USA Math Outcomes Analysis 2018/19

Grade Levels: 3, 4, 5
ST Math Program: Gen-4
Analysis Type: Z-score of math proficiency
Treatment-Years: 2017/18, 2018/19
Baseline-Year: 2016/17
Subgroup: All

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Abstract

This analysis evaluates grades using ST Math in the USA in 2018/19. It identifies those grades with nominal or better implementation of the ST Math program, and matches them to randomly selected, similar math-performance comparison grades. The nominal ST Math users are an aggregation of 263 grades, consisting of grades 3, 4, and 5 at 178 schools, with an average baseline z-score of 0.14. Refer to Figures 2 and 3 for the math performance and demographic distributions. They were matched to 263 similar, randomly selected control grades at 257 schools that never used ST Math. Grade-wise growth in math proficiency was evaluated (i.e. growth in same grade, same school, from 2016/17 to 2018/19) on the mean z-scores of percent Proficient or Advanced (see Section 3.1). Grades 3, 4, and 5 aggregated showed an ST Math effect of 0.27 z-score points.

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1   Introduction

1.1   Background

This is a quasi-experimental analysis at the grade-mean level. Entire grades represent the units of analysis, and outcome measures are the 2-year changes in grade-mean z-score of Proficient or Advanced. The treatment grades used the ST Math program for 2 years, beginning in the 2017/18 school year. The study hypothesis is treatment grades using ST Math will outperform similar matched control grades, using their "business as usual" conditions of instructional content and professional development. The control grades were selected to have similar demographic and math attributes (See Figures 2 and 3) to the treatment grades during the baseline year (2016/17), and did not use ST Math in 2017/18 or 2018/19. The treatment grades' selection pool was all schools using ST Math in grades 3, 4, and 5 in the USA. The control grades' pool was all schools not using ST Math in grades 3, 4, and 5 in the USA. This study method measures effectiveness of the ST Math program when nominally implemented.

1.2   Program Description

Spatial-Temporal Math (ST Math) is game-based, instructional software for K–12 students, created by the MIND Research Institute (MIND). The purpose of the program is to boost math comprehension through visual learning. The ST Math software games begin without language or symbol abstractions by posing math problems as purely visual puzzles. In this way, three objectives are accomplished: i) language proficiency prerequisites to engage with the program are minimal, ii) non-mathematical distractions (e.g. back-stories for word problems) are minimized or eliminated – thereby reducing load on working memory, and iii) the actual math in the problem can be represented clearly, simply, and unambiguously. Interactive, animated visual manipulatives provide informative feedback on student solutions. A score of 100 percent on a game level comprised of 4-12 puzzles is required for progression through the levels. Failure requires a re-play of the level, via a new quasi-random set of puzzles. In this way, progression is self-paced.

   Besides the self-paced progress made by students in their one-to-one environment, the program is designed to be referenced by teachers during their regular math instruction. It is supplemental to core or basal math instruction and instructional materials. As the great majority of grade-level math standards are covered in the ST Math digital curriculum, completion of 100% of the entire ST Math curriculum (i.e. completing every Game) is required to cover all grade-level math standards. Teachers receive initial training, either face to face or through self-guided online instruction. The training covers account startup, as well as math learning and growth mindset goals, the pedagogical approach to learning in a visual experiential game, monitoring and intervention of the student 1:1 game play, and connecting of ST Math content to classroom content and pacing.

   For students to achieve nominal progress through the program, there is a recommended time-on-task requirement of 90 minutes per week over about 30 weeks. Consistent application of 90 minutes per week throughout the school year is normally sufficient to result in a grade's average ST Math content coverage exceeding 50% by year-end. In this study, we include grades that have achieved 40% or more content coverage (Progress) by April 15th.

   This is a passive study with no experimental setup or extraordinary communications to any schools. All schools in this study therefore received normal program implementation support through the year from MIND support managers. This support includes bundled startup services of approximately 2-4 hours of training either in-person or online, access to live webinars, regular online and push reports on usage and progress, email/phone helpdesk, and proactive monitoring for gaps or issues by MIND support representatives.

MIND Research Institute initiated, funded, and exercised editorial control over this study.

2   Data Collection

Since this analysis uses grades as the unit of analysis, and states publish grade-mean state standardized test scores, the data for student math outcomes is collected from each state education agency's research files (retrieved from state websites). The treatment students use ST Math student accounts served by MIND. Student ST Math usage data is aggregated to grade-level means by MIND.

2.1   Treatment Grades Pool and Selection

The Treatment grades pool originated with all schools and grades using ST Math in the USA. From these schools, every grade that had used the ST Math program only for the year 2018/19 was identified. They comprise the Treatment grades pool for this evaluation of 2-year usage.

2.1.1   Enrollment Filter

Because the analysis uses grade-mean data, such as grade-mean scale scores or grade-mean proficiency level percentages, it is necessary that the program also be a grade-wide treatment, with the great majority of students in each grade receiving treatment. Otherwise, the grade-means reported by the state of 100% of *tested* students would not be valid measures of a smaller fraction of *treatment* students. MIND's site implementation requirement is that an entire grade, including all teachers and all classes within that grade, use the ST Math program. We validate how closely this is the case for each individual treatment grade by comparing the number of ST Math student accounts at a grade level to the reported enrollment at that grade level. We discard from the Treatment pool any grade with a ratio of ST Math student accounts to reported grade enrollment lower than 85%.

2.1.2   Content Coverage Filter

Furthermore, the outcomes measure is a summative year-end test, i.e. the standardized math assessment of that state. The math assessment thus covers all the math standards for that entire grade level. Meanwhile, the ST Math program curriculum (arranged into Learning Objectives) is also aligned to each state's math standards. To infer that the ST Math content is having a valid effect on student outcomes on the summative assessment, we discard any grade with grade-mean of ST Math Progress for its students lower than 40% by April.

Progress is a percentage, and is defined as Levels completed by the student, divided by the total number of Levels in the grade-level curriculum. Note that student achievement of at least 40% progress in ST Math is accomplished primarily by teacher assignment of computer session time to students. With sufficient time on task, students make progress. The program helps them self-pace through providing real-time informative feedback for each puzzle.

2.2   Control Grades Pool and Selection

The control grades are randomly selected from a control pool of schools in the USA. Though they are randomly selected, they are also matched to be similar to the Treatment grades' math attributes and demographics during the baseline 2016/17 year. The matched attributes include:

- z-score of percent Proficient or Advanced

- percentage of students receiving free or reduced lunch (using the demographic data from MDR).

To mitigate the risk of randomly picking a set of Control grades that generates an outlier for effect, a Monte Carlo approach is used to perform many random picks. The control pool's size is large enough that there are many possible "picks" of closely matched control grades.

One hundred randomly matched picks are made and sets of matched control grades are generated. For each set, the quality of the match as well as the math growth of the potential control set is evaluated. Some picked sets have high average math growth, some have low average math growth. From the set of all picks, a median pick is chosen. This avoids either an unlikely overestimate, or underestimate, of the Control grades' growth. When multiple median picks exist, the control set with the minimal math score differences in the baseline year is chosen.

3 Data Analysis

The set of all schools and grades using ST Math in the USA is evaluated for Enrollment percentage and Progress percentage parameters. A filtered Treatment set (TRT) of all ST Math grades with $\geq 85\%$ Enrollment and $\geq 40\%$ Progress is identified. State math assessment data is tabulated. A matching set of Control grades based on baseline year state math assessment is selected.

Changes in math performance, i.e. the difference in math performance of a grade from a baseline year to the final year, are evaluated and tabulated. Statistical tests of the significance of the difference in math performance changes between Treatment grades and Control grades are performed. Finally, a grade-by-grade disaggregation is performed.

3.1 Z-scores

In order to analyze across all states with different math assessments, a new z-score of that test's math proficiency is calculated. For each year being analyzed, by grade, a z-score takes the difference of the grade mean percent proficient and the mean of all percent proficient statewide for that year, and then divides it by the standard deviation of all percent proficient statewide for that year. Here is a fictional example to illustrate the calculation of a z-score for the 2015/16 exam:

School A, Grade 3, Percent Proficient: 70
Average across all schools statewide, Grade 3: 50
Standard deviation across all schools statewide, Grade 3: 20
Z-score=((School A, Grade 3, Percent Proficient)-(Average across all schools, Grade 3))/(Standard deviation across all schools, Grade 3)

$$\text{Z-score} = \frac{70-50}{20} = 1$$

The z-score is calculated for every grade across all years being analyzed, using the full state data set of schools for the averages and standard deviations. The use of z-scores is a valid statistical method to normalize any dataset and to enable analysis across otherwise uncomparable exams. In this report, we only analyze z-scores.

3.2 Percentile Ranking

These newly calculated z-scores can then be converted into a percentile ranking. Each percentile ranking shows the grade's performance relative to the others in that year and grade. For example, for a specific grade 3, a percentile ranking of 50 shows that this grade 3 performed at the average of all third grades in the state for that testing year.

3.3 Final Treatment and Control

3.3.1 ST Math Grade-Aggregated Implementation ($\geq$ 85% Enrollment Grades Only)

ST Math Percent Grade Mean Progress Distribution – 2018/19
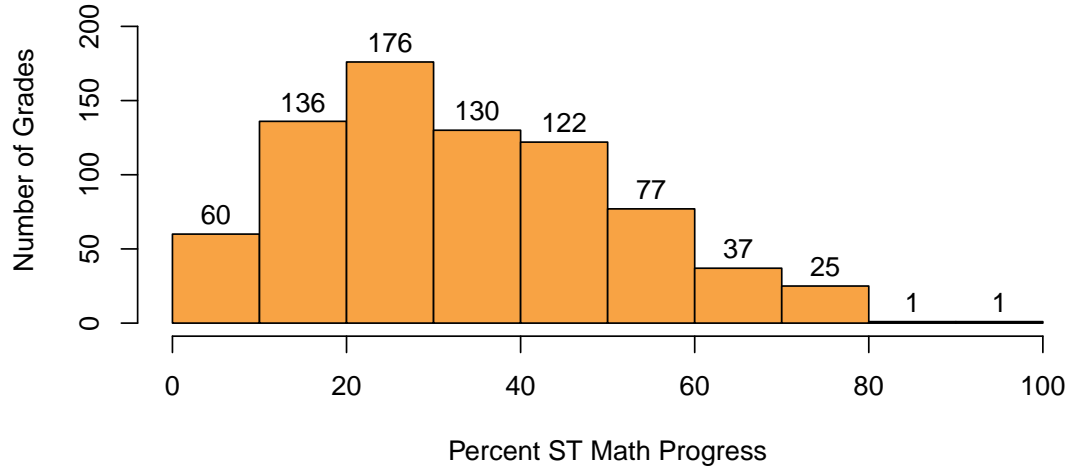
Figure 1: Histogram of ST Math Percent Progress for $\geq$ 85% Enrollment Grades 2018/19

For all ST Math grades with Enrollment $\geq$ 85%, Figure 1 shows the frequency distribution of grade-average Progress percentage through the program. Note that we will only be using grades with $\geq$ 40% Progress as the Treatment Group.

Table 1 provides descriptive statistics of the Progress distribution. Table 2 shows the number of remaining treatment grades after applying enrollment and progress filters.

	Min.	Max.	Average	S.D.
ST Math % Progress	0.0	95.9	33.4	17.7

Table 1: Descriptive Statistics of ST Math Percent Progress for >= 85 percent Enrollment Grades

Grades with >= 85% Enrollment:	765
Grades with in addition >= 40% Progress:	263

Table 2: Number of ST Math Grades with >= 85 percent Enrollment and with >= 40 percent progress

3.3.2 Filtering Treatment and Controls

Table 3 shows the total number of grades in the Treatment pool, the number of grades that exceeded the 85% Enrollment figure, and also the 40% Progress filter. Other rows in the table indicate counts of numbers of students (2018/19 from state testing count) and counts of number of schools represented. The number of matched Control (CTRL) grades, students, and schools is also shown.

	Grade 3	Grade 4	Grade 5	Total
ST Math Using Grades	451	348	400	1199
ST Math Using Schools	451	348	400	731
ST Math Students	34196	27243	32060	93499
ST Math Grades (Enroll >= 85%)	288	214	263	765
TRT Grades (Enroll >= 85% & Prog >= 40%)	108	82	73	263
TRT Schools (Enroll >= 85% & Prog >= 40%)	108	82	72	178
TRT Students (Enroll >= 85% & Prog >= 40%)	9709	7325	6468	23502
CTRL Grades	108	82	73	263
CTRL Schools	108	82	73	257
CTRL Students	8446	6644	5423	20513

Table 3: Treatment Pool Filtering and Controls: Counts of Grades, Schools, and Students

3.3.3 Match of Controls to Treatment

Figure 2 shows the density plots of the baseline z-score of percent students at state assessment Proficient or Advanced (left plot) and the percentage of students needing free or reduced lunch (right plot) for treatment grades overlayed on control grades, showing the closeness of the match obtained between Treatment and Control sets of grades in the baseline year, 2016/17.
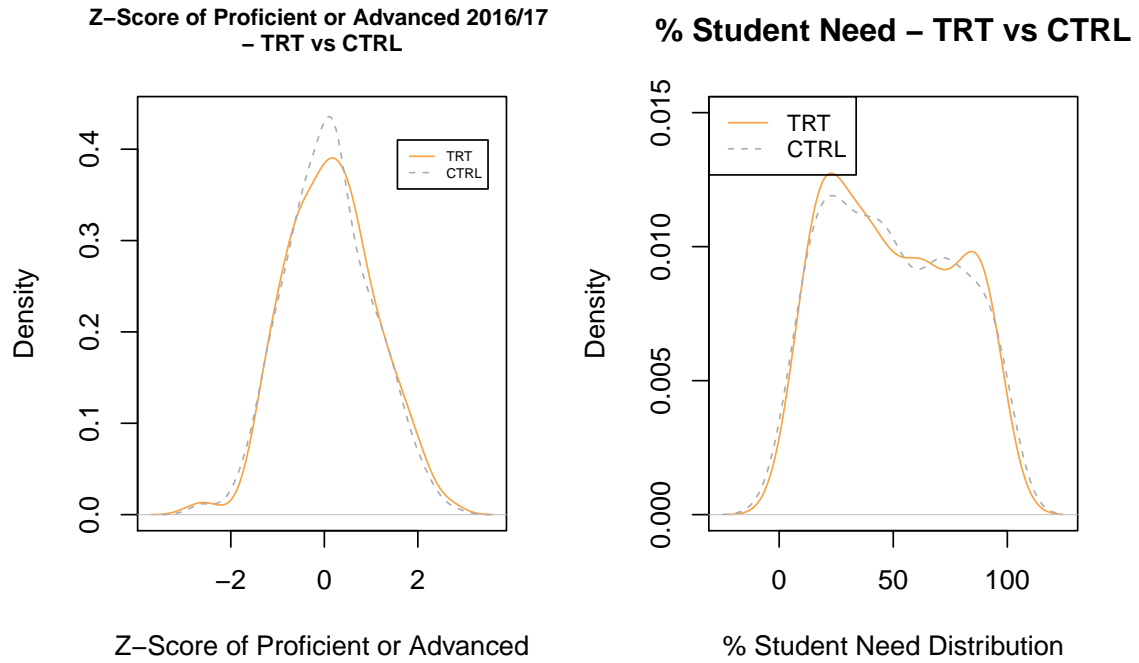
Figure 2: Baseline Year Density Plots Showing Math Scores and Percent Student Need Match between TRT and CTRL - 2016/17

Table 4 shows the difference of the means of Treatment versus Control in the baseline year, with accompanying p-values, for mean z-score of percent Proficient or Advanced and for percent of students receiving free or reduced lunch. The large p-values show the differences between the Treatment and Control grades are not statistically significant.

	Mean(TRT)	SD(TRT)	Mean(CTRL)	SD(CTRL)	Estimate	P-Value	Effect Size
Z-Score of Proficient or Advanced - 2016/17	0.14	0.96	0.09	0.93	0.05	0.53	0.06
Percent Free or Reduced Lunch	49.63	27.46	49.69	28.05	-0.06	0.98	-0.00

Table 4: Matching TRT and CTRL

3.4   Grade-Aggregated Analysis

Table 5 shows for both Treatment (TRT) and Control (CTRL) aggregation across grades of z-score distributions. The far right column also shows the average ST Math Progress for the TRT set.

	# Grades	# Schools	# Students	Z-Score	Percentile	ST Math Per Comp.
TRT.16.17	263	178	21460	0.14	53.73	–
TRT.18.19	263	178	20891	0.38	61.29	53.57
TRT.Delta	–	–	–	0.24	7.55	–
CTRL.16.17	263	257	21004	0.09	52.37	–
CTRL.18.19	263	257	20513	0.05	51.03	–
CTRL.Delta	–	–	–	-0.04	-1.34	–

Table 5: All Grades Together Growth

Figure 3 shows the changes in mean z-scores of percent Proficient or Advanced for the grade-aggregated Treatment and Control sets.
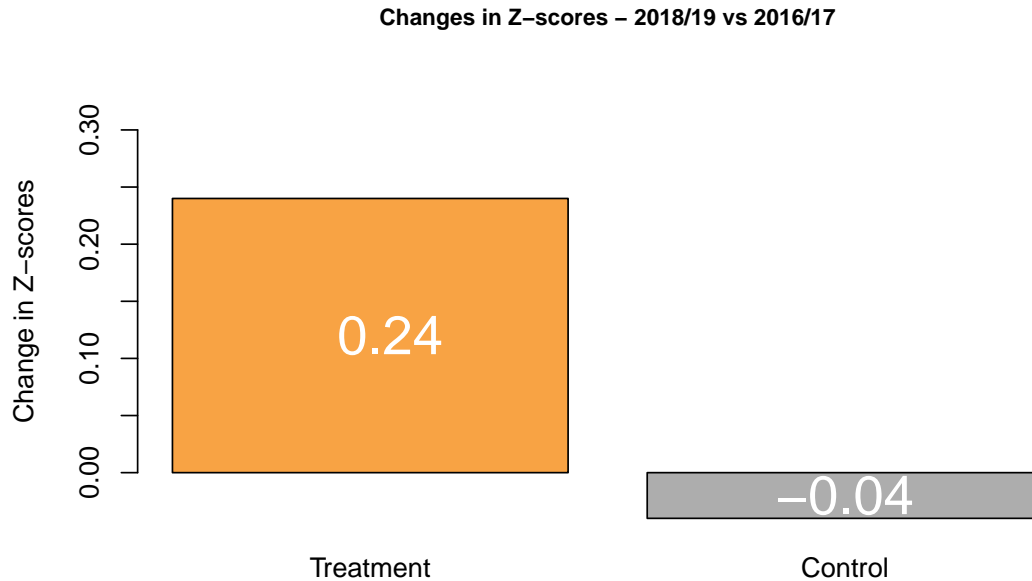
Figure 3: Changes in z-scores (See Section 3.1) for Grade-Aggregated TRT and CTRL datasets between 2016/17 and 2018/19

Further, Table 6 shows the statistics for the *differences* in changes between TRT and CTRL (Treatment - Control) for these same z-score changes as in the above figure. [1]

	Estimate	P-Value	Int.Low	Int.High
Z-Score	0.27	0.00*	0.17	0.38

Table 6: Statistics for the Differential Changes in Math Scores Growth (TRT - CTRL)

Finally, Figure 4 shows the changes in mean percentile ranking between TRT and CTRL.
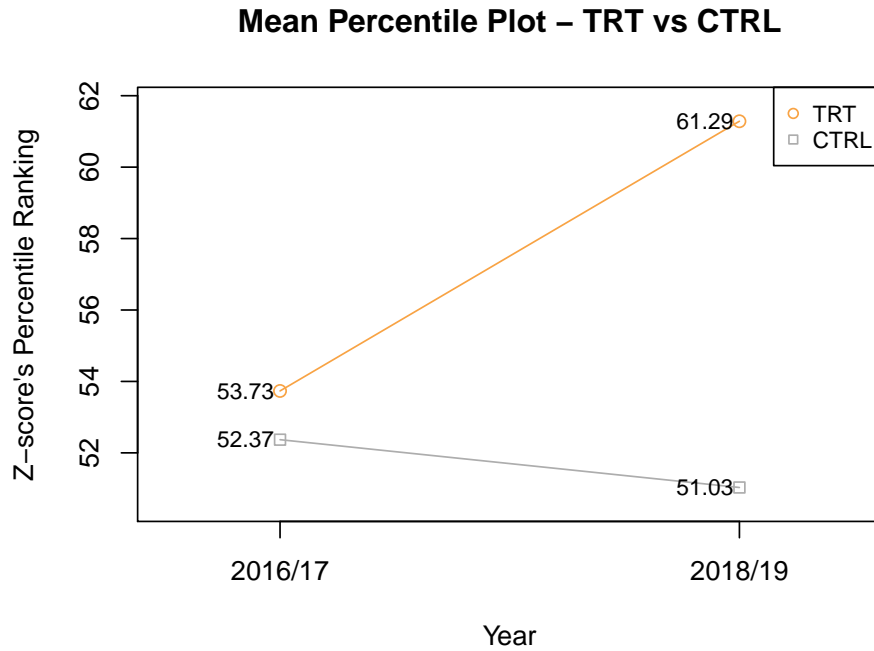
Figure 4: Changes in Percentile Ranking for TRT and CTRL Datasets between 2016/17 and 2018/19

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[1]* statistically significant p<0.05

3.5 Grade-Level Analysis

3.5.1 Grade Level Result Tables

The following tables (Table 7, 8, and 9) present a disaggregation of results by grade level. The far right column in each table also shows the average ST Math Progress for the TRT set.

	# Grades	# Schools	# Students	Z-Score	Percentile	ST Math Per Prog.
TRT.16.17	108	108	8765	0.14	54.82	–
TRT.18.19	108	108	8545	0.39	61.81	53.84
TRT.Delta	–	–	–	0.24	6.98	–
CTRL.16.17	108	108	8478	0.08	53.22	–
CTRL.18.19	108	108	8446	0.06	51.99	–
CTRL.Delta	–	–	–	-0.02	-1.23	–

Table 7: Grade 3 - Yearly Math Performance and Counts for TRT and CTRL Datasets

	# Grades	# Schools	# Students	Z-Score	Percentile	ST Math Per Prog.
TRT.16.17	82	82	6819	0.14	52.37	–
TRT.18.19	82	82	6482	0.40	61.73	52.69
TRT.Delta	–	–	–	0.26	9.37	–
CTRL.16.17	82	82	6887	0.10	51.12	–
CTRL.18.19	82	82	6644	0.03	49.51	–
CTRL.Delta	–	–	–	-0.07	-1.61	–

Table 8: Grade 4 - Yearly Math Performance and Counts for TRT and CTRL Datasets

	# Grades	# Schools	# Students	Z-Score	Percentile	ST Math Per Prog.
TRT.16.17	73	72	5876	0.14	53.66	–
TRT.18.19	73	72	5864	0.34	60.01	54.15
TRT.Delta	–	–	–	0.20	6.36	–
CTRL.16.17	73	73	5639	0.09	52.51	–
CTRL.18.19	73	73	5423	0.06	51.32	–
CTRL.Delta	–	–	–	-0.03	-1.19	–

Table 9: Grade 5 - Yearly Math Performance and Counts for TRT and CTRL Datasets

3.5.2 Grade-Level Analysis of Changes in Z-scores of Proficient or Advanced

Figure 5 shows the changes in the grade-mean z-scores of students for the TRT and CTRL datasets, disaggregated by grade:
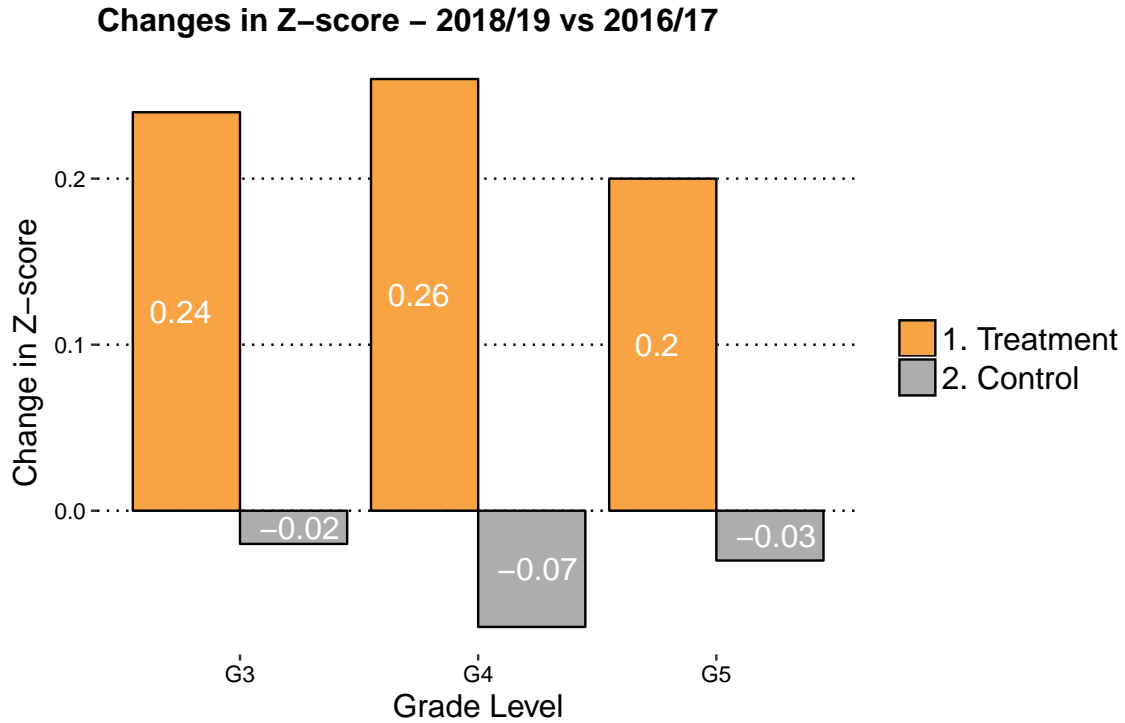
Figure 5: Changes in Grade-Mean Z-score (See Section 3.1) for TRT and CTRL Datasets between 2016/17 and 2018/19

Table 10 shows the statistics for the differences between TRT and CTRL (Treatment - Control) for these same z-score changes as shown in Figure 5.

	Estimate	P-Value	Int.Low	Int.High
Grade 3	0.26	0.00*	0.09	0.43
Grade 4	0.33	0.00*	0.16	0.50
Grade 5	0.23	0.02*	0.03	0.43

Table 10: Statistics for the Differential Changes in Z-scores (See Section 3.1) Growth, (TRT - CTRL)

4 Effect Size

The following table shows the effect sizes for z-score of Proficient or Advanced.

	Z-Score of Proficient or Advanced Effect Size
Grade 3	0.27
Grade 4	0.36
Grade 5	0.25
All Grades	0.29

Table 11: Cohen's d Effect Size

5 Findings Summary

USA grades 3, 4, and 5 using ST Math for the year 2018/19 averaged 27.6% ST Math Progress. 308/1199 grades (26%) averaged covering more than 40% of ST Math content. Statistically significant differences were found in this analysis for both grade-aggregated and individual grade levels. Looking at Table 6, a statistically significant difference was found for grade-aggregated z-score, with an estimate of 0.27 points favorable for the ST Math treatment set. Looking at Table 10, grades 3, 4 and 5 ST math treatment sets outperformed their matched controls for state assessment z-scores with statistically significant differences of 0.26, 0.33 and 0.23, respectively.

6 Confounders

Despite best efforts in minimizing confounders to the results of this analysis, there still remain a few input variables that could be significant in affecting differences of state test score outcomes between the Treatment and Control sets. One issue is the lack of randomization of grades chosen to receive the ST Math treatment. Instead of randomized selection, Treatment grades are self-selected. Self-selection can be an indication of districts or schools with a focus on math, an appetite for change, and with a spotlight on math training. Furthermore, not all grades using the ST Math program are chosen for analysis. Each grade must pass two specific filters to be considered for the Treatment set: the first being an enrollment filter of at least 85% of students in each grade using the program, and the second being a progress filter of at least 40% of the program completed on average by students in that grade. These filters might indicate relatively high-functioning schools with a team of relatively effective teachers in that grade, thus resulting in better instruction overall. A mitigation of this possible confounder is our selection of treatment groups on the grade level, rather than the teacher level, so there is no cherry picking of teachers: the full range of teachers in each grade is included. Moreover, the specific teachers may often be the same in the baseline year as in the current year, so the Treatment growth is not due to teacher differences. Finally, a possible confounder lies in the "business as usual" conditions at the matched control grades chosen for each analysis. It's unknown whether these control grades used other programs that could affect the comparison of the two sets of grades. The Monte Carlo Method is used to mitigate the possibility of control picks being favorable or unfavorable (see Section 2.3).

7 Reference Tables Grouped By School Year

The following tables show grade-level details, grouped by school year and for treatment (Table 12) and controls (Table 13) separately.

	# Grades	# Schools	# Students	Z-Score	Percentile	ST Math Per Comp.
Grade 3 (16.17)	108	108	8765	0.14	54.82	–
Grade 4 (16.17)	82	82	6819	0.14	52.37	–
Grade 5 (16.17)	73	72	5876	0.14	53.66	–
All Grades (16.17)	263	178	21460	0.14	53.73	–
Grade 3 (18.19)	108	108	8545	0.39	61.81	53.84
Grade 4 (18.19)	82	82	6482	0.40	61.73	52.69
Grade 5 (18.19)	73	72	5864	0.34	60.01	54.15
All Grades (18.19)	263	178	20891	0.38	61.29	53.57

Table 12: TRT Grades Detail Sorted by Year

	# Grades	# Schools	# Students	Z-Score	Percentile	ST Math Per Comp.
Grade 3 (16.17)	108	108	8478	0.08	53.22	–
Grade 4 (16.17)	82	82	6887	0.10	51.12	–
Grade 5 (16.17)	73	73	5639	0.09	52.51	–
All Grades (16.17)	263	257	21004	0.09	52.37	–
Grade 3 (18.19)	108	108	8446	0.06	51.99	–
Grade 4 (18.19)	82	82	6644	0.03	49.51	–
Grade 5 (18.19)	73	73	5423	0.06	51.32	–
All Grades (18.19)	263	257	20513	0.05	51.03	–

Table 13: CTRL Grades Detail Sorted by Year

8 Lists of Schools

8.1 Treatment Schools

The following tables list the treatment schools and grades (after 85% enrollment and 40% progress filtering) used in the analysis.

State	PID	IID	District	School Name	GRADE
PA	917582	ANN1B8	ANNVILLE-CLEONA SD	ANNVILLE EL SCH	3
NV	5348089	EVA6VC	Achievement	Eva G Simmons Elementary School	4, 3, 5
NV	4038932	HPF0RS	Achievement	H P Fitzgerald Elementary School	4, 3
NV	4019120	JIM0RS	Achievement	Jim Thorpe Elementary School	5, 4, 3
NV	4919934	JOH6VR	Achievement	John C. Bass Elementary School	4, 3
NV	3274377	JOH0RT	Achievement	John F Mendoza Elementary School	4
NV	711936	OKA0RS	Achievement	O K Adcock Elementary School	3, 4
VA	5098428	BAK1RN	Albemarle County	Baker-Butler Elem	3, 4
VA	1068897	BRO1RP	Albemarle County	Broadus Wood Elementary	3, 4, 5
VA	1068902	BRO1RQ	Albemarle County	Brownsville Elementary	4
VA	1068952	HOL1RN	Albemarle County	Hollymead Elementary	3, 4, 5
VA	1068990	MER1RM	Albemarle County	Meriwether Lewis Elementary	4
CA	130045	ARO7BW	Aromas - San Juan Unified	Aromas	4
MA	418093	AIR07I	Attleboro	A. Irvin Studley Elementary School	3
MA	418110	THO07I	Attleboro	Thomas Willett Elementary School	3
CA	66614	ERN0RS	Bellflower Unified	Ernie Pyle Elementary	3
NJ	2110807	THO0OG	Bethlehem Twp	Thomas B. Conley Elementary School	3
MA	421026	CEN05B	Beverly	Centerville Elementary	4
MA	421040	COV05B	Beverly	Cove Elementary	4
MA	421105	NOR05B	Beverly	North Beverly Elementary	4
MT	2109171	ALK4K6	Billings Elem	Alkali Creek School	4
MT	1828623	ARR4K6	Billings Elem	Arrowhead School	3
MT	2891013	BIG4K6	Billings Elem	Big Sky Elementary	5
MT	609280	BOU4K6	Billings Elem	Boulder School	3, 5, 4
MT	609450	POL4K6	Billings Elem	Poly Drive School	5, 3
MA	440230	ELL05V	Boston	Ellis Mendell	4
VA	1070723	BRE0RS	Botetourt County	Breckinridge Elementary	3, 4, 5
MA	428713	FOX050	Burlington	Fox Hill	3
MA	428775	FRA050	Burlington	Francis Wyman Elementary	3
MA	428751	MEM050	Burlington	Memorial	3
MA	428763	PIN050	Burlington	Pine Glen Elementary	5
CA	2852378	OAK0RU	Burton Elementary	Oak Grove Elementary	3, 4
TX	1418254	DAL0RS	CARROLLTON-FARM	DAVIS ELEM.	5
MO	556085	RUS514	COLUMBIA 93	RUSSELL BLVD. ELEM.	4
CA	4291134	BLO73M	Cajon Valley Union	Blossom Valley Elementary	3
CA	110203	BOS73M	Cajon Valley Union	Bostonia Language Academy	3
CA	110265	FLY73M	Cajon Valley Union	Flying Hills School of Arts	5
CA	110277	FUE73M	Cajon Valley Union	Fuerte Elementary	3
CA	2129652	VIS73L	Cajon Valley Union	Vista Grande Elementary	3
CA	95160	LAS0RS	Capistrano Unified	Las Palmas Elementary	5, 3
CA	95263	BUE6ZT	Centralia Elementary	Buena Terra Elementary	3
CA	95316	LOS6ZQ	Centralia Elementary	Los Coyotes Elementary	4, 5
CA	95354	SAN6ZQ	Centralia Elementary	San Marino Elementary	4, 5
IA	233843	ROO3XP	Cherokee CSD	Roosevelt Elementary School	3
IL	277526	GUN4OF	City of Chicago SD 299	Gunsaulus Elem Scholastic Academy	5
IL	280561	PEI4OI	City of Chicago SD 299	Peirce Elem Intl Studies School	4, 3
MI	504680	BOT3PR	Clarenceville School District	Botsford Elementary School	5
CO	2179504	FAL0RS	DISTRICT 49	FALCON ELEMENTARY SCHOOL OF TECHNOLOGY	3, 4
CO	4477687	REM68S	DISTRICT 49	REMINGTON ELEMENTARY SCHOOL	3
IA	250463	ADA0RT	Davenport CSD	Adams Elementary School	3, 5
IA	250499	BUF0RS	Davenport CSD	Buffalo Elementary School	3, 5
IA	250530	EIS0RS	Davenport CSD	Eisenhower Elementary School	5, 3, 4
IA	250607	HAR0RT	Davenport CSD	Harrison Elementary School	5
IA	250645	JAC0RS	Davenport CSD	Jackson Elementary School	5
IA	250762	WAL0RT	Davenport CSD	Walcott Elementary School	4, 5

Table 14: Treatment Schools (TRT Dataset)

State	PID	IID	District	School Name	GRADE
IA	250815	WIL0RW	Davenport CSD	Wilson Elementary School	4, 3
UT	1063445	OAK6HD	Davis District	Oak Hills School	3
UT	12033461	ODY6HK	Davis District	Odyssey School	5
UT	1063562	VAL6HD	Davis District	Valley View School	3
IA	236601	BRY40G	Dubuque CSD	Bryant Elementary School	5
IA	10902892	GEO40G	Dubuque CSD	Carver Elementary School	4
IA	236663	IRV40G	Dubuque CSD	Irving Elementary School	3, 4
IA	236699	JOH40G	Dubuque CSD	John Kennedy Elementary School	5, 4
IA	236730	SAG40G	Dubuque CSD	Sageville Elementary School	5, 3
IA	236742	TAB40G	Dubuque CSD	Table Mound Elementary School	5
TX	5070141	HIG0RT	EAST CENTRAL IS	HIGHLAND FOREST	3
IN	339502	EAS3K4	Edinburgh Community School Corp	East Side Elementary School	4
CA	4915794	ELC73K	Encinitas Union Elementary	El Camino Creek Elementary	3
OH	1401110	BRE3BQ	Fairfield Union Local	Bremen Elementary School	3
AZ	5279311	SAN0RT	Florence Unified School District	San Tan Heights Elementary	4
AZ	10001527	SKY0RS	Florence Unified School District	Skyline Ranch Elementary School	4, 3
MO	565751	MEA4XV	GRANDVIEW C-4	MEADOWMERE ELEM.	3, 5
GA	10902945	BET2C0	GRIFFIN	BETHLEHEM ELEMENTARY SCHOOL	5, 4
CA	96097	CLI75W	Garden Grove Unified	Clinton Elementary	5
CA	96334	JOH0RW	Garden Grove Unified	John Marshall Elementary	3
UT	10030334	GEA0RS	Granite District	Gearld Wright School	3, 4, 5
UT	1064839	LAK0RS	Granite District	Lake Ridge School	3
UT	1065209	WOO6HO	Granite District	Woodstock School	4
MO	3245546	HAN4VC	HANCOCK PLACE	HANCOCK PLACE ELEM.	5, 4
TX	1049279	HEM5UY	HEMPHILL ISD	HEMPHILL ELEM.	3, 4
FL	3319680	DEL2O4	HERNANDO	DELTONA ELEMENTARY SCHOOL	5, 3
CA	70495	ZEL6YP	Hawthorne	Zela Davis	5, 3
OH	3246112	BRT3BI	Hilliard City	Britton Elementary School	3
OH	801751	BRN3BI	Hilliard City	Brown Elementary School	3
OH	4945062	HTE3BI	Hilliard City	Hoffman Trails Elementary School	3
IA	251479	IRW3YW	IKM-Manning CSD	Irwin Elementary School	3
NJ	684670	GAR0JJ	Kearny Town	Garfield Elementary School	4, 3, 5
CA	3336511	ALV703	Long Beach Unified	Alvarado Elementary	4
CA	71475	ALI708	Long Beach Unified	Birney Elementary	4
CA	71487	FLO709	Long Beach Unified	Bixby Elementary	3, 4
CA	71504	BUR70A	Long Beach Unified	Burbank Elementary	5, 4, 3
CA	71542	GEO708	Long Beach Unified	Carver Elementary	4
CA	5345776	CES708	Long Beach Unified	Chavez Elementary	4
CA	71554	GRO6ZZ	Long Beach Unified	Cleveland Elementary	5, 4
CA	71815	LAF708	Long Beach Unified	Lafayette Elementary	4
CA	71889	LOS708	Long Beach Unified	Los Cerritos Elementary	3
CA	71891	LOW708	Long Beach Unified	Lowell Elementary	3
CA	71970	MUI709	Long Beach Unified	Muir K-8	3, 4
CA	71982	NAP708	Long Beach Unified	Naples Elementary	4
CA	71750	JAM6ZZ	Long Beach Unified	Riley Elementary	4, 3
CA	72106	TIN709	Long Beach Unified	Tincher Preparatory	3
CA	76231	GAR0RT	Los Angeles Unified	Garvanza Elementary	4, 5, 3
CA	77730	HER71Q	Los Angeles Unified	Herrick Avenue Elementary	5, 3
CA	11562419	JAI0RS	Los Angeles Unified	Jaime Escalante Elementary	3
CA	10013702	PAN0RS	Los Angeles Unified	Panorama City Elementary	3
CA	77338	RES71P	Los Angeles Unified	Reseda Elementary	3
CA	73538	STA0RS	Los Angeles Unified	State Street Elementary	5, 3
CA	73019	TOW702	Los Angeles Unified	Towne Avenue Elementary	3
IA	245042	ANS3VB	Marshalltown CSD	Anson Elementary School	3, 4
IA	245080	FIS3VB	Marshalltown CSD	Fisher Elementary School	4

Table 15: Treatment Schools (TRT Dataset)

State	PID	IID	District	School Name	GRADE
IA	245107	FRA3VB	Marshalltown CSD	Franklin Elementary Sch	3, 4
IA	245119	JCH3VB	Marshalltown CSD	J C Hoglan Elementary School	3
IA	10804927	LEN3VB	Marshalltown CSD	Lenihan Intermediate School	5
IA	245157	ROG3VB	Marshalltown CSD	Rogers Elementary School	3
IA	245171	WOO3VB	Marshalltown CSD	Woodbury Elementary School	3
CT	169644	BEN0HX	Meriden School District	Benjamin Franklin School	5
CT	169670	HAN0HX	Meriden School District	Hanover School	4
CT	169761	THO0HX	Meriden School District	Thomas Hooker School	4, 5
MA	1533684	WOO04V	Milford	Woodland	3, 4
WI	1133155	VIE43S	Milwaukee	Vieau Elementary	4
IL	315544	BIC4Q4	Moline-Coal Valley CUSD 40	Bicentennial Elem School	3, 5, 4
IL	315594	GEO4Q6	Moline-Coal Valley CUSD 40	George Washington Elem School	5
LA	11918351	BRI5ER	NA	BRICOLAGE ACADEMY	3
NY	745925	PS20RS	NEW YORK CITY GEOGRAPHIC DISTRICT #17	PS 289 GEORGE V BROWER	5, 4, 3
NY	747143	PS10VG	NEW YORK CITY GEOGRAPHIC DISTRICT #22	PS 119 AMERSFORT	4, 5
CT	164345	SMI0GT	New Britain School District	Smith Elementary School	4
NY	719782	OXF12G	OXFORD ACADEMY AND CENTRAL SCHOOL DISTRICT	OXFORD ACADEMY MIDDLE SCHOOL	5
CA	3048013	MAG7CW	Oakdale Joint Unified	Magnolia Elementary	4
CA	97663	CIR0RS	Ocean View	Circle View Elementary	4, 3, 5
CA	97869	STA75D	Ocean View	Star View Elementary	5, 4, 3
PA	918598	CET1EA	PARKLAND SD	CETRONIA SCH	3
PA	11550430	JAI1E3	PARKLAND SD	FRED J. JAINDL EL SCH	3
PA	918615	IRO1E3	PARKLAND SD	IRONTON SCH	5, 3
PA	918627	KER1E6	PARKLAND SD	KERNSVILLE SCH	5, 4
PA	918639	KRA1EA	PARKLAND SD	KRATZER SCH	4, 3
PA	918653	PAR1EA	PARKLAND SD	PARKWAY MANOR SCH	3
PA	918665	SCH1E7	PARKLAND SD	SCHNECKSVILLE SCH	3
FL	2854833	CYP2OC	PINELLAS	CYPRESS WOODS ELEMENTARY SCHL	4
FL	199912	LEA0RS	PINELLAS	LEALMAN INNOVATION ACADEMY	5
FL	199948	MAD2LM	PINELLAS	MADEIRA BEACH FUNDAMENTAL K-8	3, 4
FL	200470	TAR2OD	PINELLAS	TARPON SPRINGS FUNDAMENTAL ELE	3, 4
CA	5347633	LEO700	Paramount Unified	Leona Jackson	4
MS	595770	NIC31M	Picayune School District	Nicholson Elementary School	4, 5, 3
CA	102476	HIG74Y	Riverside Unified	Highgrove Elementary	5
CA	102555, 71877	LON74Y, HEN709	Riverside Unified, Long Beach Unified	Longfellow Elementary	5, 3, 5
VA	1088407	CRY0RS	Roanoke City	Crystal Spring Elementary	5
VA	1397143	FAL1UP	Roanoke City	Fallon Park Elementary	3
VA	1088457	GRA0RW	Roanoke City	Grandin Court Elementary	5
NJ	694895	THO0LU	Rockaway Boro	Thomas Jefferson Middle School	5
IL	1540637	LOR4N0	SD U-46	Lords Park Elem School	3
PA	925307	ROY1I2	SPRING-FORD AREA SD	ROYERSFORD EL SCH	3
NY	762442	LEM10O	SYRACUSE CITY SCHOOL DISTRICT	LEMOYNE ELEMENTARY SCHOOL	4
CA	112885	CUB73W	San Diego Unified	Cubberley Elementary	5
CA	113217	HEA73W	San Diego Unified	Hearst Elementary	3
CA	1824990	JER73X	San Diego Unified	Jerabek Elementary	5
CA	5102536	SCR73X	San Diego Unified	Scripps Elementary	3
CA	113920	SIL73U	San Diego Unified	Silver Gate Elementary	3
CA	113944	SPR73W	San Diego Unified	Spreckels Elementary	3
CA	113970	SUN73U	San Diego Unified	Sunset View Elementary	4
CA	114065	WAS73U	San Diego Unified	Washington Elementary	5
CA	3329647	DEL0RT	San Luis Coastal Unified	Del Mar Elementary	3, 5
CA	10001137	CAP77K	San Miguel Joint Union	Cappy Culver Elementary	5, 3
CA	121252	LIL77L	San Miguel Joint Union	Lillian Larsen Elementary	3, 4
CA	114443	CEN73D	South Bay Union	Central Elementary	5
CA	114455	EMO73Z	South Bay Union	Emory Elementary	3, 4
CA	114467	GOD73Z	South Bay Union	Godfrey G. Berry Elementary	3
CA	114493	NES73Z	South Bay Union	Nestor Language Academy Charter	3
CA	114508	ONE73D	South Bay Union	Oneonta Elementary	5
CA	114510	SUN73Z	South Bay Union	Sunnyslope Elementary	3
UT	5097515	MID6HJ	Tooele District	Middle Canyon School	4
CA	82345	ANZ6ZE	Torrance Unified	Anza Elementary	4, 3, 5
CA	82357	ARL6ZE	Torrance Unified	Arlington Elementary	3, 5, 4
CA	82369	ARN6ZE	Torrance Unified	Joseph Arnold Elementary	5
CA	82589	SEA6ZE	Torrance Unified	Seaside Elementary	4, 5
CA	4014572	BAR0RS	Tustin Unified	Barbara Benson Elementary	5
CA	65000	UPP7D8	Upper Lake Unified	Upper Lake Elementary	3, 4
NY	738881	WIL0UL	VALLEY STREAM 13 UNION FREE SCHOOL DISTRICT	WILLOW ROAD SCHOOL	3
MA	436899	FIS05S	Walpole	Fisher	5

Table 16: Treatment Schools (TRT Dataset)

8.2 Control Schools

The following tables list the control schools and grades (matched control grades to treatment grades) used in the analysis.

State	PID	District	School Name	GRADE
CA	65531	ABC Unified	Gonsalves (Joe A.) Elementary	3
CA	65490	ABC Unified	Leal (Frank C.) Elementary	4
MS	595017	Aberdeen School District	Belle Shivers Middle School	4
NV	3249205	Achievement	Claude & Stella Parson Elementary School	4
NV	711560	Achievement	George E Harris Elementary School	3
NV	10030102	Achievement	Imagine 100 Academy of Excellence	4
NV	711663	Achievement	J. E. Manch Elementary School	3
NV	3402005	Achievement	Jack Dailey Elementary School	4
NV	4018920	Achievement	Patricia A Bendorf Elementary School	3
NV	5099496	Achievement	Steve Cozine Elementary School	4
NV	3328899	Achievement	Walter Jacobson Elementary School	3, 5
MA	4028559	Acton-Boxborough	Merriam School	3
CA	65725	Alhambra Unified	Garfield Elementary	5
CA	65775	Alhambra Unified	Monterey Highlands Elementary	5
UT	1067386	Alpine District	Sego Lily School	3
CA	100791	Alvord Unified	La Granada Elementary	3
CA	5102938	Aspire River Oaks Charter	Aspire River Oaks Charter	5
PA	892669	BEAVER AREA SD	DUTCH RIDGE EL SCH	5
TX	10003721	BELTON ISD	CHISHOLM TRAIL	5
TX	4028169	BRIDGEPORT ISD	BRIDGEPORT INTE	4
FL	4364535	BROWARD	EAGLE RIDGE ELEMENTARY SCHOOL	4
CA	100894	Banning Unified	Central Elementary	3
NJ	677158	Belleville Town	Belleville Ps4	3
CA	5351907	Bert Corona Charter	Bert Corona Charter	5
MA	440747	Boston	Joseph P Manning	3
VA	1070747	Botetourt County	Cloverdale Elementary	3
MT	602452	Bozeman Elem	Longfellow School	4
CT	162713	Bristol School District	Greene-Hills School	4
IA	236118	Burlington CSD	Black Hawk Elementary School	5
IL	274873	CCSD 146	Memorial Elem School	5
PA	897499	CENTRAL BUCKS SD	DOYLE EL SCH	4
PA	904573	CUMBERLAND VALLEY SD	SILVER SPRING EL SCH	3
IA	253051	Cardinal CSD	Cardinal Elementary Elementary	3
NV	1877181	Carson City	C C Meneley Elementary School	4
IA	243240	Cedar Rapids CSD	Madison Elementary School	3
VA	1397040	Chesterfield County	C.C. Wells Elementary	4
VA	1071985	Chesterfield County	Grange Hall Elementary	3
VA	2094253	Chesterfield County	W.W. Gordon Elementary	4
IL	11454721	City of Chicago SD 299	Prieto Math-Science Elem Sch	3
CA	133396	Cloverdale Unified	Jefferson Elementary	4
CA	1826857	Clovis Unified	Miramonte Elementary	3
MA	2046270	Conway	Conway Grammar	3
CA	101238	Corona-Norco Unified	George Washington Elementary	5
CA	4932675	Corona-Norco Unified	Woodrow Wilson Elementary	3
IA	249373	Council Bluffs CSD	Edison Elementary School	4
IA	249488	Council Bluffs CSD	Longfellow Elementary School	4
CA	68246	Culver City Unified	El Rincon Elementary	5
CA	125739	Cupertino Union	William Faria Elementary	4
CA	139390	Curtis Creek Elementary	Curtis Creek Elementary	4
CA	60048	Cutten Elementary	Cutten Elementary	3
CA	95457	Cypress Elementary	Frank Vessels Elementary	4
AZ	1821027	Deer Valley Unified District	Sunrise Elementary School	4
CA	5347267	Delhi Unified	Harmony Elementary	3
MA	416356	Dennis-Yarmouth	N H Wixon Innovation School	4
IA	247777	Des Moines Independent CSD	Brubaker Elementary School	3

Table 17: Matched Control Schools (CTRL Dataset)

ST Math is created by
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State	PID	District	School Name	GRADE
IA	247923	Des Moines Independent CSD	Hanawalt Elementary	4
IA	248343	Des Moines Independent CSD	Studebaker Elementary School	5
CA	101513	Desert Sands Unified	John F. Kennedy Elementary	3
CA	5278757	Downtown Value	Downtown Value	3
CA	4745707	Dublin Unified	Dublin Elementary	3
PA	11150602	ENVIRONMENTAL CHARTER SCHOOL AT FRICK PARK	ENVIRONMENTAL CHARTER SCHOOL AT FRICK PARK	3
CO	153009	ESTES PARK R-3	ESTES PARK K-5 SCHOOL	3
CA	61298, 116960	El Centro Elementary, San Francisco Unified	McKinley Elementary	4, 5
IA	246888	Emmetsburg CSD	Emmetsburg Middle School	5
CA	111037	Escondido Union	Juniper Elementary	5
IN	354655	Evansville Vanderburgh School Corp	Stringtown Elementary School	4
MO	575237	FAIR PLAY R-II	FAIR PLAY ELEM.	5
GA	207777	FIRST DISTRICT	ELLIS ELEMENTARY SCHOOL	4
VA	1528263	Fairfax County	Kings Glen Elementary	4
CA	111180	Fallbrook Union Elementary	La Paloma Elementary	5
CA	4871954	Fallbrook Union Elementary	William H. Frazier Elementary	3
VA	11071032	Fauquier County	Greenville Elementary	4
CA	4017158	Fontana Unified	Mango Elementary	5
MI	489353	Forest Park School District	Forest Park School	5
IA	254005	Fort Dodge CSD	Duncombe Elementary School	3
IA	254017	Fort Dodge CSD	Feelhaver Elementary School	4
CA	2105814	Fresno Unified	Ayer Elementary	3
CO	4746139	GARFIELD RE-2	KATHRYN SENOR ELEMENTARY SCHOOL	4
PA	901351	GREAT VALLEY SD	GENERAL WAYNE EL SCH	3
CA	96164	Garden Grove Unified	Enders Elementary	4
MT	601214, 600959	Glendive Elem, Miles City Elem	Lincoln School	4, 3
MA	421533	Gloucester	East Gloucester Elementary	3
IA	1808271	Graettinger-Terril CSD	Graettinger-Terril Elementary School	5
IL	300862	Grayslake CCSD 46	Prairieview School	4
IL	323826	Grayville CUSD 1	Wells Elementary School	5
CA	4030772	Greenfield Union	Raffaello Palla Elementary	4
MS	598112	Greenville Public Schools	Weddington Elementary School	5
MS	594051	Greenwood Public School District	Threadgill Elementary School	3
FL	10902610	HILLSBOROUGH	HAMMOND ELEMENTARY SCHOOL	4
FL	192603	HILLSBOROUGH	MITCHELL ELEMENTARY SCHOOL	4
TX	4016087	HOUSTON ISD	SHADOWBRIAR ELE	3
CA	70172	Hacienda la Puente Unified	Los Altos Elementary	3
CT	169486	Hamden School District	Helen Street School	5
CA	5092668, 109254	Hanford Elementary, San Bernardino City Unified	Lincoln Elementary	3, 5
CA	4290025	Harriet Tubman Village Charter	Harriet Tubman Village Charter	4
IL	310178	Havana CUSD 126	New Central Elem School	4
NJ, IA	696635, 241486	Hawthorne Boro, Newton CSD	Thomas Jefferson Elementary School	3, 4
MT	1828611	Helena Elem	Four Georgians School	3
MT	604395	Helena Elem	Jim Darcy School	5
MT	604333	Helena Elem	Rossiter School	5
MT	1551765	Hellgate Elem	Hellgate El Intermediate	3
VA	1076210	Henrico County	Laburnum Elementary	3
VA	4016013	Henrico County	Shady Grove Elementary	3
IA	241761	Iowa City CSD	Helen Lemme Elementary School	5
IA	241785	Iowa City CSD	Herbert Hoover Elementary School	5
IA	4282389	Iowa City CSD	Weber Elementary	3
IA	240937	Iowa Valley CSD	Iowa Valley Elementary School	3
NY	3333686	JAMESVILLE-DEWITT CENTRAL SCHOOL DISTRICT	TECUMSEH ELEMENTARY SCHOOL	3
CO	5027314	JOHNSTOWN-MILLIKEN RE-5J	KNOWLEDGE QUEST ACADEMY	3
OH	832841	Jackson Local	Sauder Elementary School	3

Table 18: Matched Control Schools (CTRL Dataset)

State	PID	District	School Name	GRADE
UT	2224733	Jordan District	Columbia School	3
UT	11070777	Jordan District	Falcon Ridge School	4
UT	2176954	Jordan District	West Jordan School	5
CA	131166	Junction Elementary	Junction Elementary	3
MO	1759383	KINGSTON K-14	KINGSTON ELEM.	4
NJ	691594	Keyport Boro	Keyport Central School	4
CA	58083	Kings Canyon Joint Unified	Alta Elementary	4
AZ	39661	Kyrene Elementary District	C I Waggoner School	3
CA	11129639	LaVerne Elementary Preparatory Academy	LaVerne Elementary Preparatory Academy	3
CA	70940	Lancaster Elementary	Joshua Elementary	5
CA	89109	Larkspur-Corte Madera	Neil Cummins Elementary	3
CA	4034601	Lincoln Unified	Brookside	3
NJ	701606	Linden City	Number 5	5
CA	1170139	Lodi Unified	Leroy Nichols Elementary	3
CA	124254	Lompoc Unified	La Canada Elementary	3
CA	78332	Los Angeles Unified	Hart Street Elementary	3
CA	77637	Los Angeles Unified	Hillery T. Broadous Elementary	5
CA	76322	Los Angeles Unified	Ivanhoe Elementary	4
CA	77778	Los Angeles Unified	Knollwood Preparatory Academy	5
CA	1835042	Los Angeles Unified	Latona Avenue Elementary	3
CA	74439	Los Angeles Unified	Marvin Elementary	3
CA	74491	Los Angeles Unified	Playa del Rey Elementary	3
CA	5356103	Los Banos Unified	Lorena Falasco Elementary	5
VA	1077745	Loudoun County	Aldie Elementary	4
VA	4368907	Loudoun County	Sanders Corner Elementary	5
IA	243953	Louisa-Muscatine CSD	Louisa-Muscatine Elementary	5
PA	916356	MANHEIM CENTRAL SD	DOE RUN EL SCH	3
PA	4029814	MANHEIM TOWNSHIP SD	REIDENBAUGH EL SCH	3
GA	10014354	METRO	DEKALB ACADEMY OF TECHNOLOGY AND TH	5
FL	185648	MIAMI-DADE	JOHN G. DUPUIS ELEMENTARY SCHL	3
FL	185375	MIAMI-DADE	NATURAL BRIDGE ELEMENTARY SCHL	5
PA	886323	MOON AREA SD	J.A. ALLARD EL SCH	4
MA	431605	Melrose	Roosevelt	5
CA	5278331	Menifee Union Elementary	Freedom Crest Elementary	5
NJ	692122	Middletown Twp	Leonardo Elementary School	5
CA	63416	Mojave Unified	Mojave Elementary	3
MT	602579	Monforton Elem	Monforton School	5
CA	79099	Monrovia Unified	Monroe Elementary	4
CA	4811734	Moorpark Unified	Walnut Canyon Elementary	3
IA	243769	Mount Vernon CSD	Washington Elementary School	4
CA	111843	Mountain Empire Unified	Clover Flat Elementary	4
CA	102036	Murrieta Valley Unified	Murrieta Elementary	3
NY	744050	NEW YORK CITY GEOGRAPHIC DISTRICT #10	PS 95 SHEILA MENCHER	3
NY	747167	NEW YORK CITY GEOGRAPHIC DISTRICT #22	SCHOOL OF SCIENCE AND TECHNOLOGY	5
NY	748927	NEW YORK CITY GEOGRAPHIC DISTRICT #28	PS 86	5
NY	749282	NEW YORK CITY GEOGRAPHIC DISTRICT #29	PS 134 HOLLIS	5
NY	749177	NEW YORK CITY GEOGRAPHIC DISTRICT #29	PS 34 JOHN HARVARD	4
MO	574556	NEWBURG R-II	NEWBURG ELEM.	3
MO	11451509	NORTH KANSAS CITY 74	BELL PRAIRIE ELEMENTARY	4
MO	587682	NORWOOD R-I	NORWOOD ELEM.	5
CA	93722	Napa Valley Unified	Napa Valley Language Academy	3
UT	1824524	Nebo District	Art City School	4
UT	1067520	Nebo District	Park View School	4
VA	3235424	New Kent County	George W. Watkins Elementary	3
IA	240274	New London CSD	Clark Elementary School	3

Table 19: Matched Control Schools (CTRL Dataset)

State	PID	District	School Name	GRADE
CA	5278214	Newhall	Dr. J. Michael McGrath Elementary	4
CA	4364303	Newhall	Stevenson Ranch Elementary	3
MA	419451	North Attleborough	Falls	3
IA	232394	North Butler CSD	North Butler Elementary	5
IA	233300	North Cedar CSD	North Cedar Lowden Elementary Center	5
MA	446674	Northbridge	W Edward Balmer	4
CA	79831	Norwalk-La Mirada Unified	La Pluma Elementary	3
NV	4946614	Nye	Hafen Elementary	4
CA	2176887	Ontario-Montclair	Howard Elementary	4
IA	253116	Ottumwa CSD	Eisenhower Elementary School	5
PA	904121	PENNCREST SD	SAEGERTOWN EL SCH	3
FL	201802	POLK	FRED G. GARNER ELEMENTARY SCHL	5
CA	92704	Pacific Grove Unified	Robert Down Elementary	5
CA	130215	Pajaro Valley Unified	Alianza Charter	4
CA	4014766	Palm Springs Unified	Bubbling Wells Elementary	4
CA	102139	Palm Springs Unified	Katherine Finchy Elementary	3
CA	127854	Palo Alto Unified	El Carmelo Elementary	5
CA	11457072	Patterson Joint Unified	Walnut Grove Elementary	5
CT	174601	Plainfield School District	Plainfield Memorial School	4, 5
CA	136520	Pleasant Grove Joint Union	Pleasant Grove	3
CA	5100784	Pleasant Valley	La Mariposa	4
MA	1822277	Plymouth	West Elementary	4
VA	11070870	Prince William County	Samuel L. Gravely Jr. Elementary	5
VA	1173571	Prince William County	Signal Hill Elementary	4
MA	436306	Quincy	Charles A Bernazzani Elementary	4
NY	733128	ROCHESTER CITY SCHOOL DISTRICT	SCHOOL 52-FRANK FOWLER DOW	4
WI	1140835	Racine Unified	Wadewitz Elementary	4
CA	1168198	Redding Elementary	Bonny View Elementary	5
CA	3327106	Riverside Unified	Benjamin Franklin Elementary	3
CA	3248598	Riverside Unified	William Howard Taft Elementary	4
CA	11925859	Romoland Elementary	Boulder Ridge Elementary	4
CA	11713498	Rowland Unified	Telesis Academy of Science & Math	5
TX	1034078	SABINE PASS ISD	SABINE PASS SCH	3
FL	5347487	SEMINOLE	WALKER ELEMENTARY SCHOOL	3
FL	202430	ST. JOHNS	JULINGTON CREEK ELEM. SCHOOL	3
LA	3008403	ST. TAMMANY PARISH	MAGNOLIA TRACE ELEMENTARY SCHOOL	3
CA	1530175	Sacramento City Unified	Genevieve Didion	5
CA	109113	San Bernardino City Unified	Cole Elementary	3
CA	117160	San Francisco Unified	Rooftop Elementary	5
CA	4429305	San Francisco Unified	Yu (Alice Fong) Elementary	4
CA	81511	San Gabriel Unified	Coolidge Elementary	4
CA	1169673	San Rafael City Elementary	Glenwood Elementary	5
CA	55469	San Ramon Valley Unified	Rancho Romero Elementary	4
CA	4747145	San Ramon Valley Unified	Tassajara Hills Elementary	3
CA	123755	Santa Maria-Bonita	Bonita Elementary	4
MA	423804	Saugus	Lynnhurst	4
CA	81872	Saugus Union	Rio Vista Elementary	4
IL	274055	Schaumburg CCSD 54	Neil Armstrong Elem School	3
VA	1081722	Scott County	Yuma Elementary	5
CA	138463	Sequoia Union Elementary	Sequoia Elementary Charter	5
IA	254885	Sioux City CSD	Hunt Elementary School	4
IA	255009	Sioux City CSD	Riverside Elementary School	3
CA	114405	Solana Beach Elementary	Skyline Elementary	5
CA	130502	Soquel Union Elementary	Soquel Elementary	5
IL	319112	Springfield SD 186	Feitshans Elem Sch	5

Table 20: Matched Control Schools (CTRL Dataset)

State	PID	District	School Name	GRADE
VA	4748216	Stafford County	Winding Creek Elementary	5
OH	835544	Stow-Munroe Falls City School District	Indian Trail Elementary School	3
PA	901777	TREDYFFRIN-EASTTOWN SD	HILLSIDE EL SCH	3
OH	10029397	Talawanda City	Bogan Elementary	3
AZ	43985	Tanque Verde Unified District	Tanque Verde Elementary School	4
CA	4324080	Temecula Valley Charter	Temecula Valley Charter	3
CA	4874724	Temecula Valley Unified	Abby Reinke Elementary	3
UT	1067001	Tooele District	West School	3
CA	4946107	Tustin Unified	Red Hill Elementary	4
IA	244878	Twin Cedars CSD	Twin Cedars Elementary School	3
CA	109656	Upland Unified	Sycamore Elementary	3
IA	3393040	Urbandale CSD	Valerius Elementary School	4
CA	132885	Vacaville Unified	Fairmont Charter Elementary	3
CA	141276	Ventura Unified	E. P. Foster Elementary	3
VA	1089281	Virginia Beach City	Linkhorn Park Elementary	5
PA	925840	WISSAHICKON SD	STONY CREEK EL SCH	5
MA	436916	Walpole	Old Post Road	5
CA	11133991	Wasco Union Elementary	Teresa Burke Elementary	5
NV	4452742	Washoe	Donner Springs Elementary School	5
NV	713609	Washoe	Lena Juniper Elementary School	3
CT	171374	Waterbury School District	F. J. Kingsbury School	4
IA	231194	Waterloo CSD	Lowell Elementary School	3
IA	231053	Waterloo CSD	Poyner Elementary	3
IL	302169	Waukegan CUSD 60	Greenwood Elem School	3
IA	231883	Waverly-Shell Rock CSD	West Cedar Elementary School	3
UT	2222814	Weber District	Farr West School	5
UT	1068536	Weber District	Plain City School	3
CA	4486743	West Contra Costa Unified	Cesar E. Chavez Elementary	3
CA	55043	West Contra Costa Unified	Lake Elementary	4
CA	82979	West Covina Unified	Orangewood Elementary	3
IA	236089	West Delaware County CSD	West Delaware Middle School	5
IA	240121	West Harrison CSD	West Harrison Elementary	3
IA	236821	Western Dubuque CSD	Epworth Elementary School	4
MA	3250345	Weymouth	Frederick C Murphy	3
OH	789036	Wilmington City	Denver Place Elementary School	3
NY	782624	YONKERS CITY SCHOOL DISTRICT	MONTESSORI SCHOOL 27	4
PA	10003202	YOUNG SCHOLARS OF CENTRAL PA CS	YOUNG SCHOLARS OF CENTRAL PA CS	3

Table 21: Matched Control Schools (CTRL Dataset)