

Report on Cohort 9 of the North Carolina 21st Century Community Learning Center Program

September 2014

Prepared for the North Carolina
Department of Public Instruction by
SERVE CENTER at UNCG

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Executive Summary of Findings

Description of the grantees, centers, students served, and attendance levels

Grantees/centers. Of the 85 Cohort 9 grantees, the largest category of grantees is community based organizations; there are 34 grantees in this category operating an average of 2 centers and serving an average of 139 students. The next largest category is school districts, with 23 grantees operating an average of 3 centers, usually in different school locations, and serving an average of 265 students. Faith-based organizations are third largest, with 15 grantees averaging 1 center and 108 students. Overall, the number of centers per grantee ranged from 1 to 8 with an average of 2 centers. Grantees served an average of 178 students; centers served an average of 76 students.

Students served. Of the over 15,000 participants in 2012-13, fifth grade had the most students served (2,205 or 15%). The number of students increased through fifth grade and then decreased through middle school. The participation at the high school level was the lowest (9% compared to 27% at middle and 64% at elementary). In terms of the 2013 state test results, 78% of the students were below proficient on the reading End-of-Grade (EOG) test and 76% were below proficient on the math EOG test.

Center attendance levels. Of the over 15,000 students served, 21% of students attended the program less than 30 days (or roughly 3 days per month) which is considered the threshold definition for a “regular attendee”; 47% attended the program between 30-89 days, and 32% attended for 90 days or more. The majority of centers (73%) reported average attendance rates between 30 and 89 days (approximately 3 to 6 days per month).

Extent of year-to-year change on reading and math EOG tests by Cohort 9 students

As a first step in exploring the state test results for Cohort 9 students in grades 4-8 (grade levels for which they had a prior year of state test data for comparison), we analyzed the average year-to-year change in EOG scores in reading and math relative to the students’ overall position in the state population on the particular grade-level test.

Year-to-year changes in EOG reading and math test scores by grade level. At all grade levels (4-8), the Cohort 9 participants achieved slightly less year-to-year change on the state EOG reading tests than the overall state population. Compared to the EOG reading year-to-year change score results, on EOG math tests, the 21st CCLC students were slightly closer to the state population in terms of magnitude of change from the previous year’s test but still lower, on average, than the state year-to-year change.

Year-to-year changes in EOG reading and math test scores by prior proficiency levels. Cohort 9 students’ proficiency levels on the 2012 state EOG tests were used to categorize them into four “incoming” proficiency levels. The year-to-year change scores were averaged across all students (and all grades) within each of the four proficiency categories. The average year-to-year change on the EOG in math for students scoring at Level I in 2012 was greater than the average year-to-year change in math for all students across the state. That is, 21st CCLC students who scored at Level I on the math EOG in 2012 had greater year-to-year change from the 2012 to the 2013 test than the state population year-to-year average. In reading, 21st CCLC students who scored at Level I on the EOG test in 2012 also had slightly greater year-to-year change than the state population but not as great as the magnitude of the change for math.

In other words, the students participating in Cohort 9 who scored at Level I in 2012 had greater gains in 2013 in reading and math than the state population of Level I students. This was not the case for Cohort 9 students scoring at Level III and IV in 2012. Their year-to-year change was slightly lower than that state average for all students scoring at Level III and IV in 2012.

Variation in centers' average year-to-year change in reading and math EOG test scores

A critical question for state program staff in managing the grant program is which centers are realizing better achievement outcomes for their participants. Having good data about which centers are serving students with above average year-to-year changes on EOG tests relative to the state population allows for future exploration of why such differences exist. Thus, we described how the centers varied in terms of how many achieved less average year-to-year change than the state population and how many achieved greater average year-to-year change than the state.

The range of year-to-year change scores on the EOG reading test for students attending Cohort 9 centers suggests that some centers served students who, on average, tended to have less year-to-year change than the state population, whereas other centers served students who showed greater average year-to-year change than the state population. For EOG reading tests, of the 141 Cohort 9 centers included in the analysis, 124 had year-to-year change scores less than the state population, with 17 centers at or above the state population year-to-year change. For the EOG math tests, of the 142 centers in the analysis, 107 had year-to-year change scores below the state year-to-year change and 35 had equal or higher year-to-year change compared to the state year-to-year change.

Future considerations

This report represents a first step towards a longer-term NCDPI goal of accurately describing and better understanding the student outcomes of students participating in the 21st CCLC program. There are several reasons for continued analyses of student outcome data in subsequent years. One is increased understanding by state program staff of variability across centers in year-to-year changes in student outcomes of various types so that they can explore characteristics of the centers with the greatest gains. The second is to provide feedback to grantees and centers about where they fall relative to other centers in their students' year-to-year changes in important academic outcomes (to encourage discussions about ways to improve center programs).

REPORT ON COHORT 9 OF THE NORTH CAROLINA 21st CENTURY COMMUNITY LEARNING CENTER PROGRAM (2012-13)

Introduction

In the fall of 2013, the North Carolina Department of Public Instruction (NCDPI) contracted with SERVE Center to examine existing student-level state data on students participating statewide in the 21st Century Community Learning Center (21st CCLC) program. The 21st CCLC program is a federal grant program administered by NCDPI, with grantees (local education agencies, community-based, faith-based, or other organizations) operating a specified number of centers during out-of-school time hours (at least 12 hours per week). NCDPI awarded grants to nine cohorts of grantees between 2002 and July 2010. The 85 grantees receiving their awards in July 2010 are called “Cohort 9.” Grantees receive funding for four years, so during the 2012-13 school year, Cohort 9 grantees were in their third year. Students reported as attending Cohort 9 centers in 2012-13 are the focus of this report. That is, this report presents findings based on data provided to SERVE Center by NCDPI on over 15,000 students attending programs administered by the 85 grantees of Cohort 9 in 2012-13.

In this report, the study goals were to describe:

1. the Cohort 9 grantees and associated centers, their students served, and students’ attendance levels in the centers for the 2012-13 school year;
2. year- to-year changes across two years (from 2012 to 2013) of state achievement test data in reading and math for grades 4-8 Cohort 9 students; and
3. variation in centers’ average year-to-year change in their students’ reading and math EOG test scores.

This report takes advantage of student-level participant data available for the first time in the fall of 2013 through the use of an NCDPI-developed 21st CCLC online reporting system for grantees. The analyses relative to the second and third study goals above were exploratory in that they represent a first step towards merging available data on participating students from various NCDPI databases and understanding the extent of student year-to-year changes in academic outcomes (state reading and math test scores). NCDPI’s intent in generating this data set for analysis was to explore variation among grantees and centers in participating students’ year-to-year test scores. This information on academic outcomes and student participation, in conjunction with other information on grantee/center program quality, will be useful to NCDPI for program improvement purposes.

Federal funding for 21st Century Community Learning Centers. The NCDPI 21st CCLC awards, using federal funding authorized under Title IV, Part B of the Elementary and Secondary Education Act, provide before- and after-school, weekend, and summer school academic enrichment opportunities for children attending low-performing schools to help them meet local and state academic standards in such subjects as reading, mathematics, and science. Awards can

be made to school districts, non-profit or for-profit organizations, faith-based organizations, or others to operate centers. A “grantee” is the entity serving as the fiduciary agent for a given 21st CCLC grant. A “center” is considered to be the physical location where grant-funded services and activities are provided to participating students and adults.¹ (As a result of a successful ESEA waiver application, effective in 2012-13, centers in North Carolina may offer services on a limited basis to extend the regular school day.) Programs may provide additional activities for youth development, drug and violence prevention, art, music, technology, character education, counseling, and recreation to enhance academic programming. The program also supports a component for family literacy and community outreach. Grantees can request funds for up to \$400,000 per year for four years. Program guidelines define eligible students as those primarily attending low-income schools.

Background on 21st CCLC grantees in North Carolina. NCDPI has operated a competitive grant award program to fund 21st Century Community Learning Centers since 2002. Each four-year group of grantees is called a cohort. NCDPI funded the first cohort in 2002 with 16 grantees receiving four-year awards. Cohorts 2-8 (2003–2009) averaged 20 grantees per cohort. Prior to 2010, NCDPI had awarded grants to a total of 157 organizations. In July of 2010, NCDPI awarded funds to 85 grantees totaling roughly \$24,982,787 million (“first year dollar amount awarded”). Thus, Cohort 9 was the largest number of grantees to-date, roughly half of all awarded grants prior to that time. In total, the 85 grantees reported operating a total of 198 center locations in the 2012-13 school year, with the number of center locations per grantee ranging from one to eight. Cohort 9 grantees, the focus of this report, were in their third year of their four-year award in 2012-13.

Available data to examine student outcomes. The U.S. Department of Education maintains a national database/reporting system for 21st CCLC grantees (the 21st Century Community Learning Centers Profile and Performance Information Collection System Database—PPICS). The purpose of the PPICS database is to collect information about the characteristics of 21st CCLC grantees funded by the states and about the outcomes the grantees report on those students attending their programs (ppics.learningpt.org/public.asp).

All states and their grantees are required to enter program and performance data into this system for national reporting purposes. Until 2012, grantees from North Carolina entered their data directly into this national reporting database. They entered various programmatic data (e.g., staffing, activities) about their operations and also aggregate student data in the form of attendance in program activities, school grades, teacher reports on student progress, and state achievement test results. Because the data entered on students served was in aggregate form and entered directly by grantees, it was difficult for NCDPI to determine its accuracy. Beginning with data submitted for fiscal year 2011-12, NCDPI required sub-grantees to submit data through the Consolidated Federal Data Collection System (CFDC) to compile performance measure data from all sub-grantees statewide. The system allows the state to link students participating in 21st CCLC programs with data already collected by the state to increase the scope and validity of data collected to address specific performance measures such as academic outcomes and attendance.

¹ Grantee and center definitions: <http://ppics.learningpt.org/ppicsnet/public/supportDefinitions.aspx>

The 85 Cohort 9 grantees entered data requested by NCDPI on those students served in 2012-13 into this new system. NCDPI provided SERVE with longitudinal state End-of-Grade reading and math test scores for those Cohort 9 students.

Methodology

Sample. SERVE requested two years of student outcome data (e.g., state test scores, demographic variables) from NCDPI on the students reported by Cohort 9 grantees as having participated in their programs during the 2012-13 school year. These student level outcomes data were then merged with data provided by the NCDPI Federal Program Monitoring and Support Division that linked students to the 21st Century Community Learning Centers they attended.

SERVE’s work on merging and cleaning data that links students participating in Cohort 9 funded centers with their state achievement records was a first step towards describing student outcomes. While merging and cleaning the data, 63 student records with anomalous data² were deleted, resulting in a final analysis sample of 15,089. This sample represents students across all grade levels reported as served by the 21st CCLC grantees in 2012-13 regardless of the number of days of participation.

In addressing the second and third study goals, the sample only included students in grade 4-8 who had two years of EOG test scores in reading or math (2012 and 2013). Below are the percent of students within each grade (and overall) who had two years of data on the reading and math EOG tests. As shown in Table 1, our analytic samples for study goals two and three were 83% and 84% of the total number of Cohort 9 students reported as served in grades 4 through 8. (For study goal three, centers had to have at least 15 students with two years of data to be included in the analyses.)

Table 1. Percent of Students with 2012 and 2013 Reading and Math EOG Test Scores

Grade	Reading	Math	Total Number of Students Served in 2012-2013
4	82%	83%	2069
5	82%	85%	2205
6	84%	84%	1651
7	85%	86%	1353
8	80%	81%	1070
Total	83%	84%	8348

While this report describes year-to-year change in achievement for students participating in Cohort 9 programs in 2012-13, these year-to-year change scores should **not be** interpreted as an evaluation of the effectiveness of the program. That is, the analyses of year-to-year test score

² A total of 63 cases were deleted due to inconsistent values across records (i.e., inconsistent gender across years, multiple reading or math scores for the same year, etc.)

changes for Cohort 9 students are not meant to suggest a causal link (that the positive or negative changes reflect grantee or center effectiveness). The following points outline important issues to consider when interpreting the year-to-year changes in academic outcomes.

- 1) After-school programs are only a small part of a typical school day. Students may have experienced significant academic growth because of exceptional teachers or other programming during the school day. Isolating the specific effects of after-school programs on student academic outcomes from other potential influences (e.g., the effect of teacher or school) would require a data collection and analysis design capable of supporting such claims. The data available for the current study are not sufficient to isolate the effects of after-school programs.
- 2) Grantees focus on different programming elements and although they must focus on academic programming, they also engage in non-academic programming for which there are currently no statewide data.
- 3) North Carolina End-of-Grade tests in reading and math were in a period of transition during the time of this study. This transition poses a challenge to describing year-to-year achievement change from 2012 to 2013. For example, the state tests administered in 2012 were different than those administered in 2013, both in terms of content and reporting scale. The state tests administered in 2013 were aligned with the new North Carolina Standard Course of Study first implemented in the 2012-13 school year. The new assessments were more rigorous and challenging than the previous year, leading to lower percentages of students scoring proficient. The differences in state tests across the two years had implications for the methodology that could be used to describe student achievement growth from 2012 to 2013 (described in a subsequent section).

Analyses. In order to address the proposed study goals, three analyses were conducted.

1) For the first study goal regarding the grantees, centers, and students served in the 21st CCLC program, descriptive statistics were used. First, grantee and center characteristics were described. Second, individual characteristics of students (gender, achievement, attendance in centers) were used to describe the students served by the 21st CCLC program.

2) The second study goal aimed to describe the year-to-year change for Cohort 9 grade 4-8 students (year-to-year change from their 2012 reading and math EOG scores to their 2013 reading and math EOG scores). The analyses were conducted using all students in grade 4-8 who participated in 21st CCLC Cohort 9 programs (across all grantees and centers) and had two years of data. Because the state reading and math tests differed across years and grades, and a common reporting scale was not used across successive grades, the 2012-to-2013 achievement gain assigned to each student was based on the change of in the student's relative position in the distribution of the state population for that student's grade from 2011-12 to 2012-13. In particular, test scores within each grade of each year (2012 and 2013) were standardized based on the state-level distribution of reading and math scores for the grade and year in question. Then, each student was assigned a year-to-year change score based on the difference in their standardized scores from 2012 to 2013 (a description of the calculation and interpretation of the year-to-year change scores is provided in a subsequent section). The resulting year-to-year change scores were then averaged for each grade and incoming EOG proficiency level.

3) The third study goal was to describe the variability of the average year-to-year change in grade 4-8 achievement by Cohort 9 centers. The standardized year-to-year change scores from the analyses conducted for the second study goal were used to compute an average year-to-year change for each center with at least 15 students. The variability in average year-to-year change across centers was described.

Results

The results are organized by the three study goals, that is, to describe:

1. the Cohort 9 grantees and associated centers, their students served, and students' attendance levels in the centers for the year 2012-13;
2. year-to-year changes across two years (2012 and 2013) of state achievement test data in reading and math for grades 4-8 Cohort 9 students; and
3. variation in centers' average year-to-year change in students' reading and math EOG test scores.

1. Description of the grantees, centers, students served, and attendance levels

Grantees and Centers. Cohort 9 consisted of a total of 85 “grantees.” A grantee is an entity serving as the fiduciary agent for a given 21st CCLC grant. Grantees include both school-based organizations and non-school-based organizations. As shown in Table 2, roughly 70% of Cohort 9 grantees are non-school-based organizations—including community-based organizations (40%), faith-based organizations (18%), various nationally affiliated nonprofit agencies (5%), and for-profit entities (5%). A total of 28% of Cohort 9 are school-based organizations—including one charter school grantee.

Table 2. Type of Grantee

Grantee Type	Number of Grantees
School District (SD)	23
Charter School (CS)	1
Other Unit of City or County Government (UG)	3
Community-Based Organization (CBO)	34
Faith-Based Organization (FBO)	15
Nationally Affiliated Nonprofit Agency—Boys & Girls Club (CLUB)	1
Nationally Affiliated Nonprofit Agency—YMCA/YWCA (Y)	1
For-Profit Entity (FPC)	4
Nationally Affiliated Nonprofit Agency (NANPA)	2
Other	1

Number of centers. The 85 grantees manage a range of one to eight “centers” (i.e., the physical location where grant-funded services and activities are provided to participating students). Almost half of Cohort 9 grantees manage one center (39 out of 85) while a small percentage of grantees manage over five centers (6%).

Table 3. Number of Centers by Grantee

Number of Centers	Number of Grantees
One Centers	39
Two Centers	16
Three Centers	11
Four Centers	10
Five Centers	4
Six Centers	2
Seven Centers	2
Eight Centers	1

Number of feeder schools. Cohort 9 grantees reported serving students from one to 23 “feeder schools” (i.e., any public or private school that provides students to the 21st CCLC). Approximately 80% of grantees work with between one to six feeder schools.

Table 4. Number of Feeder Schools by Grantee

Number of Feeder Schools	Number of Grantees
1 to 3 feeder schools	32
4 to 6 feeder schools	34
7 to 9 feeder schools	7
10 to 19 feeder schools	9
20 or more feeder schools	3

Number of students. Cohort 9 grantees reported serving a range of 15 to 682 students—with a faith-based organization serving the fewest number of students with one center and a school district serving the highest number of students through four centers. Note that these values represent the total number of students participating in programs regardless of the number of days of participation. The majority of grantees served fewer than 200 students; however, five grantees served 400 or more.

Table 5. Number of Students by Grantee

Number of Students	Number of Grantees
Under 100 students	28
100 to 199 students	26
200 to 299 students	23
300 to 399 students	3
400 or more students	5

Table 6 below presents the average number of students per center. The largest number of centers (67 of 198) served between 30 and 59 students. Again, these values represent the total number of students who participated, not just regular attendees.

Table 6. Number of Students by Center

Number of Students	Number of Centers	Percent of Centers
Under 15 students	4	2%
15 to 29 students	20	10%
30 to 59 students	67	34%
60 to 89 students	50	25%
90 or more students	57	29%

Table 7 below describes the average number of centers, number of feeder schools served, total number of students reported as participating, and number of students per feeder school across the 85 Cohort 9 grantees. The number of centers per grantee ranged from 1 center to 8 centers with an average of 2 center locations. Grantees served an average of 178 students; however, there was a wide range of students served per grantee, from 15 to 682. At the center level, an average of 76 students served was reported. Grantees served an average of 6 feeder schools.

Table 7. Descriptive Statistics for Grantees, Centers, and Feeder Schools

	Average	Minimum	Maximum
Number of Centers per Grantee	2	1	8
Number of Students per Grantee	178	15	682
Number of Students per Center	76	2	325
Number of Feeder Schools Served per Grantee	6	1	23
Average Number of Students per Feeder School	38	1	242

Table 8 describes the average number of centers and students served by grantee type. The far right column shows how many grantees are categorized into each type. There are 23 grantees that are school districts, with an average of 3 centers and serving an average of 265 students. The largest category of grantees is community based organizations; there are 34 grantees in this category with an average of 2 centers serving an average of 139 students.

Table 8. Average Number of Centers and Students Served by Grantee Type

	Average # Centers	Average # Students	Grantee (N)
School District (SD)	3	265	23
Charter School (CS)	1	272	1
Other Unit of City or County Government (UG)	3	319	3
Community-Based Organization (CBO)	2	139	34
Faith-Based Organization (FBO)	1	108	15
Nationally Affiliated Nonprofit Agency—Boys & Girls Club (CLUB)	1	72	1
Nationally Affiliated Nonprofit Agency—YMCA/YWCA (Y)	3	469	1
For-Profit Entity (FPC)	1	72	4
Nationally Affiliated Nonprofit Agency (NANPA)	6	221	2
Other	4	137	1

Students participating. Of the 15,089 participants, fifth grade had the most students served (2,205 or 15%). As can be seen in Table 9, the number of students served increases through fifth grade and then decreases through middle school. The participation at the high school level was the lowest (9% compared to 27% at middle and 64% at elementary). The percentage of white students who participated is under 20% at all grade levels except for pre-kindergarten (PK) and grades 6-8. African-American students represent a majority of those served at all grade levels (over 50%) except for grades 6-8. For high school, African-American students represent over 70% of those served. Hispanic students represent about a fifth of those served in elementary school grades but less (5-15%) in middle and high school.

Table 9. Students Participating in Cohort 9 in 2012-13 by Grade Level, Gender, and Ethnicity

Grade	Students Served	Female	Male	African American	Hispanic	White	Other	%LEP
PK	6	50%	50%	67%	0%	33%	0%	0%
KG	889	51%	49%	61%	20%	14%	5%	13%
1	1177	50%	50%	60%	20%	16%	4%	15%
2	1354	50%	50%	60%	19%	15%	5%	15%
3	1897	51%	49%	57%	20%	17%	6%	15%
4	2069	50%	50%	56%	18%	19%	7%	8%
5	2205	53%	47%	56%	19%	18%	7%	8%
6	1651	50%	50%	49%	15%	29%	7%	8%
7	1353	50%	50%	44%	12%	39%	6%	7%
8	1070	51%	49%	41%	10%	42%	7%	5%
9	469	52%	48%	74%	8%	13%	5%	4%
10	392	57%	43%	73%	7%	17%	4%	1%
11	319	56%	44%	79%	5%	10%	6%	1%
12	232	53%	47%	79%	9%	7%	4%	3%
Other ^a	6	50%	50%	83%	0%	17%	0%	0%
Total	15089	51%	49%	56%	16%	22%	6%	9%

^a These students were labeled as “GR.”

The 21st CCLC program is intended to serve students who attend low-performing schools and to provide academic enrichment activities to help students meet academic standards. State End-of-Grade (EOG) test results are reported according to the following four proficiency levels:

- Level I: Students have **limited command** of knowledge and skills,
- Level II: Students have **partial command** of the knowledge and skills,
- Level III: Students have **solid command** of the knowledge and skills,
- Level IV: Students have **superior command** of the knowledge and skills.

Given the focus of the 21st CCLC on low-performing school students, it is germane to consider the distribution across these four proficiency levels for Cohort 9 students. Tables 10 and 11 below show the percentage of Cohort 9 students, by grade level, scoring at the four proficiency levels on the 2012 and 2013 state EOG reading and math tests, respectively.

Table 10 shows that in 2012, 49% of students subsequently served in Cohort 9 programs scored at a Level I or II in reading; 30% of students scored at a Level I or II in math. That is, a majority of Cohort 9 students (52% in reading and 71% in math) scored at or above proficient levels (Level III or IV) on the 2012 EOG.

Table 10. 2012 Math and Reading EOG Incoming Proficiency Levels

Grade Level in 2012	Reading (%) N = 7494				Math (%) N = 7545			
	I	II	III	IV	I	II	III	IV
3	25%	26%	42%	7%	5%	24%	59%	11%
4	17%	35%	42%	6%	5%	23%	62%	10%
5	20%	31%	45%	4%	6%	30%	55%	10%
6	17%	21%	53%	9%	4%	24%	56%	17%
7	15%	29%	38%	18%	4%	19%	57%	19%
8	24%	35%	38%	3%	8%	36%	47%	10%
Total N	1487	2172	3262	573	371	1870	4357	947
%	20%	29%	44%	8%	5%	25%	58%	13%

Table 11 indicates that in 2013, the percentages of Cohort 9 students scoring proficient (Level III or IV) across grades 3-8 was much lower (22% in reading and 25% in math) than in 2012. This is likely due to the alignment of state tests with North Carolina Standard Course of Study in 2012-13 (making the state tests more rigorous and challenging). Thus, the changes from Table 10 to Table 11 are due to the changing content of the state tests. To be clear, the information provided in Tables 10 and 11 is simply for describing the proficiency levels of the Cohort 9 students served in the 21st CCLC programs (not to compare their achievement results from 2012 to 2013). Analyses described in the next section will appropriately describe year-to-year changes.

Table 11. 2013 Math and Reading EOG Proficiency Levels

Grade Level in 2013	Reading (%) N = 7989				Math (%) N = 8043			
	I	II	III	IV	I	II	III	IV
3	43%	40%	14%	2%	45%	34%	17%	4%
4	39%	40%	21%	1%	44%	30%	21%	5%
5	46%	40%	14%	1%	43%	30%	23%	4%
6	30%	45%	21%	3%	60%	21%	15%	4%
7	23%	45%	27%	5%	53%	21%	19%	7%
8	29%	44%	24%	4%	48%	26%	20%	6%
Total N	2873	3356	1574	186	3901	2183	1582	377
%	36%	42%	20%	2%	49%	27%	20%	5%

Reported attendance in Cohort 9 centers. As part of the 21st CCLC data collection process, grantees are required to document and report information about student participation and attendance at their centers.

Attendance in a 21st CCLC is an intermediate outcome indicator that reflects the potential breadth and depth of exposure to after school programming. In this regard, attendance can be considered in terms of (1) the total number of students who participated in the center’s programming throughout the course of the year and (2) the frequency and intensity with which students attended programming when it was offered. The former number can be utilized as a measure of the breadth of a center’s reach, and the latter can be construed as a measure of how successful the center was in retaining students in center-provided services and activities (Naftzger, Vinson, Liu, Zhu, & Foley, 2014).

A “regular attendee” refers to students who have attended a 21st CCLC program for at least 30 days (which do not have to be consecutive) during the attendance reporting period. On average, 79% of Cohort 9 students attended a center as a regular attendee. That is, during the 2012-13 school year, over three-fourths of Cohort 9 students that participated in the 21st CCLC program met the definition of “regular attendee.”

As seen in Table 12, overall, elementary school grade levels have the highest percentages of regular attendees (84%-89%) while high school grade levels have the lowest percentages (51%-59%). After the fifth grade there is a steady decline of regular attendees at each subsequent grade level—with the exception of grade 12 (59%), which has the highest percentage of regular attendees at the high school level.

Table 12. Attendance by Grade Level—Total Number of Student Attendees and Total Number of Regular Attendees

Grade	Total number of students served	Total number of regular attendees (30 days or more)	% of total at 30 days or more
PK	6	5	83%
KG	889	789	89%
1	1177	1041	88%
2	1354	1207	89%
3	1897	1669	88%
4	2069	1818	88%
5	2205	1851	84%
6	1651	1212	73%
7	1353	861	64%
8	1070	657	61%
9	469	263	56%
10	392	212	54%
11	319	164	51%
12	232	138	59%
Other	6	3	50%
Total	15089	11890	79%

Of the 15,089 students served, 21% of students attended the program less than 30 days—while 24% attended the program between 30-59 days, 23% between 60-89 days, 19% between 90-119 days, and approximately 13% attended 120 or more days.

Table 13. Number and Percentage of Students by Total Days of Program Attendance

Total Days Attended	Number of students	% of students
Less than 30 days	3199	21%
30-59	3574	24%
60-89	3448	23%
90-119	2872	19%
120-149	1336	9%
150-199	637	4%
200+	23	<1%

In terms of gender, 79% of both males and females are considered regular attendees. In terms of ethnicity, Hispanic students (86%), African American students (82%), and other³ students (82%) have higher percentages of regular attendees than white students (63%).

Table 14. Attendance by Gender and Ethnicity—Total Number of Student Attendees and Total Number of Regular Attendees

Gender/Ethnicity	Total number of students served	Total number of regular attendees (30 days or more)	% of total at 30 days or more
Male	7400	5832	79%
Female	7689	6058	79%
African American	8468	6983	82%
Hispanic	2457	2104	86%
White	3247	2048	63%
Other	917	755	82%

Table 15 shows the percent of students by their proficiency level on state tests reported to be regular attendees. As can be seen, the percentage of regular attendees is highest for Level I proficiency students in reading (81%) and lowest for Level IV in reading (65%).

Table 15. Attendance by Proficiency Level in Reading and Math for 2011–12 and 2012–13

2012-2013 Proficiency Level	Reading			Math		
	Total number of students served	Total number of regular attendees (30 days or more)	% of total at 30 days or more	Total number of students served	Total number of regular attendees (30 days or more)	% of total at 30 days or more
Level I	2873	2323	81%	3901	3019	77%
Level II	3356	2601	78%	2183	1760	81%
Level III	1574	1197	76%	1582	1241	78%
Level IV	186	121	65%	377	270	72%

Table 16 illustrates the range of average attendance rates across centers. The majority of centers (73%) have average attendance rates between 30 and 89 days; however, a total of 12 centers have an average attendance rate of less than 30 days and eight centers have an average attendance rate of 120 days or more.

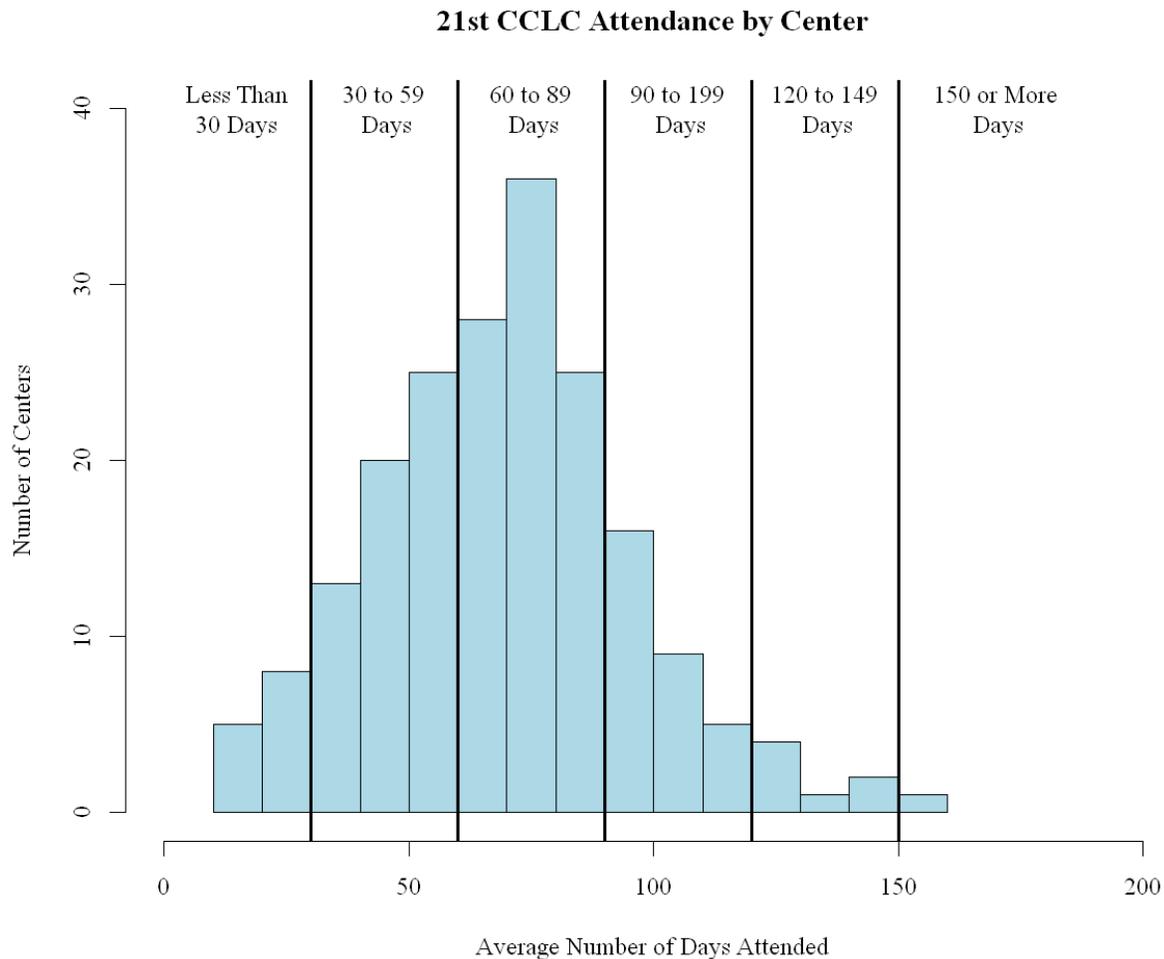
³ Other refers to students categorized as American Indian or Alaskan, Asian, Multiracial, Native Hawaiian or Other, or Two or More Races.

Table 16. Average Days of Attendance by Center

Average Days Attended	Number of Centers	% of Centers
Less than 30	12	6%
30-59	56	28%
60-89	89	45%
90-119	33	17%
120-149	6	3%
150-199	2	1%
200+	0	0%

Figure 1 visually displays the information in Table 16. This figure shows the variability across centers in terms of the regularity with which their students attended their programs in 2012-13.

Figure 1.



2. Extent of year-to-year change in reading and math realized by Cohort 9 students with two years of state achievement test data available

Because one of the goals of this funding program is to provide academic support to students from low-performing schools, it is of interest to describe how the Cohort 9 participants as a whole did on state tests relative to the overall state population of students. In this section, we describe the extent of change in student test scores in reading and math from 2011-12 to 2012-13.

We report the Cohort 9 grade 4-8 year-to-year changes solely for descriptive and exploratory data analytic purposes. That is, the changes reported **cannot** be interpreted as a causal effect due to the 21st CCLC centers because the current study lacked the necessary data collection design (e.g., experimental or quasi-experimental) to make statements concerning the extent to which observed year-to-year changes are attributable to 21st CCLC participation. Simply stated, the available data does not provide evidence of what the academic progress of the participating students would have been had they not have participated in their 21st CCLC program, and thus the current study is unable to estimate specific effects associated 21st CCLC programs. In addition, every grantee has a somewhat different program design, so describing student test score results across 85 grantees is for descriptive purposes rather than a study of the impact of the funding stream. Below we describe two years of state test data for two outcomes (reading and math) for grade 4-8 Cohort 9 students.

Reading EOG results. For this analysis, we compared students' reading EOG scores from 2012 to their reading EOG scores from 2013. For example, for 2013 fourth grade students, we compared their third grade (2012) reading EOG test scores to their fourth grade (2013) reading EOG test scores. Because the state tests are different for each grade's EOG test, we cannot directly compare the scores for the tests. In addition, the EOG tests between the 2011-12 and 2012-13 academic years changed such that the 2012-13 tests were aligned to the new North Carolina Standard Course of Study adopted in 2010. Because tests across grades and years differed, a score of 400 on the 2012 grade 3 reading EOG test, for example, did not mean the same thing as a score of 400 on the 2013 grade 4 reading EOG test.

In order to put the scores from different tests on the same scale, the scores were standardized. Standardization puts all the scores on a common scale so that comparisons between the scores from 2012 to 2013 can be made. The scores were standardized using the average and standard deviation of test scores (on the corresponding test) for all students in the state of North Carolina⁴. By using the test scores for all students in North Carolina, the standardized test scores for 21st CCLC students can be interpreted relative to the average score for all students in the state.

⁴ The state average and standard deviation for 2011-12 and 2012-13 were found at the following webpages and were verified by DPI

2011-12: <http://www.ncpublicschools.org/docs/accountability/reports/green/1112/freqdistribution.pdf>

2012-13: <http://www.ncpublicschools.org/docs/accountability/reports/green/1213/scorefreq1213.pdf>

That is, an individual's standardized score can be interpreted as the difference between that individual's score and the state average score on a test in standard deviation units. For example, if a 21st CCLC fourth grader in 2012-13 has a standardized score of -0.50 on the math test, the score indicates that the student scored half of a standard deviation lower than the state average. Relatedly, a standardized score of 0 indicates that the individual scored exactly the same as the average score for all students in North Carolina for the corresponding test, year and grade. A standardized score of 0.50 suggests that an individual scored half of a standard deviation higher than the state average on the corresponding test, year, and grade.

Of particular relevance to this study is the average year-to-year change in achievement by grade level and by centers. To obtain the average year-to-year change in achievement, each student was first assigned a year-to-year change score based on the difference between her/his standardized scores for 2011-12 and 2012-13. Specifically, a student's year-to-year change score is computed as the 2012-13 standardized score minus the 2011-12 standardized score. The resulting year-to-year change score represents the change in relative standing of the student within the population of students in North Carolina. The average year-to-year change for a select group of students reflects the average change in standing for that group from 2011-12 to 2012-13. Thus, the average year-to-year change score does not reflect absolute gain or growth of the group of students, but rather the extent to which the students in the group experienced a change in relative standing within the overall population of North Carolina students from 2011-12 to 2012-13.

The average year-to-year change score for a particular group of students reflects the group's *year-to-year change in relative standing* within the population of students in North Carolina for that grade.

Guidelines for interpreting the average year-to-year change scores are as follows:

Average Year-to-Year Change Score is Zero: An average year-to-year change score of zero indicates that the group's relative standing in the North Carolina population held constant from 2011-2012 to 2012-2013. Note that a value of zero does not indicate that the students of the group did not experience overall growth in achievement over time, but rather that their growth was the same as the state year-to-year growth.

Average Year-to-Year Change Score is Positive: A positive average year-to-year change score indicates that the group's relative standing in the North Carolina population increased from 2011-2012 to 2012-2013. The magnitude of the average year-to-year change score indicates how much the group's relative standing increased within the North Carolina population for that grade in standard deviation units. For example, an average year-to-year change of 0.5 for a particular group indicates that the group's relative standing increased by 0.5 standard deviations relative to the change experienced by the North Carolina population for that grade.

Average Year-to-Year Change Score is Negative: A negative average year-to-year change score indicates that the group's relative standing in the North Carolina population decreased from 2011-2012 to 2012-2013. The magnitude of the average year-to-year

change score indicates how much the group's relative standing decreased within the North Carolina population for that grade in standard deviation units. For example, an average year-to-year change of -0.5 for a particular group indicates that the group's relative standing decreased by 0.5 standard deviations. It is important to recognize that a negative average year-to-year change score does not indicate that the students in the group did not experience growth from 2011-2012 to 2012-2013, but rather that the growth was less than that experienced by the overall population of North Carolina students for that grade on that test.

Table 17 displays the average standardized scores and the average year-to-year change scores for Cohort 9 students on the state reading EOG in grades 4-8. As an example, we explain the results observed for grade 4, shown in the first row of the table. The 2011-2012 average standardized score for this group was -0.34 (note that this represents the average standardized score when these students were 3rd graders), indicating that this group scored, on average, 0.34 standard deviations below the North Carolina population average. Similarly, the 2012-2013 average standardized score for this group was -0.53, indicating that, on average, the students of this group scored 0.53 standard deviations below the North Carolina population average. Note that the average standardized score for this group was lower in 2012-2013 (-0.53) than in 2011-2012 (-0.34), reflecting that the relative standing of this group within the North Carolina population decreased, or "slipped", from 2011-2012 to 2012-2013. This "slipping" is reflected by the negative average year-to-year change score of -0.19, indicating that the relative standing of this group decreased by 0.19 standard deviations from 2011-2012 to 2012-2013.

These values are visually displayed in Figure 2, which shows a normal curve with an average of 0, representing the average year-to-year change score for all students in North Carolina. The grade 4 standardized reading EOG test scores for the 2011-12 (third grade) and 2012-13 (fourth grade) academic years are presented with the red and blue lines, respectively. The thick black line represents the average year-to-year score in reading for all students in the state of North Carolina. The distance between the red and blue lines represents the average year-to-year change for fourth graders in the 21st CCLC program on the reading EOG (-0.19).

Now looking at all grade levels for which there are two years of state test results in reading, Table 17 shows that the Cohort 9 21st CCLC participants demonstrated an average year-to-year change score that was negative, reflecting a decrease in relative standing within the North Carolina population of students (for each respective grade) from 2011-12 to 2012-13. Compared to the other grades, the seventh graders experienced the smallest slippage in relative standing from 2011-12 to 2012-13, with an average year-to-year change score of -0.08. This indicates that Cohort 9 seventh graders experienced a change in reading achievement that was most similar to that of the overall population of North Carolina students compared to the other grade levels shown.

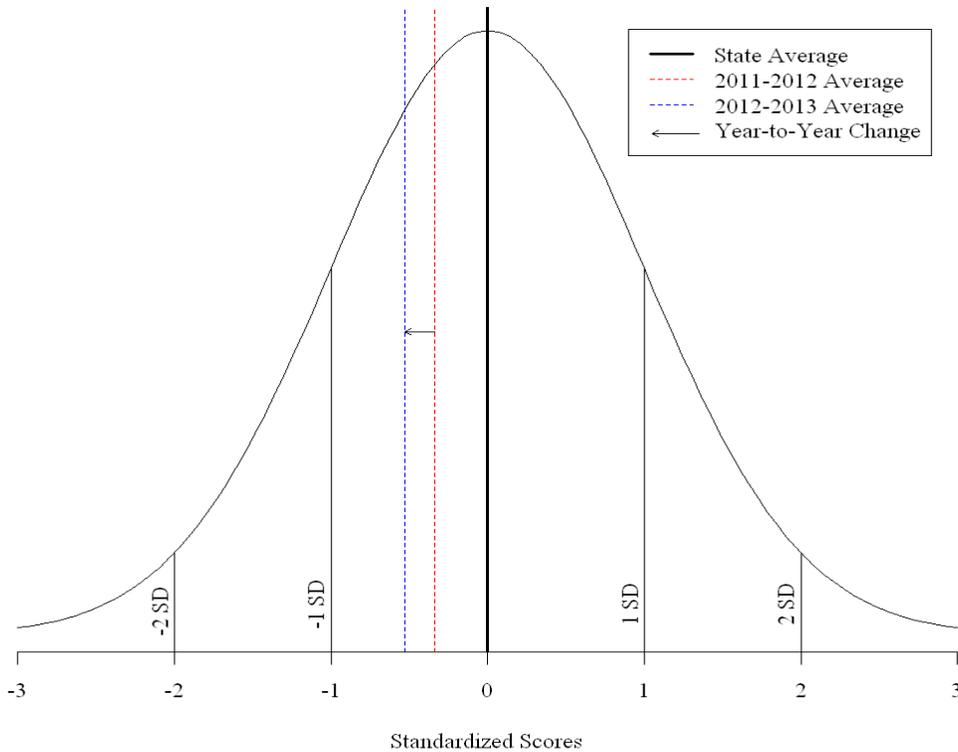
Table 17. By Grade Level—Reading

Average Change in Reading by Grade Level N = 6951				
Grade Level 2012-2013		2011-2012 Average Standardized Score	2012-2013 Average Standardized Score	Average Year-to-Year Change Score
Grade 4 N=1702	Average	-0.34*	-0.53*	-0.19*
	Confidence interval	-0.38 to -0.30	-0.57 to -0.49	-0.21 to -0.17
Grade 5 N=1852	Average	-0.45*	-0.66*	-0.21*
	Confidence interval	-0.49 to -0.41	-0.70 to -0.62	-0.23 to -0.19
Grade 6 N=1386	Average	-0.43*	-0.57*	-0.14*
	Confidence interval	-0.47 to -0.39	-0.63 to -0.51	-0.18 to -0.10
Grade 7 N=1152	Average	-0.31*	-0.39*	-0.08*
	Confidence interval	-0.35 to -0.27	-0.45 to -0.33	-0.12 to -0.04
Grade 8 N=859	Average	-0.16*	-0.32*	-0.16*
	Confidence interval	-0.22 to -0.10	-0.38 to -0.26	-0.20 to -0.12

Note. N refers to the number of students, * indicates significantly different from zero at $p < .05$. The confidence intervals for the Cohort 9 students' average year-to-year changes represent the range in which we can be 95% confident the true average year-to-year change lies, which provides information about the stability of the estimates as well as the significance of the results. The confidence intervals for the average year-to-year change for each grade do not include the value of zero, indicating that the average-year-to-year change values are all statistically significantly different from zero (i.e., below zero).

Figure 2.

Standardized Scores for Grade 4 Reading



Math EOG results. Similar to Table 17 for reading EOG results, Table 18 presents the findings for the math EOG results in grades 4-8. For each grade, we find that the average year-to-year change is negative, ranging from -0.16 (grade 4) to -0.05 (grade 5). Compared to the range of reading average year-to-year change score results (-0.21 to -0.08), the 21st CCLC students’ average year-to-year change in math is more similar to the state year-to-year change (i.e., the values tend to be closer to 0). Stated differently, there was less slippage for 21st CCLC students from 2011-12 to 2012-13 in math than in reading.

Table 18. By Grade Level—Math

Average Change in Math by Grade Level N = 7006				
Grade 2012-2013		2011-2012 Average Standardized Score	2012-2013 Average Standardized Score	Average Year To Year Change Score
Grade 4 N=1723	Average	-0.33*	-0.49*	-0.16*
	Confidence interval	-0.37 to -0.29	-0.53 to -0.45	-0.18 to -0.14
Grade 5 N=1870	Average	-0.48*	-0.52*	-0.05*
	Confidence interval	-0.50 to -0.46	-0.56 to -0.48	-0.07 to -0.03
Grade 6 N=1394	Average	-0.45*	-0.53*	-0.08*
	Confidence interval	-0.49 to -0.41	-0.57 to -0.49	-0.12 to -0.04

Average Change in Math by Grade Level N = 7006				
Grade 2012-2013		2011-2012 Average Standardized Score	2012-2013 Average Standardized Score	Average Year To Year Change Score
Grade 7 N=1157	Average	-0.24*	-0.33*	-0.09*
	Confidence interval	-0.30 to -0.18	-0.39 to -0.27	-0.13 to -0.05
Grade 8 N=862	Average	-0.11*	-0.23*	-0.13*
	Confidence interval	-0.17 to -0.05	-0.29 to -0.17	-0.17 to -0.09

Note. N refers to the number of students, * indicates significantly different from zero at $p < .05$.

Overall, the average year-to-year change scores on state reading and math tests for the students participating in 21st CCLC in 2012-13 were slightly lower than the state population’s year-to-year change scores.

Findings by Proficiency Level. To further examine the year-to-year change in scores, the participating students’ change scores were examined by incoming proficiency level. Thus, students’ proficiency levels on the 2012 state EOG tests were used to categorize them by four “incoming” proficiency levels. The year-to-year change scores were averaged across all students (and all grades) within each of the four proficiency categories.

Notably, the average year-to-year change in math for students scoring at Level I in 2011-12 is approximately half a standard deviation greater (0.51) than the year-to-year change in math for all students across the state. That is, the 21st CCLC students who scored at Level I in math in 2011-12 had greater year-to-year change from the 2012 to the 2013 test than the state population year-to-year change. Also, in reading, 21st CCLC students who scored at Level I in reading in 2011-12 had greater year-to-year change (0.06) than the state population.

In other words, the students participating in Cohort 9 who scored at Level I in 2011-12 had greater gains in 2013 than the state population. This was not the case for students scoring at Level III and IV in 2011-12. Their year-to-year change was slightly lower than that state average.

Table19. Year-to-Year Change Scores by Incoming (2012) Proficiency Level

Incoming Proficiency Level	Reading N = 6951				Math N = 7006			
	N	Pre	Post	Change	N	Pre	Post	Change
1	1279	-1.58	-1.51	0.06	291	-2.04	-1.53	0.51
2	2021	-0.70	-0.90	-0.21	1664	-1.18	-1.18	0.00
3	3096	0.09	-0.11	-0.20	4147	-0.21	-0.37	-0.16
4	555	1.16	0.83	-0.33	904	1.04	0.86	-0.18

3. Variations in year-to-year change in reading and math across centers

The standardized year-to-year change scores in reading and math for each student were used to calculate the average change in relative standing of students at the center level. It is

important to note that the center-level average year-to-year change values cannot inform any claims about the efficacy of the 21st CCLC program. They can, however, provide information about the variability in year-to-year achievement change across centers. That is, they can describe whether some centers see less year-to-year change than the state (a negative value) or more year-to-year change than the state (a positive value), but any such changes cannot be directly attributable to activities of the centers in this analysis.

The analyses below show average year-to-year achievement change across centers rather than across grantees. Aggregating year-to-year changes at the level of the grantee has the disadvantage of collapsing information across all centers associated with a particular grantee, which may mask useful trends at the level of the center. For example, consider a grantee with two centers, one of which has positive year-to-year change and the other has negative year-to-year change. If these two centers have year-to-year changes that are comparable in magnitude (i.e., the first has a value of 0.50 and the second has a value of -0.50), the values will cancel each other out. Thus, the grantee may seem to have year-to-year change comparable to the population, but we would lose information that may help in exploring differences in programs or practices among centers.

Figure 3 displays the average year-to-year change in reading EOG scores by Cohort 9 centers. The average year-to-year change scores in reading ranged from -0.60 to 0.40 across centers. This suggests that in some centers 21st CCLC students tended to have less year-to-year change than in the state population, whereas other centers served students who showed more year-to-year change relative to the state population. Of the 141 centers⁵ with two years of reading EOG test data for at least 16 students, 124 (88%) had year-to-year change scores below 0. That is, these centers served students who realized less year-to-year change than the state population year-to-year change. Of the 141 centers, 17 (12%) had students with an average year-to-year change score equal to or greater than the state population.

For the math EOG tests, the average year-to-year change ranged from -0.49 to 0.88 (see Figure 4). Of the 142 centers⁶ with two years of math EOG test data on at least 16 students, 107 (75%) had year-to-year change scores below 0, suggesting smaller year-to-year change than the state year-to-year change. Of the 142 centers, 35 (25%) had students with an average year-to-year change equal to or greater than the state population.

Overall, a higher number of centers realized greater average year-to-year change relative to the population for the math than the reading EOG tests (35 in math compared to 17 in reading). Given the variability in average year-to-year change scores across centers, it will be useful in the future to examine center characteristics associated with variability in center-level average year-to-year change scores.

⁵ For the reading EOG test, 38 centers were removed due to a small sample size ($N \leq 15$).

⁶ For the math assessment, 37 centers were removed due to a small sample size ($N \leq 15$).

Figure 3.

Year-to-Year Change in Reading by Center

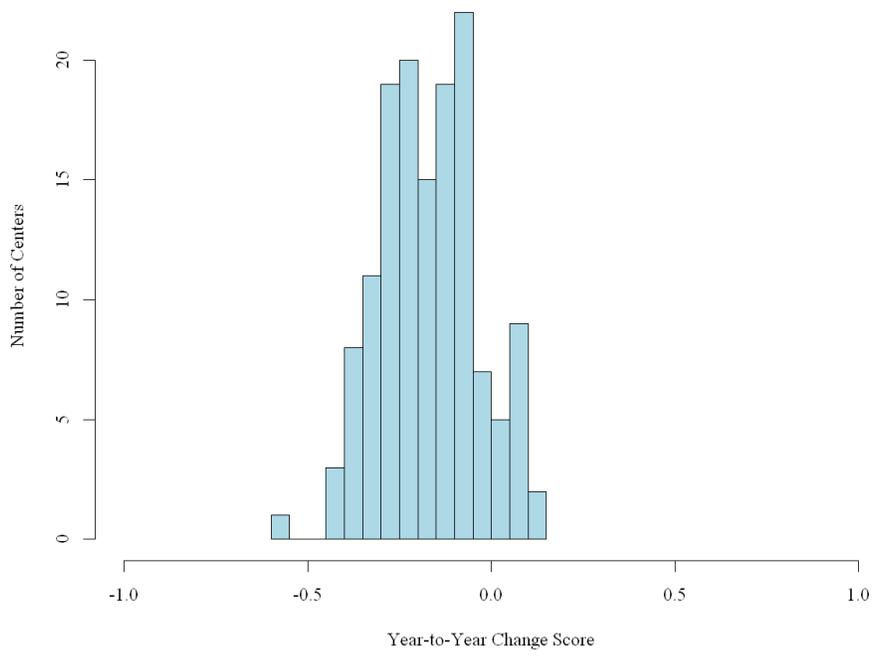
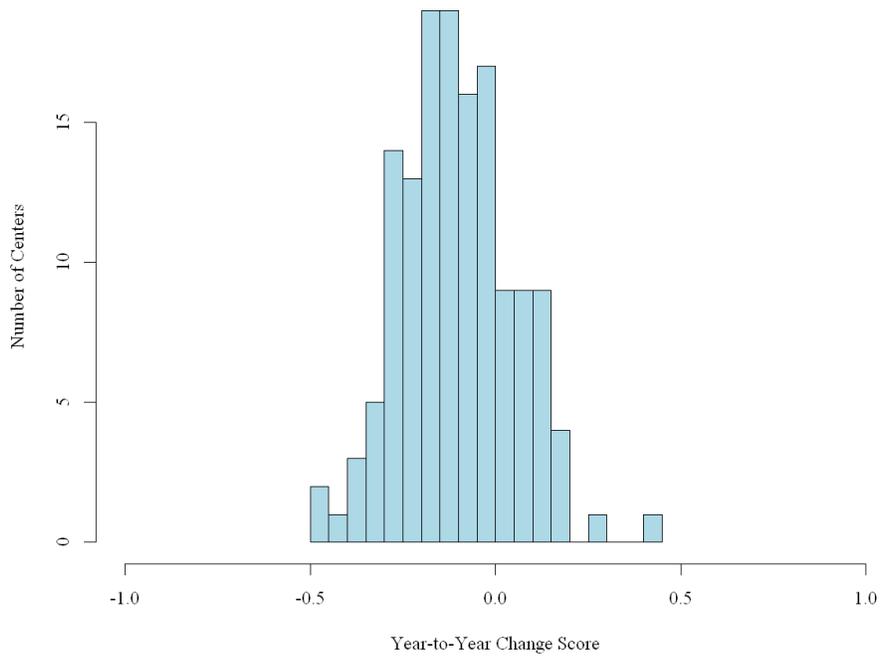


Figure 4.

Year-to-Year Change in Math by Center



Future Considerations

Specific conclusions concerning grantee effectiveness are beyond the scope of the reported analyses. Rather, this report represents a first step towards a longer term NCDPI goal of describing and understanding changes in outcomes for students participating in the 21st CCLC program. There are two purposes for continued analyses of the student outcome data in subsequent years. One is increased understanding by NCDPI program staff of the extent of variability that exists across centers in year-to-year changes in student achievement outcomes. With this information in hand, they can explore and identify characteristics of the centers with the greatest gains. The second is to provide feedback to grantees and centers about where they fall relative to other centers in their students' year-to-year changes in important achievement outcomes (to encourage discussions about ways to improve center programs). Possible future activities associated with these two goals are described below.

Goal 1: Increase understanding about variations in student outcomes across centers:

- Continue to collect data to build on this first step towards describing student outcomes of funded 21st CCLC centers and grantees. In particular, 2014 data on Cohort 9 students can be added to the database to explore year-to-year changes for another year. There are also other outcome variables that can be analyzed such as variations across centers in students' year-to-year change in grades, school attendance, or behavioral reports (suspensions).
- Examine the impact of varying levels of student attendance in 21st CCLC programs on outcomes and whether the impact varies by students' incoming proficiency levels in reading or math. Attendance at centers is a critical factor in students' benefitting from the activities; thus, more analyses of the kinds of centers which are garnering attendance of over twice per week from participants would be useful.

Goal 2: Feedback to funded centers/grantees about their students' outcomes to inform continuous improvement of their program designs and activities:

- Develop ways to provide centers/grantees feedback on their year-to-year changes in student outcomes (relative to the changes realized by all centers).

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