International Journal of
Education Policy & Leadership

IJEPL
Volume 16(16)
2020

Deal or No Deal? The Effects of Deregulation on Public School Leaders' Support for Private School Choice in California

Corey A. DeAngelis, *Reason Foundation & Cato Institute*
Lindsey M. Burke, *Heritage Foundation*

Abstract

This article uses a survey experiment to examine the effects of public school deregulations on public school leaders' support for a hypothetical private school voucher program in California. There is no evidence to suggest that public school deregulations affect public school leaders' support for private school vouchers overall. However, deregulations related to teacher certification and the administration of standardized tests were found to further decrease support for private school choice for leaders of large public schools. This result may be explained by expected adjustment costs or regulatory capture.

Keywords: Private school; School choice; School vouchers; Schooling supply; Regulations

Introduction

Employees in traditional public schools tend not to support private school voucher programs in the United States (Cheng, Henderson, Peterson, & West, 2019; Yettick, Lloyd, Harwin, & Osher, 2017). This opposition could be explained by a myriad of factors, including economic theory, risk aversion, equity concerns, and/or moral ob-

Corey A. DeAngelis & Lindsey M. Burke. (2020). Deal or No Deal? The Effects of Deregulation on Public School Leaders' Support for Private School Choice in California. *International Journal of Education Policy & Leadership 16*(16). URL: http://journals.sfu.ca/ijepl/index.php/ijepl/article/view/989 doi: 10.22230/ijepl.2020v16n16a989

jections. Whatever the reason, public school employees' opposition to private school vouchers might be driven by the expected marginal costs of the programs, which exceed expected marginal benefits. These perceived marginal costs may include a loss of funding for public education, less job security, more uncertainty, and unfair competition.

All else equal, increasing benefits for public school employees in conjunction with a new private school voucher program could theoretically increase the likelihood that public school employees support the program (Becker, 2013; Friedman, 1953). In theory, public school leaders might expect to support deregulations in public schooling operations that are perceived to increase their autonomy and general work climate. Such deregulations could include reducing state standardized testing requirements, eliminating some teacher certification requirements, and eliminating requirements to provide transportation services for all students (McShane, 2018). As Michael McShane (2018) argues, public and private school supporters might be able to "come together to improve the jobs of teachers regardless of their schooling sector" (p. 2) by reducing onerous regulations. However, deregulations could also further reduce public school leaders' support of a policy change if they believe that the regulations are beneficial for their schools, employees, and students. This article provides the first empirical evaluation to examine whether or not deregulations in public schools alongside a new private school voucher program affects public school leaders' support for the program.

Using a survey experiment, leaders of traditional public schools in California in early 2019 were randomly assigned either a control condition or one of four deregulations: reducing reporting of standardized test results, reducing standardized testing requirements, eliminating some teacher certification requirements, or eliminating transportation requirements. Participants were then asked if they would support a hypothetical voucher program in their state. A total of 755 responses were received from public school leaders in California for an overall response rate of 10.59 percent. Specifically, 157 responses were received from the control group, 143 responses from the first treatment group (reduce reporting of standardized test results), 151 responses from the second treatment group (reduce administration of standardized tests), 160 responses from the third treatment group (eliminate teacher certification requirements), and 144 responses from the fourth and final treatment group (eliminate transportation requirements). No evidence was found to suggest that any of the four public school deregulations affect public school leaders' support for private school vouchers overall. However, deregulations related to teacher certification and the administration of standardized tests were found to further decrease support for private school choice for leaders of large public schools. This result could be explained by the capture theory of regulation (McShane, 2018; Stigler, 1971) or by favorable views of regulations by public school leaders in California.

The next section theorizes why the deregulation of public schools could increase or decrease public school employees' support for private school vouchers. It then goes over the limited literature on this topic, explains the data and methods employed in the evaluation, and describes the results. The article concludes with a discussion of the survey's implications and the need for more research on the topic.

Theory

Employees in the public school sector typically express higher levels of opposition to private school voucher programs than the general public. The 2018 EdNext Poll finds that 60 percent of a nationally representative sample of teachers in the United States and 39 percent of the general public opposes universal private school voucher programs (Cheng et al., 2019). Holly Yettick, Sterling Lloyd, Alexandra Harwin, and Michael Osher (2017) conducted a national survey and found that 79 percent of teachers oppose "government funding to help pay for students' tuition at private schools" (p. 19). Teachers' opposition to private school choice programs has four potential explanations: economics, risk aversion, equity concerns, and moral objections.

Economic concerns

In general, students are residentially assigned to public schools in the traditional K–12 education system in the United States (Wang, Rathbun, & Musu, 2019). Even if families are not happy with the services provided by their traditional public schools, residential assignment—in addition to the fact that private school voucher programs do not exist in many areas—makes it costly for most families to choose alternative options. If families want to opt out of their residentially assigned school, they generally have only a few choices: 1) move residences to access a different public school, 2) pay out of pocket for a private school, 3) choose a nearby public charter school, or 4) homeschool. Some economists argue that residential assignment and funding through property taxes create monopoly power for leaders and employees of some traditional public schools (Chubb & Moe, 1988, 1990; Friedman, 1955; Walberg & Bast, 2003). Some scholars argue that the local funding of schooling is perceived to disadvantage students from lower-income families who reside in areas with lower property-tax bases (Hanushek & Lindseth, 2009), while still others argue that the "efficiency-equity tradeoff" (Hoxby, 1996, p. 70) of local funding is not as problematic as many believe. Regardless, some scholars argue that competitive pressures from private school vouchers could reduce monopoly power, meaning some power might theoretically be transferred from public school officials to individual families (DeAngelis & Holmes Erickson, 2018). School vouchers also theoretically reduce the cost for families to exit their residentially assigned public schools, meaning that traditional public schools could be more likely to lose funding associated with student enrollment counts in a choice system (Hoxby, 2001; Friedman, 1997). The transfer of power and the potential loss of funding (through student attrition) could theoretically increase workload (necessitated by increased responsiveness to parents) and increase the likelihood that public school employees eventually lose their jobs in their current public schools. However, a meta-analysis of the evidence on the competitive effects of school choice finds that the impacts are generally small in size (Jabbar, Fong, Germain, Li, Sanchez, Sun, & Devall, 2019).

Risk aversion

Five studies find that competition from school choice increases public school teacher salaries due to reductions in monopsony power held by employers (DeAngelis & Shuls, 2018; Hensvik, 2012; Hoxby, 2001; Jackson, 2012; Vedder & Hall, 2000).

However, generally small increases in salaries for public school teachers might be outweighed by the risk of losing an otherwise secure job. An individual is considered "risk averse" if they are generally reluctant to take risks. Public sector workers tend to be more risk averse than private sector workers (Masclet, Colombier, Denant-Boemont, & Loheac, 2009), and public school educators tend to be more risk averse, on average, than employees in other fields (Bowen, Buck, Deck, Mills, & Shuls, 2015). The uncertainty created by a systemic change such as private school vouchers or changes in regulatory structure could lead to opposition by risk-averse employees. However, changes in regulatory structure could also lead to more support from generally risk-averse employees if they believe the change would improve job security.

Risk aversion is not limited to economic or working conditions. Public school employees may view private school vouchers as a risk for other reasons. For example, these employees may view private school voucher models as conflicting with democratic purposes, such as national unity, political participation, and social cohesion (Gutmann, 1999; Mann; 1855; Saltman, 2000). Concerns over increased access to religious education may also be a predictor of opposition to school vouchers, since the majority of private schools in the United States have religious affiliations (Broughman, Rettig, & Peterson, 2017). Public school employees may also view private school vouchers as a risk to the least advantaged students if they believe the most advantaged students will be more likely to use the program (Chakrabarti, 2013; Hart, 2014).

Equity concerns and moral considerations

Public school employees may oppose school vouchers, even if they generally welcome competition, if they perceive that the programs create unequal playing fields. Private schools might have more autonomy from the state than traditional public schools. M. Danish Shakeel and Corey DeAngelis (2017) use nationally representative data from the National Center for Education Statistics Schools and Staffing Survey and find that private school leaders are five to 20 percentages points more likely than public school leaders to report having a major influence in six different school activities, including establishing a curriculum, hiring teachers, setting performance standards, and setting discipline policies. Private schools participating in voucher programs must abide by additional government regulations (EdChoice, 2019); however, most school voucher programs do not require private schools to follow all of the same top-down regulations as traditional public schools. Public school employees may oppose private school choice if they think the competition in the new system is unfair. Public school employees may also oppose vouchers if they believe the programs will lead to inequalities (Cardak, 2005) and segregation (Bunar, 2010; Levin, 1999; Ravitch, 2013; Swanson, 2017).

Public school employees theoretically weigh the expected costs and benefits of education reforms when deciding whether or not to support programs (Becker, 2013). In general, private school voucher programs increase the costs of support by increasing uncertainty and potentially decreasing total funding, therefore decreasing the likelihood of support. However, scholars have criticized this rational decision-making model because social problems are often complex and because actors may have bounded rationality (Simon, 2004; Zey, 1992). For example, rational choice theory

suggests individuals act as rational consumers, engaging in certain actions after weighing the costs and benefits of said actions and considering alternatives (Zey, 1998) in order to make choices that will maximize the benefits that accrue to them. Yet Mary Zey (1998) reframed rational choice theory in terms more aligned with a bounded rationality framework, assuming that individuals act to accrue beneficial results, not necessarily to "maximize or optimize returns or utility" (Zey, 1998, p. 274). While some studies have found that school choice programs can increase public school teachers' salaries (DeAngelis & Shuls, 2018; Hensvik, 2012; Hoxby, 2001; Jackson, 2012; Vedder & Hall, 2000), the salary benefits are expected to be small relative to the risk of potentially losing otherwise secure jobs, and when considered within a bounded rationality framework, those benefits may not outweigh perceived risks.

Public school employees may be less likely to oppose private school vouchers if the programs are introduced alongside deregulations in public schools. As McShane (2018) argues, public and private school supporters might be able to "come together to improve the jobs of teachers regardless of their schooling sector" (p. 2) by reducing onerous regulations. Deregulations would lead to more autonomy for public school employees and fairer competition between traditional public schools and private schools in a choice system. Autonomy might allow public schools to more effectively compete with private schools in choice settings (Hanushek, Link, & Woessmann, 2013; Ouchi, 2006; Steinberg, 2014). Private school leaders tend to have more autonomy than public school leaders in the current system (Chubb & Moe, 1988; Shakeel & DeAngelis, 2017). In December 2018, one month before this survey experiment was sent out, the superintendent of Los Angeles Unified said, "So [if] it's the flexibility of charter schools that's allowing them to excel, let's bring that flexibility into the traditional school classroom" (Blume, 2018, para. 14). The traditional public school leaders may be more willing to support bottom-up accountability in exchange for less top-down oversight in the form of state regulations.

However, it is possible that additional autonomy will be perceived as a cost to public school leaders, since deregulations could lead to adjustments and additional responsibilities. The school leaders also might view the deregulations as unfavorable if they believe the changes will lead to unfavorable working conditions for their employees or worse outcomes for their schools and students. The deregulations might also have no effects on the support for private school vouchers because of relatively strong existing values and beliefs.

Literature review

Employees in the public sector tend to be more risk averse than employees in the private sector (Bellante & Link, 1981; Dohmen, Falk, Huffman, Sunde, Schupp, & Wagner, 2005; Hartog, Ferrer-i-Carbonell, & Jonker, 2002; Masclet et al., 2009). Teachers also tend to be more risk averse than non-teachers (Davis, 1994). Daniel Bowen, Stuart Buck, Cary Deck, Jonathan Mills, and James Shuls (2015) find that teachers in the U.S. tend to be more risk averse than non-teachers. Similarly, Thomas Dohmen and Armin Falk (2010) find people in Germany who select the education profession tend to demonstrate a lower willingness to take risks than people opting into other sectors of the economy. Carl Nadler and Matthew Wiswall (2011) report

that teachers are less likely to support merit pay—programs that introduce some risk into the profession—than the general public. Risk aversion might partially explain the fact that the majority of teachers oppose private school vouchers in the United States (Cheng et al., 2019; Yettick et al., 2017).

Additional competitive pressures from school voucher programs increase uncertainty and risk for employees in the public school system. However, regulations such as standardized testing, teacher certification requirements, and transportation services could restrict the autonomy of public school employees. Education scholars argue that top-down standardized testing regulations might have unintended consequences for public and private schools, such as increased inequality, the narrowing of curriculum, limited teacher autonomy, and less non-cognitive skill development (DeAngelis, 2019; Ravitch, 2004, 2016; Wolf, Hitt, & McShane, 2018). McShane (2018) suggests that public and private school supporters should agree that certain deregulations would be good for teachers in both sectors.

Although there is an extensive literature on the "strange bedfellows" phenomenon in the political process (Ishiyama, 1998; King & Smith, 2008; Lusoli & Ward, 2005; Magnan, 2007), no studies have empirically examined whether or not deregulations in public schools would increase public school employees' support for private school voucher programs. In theory, public school employees might be more or less likely to support private school vouchers if the programs are enacted alongside deregulations that increase autonomy. This is the first study to evaluate this hypothesis. A survey conducted in 2018 randomly assigns four different deregulations and a control condition to 7,633 traditional public school leaders in California and asks them if they would support a hypothetical private school voucher program in the state. Specific deregulations were chosen to represent areas that are typically less regulated in private schools than in public schools.

This article empirically examines these four main research hypotheses:

- Hypothesis 1: No longer requiring public schools to administer state standardized tests will affect public school leaders' support of a hypothetical private school voucher program in California.
- Hypothesis 2: No longer requiring public schools to report standardized test results to the state will affect public school leaders' support of a hypothetical private school voucher program in California.
- Hypothesis 3: No longer requiring public schools to hire teachers certified by the state will affect public school leaders' support of a hypothetical private school voucher program in California.
- Hypothesis 4: No longer requiring public schools to provide transportation services to students will affect public school leaders' support of a hypothetical private school voucher program in California.

Data and research design

In the fall of 2018, a complete list of 7,633 traditional public schools in California was obtained from the California Department of Education (n.d.-a). The list provided the contact information of each school leader, and the city, county, zip code, and level of each school.

Each public school from the list was randomly assigned to one of five groups. Although each group received a slightly different survey, the only difference across the five surveys was the note on question number nine (see Appendix). The first eight questions were identical across surveys and gathered background characteristics about the respondent (e.g., position, race, and gender) and their schools (e.g., school urbanity, total enrollment, and the percent of students identified as qualifying for the federal lunch program, English language learners, and racial minorities), which were all used as control variables. These variables were used as controls because it is possible for random assignment evaluations to produce biased estimates if random assignment is not effective or if the sample is not sufficiently large. These control variables made it possible to check for equivalence on observable characteristics between experimental groups to provide readers with evidence of the study's internal validity. These control variables also made it possible to evaluate whether the results were robust to various model specifications. If random assignment is not effective, it is important to control for differences in respondents and their schools, because different types of school leaders may have different beliefs about private school voucher programs. For example, school leaders in rural areas may be less likely to oppose school voucher programs than school leaders in urban areas, since there might be fewer nearby private schools in rural areas. If random assignment is not entirely effective, it is important to control for these types of differences between experimental groups to isolate the effects of deregulations on support for private school vouchers.

The final question on the control group's survey asked: "Would you support a new private school voucher program in California (available to all students in the state) next year? Note: If this program is passed, it would not change any state requirements of your school." The surveys for all five groups were identical except for the note on the last question. The first treatment group was randomly assigned the following note: "If this program is passed, your school would no longer be required to report standardized test results to the state." The second treatment group was randomly assigned the following note: "If this program is passed, your school would no longer be required to administer state standardized tests." The third treatment group was randomly assigned the following note: "If this program is passed, your school would no longer be required to hire teachers certified by the state." The final treatment group was randomly assigned the following note: "If this program is passed, your school would no longer be required to provide students with transportation services." See the Appendix for the full survey instrument.

Because effective random assignment leads to equivalence on all observable and unobservable characteristics between treatment and control groups, evaluations employing effective random assignment methodology are expected to have the highest levels of internal validity (Freeman, Rossi, & Lipsey, 1993; Wooldridge, 2016). This study design has strong internal validity because random chance determines the assigned experimental group for each public school leader in the sample. However, strong internal validity does not imply that the study has strong external validity. Indeed, the results from the subsequent analysis should not be extrapolated beyond the state of California. Additionally, as the next section reveals, the respondents in the sample are not fully representative of the population of public school leaders in

California based on certain observable characteristics, so the results should be considered with considerable caution.

Out of the complete list of 7,633 schools, 1,563 were randomly assigned to the control group, 1,527 to the test reporting group, 1,497 to the test administration group, 1,533 to the certified teachers group, and 1,513 to the providing transportation group (Table 1). Initial surveys were sent to all California public school leaders on January 7, 2019. Reminder emails were sent on January 11, January 17, January 23, January 29, February 4, February 8, and February 14. Because there were 117 duplicate emails and 389 bounced emails, the survey went out to 7,127 public school leaders in the state (93.37 percent). By February 21, 755 public school leaders responded to the survey, leading to an overall response rate of 10.59 percent. This response rate falls between the response rates found in similar survey experiments of private school leaders in California, New York (DeAngelis, Burke, & Wolf, 2020), and Florida (DeAngelis, Burke, & Wolf, 2019). Another survey published by the Hope Center at Temple University in 2019 had a response rate of 5.8 percent. The response rate is also within the expected range of 10 to 15 percent for external online surveys published by SurveyGizmo (Johnston, 2016) and the expected range of one to 20 percent published by Practical Surveys (Ray, 2006).

Internal and external validity

A relatively low response rate does not lead to biased estimates if respondents do not complete the survey based on unobservable characteristics that differ across experimental groups. Indeed, Table 1 does not provide any evidence to suggest that response rates, survey start rates, or survey completion rates differ across experimental groups. In other words, there is not any evidence to suggest that survey respondents started or completed surveys at different rates across groups, suggesting that it is possible to be reasonably confident that estimates from the analytic models are unbiased.

Table 1. Response rates by experimental group

Distribution	Control	Report test	Administer test	Hire certified teachers	Provide transportation
Assigned	1,563	1,527	1,497	1,533	1,513
Emailed	1,486	1,401	1,395	1,429	1,416
Surveys started	201	181	181	204	175
Responded	157	143	151	160	144
Start rate	13.5% (12.1–15.1%)	12.9% (11.5–14.5%)	13.0% (11.5–14.5%)	14.3% (12.8–15.9%)	12.4% (10.9–13.9%)
Response rate	10.6% (9.3–12.0%)	10.2% (8.9–11.6%)	10.8% (9.5–12.3%)	11.2% (9.8–12.7%)	10.2% (8.9–11.6%)
Completion rate	78.1% (72.8–82.8%)	79.0% (73.4–83.9%)	83.4% (78.2–87.8%)	78.4% (73.2–83.1%)	82.3% (76.9–86.9%)

Notes: $+p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$. Statistical significance was calculated using a chi-squared test for each treatment column relative to the control group. "Emailed" excludes observations with duplicate emails and observations with emails that bounced. "Start rate" equals "Surveys started" divided by "Emailed." "Response rate" equals "Responded" divided by "Emailed." "Completion rate" equals "Responded" divided by "Surveys started." Ninety percent confidence intervals are provided in parentheses.

Table 2. Equivalence on observables

Observable	Control	Report test	Administer test	Hire certified teachers	Provide transportation
Respondent					
Principal	92.36	93.01	90.07	91.88	88.19
Administrator	6.37	4.20	5.96	7.50	7.64
Other leader	0.64	2.80	3.31+	0.00	3.47+
White	60.51	69.23	66.89	62.50	72.92*
Black	7.64	6.29	10.60	5.63	5.56
Asian	7.01	1.40*	4.64	3.75	2.08*
Hispanic	20.38	18.18	14.57	24.38	16.67
Other race	4.46	2.80	1.32	2.50	1.39
Male	45.22	37.06	43.05	45.63	41.67
Female	54.77	62.94	56.95	54.38	57.64
Latitude	36.28	36.15	36.21	35.86	36.05
Longitude	−119.59	− 119.62	− 119.67	− 119.41	− 119.33
School					
Urban	32.48	25.87	23.84+	23.75+	31.94
Suburban	39.49	44.76	43.71	54.38**	39.58
Rural	28.03	29.37	31.79	21.88	28.47
Elementary school	59.87	69.23+	65.56	56.25	54.17
Middle school	14.01	13.99	7.95+	16.88	17.36
High school	20.38	11.89*	19.87	19.38	21.53
Enrollment < 400	28.66	21.68	32.45	18.75*	24.31
400 < Enroll < 800	42.04	55.94*	44.37	45.63	50.69
800 < Enroll < 1200	14.01	13.29	8.61	18.75	14.58
1200 < Enroll < 1600	5.73	2.80	2.65	5.63	1.39*
Enrollment > 1600	9.55	6.29	11.92	11.25	9.03
Los Angeles County	17.83	19.58	17.22	15.00	15.28
Riverside County	5.73	5.59	6.62	9.38	4.86
San Diego County	8.28	8.39	4.64	6.88	10.42
San Bernardino County	3.18	8.39+	3.97	4.38	5.56
Zip code	93483	93417	93646	93536	93452
Students					
FRL percent	64.10	65.49	59.44	60.31	65.49
ELL percent	33.17	32.04	30.46	30.63	32.64
Minority percent	58.87	62.59	60.17	60.47	61.46
N	157	143	151	160	144

Notes: +$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. Statistical significance was calculated using a *t*-test for each treatment column. FRL is Free and Reduced Price Lunch student; ELL is English Language Learner student.

An equivalent response rate across groups does not guarantee that survey experiments are unbiased. Table 2 examines whether treatment groups are identical to the control group on all available observable characteristics using *t*-tests. Statistically significant differences are found for each treatment group. Three statistically significant ($p < 0.05$) differences are detected for the test reporting group, none are detected

for the test administration group, two are detected for the "hire certified teachers" group, and three are detected for the "provide transportation" group. By definition, because type I errors occur five percent of the time at the $p < 0.05$ threshold, about six can be expected to occur with 31 observable characteristics across four treatment groups. Only eight statistically significant differences are observed across all groups, so it is possible to be fairly confident that random assignment worked as theorized. Although it is possible that these experimental groups differ on unobservable characteristics, the available evidence suggests random assignment was successful.

Evidence of strong internal validity does not imply external validity. Based on the limited amount of information on the county, city, and level of all traditional public schools in the state, there is some evidence to suggest that this sample of respondents is not representative of the entire population (Table 3). This sample appears to underrepresent schools in large counties and cities, as well as schools at the elementary level.

Table 3. Respondents compared to all public schools

Observable	Respondents (#)	Respondents (%)	Population (#)	Population (%)
County				
Los Angeles	128	16.95	1,648	21.59**
San Diego	58	7.68	566	7.42
Orange	31	4.11	539	7.06**
San Bernardino	38	5.03	455	5.96
Riverside	49	6.49	411	5.38
Sacramento	13	1.72	292	3.83**
Alameda	31	4.11	286	3.75
City				
Los Angeles	11	1.46	353	4.62***
San Diego	13	1.72	213	2.79+
San Jose	15	1.99	166	2.17
Sacramento	7	0.93	147	1.93+
San Francisco	11	1.46	95	1.24
Oakland	11	1.46	78	1.02
School level				
Elementary school	460	60.93	5,138	67.31***
Intermediate/middle schools	106	14.04	1,155	15.13
High school	141	18.68***	1,040	13.63
N	755		7,633	

Notes: $+p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$. Statistical significance was calculated using a chi-squared test.

Specifically, respondents in this sample are about 4.6 percentage points less likely to be a leader from a school located in Los Angeles County, three percentage points less likely to lead a school located in Orange County, and 2.1 percentage points less

likely to lead a school located in Sacramento County than the overall population. Respondents are about 3.2 percentage points less likely to lead a school located in the city of Los Angeles, 6.4 percentage points less likely to lead an elementary school, and 5.1 percentage points more likely to lead a high school than the overall population. Because of these statistically different percentages, it is important not to generalize the results to all public schools within the state of California. Additionally, study results should be interpreted with caution since public school leaders are asked about a hypothetical private school voucher program in the survey. The public school leaders' responses to actual policy changes may differ from their responses to a hypothetical program in a survey. Further, public school leaders' revealed preferences may differ from their stated preferences (Alberini, 2019; Samuelson, 1948).

Data analysis

This study employs an ordered probit regression approach of the form:

$$Prob\ (Support_{i2019}) = \beta_0 + \beta_1 Report\_Test_{i2019} + \beta_2 Administer\_Test_{i2019} + \beta_3 Certified\_Teachers_{i2019} + \beta_4 Provide\_Transportation_{i2019} + \beta_5 X_{i2019} + \varepsilon_{it}$$

where the categorical dependent variable of interest *Support* captures school leader *i*'s expectation of supporting a hypothetical private school voucher program in 2019. The dependent variable is the public school leader's response on survey question nine, a Likert scale ordered from one to five, with one indicating that the leader is "certain not to support" the new program and five indicating that the leader is "certain to support" the new program. Ordered probit regression is used (and ordered logit regression as a robustness check) because the dependent variable of interest is ordered and categorical. When interpreting marginal effects, the focus is on the relative likelihood of public school leaders in California to choose the first outcome category ("certain not to support").

Because effective random assignment eliminates the need for controls, the base model only includes the four treatment indicators as independent variables. The first binary independent variable of interest, *Report_Test*, takes on the value of one if the public school leader, *i*, was randomly assigned a deregulation that would no longer require the school to report standardized testing results to the state in the note of question nine, and zero otherwise. The second binary independent variable of interest, *Administer_Test*, takes on the value of one if the public school leader was randomly assigned a deregulation that would no longer require the school to administer state standardized tests, and zero otherwise. The third binary independent variable of interest, *Certified_Teachers*, takes on the value of one if the public school was randomly assigned a deregulation that would no longer require the school to hire teachers that were certified by the state, and zero otherwise. The fourth binary independent variable of interest, *Provide_Transportation*, takes on the value of one if the public school was randomly assigned a deregulation that would no longer require the school to provide transportation services for students, and zero otherwise. The coefficients on all four of these independent variables are expected to be negative, indicating that these deregulations reduce the likelihood that public school leaders are certain not to support private school voucher programs.

In other words, public school deregulations—alongside the hypothetical voucher program—are expected to increase public school leaders' likelihood of supporting private school vouchers.

Random assignment alone does not absolutely guarantee that all endogeneity will be removed from the models. Because of this possibility, models with vector *X* of observable control variables are also included as robustness checks. These models control for the gender, race, and position of all respondents, school urbanity, school level, total enrollment, the percent of students eligible for the federal lunch program (FRL), the percent of students identified as English language learners (ELL), and the percent of students identified as racial minorities.

Multivariate normal regression is employed as a multiple imputation technique for one missing value (0.13 percent of the sample) for school urbanity, two missing values (0.26 percent of the sample) for the percent of students identified as ELL, four missing values (0.53 percent of the sample) for the percent of students identified as FRL, and five missing values (0.66 percent of the sample) for the percent of students identified as racial minorities. While there is not an exact cutoff for when the percentage of missing data becomes unacceptable, Joseph Schafer (1999) claims that missing rates below five percent are inconsequential, while Derrick Bennett (2001) contends that estimates are biased with missing rates exceeding 10 percent. The multiple-imputation approach employed here uses all other independent variables—position, race, and gender of the respondent; latitude and longitude of the response; and county, level, and enrollment of the school—to impute missing data (Rubin, 1987). Ten observations (1.32 percent of the overall sample) that are missing the dependent variable of interest have been dropped. Robust standard errors are clustered at the school level.

Table 4. Descriptive statistics

Variable	Mean	Standard deviation	Min.	Max.	*N*
Dependent					
Support number	1.64	0.92	1	5	745
Certain not to support	0.59	0.49	0	1	745
Very little chance	0.25	0.43	0	1	745
Some chance	0.13	0.33	0	1	745
Very good chance	0.02	0.15	0	1	745
Certain to support	0.02	0.14	0	1	745
Respondent					
Principal	0.91	0.28	0	1	755
Administrator	0.06	0.24	0	1	755
Other leader	0.02	0.14	0	1	755
White	0.66	0.47	0	1	755
Black	0.07	0.26	0	1	755
Asian	0.04	0.19	0	1	755

Table 4 (continued)

Variable	Mean	Standard deviation	Min.	Max.	*N*
Respondent					
Hispanic	0.19	0.39	0	1	755
Other race	0.03	0.16	0	1	755
Male	0.43	0.49	0	1	755
Female	0.57	0.50	0	1	755
Latitude	36.11	2.34	32.08	45.53	755
Longitude	−119.53	3.63	−124.25	−75.45	755
School					
Urban	0.28	0.45	0	1	755
Suburban	0.45	0.50	0	1	755
Rural	0.28	0.45	0	1	755
Elementary school	0.61	0.49	0	1	755
Middle school	0.14	0.35	0	1	755
High school	0.19	0.39	0	1	755
Enrollment < 400	0.25	0.43	0	1	755
400 < Enroll < 800	0.48	0.50	0	1	755
800 < Enroll < 1200	0.14	0.35	0	1	755
1200 < Enroll < 1600	0.04	0.19	0	1	755
Enrollment > 1600	0.10	0.30	0	1	755
Los Angeles County	0.17	0.38	0	1	755
Riverside County	0.06	0.25	0	1	755
Students					
FRL proportion	0.63	0.29	0	1	755
ELL proportion	0.32	0.22	0	1	755
Minority proportion	0.61	0.28	0	1	755

Descriptive statistics for the overall sample (Table 4) and the control group (Table 5) illustrate that leaders of traditional public schools in California strongly oppose the enactment of a private school voucher program in the state. The average support number is 1.62 on a five-point scale, meaning the average public school leader in the state is somewhere between being "certain not to support" the hypothetical program and having a "very little chance" of supporting the program. A majority of the respondents (59 percent) in both the control group and the overall sample indicated that they are "certain not to support" the hypothetical program. Over 80 percent of the sample of respondents indicated that they would either be "certain not to support" the program or that there is a "very little chance" they would support the program. In both groups, only about two percent of the respondents in-

dicate that they are "certain to support" a private school voucher program. Zero respondents in the control group indicated that there is a "very good chance" they would support such a program. These negative responses mostly coincide with the 2018 EdNext Poll, which finds that 60 percent of a nationally representative sample of teachers in the U.S. oppose universal private school voucher programs (Cheng et al., 2019).

Table 5. Distribution of support by category (percent)

	Certain not to support	Very little chance	Some chance	Very good chance	Certain to support California
58.62	21.55	18.10	0.00	1.72	

Note: Averages are reported for the control group.

About 97 percent of the sample of survey respondents is either a public school principal (91 percent) or an administrator (six percent). Two-thirds of the school leaders are White, one-fifth are Hispanic, and less than one-tenth of the leaders are Black, Asian, or another race. The majority of the public school leaders identify as female (57 percent). Sixty-one percent of the respondents are leaders of elementary schools and almost half (45 percent) of their schools are located in suburban areas. On average, 63 percent of the students are identified as qualifying for the federal school lunch program, 32 percent are identified as English language learners, and 61 percent are identified as racial minorities. The average percent of FRL students reported by school leaders is similar to the percent reported by the California Department of Education (n.d.-b) (60 percent). The average percent of ELL students reported by the public school leaders is similar to—although higher than—the percent reported by the California Department of Education (n.d.-c) (20 percent). The average percent of students identified as racial minorities by the school leaders is very similar to the percent of students identified as African American or Hispanic by the California Department of Education (n.d.-d) (60 percent).

Overall results

Every analytic model fails to detect statistically significant effects of deregulations on public school leaders' support for private school choice in California (Table 6). The null results exist for all five outcome categories (Table 7). Moreover, although it was theorized that the deregulation effects would be negative (indicating more support for private school vouchers), three of the four deregulations actually have positive coefficients, indicating that those deregulations might further decrease support for the hypothetical voucher programs. The only deregulation with the theorized negative coefficient is for reporting standardized test results to the state—indicating that traditional public school leaders in California dislike that particular regulation the most. However, none of the coefficients are anywhere near statistical significance, as *p* values are above 27 percent for each treatment and analytic model. The null results might be because public school leaders' opposition to school vouchers is so strong that even relief from burdensome regulations will not sway them to support such programs.

Table 6. Effects of deregulations on reported support

	Support (ordered probit)	Support (ordered logit)	Support (ordered probit)	Support (ordered logit)
Report test	– 0.034	– 0.032	– 0.042	– 0.039
	(0.522)	(0.572)	(0.422)	(0.488)
Administer test	0.015	0.018	0.008	0.014
	(0.774)	(0.760)	(0.872)	(0.798)
Certified teachers	0.057	0.057	0.052	0.056
	(0.273)	(0.290)	(0.306)	(0.301)
Transportation	0.030	0.021	0.015	0.009
	(0.566)	(0.697)	(0.766)	(0.875)
Director			– 0.266*	– 0.284**
			(0.018)	(0.008)
Other race			– 0.198*	– 0.206*
			(0.040)	(0.039)
Black			– 0.155*	– 0.183**
			(0.013)	(0.006)
Female			0.096**	0.085*
			(0.006)	(0.020)
400 < Enroll < 799			– 0.101*	– 0.100*
			(0.024)	(0.037)
FRL proportion			– 0.157*	– 0.171*
			(0.048)	(0.040)
Minority proportion			0.214*	0.232*
			(0.016)	(0.015)
Controls	No	No	Yes	Yes
Pseudo *R*-squared	0.0021	0.0018	0.0299	0.0295
Sample size (*N*)	745	745	745	745

Notes: *P* values in parentheses. $+p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$. Average marginal effects are reported for the first outcome category of "certain not to support." Models in the last two columns use controls for the gender, race, and position of respondents, school level, enrollment, urbanity, and the percentage of students identified as FRL, ELL, and minority. Sample size is 745 because 10 observations are missing the dependent variable. Statistically insignificant control variables are not displayed.

While no statistical significance exists for any of the treatment dummy variables, some control variables explained differences in support for private school vouchers overall. School directors, minority leaders, and male leaders are more likely to support the hypothetical private school choice program. Leaders of schools with higher proportions of FRL students are more likely to support private school vouchers, while leaders of schools with higher proportions of students identified as racial minorities are less likely to support private school choice.

Table 7. Effects of deregulations on reported support by category

	Certain not to support	Very little chance	Some chance	Very good chance	Certain to support
Report test	– 0.042	0.015	0.018	0.004	0.005
	(0.422)	(0.423)	(0.420)	(0.432)	(0.434)
Administer test	0.008	– 0.003	– 0.004	– 0.001	– 0.001
	(0.872)	(0.872)	(0.872)	(0.872)	(0.872)
Certified teachers	0.052	– 0.019	– 0.022	– 0.005	– 0.006
	(0.306)	(0.305)	(0.313)	(0.301)	(0.320)
Transportation	0.015	– 0.006	– 0.006	– 0.002	– 0.002
	(0.766)	(0.765)	(0.766)	(0.765)	(0.767)
Controls	Yes	Yes	Yes	Yes	Yes
Pseudo *R*- squared	0.0299	0.0299	0.0299	0.0299	0.0299
Sample size (*N*)	745	745	745	745	745

Notes: *P* values in parentheses. $+p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$. Average marginal effects are reported for each outcome category. All models employ ordered probit regression and use controls for the gender, race, and position of respondents, school level, enrollment, urbanity, and the percentage of students identified as FRL, ELL, and minority.

Specifically, school directors are about 27 percentage points (46 percent) less likely to report being "certain not to support" the hypothetical voucher program than school principals. Black school leaders are about 16 percentage points (27 percent) less likely to report being "certain not to support" the program than White principals. Female school leaders are about nine percentage points (15 percent) more likely to report being "certain not to support" the hypothetical voucher program than male leaders.

A 10 percentage point increase in the amount of FRL students in the school is associated with about a two percentage point (three percent) reduction in a school leader's likelihood of reporting that they are "certain not to support" the program, while a 10 percentage point increase in the amount of students identified as racial minorities is associated with a two percentage point (three percent) increase in a school leader's likelihood of reporting that they are "certain not to support" the program. Leaders in schools with higher proportions of FRL students might be more likely to support private school choice if they believe that students from more advantaged families will use the program (Martinez, Godwin, & Kemerer, 1995). If the claim is true, that means their schools would be the least affected by the policy change; however, some studies also find that students from lower-income families tend to be more likely to apply for vouchers (Fleming, Cowen, Witte, & Wolf, 2015; Howell, 2004).

Leaders in schools with higher proportions of racial minorities might be concerned that private school vouchers could further increase racial stratification in their schools (Bifulco & Ladd, 2007; Renzulli & Evans, 2005), despite evidence from private school voucher programs in the U.S. indicating otherwise (Egalite, Mills, & Wolf, 2017; Swanson, 2017). This finding could also be explained if public school

leaders believe that racial minorities are more likely to apply for the voucher program, meaning their schools would lose more students (Campbell, West, & Peterson, 2005; Figlio, Hart, & Metzger, 2010).

Results by school size

An exploratory analysis reveals some evidence to suggest that public school deregulations affect the reported support of hypothetical voucher programs by leaders of schools

Table 8. Effects of deregulations on reported support (by school size)

	Support (ordered probit)	Support Ordered logit)	Support (ordered probit)	Support (ordered logit)
Report test (large)	0.015	0.013	– 0.023	– 0.027
	(0.871)	(0.899)	(0.809)	(0.790)
Report test (small)	– 0.051	– 0.050	– 0.065	– 0.058
	(0.419)	(0.460)	(0.297)	(0.377)
Difference	– 0.067	– 0.062	– 0.042	– 0.031
	(0.558)	(0.606)	(0.710)	(0.794)
Administer test (large)	0.175	0.195	0.206*	0.218*
	(0.103)	(0.101)	(0.048)	(0.050)
Administer test (small)	– 0.030	– 0.034	– 0.050	– 0.048
	(0.632)	(0.602)	(0.411)	(0.459)
Difference	– 0.205+	– 0.230+	– 0.256*	– 0.267*
	(0.098)	(0.091)	(0.033)	(0.038)
Certified teachers (large)	0.141	0.171+	0.150	0.173+
	(0.128)	(0.081)	(0.104)	(0.068)
Certified teachers (small)	0.016	0.004	0.002	– 0.004
	(0.796)	(0.948)	(0.978)	(0.951)
Difference	– 0.126	– 0.166	– 0.148	– 0.177
	(0.259)	(0.155)	(0.176)	(0.120)
Transportation (large)	0.129+	0.173	0.141	0.140
	(0.085)	(0.106)	(0.156)	(0.200)
Transportation (small)	– 0.015	– 0.029	– 0.037	– 0.044
	(0.801)	(0.646)	(0.535)	(0.491)
Difference	– 0.184	– 0.202	– 0.179	– 0.184
	(0.110)	(0.104)	(0.127)	(0.148)
Controls	No	No	Yes	Yes
Pseudo *R*-squared	0.0070	0.0070	0.0284	0.0288
Sample size (*N*)	745	745	745	745

Notes: *P* values in parentheses. $+p < 0.10$, $*p < 0.05$, $**p<0.01$, $***p < 0.001$. Average marginal effects are reported for the first outcome category of "certain not to support." Models in the first two columns control for school size. Models in the last two columns use controls for the gender, race, and position of respondents, school level, enrollment, urbanity, and the percentage of students identified as FRL, ELL, and minority. Sample size is 745 because 10 observations are missing the dependent variable. "Large" means enrollment is at or above 800 students. "Small" means enrollment is below 800 students.

with enrollments above 800 students. There is evidence to suggest that test administration and teacher certification deregulations in public schools further decrease support for voucher programs by leaders of large public schools in California (Table 8).

Specifically, this study's models with all controls find that no longer requiring large public schools to administer state standardized tests increases the likelihood that public school leaders report being "certain not to support" the hypothetical voucher program by about 21 percentage points (36 percent). In addition, no longer requiring large public schools to hire state-certified teachers increases the likelihood that public school leaders report being "certain not to support" the hypothetical voucher program by about 17 percentage points (29 percent); however, this result is only marginally significant and robust to the two ordered logit models.

Conclusions and discussion

Descriptively, public school leaders in California are found to largely oppose a hypothetical private school voucher program in their state. A majority of the respondents (59 percent) in both the control group and the overall sample indicated that they are "certain not to support" the hypothetical program. Over 80 percent of the sample of respondents indicated that they would either be "certain not to support" the program or that there is a "very little chance" they would support the program.

This study is the first to empirically examine the effects of proposed public school deregulations on stated public school employees' support for private school voucher programs. Using a survey experiment administered in 2019, there is no evidence to suggest that any of the four deregulation scenarios increase public school employees' support for a hypothetical voucher program in California overall. The overall null results can be explained in at least five ways: 1) the perceived costs of additional competition from private school voucher programs far exceeds the perceived benefits of additional autonomy for public school leaders in California; 2) the randomly assigned benefits of additional public school autonomy come with additional costs; 3) the school leaders may have strong preexisting beliefs and values about private school vouchers; 4) some leaders might perceive deregulations as costs if they believe the changes will lead to unfavorable outcomes for their students or employees; and 5) additional autonomy could also mean more adjustments and responsibilities for public school leaders. That said, there may be other explanations that have not been considered.

The two results for large traditional public schools are positive. As one may theorize, decreasing the costs associated with running a school could increase the likelihood public school leaders support a policy change, all else equal. However, the economic theory of regulatory capture could explain the positive result. Economies of scale suggest that regulations are more likely to benefit larger firms than smaller ones (Bradford, 2004). In addition, businesses that hold a large share of the market could actually benefit from government regulations if they stifle competition (Stigler, 1971).

Similarly, large traditional public schools may benefit from government regulations because they are more likely to have enough revenue to cover production costs—including regulatory costs—than smaller schools. In addition, as in other industries, government regulations could limit the number of competitors that enter the educa-

tion market by raising operating costs, which would benefit schools with larger shares of the existing market. As McShane (2018) argues, "regulations can have anticompetitive effects … established firms can use regulations to crowd out their competition" (p. 6). Finally, because traditional public schools currently abide by standardized testing and teacher certification regulations, larger public schools would face more substantial costs associated with transitioning to a new competitive environment than smaller public schools. More research needs to be done regarding possible regulatory capture in the K–12 education system in the United States. For example, future studies should examine whether or not leaders of large private schools are more likely to support voucher program regulations than leaders of small private schools.

This study has important limitations. The response rate was only 10.59 percent, meaning that the results might not be representative of public school leaders in the entire state. The study is an experiment that is administered in the field, but the results are based on survey responses. Public school leaders' responses on a survey about a hypothetical voucher program may not accurately reflect their support for actual voucher programs. Also, because of the survey experiment design, the randomly assigned deregulations may not have seemed real to the public school leaders, which could have introduced attenuation bias into the analyses. Furthermore, the survey was only sent to public school leaders in California. Results might differ in other states and for other types of public school employees.

This research has important implications for public policy. Although some in the public sector argue that private schools participating in school choice programs have fewer regulations to which they must adhere relative to public schools, and thus have an unfair advantage and do not have to "play by the same rules" (Henderson, 2019, n.p.), this research suggests removing regulations from the public system, which may have inherent benefits, is unlikely to increase public sector support for school voucher programs. For public policy, growing support for voucher programs and similar school choice policies may require different strategies.

While these results suggest that deregulations in public schools are unlikely to increase their leaders' support for private school choice programs, much more research on the topic is needed. This experiment should be replicated in states that are actually deciding whether or not to pass private school voucher programs. Future studies should evaluate the effects of deregulations on support from other types of public school employees, such as teachers. Deregulations may be more beneficial to public school teachers, since they are the ones providing students with direct instruction. Moreover, future studies should examine the effects of other benefits for public school employees, such as salary raises, more job security, and class size reductions, on their support for private school vouchers.

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Appendix: Survey instrument

Control Group

Question 1: What is your position at the school?

Principal
Director
Administrator
Other leader

Question 2: Please describe your race/ethnicity

White or Caucasian
Black or African American
Hispanic or Latino
Asian or Asian American
American Indian or Alaska Native
Native Hawaiian or other Pacific Islander
Another race/ethnicity

Question 3: What is your gender?

Male
Female
Other

Question 4: Which best describes the location of your school?

Rural
Urban
Suburban

Question 5: What is your school's total enrollment?

0–399
400–799
800–1,199
1,200–1,599
Over 1,600

Question 6: About what proportion of your students qualify for the national school lunch program?

0%
25%
50%
75%
100%

Question 7: About what proportion of your students are racial minorities?

0%
25%
50%
75%
100%

Question 8: About what proportion of your students are English language learners?

0%
25%
50%
75%
100%

Question 9: Would you support a new private school voucher program in California (available to all students in the state) next year? **Note: If this program is passed, it would not change any state requirements of your school.**

Certain not to support
Very little chance
Some chance
Very good chance
Certain to support

Treatment Group One

Exactly the same as Control Group, but the note on Question 9 says, "If this program is passed, your school would no longer be required to report standardized test results to the state."

Treatment Group Two

Exactly the same as Control Group, but the note on Question 9 says, "If this program is passed, your school would no longer be required to administer state standardized tests."

Treatment Group Three

Exactly the same as Control Group, but the note on Question 9 says, "If this program is passed, your school would no longer be required to hire teachers certified by the state."

Treatment Group Four

Exactly the same as Control Group, but the note on Question 9 says, "If this program is passed, your school would no longer be required to provide students with transportation services."