasked with operating and maintaining the equipment. Program staff anticipate that the use of telemedicine equipment will increase access to care – the schools that currently are served will now be able to access an NP or MD during the school day, even on days when the School-Based Health Center is not traditionally open. By paying close attention to how and when staff are using the telemedicine equipment and any unanticipated technical difficulties, program leaders will be able to maximize the use of this important technology.

In terms of next steps for the ongoing evaluation of School-Based Health Centers, researchers should explore opportunities for improving the administrative data used for propensity score matching and outcome variables. While the administrative data received from the local school district and state were

clean and of high quality, the availability and formatting of certain variables posed several challenges to the matching process and outcome analyses. Researchers will continue to explore opportunities with both entities around the availability of (1) additional health-related variables to be used in the matching process and (2) more refined measures of student attendance.

In addition, in future years of the study, researchers should consider refining the treatment definition. As noted, the current impact analysis included a very broad treatment definition. In subsequent years of the study, researchers should consider using a more narrow definition of treatment or examining multiple levels of treatment depending on sample size. Some variables to consider for adjusting inclusion criteria include the number of visits, the type of visit, and the referral source. Researchers will return to the body of literature on School-Based Health Center usage and impact to help guide this process.

Finally, researchers and stakeholders should continue to discuss and document the implementation of school-wide policy changes at OnTrack Greenville treatment schools. As OnTrack Greenville schools continue to refine formal and informal school policy, an ongoing discussion and documentation of these changes will allow stakeholders and researchers to understand better and potentially tease out the impact of individual implementation partners and the impact of broader change at a systems level.

Appendix A. Study Logistics Updates

A. Institutional Review Board

There were no issues securing Institutional Review Board approval for this study. Furman University's Institutional Review Board approved and oversaw all research activities affiliated with the impact study. Furman University's IRB reviewed this research under its Expedited review process. The original application was submitted to Furman's IRB in July 2016 and approved in August 2016. Modification requests were submitted for IRB review on an ongoing basis and continuation requests were submitted annually. The school district and school personnel informed parents and guardians of the interventions and services available to their students and secured permission to provide services when necessary. Evaluators followed all parental consent and child assent protocol, as dictated by Furman University IRB guidelines and Greenville County Schools' district research protocol. These protocols detailed precisely how researchers must protect data electronically and in hard copy, and detailed informed consent procedures for both parents (parental consent) and students (child assent).

In addition, IRB approval was obtained for all implementation evaluation activities. Fortunately, through a Health Sciences South Carolina Cooperative Agreement, there was a streamlined process that satisfied IRB approval for both Clemson University and Greenville Health System. Additionally, Dr. Griffin was recognized as an Institute for the Advancement of Health Care (IAHC) at GHS scholar and completed all GHS requirements for medical records access. Any graduate students assigned to the project also completed the IAHC clearance procedures.

B. Project Timeline

There were very few modifications to the evaluation timeline for data collection, analysis, and reporting. The most notable change is that data from the South Carolina Department of Education for academic year 2017-18 were not made available in November as originally planned. At present time, researchers still have not received these data; therefore, researchers were not able to conduct statistical analyses for the state comparison group for academic year 2017-18 for inclusion in this report.

Researchers intended to administer the OnTrack Greenville Student pre-survey in September of each academic year. For several reasons, pre-survey administration occurred in October instead. First, in academic year 2016-17, schools were administering the MAP assessment in September and standardized testing took precedent over data collection. In addition, researchers required the entire month of September to manage the parental consent process and prepare survey administration materials. Subsequently, researchers established a two-week survey administration window for schools in early October. In academic year 2016-17, schools were closed unexpectedly in early October due to Hurricane Michael, which delayed survey administration at some school sites. One comparison school experienced additional challenges with having adequate electronic devices for survey administration and did not complete survey administration until early November 2016.

C. Project Personnel

There were no major changes to the evaluation or School-Based Health Center project team. The Principal Investigators and lead project staff remained constant for all years of the study.

D. Project Budget

Apart from the unavailability of Social Innovation Fund continuation grant monies for Year 4 and Year 5 of the project, there were no issues with or changes to the budget for this evaluation. OnTrack Greenville stakeholders have secured non-federal funding to continue the implementation and evaluation of OnTrack Greenville through academic year 2019-20.

Appendix B. Program Logic Model

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	IMPACTS
GHS program staff, knowledge, and experience	Primary care health services available at schools 1 – 2 days per week	Initial student health assessments	**Exploratory**	**Confirmatory**
			Increased number of students have an identified medical home	Increased student attendance rates
Collaborating schools and staff	• Non-emergent acute health care	Student health care visits		
	• Chronic disease management		Students return to class after a health visit	**Exploratory**
Medical equipment, supplies, and telemedicine equipment	• Preventative health care	Chronic disease management plans for students		Improved math and English/language arts course performance
	• Immunizations		School staff members increase awareness of SBHC purpose and services	
Financial resources from UWGC Social Innovation Fund subgrant, Greenville Partnership for Philanthropy, and other match sources.	• Medical referrals	Referrals for outside care, specifically for (a) medical homes; b) specialty care; (c) mental health services; (d) dental care		Decreased number of student discipline incidences (i.e. behavioral referrals and in-school or out-of-school suspensions)
	• Prescriptions and medications			
	• Hearing and vision screenings			
	• Telemedicine triage	Medications provided from on-site pharmacy		
Early Warning and Response System and internal data system to identify eligible students, track students' progress, and provide ongoing feedback	Educate school staff members on SBHC purpose and services	Telemedicine encounters		
		Staff educational events		
OnTrack Greenville collective impact resources and support				

INTENDED RESULTS

Appendix C. Additional Matching Results

Appendix C provides further information on the matching process, organized by match. Each section provides: 1) additional data on the number of students matched via a participant flow chart, (2) the demographic differences between the School-Based Health Center students who were matched and those who were not, (3) the overlap in propensities between the School-Based Health Center and comparison students, and (4) further evidence of balance in the form of post-match standardized mean differences and variance ratios of the variables used in the matching process.

Participation Flow Chart: The School-Based Health Center and comparison sample sizes are presented for each match. Given that each match was done independently, the number of students in each match varies, so a separate flow chart for each match is necessary. One will note that the sample sizes for the matches using survey data are much smaller than those using the administrative data. This is because researchers limited potential matches to those who responded to the student survey.

Demographic Differences between Matched and Unmatched School-Based Health Center Students: As is evident in the participant flow charts, not all School-Based Health Center students were matched. This has important implications for the generalizability for the results presented in this evaluation. The estimated effects of School-Based Health Center participation are limited to those who are included in the analysis. It is possible that the effect of receiving School-Based Health Center services is different for those who could not be matched. To get a better sense of the matching results, researchers compared the demographic characteristics of those School-Based Health Center students who were matched to those who were not because they were missing full matching data or they did not have an available match in the given caliper. This allows one to examine how similar the School-Based Health Center sample is to the School-Based Health Center population on these factors.

Overlap: One goal of the matching process is for there to be substantial overlap in the propensity scores of the SBHC students and the comparison group. To get a sense of this overlap, kernel densities were estimated for the SBHC and comparison samples after the matching process. Frequency weights were used to account for matching with replacement. Further, the natural log of the propensity score was used in the figures, since it is not truncated at zero and one. Substantial overlap between the distributions of the SBHC and comparison groups is evidence of good balance.

Evidence of Balance: When considering the balance of the matches, researchers considered the standardized differences between the two groups and the variance ratios. The goal was to have standardized mean differences below 0.1 and variance ratios near 1.0 (Steiner & Cook, 2013). If researchers found that the initial matching process created imbalanced samples, they re-estimated the propensity model using higher-order terms and interactions between the covariates (Rosenbaum & Rubin, 1984, 1985). This iterative process lead to different combinations of variables being included in different matching procedures. Following Steiner and Cook (2013), the figures below demonstrate the improvement from the pre-match to the post-match balance in terms of standardized differences and variance ratios. The figures highlight that the matching process produced two very similar samples based on these factors. Researchers were not always able to produce matches that met the above goals. For half of the instances in which a standardized mean difference of 0.10 could not be met, the standardized differences were between 0.10 and 0.11. The maximum standardized mean difference was 0.164 (2016-17 district school survey match). The maximum variance ratio was 1.36 (2017-18 district

school survey match). Overall, the matches were generally better when the administrative data were used. The small sample sizes for the survey matches made finding balance more difficult.

A. AY 2016-17 District Administrative Match

Table 40. SBHC Participant Flow Chart at District Schools AY 2016-17 (Administrative Data)

Study Time-point	Total number students	Number students included	Number students not included	Notes
Treatment Students				
1. Program Roster	179	---	---	Used SBHC Services
2. Appeared on School Roster	179	170	9	
3. Had Full Matching Data	170	135	35	
4. Matched	135	126	9	
5. Included in Analysis	126	126	0	
Comparison Students				
1. School Rosters	5,267	---	---	
2. Met Treatment Inclusion Criteria	5,267	3,303	1,964	District School
3. Had Full Matching Data	3,303	2,848	455	
4. Matched	2,848	474	2,374	Unique students (note: matching was done with replacement)
5. Included in Analysis	474	474	0	

Table 41. Which SBHC Students Were Matched? Post-Match Demographics, AY 2016-17 District Schools (Administrative Data Match)

	SBHC Not Matched - Mean	SBHC Matched - Mean	Difference	S.E. of Diff.
Black	0.23	0.33	-0.11	0.09
Hispanic	0.58	0.29	**0.29****	0.09
White	0.13	0.32	**-0.19***	0.09
Other Race	0.06	0.06	0.01	0.05
Free/Reduced Meals	0.81	0.92	**-0.11+**	0.06
Female	0.39	0.45	-0.07	0.10
Special Ed.	0.32	0.25	0.07	0.09
ESL	0.53	0.26	**0.27****	0.09
Grade 6	0.27	0.34	-0.07	0.08
Grade 7	0.43	0.35	0.08	0.08
Grade 8	0.30	0.31	-0.01	0.08

$^{†}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
Significance determined by chi-square tests.

Figure 7. AY 2016-17 District School Comparison Matches (Administrative Data): Overlap

Distribution of Propensity Score

Figure 8. AY 2016-17 District School Comparison Matches (Administrative Data): Standardized Differences and Variance Ratios
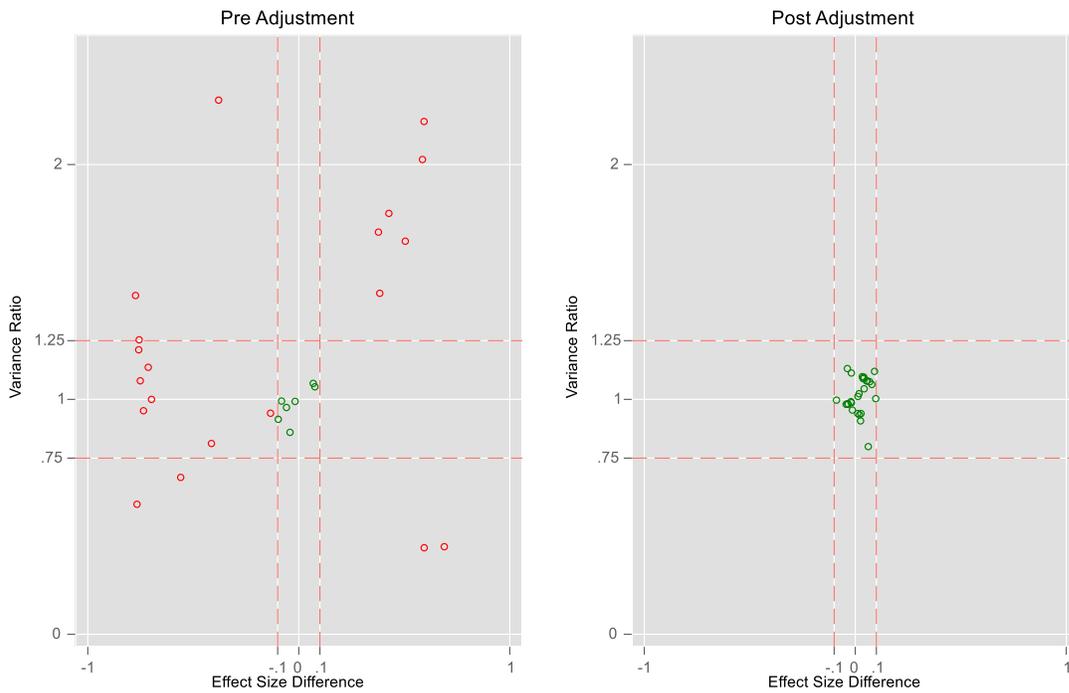
B. AY 2016-17 State Administrative Match

Table 42. SBHC Participant Flow Chart at State Schools AY 2016-17 (Administrative Data)

Study Time-point	Total number students	Number students included	Number students not included	Notes
Treatment Students				
1. Program Roster	179	---	---	Used SBHC Services
2. Appeared on School Roster	179	169	10	
3. Had Full Matching Data	169	148	21	
4. Matched	148	73	75	
5. Included in Analysis	73	73	0	
Comparison Students				
1. School Rosters	796,876	---	---	
2. Met Treatment Inclusion Criteria	796,876	45,013	751,863	Title I School, Grades 6-8, Not in GCS district
3. Had Full Matching Data	45,013	41,029	3,984	
4. Matched	41,029	347	40,682	Unique students (note: matching was done with replacement)
5. Included in Analysis	347	347	0	

Table 43: Which SBHC Students Were Matched? Post-Match Demographics, AY 2016-17 State Schools (Administrative Data Match)

	SBHC Not Matched - Mean	SBHC Matched - Mean	Difference	S.E. of Diff.
Black_2016sc	0.18	0.46	**-0.28*****	0.07
Hispanic_2016sc	0.45	0.21	**0.25*****	0.07
White_2016sc	0.27	0.29	-0.02	0.07
OtherRace_2016sc	0.09	0.04	0.05	0.04
Poverty_2016sc	0.76	0.93	**-0.17*****	0.06
Female_2016sc	0.58	0.31	**0.27*****	0.08
Special Ed.	0.15	0.28	**-0.13****	0.06
ESL_2016sc	0.38	0.21	**0.17****	0.07
Grade 6	0.40	0.22	**0.18****	0.07
Grade 7	0.31	0.42	-0.11	0.07
Grade 8	0.29	0.36	-0.07	0.07

Significance determined by chi-square tests. $^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Figure 9. AY 2016-17 State School Comparison Matches (Administrative Data): Overlap
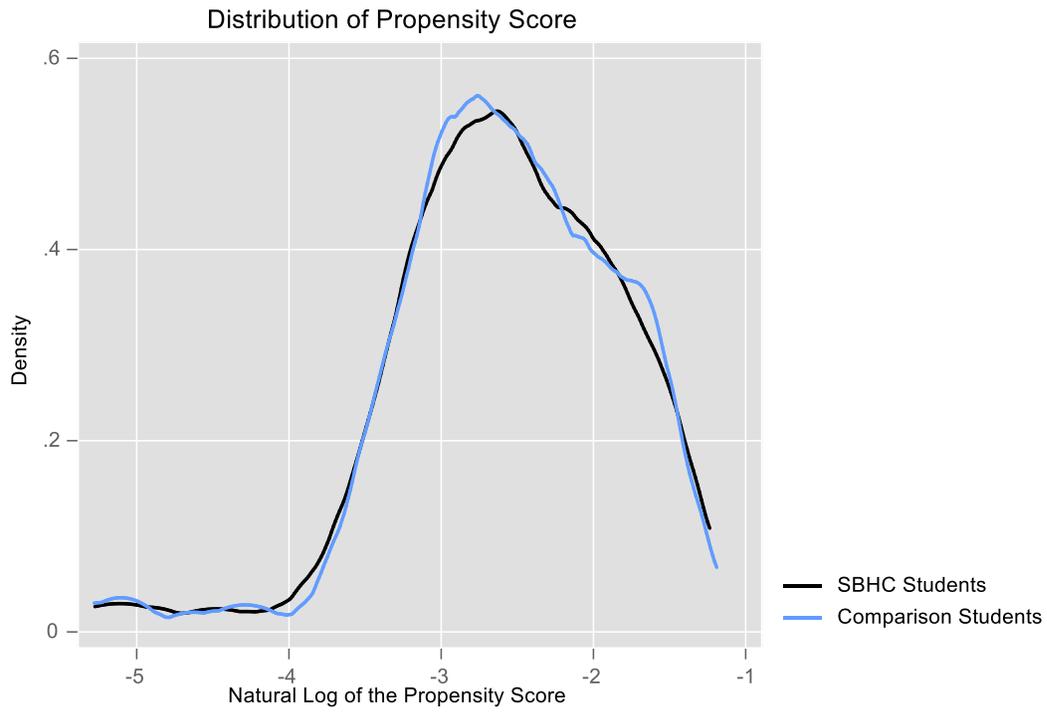

Distribution of Propensity Score

Figure 10. AY 2016-17 State School Comparison Matches (Administrative Data): Standardized Differences and Variance Ratios
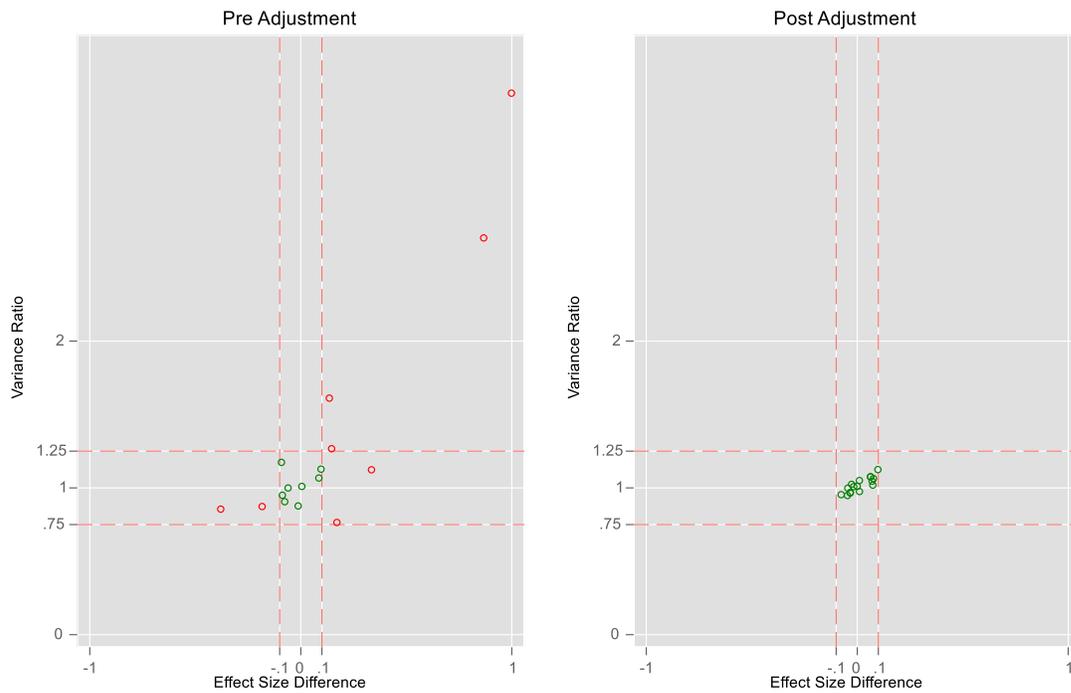
C. AY 2016-17 Treatment Survey Match

Table 44. SBHC Participant Flow Chart at Treatment Schools AY 2016-17 (Survey Data)

Study Time-point	Total number students	Number students included	Number students not included	Notes
Treatment Students				
1. Program Roster	179	---	---	Used SBHC Services
2. Appeared on School Roster	179	170	9	
3. Had Full Matching Data	170	87	83	Includes Fall 2016 survey
4. Had Survey Outcomes	87	65	22	Spring 2017 survey outcomes
5. Matched	65	58	7	
6. Included in Analysis	58	58	0	
Comparison Students				
1. School Rosters	5,267	---	---	
2. Met Treatment Inclusion Criteria	5,267	1,710	3,557	Treatment School, Didn't receive SBHC services
3. Had Full Matching Data	1,710	1,064	646	Includes Fall 2016 survey
4. Had Survey Outcomes	1,064	817	247	Spring 2017 survey outcomes
4. Matched	817	236	581	Unique students (note: matching was done with replacement)
5. Included in Analysis	236	236	0	

Table 45. Which SBHC Students Were Matched? Post-Match Demographics, AY 2016-17 Treatment Schools (Survey Data Match)

	SBHC Not Matched - Mean	SBHC Matched - Mean	Difference	S.E. of Diff.
Black	0.31	0.28	0.04	0.13
Hispanic	0.38	0.34	0.03	0.14
White	0.31	0.31	0.00	0.13
Other Race	0.00	0.07	-0.07	0.06
Free/Reduced Meals	0.88	0.93	-0.06	0.08
Female	0.56	0.48	0.08	0.14
Special Ed.	0.38	0.22	0.15	0.12
ESL	0.25	0.29	-0.04	0.13
Grade 6	0.25	0.36	-0.11	0.12
Grade 7	0.45	0.36	0.09	0.13
Grade 8	0.30	0.28	0.02	0.12

Significance determined by chi-square tests. $^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Figure 11. AY 2016-17 Treatment School Comparison Matches (Survey Data): Overlap
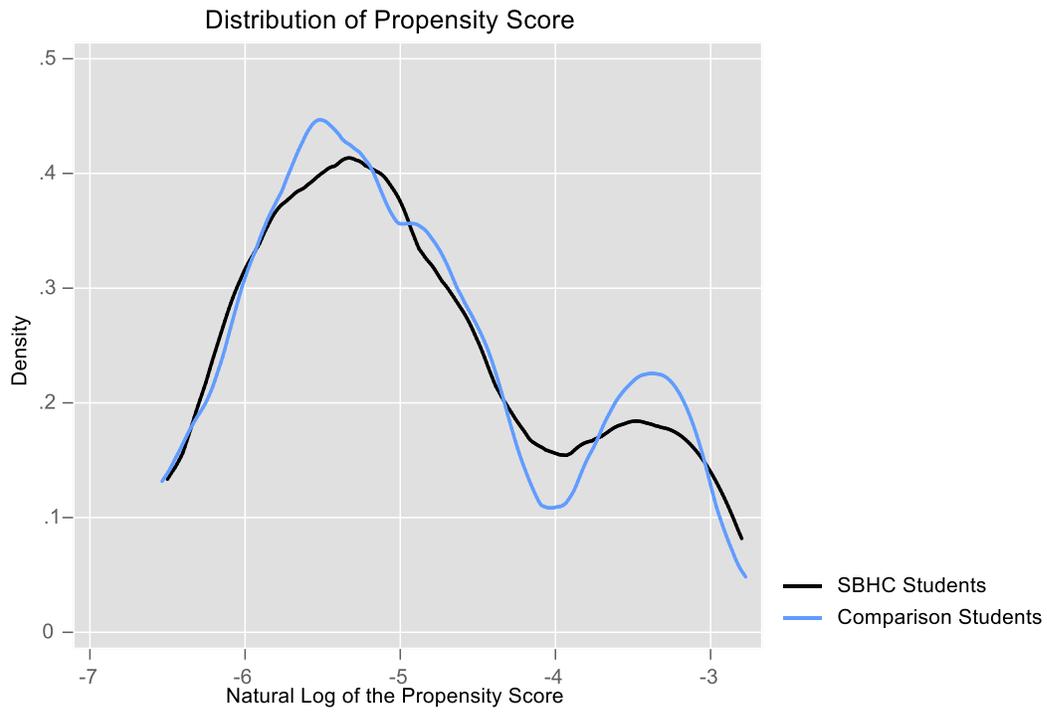

Distribution of Propensity Score

Figure 12. AY 2016-17 Treatment School Comparison Matches (Survey Data): Standardized Differences and Variance Ratios
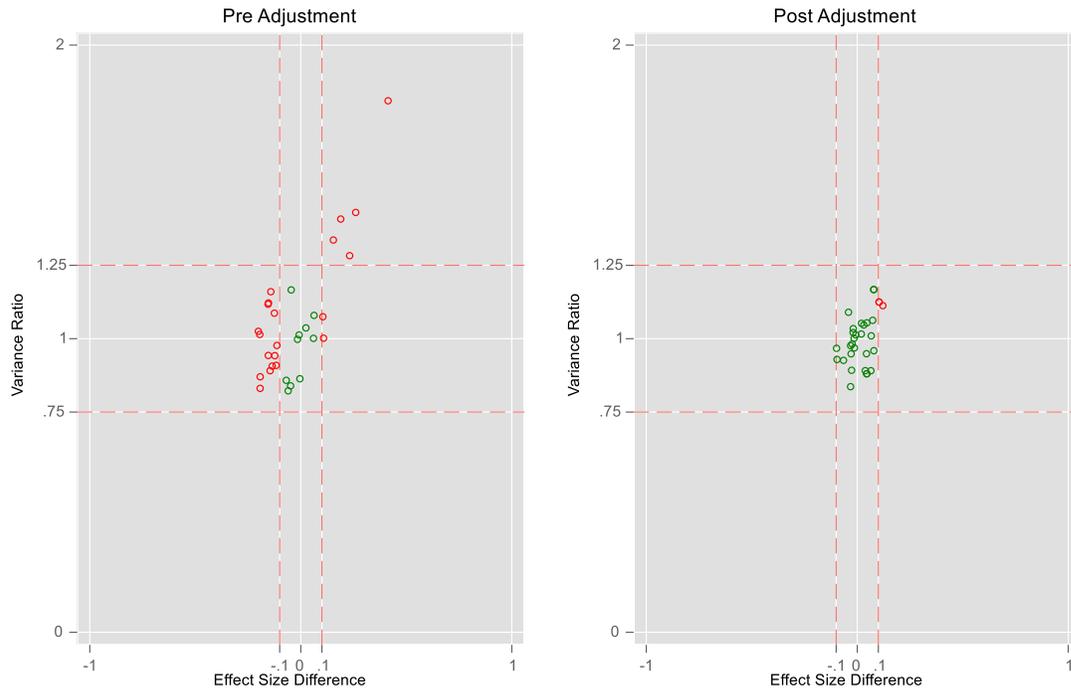
D. AY 2016-17 District Survey Match

Table 46. SBHC Participant Flow Chart at District Schools AY 2016-17 (Survey Data)

Study Time-point	Total number students	Number students included	Number students not included	Notes
Treatment Students				
1. Program Roster	179	---	---	Used SBHC Services
2. Appeared on School Roster	179	170	9	
3. Had Full Matching Data	170	87	83	Includes Fall 2016 survey
4. Had Survey Outcomes	87	65	22	Spring 2017 survey outcomes
5. Matched	65	57	8	
6. Included in Analysis	57	57	0	
Comparison Students				
1. School Rosters	5,267	---	---	
2. Met Treatment Inclusion Criteria	5,267	3,303	1,964	District School
3. Had Full Matching Data	3,303	2,305	998	Includes Fall 2016 survey
4. Had Survey Outcomes	2,305	1,951	354	Spring 2017 survey outcomes
4. Matched	1,951	233	1,718	Unique students (note: matching was done with replacement)
5. Included in Analysis	233	233	0	

Table 47. Which SBHC Students Were Matched? Post-Match Demographics, AY 2016-17 District Schools (Survey Data Match)

	SBHC Not Matched - Mean	SBHC Matched - Mean	Difference	S.E. of Diff.
Black	0.29	0.28	0.01	0.13
Hispanic	0.53	0.30	**0.23†**	0.13
White	0.18	0.35	-0.17	0.13
Other Race	0.00	0.07	-0.07	0.06
Free/Reduced Meals	0.88	0.93	-0.05	0.08
Female	0.41	0.53	-0.11	0.14
Special Ed.	0.41	0.21	**0.20†**	0.12
ESL	0.41	0.25	0.17	0.12
Grade 6	0.24	0.37	-0.13	0.12
Grade 7	0.52	0.33	0.19	0.12
Grade 8	0.24	0.30	-0.06	0.12

Significance determined by chi-square tests. †$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

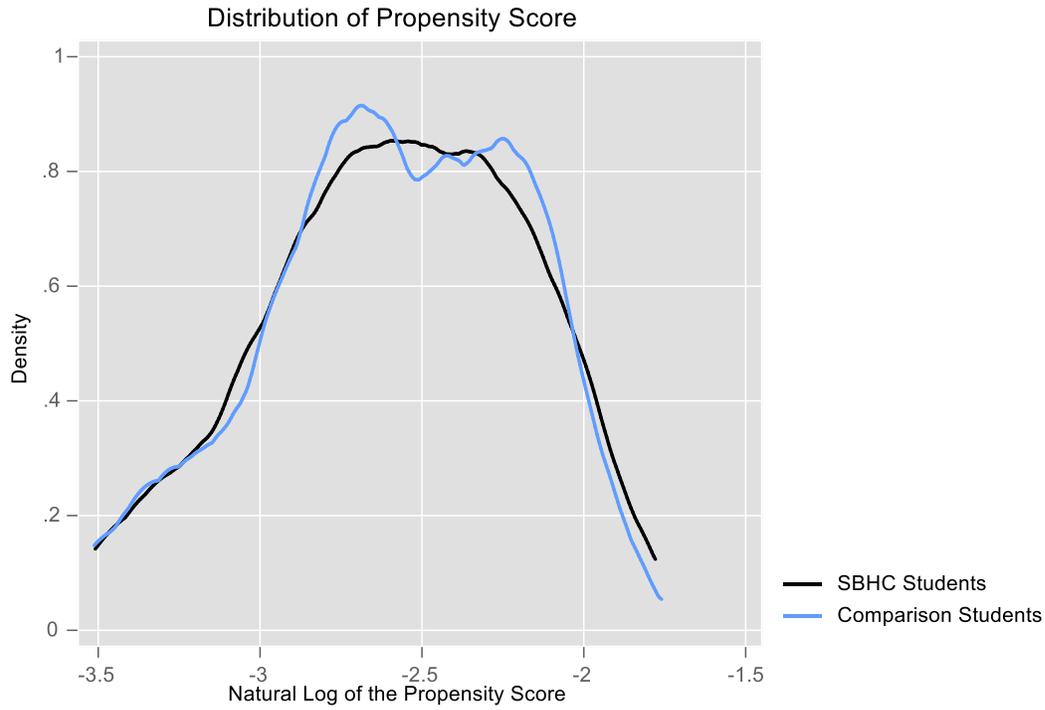Figure 13. AY 2016-17 District School Comparison Matches (Survey Data): Overlap

Figure 14. AY 2016-17 District School Comparison Matches (Survey Data): Standardized Differences and Variance Ratios
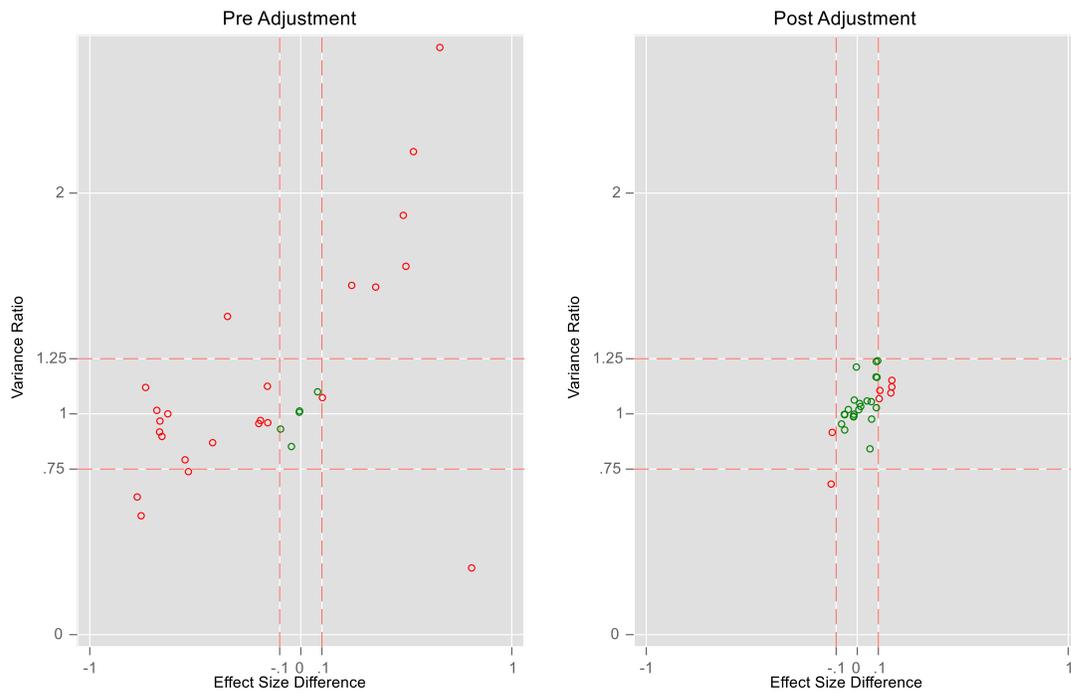
E. AY 2017-18 Treatment School Administrative Match

Table 48. SBHC Participant Flow Chart at Treatment Schools AY 2017-18 (Administrative Data)

Study Time-point	Total number students	Number students included	Number students not included	Notes
Treatment Students				
1. Program Roster	98	---	---	Used SBHC Services
2. Appeared on School Roster	98	96	2	
3. Had Full Matching Data	96	88	8	
4. Matched	88	82	6	
5. Included in Analysis	82	82	0	
Comparison Students				
1. School Rosters	5,424	---	---	
2. Met Treatment Inclusion Criteria	5,424	1,927	3497	Treatment School, Didn't receive SBHC services
3. Had Full Matching Data	1,927	1,737	190	
4. Matched	1,737	322	1415	Unique students (note: matching was done with replacement)
5. Included in Analysis	322	322	0	

Table 49. Which SBHC Students Were Matched? Post-Match Demographics, AY 2017-18 Treatment Schools (Administrative Data Match)

	SBHC Not Matched - Mean	SBHC Matched - Mean	Difference	S.E. of Diff.
Black	0.07	0.24	-0.17	0.12
Hispanic	0.79	0.49	**0.30***	0.14
White	0.14	0.20	-0.05	0.11
Other Race	0.00	0.07	-0.07	0.07
Free/Reduced Meals	0.50	0.83	**-0.33****	0.12
Female	0.50	0.46	0.04	0.15
Special Ed.	0.43	0.21	**0.22**†	0.12
ESL	0.71	0.34	**0.37****	0.14
Grade 6	0.36	0.35	0.00	0.14
Grade 7	0.29	0.35	-0.07	0.14
Grade 8	0.36	0.29	0.06	0.13

Significance determined by chi-square tests. †$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Figure 15. AY 2017-18 Treatment School Comparison Matches (Administrative Data): Overlap

Distribution of Propensity Score

Figure 16. AY 2017-18 Treatment School Comparison Matches (Administrative Data): Standardized Differences and Variance Ratios
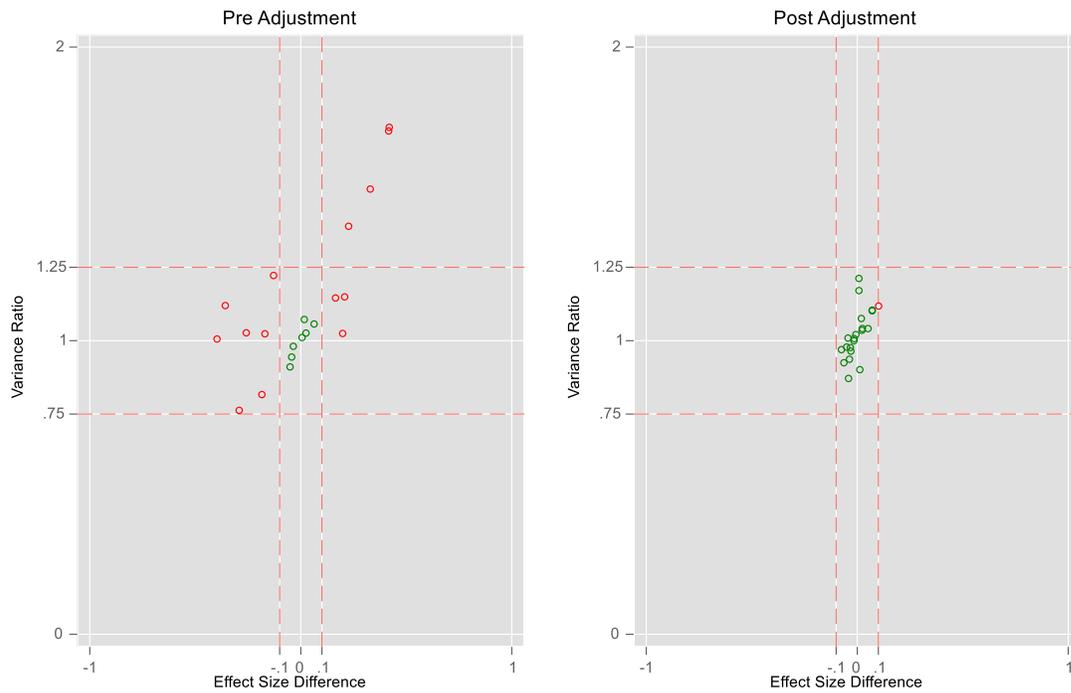
F. AY 2017-18 District Administrative Match

Table 50. SBHC Participant Flow Chart at District Schools AY 2017-18 (Administrative Data)

Study Time-point	Total number students	Number students included	Number students not included	Notes
Treatment Students				
1. Program Roster	98	---	---	Used SBHC Services
2. Appeared on School Roster	98	96	2	
3. Had Full Matching Data	96	88	8	
4. Matched	88	82	6	
5. Included in Analysis	82	82	0	
Comparison Students				
1. School Rosters	5,424	---	---	
2. Met Treatment Inclusion Criteria	5,424	3,516	1,908	District School
3. Had Full Matching Data	3,516	3,255	261	
4. Matched	3,255	338	2917	Unique students (note: matching was done with replacement)
5. Included in Analysis	338	338	0	

Table 51. Which SBHC Students Were Matched? Post-Match Demographics, AY 2017-18 District Schools (Administrative Data Match)

	SBHC Not Matched - Mean	SBHC Matched - Mean	Difference	S.E. of Diff.
Black	0.07	0.24	-0.17	0.12
Hispanic	0.86	0.48	**0.38****	0.14
White	0.07	0.21	-0.14	0.11
Other Race	0.00	0.07	-0.07	0.07
Free/Reduced Meals	0.29	0.87	**-0.58*****	0.10
Female	0.43	0.48	-0.05	0.15
Special Ed.	0.29	0.23	0.05	0.12
ESL	0.79	0.33	**0.46****	0.13
Grade 6	0.36	0.35	0.00	0.14
Grade 7	0.29	0.35	-0.07	0.14
Grade 8	0.36	0.29	0.06	0.13

Significance determined by chi-square tests. $^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

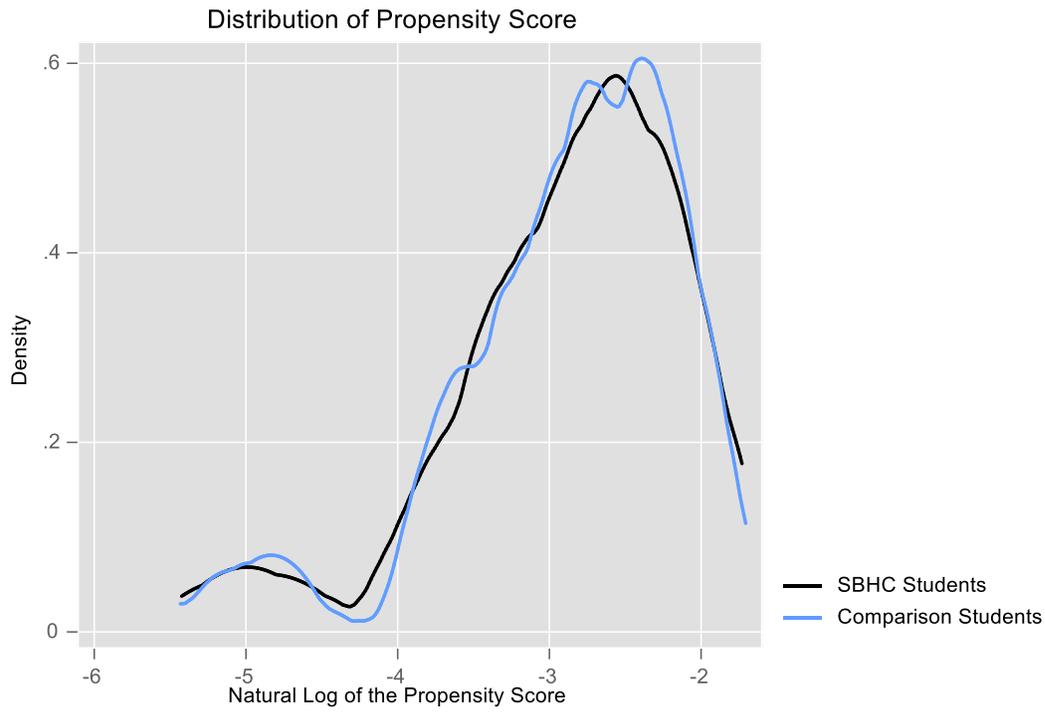Figure 17. AY 2017-18 District School Comparison Matches (Administrative Data): Overlap
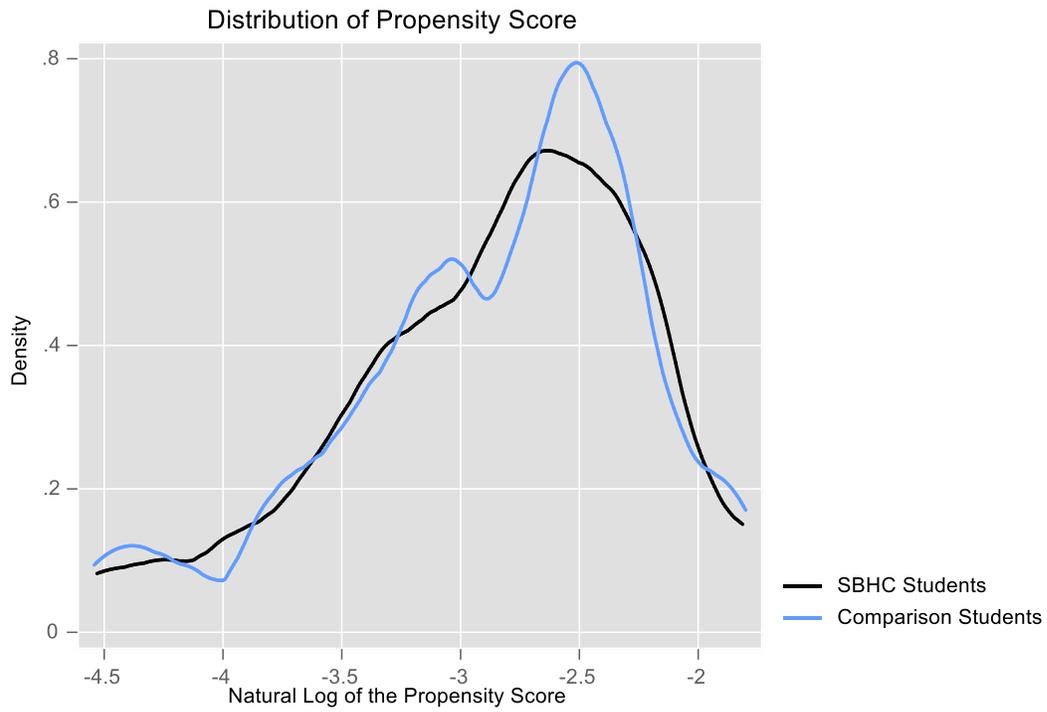

Figure 18. AY 2017-18 District School Comparison Matches (Administrative Data): Standardized Differences and Variance Ratios
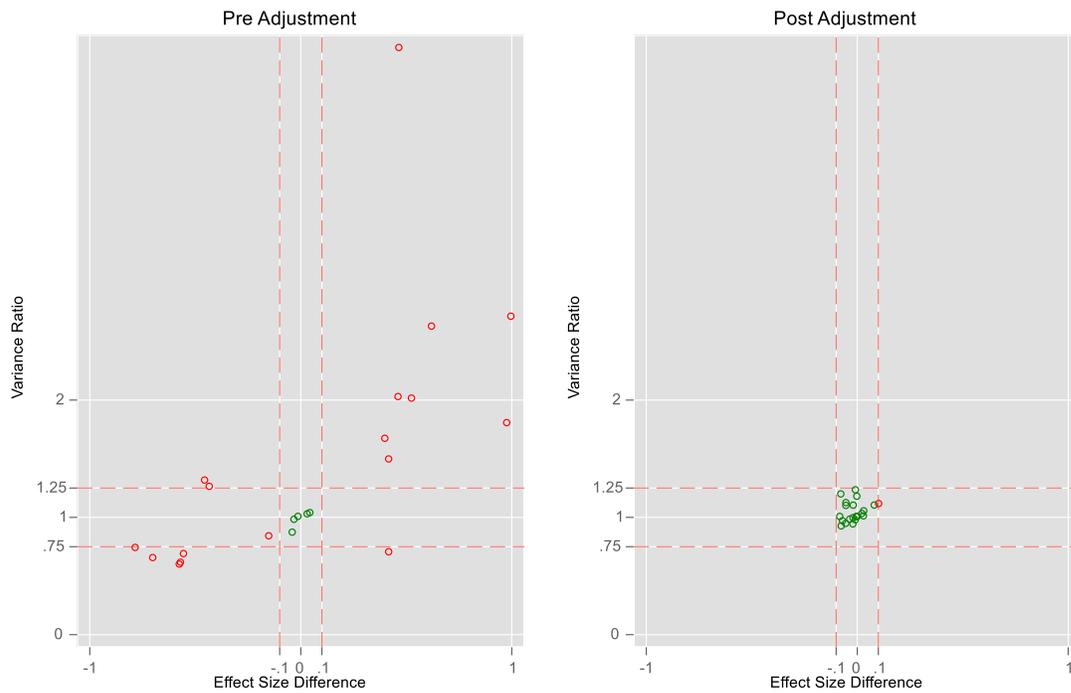
G. AY 2017-18 Treatment School Survey Match

Table 52. SBHC Participant Flow Chart at Treatment Schools AY 2017-18 (Survey Data)

Study Time-point	Total number students	Number students included	Number students not included	Notes
Treatment Students				
1. Program Roster	98	---	---	Used SBHC Services
2. Appeared on School Roster	98	96	2	
3. Had Full Matching Data	96	88	8	
4. Had Survey Outcomes	88	51	37	Spring 2018 survey outcomes
5. Matched	51	44	7	
6. Included in Analysis	44	44	0	
Comparison Students				
1. School Rosters	5,424	---	---	
2. Met Treatment Inclusion Criteria	5,424	1,927	3497	Treatment School, Didn't receive SBHC services
3. Had Full Matching Data	1,927	1,737	190	
4. Had Survey Outcomes	1,737	1,217	520	Spring 2018 survey outcomes
4. Matched	1,217	184	1,033	Unique students (note: matching was done with replacement)
5. Included in Analysis	184	184	0	

Table 53. Which SBHC Students Were Matched? Post-Match Demographics, AY 2017-18 Treatment Schools (Survey Data Match)

	SBHC Not Matched - Mean	SBHC Matched - Mean	Difference	S.E. of Diff.
Black	0.00	0.20	-0.20	0.12
Hispanic	0.64	0.59	0.05	0.17
White	0.27	0.16	0.11	0.13
Other Race	0.09	0.05	0.05	0.08
Free/Reduced Meals	0.36	0.82	**-0.45****	0.14
Female	0.55	0.45	0.09	0.17
Special Ed.	0.45	0.18	**0.27**†	0.14
ESL	0.55	0.45	0.09	0.17
Grade 6	0.36	0.34	0.02	0.16
Grade 7	0.45	0.45	0.00	0.17
Grade 8	0.18	0.20	-0.02	0.14

Significance determined by chi-square tests. †$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

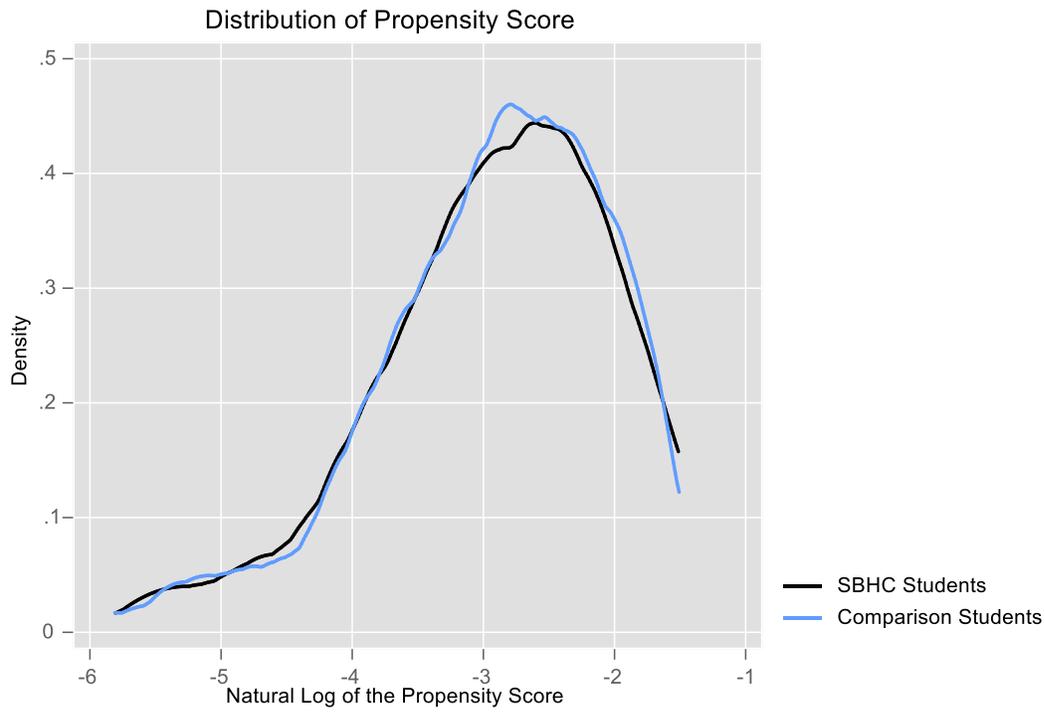Figure 19. AY 2017-18 Treatment School Comparison Matches (Survey Data): Overlap

Distribution of Propensity Score

Figure 20. AY 2017-18 Treatment School Comparison Matches (Survey Data): Standardized Differences and Variance Ratios
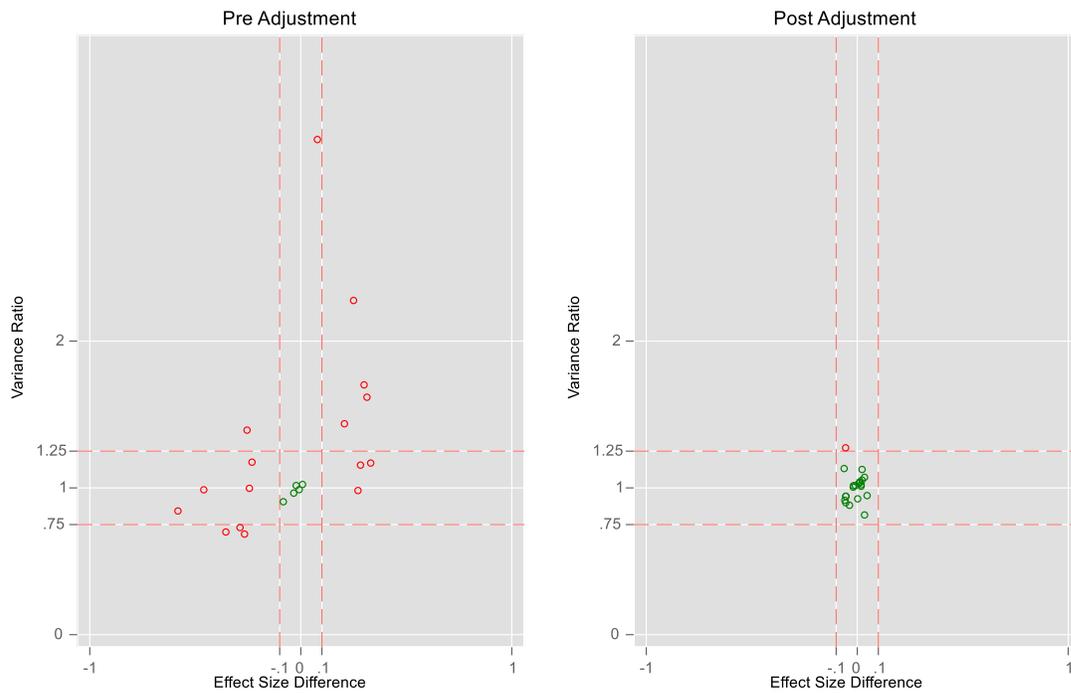
H. AY 2017-18 District Survey Match

Table 54. SBHC Participant Flow Chart at District Schools AY 2017-18 (Survey Data)

Study Time-point	Total number students	Number students included	Number students not included	Notes
Treatment Students				
1. Program Roster	98	---	---	Used SBHC Services
2. Appeared on School Roster	98	96	2	
3. Had Full Matching Data	96	88	8	
4. Had Survey Outcomes	88	51	37	Spring 2018 survey outcomes
5. Matched	51	46	5	
6. Included in Analysis	46	46	0	
Comparison Students				
1. School Rosters	5,424	---	---	
2. Met Treatment Inclusion Criteria	5,424	3,516	1,908	District School
3. Had Full Matching Data	3,516	3,255	261	
4. Had Survey Outcomes	3,255	2,385	870	Spring 2018 survey outcomes
4. Matched	2,385	192	2,193	Unique students (note: matching was done with replacement)
5. Included in Analysis	192	192	0	

Table 55. Which SBHC Students Were Matched? Post-Match Demographics, AY 2017-18 District Schools (Survey Data Match)

	SBHC Not Matched - Mean	SBHC Matched - Mean	Difference	S.E. of Diff.
Black	0.00	0.20	-0.20	0.13
Hispanic	0.89	0.54	**0.35†**	0.18
White	0.11	0.20	-0.08	0.14
Other Race	0.00	0.07	-0.07	0.08
Free/Reduced Meals	0.56	0.76	-0.21	0.16
Female	0.44	0.48	-0.03	0.19
Special Ed.	0.56	0.17	**0.38***	0.15
ESL	0.78	0.41	**0.36***	0.18
Grade 6	0.22	0.37	-0.15	0.18
Grade 7	0.67	0.41	0.25	0.18
Grade 8	0.11	0.22	-0.11	0.15

Significance determined by chi-square tests. $^{†}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Figure 21. AY 2017-18 District School Comparison Matches (Survey Data): Overlap
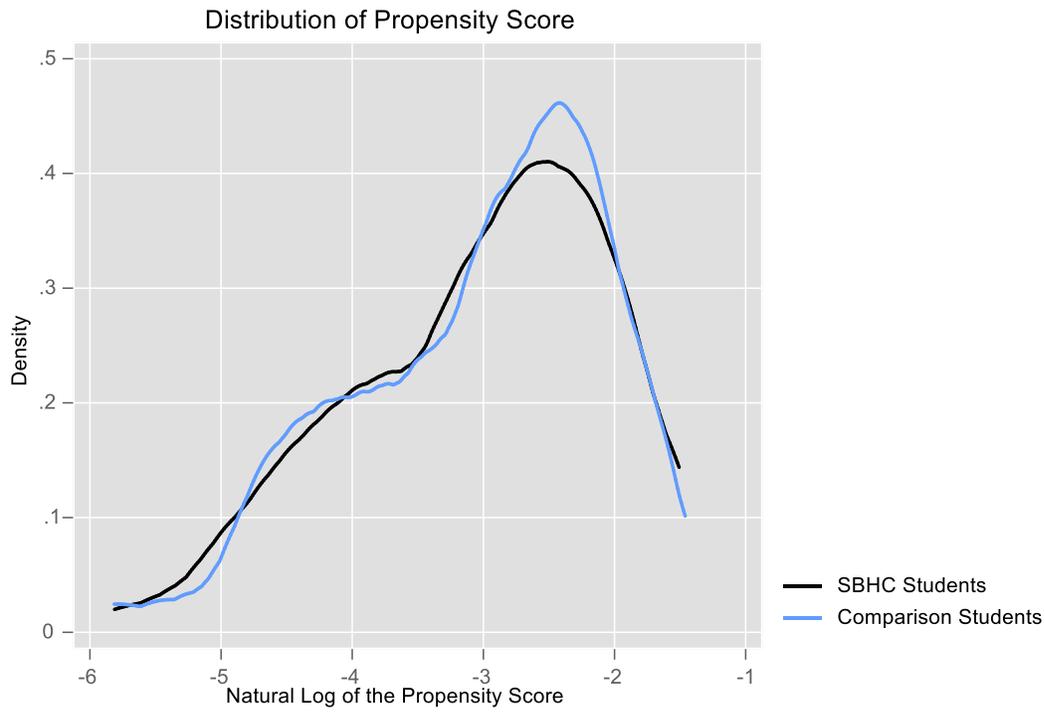
Figure 22. AY 2017-18 District School Comparison Matches (Survey Data): Standardized Differences and Variance Ratios
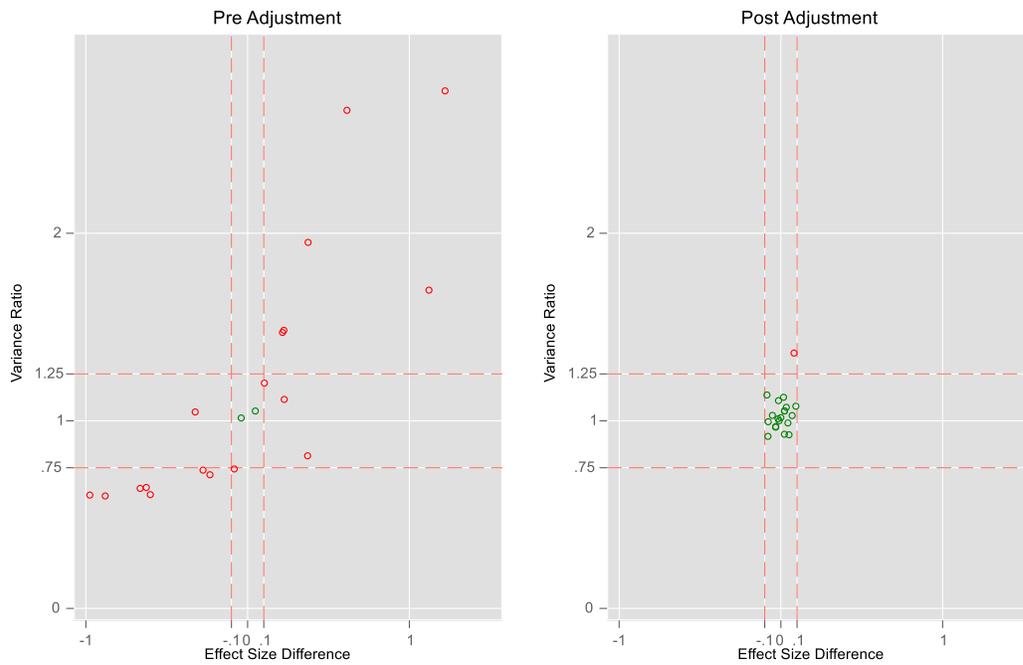
I. Additional Matching Tables

Table 56. SBHC Participants vs. Student Matches 2017-18 (Administrative Data Matches)

	School-Based Health Center Participants (n = 82)	Student Matches: Treatment Schools (n = 410)	School-Based Health Center Participants (n = 82)	Student Matches: District Schools (n = 410)
Black	24.4%	21.5% (0.07)	24.4%	26.8% (-0.05)
Hispanic	48.8%	51.0% (-0.04)	47.6%	46.1% (0.03)
White	19.5%	20.7% (-0.03)	20.7%	19.5% (0.03)
Other Race	7.3%	6.8% (0.02)	7.3%	7.6% (-0.01)
Free/Reduced Meals	82.9%	83.2% (-0.01)	86.6%	89.0% (-0.08)
Female	46.3%	47.1% (-0.01)	47.6%	51.7% (-0.08)
Special Ed.	20.7%	23.4% (-0.06)	23.2%	23.2% (0.00)
ESL	34.1%	36.6% (-0.05)	32.9%	34.6% (-0.04)
6th grade	35.4%	39.0% (-0.07)	35.4%	38.8% (-0.07)
7th grade	35.4%	36.1% (-0.02)	35.4%	36.3% (-0.02)
8th grade	29.3%	24.9% (0.10)	29.3%	24.9% (0.10)

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
*Note: Standardized mean differences are reported in parentheses. Significance tests are in comparison to the SBHC group. Frequency weights were used to account for matching with replacement.

Table 57. SBHC Participants vs. Comparison Student Matches AY 2016-17 (Survey Data Matches)

	School-Based Health Center Participants (n = 58)	Student Matches: Treatment Schools (n = 290)	School-Based Health Center Participants (n = 57)	Student Matches: District Schools (n = 285)
Black	27.6%	32.1% (-0.09)	28.1%	33.7% (-0.11)
Hispanic	34.5%	29.0% (0.12)	29.8%	27.7% (0.04)
White	31.0%	31.7% (-0.01)	35.1%	27.7% (0.16)
Other Race	6.9%	7.2% (-0.01)	7.0%	10.9% (0.12)
Free/Reduced Meals	93.1%	92.1% (0.04)	93.0%	93.3% (-0.01)
Female	48.3%	48.6% (-0.01)	52.6%	54.7% (0.04)
Special Ed.	22.4%	23.4% (-0.02)	21.1%	21.8% (-0.01)
ESL	29.3%	24.8% (0.10)	24.6%	23.9% (0.02)
6th grade	36.2%	41.0% (-0.09)	36.8%	33.7% (0.07)
7th grade	36.2%	32.8% (0.07)	33.3%	33.0% (0.01)
8th grade	27.6%	26.2% (0.03)	29.8%	33.3% (0.07)

[†] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

*Note: Standardized mean differences are reported in parentheses. Significance tests are in comparison to the SBHC group. Frequency weights were used to account for matching with replacement.

Table 58. SBHC Participants vs. Comparison Student Matches AY 2017-18 (Survey Data Matches)

	School-Based Health Center Participants (n = 44)	Student Matches: Treatment Schools (n = 220)	School-Based Health Center Participants (n = 46)	Student Matches: District Schools (n = 230)
Black	20.5%	19.5% (0.02)	19.6%	20.0% (-0.01)
Hispanic	59.1%	58.2% (0.02)	54.3%	57.0% (-0.05)
White	15.95	18.2% (-0.06)	19.6%	18.3% (0.03)
Other Race	4.6%	4.1% (0.02)	6.5%	4.8% (0.08)
Free/Reduced Meals	81.8%	84.1% (-0.06)	76.1%	79.6% (-0.09)
Female	45.5%	44.5% (0.02)	47.8%	44.3% (0.07)
Special Ed.	18.2%	17.7% (0.01)	17.4%	17.4% (0.00)
ESL	45.5%	46.4% (-0.02)	41.3%	45.2% (-0.08)
6th grade	34.1%	35.0% (-.02)	37.1%	32.6% (0.09)
7th grade	45.5%	45.9% (-0.01)	41.3%	42.2% (-0.02)
8th grade	20.5%	19.1% (0.03)	21.7%	25.2% (-0.08)

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

*Note: Standardized mean differences are reported in parentheses. Significance tests are in comparison to the SBHC group. Frequency weights were used to account for matching with replacement.

Appendix D. OnTrack Greenville Student Survey

Please enter your survey ID number: _____

Click NEXT to continue.

You may complete the survey in English or Spanish. Please select which language you prefer. Usted puede hacer la encuesta en inglés o español. Por favor marque el idioma que prefiere.
   a) English / inglés
   b) Spanish / español

I am Dr. Tracy Waters from Furman University. I am conducting a study to learn about the OnTrack Greenville initiative in your school district. We are asking you to take part in the study because you are learning in a school that offers this program.

For this research, we will ask you to take a short survey. We don't think that you will encounter any problems if you participate in this survey. You can feel good about helping out with this important study. Please answer all of the questions as best you can, even if they don't seem like they apply to you.

You will not put your name anywhere on this survey. We will keep all of your answers private and will not show them to your teachers or your parents. Your answers will be stored on a password protected computer file. Only people from Furman University working on this study will see the answers students provide. When we share the results of the survey, we will never share your name or the name of your school.

You should know that:
   • You do not have to be in this study if you do not want to. You won't get into any trouble with your teachers, your school, or Furman University if you say no.
   • You can stop being in the study at any time.
   • You can ask any questions you have, now or later. If you think of a question later, you or your parents can contact me at 864-294-3803.
   • Your parents/guardians have been provided information about this study and have been given the opportunity to decline your participation.

Click NEXT to continue.

Are you willing to take this survey? By choosing "Yes," below, you acknowledge that you:
   • Understand what you will be doing for this study,
   • Have had all your questions answered,
   • Have talked to your parent(s)/legal guardian about any questions you have about the study and,
   • Agree to take part in this study.

If you choose "No," the survey will end.

   a. Yes
   b. No

What grade are you in?
   a. 6th
   b. 7th
   c. 8th

[Pre-Survey] We are going to ask you about the kinds of things you did during your SUMMER BREAK, June to August 2017. Please select the answer that best reflects how often you did each of the activities listed below during the summer this year.

Responses: (1) Never; (2) Not very often (1 or 2 times); (3) Sometimes (about one a week); (4) Pretty often (a couple of times a week or more); or (5) Very often

How often…
    …did you go to the library?
    …did you write something like an email, letter, poem, or story?
    …did you play math games or solve math problems?
    …did you read a book?

[Pre-Survey] How often you did each of the activities listed below during your summer break this year?

Responses: (1) Never; (2) Not very often (1 or 2 times); (3) Sometimes (about one a week); (4) Pretty often (a couple of times a week or more); or (5) Very often

How often…
…did you play on your phone, watch TV, or play video games?
…did you do activities at a community center, YMCA, church or day camp, or Boys and Girls club?
…did you play outside?

The following statements describe your experiences at your school.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

When I study, I set goals for myself.
I keep doing schoolwork even if it is hard.
If I can't do something the first time, I keep trying until I can.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

I keep doing schoolwork even if I am bored.
When something is hard for me to do, I usually give up.
I keep doing schoolwork even if I don't like it.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

It is easy for me to get good grades in school.
I generally understand the material in my classes just as well as other students.
I am a good student.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

My homework is usually pretty easy for me.
I will be able to go as far in school as I want to go.
I can learn new things if I try.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

Doing well at school is important to me.
The things I am learning in school will be useful outside of school.
I think it is important to go to college.
I need to do well in school to accomplish my goals.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

I like school.
I participate a lot in class.
I like learning new things in school.
I feel like I matter at my school.

The following statements describe teachers at your school.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

Overall, students at my school get along well with teachers.
My teachers meet with me to talk about schoolwork and give me extra help if I need it.
My teachers really listen to what I have to say.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

Teachers at this school set a positive example for students with their actions.
My teachers notice when I am doing a good job and let me know about it.
Overall, teachers at my school try to be fair.

The following statements describe adults at your school. How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

There is at least one adult at my school who…

…really cares about me.
…tells me when I do a good job.
…notices when I am not there.

How true are the following statements?
Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

There is at least one adult at my school who…

…always wants me to do my best.
…listens to me when I have something to say.
…believes that I will be a success.

The following statements describe your experiences at your school. How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

My education will be valuable in getting the job I want.
I would be upset if I got a low grade in one of my subjects.
What I learn in school is useful for the job I want to have as an adult.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

It is important to me to get good grades.
Being a good student is important to me.
School is useful in helping me make good decisions in my life.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

I feel close to people at this school.
I am happy to be at this school.
I feel like I am a part of this school.

How true are the following statements?

Responses: (1) Not true; (2) Somewhat true; (3) Mostly true; (4) True

I feel teachers at this school treat me fairly.
I feel safe in my school.

How far *would you LIKE to go* in school with your education?
   a. Some high school
   b. Finish high school
   c. Finish two-year/technical school
   d. Finish four-year college
   e. Finish graduate school or professional school
   f. I don't know

How far *do you think you will actually go* in school with your education?
- a. Some high school
- b. Finish high school
- c. Finish technical school
- d. Finish college
- e. Finish graduate school or professional school
- f. I don't know

Physical Health refers to your diet and exercise, how often you are sick or healthy, and how your body feels.

In general, how would you describe your physical health?

(a) Excellent (b) Good (c) Fair (d) Poor

Mental Health refers to how you think and feel emotionally on a daily basis.

In general, how would you describe your emotional or mental health?

(a) Excellent (b) Good (c) Fair (d) Poor

Where do you usually go when you need to see a doctor or nurse?
- a. My doctor's office
- b. Emergency room
- c. School health room
- d. Somewhere else
- e. I don't know

I am…

(a) Male (b) Female (c) Prefer not to say

I would describe myself as… (Choose all that apply)

(a) Black or African American
(b) White
(c) Spanish/Hispanic/Latino
(d) Asian or Pacific Islander
(e) American Indian or Alaska Native
(f) Other: _____
(g) Prefer not to say

--- END OF SURVEY ---

[If language = Spanish]

Yo soy la Dra. Tracy Waters de la Universidad de Furman. Yo estoy haciendo un estudio para aprender sobre el programa de OnTrack Greenville en tu distrito escolar. Te invitamos a participar en este estudio porque tú estás asistiendo a una escuela que ofrece este programa.

Para este estudio, vamos a pedir que tomes una breve encuesta. No pensamos que tendrás ningún problema si tomas esta encuesta. Tú puedes sentirse bien por ayudarnos con este estudio importante. Por favor conteste todas las preguntas lo mejor que puedas, incluso si las preguntas no te aplican.

No vamos a pedir que pongas tu nombre en ninguna parte de la encuesta. Vamos a mantener tus respuestas privadas y no vamos a compartirlas con tus maestros/as ni con tus padres. Tus respuestas serán guardadas en un archivo de computadora protegido con contraseña. Solamente personas de Furman University que trabajan en este estudio van a ver las respuestas que estudiantes proveen. Cuando compartimos los resultados de la encuesta, nunca vamos a compartir tu nombre ni el nombre de tu escuela.

Tú debes saber que:
- No tienes que participar en este estudio si no quieres. Tú no te vas a meter en problemas con tus maestros/as, tu escuela, ni la Universidad de Furman si dices "No."
- Puedes retirar del estudio en cualquier momento.
- Puedes preguntar cualquier pregunta que tienes, ahora o después. Si piensas en una pregunta después, tú o tus padres/tutores pueden llamarme al 864-294-3803.
- Tus padres/tutores han recibido información sobre este estudio y ellos han tenido la oportunidad de declinar tu participación.

Oprima PRÓXIMO para continuar.

¿Estás dispuesto/a a tomar esta encuesta?? A escoger "Sí" debajo, tú reconoces que:
- Entiendes lo que vas a hacer en este estudio,
- Se han contestado todas tus preguntas,
- Has hablado con tus padres/tutores sobre las preguntas que tienes relacionadas con el estudio y
- Aceptas participar en este estudio.

Si escoges "No," la encuesta va a acabar.

    a. Sí
    b. No

¿En qué grado estás?

  a. 6º (sexto)
  b. 7º (séptimo)
  c. 8º (octavo)

Vamos a preguntarte sobre los tipos de cosas que hiciste durante LAS VACACIONES DE VERANO, junio a agosto 2017. Por favor marque la respuesta que mejor reflexione la frecuencia con que hiciste las siguientes actividades durante el verano de este año.

Respuestas: (a) Nunca; (b) No muy en seguido (1 o 2 veces); (c) A veces (como una vez a la semana); (d) Más o menos frecuente (un par de veces cada semana o más); (e) Muy frecuente (todos los días)

¿Con tanta frecuencia….?
  …fuiste a la biblioteca?
  …escribiste algo como un email, una carta, un poema o un cuento?
  …jugaste juegos matemáticos o solucionar problemas matemáticas?
  …leíste un libro?

¿Con tanta frecuencia hiciste cada una de las siguientes actividades durante las vacaciones de verano de este año.

Respuestas: (a) Nunca; (b) No muy en seguido (1 o 2 veces); (c) A veces (como una vez a la semana); (d) Más o menos frecuente (un par de veces cada semana o más) ; (e) Muy frecuente (todos los días)

¿Con tanta frecuencia….?
  …jugaste en tu teléfono, viste televisión, o jugaste juegos videos?
  …hiciste actividades en un centro comunitario, YMCA, iglesia o campo, o Club de Niños y Niñas?
  …jugaste afuera?

Las siguientes frases describen tus experiencias en tu escuela.

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

¿Qué tan verdad son las siguientes frases?

Cuando estudio, yo me fijo metas para mí.
Yo sigo haciendo mi trabajo escolar incluso si es difícil.
Si no puedo hacer algo la primera vez, sigo intentando hasta que pueda.

¿Qué tan verdad son las siguientes frases

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Sigo haciendo mi trabajo escolar incluso si estoy aburrido/a.
Cuando algo es difícil para mí, normalmente me rindo.
Sigo hacienda mi trabajo escolar incluso si no me gusta.

¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Es fácil para mí sacar buenas notas en la escuela.
Generalmente entiendo el material en mis clases tan bien como otros estudiantes.
Soy buen/a estudiante.

¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Mis tareas en general son fáciles para mí.
Puedo llegar tan lejos en la escuela como quiero llegar.
Puedo aprender cosas nuevas si intento.

¿Qué tan verdad son las siguientes frases?
Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Hacer bien en la escuela es importante para mí.
Las cosas que estoy aprendiendo en la escuela serán útiles para mí afuera de escuela.
Pienso que es importante ir a la universidad.
Tengo que hacer bien en la escuela para alcanzar mis metas.

¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Me gusta la escuela.
Participo mucho en clase.
Me gusta aprender cosas nuevas en escuela.
Siento que valgo en mi escuela.

Las siguientes frases describen a los/las maestros/as en tu escuela.

¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

En general, estudiantes en mi escuela se llevan bien con maestros/as.
Mis maestros/as se reúnen conmigo para hablar de mi trabajo escolar y darme más ayuda si la necesito.
Mis maestros/as realmente escuchan lo que tengo que decir.

¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Maestros/as en esta escuela muestran un ejemplo positivo para estudiantes con sus acciones.
Mis maestros/as notan cuando estoy haciendo un buen trabajo y me dejan saber.
En general, maestros/as en mi escuela intentan ser justos/as.

Las siguientes frases describen a adultos en tu escuela. ¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Hay por lo menos un adulto en mi escuela quien…

…realmente se preocupa de mí.
…me dice cuando hago un buen trabajo.
…nota cuando no estoy presente.

¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Hay por lo menos un adulto en mi escuela quien…

…siempre quiere que yo haga mi mejor.
…escucha cuando tengo algo que decir.
…cree que voy a ser un éxito.

Las siguientes frases describen tus experiencias en tu escuela. ¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Mi educación será valiosa en obtener el trabajo que quiero.
Me pondría bravo/a si sacara una nota baja en una de mis materias.
Lo que aprendo en la escuela es útil para el trabajo que quiero tener de adulto.

¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Es importante para mí sacar buenas notas.
Ser buen/a estudiante es importante para mí.
La escuela es útil en ayudarme a hacer buenas decisiones en mi vida.

¿Qué tan verdad son las siguientes frases

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Siento cerco/a de las personas en esta escuela.
Estoy feliz estar en esta escuela.
Siento que soy parte de esta escuela.

¿Qué tan verdad son las siguientes frases?

Respuestas: (a) No verdad; (b) Un poco verdad; (c) En la mayor parte verdad; (d) Verdad

Me siento que maestros/as en esta escuela me tratan justamente.
Me siento seguro/a en mi escuela.

¿Qué tan lejos *te GUSTARIA llegar* en la escuela con tu educación?
    a. Hacer una parte de la preparatorio
    b. Terminar toda la preparatorio
    c. Terminar la universidad de 2 años / escuela técnica
    d. Terminar la universidad de 4 años / licenciatura
    e. Terminar la maestría, una especialización o un doctorado
    f. Yo no sé

¿Qué tan lejos *crees que actualmente vas a llegar* en la escuela con tu educación?
    a. Hacer una parte de la preparatorio
    b. Terminar toda la preparatorio
    c. Terminar la universidad de 2 años / escuela técnica
    d. Terminar la universidad de 4 años / licenciatura
    e. Terminar la maestría, una especialización o un doctorado
    f. Yo no sé

La salud física refiere a tu dieta y ejercicio, la frecuencia con que estás enfermo/a o saludable y como se siente tu cuerpo.

  ¿En general, como describes tu salud física?
      (a) Excelente   (b) Buena   (c) Regular   (d) Mala

La salud mental refiere a como piensas y te sientes emocionalmente diariamente.

  ¿En general, como describes tu salud emocional o mental?
      (a) Excelente   (b) Buena   (c) Regular   (d) Mala

¿Normalmente a dónde vas cuando necesitas una consulta con un/a médico/a o enfermera?
- a. La oficina de mi médico/a
- b. La sala de emergencias
- c. La sala de salud escolar
- d. Otro lado: _____
- e. Yo no sé

Yo soy…
- a. Varón
- b. Hembra
- c. Prefiero no decir

Me describo como… (Escoge todos que te describen)
- a. Negro/a o Afroamericano/a
- b. Caucásico/a
- c. Hispano/a o Latino/a
- d. Asiático/a o Isleño/a del Pacífico
- e. Indio/a Americano/a o Nativo/a de Alaska
- f. Otro/a: _____
- g. Prefiero no decir

--- END OF SURVEY ---

Appendix E. OnTrack Greenville Educator Survey

INTRODUCTORY SCREEN

Welcome, and thank you for participating in the Educator Survey administered as a part of the evaluation of OnTrack Greenville.

Please know that results of this survey are confidential, and no findings will be reported that identify you or your school. The informed consent form on the next screen provides additional information on confidentiality and reporting of results.

Your survey link is unique to you; no one else will be able to use your link. If you need to stop while completing the survey: finish the page you are on, click the Next button, and then close your browser window. You can resume the survey at any point by clicking the link in your email invitation. Your answers will be saved.

To thank you for completing this survey, you will receive five free movie rentals from Redbox. At the end of this survey, you will be redirected to a separate page where you will enter your name and email address. A member of the research team will send the movie rental codes to the email address you provide. Your personal information will not be connected to your survey responses in any way, maintaining your confidentiality at all times.

If you have questions at any point during the survey, contact Tracy Waters at tracy.waters@furman.edu or (864) 294-3803.

Click the Next button to view the informed consent and begin the survey.

Please select your choice from the options below. To view and/or print the informed consent form, click **here**.

By choosing "Agree" you acknowledge that you understand the general purposes of your involvement in the study described, have decided that you will participate, and understand that you can withdraw at any time.

If you select "Disagree" the survey will end.

    a.   Agree
    b.   Disagree → END OF SURVEY

Q1. What is the name of your school? [If you work at multiple schools, check all that apply.]
    a. Berea Middle School
    b. Greenville Early College
    c. Lakeview Middle School
    d. Tanglewood Middle School
    e. Other School: _____

Q2. What is your current role in the school(s)? [Check all that apply]
    a.   Teacher
    b.   Administrator
    c.   Title I Staff
    d.   Guidance, Social Work, Mental Health, or other Case Management Staff
    e.   Other Professional Staff: _____

Q3. What is your highest level of education?
       a. High School diploma or equivalency
      b.   Associate's degree
      c.   Bachelor's degree
      d.   Master's degree
      e.   Master's degree + 30
      f.   Doctoral degree

Q4. IF Q2=Teacher, Which of the following grades do you teach? [Check all that apply.]
      a. 6th grade
      b. 7th grade
      c. 8th grade

Q5. IF Q2=Teacher, Which of the following courses do you teach? [Check all that apply]
      a. Math
      b. ELA
      c. Social Studies
      d. Science
      e. Special Education
      f. Related arts courses
      g. Other: _____

Q6. How many years have you been employed at your school, including this school year?
      a. This is my first year
      b.   2 – 4 years
      c.   5 – 7 years
      d.   8 – 10 years
      e.   11 or more years

Q7. How many years have you worked in the field of K-12 education, in total, including this year?
      a.   This is my first year
      b.   2 – 4 years
      c.   5 – 7 years
      d.   8 – 10 years
      e.   11 or more years

Q8. Overall, how much do you agree or disagree with the following statements?

Responses: (1) Completely Agree, (2) Somewhat Agree, (3) Somewhat Disagree, and (4) Completely Disagree.

a. Educators in this school are able to get through to the most difficult students.
b. Educators here are confident that they will be able to motivate their students.
c. If it seems like a child doesn't want to learn, educators here give up.
d. Educators here have the skills needed to produce meaningful student learning.

Q9. Overall, how much do you agree or disagree with the following statements?

Responses: (1) Completely Agree, (2) Somewhat Agree, (3) Somewhat Disagree, and (4) Completely Disagree.

a. Educators in this school believe that every student can learn.
b. Students in this school come to school ready to learn.
c. Students in this school just aren't motivated to learn.

Q10. Overall, how much do you agree or disagree with the following statements?

Responses: (1) Completely Agree, (2) Somewhat Agree, (3) Somewhat Disagree, and (4) Completely Disagree.

a. Educators in this school do not have the skills to deal with student disciplinary problems.
b. The opportunities in this community help ensure that students will learn.
c. Learning is more difficult at this school because students are worried about their safety.
d. Drug and alcohol abuse in this community make it difficult for students here.

Q11. Overall, how much do you agree or disagree with the following statements?

Responses: (1) Completely Agree, (2) Somewhat Agree, (3) Somewhat Disagree, and (4) Completely Disagree.

a. Educators at this school routinely analyze information together (such as student work and data) to inform practices.
b. Educators at this school routinely develop strategies for improvement based on data they have analyzed.
c. Educators at this school have effective practices for working together.
d. My school's schedule allows adequate time for educator collaboration.

Q12. Do you participate in an OnTrack Team (a.k.a. EWRS Team) at your school?
   a.   Yes
   b.   No

Q13. How familiar are you with OnTrack Greenville and the following OnTrack interventions available at your school?

Responses: (1) Very familiar, (2) Familiar, (3) Somewhat familiar, and (4) Not at all familiar

a. OnTrack Greenville
b. Public Education Partners (PEP) Literacy Coaches
c. School-Based Health Center (GHS)
d. Communities In Schools (CIS)
e. BELL Summer Program
f. Teen Leadership course

ONTRACK TEAMS (Questions 14 – 21) [DISPLAY THIS SECTION IF Q12 = Yes]

Q14. How often did you participate in OnTrack Team (EWRS Team) meetings at your school this year?

a. Every week
b. About two times per month
c. About once per month
d. About every other month
e. Only once or twice this year

Q15. The following statements describe how OnTrack Teams hope to make decisions when matching students to appropriate interventions. How much do you agree or disagree with the following statements?

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, and 5) Completely Agree.

When matching students to appropriate interventions…
a) …discussions of students focus on strengths and solutions.
b) …decisions are made collaboratively with OnTrack Team members.
c) …decisions are made collaboratively with students.
d) …decisions are made collaboratively with families.

Q16. The statements below reflect how OnTrack Greenville hopes team members interact with each other. Overall, how much do you agree or disagree that team members are achieving these behaviors?

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, and 5) Completely Agree.

OnTrack Team members at my school are…
a. …sharing information and communicating effectively.
b. …following through on assigned tasks.
c. …reporting back to the team on progress and/or barriers.
d. …working together to discover different approaches to the EWRS process.
e. …adapting solutions to improve student success.

Q17. How much do you agree or disagree with the following statements?

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, and 5) Completely Agree.

a. The right types of interventions exist at my school to meet student needs.
b. The right types of interventions exist in my community to meet student needs.
c. Most students who have needs are matched to an intervention(s).
d. When identified as in need of assistance, students generally are matched with the right intervention(s).
e. When identified students are matched with an intervention(s), the intervention(s) seems to meet the students' needs.

Q18. [IF Q17a=1, 2, or 3]: What additional types of interventions are needed to help meet student needs? [open-ended essay-size test box]

Q19. [IF Q17b=1, 2, or 3]: What are the reasons that some students who have needs are not matched to an intervention(s)? [Check all that apply.]
   a. The intervention(s) cannot serve enough students.
   b. The right type of intervention(s) is not available at my school or in my community.
   c. Caregivers do not provide consent for students to participate in the intervention(s).
   d. Other, please specify: _____ [ESSAY-SIZE TEXT BOX].

Q20. The following partners serve students identified as needing assistance by the OnTrack Teams. How often does your OnTrack Team match identified students to these OnTrack interventions?

Responses: 1) Rarely, 2) Once in a while, 3) Sometimes, 4) Often, and 5) All the time.

a. Communities In Schools (CIS)
b. School-Based Health Center (GHS)

Q21. What feedback or suggestions, if any, do you have about how the OnTrack Team in your school can be improved? [Essay-sized text-box.]

COMMUNITIES IN SCHOOLS (Questions 22 – 26) [DISPLAY SECTION IF Q13c=1, 2, or 3]

Q22. Have you referred students to services provided by Communities In Schools (CIS)?
    a.   Yes
    b.   No

Q23. Thinking about your school, indicate how much do you agree or disagree with the following statements.

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, 5) Completely Agree, and 6) I don't know enough to speak to this.

CIS has helped participating students…
a. …improve their attendance.
b. …improve their behavior
c. …improve course performance in Math.
d. …improve course performance in English/language arts.

Q24. Thinking about your school, indicate how much do you agree or disagree with the following statements.

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, 5) Completely Agree, and 6) I don't know enough to speak to this.

CIS has helped participating students…
a. …improve their attitude toward learning and school.
b. …become more engaged in learning.
c. …build relationships with caring adults.
d. …improve their educational self-perception.

Q25. Please indicate the extent to which you agree or disagree with the following statements.

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, 5) Completely Agree, and 6) I don't know enough to speak to this.

a. CIS is well-integrated with other interventions and services for students at my school.
b. CIS Student Support Specialists in my school have developed good relationships with the students they serve.
c. This year, CIS Student Support Specialists have contributed to an improvement in our school climate.

Q26. What feedback or suggestions, if any, do you have about how the CIS program in your school can be improved? [Essay-sized text box].

SCHOOL-BASED HEALTH CENTERS: IMPACT QUESTIONS (Questions 27 – 29) [DISPLAY IF Q13b=1, 2 or 3.]

Q27. Have you referred students to the School-Based Health Center staff?
   a.   Yes
   b.   No

Q28. Please indicate the extent to which you agree or disagree with the following statements:

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, 5) Completely Agree, and 6) I don't know enough to speak to this.

a. The School-Based Health Center in this school is well-integrated with other interventions and services for students.
b. The School-Based Health Center staff in this school have developed good relationships with the students they serve.
c. This year, School-Based Health Center staff have contributed to an improvement in our school climate.

Q29. What feedback or suggestions, if any, do you have about how the School-Based Health Center in your school can be improved? [Essay-sized text box]

TEEN LEADERSHIP COURSE (Questions 30 – 31). [DISPLAY SECTION IF Q13e= 1, 2, or 3]

Q30. Please indicate the extent to which you agree or disagree with the following statements:

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, 5) Completely Agree, and 6) I don't know enough to speak to this.

a. The Teen Leadership course in my school is well-integrated with other interventions and services for students.
b. The Teen Leadership teachers in my school have developed good relationships with the students they serve.
c. This year, Teen Leadership teachers have contributed to an improvement in our school climate.

Q31. What feedback or suggestions, if any, do you have about how the Teen Leadership course in your school can be improved? [Essay-sized text box]

PUBLIC EDUCATION PARTNERS (PEP) LITERACY COACHES (Questions 32 – 33) DISPLAY SECTION IF Q13a=1, 2, or 3

Q32. Please indicate the extent to which you agree or disagree with the following statements:

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, 5) Completely Agree, and 6) I don't know enough to speak to this.

a. PEP Literacy Coaching in this school is well-integrated with other professional development/coaching opportunities.
b. The PEP Literacy Coaches in this school have developed good relationships with the teachers they coach.
c. This year, PEP Literacy Coaches have contributed to an improvement in our school climate.

Q33. What feedback or suggestions, if any, do you have about how PEP Literacy Coaching in your school can be improved? [Essay-sized text box]

BELL SUMMER PROGRAM (Questions 34 – 35) [DISPLAY SECTION IF Q13d=1, 2, or 3]

Q34. Please indicate the extent to which you agree or disagree with the following statements:

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, 5) Completely Agree, and 6) I don't know enough to speak to this.

a. The BELL Summer Program in this school is well-integrated with other interventions and services for students.
b. The BELL Summer Program staff in this school have developed good relationships with the students they serve.
c. This year, the BELL Summer Program staff have contributed to an improvement in our school climate.

Q35. What feedback or suggestions, if any, do you have about how the BELL Summer Program at your school can be improved? [Essay-sized text box]

PUBLIC EDUCATION PARTNERS DISPLAY SECTION IF [Q1=A, C, **OR** D] **AND** [Q2=TEACHER] **AND [**Q5=MATH **OR** ELA]

Q36. Did you work with a PEP Literacy Coach or PEP Mathematics Coach during this academic school year?
a. Yes
b.   No

[Display Questions 37 – 45 IF Q36=Yes]

Q37. How often did you work with a PEP Coach this year?
a. Once a semester
b.   Once a quarter
c.   Monthly
d.   Weekly
e.   Other: _____

Q38. How many total days was the PEP Coach in your classroom during the year?
   a. 15 or more days
   b. 11 – 15 days
   c. 6 – 10 days
   d. 1 – 5 days
   e. 0 days

Q39. Who typically initiated the collaboration between you and a PEP Coach?
   a. PEP Coach
   b. You
   c. Teaching Colleague
   d. Administrator
   e. Other: _____

Q40. What student learning outcomes did you and the coach attempt to improve upon? [Essay-sized text box]

Q41. What teaching practices/strategies were focused on during your collaboration? [Essay-sized text box]

Q42. Which of the following coaching activities occurred during your collaboration(s) with the PEP Coach? [Check all that apply]
   a. Sharing of resources
   b. Meeting to plan curriculum and/or instruction
   c. In-class modeling of instruction
   d. Observation of your teaching/students
   e. Collection of student formative assessment data
   f. Debriefing of instruction with student data
   g. Other: _____

Q43. Which of the following coaching activities did you find most valuable during your collaboration(s) with the PEP Coach? [Check all that apply]
   a. Sharing of resources
   b. Meeting to plan curriculum and/or instruction
   c. In-class modeling of instruction
   d. Observation of your teaching/students
   e. Collection of student formative assessment data
   f. Debriefing of instruction with student data
   g. Other: _____

Q44. How likely are you to recommend literacy coaching to a teaching colleague?
   a. Very likely
   b. Likely
   c. Somewhat likely
   d. Not at all likely

Q45. Please indicate the extent to which you agree or disagree with the following statements.

Responses: 1) Completely Disagree, 2) Somewhat Disagree, 3) Neither Agree nor Disagree, 4) Somewhat Agree, and 5) Completely Agree.

a. More teachers at my school should participate in literacy coaching.
b. I regularly incorporate teaching practices I learned through coaching into my instruction.
c. My students have benefited from my participation in literacy coaching.
d. I feel confident incorporating teaching practices I learned through coaching into my instruction.
e. Literacy coaching has enhanced my instruction.
f. My students are more engaged in class when I use teaching practices I learned through literacy coaching.

SCHOOL-BASED HEALTH CENTERS: IMPLEMENTATION QUESTIONS (Questions 46 – 58)

The following questions are to get a sense of your level of awareness about the School-Based Health Center services and processes. Please answer each question to the best of your ability.

Q46. On what days are the School-Based Health Center staff available at your school (Check all that apply)?
    a. Monday
    b. Tuesday
    c. Wednesday
    d. Thursday
    e. Friday
    f. It varies by week or month
    g. School-Based Health Center staff are not available at my school, only Telemedicine
    h. I don't know

Q47. On a weekly basis, what is the best way to let school personnel know when School-Based Health Center staff are on site? [Essay-sized text box]

Q48. On a weekly basis, what is the best way to let students and parents know when School-Based Health Center staff are on site? [Essay-sized text box]

Q49. The following is a list of ways students could be referred to the School-Based Health Center health care provider. Of these, which referral processes are available at your school?

Responses: 1) Yes, available at my school, 2) No, not available at my school, and 3) Unsure if available at my school

a. A parent may make a request for their child to be seen by my school's School-Based Health Center health care provider.
b. The school nurse can refer someone to the School-Based Health Center health care provider.
c. A teacher, staff member, or administrator may refer a student to the School-Based Health Center health care provider.
d. A student may be referred to the School-Based Health Center health care provider through the OnTrack Teams (Early Warning and Response System).
e. A student may refer another student to the School-Based Health Center health care provider.

Q50. The following is a list of health and/or health-related services. Please indicate if the service is available at your school.

Responses: 1) Yes, available at my school, 2) No, not available at my school, and 3) Unsure if available at my school

    a. Sports Physicals
    b. Care for acute illness (such as cough/cold, allergies, headache, or stomach-ache)
    c. Immunization management
    d. Chronic illness management (such as asthma, high blood pressure, etc.)
    e. ADHD evaluations with physicians
    f. Referrals for specialty care (such as an endocrinologist or gastroenterologist)

[Page Break]

    g. Referral to primary care practice for a "medical home"
    h. Assistance with Medicaid eligibility application
    i. Assistance with accessing health-related community resources
    j. Diagnosis and treatment of illnesses with over-the-counter medicine available at school
    k. Treatment of illnesses with over-the-counter medicine sent from home in original bottle with parent permission
    l. Diagnosis and treatment of illnesses with a prescription medicine

[Page Break]

    m. Decision-making around sending a child back to class, home, or to hospital, based on clinical judgment
    n. Basic first aid
    o. Wound care (e.g. removing stitches or redressing a bandage)
    p. Administration of prescription medicine that is sent to school with doctor's note and in original bottle

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Q51. [DISPLAY ONLY THOSE OPTIONS SELECTED IN Q50]. Below are some of the health and/or health-related services that you said are available at your school. Please check the appropriate box(es) for who at your school provides that service. **If services are provided by both the School Nurse and the School-Based Health Center health care provider, please check both columns.**

Responses: 1) School Nurse, 2) School-Based Health Center health care provider, 3) Unsure

    a. Sports Physicals
    b. Care for acute illness (such as cough/cold, allergies, headache, or stomach ache)
    c. Chronic illness management (such as asthma, high blood pressure, etc.)

[Page Break]

    d. Assistance with accessing health-related community resources
    e. Diagnosis and treatment of illnesses with over-the-counter medicine available at school
    f. Treatment of illnesses with over-the-counter medicine sent from home in original bottle with parent permission

[Page Break]

    g. Decision making around sending a child back to class, home, or to hospital based on clinical judgment
    h. Wound care (e.g. removing stitches, redressing a bandage)

Q52. Have you interacted with the School-Based Health Center staff at your school this school year?
   a.Yes
   b. No
   c. Don't know

Q53. What are the names of the School-Based Health Center staff at your school? [Open response]

Q54. Have you referred a student to the School-Based Health Center this school year?
   a.Yes
   b. No
   c. Don't know

Q55. What additional services, if any, would you like to see provided by the School-Based Health Center staff at your school? [Essay-sized text box]

Q56. Are there barriers to students accessing the School-Based Health Center staff?
   a.Yes
   b. No
   c. I don't know

Q57. DISPLAY IF Q56=YES. What are the barriers to students accessing the School-Based Health Center staff? [Essay-sized text box]

Q58. DISPLAY IF Q56=YES. Do you have any recommendations on how to remove potential barriers and encourage more students to use the School-Based Health Center services that are available? [Essay-sized text box]

End of Survey Questions

Q59. Use the space below to comment on any aspects of OnTrack Greenville that we have not covered or to provide any general impressions that would be helpful for us to know. [Essay-sized text box]

Q60. What is your gender?
   a.   Female
   b.   Male
   c.   Prefer not to say

Q61. What is your race/ethnicity? [Select all that apply.]
   a.   Black
   b.   Asian American
   c.   White
   d.   Hispanic American
   e.   Native American
   f.   Prefer not to say [MAKE MUTUALLY EXCLUSIVE]
   g.   Other (please specify): _____

Appendix F. Medical Record Review Tool

Review Number: _____   Date: ____/____/____

Id Number: _____   Gender: M   F   T

Grade: _____   School:_____

_____

Total Number of Encounters to date: _____

Screening /Assessment	Chronic Care Management

Brief Description:
 	
Entry Protocol followed: Yes   No
 	
Care Protocol followed: Yes   No
 	
Referral issued: Yes   No
   If yes, referred to: _____
   If Yes, referral completed   Yes   No
 	
Follow-up appropriate   Yes   No
   If yes, follow-up completed   Yes No
   If yes, follow-up to: _____
	Brief Description:
	
	Entry Protocol followed: Yes No
	
	Care Protocol followed: Yes No
	
	Referral issued: Yes No
	   If yes, referred to: _____
	   If Yes, referral completed Yes No
	
	Follow-up appropriate Yes No
	   If yes, follow-up completed Yes No
	   If yes, follow-up to: _____

Acute Care	**Other**

Brief Description:
 	
Entry Protocol followed: Yes   No
 	
Care Protocol followed: Yes   No
 	
Referral issued: Yes   No
   If yes, referred to: _____
   If Yes, referral completed   Yes   No
 	
Follow-up appropriate   Yes   No
   If yes, follow-up completed   Yes No
   If yes, follow-up to: _____
	Brief Description:
	
	Entry Protocol followed: Yes No
	
	Care Protocol followed: Yes No
	
	Referral issued: Yes No
	   If yes, referred to: _____
	   If Yes, referral completed Yes No
	
	Follow-up appropriate Yes No
	   If yes, follow-up completed Yes No
	   If yes, follow-up to: _____

Appendix G. Parent Interview/Focus Group Protocol

Welcome
Thank you for agreeing to participate in this focus group. We appreciate your willingness to participate and share your impressions and insight. Your input is very valuable to us as we work on making your School Based Health Center the best it can be.

Introductions
Moderator; assistant moderator (notetaker)

My name is _____ and I am with Clemson University and I will be facilitating our discussion. This is _____ she/he will be helping to facilitate and will be taking notes.

Purpose of Focus Group
We are doing several focus groups as part of the evaluation of the School Based Health Center program. This initiative to bring nurse practitioners into school health centers is part of OnTrack Greenville. OnTrack Greenville is working to increase student success during middle school so students can build a successful future. Part of this involves making sure students are healthy and able to perform their best at school. As part of the evaluation, we want to hear more from you (parents) about your experiences and impressions so far with the School Based Health Centers as well as what you would like to see from it. We need your input and want you to share your honest and open thoughts with us.

Ground Rules
1. WE WANT YOU TO DO THE TALKING.
We would like everyone to participate.
I may, politely, call on you if I haven't heard from you in a while. Of course, you always have the option of not talking, but we hope that you will fully participate.

2. THERE ARE NO RIGHT OR WRONG ANSWERS
Every person's experiences and opinions are important. It is important to us that you speak up whether you agree or disagree with something someone else in the group said. We want to hear a wide range of opinions.

3. ANONYMITY
We want folks to feel comfortable sharing when/if sensitive issues come up. So, please know that we will not share anything said in this group discussion in a way that it can be linked back to you. We will provide a general summary of the discussion to conference planners from Greenville Health System. But, it will not include any names or other identifying information.

4. WE WILL BE RECORDING THE GROUP
We want to capture everything you say and while _____ does a great job at taking notes, she/he still may miss something. So, we would like to record our conversation so that we can use the recording to double check and make sure we have everything in our notes.

Again, we absolutely will not identify anyone by name in our report. You will remain anonymous. If we use your words we will simply say "one participant told us" – we will not use your name or describe you in a way that tells someone who said it.

Do you have any questions of us before we begin?

      Yes   If yes, answer their questions

      No   Okay, let's get started

Everyone ready to begin?

Session Questions

1. We would like to start with asking you to <u>tell us what you know</u> about the School Based Health Center at your child's school?
   a. If not addressed, probe about the following?
      i. Services provided?
      ii. Services they cannot provide?
      iii. How they get consent?
      iv. How they communicate with you?
      v. When they are here at the school?

2. Please tell about your <u>most recent involvement/experience</u> with the School Based Health Center, if any.

3. What health care services would you like to see available for your child (children) at his/her school?

4. What do you see as an advantage to having health care services at your child's school?

5. What do you see as a concern to having health care services at your child's school?

6. Has your family had any issues with accessing School Based Health Center services? What made it difficult?

7. What would make accessing school based health center services for your child easier?

8. Please describe the role the school based health center has taken in making referrals for your family?
   a. Making a referral
   b. Follow-up after a referral

9. Do you have any additional comments about the school based health center would you like to share with us?

Appendix H. Student Satisfaction Survey

We need your help! To give you the best health care, we need your feedback.

If you are willing to give us your feedback about your visit today, then please answer the questions below. DO NOT put your name on the survey as it is confidential. Answer the questions below by circling the answer(s) or filling in the bubble. Once you have answered the questions, place this paper in the locked box. Only the evaluators from Clemson will have access to this box.

1. How many classes did you miss to come to the School Health Center today?
   o 1 (includes missing part of a class)
   o 2
   o 3
   o 4 or more
   o 0 (before or after school)
   o Not sure

2. If there was **not** a School Health Center what would you have done today?
   o Stayed in school
   o Gone home until I felt better
   o Gone somewhere else for care

3. During your visit with Ms. Holly & Ms. Lucia today, did they:

…explain things in a way that was easy to understand?	☐ Yes, definitely	☐ Yes, somewhat	☐ No
… give you easy-to-understand instructions about taking care of your health?	☐ Yes, definitely	☐ Yes, somewhat	☐ No
… spend enough time with you?	☐ Yes, definitely	☐ Yes, somewhat	☐ No
… treat you with courtesy and respect?	☐ Yes, definitely	☐ Yes, somewhat	☐ No
… give you advice you are likely to follow?	☐ Yes, definitely	☐ Yes, somewhat	☐ No

Appendix I. Unmatched Regressions

In addition to running regression analysis comparing impacts and outcomes between matched comparison students and treatment students, researchers also conducted regression analyses comparing outcomes for School-Based Health Center students to all students attending comparison schools. These regressions allowed researchers to assess the impact of the matching system on the overall conclusions of the study. Additionally, these unmatched regressions allowed researchers to compare the overall student populations in each comparison group to all students who utilized services at the School-Based Health Center.

Researchers examined differences in attendance outcomes between students receiving resources from School-Based Health Centers and students attending treatment, district, and state schools in the 2016-17 academic year. As shown in Table 59, School-Based Health Center students had significantly lower daily attendance rates than students attending treatment schools (p < 0.10). Additionally, when compared with students attending district schools, School-Based Health Center students had significantly lower daily attendance rates (p < 0.01) and they had significantly higher rates of chronic absenteeism (p <0.05). Lastly, when compared to students attending state schools, School-Based Health Center students had lower rates of average daily attendance (p < 0.01).

Table 59. Confirmatory Impact Unmatched Regression Results for Student Attendance AY 2016-17

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools		SBHC Students vs. Comparison Students: State Schools	
	Unmatched Regression (n = 1880)	Effect Size	Unmatched Regression (n = 3470)	Effect Size	Unmatched Regression (n = 45182)	Effect Size
Average Daily Attendance	**-0.77†** (0.46)	-0.13	**-1.24**** (0.44)	-0.25	**-1.23**** (0.44)	-0.20
Chronically Absent	0.16 (0.21)	0.09	**0.44*** (0.21)	0.24	0.26 (0.20)	0.14

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers examined differences in attendance outcomes between students receiving resources from School-Based Health Centers and students attending treatment and district comparison schools in the 2017-18 academic year. As shown in Table 60, School-Based Health Center students had significantly lower daily attendance rates (p < 0.10) and significantly higher rates of chronic absenteeism (p < 0.001) than students attending treatment schools in the 2017-18 academic year. Additionally, when compared with students attending district schools, School-Based Health Center students had significantly lower daily attendance rates (p < 0.01).

Table 60. Confirmatory Impact Unmatched Regression Results for Student Attendance 2017-18

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1976)	Effect Size	Unmatched Regression (n = 3544)	Effect Size
Average Daily Attendance	**-1.65**** (0.56)	-0.33	**-1.65**** (0.55)	-0.34
Chronic Absenteeism	**0.96***** (0.25)	0.53	-0.08 (0.49)	0.53

†*p* < 0.10, **p* < 0.05, ***p* < 0.01, ****p* < 0.001
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers examined differences in outcomes related to course performance between students receiving resources from School-Based Health Centers and students attending treatment, district, and state schools in the 2016-17 academic year. As shown in Table 61, School-Based Health Center students had significantly lower scores on the MAP Math (p < 0.05) and MAP Reading (p < 0.001) assessments when compared to students attending treatment schools in 2016-17. Additionally, when compared with students attending district schools, School-Based Health Center students had significantly lower scores on the MAP Math (p <0.001), MAP Reading (p < 0.001), SC Ready Math (p < 0.10), and SC Ready ELA (p < 0.10) assessments in the 2016-17 academic year. Lastly, when compared to students attending state schools, School-Based Health Center students had lower scores on the SC Ready ELA assessment (p < 0.01).

Table 61. Exploratory Impact Unmatched Regression Results for Course Performance AY 2016-17

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools		SBHC Students vs. Comparison Students: State Schools	
	Unmatched Regression (n = 1755)	Effect Size	Unmatched Regression (n = 3339)	Effect Size	Unmatched Regression (n = 42496)	Effect Size
MAP RIT - Math	**-3.20*** (1.31)	-0.20	**-12.5***** (1.29)	-0.75	---	---
MAP RIT - Reading	**-5.31***** (1.57)	-0.30	**-14.3***** (1.53)	-0.85	---	---
SC Ready - Math	5.34 (6.32)	0.07	**-10.4†** (6.16)	-0.13	-1.79 (6.04)	-0.02
SC Ready - ELA	3.89 (6.82)	0.05	**-11.2†** (6.66)	-0.13	**-3.07**** (1.15)	-0.04

†*p* < 0.10, **p* < 0.05, ***p* < 0.01, ****p* < 0.001
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers examined differences in outcomes related to course performance between students receiving resources from School-Based Health Centers and students attending treatment, district, and state schools in the 2017-18 academic year. As shown in Table 62, School-Based Health Center students

had significantly lower scores on the SC Ready Math ($p < 0.001$) and SC Ready Reading ($p < 0.001$) assessments when compared to students attending treatment schools in 2017-18. Additionally, when compared with students attending district schools, School-Based Health Center students had significantly lower scores on the SC Ready Math ($p < 0.001$), and SC Ready ELA ($p < 0.001$) assessments in the 2017-18 academic year.

Table 62. Exploratory Impact Unmatched Regression Results for Course Performance AY 2017-18

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1862)	Effect Size	Unmatched Regression (n = 3383)	Effect Size
SC Ready - Math	**-0.35***** (0.07)	-0.43	**-0.81***** (0.07)	-0.78
SC Ready - ELA	**-0.36***** (0.09)	-0.41	**-0.82***** (0.09)	-0.81

$^†p < 0.10$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers examined differences in behavioral outcomes between students receiving treatment at a School-Based Health Center and students attending treatment schools, district schools, and state schools in the 2016-17 academic year. As shown in Table 63, when compared with students attending treatment schools, School-Based Health Center students were significantly more likely to receive at least one behavioral referral ($p < 0.05$), at least one day of ISS ($p < 0.01$), and at least one day of OSS ($p < 0.01$) during the 2016-17 academic year. Further, School-Based Health Center students received an average of 1.08 more behavioral referrals ($p < 0.01$) and 1.78 more hours of ISS ($p < 0.05$) than students at treatment schools in the 2016-17 academic year. When compared to students attending district schools, School-Based Health Center students were more likely to receive at least one behavioral referral ($p < 0.001$) and at least one day of OSS ($p < 0.001$) during the 2016-17 academic year. Lastly, when compared to students attending state schools, School-Based Health Center students were significantly more likely to receive at least one behavioral referral ($p < 0.01$), at least one hour of ISS ($p < 0.001$), and at least one day of OSS ($p < 0.01$) during the 2016-17 academic year. Further, School-Based Health Center students received an average of 0.61 more behavioral referrals ($p < 0.05$), 0.25 more hours of ISS ($p < 0.05$), and 0.21 more days of OSS ($p < 0.10$) than students attending state schools in the 2016-17 academic year.

Researchers examined differences in behavioral outcomes between students receiving treatment at a School-Based Health Center and students attending treatment and district comparison schools in the 2017-18 academic year. As shown in Table 64, when compared with students attending treatment schools, School-Based Health Center students were significantly more likely to receive at least one behavioral referral ($p < 0.05$), at least one day of ISS ($p < 0.001$), and at least one day of OSS ($p < 0.001$) during the 2017-18 academic year. Further, School-Based Health Center students received an average of 1.60 more behavioral referrals ($p < 0.01$), 1.85 more hours of ISS ($p < 0.05$), and 1.70 more days of OSS ($p < 0.001$) than students at treatment schools in the 2017-18 academic year. When compared to students attending district schools, School-Based Health Center students were more likely to receive at least one behavioral referral ($p < 0.001$), at least one hour of ISS ($p < 0.05$), and at least one day of OSS ($p < 0.001$) during the 2017-18 academic year. Further, School-Based Health Center students received an

average of 1.91 more behavioral referrals (p < 0.001) and 1.73 more days of OSS (p < 0.001) than students attending district schools in the 2017-18 academic year.

Table 63. Exploratory Impact Unmatched Regression Results for Student Behavior AY 2016-17

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools		SBHC Students vs. Comparison Schools: State Schools	
	Unmatched Regression (n = 1880)	Effect Size	Unmatched Regression (n = 3473)	Effect Size	Unmatched Regression (n = 45,182)	Effect Size
Any Behavioral Referral	**0.36*** (0.16)	0.20	**0.75***** (0.16)	0.41	**0.45**** (0.15)	0.25
# Behavioral Referrals	**1.08**** (0.40)	0.28	**1.51***** (0.39)	0.43	**0.61*** (0.31)	0.15
Any ISS	**0.56**** (0.17)	0.31	0.48** (0.17)	0.27	**0.55***** (0.16)	0.31
# Hours ISS	**1.78*** (0.77)	0.22	0.36 (0.77)	0.03	**0.25*** (0.12)	0.16
Any OSS	**0.46**** (0.18)	0.26	**0.76***** (0.17)	0.42	**0.52**** (0.17)	0.29
# Days OSS	0.36 (0.26)	0.13	0.37 (0.26)	0.11	**0.21†** (0.12)	0.15

†*p* < 0.10, *p* < 0.05, **p* < 0.01, ***p* < 0.001
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Table 64. Exploratory Impact Unmatched Regression Results for Student Behavior AY 2017-18

	SBHC Students vs. Comparison Students: Treatment Schools		SBHC Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 2,023)	Effect Size	Unmatched Regression (n = 3,612)	Effect Size
Any Behavioral Referral	**0.45*** (0.21)	0.25	**0.81***** (0.21)	0.45
# Behavioral Referrals	**1.60**** (0.57)	0.42	**1.91***** (0.56)	0.52
Any ISS	**0.77***** (0.22)	0.43	**0.51*** (0.22)	0.28
# Hours ISS	**1.85*** (0.86)	0.30	-0.71 (0.88)	-0.06
Any OSS	**0.91***** (0.22)	0.50	**1.26***** (0.21)	0.69
# Days OSS	**1.70***** (0.44)	0.60	**1.73***** (0.44)	0.52

†*p* < 0.10, *p* < 0.05, **p* < 0.01, ***p* < 0.001
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers examined differences in outcomes measuring students' medical homes between students receiving treatment from a School-Based Health Center and students attending treatment and district comparison schools in the 2016-17 academic year. As shown in Table 65, there were few differences in outcomes on students' medical home. However, when compared to students attending treatment schools, School-Based Health Center students were significantly more likely to report using a School Health room as a primary resource in receiving medical treatment ($p < 0.01$). Additionally, when compared to students attending district schools, School-Based Health Center students were significantly more likely to report using a school health room ($p < 0.001$) and less likely to report going to a doctor's office ($p < 0.01$) as a primary means of receiving medical treatment during the 2016-17 academic year.

Table 65. Exploratory Secondary Unmatched Regression Outcome Results for Medical Home AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,138)	Effect Size	Unmatched Regression (n = 2,720)	Effect Size
Doctor's Office	-0.23 (0.22)	-0.13	**-0.69**** (0.21)	-0.38
Emergency Room	-0.61 (0.47)	-0.34	0.24 (0.47)	0.13
School Health Room	**0.63**** (0.24)	0.35	**0.94***** (0.23)	0.52
Somewhere Else	-0.73 (0.73)	-0.40	-1.15 (0.72)	-0.62
Do not know	0.06 (0.30)	0.03	0.40 (0.30)	0.22

$^{†}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers examined differences in outcomes measuring students' medical homes between students receiving treatment from a School-Based Health Center and students attending treatment and district comparison schools in the 2017-18 academic year. As shown in Table 66, there were several differences in outcomes on students' medical home. When compared to students attending treatment schools, School-Based Health Center students were significantly more likely to report using a School Health room ($p < 0.10$) and the emergency room ($p < 0.10$) as a primary resource in receiving medical treatment. However, these students were less likely to report going to a doctor's office as a primary means of receiving medical treatment ($p < 0.10$). When compared to students attending district schools, School-Based Health Center students were significantly more likely to report using a school health room ($p < 0.05$) and and an emergency room ($p < 0.01$), but they were less likely to report going to a doctor's office ($p < 0.01$) as a primary means of receiving medical treatment during the 2017-18 academic year.

Table 66. Exploratory Secondary Outcome Unmatched Regression Results for Medical Home AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,351)	Effect Size	Unmatched Regression (n = 2,541)	Effect Size
Doctor's Office	**-0.52†** (0.29)	-0.29	**-1.02***** (0.28)	-0.56
Emergency Room	**0.78†** (0.40)	0.43	**1.28**** (0.39)	0.71
School Health Room	**0.52†** (0.31)	0.29	**0.77*** (0.31)	0.43
Somewhere Else	0.04 (0.53)	0.02	0.05 (0.53)	0.03
Do not know	-0.28 (0.39)	-0.16	0.18 (0.39)	0.10

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. ^ The bootstrapping method did not converge for this outcome. The original SEs are presented.
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers compared physical and mental health outcomes between students who received treatment from a School-Based Health Center and students attending treatment and district comparison schools during the 2016-17 academic year. As shown in Table 67, there were no significant differences on physical and mental health outcomes between School-Based Health Center students and students attending treatment and district schools during the 2016-17 academic year.

Table 67. Exploratory Outcome Unmatched Regression Results for Self-Reported Health AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,144)	Effect Size	Unmatched Regression (n = 2,723)	Effect Size
Physical Health	0.18 (0.20)	0.10	-0.09 (0.19)	-0.05
Mental Health	-0.14 (0.20)	-0.08	-0.19 (0.19)	-0.11

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.
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Researchers compared physical and mental health outcomes between students who received treatment from a School-Based Health Center and students attending treatment and district comparison schools during the 2017-18 academic year. As shown in Table 68, there were no significant differences on

physical and mental health outcomes between School-Based Health Center students and students attending treatment and district schools during the 2017-18 academic year.

Table 68. Exploratory Outcome Unmatched Regression Results for Self-Reported Health AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,353)	Effect Size	Unmatched Regression (n = 2,546)	Effect Size
Physical Health	0.07 (0.26)	0.04	-0.41 (0.26)	-0.22
Mental Health	0.06 (0.25)	0.03	-0.06 (0.22)	-0.03

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers compared student self-confidence outcomes between students who received treatment from a School-Based Health Center and students attending treatment and district comparison schools during the 2016-17 academic year. As shown in Table 69, there were no significant differences in either self-confidence outcome between School-Based Health Center students and students attending treatment schools in the 2016-17 academic year. However, when compared to students attending district schools, School-Based Health Center students reported significantly lower levels of academic self-confidence during the 2016-17 academic year (p < 0.05).

Table 69. Exploratory Outcome Unmatched Regression Results for Student Self-Confidence AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 1,150)	Effect Size	Matched Regression (n = 2,727)	Effect Size
Academic Perseverance	0.03 (0.07)	0.05	-0.03 (0.07)	-0.05
Academic Self-Confidence	0.00 (0.07)	0.00	**-0.15*** (0.07)	-0.25

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers compared student self-confidence outcomes between students who received treatment from a School-Based Health Center and students attending treatment and district comparison schools during the 2017-18 academic year. As shown in Table 70, there were no significant differences in either self-confidence outcome between School-Based Health Center students and students attending treatment schools in the 2017-18 academic year. However, when compared to students attending district schools, School-Based Health Center students reported significantly lower levels of academic perseverance (p < 0.01) and academic self-confidence (p < 0.001) during the 2017-18 academic year.

Table 70. Exploratory Outcome Unmatched Regression Results for Student Self-Confidence AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,356)	Effect Size	Unmatched Regression (n = 2,555)	Effect Size
Academic Perseverance	-0.16 (0.10)	-0.25	**-0.25**** (0.10)	-0.38
Academic Self-Confidence	-0.09 (0.09)	-0.14	**-0.28***** (0.08)	-0.44

†*p* < 0.10, *p* < 0.05, **p* < 0.01, ***p* < 0.001
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers compared outcomes measuring students' relationships with adults in their school between students who received treatment from a School-Based Health Center and students who attended treatment and district schools during the 2016-17 academic year. As shown in Table 71, there were no significant differences in relationships with teachers or caring adults between School-Based Health Center students and students attending treatment schools during the 2016-17 academic year. However, when compared to students attending district schools, School-Based Health Center students reported significantly stronger relationships with teacher (p < 0.05) during the 2016-17 academic year.

Table 71. Exploratory Outcome Unmatched Regression Results for Relationships with Adults AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,150)	Effect Size	Unmatched Regression (n = 2,727)	Effect Size
Relationships with Teachers	-0.06 (0.08)	-0.08	**0.21*** (0.12)	0.27
Relationships with Caring Adults	0.00 (0.08)	0.00	-0.04 (0.08)	-0.05

†*p* < 0.10, *p* < 0.05, **p* < 0.01, ***p* < 0.001
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers compared outcomes measuring students' relationships with adults in their school between students who received treatment from a School-Based Health Center and students who attended treatment and district schools during the 2017-18 academic year. As shown in Table 72, there were no significant differences in relationships with teachers or caring adults between School-Based Health Center students and students attending treatment schools and district schools during the 2017-18 academic year.

Table 72. Exploratory Outcome Unmatched Regression Results for Relationships with Adults AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,356)	Effect Size	Unmatched Regression (n = 2,555)	Effect Size
Relationships with Teachers	0.02 (0.12)	0.03	0.13 (0.12)	0.16
Relationships with Caring Adults	0.02 (0.11)	0.02	-0.01 (0.11)	-0.01

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers compared school engagement outcomes between students who received treatment from a School-Based Health Center and students attending treatment and district comparison schools during the 2016-17 academic year. As shown in Table 73, there were no significant differences in either school engagement outcome between School-Based Health Center students and students attending treatment schools in the 2016-17 academic year. However, when compared to students attending district schools, School-Based Health Center students reported significantly higher levels of school engagement during the 2017-18 academic year ($p < 0.05$).

Table 73. Exploratory Outcome Unmatched Regression Results for School Engagement AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Matched Regression (n = 1,150)	Effect Size	Matched Regression (n = 2,727)	Effect Size
School Engagement	0.09 (0.09)	0.12	**0.16†** (0.08)	0.21
School Belonging	0.05 (0.09)	0.06	0.12 (0.09)	0.14

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers compared school engagement outcomes between students who received treatment from a School-Based Health Center and students attending treatment and district comparison schools during the 2017-18 academic year. As shown in Table 74, when compared to students attending treatment schools, School-Based Health Center students reported significantly higher levels of school belonging during the 2017-18 academic year ($p < 0.10$). Additionally, when compared to students attending district schools, School-Based Health Center students reported significantly higher levels of school belonging during the 2017-18 academic year ($p < 0.10$).

Table 74. Exploratory Outcome Unmatched Regression Results for School Engagement AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,356)	Effect Size	Unmatched Regression (n = 2,555)	Effect Size
School Engagement	0.08 (0.11)	0.10	0.04 (0.11)	0.05
School Belonging	**0.20†** (0.12)	0.24	**0.19†** (0.12)	0.22

†*p* < 0.10, *p* < 0.05, **p* < 0.01, ***p* < 0.001
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Researchers compared outcomes measuring students' attitude toward education between students who received treatment from a School-Based Health Center and students who attended treatment and district schools during the 2016-17 academic year. As shown in Table 75, there were no significant differences in self-reported value of education between School-Based Health center students and students attending treatment and district schools in the 2016-17 academic year.

Researchers compared outcomes measuring students' attitude toward education between students who received treatment from a School-Based Health Center and students who attended treatment and district schools during the 2017-18 academic year. As shown in Table 76, there were no significant differences in self-reported value of education between School-Based Health center students and students attending treatment and district schools in the 2017-18 academic year.

Table 75. Exploratory Outcome Unmatched Regression Results for Attitude toward Learning AY 2016-17

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,150)	Effect Size	Unmatched Regression (n = 2,727)	Effect Size
Valuing Education	-0.02 (0.07)	-0.03	-0.01 (0.07)	-0.02

†*p* < 0.10, *p* < 0.05, **p* < 0.01, ***p* < 0.001
Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

Table 76. Exploratory Outcome Unmatched Regression Results for Attitude toward Learning AY 2017-18

	School-Based Health Center Students vs. Comparison Students: Treatment Schools		School-Based Health Center Students vs. Comparison Students: District Schools	
	Unmatched Regression (n = 1,356)	Effect Size	Unmatched Regression (n = 2,555)	Effect Size
Valuing Education	0.13 (0.08)	0.19	0.06 (0.08)	0.09

$^\dagger p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Note: Table presents the regression coefficients of the SBHC variable and robust SE in parentheses from multivariate regressions that also control for student demographics, grade, and pretreatment outcome measure.

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