Identifying South Carolina charter schools that are "beating the odds"

Mark A. Partridge
Florida State University

Zena Rudo
American Institutes for Research

Sarah Herrera
Florida State University

This study, conducted in partnership with education leaders in South Carolina, identifies how many of the state's charter schools serving students in any of grades 3–8 are "beating the odds," or performing better than expected on the Palmetto Assessment of State Standards in math and English language arts in the 2013/14 school year. Thirty-nine percent of schools serving students in any of grades 3–5 and 26 percent of schools serving students in any of grades 6–8 were found to be beating the odds in both math and English language arts.

Why this study?

Charter schools have become a widely used alternative to traditional public schools, both nationally and in the Regional Educational Laboratory (REL) Southeast Region. They play an increasingly important role in state reform efforts. South Carolina stakeholders—including the South Carolina Department of Education, the Public Charter School Alliance of South Carolina, and charter school leaders throughout the state—requested assistance from REL Southeast to broaden their understanding of why some charter schools are more successful than others to inform their consideration of whether to expand this school choice option. This study identifies charter schools that are "beating the odds," or performing better than expected given the demographic characteristics of the students they serve.

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The study team worked in partnership with South Carolina Department of Education research personnel to develop a statistical model that identifies charter schools that are beating the odds. The South Carolina Department of Education can use the model to explore which school characteristics are associated with beating-the-odds schools. This study was designed as a first step in comparing practices and policies and developing learning communities in South Carolina charter schools.

What the study examined

Two research questions guided this study:
- Which South Carolina charter schools are beating the odds, or performing better than expected on the Palmetto Assessment of State Standards in math?
- Which South Carolina charter schools are beating the odds, or performing better than expected on the Palmetto Assessment of State Standards in English language arts?

See box 1 for a summary of the data and methods used in the study, and see the appendix for details.

Box 1. Data and methods

Data

The data used in the study were obtained from the South Carolina Department of Education and covered grades 3–8 for the 2012/13 and 2013/14 school years. The data included the following variables:
- Student scale scores on the Palmetto Assessment of State Standards in math.[1]
- Student scale scores on the Palmetto Assessment of State Standards in English language arts.[1]
- Percentage of students in the school who are Black.
- Percentage of students in the school who are White.
- Gender (binary).
- English learner status (binary).
- Eligibility for the federal school lunch program (binary).
- Eligibility for special education services (binary).
- School identification number and name.
- District identification number and name.

The results reflect data on students from the 38 charter schools in South Carolina that had students in grades 3–8 and available demographic data for 2013/14. Of the 38 schools, 33 served students in any of grades 3–5, and 35 served students in any of grades 6–8. Specific grade configurations varied, with schools serving grades kindergarten–3, 3–4, 3–5, 3–6, or some other configuration. Only the 2013/14 results are reported because they were similar to those of 2012/13 and there were fewer operating charter schools in the 2012/13 school year. The student demographics of the schools used in the study align closely with those of the general public school student population of South Carolina (see table A1 in the appendix for summary statistics of the study samples). Student-level data were aggregated to create school-level data so that both student and school characteristics could be included in the statistical models. The data aggregation was performed by creating averages for each variable within each school.

Methodology

Charter schools were identified as beating the odds if they performed better than expected on the Palmetto Assessment of State Standards (PASS) in the 2013/14 school year according to statistical models that account for differences in race/ethnicity, gender, English learner status, eligibility for the federal school lunch program, and eligibility for special education services. Expected performance was determined using a multilevel

(continued)

regression approach, which has been deemed an acceptable statistical approach in such cases (Abe et al., 2015), to estimate the relationship between student and school demographic and socioeconomic characteristics and performance on the state assessment. If the difference between a charter school's expected and actual (or observed) scores was positive and found to be statistically different from zero, the school was considered to be beating the odds.

The analyses were conducted separately for math and English language arts in grade groupings of 3–5 and 6–8 to match the groupings used in testing for state accountability measures.

Note

1. A scaled score in this case means that a student's raw score on the Palmetto Assessment of State Standards was converted to a common scale that allows for numerical comparisons among students.

What the study found

Of the 33 South Carolina charter schools serving students in any of grades 3–5, 13 (39 percent) were found to be beating the odds in both math and English language arts (figure 1). One additional charter school was found to be beating the odds in math only. Of the 35 South Carolina charter schools serving students in any of grades 6–8, 9 (26 percent) were found to be beating the odds in both math and English language arts. Three additional schools were found to be beating the odds in English language arts only.

Charter schools that were identified as beating the odds were not notably different in observable characteristics from charter schools that were not identified (see tables A4 and A5 in the appendix).

Detailed information about the charter schools that are beating the odds in math and English language arts—including the difference between expected and observed student achievement (often referred to as the residual)—can be found in the appendix.

Figure 1. Some 26–42 percent of South Carolina charter schools were found to be beating the odds in 2013/14
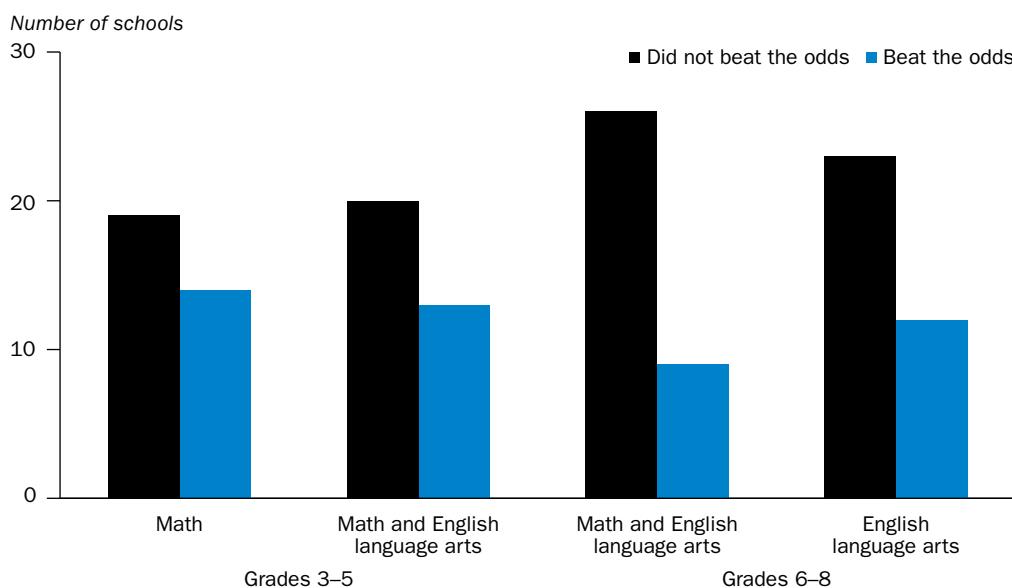
Source: Authors' analysis of 2013/14 South Carolina Department of Education data.

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Implications and limitations of the study

Further inspection of schools that are beating the odds could help identify promising practices or other factors that promote success, and these factors could be shared with stakeholders in other states. The South Carolina Department of Education is particularly interested in the leadership practices at charter schools that are beating the odds and is planning to conduct a leadership study. Beating-the-odds analysis can be particularly useful for evaluating the performance of groups of similar schools and sharing lessons learned. That the charter schools identified in this study as beating the odds were not notably different in observable characteristics from charter schools that were not identified may help the South Carolina Department of Education as it determines whether any beating-the-odds charter schools engage in unique practices associated with school success. The study's analyses can also be replicated and used by researchers and staff from state and local education agencies to study schools in different contexts.

This study has three main limitations. First, the small number of charter schools in South Carolina limits the precision of a beating-the-odds analysis; a larger sample would allow for more precise comparisons of schools at similar performance levels. Simulation studies show that a small sample size in a hierarchical linear model at level two (the school level) with 30 units leads to second-level standard errors that are 15 percent too small (Maas & Hox, 2005). In other words, the current study may have identified too many schools as beating the odds. Although the use of student-level data increases the precision of the results that would have been obtained using only school-level data, the small sample size remains an issue because the school-level results were most important for this study. The small number of students in some schools analyzed is not a problem because the data used for these analyses included information on all tested students in South Carolina charter schools.

Second, the sample, statistical model, and parameters used to estimate which schools are beating the odds can influence the results (Abe et al., 2015). The models estimated in this study included all available covariates; the results might have varied if other variables that were not available for the analysis, such as parent education, were included.

Finally, the identification and ranking of beating-the-odds schools depend on the schools included in the analysis, some of which may serve a specialized student population based on specific enrollment criteria (for example, a school that serves high-performing students). Such schools have historically demonstrated higher performance on statewide assessments. Including nontraditional schools may thus affect which schools are classified as beating the odds, but no nontraditional schools were readily identifiable in the available data. Future research could include a sensitivity analysis to evaluate how the beating-the-odds scores change as particular schools are excluded (assuming that the schools can be identified), as well as which schools may be differentially identified as beating the odds.

Appendix. Details on the analyses and results

This appendix provides details on the models used to identify beating-the-odds schools and statistics for the schools identified as beating the odds.

Models

The beating-the-odds analysis entailed a two-stage process. In the first stage, school-level average scale scores weighted by grade on the Palmetto Assessment of State Standards (PASS) in math and English language arts (for schools serving any of grades 3–5 and 6–8, estimated separately) served as the outcome measure in a two-level hierarchical linear model with students nested in schools. Student demographic characteristics were included as predictors at level 1 and aggregated by school (table A1) and used as predictors at level 2:

Level 1 model:

$$Y_{ij} = \beta_{0j} + \beta_{1j}*(Male_{ij}) + \beta_{2j}*(\textit{Eligibility for the Federal School Lunch Program}_{ij}) + \beta_{3j}*(\textit{English Learner Status}_{ij}) + \beta_{4j}*(\textit{Special Education Status}_{ij}) + \beta_{5j}*(White_{ij}) + r_{ij}$$

where Y_{ij} is the student's PASS score at school j, controlling for the student's gender (*Male*), socioeconomic status (*Eligibility for the Federal School Lunch Program*), English learner status (*English Learner Status*), eligibility for special education services (*Special Education Status*), race/ethnicity (*White;* where all other races/ethnicities serve as the reference group), and r_{ij} is the student-level residual.[1]

Table A1. Characteristics of all South Carolina charter schools included in the study and all South Carolina public schools, by grade levels served, 2013/14

Characteristic	Grades 3–5		Grades 6–8	
	Charter schools	All public schools	Charter schools	All public schools
Total number of students	3,972	162,563	5,184	166,502
Average Palmetto Assessment of State Standards math scale score	635	644	630	632
Average Palmetto Assessment of State Standards English language arts scale score	645	644	635	628
Average percentage of students who are male	52	51	51	51
Average percentage of students who are eligible for the federal school lunch program	47	60	44	58
Average percentage of students who are English learner students	5	7	3	6
Average percentage of students eligible for special education services	11	14	10	13
Average percentage of students who are White	60	53	67	54
Average percentage of students who are Black	30	34	25	35

Source: Authors' analysis of 2013/14 South Carolina Department of Education data.

Level 2 model:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(Sch\_Male_j) + \gamma_{02}*(Sch\_Eligibility\ for\ the\ Federal\ School\ Lunch\ Program_j) +$$
$$\gamma_{03}*(Sch\_English\ Learner\ Status_j) + \gamma_{04}*(Sch\_Special\ Education\ Status_j) +$$
$$\gamma_{05}*(Sch\_White_j) + \gamma_{06}*(Sch\_Black_j) + u_{0j}$$

$\beta_{1j} = \gamma_{10}$
$\beta_{2j} = \gamma_{20}$
$\beta_{3j} = \gamma_{30}$
$\beta_{4j} = \gamma_{40}$
$\beta_{5j} = \gamma_{50}$

The school-level model (level 2) is characterized by the percentage of students who are male (*Sch_Male*), the percentage of students who are eligible for the federal school lunch program (*Sch_ELigible for the Federal School Lunch Program*), the percentage of students who are not proficient in English (*Sch_English Learner Status*), the percentage of students who are eligible for special education services (*Sch_Special Education Status*), the percentage of students who are White (*Sch_White*), the percentage of students who are Black (*Sch_Black)*, and the school-level residual (u_{0j}).

Mixed model:

$$Y_{ij} = \gamma_{00} + \gamma_{01}*Sch\_Male_j + \gamma_{02}*\ Sch\_Eligibility\ for\ the\ Federal\ School\ Lunch\ Program_j +$$
$$\gamma_{03}*\ Sch\_English\ Learner\ Status_j + \gamma_{04}*\ Sch\_Special\ Education\ Status_j + \gamma_{05}*\ Sch\_White_j +$$
$$\gamma_{06}*\ Sch\_Black_j + \gamma_{10}*Male_{ij} + \gamma_{20}*Eligibility\ for\ the\ Federal\ School\ Lunch\ Program_{ij} +$$
$$\gamma_{30}*English\ Learner\ Status_{ij} + \gamma_{40}*Special\ Education\ Status_{ij} + \gamma_{50}*White_{ij} + u_{0j} + r_{ij}.$$

The analysis was conducted independently using 2012/13 and 2013/14 data to capture the respective residuals for each year as a sensitivity analysis. Only the 2013/14 results are reported because they were similar to those of 2012/13 and there were fewer charter schools operating in the 2012/13 school year. The study team recovered the residuals—which measure the degree to which a school differed from its statistically expected performance on a normed scale score, controlling for the proportion of students eligible for the federal school lunch program, racial/ethnic composition, and proportion of English learner students—and the results were found to meet the assumptions for a hierarchical linear model analysis, including independence of level 2 residuals and predictors and normality of level 2 residuals.

The study team then evaluated which schools performed statistically significantly better than predicted by constructing a 95 percent confidence interval around the schools' residuals as follows:

95 percent confidence interval − School residual ± (1.96 × residual standard error).

Schools that had a positive lower bounded confidence interval were considered to be beating the odds. Tables A2 (math) and A3 (English language arts) present the estimated coefficients for the statistical models used to identify which charter schools were identified as beating the odds. Coefficients with *p*-values of less than .01 are considered statistically significant, meaning that they have some association with the dependent variable (PASS scores). Positive and significant coefficients indicate that an increase in the variable—for example, an increase in the percentage of students who are White—is associated with an increase in predicted PASS scores.

Table A2. Model estimates for math, 2013/14

Characteristic	Grades 3–5			Grades 6–8		
	Coefficient	Standard error	p value	Coefficient	Standard error	p value
Level 1: Student						
Male	0.34	1.61	.83	2.47	1.60	.12
Eligible for the federal school lunch program	−18.18	2.96	.00	−17.27	1.50	.00
English learner	1.66	3.81	.66	8.87	4.10	.03
Eligible for special education services	−42.97	3.92	.00	−42.83	2.63	.00
White	21.76	3.78	.00	13.27	1.71	.00
Level 2: School						
Intercept	714.01	89.31	.00	758.07	84.35	.00
Male	−82.30	65.26	.22	−32.18	29.23	.28
Eligible for the federal school lunch program	−46.77	16.42	.01	−47.34	21.83	.04
English learner student	6.17	110.10	.96	−104.23	105.19	.33
Eligible for special education services	−71.76	60.89	.25	−131.29	36.99	.00
White	−18.07	95.95	.85	−89.75	92.21	.34
Black	10.52	97.60	.92	−48.82	94.77	.61

Note: Coefficient estimates are in terms of Palmetto Assessment of State Standards scale scores.

Source: Authors' analysis of South Carolina Department of Education data.

Table A3. Model estimates for English language arts, 2013/14

Characteristic	Grades 3–5			Grades 6–8		
	Coefficient	Standard error	p value	Coefficient	Standard error	p value
Level 1: Student						
Male	−8.61	1.90	.00	−10.12	1.41	.00
Eligible for the federal school lunch program	−16.60	2.64	.00	−18.55	1.67	.00
English learner student	−2.15	8.17	.79	3.36	5.05	.51
Eligible for special education services	−39.35	4.09	.00	−50.79	2.96	.00
White	18.86	2.78	.00	12.04	1.94	.00
Level 2: School						
Intercept	725.74	52.78	.00	715.06	65.88	.00
Male	−42.29	46.45	.37	−13.70	19.80	.50
Eligible for the federal school lunch program	−42.18	11.15	.00	−53.33	15.73	.00
English learner student	−21.53	65.68	.75	−25.04	76.95	.75
Eligible for special education services	−57.58	49.18	.25	−117.38	32.86	.00
White	−37.58	61.45	.55	−35.90	68.02	.60
Black	−18.34	63.91	.78	−7.63	69.46	.91

Note: Coefficient estimates are in terms of Palmetto Assessment of State Standards scale scores.

Source: Authors' analysis of South Carolina Department of Education data.

An increase in the percentage of students eligible for the federal school lunch program or the percentage of students eligible for special education services is associated with lower predicted PASS scores. An increase in the percentage of students who are White is associated with higher predicted PASS scores.

Statistics for beating-the-odds schools

Tables A4 (grades 3–5) and A5 (grades 6–8) include information on all 38 charter schools examined in the study. Schools that do not offer grades 3–5 or 6–8 are omitted when appropriate. The tables present the average values for the school-level controls as well as the residual values (observed minus predicted proficiency rates) for math and English language arts. Schools that had a positive lower bounded confidence interval were identified as beating the odds. The lower-bounded confidence interval was calculated using the following formula:

95 percent confidence interval − School residual − (1.96 × residual standard error).

Table A4. Characteristics of South Carolina charter schools serving students in any of grades 3–5 and beating-the-odds analysis results for them, 2013/14

| School number | Number of students tested | Percentage of students who are | | | | | | Math proficiency rate residual (lower and upper confidence interval) | English language arts proficiency rate residual (lower and upper confidence interval) | Beating the odds in math or English language arts |
		Male	Eligible for federal school lunch program	English language learner	Eligible for special education services	White	Black			
14	20	60	65	10	15	35	55	58.97 (50.16, 67.79)	18.75 (13.00, 24.50)	Both
19	47	60	81	0	19	4	96	46.42 (37.61, 55.24)	28.08 (22.33, 33.83)	Both
25	132	53	45	0	14	64	29	27.48 (18.66, 36.30)	12.77 (7.02, 18.52)	Both
7	348	49	38	3	9	61	35	26.35 (17.53, 35.17)	23.53 (17.78, 29.28)	Both
4	53	43	89	2	11	0	98	20.87 (12.06, 29.69)	16.43 (10.68, 22.18)	Both
30	82	48	38	2	12	43	43	20.83 (12.01, 29.64)	19.26 (13.51, 25.01)	Both
37	128	47	19	14	5	49	22	19.91 (11.09, 28.73)	3.76 (−1.99, 9.51)	Math
16	106	41	25	6	8	82	5	19.15 (10.33, 27.97)	14.73 (8.98, 20.48)	Both
3	152	49	26	1	7	66	22	19.15 (10.33, 27.96)	9.52 (3.77, 15.27)	Both
27	54	54	94	0	26	6	93	16.38 (7.56, 25.19)	15.11 (9.36, 20.86)	Both
34	45	56	31	0	7	96	4	15.14 (6.32, 23.96)	8.18 (2.43, 13.93)	Both
2	60	45	60	0	12	73	27	13.45 (4.64, 22.27)	10.35 (4.61, 16.10)	Both
10	17	65	88	0	12	0	100	13.24 (4.42, 22.06)	23.62 (17.87, 29.37)	Both
5	103	60	4	2	16	94	1	12.23 (3.42, 21.05)	10.46 (4.71, 16.21)	Both
13	274	51	95	22	15	6	71	5.46 (−3.35, 14.28)	0.61 (−5.14, 6.36)	No
9	124	49	44	0	15	82	15	1.23 (−7.59, 10.04)	−8.97 (−14.72, −3.23)	No
24	454	56	58	0	11	75	19	−1.66 (−10.48, 7.15)	2.71 (−3.04, 8.46)	No
29	365	57	20	1	14	74	19	−2.16 (−10.97, 6.66)	−5.27 (−11.02, 0.48)	No
17	42	43	83	0	24	7	93	−6.01 (−14.82, 2.81)	3.07 (−2.68, 8.82)	No
23	493	50	47	0	11	80	13	−6.56 (−15.38, 2.25)	0.71 (−5.03, 6.46)	No
36	109	54	67	0	0	82	17	−10.12 (−18.94, −1.31)	−5.71 (−11.46, 0.04)	No
18	52	54	0	8	17	67	29	−11.44 (−20.25, −2.62)	−3.86 (−9.61, 1.89)	No
21	9	33	89	0	33	89	11	−14.95 (−23.77, −6.14)	−15.99 (−21.74, −10.24)	No
31	154	55	86	37	4	28	32	−15.98 (−24.80, −7.16)	−2.23 (−7.98, 3.52)	No
35	118	49	41	7	8	73	11	−17.01 (−25.83, −8.19)	−8.82 (−14.57, −3.08)	No
38	139	50	27	0	0	81	11	−20.33 (−29.14, −11.51)	−20.44 (−26.19, −14.69)	No
1	36	64	56	0	31	42	56	−27.97 (−36.78, −19.15)	−21.08 (−26.83, −15.33)	No
15	39	41	3	15	5	41	36	−29.67 (−38.49, −20.85)	−21.42 (−27.17, −15.67)	No
11	83	49	19	0	12	81	11	−30.92 (−39.74, −22.11)	−7.06 (−12.81, −1.31)	No
8	29	55	93	0	7	0	100	−33.87 (−42.69, −25.05)	−29.15 (−34.90, −23.41)	No
26	64	52	33	0	17	64	30	−38.36 (−47.18, −29.55)	−23.08 (−28.83, −17.33)	No
32	66	50	89	0	17	0	100	−42.36 (−51.18, −33.55)	−37.64 (−43.38, −31.89)	No
20	8	75	88	0	13	0	100	−44.47 (−53.29, −35.65)	−31.24 (−36.99, −25.49)	No

Note: A total of 38 schools were examined, and school numbers match those in table A5. Omitted school numbers (6, 12, 22, 28, and 33) correspond to schools that do not have grades 3–5.

Source: Authors' analysis of South Carolina Department of Education data.

Table A5. Characteristics of South Carolina charter schools serving students in any of grades 6–8 and beating-the-odds analysis results for them, 2013/14

School number	Number of students tested	Percentage of students who are						Math proficiency rate residual (lower and upper confidence interval)	English language arts proficiency rate residual (lower and upper confidence interval)	Beating the odds in math or English language arts
		Male	Eligible for federal school lunch program	English language learner	Eligible for special education services	White	Black			
25	96	51	48	0	13	66	27	50.09 (43.38, 56.79)	16.47 (11.42, 21.52)	Both
33	92	58	10	0	7	97	1	32.79 (26.09, 39.50)	25.83 (20.78, 30.88)	Both
19	14	29	79	0	21	7	93	32.08 (25.37, 38.78)	30.37 (25.32, 35.42)	Both
37	36	56	22	11	8	64	17	25.26 (18.56, 31.96)	22.76 (17.71, 27.81)	Both
22	64	53	88	2	6	44	55	21.71 (15.01, 28.42)	11.66 (6.61, 16.71)	Both
3	110	57	20	4	12	63	16	21.62 (14.92, 28.32)	15.59 (10.54, 20.64)	Both
14	118	52	61	15	11	31	54	18.32 (11.62, 25.02)	10.52 (5.47, 15.57)	Both
12	442	48	9	5	5	84	8	17.94 (11.24, 24.64)	5.98 (0.93, 11.03)	Both
10	7	71	86	0	29	0	100	7.95 (1.25, 14.66)	10.60 (5.55, 15.65)	Both
16	95	54	42	3	8	74	12	3.12 (−3.58, 9.83)	4.31 (−0.74, 9.36)	No
9	103	51	42	0	17	82	18	3.09 (−3.61, 9.79)	0.43 (−4.62, 5.48)	No
6	257	56	37	3	9	57	37	2.87 (−3.84, 9.57)	−5.69 (−10.74, −0.64)	No
27	52	40	92	0	21	0	100	2.01 (−4.69, 8.71)	−23.72 (−28.77, −18.67)	No
34	8	75	50	0	0	88	13	1.54 (−5.16, 8.24)	−13.72 (−18.77, −8.67)	No
24	858	52	53	0	14	76	19	1.46 (−5.24, 8.16)	−22.83 (−27.88, −17.78)	No
17	8	75	63	0	25	13	88	0.65 (−6.05, 7.35)	−20.79 (−25.84, −15.74)	No
5	83	45	5	1	7	92	2	0.10 (−6.60, 6.80)	−6.00 (−11.05, −0.95)	No
28	196	48	16	0	0	66	24	−0.25 (−6.95, 6.45)	−6.97 (−12.02, −1.92)	No
4	50	50	84	2	2	0	98	−0.61 (−7.31, 6.09)	2.61 (−2.44, 7.66)	No
8	29	62	90	0	24	7	93	−1.29 (−8.00, 5.41)	−10.42 (−15.47, −5.37)	No
2	68	47	65	0	13	84	16	−3.05 (−9.75, 3.65)	4.27 (−0.78, 9.32)	No
23	959	48	44	0	9	81	12	−5.52 (−12.22, 1.18)	4.18 (−0.87, 9.23)	No
21	4	75	25	0	25	75	25	−5.54 (−12.24, 1.16)	4.90 (−0.15, 9.95)	No
32	10	40	80	0	30	0	100	−6.44 (−13.14, 0.26)	−25.95 (−31.00, −20.90)	No
13	256	47	91	20	12	7	70	−7.41 (−14.11, −0.71)	−4.73 (−9.78, 0.32)	No
31	147	50	80	30	11	20	48	−10.04 (−16.74, −3.34)	−23.47 (−28.52, −18.42)	No
38	40	70	25	0	0	75	15	−13.06 (−19.76, −6.36)	11.25 (6.20, 16.30)	English
1	57	49	67	0	19	32	61	−14.88 (−21.58, −8.18)	−9.08 (−14.13, −4.03)	No
29	354	50	20	1	12	78	17	−19.16 (−25.86, −12.46)	3.66 (−1.39, 8.71)	No
20	14	64	100	0	7	0	100	−22.75 (−29.45, −16.05)	2.62 (−2.43, 7.67)	No
35	120	53	47	3	7	78	10	−22.95 (−29.65, −16.25)	15.45 (10.40, 20.50)	English
26	119	49	30	2	15	70	21	−26.43 (−33.14, −19.73)	3.61 (−1.44, 8.66)	No
11	13	31	8	0	8	92	8	−27.44 (−34.14, −20.74)	0.49 (−4.56, 5.54)	No
36	255	52	62	0	0	79	17	−28.36 (−35.06, −21.66)	10.78 (5.73, 15.83)	English
15	50	54	2	6	22	46	42	−31.74 (−38.44, −25.04)	−21.54 (−26.59, −16.49)	No

Note: A total of 38 schools were examined, and school numbers match those in table A4. Omitted school numbers (7, 8, and 30) correspond to schools that do not have grades 6–8.

Source: Authors' analysis of South Carolina Department of Education data.

Note

1. Information on student race/ethnicity was limited to Black or White, and it was determined by means of the variance inflation factor statistic that those two variables were collinear at the student level but not the school level. Thus only White was included in the student-level equation.

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