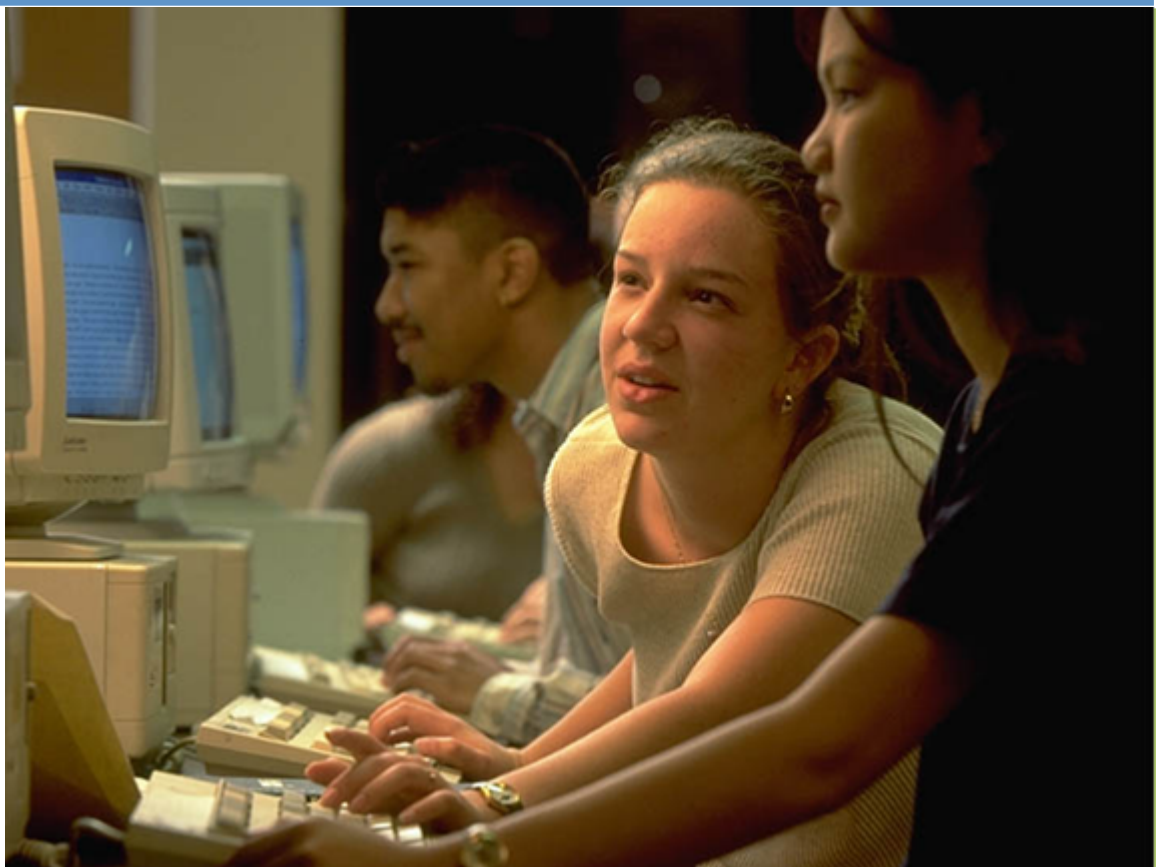


*St. Vrain Valley School District i3 Project Evaluation:
Student Outcomes Report*



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Introduction

EPI was contracted by the St. Vrain Valley School District in December 2010 to plan and execute an implementation and outcome evaluation of the *St. Vrain Investment in Innovation (i3) Grant*. The evaluation utilized an extensive mixed-methods design to capture the fidelity of the project as well as its effect on student achievement. This report summarizes the effects of student achievement in terms of retention, graduation, and performance on the state standardized assessments. Before describing these results, the following includes a description of the project and the broader evaluation effort.

THE ST. VRAIN VALLEY SCHOOL DISTRICT I3 PROJECT

The St. Vrain Valley School District i3 project is a development grant to explore the effectiveness of a data-driven decision making process that incorporates information technology and specific content-focused interventions (i.e., literacy, math, and science) in grades K-12, as implemented in one feeder school system within the district. Specifically, four elementary schools (Columbine, Loma Linda, Rocky Mountain, and Spangler), two middle schools (Heritage and Trail Ridge), and Skyline High School are the schools that were targeted.

Data-Driven Intervention

At each school level, there is a foundational response to intervention (RtI) approach, through which screening is used to identify students in need of additional support, and those identified students receive regular student progress monitoring and additional targeted academic support. Teachers receive through the i3 program professional development to facilitate understanding of student progress and screening scores and targeting of additional interventions during the school year. For some students, additional support is also provided during a 7-week summer program. The academic focus shifts at the different school levels, such that language arts is the focus at the elementary grades, math is targeted at middle school grades, and math and science are targeted in high school. At the high school, a “school within a school” has been developed to target Science, Technology, Engineering, and Mathematics (STEM) through a STEM Academy. At this level, 100 interested high school students (i.e., 9th graders) will be admitted to the STEM Academy and into the summer academy.

Summer Program

Each year, approximately 120 elementary-grade students were admitted to the summer program, while approximately 100 middle school students were admitted. While all students (i.e., K-5 in the elementary and 6-8 in the middle schools) received the school year support, 5th and 8th graders were not be offered the summer program, as they were transitioning to a new school. These students were specifically selected because their academic performance is the lowest. Special education students who received self-contained (i.e., non-traditional, small-sized class) instruction were excluded from this summer program, as they require one-on-one assistance which could not be provided through this program. Any other special education student who did not require one-on-one instruction (i.e., whose educational instruction is provided in an inclusive setting) and who also fell into the bottom 120 or 100 performers were eligible to be selected to attend this summer program.

Teacher Professional Development

In order to ensure that the data-driven process is implemented with fidelity, teachers were provided with professional development trainings that focus on the administration of screening procedures and the use of data to adapt instruction. With this additional focus, it was expected that teachers would use data more frequently, would improve their instructional practices by targeting student needs, and would report greater efficacy and locus of control over student achievement.

Project Goals

This project is guided by six overarching objectives that were assessed through three general goals for student outcomes. These are provided below.

The guiding objectives of the project are to:

1. Encourage and facilitate the evaluation, analysis, and use of student achievement or student growth data by teachers to inform decision-making and improve student achievement, student growth, or teacher, principal, school, or LEA performance and productivity
2. Provide necessary classroom information technology tools, professional development time, peer mentorship and collaborative supports for 24 teachers
3. Provide 400 students with a 35 half-day augmented school year for English Language Arts
4. Provide 550 middle school students with enriched mathematics RtI program and an augmented school year for mathematics
5. Provide 400 students, after four cohorts have entered the program, with an alternative path to graduation through a STEM certificate program
6. Sustain, replicate, and disseminate the St. Vrain i3 Project

The three primary goals related to student outcomes are:

1. Increased proficiency scores on statewide assessments
2. Improved student growth and performance
3. Improved student retention and graduation rates

THIS REPORT

In the first year, EPI worked with the national evaluation team and representatives from the St. Vrain Valley School District to develop an evaluation plan and appropriate measures. EPI analyzed the extent of implementation of each component, as well as student outcomes (e.g., achievement at all levels, retention, need for repeated intervention, graduation) in targeted and matched comparison schools. Each year, EPI collected student data from the district.

Evaluation Design

The mixed methods evaluation design assessed both program implementation (activities and outputs) and impacts. Collection and analyses of qualitative and quantitative data determined the extent to which the initiative meets both its objectives and the required GPRA performance measures. Additionally, EPI compiled statistical data to examine longitudinal trends and provide continuous feedback to the Project Director.

Measuring Outcomes

Gains in student academic performance in reading (for students in grades 3-5) and in mathematics (for students in grades 8-10) were assessed through the statewide standardized exams. For 2011 and 2012, the state administered the Colorado Student Assessment Program (CSAP), and the Transitional Colorado Assessment Program (TCAP) in 2013 and 2014 as it prepared for the implementation of the Common Core curriculum and its assessment (Partnership for Assessment of Readiness for College and Career) in 2015. The accountability ratings of Advanced, Proficient, Partially Proficient, and Unsatisfactory are consistent through the change from the CSAP to the TCAP tests and are equivalent in difficulty, making comparisons valid. District student records were the basis of investigating changes in student retention, need for intervention between middle and high school, repeated categorization as “low performer,” and rates of high school graduation.

Data Analysis

Descriptive statistical analyses included retention rates and mean performance on state standardized exams using three approaches. The first analysis examines Hispanic dropout and graduation in Skyline High School over the life of the grant and the second analysis examines student performance as captured by accountability ratings over the life of the grant. The third approach captures the cohorts of students during the initial year of implementation and follows the cohorts through the four years of the project, comparing their results to those of their peers within the comparison schools.

For each approach, the reading scores are examined in grades 3, 4, and 5 among the treatment elementary schools and the math scores are examined in grades 7, 8, and 9 among the treatment middle schools and Skyline High School.

Comparison schools for the third approach were selected based on similarities between outcomes (i.e., reading and math achievement based on state standardized assessments, or the dependent variable in this case; and student demographics at the school level including percent of students receiving Free and Reduced Meals (FARMs), percent of students who are of Hispanic ethnicity, and percent of student categorized by the school system as English Language Learners (ELL) by meeting the criteria on the CELA English language test). Statistical tests were conducted to determine whether there is a treatment difference on reading achievement on the CSAP/TCAP for the elementary-level students and math achievement on the CSAP/TCAP for the middle school students, while controlling for the above-mentioned student demographics and baseline achievement. This will reflect two main effects models, one for each of the noted school levels.

Finally, as only one high school has been targeted, the evaluation of findings with regard to student achievement, graduation, retention, and college access will be exploratory and developmental in nature – looking only at changes from the baseline data.

Number of Students Served and Cost per Student

Exhibit 1 indicates that the project exceeded its target number of students served by 2014 with 1,186 students, 256 more than the target of 930. By 2014, the cost per student served by the project reached \$536, \$147 less than the target cost of \$683.

Exhibit 1. Students served and cost per student.

Number of Students Served								
	2011		2012		2013		2014	
Actual		642		812		892		1,186
Target		780		930		930		930
Cost per Student								
Actual	\$	1,115	\$	1,100	\$	899	\$	536
Target	\$	918	\$	969	\$	862	\$	683

Hispanic Dropout and Graduation

Key Takeaways: St. Vrain made progress at addressing the educational needs of Hispanic students as measured by changes in their dropout and graduation rates from Skyline High School, but 2014 proved to be a setback to the gains achieved through 2013. By 2013, the dropout rate dipped to 1.6 percent, 0.4 percentage points lower than the target rate of 2.0 percent. Similarly, the graduation rate of Hispanics reached 83 percent in 2012, 7 percentage points higher than the target of 76 percent, but decreased steadily to the target of 76 percent by 2014. The setback in these indicators in 2014 relative to 2013 was due in-part to the re-entry into Skyline High School of students from the district's Adult Education program which was closed in 2013.

Exhibit 2 indicates that the percentage of students who dropped out from Skyline High School decreased just over 2.5 percent in 2011 to 1.6 percent in 2013, 0.4 percentage points lower than the target rate of 2.0 percent. The dropout rate subsequently increased to 3.1 percent in 2014.

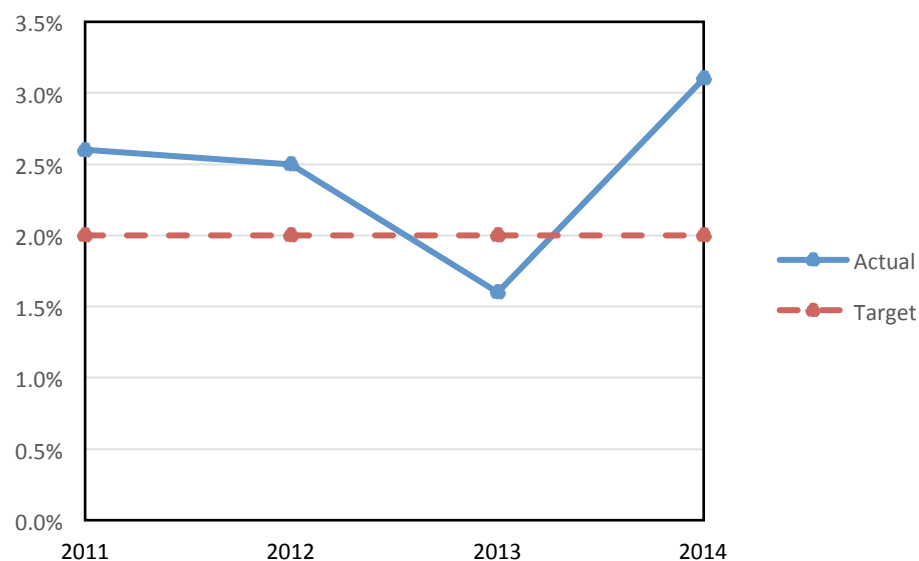
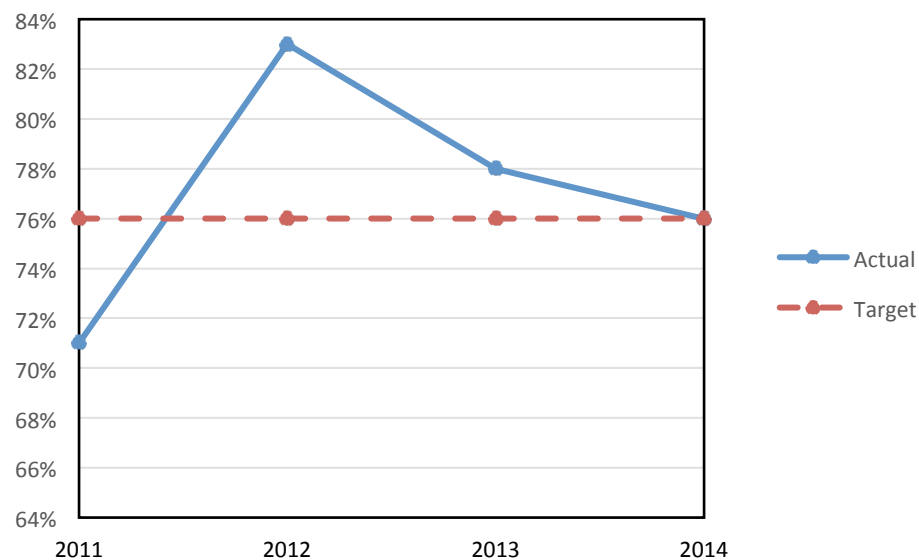
Exhibit 2. Percentage of Hispanic students who dropout of Skyline High School.

Exhibit 3 reveals that the graduation rate of Hispanic students increased from 71 percent in 2011 to 83 percent in 2012, 7 percentage points higher than the target rate at 76 percent. Thereafter, the graduation rate decreased to 78 percent in 2013 and 76 percent in 2014.

Exhibit 3. Percentage of Hispanic students who graduate from Skyline High School.

Student Performance on Accountability Ratings

The examination of student performance needs to account for the demographic makeup of the students. Exhibit 4 captures an important shift in the percent of English Language Learner (ELL) students in grades 3, 4, and 5 in the treatment schools in which reading was the focus, which bounced from 70 percent in 2011 to 72 percent in 2012 and back to 70 percent in 2013, but increased markedly to 74 percent in 2014.

There was a similar increase in the percent of English as a Second Language (ESL) students in the grades and schools in which math was a focus, with a notable increase from 23 percent in 2013 to 28 percent in 2014 due to an increase of 64 additional ESL students over the same time period.

Exhibit 4. Changing composition of students in the treatment schools.

ELL in Grades 3,4, and 5				
	2011	2012	2013	2014
No	30%	28%	30%	26%
Yes	70%	72%	70%	74%
Total	100%	100%	100%	100%

ESL in Grades 7, 8, and 9				
	21%	22%	23%	28%

Did the percentage of students in grades 3, 4, and 5 who score Proficient or higher on the Reading CSAP/TCAP increase?

Exhibit 5 indicates that the percent of students who scored proficient or advanced on the reading CSAP/TCAP decreased slightly from 50 percent in 2011 to 47 percent in 2012, increasing to 57 percent in 2013, just 2 percentage points shy of the target rate of 59 percent. The rate decreased to 53 percent in 2014. In comparison, the corresponding statewide percentage remained at 70 percent throughout the life of the project.

The overall trend of all students masks important underlying trends of ELL and non-ELL students. The percent of non-ELL students who scored proficient or higher increased slightly from 60 percent in 2011 to 61 percent in 2014, one percentage point higher than the target rate of 60 percent. The percent passing among ELL students increased from 47 percent in 2011 to 50 percent in 2014. The overall rate decreased from 2013 to 2014 because of the marked increase in the percent of ELL students as revealed by Exhibit 4 combined with the slight decrease in the percent passing among non-ELL students.

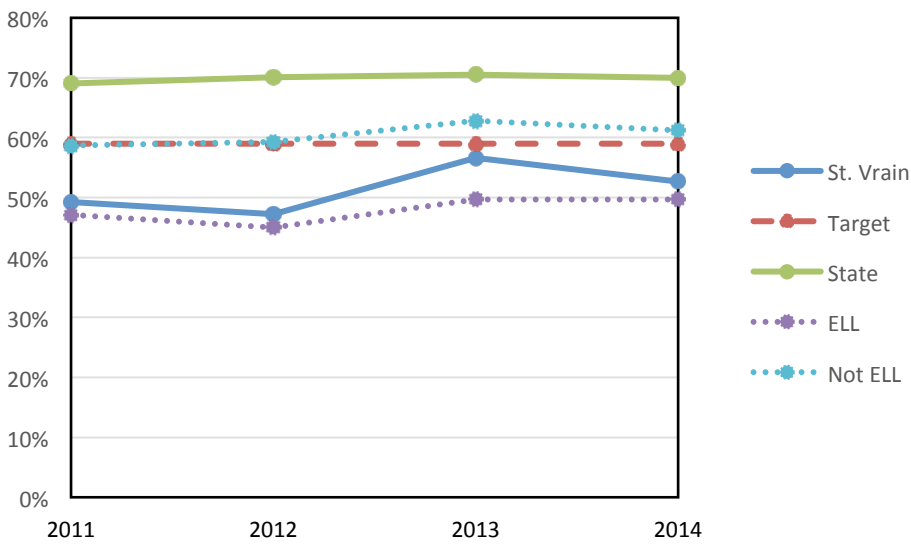
Exhibit 5. Percentage of students scoring Proficient or higher on the reading CSAP/TCAP***Did the percentage of students in grades 8, 9, and 10 who score Proficient or higher on the Math CSAP/TCAP increase?***

Exhibit 6 indicates that the percentage of students who scored proficient or advanced on the math CSAP/TCAP decreased from 34 percent in 2011 to 31 percent in 2012, but increased back to 34 percent in 2013 and 33 percent in 2014. The target was 45 percent, a full 12 percentage points higher than the actual rate in 2013. Over the same period of time, the state rate increased slightly from 40 percent to 42 percent. As noted in Exhibit 4, the percent of ESL students increased to 28 percent by 2014, which represented an influx of 64 (or 39 percent) additional ESL students to the 164 who were in the treatment schools and grades in 2011. The overall trends need to account for this increase because the performance of the ESL students on the state standardized exams lags that of their non-ESL peers. For example, the average score on the TCAP in 2014 of ESL students was 500 compared to 582 for the non-ESL students.

The performance of ESL students improved over the life of the grant from an average score of 497 to 500 in 2014. There was a marked improvement in particular among those students who were Partially Proficient, increasing from an average score of 549 in 2011 to 557 in 2014. Trends such as these suggest that St. Vrain is increasing its capacity to better serve those ESL students who are showing promise, but need more time to catch up to the academic expectations of the state.

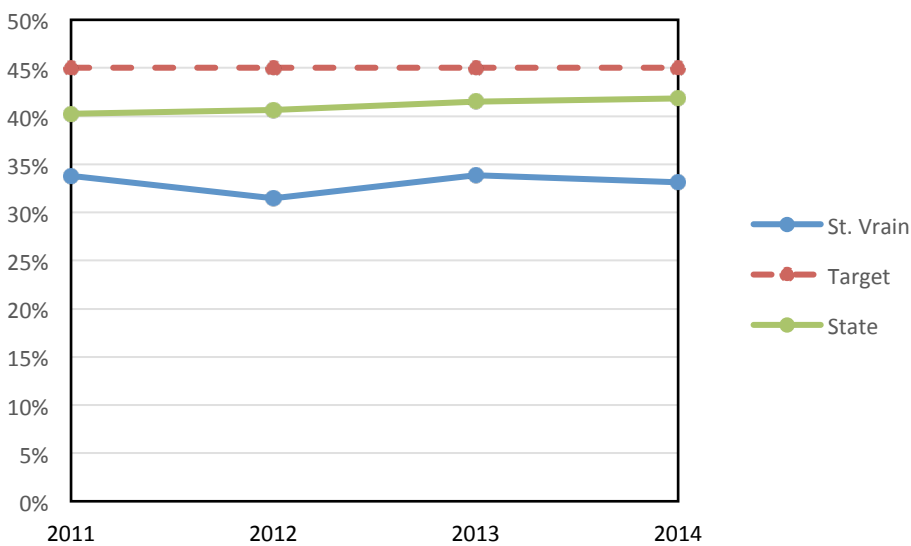
Exhibit 6. Percentage of students scoring Proficient or higher on 2011 math CSAP/TCAP**Improved Student Growth and Performance*****Did the percentage of students repeatedly categorized as low performers in reading decrease?***

Exhibit 7 indicates that the percent of students repeatedly categorized as low performers in reading decreased from 12 percent in 2011 to 11 percent in 2012, but increased to 16 percent in 2013 and 13 percent in 2014, 5 percentage points higher than the target of 8 percentage points.

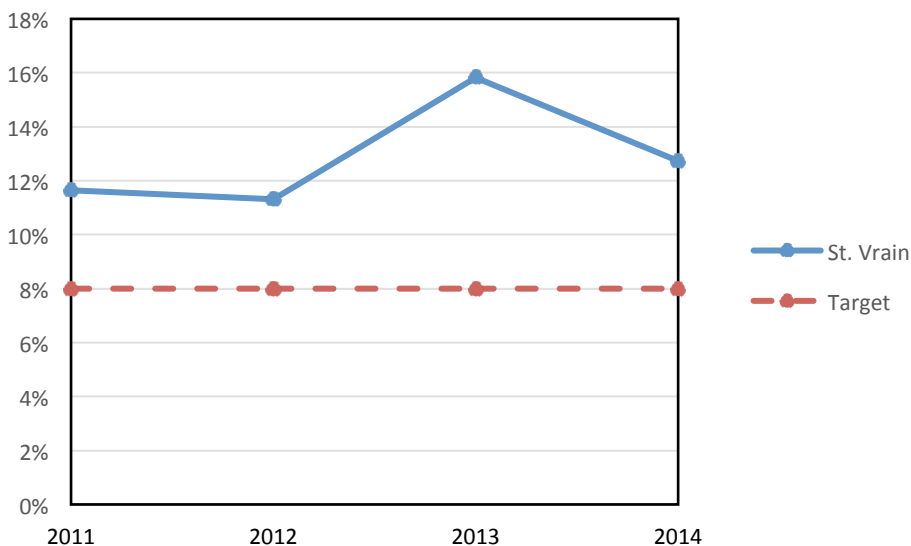
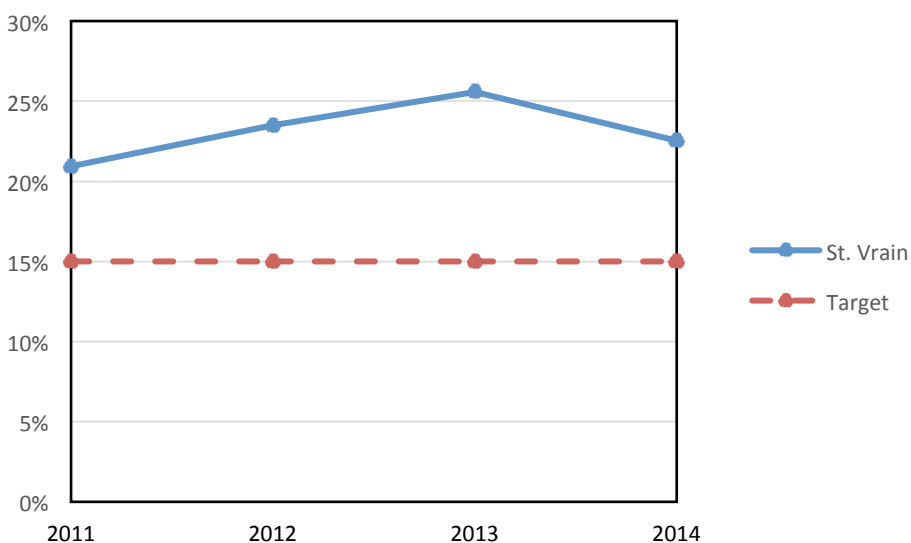
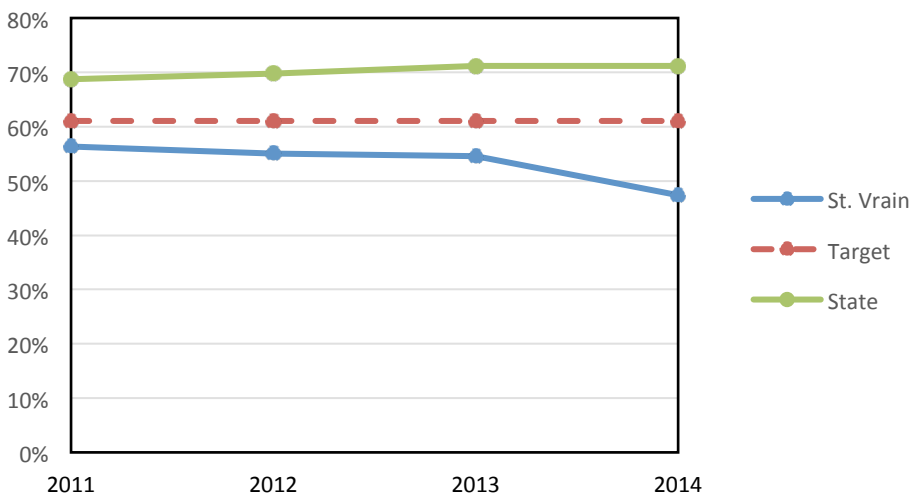
Exhibit 7. Percentage of students categorized as Repeat Low Performers in reading***Did the number of students repeatedly categorized as low performers in math decrease?***

Exhibit 8 indicates that the percent of students who are repeatedly categorized as low performers in math increased from 21 percent in 2011 to 25 percent in 2013, but decreased to 23 percent in 2014, 8 percentage points higher than the target.

Exhibit 8. Percentage of students categorized as Repeat Low Performers in math

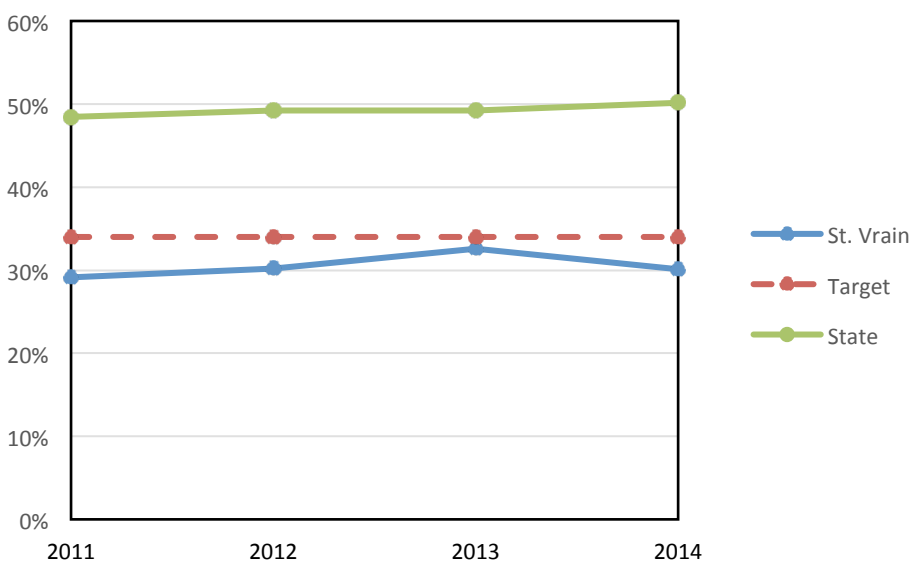
Did the portion of students that met or exceeded “adequate growth” on the CO growth score for reading increase?

Exhibit 9. Percentage of students who Met or Exceeded Adequate Growth in reading



Did the portion of students that met or exceeded “adequate growth” on the CO growth score for math increase?

Exhibit 10. Percentage of students who Met or Exceeded Adequate Growth in math



Mobility and Student Achievement for the Math Cohort

The following exhibits present an analysis of i3 math cohort of students in the St. Vrain Valley School District which consists of 7th graders in treatment and comparison schools in 2012. The analysis includes leaver and mobility rates for students who were originally in the sample, followed by an examination of student performance on the state standardized assessments as the cohort made progress from the 6th grade in 2011 through the 9th grade in 2014.

LEAVERS AND MOBILITY

Exhibit 11 indicates that there were a total of 1,994 7th graders in 2012 in the district, 352 (17.7 percent) of whom were in treatment schools (Heritage and Trail Ridge middle schools) and 478 (23.9 percent) of whom were in comparison schools (Carbon Valley, Coal Ridge, Imagine Charter, and Longs Peak). The treatment schools are disproportionately Hispanic and low-income relative to the district and comparison schools. Over 12 percent of the 2012 7th graders in comparison schools had an IEP compared to only 8.7 percent district wide and 7.1 percent in treatment schools.

Exhibit 11. Descriptive statistics of 7th graders in 2012 in the district and in treatment and comparison schools.

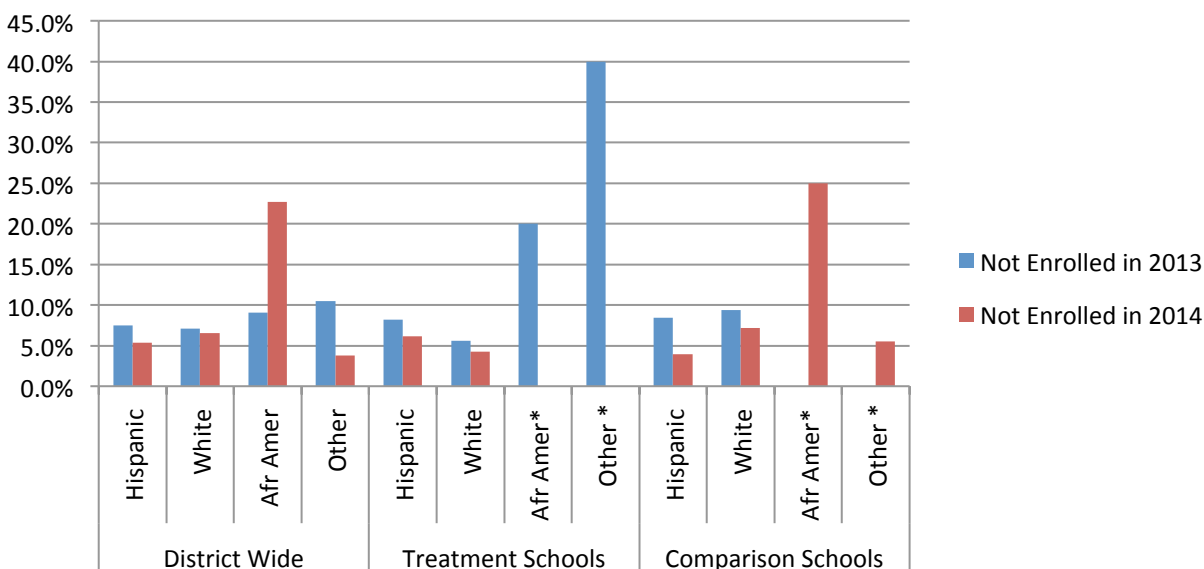
	District	Treatment Schools	Comparison Schools
Total Number of Students	1,994	352	478
Race/Ethnicity			
Hispanic	28.1%	55.4%	37.2%
White	65.5%	40.3%	58.2%
African American	1.1%	1.4%	0.8%
Other	5.3%	2.8%	3.8%
Total	100.0%	100.0%	100.0%
Free Lunch	28.5%	53.4%	36.8%
Reduced Lunch	5.7%	5.4%	8.4%
IEP	8.7%	7.1%	12.1%

Leaver Analysis

Leavers are defined as any 7th grader in 2012 who was not enrolled in the district in 2013 or 2014. Exhibit 12 indicates that the leaver rate varied across ethnicities and year. The leaver

rates for 2014 were less than 2013. Over twenty percent of the 2012 African-American 7th graders in the district were not enrolled in 2014, a significant finding given that 2014 is the year that the students transitioned to high school. The leaver rates of Hispanics in the treatment schools were roughly similar to that of the district. The leaver rate in 2014 for Hispanic 7th graders in treatment schools was slightly higher than their counterparts in comparison schools. White 7th graders in the comparison schools left at higher rates than their counterparts in the treatment schools and district wide.

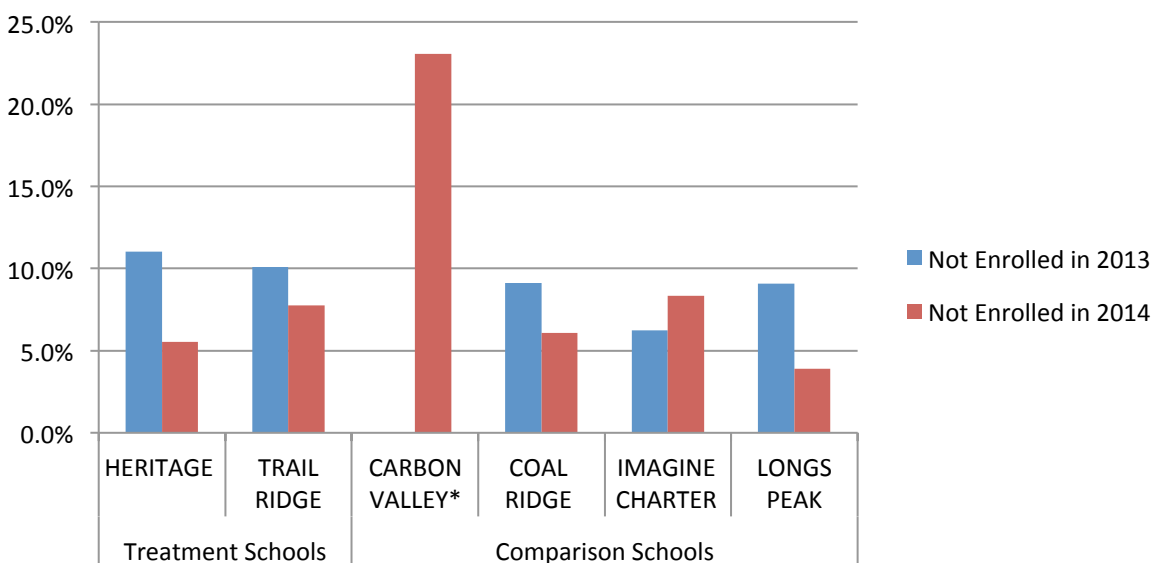
Exhibit 12. Leaver rates by ethnicity among all 7th graders in 2012 in the district, treatment schools, and comparison schools.



*Interpret cautiously due to low cell counts less than 10.

Exhibit 13 indicates that the 2013 leaver rate at Heritage MS was highest at just over 10 percent, followed by Trail Ridge at 10 percent. Just over 5 percent of the 2012 7th graders at Imagine Charter did not return in 2013, but this increased to approximately 8 percent in 2014. This is unusual in that the leaver rate was higher in 2014 than in 2013.

Exhibit 13. Leaver rates among 7th graders in 2012 in treatment and comparison schools.

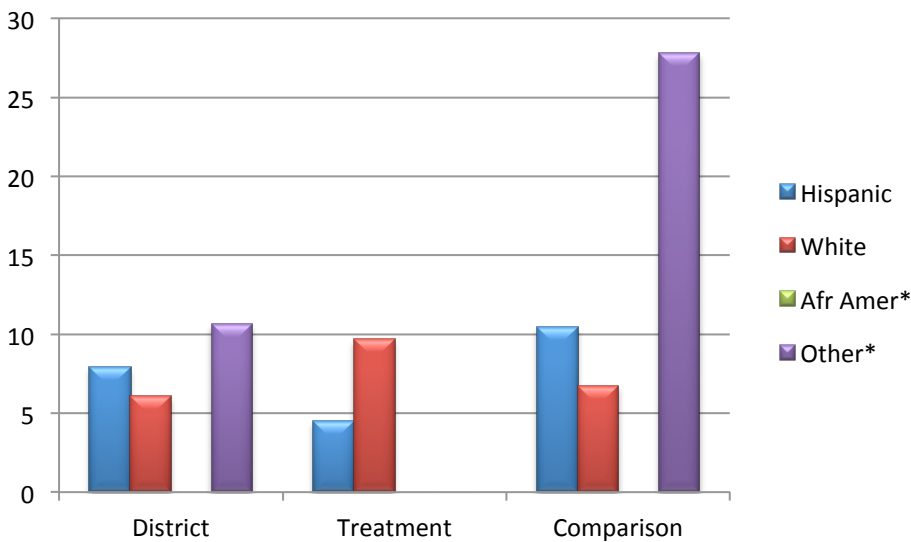


*Interpret cautiously due to low cell count (n=13)

Mobility Analysis

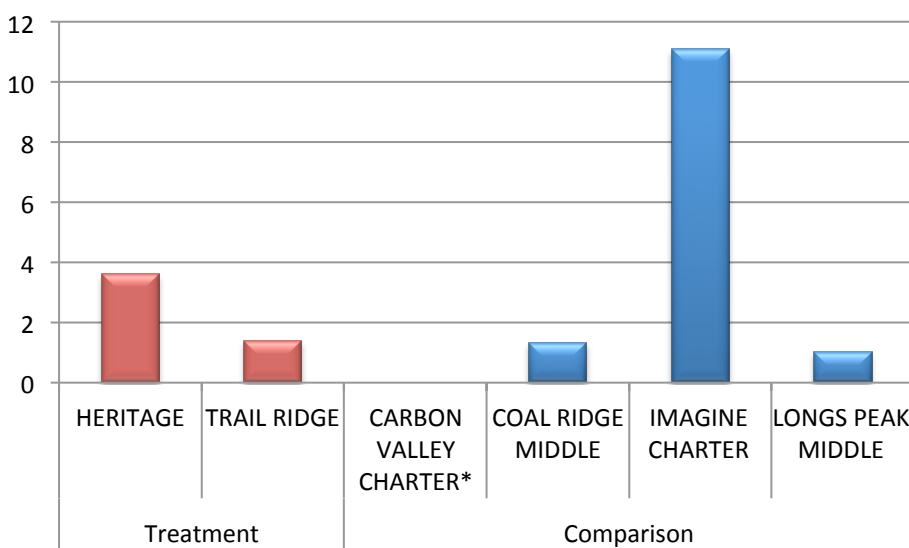
Mobility is defined as moving to another school anywhere in the district in 2013. Statistics for 2014 are not included since this is the transition year for students to high school. Exhibit 14 indicates that the highest mobility rate was experienced by the 2012 Other 7th graders district wide, followed by Hispanic 7th graders in comparison schools and White 7th graders in treatment schools. Hispanic 2012 7th graders in treatment schools experienced the lowest mobility rate at just under 5 percent.

Exhibit 14. Mobility rates by ethnicity among 7th graders in 2012 in the district, in treatment schools, and in comparison schools.



*Interpret cautiously for treatment and comparison due to low cell counts.

Exhibit 15 indicates that over 10 percent of the 2012 7th graders at Imagine Charter moved to another school in the district. The mobility rate of all other schools was less than 4 percent.

Exhibit 15. Mobility rates of 7th graders in 2012 by each treatment and comparison school.

MATH ACHIEVEMENT

The math treatment occurred in the schools starting in 2012. The analysis, therefore, examines student performance on the CSAP exam in the year prior to the treatment's implementation when the cohort of students was 6th graders, and follows them through each year as the cohort reached 9th grade in 2014. This analysis compares the relative changes in average scores over time of the analytic treatment and comparison samples. In addition, it compares the percent of students in the analytic sample who scored unsatisfactory and proficient to the state.

The analytical sample includes students among the treatment and comparison samples of Exhibit 11 who stayed in a school within each sample, did not leave the district, transitioned to high school in 9th grade in 2014, and had scores on the state's CSAP/TCAP exam both as 6th graders in 2011 and 9th graders in 2014. Exhibit 16 indicates that the full treatment sample is reduced from 352 to 227, which shifts the profile of the analytic sample to a slightly higher proportion of Hispanic students. The same is true, but to a lesser extent, as the full comparison sample is reduced from 478 to 271 2012 7th graders in the comparison analytic sample. There are not notable differences in the percent who are on free/reduced lunch between the respective samples.

Exhibit 16. Descriptive statistics of 7th graders in 2012 in the full and analytical samples at treatment and comparison schools.

	Treatment		Comparison	
	Full Sample	Analytic Sample	Full Sample	Analytic Sample
Total Number of Students	352	227	478	271

Race/Ethnicity				
Hispanic	55.4%	58.6%	37.2%	39.9%
White	40.3%	39.2%	58.2%	55.4%
African American*	1.4%	1.3%	0.8%	1.1%
Other*	2.8%	0.9%	3.8%	3.7%
Total	100.0%	100.0%	100.0%	100.0%
Free Lunch				
	53.4%	53.3%	36.8%	34.3%
Reduced Lunch				
	5.4%	5.3%	8.4%	10.3%
IEP				
	7.1%	5.3%	12.1%	11.0%

* For the treatment and comparison analytic samples, the number of observations is less than 10. Results will be presented but interpretation is problematic.

Exhibit 17 shows the average 6th grade CSAP scores for both the full and analytic samples. The treatment and comparison analytic samples are nearly identical in terms of 6th grade CSAP scores. The average math score of 549.3 for the treatment analytic sample is statistically different than the average of 540.8 for the full treatment sample, suggesting that the students who attrit out of the treatment sample are systematically different than those who did not. In contrast, the difference between the average 6th grade CSAP scores of the comparison full and analytic samples is not statistically significant. For both the treatment and comparison groups, the difference between the average 6th grade CSAP scores among Hispanic students is the largest. There is not a notable difference in the means of the White students.

Exhibit 17. Average 2011 6th grade CSAP scores for 2012 7th graders in treatment and comparison schools.

	Treatment		Comparison	
	Full Sample	Analytic Sample	Full Sample	Analytic Sample
Hispanic	487.1	499.9**	485.9	490.1**
White	557.5	559.1	537.6	535.4
African American	472.0	472.0*	421.8	480.0*
Other	498.8	599.0*	527.7	521.0*
Full Sample	516.5	523.6 [†]	516.5	516.2 [†]
Full Sample Counts	327	227	432	271

* For the treatment and comparison analytic samples, the number of observations is less than 10. Results will be presented but interpretation is problematic.

** Statistically different from the treatment and comparison full-sample averages at the p = 0.05 level.

[†] Not statistically different from the full treatment and comparison samples.

Exhibit 18 indicates that 63.4 percent of the treatment students in the analytic sample were at Trail Ridge. Over 55 percent of the comparison analytic sample was at Coal Ridge MS, followed by 36.5 percent at Longs Peak MS and 6.6 percent at Imagine Charter. Only 1.5 percent of the comparison analytic sample was comprised of students who were at Carbon Valley MS in 2012.

Exhibit 18. 2012 7th graders in the treatment and comparison analytic sample by school.

	Treatment	Percent of Treatment Analytic Sample	Comparison	Percent of Comparison Analytic Sample
Treatment				
HERITAGE MS	83	36.6%		
TRAIL RIDGE MS	144	63.4%		
Comparison				
CARBON VALLEY MS			4	1.5%
COAL RIDGE MS			150	55.4%
IMAGINE CHARTER			18	6.6%
LONGS PEAK MS			99	36.5%
Total	227	100.0%	271	100.0%

Exhibit 19 indicates that the analytic sample remains at 498, 227 treatment and 271 comparison, for all years and that they make on-time progress through 2014.

Exhibit 19. Progression of the analytic sample by grade and year.

	2011	2012	2013	2014
6 th Grade	498	0	0	0
7 th Grade	0	498	0	0
8 th Grade	0	0	498	0
9 th Grade	0	0	0	498

Results

Exhibit 20 shows the average CSAP/TCAP math scores as the cohort progresses through to the 9th grade in 2014. The schools are where the students were in the 7th grade in 2012. The graphs of the treatment schools of Heritage and Trail Ridge have square markers whereas the comparison schools do not. Except for Carbon Valley, the scores increase uniformly through the 8th grade, followed by a decrease in 9th grade. Students at Longs Peak achieved both the largest gain in average score (approximately 60) from 2011 and 2013 and the highest average scores in 2013, followed by Trail Ridge. Students at Trail Ridge had the highest average math scores when they were 6th grades in 2011 and went on to have the highest average scores as 9th graders in 2014 along with students from Longs Peak.

Students in both treatment schools experienced a gain of 44 points in the average scores between 6th grade and 8th grade. Students from Trail Ridge who transitioned to Skyline HS experienced a 4 point drop in average score as 9th graders in 2014, the lowest drop of all the schools. Students from the treatment school of Heritage, in contrast, experienced a drop of over 9 points even though they went to Skyline HS as well.

Exhibit 20. Average CSAP/TCAP math score by school and grade.

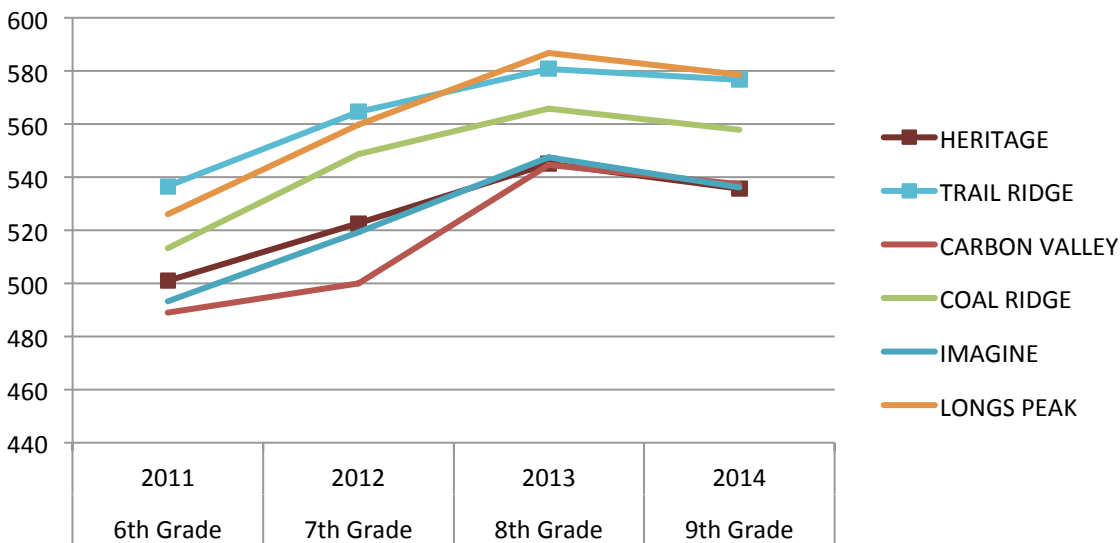


Exhibit 21 indicates that the scores of the Hispanic students generally followed the same trend as the general sample. Note that Carbon Valley and Imagine are not shown due to the very low number of Hispanic students from these schools in the analytic sample. Except for Hispanic students at Coal Ridge, the average math score in 6th grade was 500. Hispanic students at Longs Peak experienced the largest gain of over 60 points by 8th grade and ended up with the highest average score in 9th grade. Hispanic students at Coal Ridge achieved a gain of 60 points by 8th grade, followed by students at the treatment schools of Heritage and Trail Ridge at about 49 points.

For all schools, the average scores dropped as the Hispanic students transitioned to high school. The lowest drop was among students from Trail Ridge MS at approximately 7 points, compared to 10 and 12 point drops among students from the other middle schools.

Exhibit 21. Average math CSAP/TCAP scores for Hispanics by school and grade.

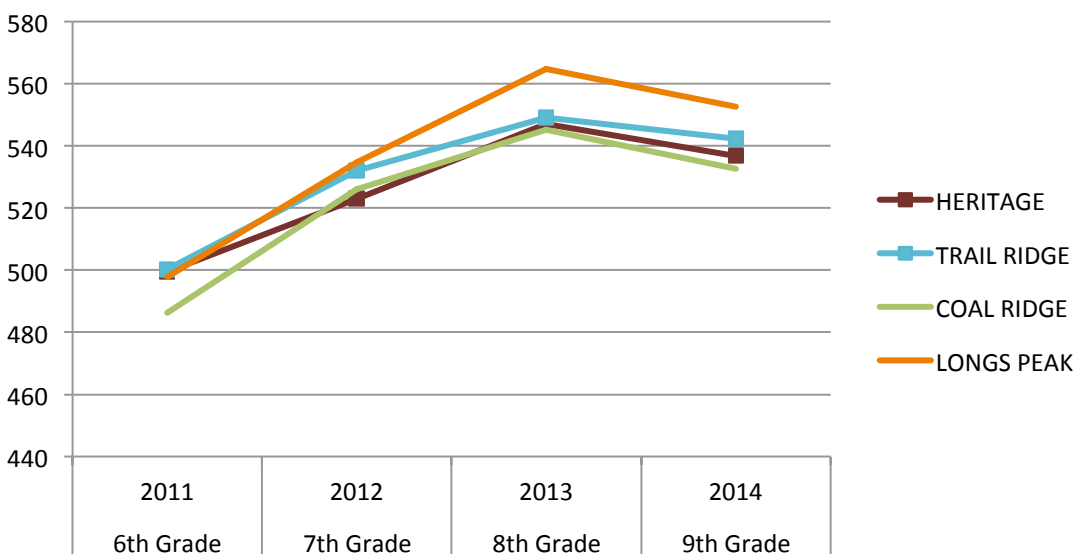


Exhibit 22 shows the White-Hispanic average score gap for students at each school. For all schools, Hispanics gained ground relative to their White peers through 2008, but lost part of that ground as they transitioned to high school in 2014. Heritage started off with a remarkably small gap of 3 in 2011 when the students were 6th graders, decreased by 22 points to -19 points by 8th grade in 2013, and increased back to approximately -11 points as 9th graders in 2014. Students at Trail Ridge had the largest gap as 6th graders in 2011, and experienced the smallest decrease of only 10 points by the time they reached 8th grade in 2013. Hispanic students at Longs Peak closed the gap relative to their White peers by 16 points by 2013, but by 2014 the gap increased by 10 points relative to the 2013 gap. The smallest increase in the gap as students transitioned from 8th grade in 2013 to high school in 2014 was experienced by Hispanic students at Trail Ridge (6 points).

Exhibit 22. Difference in the average White-Hispanic math CSAP/TCAP scores by school and year.

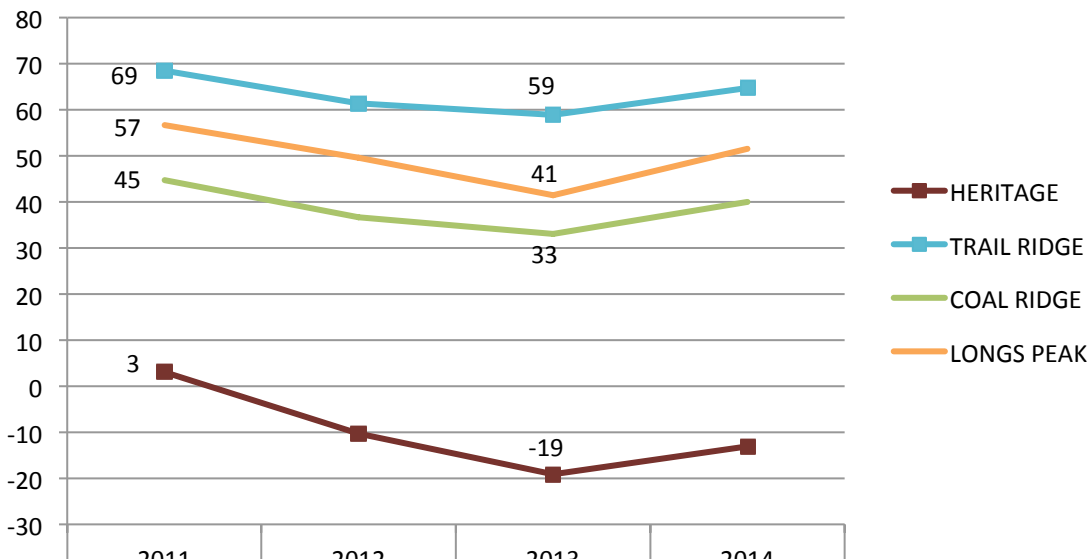


Exhibit 23 and Exhibit 24 compare academic performance of the St. Vrain Hispanic students relative to their peers statewide. Average scores are not available from the state, but the percent of students whose scores are Unacceptable, Provisionally Proficient, Proficient, and Advanced are available. Exhibit 23 indicates that, relative to the state, the percent of Hispanic students who were unacceptable among 6th graders in 2011 was higher at Heritage and Coal Ridge, about the same at Trail Ridge, and lower at Longs Peak. By the time they were 8th graders in 2013, the percent of Hispanic students who were unacceptable was lower than the state at all the schools. As the students transitioned to high school in 2014, they lost ground relative to the state, especially among Hispanic students at Coal Ridge, Trail Ridge, and Heritage.

Exhibit 23. Percent unsatisfactory on the math CSAP/TCAP by grade and year among Hispanics.

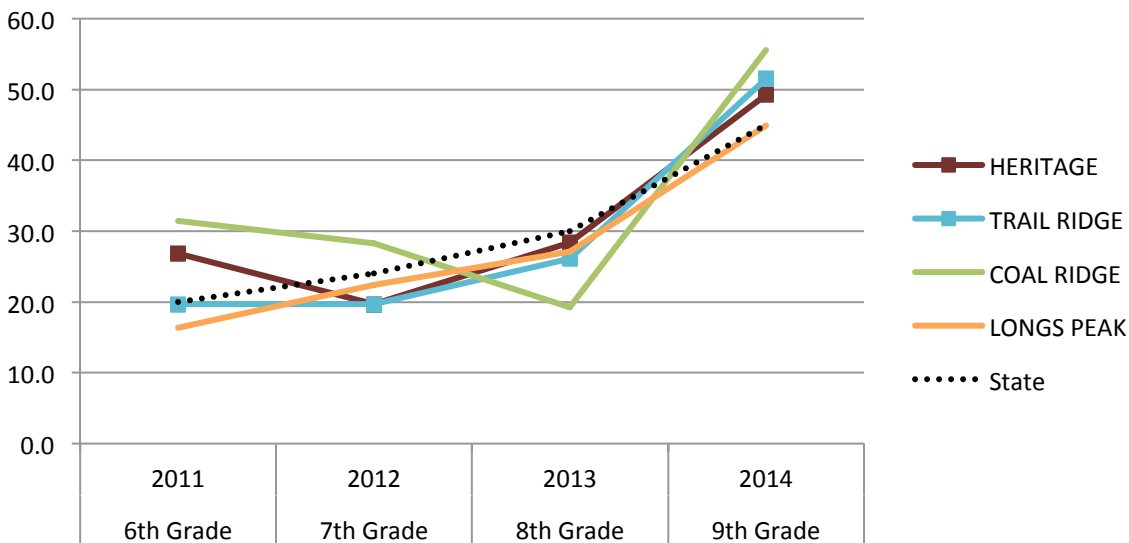
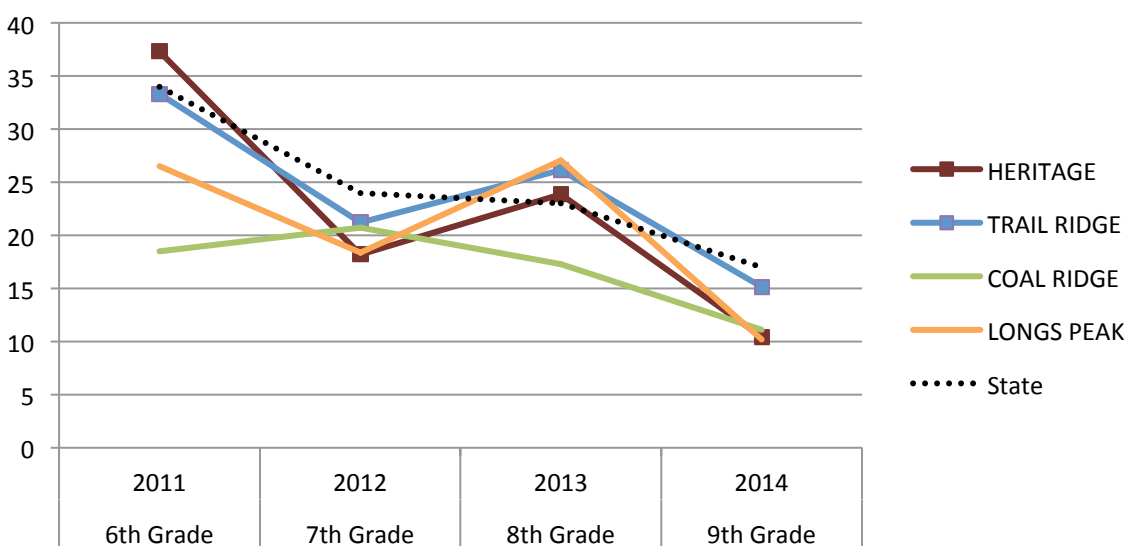


Exhibit 24 reveals the percent of Hispanic students statewide who score proficient on the CSAP/TCAP decreased between 2011 and 2014. Except for Heritage, the percent of Hispanics who scored proficient as 6th graders in 2011 was equal to or lower than the state average. By the time the cohort reached 8th grade in 2013, the percent who scored proficient at all schools except for Coal Ridge was higher than the state average. As students transitioned into high school in 2014, the St. Vrain students lost ground relative to the state, when the percent proficient for Hispanic students at the St. Vrain schools was less than that of the state.

Exhibit 24. Percent proficient on the math CSAP/TCAP by year and grade among Hispanics.



The last phase of the analysis utilizes a quasi-experimental design to predict 2013 and 2014 TCAP scores controlling for 2011 CSAP scores, ethnicity, free/reduced lunch status, and IEP status. Results indicate that the 2014 TCAP treatment students scored an average of approximately 10 points less than comparison students on the 2013 TCAP as 8th graders and 8 points less on the 2014 TCAP as 9th graders. Compared to the full range of scale score points from 0 to 722, differences of 10 and 8 points do not represent large gaps in performance between the two samples. These results are explained in large part by the analysis above which suggests that students in both the treatment and comparison analytic samples experienced similar gains over time. The decrease in the gap between the treatment and comparison schools in 2014 to 8 points is largely due to the relatively small decrease in the performance of students from Trail Ridge as they transitioned to 9th grade.

Mobility and Student Achievement for the Reading Cohort

The following is an analysis of the cohort of 2nd grade students in the St. Vrain Valley School District who were in treatment and comparison schools in 2012. The analysis includes leaver and mobility rates followed by an examination of student performance on the state standardized assessments as the cohort made progress from the 1st grade in 2011 through the 4th grade in 2014.

LEAVERS AND MOBILITY

Exhibit 25 indicates the number of 2nd graders in 2012 in the district, in treatment schools, and in comparison schools. Approximately 11 percent (252 of 2,281 students) of the district's 2nd graders in 2012 were enrolled in treatment schools and 17.4 percent (397 of 2,281) were enrolled in comparison schools. The treatments and comparison schools are disproportionately Hispanic and low-income as measured by the percent of students on free/reduced lunch.

Exhibit 25. Descriptive statistics of 2nd graders in 2012 in the district, in treatment schools, and in comparison schools.

	District	Treatment Schools	Comparison Schools
Total Number of Students	2,281	252	397
Race/Ethnicity			
Hispanic	29.0%	88.1%	57.2%
White	64.8%	8.7%	39.3%
African American	1.1%	0.4%	0.8%
Other	5.1%	2.8%	2.8%
Total	100.0%	100.0%	100.0%
Free Lunch	28.5%	80.2%	58.4%
Reduced Lunch	5.52%	8.7%	8.3%
IEP	8.6%	13.1%	10.1%

Leaver Analysis

Leavers are defined as any 2nd grade student in 2012 who was no longer enrolled anywhere in the district in 2013 or 2014. Exhibit 26 indicates that the 2013 leaver rate of students in the treatment schools was higher than their counterparts in the comparison schools or the district as a whole. For example, approximately 7 percent of the Hispanic 2nd graders who were in treatment schools in 2012 were not enrolled in the district in 2013; approximately 4 percent of the 2012 treatment Hispanic 2nd graders students were not enrolled in 2014, lower than their counterparts district wide or in comparison schools. The highest leaver rate was among Other (any ethnicity other than White, Hispanic, and African American) 2nd graders in the treatment schools at over 26%.

Exhibit 26. Leaver rates by ethnicity for all 2nd graders in 2012 in the district, in treatment schools, and in comparison schools.

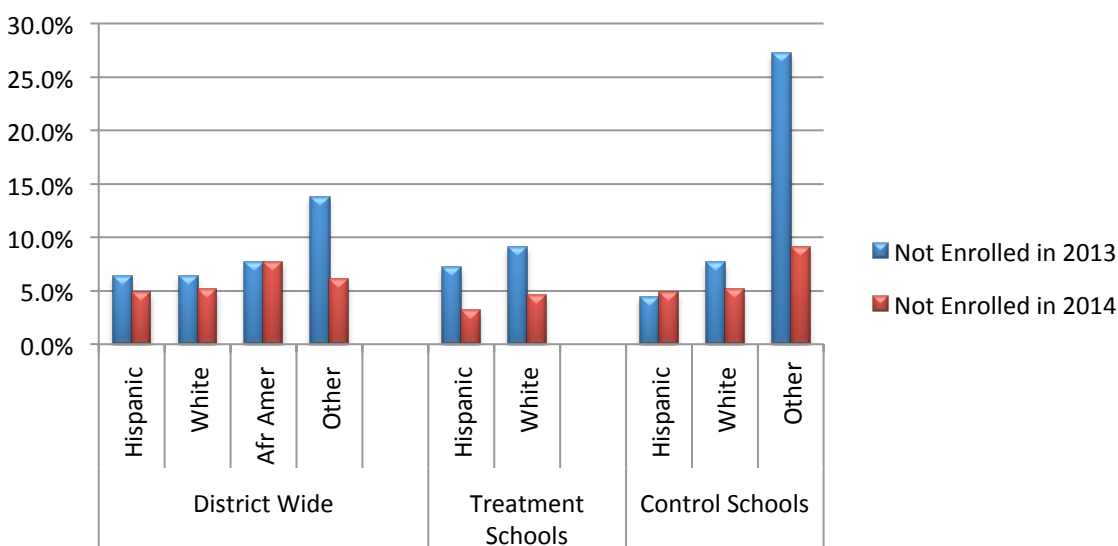


Exhibit 27 suggests that there are notable differences in the leaver rate among treatment schools. Over 11 percent of the 2nd graders at Spangler in 2012 did not enroll anywhere in the district in 2013, compared to only 6 percent at Columbine. Eight percent of the Columbine 2012 2nd graders were not enrolled anywhere in the district in 2014 compared to just over 1 percent at both Loma Linda and Rocky Mountain. The leaver rate in 2013 was higher at each school than 2014 except for Columbine.

Exhibit 27. Leaver rates among 2nd graders in 2012 by treatment school

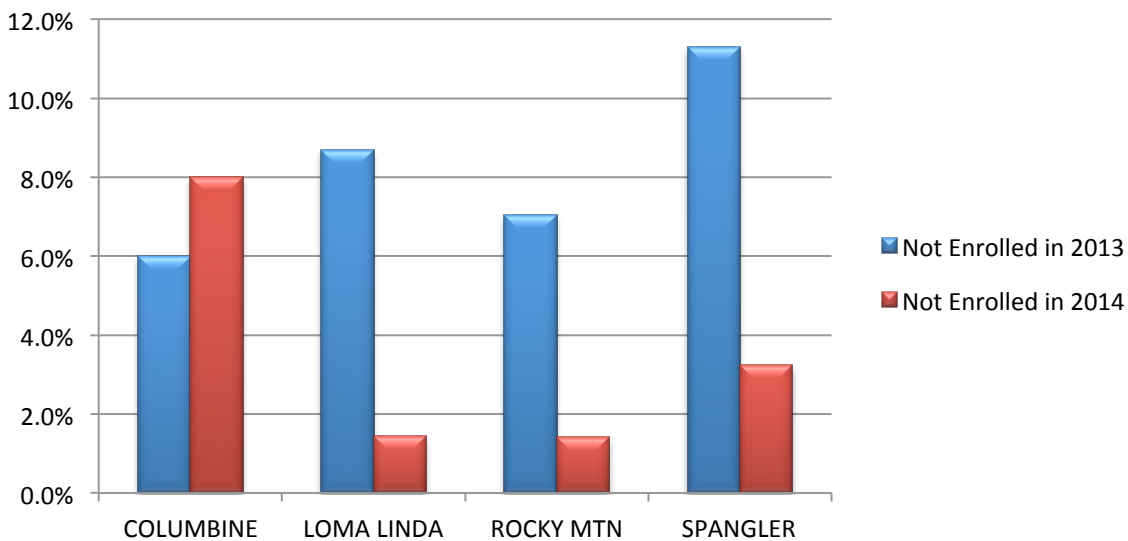
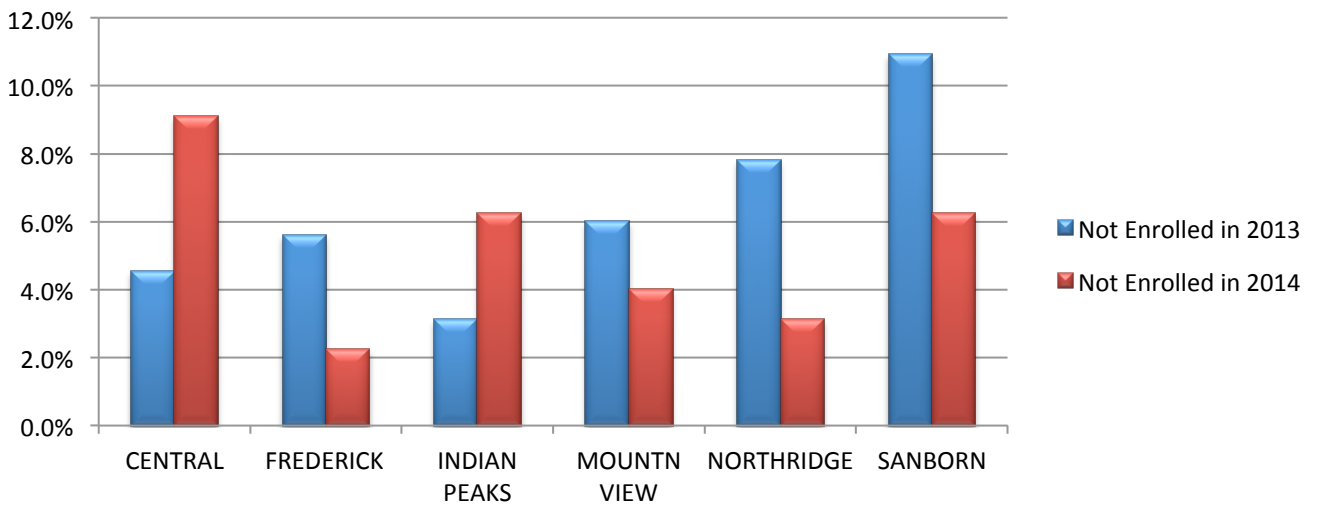


Exhibit 28 reveals that there were similar differences in leaver rate among the comparison schools as was the case with treatment schools. The leaver rates for 2014 were lower than that of 2013 except for Central and Indian Peaks. Over 10 percent of the 2012 Sanborn 2nd graders were not enrolled in 2013.

Exhibit 28. Leaver rates among 2nd graders in 2012 by comparison school***Mobility Analysis***

A student is considered a mover if she was still enrolled in the district the following year, but in a different school. Those students who moved because of school closings or redrawing of boundaries are not considered movers.

Exhibit 29 indicates that White students in treatment schools experienced the highest mobility rates at over 26 percent, followed by treatment Hispanic 2012 2nd graders at 15 percent.

Mobility rates at the comparison schools were slightly higher than that of the district. Across all schools and ethnicities, 2012 2nd graders did not move within the district in 2014 as much as in 2013.

Exhibit 29. Mobility rates by ethnicity among 2nd graders in 2012 in the district, in treatment schools, and in comparison schools.

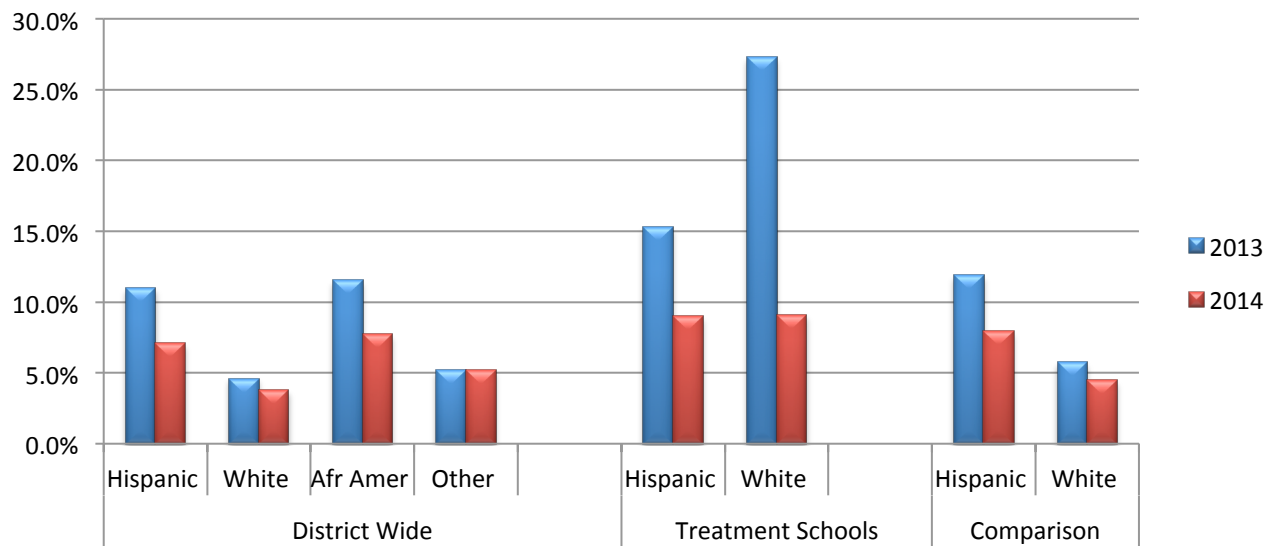
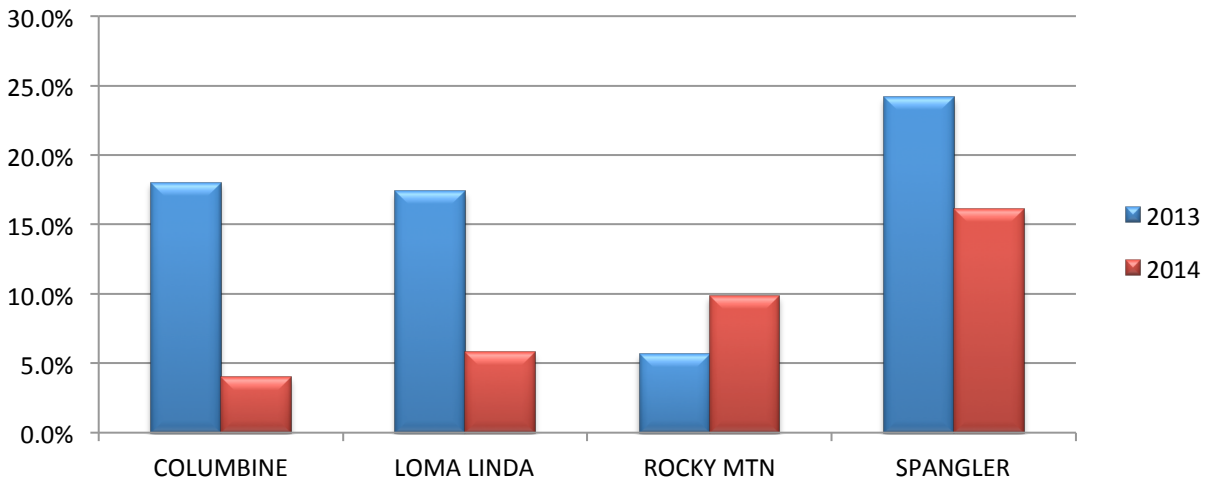


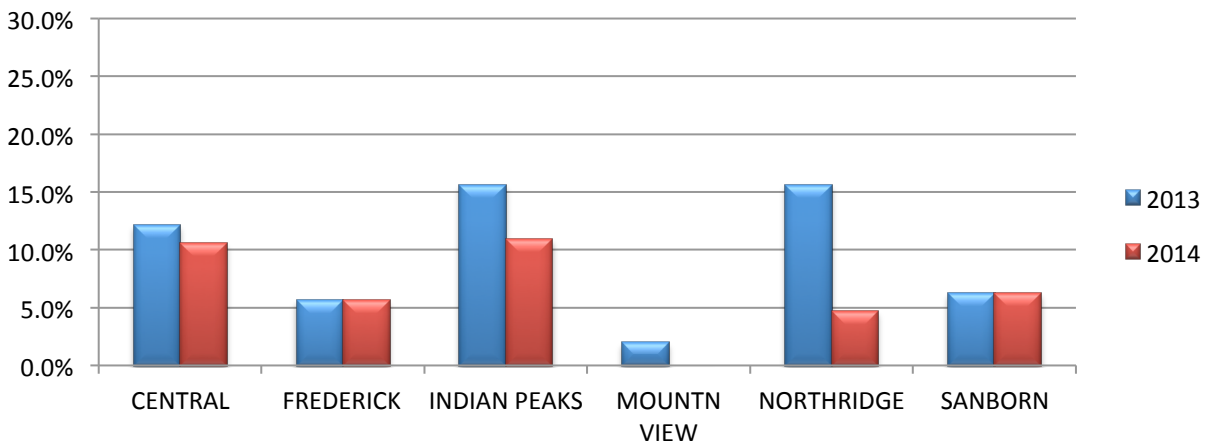
Exhibit 30 indicates that 2012 2nd graders in Spangler elementary were more mobile within the district in both 2013 and 2014 than the students at the other treatment schools. Only 4 percent of the Columbine 2012 2nd graders moved to another school in 2014.

Exhibit 30. Mobility rates by each treatment school of 2nd graders in 2012.



Over 15 percent of the 2012 2nd graders at both Indian Peaks and Northridge moved to another school in the district in 2013. Just over 10 percent of the 2012 2nd graders at Central and Indian Peaks moved to another school in 2014.

Exhibit 31. Mobility rates by each comparison school of 2nd graders in 2012.



READING ACHIEVEMENT

The reading treatment occurred in the schools starting in 2012. The analysis, therefore, examines student performance on the district's Phonological Awareness Language Screening (PALS) exam in the year prior to the treatment's implementation when the cohort of students was 1st graders. It examines student performance on the TCAP in 2013 as 3rd graders and 4th graders in 2014. The state does not administer an exam to 1st graders and 2nd graders. This analysis compares the relative changes in average scores over time of the analytic treatment and comparison samples, and compares the percent of students in the analytic sample who scored unsatisfactory and proficient to the state. Lastly, it utilizes a quasi-experimental design to predict 2013 and 2014 TCAP scores controlling for 2011 CSAP scores, ethnicity, free/reduced lunch status, and IEP status.

The analytical sample includes students among the treatment and comparison samples of Exhibit 25 who stayed in a school within each sample, did not leave the district, and was in 4th grade in 2014, had scores on the district's PALS exam as 1st graders in 2011 and the state's TCAP exam as 4th graders in 2014. Exhibit 32 indicates that the full treatment sample is reduced from 252 to 150, which shifts the profile of the analytic sample to a slightly higher proportion of Hispanic students. The opposite is true as the full comparison sample is reduced from 397 to 205 2nd graders in the comparison analytic sample in 2012. There are notable differences in the percent who are on free/reduced lunch between the respective samples.

Exhibit 32. Descriptive statistics of 2nd graders in 2012 in the full and analytical samples at treatment and comparison schools.

	Treatment		Comparison	
	Full Sample	Analytic Sample	Full Sample	Analytic Sample
Total Number of Students	252	150	397	205
Race/Ethnicity				
Hispanic	88.1%	93.4%	57.2%	54.5%
White	8.7%	5.3%	39.3%	42.0%
African American*	0.4%	0.0%	0.8%	1.5%
Other*	2.8%	1.3%	2.8%	2.0%
Total	100.0%	100.0%	100.0%	100.0%
Free Lunch	80.2%	53.3%	58.4%	34.3%
Reduced Lunch	8.7%	5.3%	8.3%	10.3%
IEP	13.1%	5.3%	10.1%	11.0%

* For the treatment and comparison analytic samples, the number of observations is less than 10. Results will be presented but interpretation is problematic.

Exhibit 33 indicates that, in terms of the average PALS scores as 1st graders in 2011, the full and analytic samples are remarkably similar for both treatment and comparison schools. The average PALS score for the comparison analytic sample is statistically different than the treatment analytic sample.

Exhibit 33. Average 2011 1st grade PALS scores for 2012 2nd graders in treatment and comparison schools.

	Treatment		Comparison	
	Full Sample	Analytic Sample	Full Sample	Analytic Sample
Hispanic	37.3	37.1 [†]	38.7	37.7
White	52.5	52.1 ^{*†}	50.1	50.3 [†]
African American			51.0 [*]	51.0 [*]
Other	42.8 [*]	54.5 [*]	51.7 [*]	52.3 [*]
Full Sample	38.3	38.1 ^{**†}	43.6	43.5 [†]
Full Sample Counts	195	150	318	205

* For the treatment and comparison analytic samples, the number of observations is less than 10. Results will be presented but interpretation is problematic.

** Statistically different from the comparison analytic sample average at the p = 0.001 level.

[†] Not statistically different from the full treatment and comparison samples.

Exhibit 34 indicates that the treatment analytic sample consisted of a good representation of each of the 4 schools. The same is true of the comparison analytic sample except for Frederick elementary which contributed only 1.5 percent.

Exhibit 34. 2012 2nd graders in the treatment and comparison analytic sample by school.

	Treatment	Percent of Treatment Analytic Sample	Comparison	Percent of Comparison Analytic Sample
Treatment				
COLUMBINE	34	22.7%		
LOMA LINDA	37	24.7%		
ROCKY MTN	50	33.3%		
SPANGLER ELEM	29	19.3%		
Comparison				
CENTRAL			37	18.0%
FREDERICK			3	1.5%
INDIAN PEAKS			40	19.5%
MOUNTAIN VIEW			37	18.0%

NORTHRIDGE			40	19.5%
SANBORN			48	23.4%
Total	150	100.0%	205	100.0%

Exhibit 35 indicates that there were a total of 355 students in the analytic sample across all grades and years.

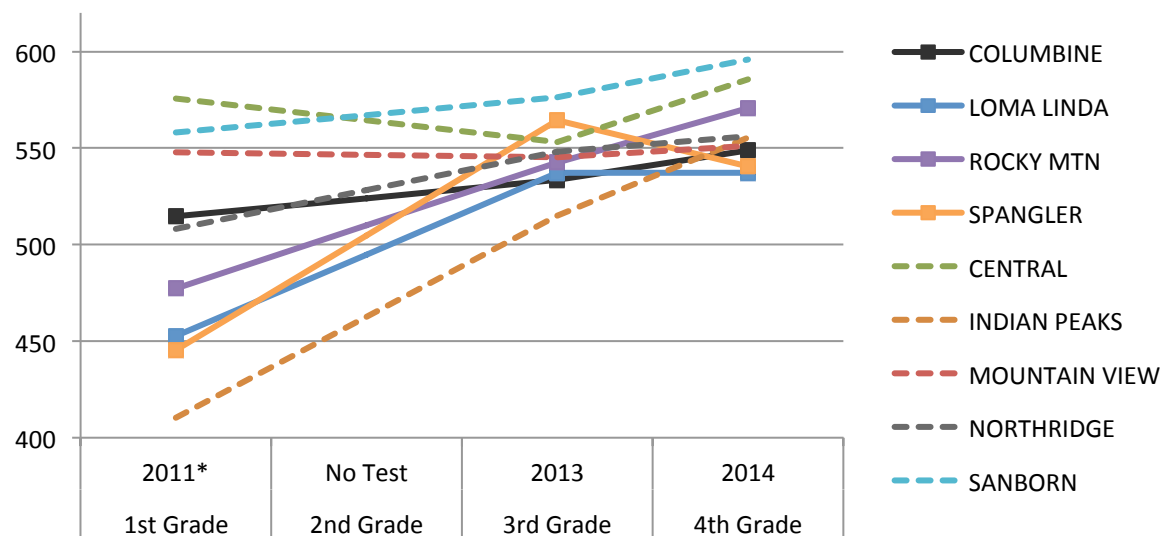
Exhibit 35. Progression of the analytic sample by grade and year.

	2011	2012	2013	2014
6th Grade	355	0	0	0
7th Grade	0	355	0	0
8th Grade	0	0	355	0
9th Grade	0	0	0	355

Results

Exhibit 36 shows the average adjusted PALS and TCAP scores as the cohort progresses from 1st graders in 2011 to 4th graders in 2014. Treatment schools are shown in solid lines with square markers; comparison schools are shown in dashed lines with no markers. The adjustment in the PALS scores as shown in Exhibit 36 was to normalize to the 2013 distribution of the 3rd grade TCAP scores in order to depict how the rank order of schools in 2011 relates to the 2013 TCAP scores.¹ Although this may be insightful, however, the changes of interest are the average scores in 2013 and 2014. As can be seen, there is an increase in average scores across the board except for Spangler. The treatment school of Rocky Mountain demonstrated the largest percentage point increase of over 40, followed by approximately 32 percentage points at Central and 28 percentage points at Rocky Mountain. Columbine increased 15 percentage points and Loma Linda experienced essentially no gain in average scores. Students in the analytic sample at the treatment school of Spangler decreased a notable 24 points.

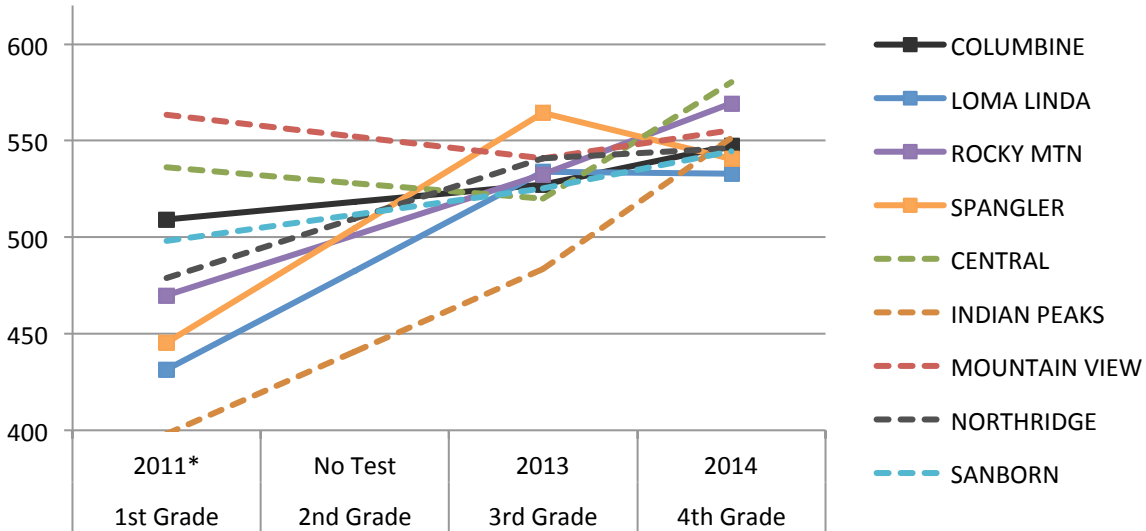
¹ The analytic sample range of the 2011 PALS was 0 to 76, and 150 to 795 for the 2013 TCAP. The adjusted PALS = $(795-150)/76 * \text{PALS} + 150$.

Exhibit 36. Average adjusted PALS and TCAP reading score by school and grade.

* PALS scores normalized to the 2013 TCAP distribution for illustrative purposes

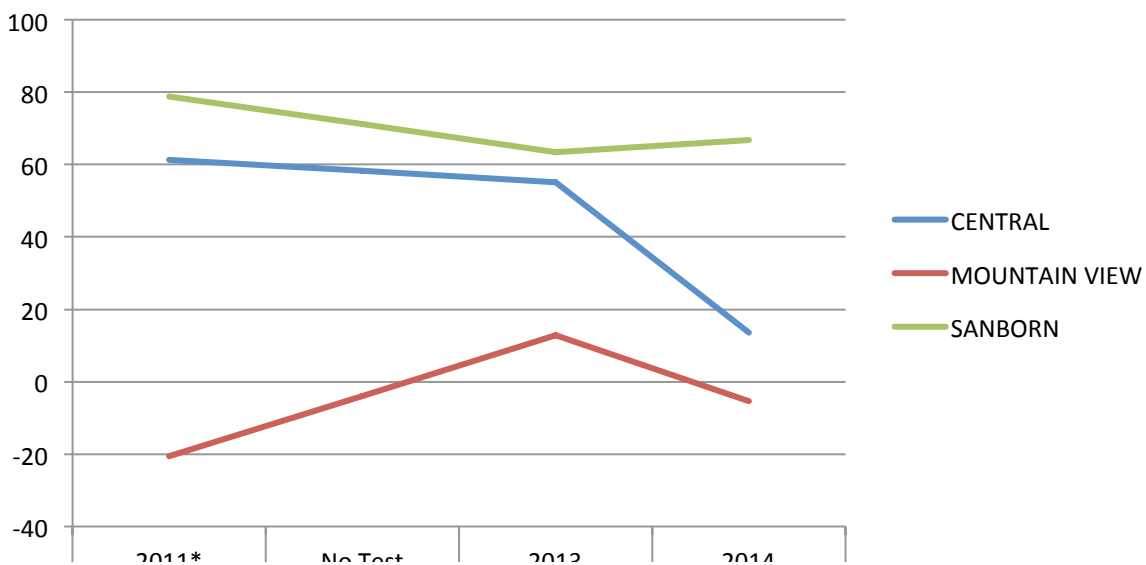
Exhibit 37 shows the average scores for Hispanic students. Among treatment schools, the largest gain in average TCAP scores was experienced by Hispanic students at Rocky Mountain with a gain of almost 40 percentage points, followed by Columbine at 20 percentage points, Loma Linda with essentially no change, and Spangler with a decrease of almost 24 percentage points. Hispanic students at Indian Peaks experienced the largest gain of any school with 68 percentage points, followed by 60 points at Central, 20 points at Sanborn, and 15 points at Mountain View.

Exhibit 37. Average adjusted 2011 PALS and reading TCAP scores for Hispanics by school and grade.



* PALS scores normalized to the 2013 TCAP distribution for illustrative purposes

Exhibit 38 reflects the change in the White-Hispanic test score gap by school. Only those schools that had a sufficient number of both races are included in the graph. The gap decreased remarkably at both Central and Mountain View, with Hispanic students at Mountain View actually outscoring their White counterparts on average by 2014. The largest gap was at Sanborn, which grew to 67 percentage points by 2014.

Exhibit 38. Difference in the average White-Hispanic math TCAP scores by school and year.

* PALS scores normalized to the 2013 TCAP distribution for illustrative purposes

The last phase of the analysis utilizes a quasi-experimental design to predict 2014 TCAP scores controlling for 2011 PALS scores, ethnicity, free/reduced lunch status, and IEP status. Results indicate that the 2014 treatment students did not differ in terms of their TCAP scores from their counterparts at the comparison schools.