ACKNOWLEDGMENTS

This report was prepared in partial fulfilment of CCSD RFP 22051TCG. UNLV CREA would like to thank Dr. Brenda Pearson, Dr. Harsha Perera, and Dr. Rachel Part for their scholarly contributions to this project.

DISCLAIMER

UNLV CREA is an independent, non-partisan research and evaluation center. CREA conducts original research using a variety of quantitative and qualitative research, evaluation, and assessment methods. The results, information, and opinions solely represent the author(s) and are not endorsed by, nor reflect the views or positions of the Clark County School District or the Nevada System of Higher Education, or any employee thereof.
Table of Contents

List of Tables ........................................................................................................................................ 3
List of Figures ........................................................................................................................................ 4
Executive Summary ................................................................................................................................. 5
  Impact Questions ................................................................................................................................. 5
  Methodology ......................................................................................................................................... 5
  Results ................................................................................................................................................ 6
SECTION 1: INTRODUCTION .............................................................................................................. 8
  Background on the CCSD Innovative Middle School Program ......................................................... 8
  Teacher Job Satisfaction, Burnout, and Intent to Leave ................................................................. 9
  Evaluation Purpose ............................................................................................................................. 11
SECTION 2: DATA AND METHODS ..................................................................................................... 12
  Sample .............................................................................................................................................. 12
    Treated and comparison Schools and Students .............................................................................. 12
  Outcomes To Be Used in Impact Analysis ..................................................................................... 15
    Student Academic Achievement (SBAC ELA and Math Scores) .............................................. 16
    Attendance (Percentage of Days Absent) ...................................................................................... 16
    Staff Retention (School-Level Percentage of Staff Retained) .................................................. 16
  Analytic Models ................................................................................................................................. 17
SECTION 3: RESULTS ........................................................................................................................... 19
  Impact Analysis Results .................................................................................................................... 19
    Results: Student Academic Achievement (SBAC ELA and Math Scores) .......................... 19
    Results: Attendance (Percentage of Days Absent) ................................................................. 23
    Results: Staff Retention (School-Level Percentage of Staff Retained) .................................. 23
    Results: Subgroup Analysis ........................................................................................................ 25
SECTION 4: CONCLUSIONS AND RECOMMENDATIONS ................................................................. 31
References ............................................................................................................................................. 33
List of Tables

Table 1. List of Innovative Middle Schools and Matched Comparison Middle Schools

Table 2. Summary Statistics for Innovative Middle Schools and Students by Cohort at Baseline
### List of Figures

1. **Figure 1. Logic Model for CCSD Innovative Middle School Program (2019-2022)**  
   - Page 9

2. **Figure 2. Change in ELA Achievement for Innovative Middle School Students Relative to Comparison Students**  
   - Page 19

3. **Figure 3. Change in Math Achievement for Innovative Middle School Students Relative to Comparison Students**  
   - Page 21

4. **Figure 4. Change in Absences for Innovative Middle School Students Relative to Comparison Students**  
   - Page 23

5. **Figure 5. Change in Percentage of Teachers Retained at Innovative Middle Schools Relative to Comparison Middle Schools**  
   - Page 25

6. **Figure 6. Change in ELA and Math Achievement and Absences for Innovative Middle School Students Relative to Comparison Students (Black Students)**  
   - Page 27

7. **Figure 7. Change in ELA and Math Achievement and Absences for Innovative Middle School Students Relative to Comparison Students (White Students)**  
   - Page 28

8. **Figure 8. Change in ELA and Math Achievement and Absences for Innovative Middle School Students Relative to Comparison Students (Hispanic Students)**  
   - Page 29

9. **Figure 9. Change in ELA and Math Achievement and Absences for Innovative Middle School Students Relative to Comparison Students (EL Students)**  
   - Page 30
Executive Summary

As of 2022-23, Clark County School District was in its third and final year of implementing the Innovative Middle School Program, a three-year pilot program designed to improve student achievement and retain teachers invested in growing and sustaining a positive educational culture in schools identified by the state of Nevada as needing improvement (CCSD, n.d.). As such, eight middle schools received funding to implement the program, including extra planning time to allow for teacher collaboration and enhanced instruction, as well as bonuses tied to teacher recruitment, retention, and student performances in support of increased job satisfaction.

Under CCSD RFP 22051TCG, in this report, we present the results of our evaluation of the impact of Innovative Middle School programming on academic and non-academic outcomes. To that end, this evaluation aims to answer the following evaluation questions:

Impact Questions

1. What is the impact of the Innovative Middle School Program on student smarter balance assessment consortium (SBAC) English Language Arts (ELA) and math achievement?
2. What is the impact of the Innovative Middle School Program on student attendance?
3. What is the impact of the Innovative Middle School Program on staff retention?

Methodology

To answer our impact evaluation questions, we relied on academic and non-academic data from CCSD administrative data systems. This includes student scores on SBAC ELA and math exams, as well as student attendance data from Infinite Campus to measure student academic progress and completion rates. We also analyzed staff retention data. We utilize these data in conjunction with a series of quasi-experimental event study models with a propensity score matched comparison group.
Results

We found that the Innovative Middle School program was successful in improving student achievement outcomes, though the academic achievement effects were somewhat delayed. Students enrolled at Innovative Middle Schools did not start realizing gains in achievement relative to students at matched comparison schools until year 2 and year 3 of the program, and the improvement was larger in math than in ELA. The gains in ELA were 0.13 of a SD and represented about 27% of the average student growth in ELA achievement for a middle schooler. The gains in math were 0.18 of a SD and represented about 29% of the average student growth in math achievement for a middle schooler. In addition, we explored effects across different student demographic groups and found that all groups realized gains in ELA and math achievement. By year 3, the effect on ELA achievement was 0.17 SD for black students, 0.22 SD for white students, 0.12 SD for Hispanic students, and 0.16 SD for EL students. By year 3, the effect on math achievement was 0.17 SD for black students, 0.14 SD for white students (though no statistically significant), 0.19 SD for Hispanic students, and 0.16 SD for EL students.

We found that the Innovative Middle School program did not make much of a difference in terms of student attendance but did improve staff retention by over 1 percentage point in the first year of implementation. However, staff retention dropped after the first year, suggesting that any gains were short-term and not sustained over the course of the program. While we were not able to interview or survey teachers as a part of this program evaluation to explore potential reasons for the downward slide in staff retention, prior surveys of Innovative Middle School teachers could shed some light (Perera et al., 2021). Importantly, this work suggested that teachers at Innovative Middle School were already feeling a sense of burnout and were considering leaving the profession. These feelings did not necessarily stem from any increased workload on the part of teaching at an Innovative Middle School, but stemmed from general feelings associated with the teaching
profession. Consequently, the retention bonuses associated with the program may have delayed but not altogether prevented exit for these teachers.

**Recommendations**

When considering a program like this one in the future, CCSD may reflect on a few things. First, they can proceed with confidence that programs like this one do make a measurable difference for student achievement. CCSD may want to look in more detail at the types of efforts Innovative Middle School leaders made to address and enhance academic achievement. Second, CCSD should look at their staff retention bonuses and consider enhancing the bonus to provide additional incentives for teachers to stay at the Innovative Middle School. In addition, they may want to provide a longer time horizon for teachers to achieve the bonuses or provide scaled bonuses that increase with additional years of longevity. This could help with the increased staffing churn beyond the first year of the program. Finally, CCSD will want to implement other feedback and data collection mechanisms during implementation of a program like this one to ensure that decisions about what is working and what is not can be regularly informed by the voices of educators in the classroom.
SECTION 1: INTRODUCTION

Background on the CCSD Innovative Middle School Program

As of 2021-22, the Clark County School District (CCSD) was in its final year of implementing the Innovative Middle School Program, a three-year pilot program that ran from August 2019 through June 2022. Designed to improve student progress and recruit and retain teachers invested in growing and sustaining a positive educational culture (CCSD, n.d.), CCSD selected eight schools that they identified as having substantial disadvantaged student populations and significant difficulty in retaining high-quality educators. The following schools received approximately 10 million dollars per year in funding: Caroll M. Johnston Middle School, Ed Von Tobel Middle School, J. Harold Brinley Middle School, Jerome Mack Middle School, Mario C. and JoAnne Monaco Middle School, Marvin M. Sedway Middle School, West Preparatory Academy Middle School, William E. Orr Middle School.

As shown in Figure 1, each Innovative Middle School leader was afforded the autonomy to 1) independently select and retain staff, 2) organize instructional time, including extended daily classroom preparation opportunities (up to 34 minutes), and 3) align learning opportunities with school and community needs. School leaders were given an annual performance bonus of up to $12,500 dollars for meeting specific school performance targets. Teachers who applied to and were selected to work at the Innovative Middle Schools were afforded an annual $10,000 dollar retention bonus and an additional $5,000 dollar bonus if student outcomes improved. As shown further in Figure 1, ultimately the program was designed to improve staff retention and student learning outcomes.

This evaluation looked at the impact of CCSD’s Innovative Middle School Program on academic and non-academic outcomes at the identified schools through the 2021-22 school year. While most prior research has focused solely on student test scores as a proxy for student learning,
this evaluation built on that research by looking at student achievement on state assessments, as well as measures of student attendance. We also examined staff retention data to infer implications for retention and job satisfaction and further contextualize the program’s impact.

Figure 1. Logic Model for CCSD Innovative Middle School Program (2019-2022)

Notes: CCSD’s Innovative Middle School Program was a three-year pilot program that ran from August 2019 through June 2022. The program was built on the idea that enhanced principal autonomy over staff selection and retention, instructional time, and targeted learning opportunities would yield improved staff retention and student learning.

Teacher Job Satisfaction, Burnout, and Intent to Leave

Prior research examining CCSD’s Innovative Middle School Program teachers was conducted during the Spring 2021 semester (Perera et al., 2021). Researchers surveyed 473 teachers from participating middle schools monthly on four separate occasions during the semester to monitor changes in perceived job satisfaction, burnout, and intent to leave. In addition, 25% of participants were considered early career (e.g., reported five or fewer years of teaching experience); 29% were mid-career (e.g., reported six to 12 years of teaching experience); and 48% were veterans.
(e.g., reported having 13 or more years of teaching experience). On average, respondents reported having 13.01 years of teaching experience.

Regardless of career standing, teachers reported relatively high levels on emotional support, instructional support, and classroom organization. Yet, findings indicated a downward trajectory of professional well-being coupled with increased feelings of burnout and intentions to leave. Overall, teachers reported statistically significant decreases in job satisfaction, inferring decreased enjoyment of and enthusiasm for their profession. Data suggest job satisfaction may be related to feelings of disinterest in teaching regardless of whether or not respondents perceived teaching-related tasks as requiring sacrifices of their time, effort, and mental capacity. Teachers indicated moderate yet statistically significant increases in feelings of burnout, suggesting increased perceptions of strain and exhaustion. In particular, early career teachers reported higher ratings of burnout than any other group. Data suggest feelings of burnout may correlate with perceptions of teaching and teaching-related tasks as requiring significant time, effort, and mental capacity, yet not being enjoyable, personally beneficial, or contributing to society. Conversely, those who tended to perceive teaching as relevant, personally or socially contributive, and requiring little sacrifice reported lower feelings of burnout. While not statistically significant, overall teachers also reported increased intentions to leave the profession. Notably, mid-career participants reported higher ratings on intention to leave than any other group. Data suggest intent to leave may be linked to perceptions of teaching as requiring effort without producing comparable intrinsic or extrinsic rewards, but also to diminished interest in teaching. Conversely, those who viewed teaching as important, interesting, and contributive or who view teaching tasks as requiring low levels of sacrifice reported lower intention to leave.
Findings are complicated by the fact that during the semester, teachers were transitioning from distance instruction to predominantly hybrid or in-person instruction due to the COVID-19 pandemic.

**Evaluation Purpose**

CREA provided evaluation services for CCSD’s implementation of the Innovative Middle School Program, examining whether and to what extent, the program activities produced the intended academic and non-academic outcomes. In this case, outcomes included retaining high-quality teachers committed to building a positive culture and increasing student achievement. We focused on the following three evaluation questions:

1. What is the impact of the Innovative Middle School Program on student SBAC ELA and math achievement?
2. What is the impact of the Innovative Middle School Program on student attendance?
3. What is the impact of the Innovative Middle School Program on staff retention?

We answered these questions using two separate quasi-experimental (i.e., event study) models, one that estimates the impact of the Innovative Middle School program on student outcomes and one that estimates the impact on teacher outcomes. The outcomes we measured were as follows:

- Student achievement: Student scores on smarter balance assessment consortium (SBAC) exams.
- Student attendance: the percentage of days absent
- Staff retention: the percentage of teaching staff that remained at the school from the prior year.

For student achievement, CREA compared the change in SBAC scores for treated middle school students relative to comparison school students before and after the implementation of the Innovative Middle Schools Program. For student attendance, CREA utilized data from CCSD’s
EVALUATION OF INNOVATIVE MIDDLE SCHOOLS

Infinite Campus system to calculate the percentage of days a student was in each school year. Finally, for staff retention, our data came from CCSD’s personnel management system. Staff retention was available only at the school-level. The measure captures the percentage of teaching staff that remained at the school from the prior year. We describe out data and methods further in the following section.

SECTION 2: DATA AND METHODS

This evaluation sought to understand the impact of CCSD’s Innovative Middle School programming on intended student and teacher outcomes. The method for this evaluation is described in more detail in what follows.

Sample

Treated and comparison Schools and Students

We created a treatment indicator for the eight Innovative Middle Schools: J. Harold Brinley Middle School, Caroll M. Johnston Middle School, Jerome Mack Middle School, Mario C. and JoAnne Monaco Middle School, William E. Orr Middle School, Marvin M. Sedway Middle School, and Ed Von Tobel Middle School.

Within those schools, we identified three cohorts of 6th grade students treated by the Innovative Middle School programming during their time in middle school. Cohort I students were 6th grade students at an Innovative Middle School in the 2019-20 school year. Cohort II students were 6th grade students at an Innovative Middle School in the 2020-21 school year. Cohort III students were 6th grade students at an Innovative Middle School in the 2021-22 school year. We ran our analytic models by cohort and then for all students. We then ran our models combined for all cohorts of students.

To identify suitable comparison schools for the Innovative Middle Schools, we performed propensity score nearest-neighbor matching. With the propensity score nearest-neighbor matching,
we identified the eight middle schools in CCSD that were most similar to the Innovative Middle Schools in student demographics but were not selected to participate in the program. We matched comparison schools with the Innovative Middle Schools on school enrollment, the percentage of Free-and-Reduced Price Lunch (FRL) students, the percentage of learners who are not proficient in English (EL students), the percentage of Black students enrolled, and the percentage of Hispanic students enrolled. To identify the matches, we followed Austin’s (2011) nearest-neighbor propensity matching strategy based on a caliper width. The caliper sets the maximum tolerance for the distance between a matched treatment and control. The caliper method draws only on matches that have a propensity score within a reasonable distance of the treated unit, and importantly, it allows for obtaining stronger matches while dropping poor matches from the analysis (Caliendo & Kopeinig, 2005). Austin (2011) recommends using a caliper with a width of 0.20 SD when estimating differences in means, which we used for our analysis. The propensity score matching algorithm identified 100 Academy of Excellence Secondary School, Dell H. Robison Middle School, Dr. William H. Bailey Middle School, Duane Keller Middle School, Frank F. Garside Junior High School, James Cashman Middle School, Kathleen and Tim Harney Middle School, and Rainbow Dreams Academy Middle School as the comparison schools, as shown in Table 1.

**Table 1.** List of Innovative Middle Schools and Matched Comparison Middle Schools

<table>
<thead>
<tr>
<th>Innovative Middle Schools</th>
<th>Matched Comparison Middle Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caroll M. Johnston Middle School</td>
<td>100 Academy of Excellence Secondary School</td>
</tr>
<tr>
<td>Ed Von Tobel Middle School</td>
<td>Dell H. Robison Middle School</td>
</tr>
<tr>
<td>J. Harold Brinley Middle School</td>
<td>Dr. William H. Bailey Middle School</td>
</tr>
<tr>
<td>Jerome Mack Middle School</td>
<td>Duane Keller Middle School</td>
</tr>
<tr>
<td>Mario C. and JoAnne Monaco Middle School</td>
<td>Frank F. Garside Junior High School</td>
</tr>
<tr>
<td>Marvin M. Sedway Middle School</td>
<td>James Cashman Middle School</td>
</tr>
<tr>
<td>West Preparatory Academy Middle School</td>
<td>Kathleen and Tim Harney Middle School</td>
</tr>
<tr>
<td>William E. Orr Middle School</td>
<td>Rainbow Dreams Academy Middle School</td>
</tr>
</tbody>
</table>

Notes: Suitable comparison schools for the eight Innovative Middle Schools were determined through a propensity score matching strategy. We matched comparison schools with the Innovative Middle Schools on school enrollment, the percentage of Free-and-Reduced Price Lunch (FRL) students, the percentage of learners who are not proficient in English (EL students), the percentage
of Black students enrolled, and the percentage of Hispanic students enrolled. We selected schools based on a caliper with a width of 0.20 SD. Schools are listed here in alphabetical order.

Table 2 provides summary statistics for treated Innovative Middle schools and comparison schools and students by cohort and combined across cohorts at baseline (2018-19 for Cohort I, 2019-20 for Cohort II, and 2020-21 for Cohort III). At the school-level, we show that treated and matched comparison schools were very similar in the percentage of FRL students (94% for treated schools relative to 91% for comparison schools). Treated schools had a slightly higher percentage of EL students (26% relative to 19%) and slightly higher enrollment (1,245 students relative to 1,101 students), though these differences were not statistically significant based on a two-sample independent t-test for differences in means. Treated and comparison schools also had similar retention rates at baseline (90% for treated schools relative to 88% for comparison schools).

At the student-level, Table 2 shows that treated students were just as likely as comparison students to be EL (29% relative to 30% across all cohorts) or to have an IEP (15% relative to 13%). However, treated students had lowest SBAC scores at baseline relative to comparison students (0.09 SD lower in ELA and 0.11 SD lower in Math). In addition, treated students were slightly more likely to be absent than comparison students (7% relative to 6%). Our event study model accounts for these baseline differences in outcomes.
Table 2. Summary Statistics for Innovative Middle Schools and Students by Cohort at Baseline

<table>
<thead>
<tr>
<th></th>
<th>Innovative Middle Schools</th>
<th>Comparison Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Matched</td>
</tr>
<tr>
<td></td>
<td>N=8</td>
<td>N=8</td>
</tr>
<tr>
<td>% FRL</td>
<td>94.22 (8.39)</td>
<td>91.19 (9.69)</td>
</tr>
<tr>
<td>% EL</td>
<td>25.96 (7.20)</td>
<td>18.93 (12.38)</td>
</tr>
<tr>
<td>Enrollment</td>
<td>1244.88 (180.31)</td>
<td>1101.50 (632.02)</td>
</tr>
<tr>
<td>Percentage of Staff Retained</td>
<td>89.98 (5.39)</td>
<td>87.77 (2.11)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student-Level</th>
<th>Cohort I N=2,961</th>
<th>Cohort II N=2,727</th>
<th>Cohort III N=2,437</th>
<th>All Cohorts N=8,125</th>
<th>Cohort I N=2,734</th>
<th>Cohort II N=2,393</th>
<th>Cohort III N=2,141</th>
<th>All Cohorts N=7,244</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL</td>
<td>31.14%</td>
<td>28.56%</td>
<td>26.30%</td>
<td>28.73%</td>
<td>31.64%</td>
<td>28.66%</td>
<td>27.88%</td>
<td>29.60%</td>
</tr>
<tr>
<td>IEP</td>
<td>14.22%</td>
<td>15.03%</td>
<td>14.57%</td>
<td>14.68%</td>
<td>12.25%</td>
<td>12.24%</td>
<td>13.69%</td>
<td>12.71%</td>
</tr>
<tr>
<td>SBAC ELA</td>
<td>-0.42***</td>
<td>-0.48</td>
<td>-0.44***</td>
<td>-0.44***</td>
<td>-0.30</td>
<td>-0.43</td>
<td>-0.35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.91)</td>
<td>(0.88)</td>
<td>(0.90)</td>
<td>(0.92)</td>
<td>(0.92)</td>
<td>(0.92)</td>
<td>(0.92)</td>
<td></td>
</tr>
<tr>
<td>SBAC Math</td>
<td>-0.42***</td>
<td>-0.48**</td>
<td>-0.44***</td>
<td>-0.30</td>
<td>-0.40</td>
<td>-0.40</td>
<td>-0.33</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.93)</td>
<td>(0.83)</td>
<td>(0.90)</td>
<td>(0.93)</td>
<td>(0.89)</td>
<td>(0.89)</td>
<td>(0.92)</td>
<td></td>
</tr>
<tr>
<td>Percentage of Days Absent</td>
<td>5.39</td>
<td>11.05***</td>
<td>6.95***</td>
<td>5.17</td>
<td>9.47</td>
<td>6.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.45)</td>
<td>(13.69)</td>
<td>(8.76)</td>
<td>(5.06)</td>
<td>(13.12)</td>
<td>(7.85)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Baseline is the year prior to treatment for each cohort. Baseline for Cohort I was 2018-19. Baseline for Cohort II was 2019-20. Baseline for Cohort III was 2020-21. The SBAC was not administered during the 2019-20 school year which is why the scores are missing for Cohort II. We use a two-sample independent t-test to test for differences between treatment and comparison units. *p≤0.05; **p≤0.01; ***p≤0.001

Outcomes Used in Impact Analysis

We utilized three outcomes in our analysis: students’ performance on SBAC ELA and math assessments, student attendance reported via CCSD’s Infinite Campus system, and staff retention...
from CCSD’s personnel management system. The outcomes for this evaluation are described in more detail in what follows.

**Student Academic Achievement (SBAC ELA and Math Scores)**

We used students’ performance on the SBAC ELA and math assessments as our measure of student academic achievement. We used SBAC as our measure of academic achievement because our quasi-experimental design requires repeated measures of achievement from the same group of students over time. Nevada students do not always take other Nevada academic achievement assessments like ACT and WIDA multiple times across multiple years. The SBAC assessments are administered annually to Nevada students in third through eighth grade, except during the 2019-20 school year due to the global COVID-19 pandemic. For ease of interpretation, we standardized the test scores within grade, year, and subject. The coefficients can be interpreted in terms of standard deviation changes.

**Attendance (Percentage of Days Absent)**

We derived our measure of student attendance from CCSD’s Infinite Campus system, which tracks the number of days a student missed school out of the number of days at student was enrolled. Elementary school students are marked absent if they miss three hours of instructional time during a school day. Secondary students are marked absent if they miss every class period during a school day. We created the percentage of days absent measure by taking the total number of days a student was marked absent, dividing by the total number of days a student was enrolled, and multiplying by 100.

**Staff Retention (School-Level Percentage of Staff Retained)**

Our measure of staff retention came from CCSD’s personnel management system. Staff retention was available only at the school-level. The measure captures the percentage of teaching staff that remained at the school from the prior year.
Analytic Models

To analyze the impact of CCSD’s Innovative Middle School Program, we utilized an event study model. The fully specified event study model estimates the average change in student-level outcomes (SBAC ELA and Math scores and attendance) for students at Innovative Middle Schools relative to students at matched comparison schools. The model takes the following form:

\[ Y_{ist} = \alpha + \sum_{j=-3}^{2} I_{2020+j} + \sum_{j=-3}^{2} I_{2020+j} \times Innovative_{ist} + \delta_s + \delta S_{st} + \epsilon_{ist} \] (1)

This model estimates the outcome \( Y \) for our student-level outcomes of achievement, as measured by standardized exam scores (i.e., SBAC ELA and math scores), student attendance, as measured by the percentage of days absent. The SBAC and MAP scores were standardized within subject, grade-level, and year.

\( I_{2022+j} \) represent a series of year indicators from the 2016-17 school year, three years prior to the implementation of Innovative Middle School Program, to 2021-22, three years after the implementation of the Innovative Middle School Program. The year prior to Innovative Middle School implementation, 2018-19, was omitted as the reference year. The year indicators were interacted with \( Innovative_{ist} \), which was equal to 1 if a student was in an Innovative Middle School and 0 if a student was in the matched comparison group. The coefficients on these interactions provided the estimated difference in ELA, math, or attendance between Innovative Middle School students and comparison students relative to the omitted 2019-20 school year. \( \delta_s \) was a school fixed effect to account for non-time varying characteristics of schools. \( S_{st} \) was a vector of time-varying school-level controls, including school enrollment, the percentage of FRL students, and the percentage of learners who are not proficient in English. \( \epsilon_{st} \) represents an error term. The standard errors for this model were clustered at the school-level to adjust for repeated school observations over time.
The identifying assumption for this model is that treated and comparison students and school would have trended similarly in outcomes in absence of the implementation of the Innovative Middle School programs (i.e., the parallel trends assumption). If this assumption is met, then we can reasonably use the post-treatment trend of comparison students and schools as a benchmark for what would have happened to Innovative Middle School students and schools had the program not been implemented. This is tested by examining whether treatment and comparison schools and students were trending similarly on outcomes prior to implementation. We show pre-trends for all of our models and outcomes and provide evidence that the parallel trends assumption was met.

Because staff retention was measured at the school-level and not at the student-level, we run a variation on model 1 at the school-level. This model was formally specified as follows:

\[
Y_{st} = \alpha + \sum_{j=-2}^{2} I_{2020+j} + \sum_{j=-2}^{2} I_{2020+j} \ast Innovative_{st} + \delta_{s} + \partial S_{st} + \epsilon_{st} (2)
\]

This model estimates the outcome \(Y\), or staff retention in school \(s\) in year \(t\). \(I_{2022+j}\) represent a series of year indicators from the 2017-18 school year (because we do not have staff retention data in 2016-17), two years prior to the implementation of Innovative Middle School Program, to 2021-22, three years after the implementation of the Innovative Middle School Program. The year prior to Innovative Middle School implementation, 2018-19, was once again omitted as the reference year. The year indicators were interacted with \(Innovative_{st}\), which was equal to 1 if a school was an Innovative Middle School and 0 if a student was in the matched comparison group. The coefficients on these interactions provided the estimated difference in staff retention between Innovative Middle Schools and comparison schools relative to the omitted 2019-20 school year. \(\delta_{s}\) was again a school fixed effect to account for non-time varying characteristics of schools. \(S_{st}\) was a vector of time-varying school-level controls, including school enrollment, the percentage of FRL students, and the percentage of learners who are not proficient in English.
\( \varepsilon_{st} \) represents an error term. The standard errors for this model were again clustered at the school-level to adjust for repeated school observations over time.

**SECTION 3: RESULTS**

**Impact Analysis Results**

**Results: Student Academic Achievement (SBAC ELA and Math Scores)**

We first explored the impact of the Innovative Middle School program on student academic achievement, as measured by SBAC ELA and math scores. The results for ELA achievement are shown in Figure 2. Cohort I did not have pre-treatment ELA scores from the first year of treatment (year zero) due to interruption from the COVID-19 pandemic. We note that Cohort I Innovative Middle School students were trending similarly in ELA scores during the pre-treatment time period.

*Figure 2. Change in ELA Achievement for Innovative Middle School Students Relative to Comparison Students*

Cohort I ELA Score (Standardized)  
Cohort II ELA Score (Standardized)
Note: The figure shows the results from our event study models. The results reveal the change in ELA achievement for Innovative Middle School student cohorts relative to comparison student cohorts after relative to before the start of the program. Cohort I students were 6th grade students at an Innovative Middle School or comparison school in the first year of the program (2019-20 school year). Cohort II students were 6th grade students at an Innovative Middle School and comparison school in the second year of the program (2020-21 school year). Cohort III students were 6th grade students at an Innovative Middle School or comparison school in the third year of the program (2021-22 school year). The results are standardized within grade, year, and subject.

(in years -2 and -3, as demonstrated by the fact that the blue dots are centered on zero). We observe a positive and statistically significant effect on ELA achievement after year 3 of the implementation of the Innovative Middle School program (because the first year is measured as year zero, this is at time point 2). On average, Cohort I ELA student achievement improved by 0.13 SDs after two years of implementation, relative to the year before implementation. Another way to look at this is by 8th grade, Innovative Middle School students experienced a 0.13 SD increase in ELA achievement compared to their 8th grade counterparts at comparison schools. Prior research suggests that average middle school ELA achievement increases by about 0.49 SD from 6th grade to 8th grade (Bloom et al., 2008). Thus, a 0.13 SD increase represents about 27% of the average student growth in ELA achievement for a middle schooler. This is a moderate effect on a scale of small, moderate, and large (Kraft, 2020).
We did not observe the same positive effect on ELA achievement for Cohort II (6th grade students during the 2021-22 school year). The change in Cohort II ELA achievement for Innovative Middle School students relative to comparison students was near zero and not statistically significant. However, we did observe a positive effect for Cohort III of 0.09 SD. This effect was imprecisely estimated as the 95 percent confidence interval ranges from as low as -0.02 SD and as high as 0.21 SD. When we grouped all of the cohorts together, we found similar positive but non-statistically significant results in the first two years of the program and a positive effect of 0.13 SD in the third year (which simply reflects the effect for Cohort I as we only have three years of post-treatment data for the first cohort of students).

Figure 3 shows the results for SBAC math scores. We found that, on average, Cohort I math achievement improved by 0.18 SDs after year 3 of implementation, relative to the year before implementation. Prior research suggests that average middle school math achievement increases by

**Figure 3.** Change in Math Achievement for Innovative Middle School Students Relative to Comparison Students

<table>
<thead>
<tr>
<th>Cohort I Math Score (Standardized)</th>
<th>Cohort II Math Score (Standardized)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="chart.png" alt="Chart showing change in math scores for Cohort I and Cohort II over time." /></td>
<td><img src="chart.png" alt="Chart showing change in math scores for Cohort I and Cohort II over time." /></td>
</tr>
</tbody>
</table>
Note: The figure shows the results from our event study models. The results reveal the change in math achievement for Innovative Middle School student cohorts relative to comparison student cohorts after relative to before the start of the program. Cohort I students were 6th grade students at an Innovative Middle School or comparison school in the first year of the program (2019-20 school year). Cohort II students were 6th grade students at an Innovative Middle School and comparison school in the second year of the program (2020-21 school year). Cohort III students were 6th grade students at an Innovative Middle School or comparison school in the third year of the program (2021-22 school year). The results are standardized within grade, year, and subject.

about 0.62 SD from grade 6 to grade 8 (Bloom et al., 2008). Thus, a 0.18 SD increase represents about 29% of the average student growth in math achievement for a middle schooler. This is a moderate effect on a scale of small, moderate, and large (Kraft, 2020). We also observed positive effects for the other two cohorts. The change in Cohort II ELA achievement scores for Innovative Middle School students relative to comparison students was 0.12 SD. The change in Cohort II ELA achievement scores for Innovative Middle School students relative to comparison students was 0.17 SD. When we grouped all of the cohorts together, we found similar positive and statistically significant results in all years of the program. Consequently, while we observed some benefit of the Innovative Middle School program on student ELA achievement, we observed more consistent and positive effects of the program on student math achievement.
Results: Attendance (Percentage of Days Absent)

Next, we explored the impact on student attendance, where student attendance is measured as the percentage of days a student was absent, as shown in Figure 4. Across all cohorts, we found no impact of the Innovative Middle School program on student absences. When we grouped all cohorts together, we found negative effects in each year after the program began (i.e., the Innovative Middle School program lowered absences). However, these effects were not statistically significant.

Figure 4. Change in Absences for Innovative Middle School Students Relative to Comparison Students
Note: The figure shows the results from our event study models. The results reveal the change in the percentage of days absent for Innovative Middle School student cohorts relative to comparison student cohorts after relative to before the start of the program. Cohort I students were 6th grade students at an Innovative Middle School or comparison school in the first year of the program (2019-20 school year). Cohort II students were 6th grade students at an Innovative Middle School and comparison school in the second year of the program (2020-21 school year). Cohort III students were 6th grade students at an Innovative Middle School or comparison school in the third year of the program (2021-22 school year).

**Results: Staff Retention (School-Level Percentage of Staff Retained)**

We then explored the impact of the Innovative Middle School program on staff retention, where staff retention is measured as the school-level percentage of staff retained from year-to-year. These results are presented in Figure 5. We found that relative to the year before the start of the Innovative Middle School program, staff retention at Innovative Middle Schools improved by 1.25 percentage points compared to staff retention at non-Innovative Middle Schools. However, staff retention worsened over time. In Year 2 of the program, staff retention at Innovative Middle Schools decreased by 1.34 percentage points compared to staff retention at non-Innovative Middle Schools. In Year 3 of the program, staff retention at Innovative Middle Schools decreased by 3.81 percentage points relative to staff retention at non-Innovative Middle Schools. Consequently, the promise of retention bonuses appears to have benefited staff retention early on in the program, but staff retention actually worsened as the program progressed.
Figure 5. Change in Percentage of Teachers Retained at Innovative Middle Schools Relative to Comparison Middle Schools

Note: The figure shows the results from our event study models. The results reveal the change in staff retention (the percentage of staff retained) for Innovative Middle Schools relative to comparison school after relative to before the start of the program.

Results: Subgroup Analysis

Finally, we explored whether the Innovative Middle School program benefited specific groups of students. First, we looked at student racial demographics. As Figure 6 shows, we found ELA achievement of black Innovative Middle School students did not meaningfully change relative to black students at comparison schools. By year 3 of the program, black student math achievement had improved by 0.17 SD relative to black student match achievement at comparison schools.

White students at Innovative Middle Schools experienced larger improvements in achievement than Black students. By year 2 of the program, as Figure 7 shows, white student ELA achievement in Innovative Middle Schools improved by 0.14 SD relative to white student ELA achievement in comparison schools. By year 3, the effect was 0.22 SD for white students in
Innovative Middle Schools. The effect in math was slightly larger than the effect in ELA at 0.18 SD by year 2 of the program, but we found no difference in achievement between white students in Innovative Middle Schools and white students in comparison schools by year 3 of the program.

As Figure 8 shows, Hispanic student ELA achievement at Innovative Middle Schools improved by 0.12 SD by year 3 of the program. Hispanic student math achievement improved in all three years of the program, by 0.12 SD in year 1, by 0.13 SD in year 2, and by 0.19 SD in year 3.

We found no change in student attendance for all of the racial subgroups at Innovative Middle Schools relative to comparison schools.

Next, we looked at outcomes for EL students. As Figure 9 shows, we found that by year 3 of the program, ELA student achievement of EL students improved by 0.17 SD at Innovative Middle Schools relative to ELA student achievement of EL students at comparison schools. By year 3 of the program, EL student achievement in math at Innovative Middle Schools improved by 0.16 SD. We found no change in the student attendance of EL students at Innovative Middle Schools relative to EL students at comparison schools.
**Figure 6.** Change in ELA and Math Achievement and Absences for Innovative Middle School Students Relative to Comparison Students (Black Students)

All Cohorts ELA Score (Standardized)  All Cohorts Math Score (Standardized)

Note: The figure shows the results from our event study models. The results reveal the change in outcomes for Innovative Middle School black students relative to comparison school black students after relative to before the start of the program. The achievement results are standardized within grade year and subject.
Figure 7. Change in ELA and Math Achievement and Absences for Innovative Middle School Students Relative to Comparison Students (White Students)

All Cohorts ELA Score (Standardized)  All Cohorts Math Score (Standardized)

All Cohorts Percent Absent

Note: The figure shows the results from our event study models. The results reveal the change in outcomes for Innovative Middle School white students relative to comparison school white students after relative to before the start of the program. The achievement results are standardized within grade, year, and subject.
**Figure 8.** Change in ELA and Math Achievement and Absences for Innovative Middle School Students Relative to Comparison Students (Hispanic Students)

All Cohorts ELA Score (Standardized)  All Cohorts Math Score (Standardized)

Note: The figure shows the results from our event study models. The results reveal the change in outcomes for Innovative Middle School Hispanic students relative to comparison school Hispanic students after relative to before the start of the program. The achievement results are standardized within grade, year, and subject.
Figure 9. Change in ELA and Math Achievement and Absences for Innovative Middle School Students Relative to Comparison Students (EL Students)

All Cohorts ELA (EL Students)

All Cohorts Math (EL Students)

All Cohorts Attendance (EL Students)

Note: The figure shows the results from our event study models. The results reveal the change in outcomes for Innovative Middle School EL students relative to comparison school EL students after relative to before the start of the program. The achievement results are standardized within grade, year, and subject.
SECTION 4: CONCLUSIONS AND RECOMMENDATIONS

In 2019-20, CCSD embarked on a three year effort to improve student academic achievement and staff retention at eight CCSD middle schools. Called the Innovative Middle School program, the three-year pilot program ran from August 2019 through June 2022. Each Innovative Middle School leader was afforded the autonomy to 1) independently select and retain staff, 2) organize instructional time, including extended daily classroom preparation opportunities (up to 34 minutes), and 3) align learning opportunities with school and community needs. School leaders were given an annual performance bonus of up to $12,500 dollars for meeting specific school performance targets. Teachers who applied to and were selected to work at the Innovative Middle Schools and were afforded an annual $10,000 dollar retention bonus and an additional $5,000 dollar bonus if student outcomes improved.

We found that the Innovative Middle School program was successful in improving student achievement outcomes, though the academic achievement effects were somewhat delayed. Students enrolled at Innovative Middle Schools did not start realizing gains in achievement relative to students at matched comparison schools until year 2 and year 3 of the program and the improvement was larger in math than in ELA. The gains in ELA were 0.13 of a SD and represented about 27% of the average student growth in ELA achievement for a middle schooler. The gains in math were 0.18 of a SD and represented about 29% of the average student growth in math achievement for a middle schooler. In addition, we explored effects across different student demographic groups and found that all groups realized gains in ELA and math achievement. By year 3, the effect on ELA achievement was 0.17 SD for black students, 0.22 SD for white students, 0.12 SD for Hispanic students, and 0.16 SD for EL students. By year 3, the effect on math achievement was 0.17 SD for black students, 0.14 SD for white students (though no statistically significant), 0.19 SD for Hispanic students, and 0.16 SD for EL students.
We found that the Innovative Middle School program did not make much of a difference in terms of student attendance, but did improve staff retention by over 1 percentage point in the first year of implementation. However, staff retention dropped after the first year, suggesting that any gains were short-term and not sustained over the course of the program. While we were not able to interview or survey teachers as a part of this program evaluation to explore potential reasons for the downward slide in staff retention, prior surveys of Innovative Middle School teachers could shed some light (Perera et al., 2021). Importantly, this work suggested that teachers at Innovative Middle School were already feeling a sense of burnout and were considering leaving the profession. These feelings did not necessarily stem from any increased workload on the part of teaching at an Innovative Middle School but rather from general feelings associated with the teaching profession. Consequently, the retention bonuses associated with the program may have delayed but not altogether prevented these teachers from exiting.

When contemplating a program like this in the future, CCSD may consider a few things. First, they can proceed with confidence that programs like this do make a measurable difference for student achievement. CCSD may want to look in more detail at the types of efforts Innovative Middle School leaders made to address and enhance academic achievement. Second, CCSD should look at their staff retention bonuses and consider enhancing the bonus to provide additional incentives for teachers to stay at the Innovative Middle School. In addition, they may want to provide a longer time horizon for teachers to achieve the bonuses or provide scaled bonuses that increase with additional years of longevity. This could help with the increased staffing churn beyond the first year of the program. Finally, CCSD will want to implement other feedback and data collect mechanisms during implementation of a program like this to ensure that decisions about what is working and what is not can be regularly informed by the voice of educators in the classroom.
EVALUATION OF INNOVATIVE MIDDLE SCHOOLS

References


