Improving Academic Performance through Conditional Benefits: Open/Closed Campus Policies in High School and Student Outcomes

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June 2014†

Abstract

Open campus privileges in high schools can be conditional on students' academic (GPA, test scores, etc.) or behavioral (absences, probation, etc.) performance. I evaluate the effect of this incentive scheme on students' test scores and dropout rates using an independently-constructed dataset, documenting when closed campus, unconditionally open campus, or conditionally open campus policies were in place for over 460 California high schools over a 10-year period. The results show that the incentive scheme intended by the conditional open campus policy is indeed effective, in particular as a means for improving students' test score outcomes.

I am grateful to Caroline Hoxby, Ran Abramitzky, Matthew Harding, Moshe Justman, Roy Mill, John Pencavel, Karine van der Beek, participants at Ben-Gurion's Economics Department Brown Bag Seminar, the Hebrew University's Applied Microeconomics Seminar, and the 2014 AEFP annual conference for their helpful advice and comments.

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†This version updated June 9, 2014.

1 Introduction

An important question in the economics of education is how to motivate students to put more effort into schooling and improve their academic performance. Children and teenagers may have higher discount rates than adults or inconsistent time-preferences.[1] If they do, they will make less than optimal investment decisions in education, compared to the expected gains from education. Incentive schemes can provide immediate returns and induce greater motivation to invest effort in schooling. Several papers have investigated programs which incentivise students through non-academically-oriented rewards for the purpose of improving student academic/schooling outcomes.[2] This paper evaluates the policy of granting high school students privileges to go off campus during the school day and its effect on students' academic performance. I distinguish between an unconditional open campus policy - in which the privilege to go off campus does not require students to meet any criteria - and a conditional open campus policy - which allows students to go off campus only if they fulfill certain minimal academic or behavioral criteria. This distinction allows me to evaluate the effectiveness of an incentive scheme which rewards students in exchange for certain investments in schooling. The fact that I observe some student groups which are experiencing an open campus policy without having to meet any criteria and other student groups which are experiencing an open campus policy with the requirement to meet specific criteria allows me to isolate the effect of the incentive scheme from the effect of the open campus privilege in my estimates.

The majority of student incentive schemes evaluated to date focus on financial or monetary rewards provided to students in exchange for meeting certain academic requirements. Some of these programs can be quite costly, with potential rewards to students who meet the required academic goals exceeding several thousands of dollars per student.[3] Thus, implementing these programs on a very large scale can entail substantial costs. While many of the financial incentive schemes evaluated have exhibited positive effects on students' academic outcomes, their costly nature has resulted in some debate as to whether their benefits justify the substantial costs associated with these programs (Gneezy et al. (2011)). Given this, student incentive schemes that are not monetary in their nature are important additions to the literature on student incentive schemes.

Only two other papers to date have examined non-financial student incentive schemes. Vidal-Fernández (2011) investigates the effect of a policy applied to U.S. high schools during the 1970's, which required student athletes to pass a certain number of subjects in order to be allowed to participate in school sports. The author finds that the policy had a positive effect on high school graduation rates. Barua and Vidal-

[1] Bettinger and Slonim (2007) and Lahav et al. (2010) present experimental evidence to support children's and adolescents' higher discount rates. Lee (2013) indirectly provides evidence of teenagers' relatively high discount rates by showing that repealing Sunday closing laws decreased adolescents' educational attainment and even their adult earnings, most probably through reallocating time away from schooling and toward employment or leisure activities. I characterize time-preferences as "inconsistent" based on Gruber (2000), where the discount rate is higher in the short run than it is in the long-run.

[2] See: Angrist and Lavy (2009); Angrist et al. (2009); Kremer et al. (2009); Jackson (2010); Fryer (2011); Vidal-Fernández (2011); Bettinger (2012); Barua and Vidal-Fernandez (2012)

[3] In Angrist and Lavy (2009), high school students in Israel were awarded a total of $650,000 for passing high school completion examinations, with each student potentially receiving as much as $2,400. Angrist et al. (2009) evaluated a program in a Canadian college which granted first-year students up to $5,000 in exchange for having "solid" grades at the end of their first year of college.

Fernandez (2012) evaluate state programs which condition teenagers' driving licenses on staying in school. Their findings show that this policy increased educational attainment and decreased high school dropout rates among the male black population.This paper also differs from most of the literature on student incentive schemes, as the policy evaluated involves no financial benefit to the students, but rather the provision of a privilege to which students attach a high value - going off campus during the school day and potentially the autonomy students associate with that benefit.

For the purpose of conducting the analysis, an independently-constructed dataset was used. Open/closed campus policies for eleven school-years between 2001 and 2011 were collected for more than 460 California high schools by surveying high school and school district administrators. This policy information was matched to student outcomes provided by the California Department of Education. The empirical approach exploits variation in the timing and implementation across grades of high schools' open/closed campus policies. Specifically, I compare grade-school units which switched their policy during the sample period to grade-school units which maintained a steady policy throughout the sample period. Furthermore, the inclusion of fixed effects at the school level in my resgression specifications allows me to take advantage of variation in policies across grade-levels within the same school.

If the conditional open campus incentive scheme is effective in improving students' outcomes, we would expect the difference between the effect of a conditional open campus policy and the effect of an unconditional open campus policy, in comparison to a closed campus policy, to be statistically significant, with the conditional open campus policy resulting in improved outcomes. Such results would be even stronger if there was a qualitative difference between the two effects. The results for test scores exhibit those exact patterns. Quantitatively, an unconditional open campus policy, in comparison to a closed campus policy, decreases students' test scores by 0.03 of a standard deviation, while a conditional open campus policy increases students' test scores by 0.08 of a standard deviation. Thus, the overall improvement from implementing the conditional open campus policy, while maintaining students' open campus policy privileges exceeds 0.11 of a standard deviation. The statistically significant difference between the effect of an unconditional open campus and the effect of a conditional open campus policy, both in comparison to a closed campus policy, holds for almost all student population segments analyzed separately, and for both mean scaled scores and when examining the percent of students obtaining certain performance levels.

The dropout rate results are less conclusive, with both the conditional and unconditional open campus policies reducing high school dropout rates, in comparison to a closed campus policy, and the difference between the two effects is not statistically significant. One potential explanation for this is that while the incentive scheme of the conditional open campus policy is working for the highest-risk students on the verge of dropping out, an unconditional open campus policy is also effective in reducing dropout rates, possibly through lowering high-risk students' psychological cost of attending school. Quantitatively, both the conditional and unconditional open campus campus policies decrease dropout rates by 0.6-0.8 percentage points, which is relatively large in magnitude, considering that the average dropout rates in the sample are 0.7%, 0.9%, 1.2% and 3.8% for ninth, tenth, eleventh, and twelfth grades, respectively.

To address concerns that schools' open/closed campus policies are correlated with school or student characteristics, I include in my regression specifications separate flexible time trends for grade-school units that changed their policies, as well as time trends interacted with grade-school units' demographic characteristics during a base year. Furthermore, the results are robust to several alternative specifications, including: the synthetic control method, which allows me to control more rigorously for differences between grade-school units experiencing different open/closed campus policies; regressions which control for school-level administrative changes, which may have coincided with changes in school's open/closed campus policies; and regressions which limit my sample to school districts with a single high school, which decreases substantially students' ability to select into high schools in response to open/closed campus policies.

The paper starts by providing background on open/closed campus policies in U.S. high schools, with some emphasis on California high schools. Section 3 discusses the data sources used for the analysis. Section 4 outlines the empirical strategy, including the identification assumptions and discusses at length any potential challenges with the identification strategy. Results are presented in Section 5 for various test-score-related outcome variables, as well as high school dropout rates. Section 6 checks whether the results from Section 5 are robust to several alternative specifications, and Section 7 concludes.

2 Open/Closed Campus Policies in U.S. High Schools

High school administrators and school boards face a dilemma as to whether or not to allow their students off campus during the school day. The adoption of an open/closed campus policy has the potential for both benefits and risks. While an open campus provides more autonomy and individual responsibility to students, abuse of this privilege may induce greater student truancy, tardiness to classes, and disciplinary issues. If a high school has an open campus policy, at least some of its students may leave the school grounds during at least part of the school day. High school open campus policies can be limited to only lunch or can allow students to leave campus during the entire school day, under the assumption that students leave when they have a free period and otherwise they stay on campus for their classes. In this paper, an open campus policy is defined as a policy allowing students to leave campus for at least part of the school day - even if it is limited to only the lunch period.

Open and closed campus policies can be set at the state level by a state board of education or by the state's education code, at the district level by the school board, or at the school level by high school principals. In California, there are no guidelines concerning open/closed campus policies at the state level. There are several school districts with official open/closed campus policies, and these range from very general guidelines to a ban on any open campus privileges to high school students within the school district.

It appears that U.S. high schools have experienced a decline in open campus privileges during the last few decades.[4] According to the School Health Policies and Programs Study from 2000, a survey covering a representative sample of U.S. high schools, 73.4% of high schools and 65.3% of school districts in the U.S. had a closed campus policy at the high school level (Small et al. (2001)). The 2006 School Health Policies and Programs Study shows the number of U.S. school districts with a closed campus policy for all high schools in the school district had gone up to 75.1% (O'Toole et al. (2007)), an increase of nearly 10 percentage points.[5]

Open campus policies can vary within a school by grade-level. In such situations, the strictest policies typically apply to the lower grades. As students progress through high school, greater open campus privileges tend to be permitted to higher grade levels.

When a high school applies an open campus policy, its administration can choose to either grant the privilege universally to all students (in the appropriate grade-level) or to condition the privilege on student grades, test scores, or behavioral conduct. While the data in this study shows that conditional open campus policies have become more prevalent in California high schools over the last decade, no additional background could be found on the origin of conditional open campus policies in U.S. high schools or their prevalence.[6] Generally, when open campus privileges are conditional, the threshold for eligibility is relatively low, and may include a minimum GPA ranging from 2.0 to 2.5, no unexcused absences, being in good standing, passing the high school exit exams by senior year, or scoring above a certain percentile in standardized tests. Thus, the privilege to go off campus under a conditional open campus policy regime is typically granted to the vast majority of the student population in the school, and the limitation applies primarily to the most problematic students.

The motivation behind a high school having either an open or closed campus policy and the type of open campus policy implemented can vary. Generally, the basic intention is related to providing alternative food sources for students during their lunch break. It appears that the main stimulus for debates regarding open/closed campus policies is student safety. In fact, a large portion of media coverage on this subject focuses on incidents such as fighting, car accidents, mugging, substance abuse and arrest, and sexual assault occurring off campus during lunch periods.[7] Other driving forces behind decisions to open or close high school campuses could be related to the school environment, the location of the school, whether any food establishments are in close enough proximity, and whether the school cafeteria can adequately serve the entire student body in the school. Interestingly, budget considerations related to school lunches tend to play a major role in determining whether high schools will maintain open or closed campus poli-

[4] According to a newspaper article from 2001 in the Atlantic Monthly titled "The Organization Kid", written by the New York Times journalist David Brooks, open campus policies became more popular in U.S. high schools during the 1970's, as schools were "rebelling against the rigid desks-in-a-row pedagogy of the 1950's". However, by the 1980's, that trend had started reversing itself, as "the language of education reform has changed, and the emphasis is on testing, accountability, and order."

[5] O'Toole et al. (2007)does not provide figures for the percent of high schools in their sample with closed campus policies.

[6] To date, this is the only known study documenting high school open campus policies, while distinguishing between a conditional and unconditional open campus policy.

[7] Stone and Runyan (2005) is a study from the public health literature on the impact of open campus lunch policies in high schools on car accidents. The study covered three North Carolina counties over four years, and found that there was a significantly higher rate of risk for car accidents involving teens during lunch periods in open campus counties, compared to any other time of the day, and compared to a county with a closed campus lunch policy for its high schools. There were also more passengers in the cars during lunch period accidents.

cies. However, the impact of these budget considerations is not obvious. While budgetary struggles may reduce the likelihood of having a cafeteria that can adequately serve the entire student-body, they may also aggravate pressures to have students stay on campus during lunch time for the purpose of increasing the incoming revenues from sale of school meals and other foods from within the school.[8]

3 Data

Three main data sets are used for this study. I collected data on over 460 California high schools' open/closed campus policies for the school years 2001-2002 through 2010-2011, primarily through surveying high school principals and school district administrators. This data was then matched at the school and grade-level to California Standards Test (CST) scores, available from the California Department of Education (CDE), for every grade-level in a school for the period 2003-2011. Lastly, the open/closed campus policy data was matched to data on high school dropout rates, available at the grade-level for each school from the CDE for the period 2003-2011.

3.1 High Schools' Open/Closed Campus Policies

For the purpose of this study, I independently constructed a data set which documents for over 460 California high schools their open/closed campus policies at each grade-level over a ten-year period. If an open campus policy was ever in place, this data set also documents whether open campus privileges were unconditional or conditional on factors such as students' academic standing, behavior, or even parent permission or the payment of a fee to the school. For the forthcoming analysis, the conditions evaluated for student eligibility to open campus privileges are minimal thresholds for either GPA or CST exams, or behavior criteria, such as absences, tardiness, probation, etc. (or any combination of these three criteria).[9]

As the first step in the data collection process, I selected 1,079 target schools in California which had at least 150 students and that had no students in grades below grade eight. I excluded any school that was a continuation school because such schools often include students of an unusually mature age, who sometimes maintain jobs while attending. A brief online survey inquiring about the school's open/closed campus policy from the last 10 years for each grade-level was e-mailed in two rounds to the targeted high school principals during the Fall of 2011. The survey took most school principals approximately 5 minutes to complete. The overall number of responses to the survey, from the two rounds of e-mails, was 525 re-

[8]For example, among the sample of school districts in this study, the Jefferson Union High School District (JUHSD) board voted in March 2004 to close all of its three open campus high schools during lunch, as part of its budget cuts for the 2004-2005 school year. It was estimated in the board meeting minutes that this would save the school district $35,000 annually due to higher sales during lunch under a closed campus regime.

[9]Other possibilities for defining the conditions were also explored. The results were very similar to those presented when the conditions for open campus privileges were either only CST exams or only GPA thresholds. Another criterion documented for open campus eligibility was parent permission, but evaluating just the effect of parent permission or only behavior criteria did not produce statistically significant results, probably due to the fact that such definitions exclude the GPA and CST conditions, and those seem to be very dominant in driving the statistically significant results presented.

sponses.[10] The information filled out in the survey was then cross-checked with any information found through Lexis-Nexis or other online sources which explicitly mention the school/school district and its open/closed campus policy.[11] If the information provided in the survey did not correspond to information available online, or review of the survey brought up questions, e-mails were sent for the purpose of clarifying the survey response, followed by attempts to reach the principals or other school personnel via phone. In some cases, when a survey response or online resources indicated that the open/closed campus policy of certain schools is determined at the district level, school district representatives were contacted for the purpose of obtaining information on all high schools within the school district. The information collection process at the school district level frequently involved review of board meeting minutes which discussed the district's open/closed campus policies and decisions made at the district level. The final sample resulted in grade-level open/closed campus policies from the last 10 years for 476 schools. Out of these, 11 schools had to be excluded due to moving to a new site during this period.[12] In addition, all ninth grade observations for Visalia Unified School District's four high schools were excluded, due to implementing a "Ninth Grade Support Program" at the start of the 2007-2008 school year, to guide and assist ninth graders academically at risk, simultaneously with the transition to a closed campus policy for ninth graders in the school district.[13] For a comparison between schools in the sample and schools which completed the survey, see Table A.1 in the Appendix.

Table 1 summarizes the survey results for the 465 schools for which responses were obtained, with the number of schools, broken down by the type of open/closed campus in place during the period 2003-2011 and whether a transition from one type of policy to another was implemented or not for each grade-level. As can be seen, the majority of high schools in the sample have had closed campus policies for the entire sample period, with this number increasing as the grade-level is lower. These numbers are consistent with the 2003 California High Schools Fast Food Survey (CHSFFS) (Craypo et al. (2003)), a survey commissioned by the Public Health Institute.[14] This survey contacted nutrition services directors in California school districts to inquire about their high schools' food offerings, but also included a question regarding the high schools' open/closed campus policies during the survey period. According to the survey, in 2003, out of a sample of 320 California high schools which participated in the survey, 53% had closed campus policies.

[10]Out of the 525 responses obtained, there were numerous responses which left blank the high school's name and contact information, so that the data provided could not be matched to a specific school. There were also several principals who filled out the survey more than once, probably due to technical failures while accessing the survey. There were several schools for which clarification questions had to be addressed, but the principals did not respond to numerous attempts to get in touch with them or no one within the school could be found to verify the exact policies in place over the last 10 years. Lastly, there were three schools in San Francisco Unified School District (SFUSD), for which it was required to follow up with but following the first round of surveys sent, a representative from SFUSD made it clear that surveys could not be sent to SFUSD personnel without prior approval, which was denied. Out of the 1,079 target schools, 91 schools could not be reached via e-mail due to errors in the e-mail address provided in the CDE dataset used for obtaining schools' contact information.

[11]Online and media information on specific California high schools' or school districts' open/closed campus policies were only found for approximately 10% of the targeted schools.

[12]A new site is frequently associated with better facilities or a change in some of the demographic characteristics of the student-body population, which could have an impact on student outcomes, which is unrelated to the school's open/closed campus policy.

[13]Source: Visalia Unified School District Board Meeting Minutes from March 27, 2007.

[14]The Public Health Institute is a California-based independent, nonprofit organization dealing with health issues.

Table 1: Open/Closed Campus Policies for 2003-2011 - Survey Results

Grade	Always Unconditional Open	Always Closed	Always Conditional Open	Unconditional Open to Closed	Unconditional Open to Conditional Open	Closed to Unconditional Open	Closed to Conditional Open	Total Schools
9	64	353	13	27	4	0	0	461
10	82	338	18	20	6	1	0	465
11	99	285	48	21	8	1	2	464
12	114	232	80	18	12	2	4	462

Notes:

The above are survey results for 465 California high schools in the sample, broken down by the open/closed campus policy in the each grade during the sample period. "Conditional" refers to having open campus privileges for students conditional on at least grades, test scores, or behavioral criteria. The results exclude seven schools which reported moving to a new site during the sample period, as well as the 9th grade classes in Visalia Unified School District (VUSD) high schools, due to implementation of a "Ninth-Grade Support Program" at the same time as open campus privileges were revoked to 9th graders in VUSD.

Because the results in the CHSFFS do not inquire about the open/closed campus policy at a specific grade-level, an open campus response is likely to be relevant for a high school allowing at least one grade-level to leave the campus during the school day. As open campus privileges expand as the grade-level increases, the open campus percent from the CHSFFS should correspond to the percent of open campus high schools among twelfth graders in the survey results presented in Table 1. This figure is 51.5%, thus exhibiting a high degree of consistency with the results in the CHSFFS.[15]

The schools in the sample are scattered throughout California roughly in proportion to the school-aged population. Thus, many of the schools are in the state's largest cities - Los Angeles, San Francisco, Sacramento, and San Diego. Figure 1 maps all schools in the sample, with the variation in color representing the type of open/closed campus policy during the sample period in the tenth grade for each school.[16]

3.2 California Standard Tests (CST)

The California Department of Education (CDE) administers every Spring standardized tests for second through eleventh grade. I obtained from the CDE CST scores by test, school, grade-level, and certain demographic characteristics for 2003-2011.[17,18] For each observation in the CST data (i.e. a group of students tested exceeding 10 students within a grade at a school), several measures of performance are provided: mean scaled score,[19] and percent at each of the five performance levels the CDE has set - advanced, proficient, basic, below basic, and far below basic. A breakdown by demographic groups is only available for

[15] The percent of closed campus policies in the sample as of 2003 was calculated by taking all high schools which had a closed campus policy all throughout the sample period (232 schools), with those that changed from a closed campus policy to some open campus policy (6 schools) and dividing through by the total number of schools (462) for twelfth grade.

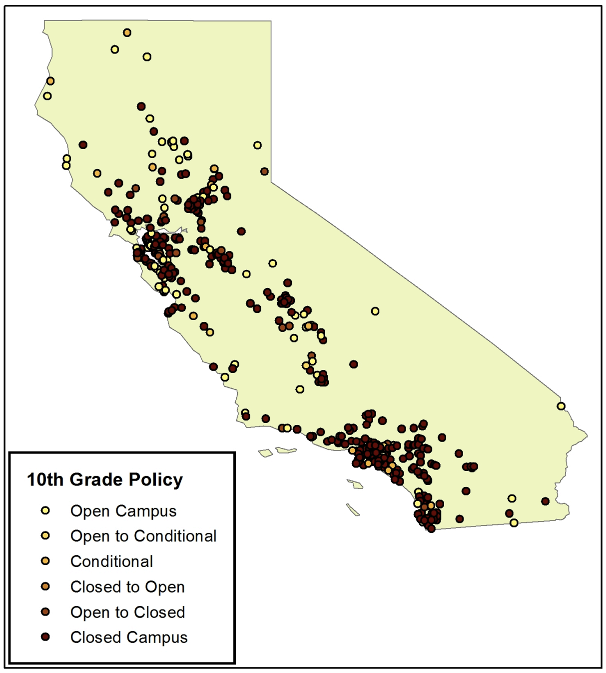
[16] The tenth grade was chosen just as a representative grade. Figure 1 most importantly highlights the geographic layout of the schools in the sample, which is almost identical across all grade-levels.

[17] Due to changes in the format and grading of the exams beginning the 2002-2003 school year, the analysis presented in this paper makes use of data beginning in the 2002-2003 school year.

[18] If a reporting group has fewer than 10 students in it, CST scores for that group are censored.

[19] For the analysis of the mean scaled score, Z-scores were constructed using the overall means and standard deviations for specific exams for every grade and year, available in the CDE CST Technical Reports and Files (http://www.cde.ca.gov/ta/tg/sr/technicalrpts.asp.).

Figure 1: Geographic Distribution of Schools in Sample



Notes:

The above figure shows the geographic distribution of high schools in the sample. Each dot represents a high school with a sophomore grade-level. The various shades of the dots represent different open/closed campus policies during the sample period, as indicated by the legend. Source: CDE Directory (includes high school's physical address).

the mean scaled scores, and therefore, performance-level percentages are only reported for grade-school observations containing all students.[20]

The CST exams are in several subject areas. English Language Arts (ELA) is a grade-specific exam taken by all students at all tested grade-levels (i.e. second through eleventh) every year. In Math, only second through seventh grade students are required to take a CST exam. After the seventh grade, all California students are required to pass an Algebra I exam, but students can decide whether to take it in the eighth or ninth grade.[21] The Algebra I exam completes all Math requirements for California students and all additional Math CST exams are optional. Due to concern that students select differently into the optional Math exams, depending on their high school's open/closed campus policy, Math results could not be used for the analysis in this paper. The only other subject areas with mandatory testing at the high school level are: Science for tenth grade, World History for tenth grade, and U.S. History for eleventh grade. For the purpose of evaluating these exams' representativeness of the student population, I calculated the percent of students tested for each high school mandatory CST exam in the Spring 2011 tests, by dividing the number of examinees reported in the official CDE reports by total state enrollment for that school-year in the appropriate grade-level, as reported in the CDE web site. According to these calculations, for all mandatory high school CST exams in 2011, 91.3-94.3% of students enrolled in the state were tested.

3.3 High School Dropout Rates

I obtained from the CDE annual school and grade-level data on the number of dropouts for seventh through twelfth grade for the school years 2002-2003 through 2010-2011. Each October, the CDE surveys all schools and requests from them information on the number of students enrolled in each grade and the number of students which dropped out of each grade-level over the past year. CDE uses this information to compute annual dropout figures for each grade.

The data can be imprecise, particularly for schools with very low enrollment and high dropout rates. Thus, there are several observations in the data with a dropout rate exceeding 100%. I discussed the accuracy of the dropout rates with CDE personnel and concluded that I should exclude ninth grade observations with dropout rates above 20 percent and tenth through twelfth grade observations with dropout rates above 40 percent. This resulted in just a few specific grade-school exclusions, but no entire school exclusions.

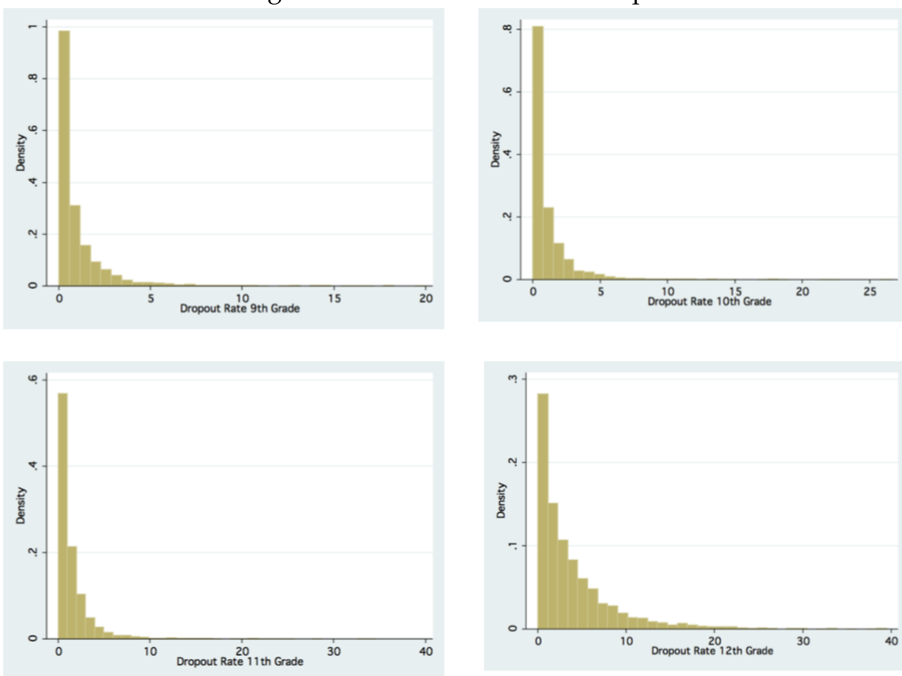
The distribution of dropout rates across schools is extremely skewed to the left, with most schools having a very low dropout rates. Figure 2 plots the distribution of dropout rates in the sample of high schools, by grade-level.

Although the dropout data reported by CDE is broken down by gender and ethnicity for each grade-level at a school, no meaningful patterns were found when analyzing the effect of open/closed campus

[20]CDE does collect data on performance levels broken down by demographic subgroups according to socioeconomic status, race and gender. However, these are currently not available on CDE's website and no one at CDE was able to inform me how I can get the data.

[21]A minority of high-achieving students take the Algebra I exam already in the seventh grade.

Figure 2: The Distribution of Dropout Rates Across Grade-Levels



policies on dropout rates based on gender and/or ethnicity.Therefore, this additional level of data will not be presented in the forthcoming results.

4 Empirical Strategy

4.1 Specification

The analysis for this paper utilizes a dataset which documents open/closed campus policies in high schools during the period 2003-2011 at the grade level and matches these to student outcomes. The final dataset is a panel dataset, with most grade-school combinations appearing for every school year.[22] The objective is to find the impact of an open campus policy on student outcomes, while distinguishing between conditional and unconditional open campus policies. Student outcomes are compared between grade-school observations with different open/closed campus policies, while some changed their policies during the sample period.

Two sources of variation are exploited. The first source of variation is whether grade-school observations have an open or closed campus policy, and if open, whether conditional or unconditional. The second source of variation is with respect to the timing of the open/closed campus policies. This variation results

[22]The exception is schools that did not exist at the start of the sample period, or changed their grade composition over the sample period.

from changes in grade-school observations' open/closed campus policies and differences in when these changes were implemented. The estimating equation is the following:

$$
\begin{aligned}
Outcome_{ysg} &= \alpha_0 + \alpha_1 YrOpenNoCond_{ysg} + \alpha_2 YrOpenCond_{ysg} \\
&+ \sum_{i=1}^{6} \beta_i Status_{sg}^{i} \\
&+ \gamma_1 X_{ysg} + \gamma_2 W_{ys} + gr_g + yr_y + gryr_{gy} + scl_s + \varepsilon_{ysg}
\end{aligned} \quad (1)
$$

In equation (1), the subscripts y, s, and g represent school-year, school and $g$rade-level, respectively. $Outcome_{ysg}$ is a measure of either test scores or dropout rates for a given grade-level, at a given school, in a given school-year. The dummy variable $YrOpenNoCond_{ysg}$ ($YrOpenCond_{ysg}$) receives the value 1 if the grade-school observation is observed when an unconditional (conditional) open campus policy is in place. $Status^{i}$ is a series of six dummy variables (indexed by the superscript $i \epsilon \{1,2,3,4,5,6\}$) equal to one if the grade-school observation experienced one of six mutually exclusive open/closed campus policy combinations during the sample period. As Table 1 shows us, there are seven possible open/closed campus policy combinations in the sample. Omitting the dummy for having a closed campus policy throughout the entire sample period, results in six grade-school level policy combinations during the sample period.[23]

The coefficients of interest in equation (1) are α_1 and α_2. They measure how open campus policies with or without conditions differentially affect student outcomes, compared to a closed campus policy, the policy dummy variable excluded from the regression. These estimated effects control for trends mutual to grade-school observations experiencing any of the possible open/closed campus policy combinations during the sample period through the estimation of β_1 through β_6. α_2, the estimated effect of a conditional open campus policy, is capturing the effect of a student incentive scheme based on open campus privileges. By observing both grade-school observations which experience an unconditional open campus policy and grade-school observations which experience a conditional open campus policy, α_1 and α_2 can be compared to each other - a statistically significant difference between α_1 and α_2 is evidence of the incentive scheme having a significant effect on student outcomes, beyond any potential effect of the open campus policy by itself (without conditioning it).

Grade fixed effects (gr_g) control for unobservable characteristics which vary across grade, such as varying difficulty of exams, or when it comes to dropout rates, higher rates as the grade-level increases.[24] Year fixed effects (yr_y) control for annual unobservable characteristics, which may have affected student outcomes for all California high school students - for example, changes in reporting standardizations of either

[23]These six policy combinations are: transitioning from a closed campus policy to a conditional open campus policy, transitioning from a closed campus policy to an unconditional open campus policy, having a conditional open campus policy all throughout the sample period, transitioning from an unconditional open campus policy to a conditional open campus policy, transitioning from an unconditional open campus policy to a closed campus policy, and having an unconditional open campus policy all throughout the sample period.

[24]The minimum lawful age for dropping out of school in California has been 18 for the entire sample period. However, as can be seen in Table A.1, this law is not completely enforced and dropout rates are positive even in the ninth grade.

dropout rates or test scores, budget cuts throughout the entire state, etc. Joint year-grade fixed effects ($yrgr_{gy}$) control for annual unobservable characteristics specific to a grade-level. These fixed effects can potentially reduce noise resulting from policies implemented at certain years for just certain grades. This could be frequent within a state-wide education system, which implements various policies for specific grade-levels. School fixed effects (scl_s) control for schools' unobservable characteristics which are fixed over time and can potentially affect student outcomes, such as: characteristics of the student-body; characteristics of the staff and teachers at the school; the school's location; the school facilities; or the school environment. X_{ysg} and W_{ys} represent time-varying characteristics at either the grade-school or just school level, respectively. These include: fraction Hispanic, fraction black, fraction white and enrollment at the grade level, and free and reduced price meal participation and total enrollment at the school level. Standard errors are clustered at the grade-school level.

A variation of equation (1) estimates whether the effect of a conditional/unconditional open campus policy varies by grade. This requires interacting all the open campus variables (whether conditional or unconditional and whether time-varying or not) with dummies for the grade-levels and results in the following estimating equation:

$$\begin{aligned} Outcome_{ysg} &= \alpha_0 + \sum_{j=9}^{12} \alpha_1^j YrOpenNoCond_{ysg} * Grade_g^j \\ &+ \sum_{j=9}^{12} \alpha_2^j YrOpenCond_{ysg} * Grade_g^j + \sum_{i=1}^{6} \sum_{j=9}^{12} \beta_3^{ij} Status_{sg}^i * Grade_g^j \\ &+ \gamma_1 X_{ysg} + \gamma_2 W_{ys} + gr_g + yr_y + scl_s + \varepsilon_{ysg} \end{aligned} \tag{2}$$

Grade-levels 9 through 12 are represented by the superscript j. The coefficients of interest are α_1^j and α_2^j for $j \epsilon \{9, 10, 11, 12\}$. These coefficients measure the effect of an open campus policy, based on conditioning or not conditioning the eligibility, for each grade-level separately.[25]

4.2 Identification

The main identification assumption is that for a grade-school observation which experiences a change in its open/closed campus policy, absent this change in the policy, student outcomes at this grade-school observation would have continued on the same trend as the trend for other grade-school observations, which had the same pre-change policy all throughout the sample period - i.e. absent the change in the policy for a grade-school observation, our outcome of interest would have equal time trends in *levels* as other grade-school observations which maintained the pre-change policy as constant during the entire sample period. This implies for grade-school observations experiencing a change (Ch) from policy A to B and for grade-school observations with the same constant policy (Const) of type A over the entire sample period

[25] For test scores, there are no variables representing grade 12, as no test scores are available for grade 12.

the following:

$$E\left[Outcome^{ChAB}_{post-change}|NoChange\right] - E\left[Outcome^{ChAB}_{pre-change}\right] = E\left[Outcome^{ConstA}_{post-change}\right] - E\left[Outcome^{ConstA}_{pre-change}\right] \quad (3)$$

Taking into account the inclusion of school fixed effects in our estimating equations, we can rewrite equation (3) in terms of variation stemming from differences in policy implementation within schools. Here the variation is either in terms of different grade-levels having a different policy within the same school, or differences in the timing of implementing changes in policies across grades within the same school. Consider a school, s, for which grade x experiences a policy change from A to B (and is thus indexed with $ChAB$) and grade $y \neq x$ in the same school s has for the entire sample period the same policy A (and is thus indexed with $_{ConstA}$). Here, the identification assumption is that absent the change in policy, grade x in school s would have equal time trends in levels as grade y in school s. This implies:

$$\begin{aligned} E\left[Outcom(school = s, grade = x)^{ChAB}_{post-change}|NoChange\right] - E\left[Outcome(school = s, grade = x)^{ChAB}_{pre-change}\right] \\ = E\left[Outcome(school = s, grade = y)^{ConstA}_{post-change}\right] - E\left[Outcome(school = s, grade = y)^{ConstA}_{pre-change}\right] \quad (4) \end{aligned}$$

One concern with the identification discussed above is selection of schools or students into specific open/closed campus policies. If schools or students with specific characteristics that are correlated with our outcomes of interest are selecting into specific policies, then it can be argued that any statistically significant estimates for α_1 and/or α_2 in equation (1) are attributed to systematic differences in the characteristics between grade-school units or students in grade-school units with different open/closed campus policies, rather than the actual policies in place. To address this concern, I will first present several arguments against the possibility of selection of schools or students into specific open/closed campus policies. Despite these arguments, I will show that results from placebo regressions cannot rule out the existence of systematic differences between grade-school units with different policies in place. For this reason, I will explain how I intend to empirically address the concern that grade-school units with different policies are inherently different.

Many schools in my sample have several open/closed campus policies in place, depending on the grade-level within the school. Furthermore, some grade-levels within schools changed their policies during my sample period. Thus, many students in my sample of high schools enter high school with one policy in place for the ninth grade, and while they are in the midst of high school, the open/closed campus policy applied to them changes. Taking into account this variation across grades within schools in terms of open/closed campus policies, as well as the fact that school fixed effects are controlled for in my regression specifications, selection of students into specific open/closed campus policies would imply either that students leave high school after already starting high school in response to changes in open/closed campus policies, or that students' characteristics change significantly over time as they progress through high school into different policies. Because the vast majority of high school students graduate from the same high school they started four years earlier, the former possibility seems unlikely. Furthermore, it seems highly unlikely that students' characteristics change significantly as they progress through high school and that these changes are correlated with changes in the open/closed campus policy in place. A similar argument can also be made for the selection of schools (as opposed to students) into specific open/closed campus policies. While it seems plausible that schools with specific characteristics select into specific open/closed campus policies, the selection of specific grades within a school and systematic differences between grades within a school based on open/closed campus policies seems very unlikely.

If schools with particular characteristics systematically select specific open/closed campus policies, then this means that changes in schools' open/closed campus policies are triggered by changes in these schools' characteristics. In practice, it seems that the determinants of high schools' open/closed campus policies are not linked to school characteristics for two reasons. First, some of these policies are historic, having been set as many as several decades ago. These historic policies determine the school's ability or lack of ability to change from one policy to another. In particular, in some cases, opening or closing a high school campus is not feasible due to the school's location (e.g. no lunch options sufficiently close to the school) or the school's infrastructure (e.g. no cafeteria in the school or a cafeteria unable to adequately serve the entire student body, unfenced school with many possible exits, or school being used for other community recreational activities during the school day). Second, changes in open/closed campus policies are frequently induced by exogenous events, not related to schools' characteristics - for example, fatal car accidents while students were off campus or financial hardships, usually at the school district level.[26]

Table 2 presents summary statistics for the grade-school observations in the entire sample (column 1), as well as for parts of the sample, broken down by whether the grade-school observations experienced an unconditional open, conditional open, or closed campus policy *sometime* during the sample period (columns 2, 3, and 4, respectively).[27] T-tests between the means of the various samples show statistically significant differences in some characteristics between some samples. Because the main analysis evaluates the effect of an unconditional/conditional open campus policy while it is in place, I run placebo tests in order to evaluate whether having a certain open/closed campus policy is correlated with certain characteristics at the grade-school level. These tests are regressions, as specified in equation (1), only the dependent vari-

[26] To illustrate these arguments, I present anecdotal evidence from two school districts: In Novato Unified School district, a fatal car accident involving four high school students took place around noon on a school day in September 2010. In response to this, the school district's high school open campus policies came under attack. While the school board determined later that school year that closing campuses is preferable, the existence of no cafeteria in one of the two high schools posed a logistic constraint. The result was that open campus privileges were revoked in Fall 2011 from ninth grade students, although only at the school that had a cafeteria. In Jefferson Union High School District (JUHSD), as noted already in footnote 8, three high schools closed their campuses in 2004 in response to financial hardships the school district experienced, as the school board estimated this would increase revenues through higher participation in the National School Lunch Program. The fourth high school in JUHSD had a closed campus policy in place already in 2004, following a fatal car accident involving one of its students during lunch approximately five years earlier.

[27] Note that the samples in columns (2), (3) and (4) are not mutually exclusive.

able is no longer a measure of academic achievement, but rather a characteristic at the grade-school/school level. In addition, the time-varying grade-school-level and school-level characteristics (X_{ysg} and W_{ys}, respectively) are omitted from the regression specification. The results of these placebo tests are presented in Table 3. Statistical significance of the coefficient estimates presented in Table 3 indicates that there is a statistically significant difference between grade-school observations which have an unconditional (column (1)) or conditional (column (2)) open campus policy, compared to grade school observations which have a closed campus policy, for the specific characteristic in that row. The p-values presented in column (3) indicate whether there is a statistical significance between grade-school observations with an unconditional open campus policy and grade-school observations with a conditional open campus policy for the specific characteristic in that row. As can be seen, there are some statistically significant differences in the racial composition of grade-school observations experiencing the various open/closed campus policies. Furthermore, grade-school observations experiencing an unconditional open campus policy appear to have more full-time equivalent teachers per student than grade-school observations experiencing a conditional open campus policy.

Concern that certain characteristics associated with student academic performance are changing at the same time as grade-schools' open/closed campus policies are changing, or prior to any policy changes, is further examined by separately plotting school/student characteristics for grade-school units which had a constant policy in place during the sample period and for grade-school units which changed their policy during the sample period. Figure 3 plots two trend lines for five separate demographic characteristics over time. The horizontal axis is the number of years before or after the change in policy for the grade-school units changing their policies, with t representing the year of change. For grade-school units with a constant policy during the sample period, t is set to the average year among grade-school units which changed their policy during the sample period. From the Figure, it appears that the trend for most student and school characteristic is the same for both those grade-schools changing their policies and those grade-schools with a constant policy. One potential exception is the fraction of Black students, which appears to be decreasing more for the grade-school units with a change in policy than for the constant-policy group.

The results in Tables 2 and 3, as well as Figure 3, show that some grade-school characteristics may be correlated with the type of open/closed campus policy the grade-school has in place, or with changes in the open/closed campus policies. This raises concern that the regressions are not controlling sufficiently for all important differences between the various grade-school units experiencing the different policies. To address concerns for differences in the time path of the dependent variables between grade-school units experiencing a change in policy and grade-school units with a constant policy during the sample period, I will add to my baseline estimating equations, specified in (1) and (2), a separate fourth-order polynomial in time for grade-school units which changed their open/closed campus policy during the sample period. To address concerns for differences in the time path of the dependent variables, whose correlation with the actual open/closed campus policy may be driven by a non-random pattern of the specific policies in

Table 2: Summary Statistics - School Characteristics for Grade-School Observations, broken down by Open/Closed Campus Policies Experienced During the Sample Period

Variable	(1) Entire Sample	(2) Unconditional Open Policy Sometime during Sample Period	(3) Conditional Open Policy Sometime during Sample Period	(4) Closed Campus Sometime during Sample Period	(5) P-Value for Difference between (2) and (3)	(6) P-Value for Difference between (2) and (4)	(7) P-Value for Difference between (3) and (4)
Number of Grade-School Observations	1852	502	177	1304			
School Enrollment - October 2011	1589.4	1335.5	1711.0	1646.6	0.000	0.000	0.386
	(872.46)	(815.86)	(954.70)	(862.61)			
Grade Enrollment - October 2011	397.37	329.62	409.63	414.66	0.000	0.000	0.738
	(224.56)	(206.25)	(234.88)	(224.68)			
Free and Reduced Priced Meal	0.431	0.392	0.450	0.451	0.058	0.000	0.993
Eligibility - October 2011	(0.259)	(0.248)	(0.241)	(0.264)			
Fraction Hispanic - 2011	0.400	0.343	0.445	0.420	0.001	0.000	0.217
	(0.264)	(0.257)	(0.265)	(0.263)			
Fraction Black - 2011	0.059	0.057	0.050	0.065	0.613	0.554	0.050
	(0.092)	(0.120)	(0.069)	(0.099)			
Fraction White - 2011	0.362	0.404	0.396	0.335	0.808	0.000	0.003
	(0.259)	(0.256)	(0.263)	(0.257)			
Dropout Rate, 9th Grade - 2011	0.716	0.663	0.543	0.725	0.796	0.613	0.603
Weighted Mean	(1.019)	(1.117)	(0.800)	(1.028)			
Dropout Rate, 10th Grade - 2011	0.835	0.828	0.648	0.862	0.558	0.898	0.414
Weighted Mean	(1.130)	(1.392)	(0.605)	(1.174)			
Dropout Rate, 11th Grade - 201	1.162	1.021	0.860	1.324	0.385	0.159	0.063
Weighted Mean	(1.589)	(1.569)	(0.934)	(1.799)			
Dropout Rate, 12th Grader - 20	3.715	3.466	4.529	3.804	0.094	0.713	0.135
Weighted Mean	(3.859)	(4.110)	(3.889)	(4.090)			
English Language Arts Zscore -	0.172	0.271	0.180	0.142	0.124	0.000	0.371
2011 Weighted Mean	(0.386)	(0.427)	(0.278)	(0.374)			

Notes:

"Conditional" refers to having open campus privileges for students conditional on at least grades, test scores, or behavioral criteria. The results exclude seven schools which reported moving to a new site during the sample period, as well as the 9th grade classes in Visalia Unified School District (VUSD) high schools, due to implementation of a "Ninth-Grade Support Program" at the same time as open campus privileges were revoked to 9th graders in VUSD. Weighted means are weighted by the number of students in each grade-school level. T-tests for differences between weighted means are conducted by running a weighted regression with the group's mean as the dependent variable, and running a t-test for whether the coefficient for being in one group is different from zero.

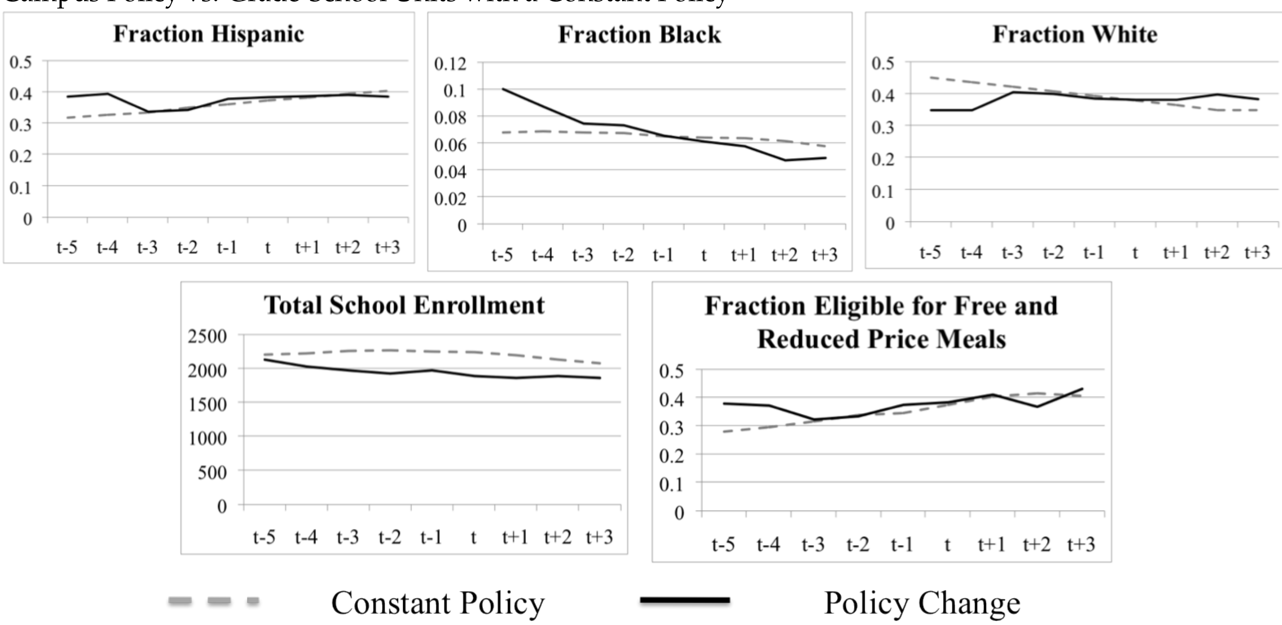
Table 3: Placebo Tests - Testing for Differences in Characteristics between Grade-School Observations when Experiencing different Open/Closed Campus Policies

	(1)	(2)	(3)	(4)	(5)
Grade-School Characteristic	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**P-Value for Difference between (1) and (2)**	**N**	**R^2**
Fraction Hispanic	-0.012**	-0.013	0.911	11,496	0.98
	(0.005)	(0.009)			
Fraction Black	-0.001	-0.003*	0.090	11,496	0.96
	(0.001)	(0.002)			
Fraction White	0.010*	0.021***	0.049	11,496	0.98
	(0.005)	(0.007)			
Total Grade Enrollment	18.191	8.954	0.517	11,496	0.86
	(15.447)	(21.016)			
Total School Enrollment	79.724	26.561	0.235	11,496	0.93
	(49.149)	(68.708)			
Free and Reduced Price Meal	-0.009	0.006	0.154	11,490	0.92
Population	(0.008)	(0.013)			
Percent with English as	0.001	-0.008	0.157	11,085	0.89
Second Language	(0.005)	(0.008)			
Number of Full-Time Equivalent	0.007	-0.040	0.082	8,748	0.77
Teachers per Student	(0.046)	(0.052)			

Notes:

Each line presents the coefficient estimates of a single regression, as specified in equation (1), with the dependent variable being the grade-school characteristic listed, and the time-varying grade-school level and school-level characteristics omitted. School, year and grade-year fixed-effects are included. Data on Full-Time equivalent teachers per student was only available for 2007 through 2009. Numbers in parenthesis are standard errors clustered at the grade-school level. *** p<0.01, ** p<0.05, * p<0.1

Figure 3: Trends in Student and School Characteristics - Grade-School Units with Change in Open/Closed Campus Policy vs. Grade-School Units with a Constant Policy



Notes:
The figure above presents the average values for each characteristic (fraction Hispanic, fraction Black, fraction White, School Enrollment, and Free or Reduced Price Meal Eligibility) in the grade-school units changing their open/closed campus policies during the sample period (solid line) and the grade-school units with a constant open/closed campus policy during the sample period (dotted line). These averages are weighted by the number of students in each grade-school unit. The horizontal axis is the number of years before or after a change at the grade-school unit in the open/closed campus policy, with t representing the first year after the change. The t year for the grade-school units not experiencing a change in policy is the average of the t year for the grade-school units in the sample with a change in the policy.

place, I will add to my baseline specifications interactions between a fourth-order polynomial in time and key school/school-grade-level observables in a base year.[28] Including these separate flexible time paths based on school-grade units' characteristics and policies during the sample period allows me to reduce substantially concerns that systematic differences in grade-school units experiencing the different policies are driving the results.

If students with particular characteristics select into schools with specific open/closed campus policies, then students' mobility between schools with different policies should be very high. Because interdistrict transfers in California are not common,[29] then students' mobility between schools with different policies would potentially be high only in school districts with more than one high school (and these high schools would need to have different open/closed campus policies in place). However, in California, there is actually a large number of school districts with a single high school.[30] Out of 255 school districts in my sample, 93 have only one high school - i.e. over 36% of the school districts in my sample have a single high school. As a robustness check, I limit my sample of high schools to those that are single high schools within a school district and the results continue to hold for the most part (qualitatively, the results continue to hold, but the magnitude increases substantially for some of the results) - see Section 6.3 for further details.

In addition to extending upon my baseline equations, as specified in (1) and (2), I will also include a robustness check for my results, which will present the same regressions from the main analysis using synthetic controls rather than the entire sample as controls, according to the synthetic control method developed in Abadie and Gardeazabal (2003) and Abadie et al. (2010) (See Section 6.1 for further discussion concerning the synthetic control method).

5 Results

5.1 Test Score Results

The specification described in equation (1) was run for test scores at the grade-school level for grades 9 through 11. As discussed in Section 3.2, test score results are available in 6 different forms: percent at one of the five performance levels (far below basic, below basic, basic, proficient, advanced) or the average mean scaled score for the specific subgroup observed. Mean scaled scores were standardized into Z-Scores to control for any possible differences across years or grades in the tests.

[28]The observables chosen were: percent white, to represent the racial composition of the school-grade unit; total school enrollment to represent the school/grade size; and free or reduced price meal eligibility. The base year is for the most part 2003, the start of the sample period, with the exception of instances that the school did not exist at 2003, in which case the earliest year for which data on the school is available is the base year.

[29]According to the CDE, interdistrict transfers require the approval of an interdistrict transfer/reciprocal agreement by both sides. According to the CDE, "it is within the authority of either the home district or the receiving district to revoke an interdistrict transfer/reciprocal agreement at any time for any reason the local board or district superintendent deems appropriate." (source: http://www.cde.ca.gov/re/di/fq/districttransfers.asp#Interdistrict). Specific data on interdistrict transfers within California could not be obtained from the CDE, due to a freeze on all data requests during 2014.

[30]For the purpose of defining single-high-school school districts, continuation schools or schools with alternative teaching methods (e.g. independent high schools, as defined by the CDE in http://www.cde.ca.gov/sp/eo/is/) were not considered valid alternatives for students within the school district.

Two groups of tests are possible for the analysis: only ELA and all mandatory exams (including ELA). ELA is the only exam that is held for all grades in the test score sample (grades 9-11), while all other mandatory exams are for only one grade-level. While the ELA's comprehensive coverage is attractive and merits examining results just for the ELA, an analysis of all mandatory exams is advantageous due to the possibility of including fixed effects at the exam level in the regression specifications and through that canceling out any individual exam's effect on our outcomes of interest. As mentioned in Section 3.2, non-mandatory exams are not included in the analysis due to potential self-selection of students into these exams.

As a first step, I evaluate potential differences between the estimates for our coefficients of interest in equation (1) for various specifications. Table 4 presents the estimates for α_1 and α_2 in equation (1): the effect of having an unconditional and conditional open campus policy, respectively, in comparison to a closed campus policy. The top panel presents results for ELA, while the bottom panel for all mandatory CST exams (including ELA). As can be seen, in all specifications and for all exams evaluated, the effect of the conditional open campus on students' Z-Scores, relative to a closed campus policy, is positive and highly statistically significant. Furthermore and quite importantly, this effect is statistically significantly different from the effect of an unconditional open campus policy on students' Z-Scores, to which all coefficient estimates are negative and at times statistically significant. Thus, not only does Table 4 present evidence of the positive effect of the conditional open campus policy on students' test scores, but we can also attribute this effect to the incentive scheme behind the conditional open campus policy, due to the fact that this effect is statistically significantly different from the effect of an open campus policy without an incentive scheme - i.e. the effect of the unconditional open campus policy. The results show that the positive effect of the conditional open campus policy, in comparison to a closed campus policy, as well as the statistically significant difference between the effect of the conditional and unconditional open campus policy, are robust to the inclusion of controls. Due to the identification concerns discussed in Section 4.2, the remaining results presented will include the controls specified in the last column of Table 4.

Table 5 presents results for the estimated effect of an unconditional/conditional open campus policy on students' Z-scores for ELA (first 5 columns) and for all mandatory exams (last 5 columns), broken down by demographic subgroups based on socioeconomic status, race, gender, and parents' educational attainment. For the ELA results, almost all estimates of the effect of a conditional open campus policy, in comparison to a closed campus policy, are positive, but they are statistically significant primarily for the subgroups that are socioeconomically disadvantaged - i.e. students who are economically disadvantaged,[31] black, Hispanic and with parents without a high school degree.[32] The effect of a conditional open campus policy, in comparison to an unconditional open campus - which represents the effect of the incentive scheme on students' test scores - is statistically significant for alll subgroups, with the exception of students who are

[31]The CDE uses the term "economically disadvantaged" for students on free or reduced price meals, as part of the National School Lunch Program.

[32]For students with parents who have a college degree, the coefficient estimate is also statistically significant.

Table 4: The Effect of an Unconditional/Conditional Open Campus Policy on Students' Mean Scaled Scores - All Students

English Language Arts CST Exam						
Unconditional Open Campus Policy	-0.020	-0.026	-0.031*	-0.023	-0.036**	-0.035*
	(0.014)	(0.019)	(0.019)	(0.015)	(0.015)	(0.019)
Conditional Open Campus Policy	0.061***	0.060***	0.049**	0.057***	0.043**	0.044**
	(0.021)	(0.021)	(0.021)	(0.021)	(0.020)	(0.020)
N	11,510	11,510	11,476	11,096	11,071	11,071
R^2	0.94	0.94	0.94	0.94	0.94	0.94
Mandatory CST Exams						
Unconditional Open Campus Policy	-0.001	-0.025	-0.031	-0.002	-0.015	-0.033*
	(0.015)	(0.021)	(0.019)	(0.016)	(0.015)	(0.020)
Conditional Open Campus Policy	0.092***	0.090***	0.077***	0.095***	0.080***	0.078***
	(0.023)	(0.023)	(0.021)	(0.023)	(0.020)	(0.021)
N	24,827	24,827	24,765	23,992	23,948	23,948
R^2	0.78	0.78	0.78	0.78	0.78	0.77
School-Grade Demographics			X		X	X
Time Polynomial Interacted with Change in Policy		X	X			X
Time Polynomial Interacted with Base-Year Demographics				X	X	X
School, Year, Grade, Year-Grade Fixed Effects	X	X	X	X	X	X

Notes:

Dependent variable is the average Z-Score for students at the school-grade-year-test level. The regressions in the first panel are run for ELA exams only, and the regressions in the second panel are run for all mandatory CST exams (including ELA) at the high school level. Regressions are weighted by the number of students in every school-grade-year level. Demographics are the following: percent black, percent Hispanic, percent white, total grade enrollment, and percent eligible for free or reduced price meals at the grade level; and total school enrollment at the school level. All regressions include fixed effects at the school, year, grade and joint year-grade level. Regressions for Mandatory CST exams also include exam fixed effects. Mandatory CST Exams includes the following exams: English Language Arts (Grades 9-11), Science (Grade 10), World History (Grade 10), and U.S. History (Grade 11). Time polynomial interactions are a fourth-order polynomial in time interacted with a dummy for a change in policy (second row), or with percent white, total school enrollment and free or reduced meal eligibility in the earliest year the school-grade is observed (third row). The number of schools in all regressions is 465. Standard errors clustered at the school-grade level are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

not economically disadvantaged. The magnitude of this effect is largest (i.e. greater than 0.1 of a standard deviation) for students who are economically disadvantaged, black, and have parents without a high school degree.[33] When the coefficient estimate for the conditional open campus policy is not statistically significant, then in all cases, except for students who are not economically disadvantaged, it is positive while the coefficient estimate for the unconditional open campus policy is negative and statistically significant.[34] This suggests that even for the subgroups for which the effect of a conditional open campus policy, in comparison to a closed campus policy, cannot be rejected to be zero, the incentive scheme is still effective in offsetting the negative effect of just having an open campus policy without the incentive scheme. The results for the mandatory exams are similar to those of the ELA exams, except that the positive and statistically significant effect of a conditional open campus policy, in comparison to a closed campus policy, is found for all subgroups, with the exception of students with parents who have a post-graduate degree. These point-estimates are larger in magnitude than those in the ELA results, and the difference between the conditional and unconditional open campus policy is quite large in magnitude (and statistically significant) for nearly all subgroups, and not just for the more disadvantaged ones. Quantitatively, when looking at the entire student population, a conditional open campus policy increases student test scores, in comparison to a closed campus policy, by 0.04-0.08 of a standard deviation, while an unconditional open campus policy decreases student test scores by more than 0.03 of a standard deviation.

I now turn to investigate the effect of the unconditional and conditional open campus policies on the percent of students in each of the five performance levels defined by the CDE. Table 6 provides results for the specifications in equation (1) for just ELA outcomes (top panel) and all mandatory CST exams (including ELA) (bottom panel). Each column has the percent at a different performance level as its dependent variable. For ELA, the results in Table 6 provide evidence of a conditional open campus policy's positive effect on test scores, in comparison to a closed campus policy, in terms of the percent performing below basic (a decrease of 0.86 percentage points) and the percent performing at the advanced level (an increase of over 1 percentage points). The effect of a conditional open campus policy is statistically significantly different from that of an unconditional open campus policy - and in a direction indicating improvement under the conditional open campus regime - for all performance levels, with the exception of the basic performance level. For the mandatory exams, the effect of the conditional open campus policy in comparison to a closed campus policy is statistically significant for almost all performance levels (as opposed to just two for the ELA) and the magnitude of the point estimates are much greater as well. Comparing between the coefficient estimates of the unconditional and conditional open campus policies, the results are similar to those of the ELA, except that the magnitudes and statistical significance are greater. Quantitatively, while for ELA a conditional open campus decreases the average number of students performing at the below basic level by 6 percent, in comparison to a closed campus policy, for the mandatory exams this decrease is over 11

[33]Comparing the magnitude of the effect of a conditional open campus policy in comparison to an unconditional open campus policy is through subtracting the former coefficient estimate value from the latter.

[34]Even for the ELA regression with students who are not economically disadvantaged, the p-value for a test that the coefficient estimate for the unconditional open campus policy is equal to the coefficient estimate for the conditional open campus is 0.0025.

Table 5: The Effect of an Unconditional/Conditional Open Campus Policy on Students' Mean Scaled Scores - by Demographic Subgroup

	English Language Arts					All Mandatory Exams				
Subgroup	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**Weighted Mean of Dependent Variable**	**N**	**R^2**	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**Weighted Mean of Dependent Variable**	**N**	**R^2**
All Students	-0.035*	0.044**	0.174	11,071	0.94	-0.033*	0.078***	0.157	23,948	0.78
	(0.019)	(0.020)				(0.020)	(0.021)			
Economically Disadvantaged	-0.036*	0.084***	-0.264	10,432	0.80	-0.038*	0.094***	-0.267	20,212	0.59
	(0.019)	(0.022)				(0.021)	(0.025)			
Not Economically Disadvantaged	-0.039	0.026	0.418	10,706	0.91	-0.034	0.070***	0.391	22,639	0.73
	(0.024)	(0.030)				(0.024)	(0.026)			
Black	0.004	0.166***	-0.269	5,826	0.76	0.029	0.167***	-0.317	9,115	0.71
	(0.032)	(0.041)				(0.031)	(0.044)			
Hispanic	-0.015	0.059**	-0.234	10,521	0.82	-0.014	0.070**	-0.251	20,466	0.62
	(0.018)	(0.026)				(0.020)	(0.029)			
White	-0.054**	0.004	0.462	10,180	0.87	-0.047*	0.060**	0.430	20,667	0.66
	(0.024)	(0.028)				(0.024)	(0.025)			
Male	-0.038*	0.049**	0.063	11,026	0.92	-0.036	0.089***	0.091	23,248	0.77
	(0.023)	(0.025)				(0.023)	(0.024)			
Female	-0.034*	0.038*	0.287	11,042	0.94	-0.032	0.066***	0.223	23,360	0.79
	(0.019)	(0.020)				(0.020)	(0.021)			
Parents w/o High School	-0.033*	0.074**	-0.380	8,226	0.64	-0.030	0.071**	-0.386	13,853	0.50
	(0.020)	(0.029)				(0.019)	(0.034)			
Parents w/ High School	-0.059**	0.028	-0.124	9,735	0.70	-0.052**	0.050*	-0.140	17,943	0.55
	(0.023)	(0.028)				(0.022)	(0.030)			
Parents w/ Some College	-0.053**	0.016	0.173	9,960	0.75	-0.040*	0.053**	0.137	19,533	0.57
	(0.023)	(0.026)				(0.023)	(0.024)			
Parents College Graduates	-0.001	0.052*	0.488	9,451	0.83	-0.005	0.083***	0.459	18,322	0.64
	(0.021)	(0.030)				(0.021)	(0.028)			
Parents Post-Graduates	-0.073***	-0.014	0.900	7,985	0.83	-0.085***	0.022	0.885	13,698	0.66
	(0.025)	(0.040)				(0.029)	(0.038)			

Notes:

Dependent variable is the average Z-Score for students at the school-grade-year level. Each row within either ELA (first 5 columns) or All Mandatory Exams (last 5 columns) represents a single regression for a specific subgroup. Regressions are weighted by the number of students in every school-grade-year-subgroup level. The mean of the dependent variable provided is weighted by the number of students tested at each school-grade-year-subgroup observation. Time-varying school and school-grade characteristics are controlled for: percent black, percent hispanic, percent white, total grade enrollment, and percent eligible for free or reduced price meals at the grade level; and total school enrollment at the school level. Additional controls include four fourth-order polynomials in time interacted with: a dummy for a change in policy, with percent white, with total school enrollment and with free or reduced meal eligibility in the earliest year the school-grade is observed. All regressions include fixed effects at the school, year, grade and joint year-grade level. Mandatory exams regressions also include exam fixed effects. Mandatory CST Exams includes the following exams: English Language Arts (Grades 9-11), Science (Grade 10), World History (Grade 10), and U.S. History (Grade 11). The number of schools in all regressions is 465. Standard errors clustered at the grade-school level are in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

percent.

5.2 High School Dropout Rates Results

The specifications presented in equations (1) and (2) were run with the dependent variable being the dropout rate (in percent) for a grade-school-year observation and while controlling for grade-school-level demographic characteristics and the four fourth-order polynomials in time interactions, as specified in Sections 4.2 and 5.1. [35] A statistically significant decrease in dropout rates results from an open campus policy, in comparison to a closed campus policy, regardless of whether it is conditional or not. Furthermore, there difference between the coefficient estimates for the unconditional and conditional open campus policies is not statistically significant. The magnitude estimated, 0.65-0.8 percentage points, is very large, compared to the overall average dropout rate across all grades and years, 2.1%. When breaking down the effect of an unconditional open campus policy by grade-level (equation (2)), the magnitude of the effect is increasing as the grade-level increases, which is consistent with the higher average dropout rates for the higher grade-levels. However, this pattern does not hold for the conditional open campus policy grade-level estimates.

One potential explanation for the decrease in dropout rates in response to an unconditional open campus policy is that the freedom provided through an unconditional open campus policy is reducing the psychological cost of staying in school for the highest-risk students on the verge of dropping out. This line of argument cannot hold for explaining the decrease in dropout rates in response to a conditional open campus policy, due to the need to exert effort in order to be eligible for the open campus privilege under this policy regime. Thus, this logic could be evidence that the conditional open campus policy's incentive scheme is effective in reducing high schools' dropout rates.

5.3 Discussion

The analysis above has shown that the effect of an open campus policy on student test scores, in comparison to a closed campus policy, depends on whether the open campus policy is unconditional or conditional. Not only is the difference between the effect of the two policies statistically significant, but the results also show a qualitative differences for the entire student population, as well as for some specific population segments. These differences in the effect of an open campus policy present direct evidence that the incentive scheme behind the conditional open campus is indeed effective in improving student academic outcomes. When comparing the effect of the conditional open campus - relative to a closed campus policy and relative to an unconditional open campus policy - across student population segments, the results presented show that while the for the mandatory exams the patterns are similar across most population segments, for the ELA the effects of the incentive scheme behind the conditional open campus policy is greatest for

[35] In regressions that explored variations of equation (1), as presented for Z-Scores in Table 4, the coefficient estimates when dropout rate was the dependent variable were found to be quite stable in terms of magnitude and statistical significance across the various specifications.

Table 6: The Effect of an Unconditional/Conditional Open Campus Policy on Percent of Test Takers at the Five Performance Levels

Performance Level	Far Below Basic	Below Basic	Basic	Proficient	Advanced
		English Language Arts CST Exam			
Unconditional Open Campus	0.682	0.435	-0.020	-0.169	-0.917*
	(0.532)	(0.437)	(0.429)	(0.490)	(0.486)
Conditional Open Campus	-0.466	-0.863*	-0.452	0.788	1.013*
	(0.739)	(0.494)	(0.666)	(0.696)	(0.607)
P-Value for Difference between Coefficient Estimates	0.0522	0.0005	0.4131	0.0998	0.0008
Fixed Effects	S,Y,G,YG	S,Y,G,YG	S,Y,G,YG	S,Y,G,YG	S,Y,G,YG
Weighted Mean of Dependent Variable	10.32	14.27	26.89	25.89	22.64
R^2	0.83	0.89	0.83	0.76	0.95
		Mandatory CST Exams			
Unconditional Open Campus	0.314	0.330	0.511	-0.203	-0.909**
	(0.521)	(0.528)	(0.483)	(0.535)	(0.447)
Conditional Open Campus	-1.362*	-1.992***	0.268	2.029***	1.145*
	(0.709)	(0.565)	(0.794)	(0.628)	(0.605)
P-Value for Difference between Coefficient Estimates	0.0006	0.0003	0.7411	0.0000	0.0048
Fixed Effects	S,Y,G,YG,T	S,Y,G,YG,T	S,Y,G,YG,T	S,Y,G,YG,T	S,Y,G,YG,T
Weighted Mean of Dependent Variable	10.46	17.45	27.21	24.78	20.10
R^2	0.70	0.72	0.48	0.54	0.86

Notes:
Dependent variable is the percent of students at the school-grade-year-test level at the given performance level. The mean of the dependent variable provided is weighted by the number of students tested at each school-grade-year-test observation. Regression specifications are as in Table 5 for ELA and mandatory exams, respectively. Number of observations is 11,071 for ELA and 23,948 for Mandatory. *** p<0.01, ** p<0.05, * p<0.1

Table 7: The Effect of an Unconditional/Conditional Open Campus Policy on High School Dropout Rates - Differentiating by Grade-Level

Dependent Variable: Dropout Rate		
Unconditional Open Campus	-0.809***	
	(0.217)	
Conditional Open Campus	-0.647**	
	(0.323)	
Unconditional Open Campus - Grade 9		-0.413*
		(0.213)
Unconditional Open Campus - Grade 10		-0.560**
		(0.225)
Unconditional Open Campus - Grade 11		-0.713**
		(0.351)
Unconditional Open Campus - Grade 12		-2.129**
		(0.850)
Conditional Open Campus - Grade 9		-1.062*
		(0.588)
Conditional Open Campus - Grade 10		-1.057**
		(0.439)
Conditional Open Campus - Grade 11		-0.843**
		(0.408)
Conditional Open Campus - Grade 12		-1.688*
		(0.877)
Fixed Effects	S, Y, G, YG	S, Y, G, YG
Observations	15,153	15,153
R-squared	0.55	0.55

Notes:

Dependent variable is the dropout rate (in percent) for a year-school-grade observation. The mean of the dependent variable is 2.1%. For specific grades, the mean of the dropout rate is 0.7%, 0.9%, 1.2%, and 3.8% for 9th, 10th, 11th, and 12th grade, respectively. Regression specifications are as in Table 5. Fixed Effects Codes: S - School Fixed Effects; Y - Year Fixed Effects; G - Grade Fixed Effects; T - Test Fixed Effects; YG - Joint Year-Grade Fixed Effects. Standard errors clustered at the school-grade level are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

socioeconomically disadvantaged students.

Quantitatively, I observe an increase of 0.08 and 0.11 of a standard deviation in response to the incentive scheme behind a conditional open campus policy for ELA and mandatory exams, respectively. This increase in test scores is considered modest but substantial in magnitude, when compared to other policy measures or school environments evaluated in recent literature. Rockoff (2004) observed a 0.15 standard deviation increase in response to a one standard deviation increase in teacher quality in elementary schools. Abdulkadiroğlu et al. (2011) report that one extra year of attending an over-subscribed charter school in Boston increases high school students' ELA results by 0.27 of a standard deviation. In Zimmer et al. (2010), after-school tutoring for elementary and middle-school low-income students in Pittsburgh increased their math test score performance by 0.14-0.26 of a standard deviation.[36] While these reported effects are greater in magnitude, in comparison to the estimated effect of a conditional open campus policy, it should be emphasized that a conditional open campus policy is virtually costless, in comparison to investments in teacher quality, opening more high-demand charter schools, or providing after-school tutoring. Furthermore, the magnitude of the effect is comparable to that of more costly student incentive schemes. Bettinger (2012) finds that a financial incentive scheme for Ohio elementary school students, which paid each student up to $100 in cash rewards, increased students' math test score outcomes by 0.15 of a standard deviation, an increase very close in magnitude to my result, although the cost of a conditional open campus policy should be substantially less than $100 per student.[37]

In terms of the performance levels of students, the statistically significant difference between the coefficient estimates of the unconditional versus conditional open campus policy for nearly all performance levels is evidence of the incentive scheme's positive effect on test scores for students performing at all performance levels. It may be a little surprising that the incentive scheme is increasing the percent performing at the advanced level, as the eligibility criteria set in the conditional open campus policies are generally quite minimal and performing at the advanced level is substantially beyond the required thresholds. Nevertheless, the increase in the percent of students at the advanced level may be due to peer effects generated, as other students are exerting greater effort to succeed in school. It should be noted that for the performance-level analysis, a non-statistically significant coefficient in one of the performance levels does not necessarily imply that the specific open campus policy has no effect on the percent of students at that performance level. This is because an improvement (worsening) in test scores entails students both moving from that performance level to the higher (lower) performance level and students entering that

[36] In Zimmer et al. (2010) the results are strictly for low-income students, while in Abdulkadiroğlu et al. (2011) the results are primarily for low-income students, as the Boston Public School system serves a disproporionately black and Hispanice student population and Boston's charter schools serve an even higher proportion of black students. Thus, when comparing these estimated effects to those of the conditional open campus policy for economically disadvantaged students - at least 0.12 of a standard deviation - the comparison is even closer.

[37] In Bettinger (2012) only math scores were affected by the financial incentive scheme and students were paid $15-20 for various achievement rates on 5 separate exams, with math being only one of them. Thus, given that the incentive scheme was only effective for math scores, the cost of the incentive scheme could have potentially gone down to up to $20 per student. On the other hand, the incentive scheme in Bettinger (2012) was for elementary school students in grades 3-6, and it seems plausible that high school students' financial incentive schemes would involve higher costs.

performance level from the lower (higher) performance level. Because these two can offset each other, it may appear as if there is no change in the percent of students attaining that performance level. Therefore, when evaluating the performance levels affected by a specific open campus policy, it is important to examine the lowest and highest performance levels showing statistically significant changes in response to the open campus policy, and it may be that performance levels between these two will be affected by the policy as well.

In the analysis for dropout rates, open campus policies are decreasing dropout rates, irrespective of whether they are conditional or not. However, the mechanism behind each of the open campus policies which is driving these outcomes may be different - while an unconditional open campus policy could decrease the psychological cost of attending school, this cannot be claimed for the conditional open campus policy, and it therefore appears that under the conditional open campus policy, the incentive scheme does work for at least some of the high-risk students on the verge of dropping out.

6 Robustness Checks

Several concerns with respect to this paper's identification assumptions were discussed in Section 4.2. I will present results for three robustness checks, which attempt to address these concerns through alternative regression specifications. The results presented in this section will be for the test score outcomes. The results of the robustness checks for the dropout rates were stable for two of the three robustness checks (as discussed below), and these can be found in Table A.3 in the Appendix.

6.1 Synthetic Control Method

The underlying assumption in using the regression specification in equation (1) and its extensions[38] is that the regression controls for all important differences between grade-school observations with different open/closed campus policies and that any unobservable differences are not correlated with the outcomes of interest. If grade-school observations with different policies in place are systematically different from each other in characteristics which are correlated with student academic performance, and these characteristics are not controlled for in the regression, then the coefficient estimates presented in Section 5 will be biased.

Tables 2 and 3 present evidence that there are differences between grade-school observations with different open/closed campus policies in place, and this may be an indicator to differences which are not controlled for. Because the regression specification in equation (1) compares grade-school units which switched their policy during the sample period to grade-school units which maintained a steady policy throughout the sample period, one way to address any concern for differences between observations experiencing different policies is to refine the comparison group of each grade-school unit which changed its policy during

[38]The extension of the specification in equation (1) is the inclusion of four fourth-order polynomials in time interacted with: a dummy for a change in policy, with percent white, with total school enrollment and with free or reduced meal eligibility in the earliest year the school-grade is observed, as discussed in Section 4.2.

the sample period. This can be done through use of the synthetic control method developed in Abadie and Gardeazabal (2003) and Abadie et al. (2010).

The synthetic control method is most commonly applied in a difference-in-differences setting, where some observational units experience some treatment and are observed both before and after the treatment, while other observational units serve as controls, due to no treatment experienced by them during the sample period. As a first step, this method splits the sample of observations into treated units and control units, and then it constructs a control group for each treated unit by assigning weights to each control unit such that its pre-intervention characteristics and outcome variable resemble those of the treated unit. The objective is to choose a vector of weights which minimizes the distance between the pre-intervention characteristics of the treated unit and the characteristics of the (weighted) synthetic control group. This method is most useful when there are considerably more control units than treated units. While the analysis presented in Section 4 and equation (1) is not a straightforward difference-in-differences analysis, I can still apply the synthetic control method by defining my treated units as those grade-school units which experienced a change in their open/closed campus policy during my sample period and my control units as those grade-school units which had the same open/closed campus policy throughout the entire sample period.[39] While Abadie and Gardeazabal (2003) and Abadie et al. (2010) use the synthetic control method for a single treatment unit with one treated period, the method can be extended to interventions covering multiple treatment units with multiple intervention periods, as is the case when the intervention is defined as a grade-school unit's change in an open/closed campus policy.

I divide the sample of school-grade units into treated (experiencing a change in their open/closed campus policy during the sample period) and untreated. For each treated unit, I define the pre-intervention window period used for the comparison of school-grade characteristics. To maximize comparability between the treated and control units, when choosing the control units for each treated unit, I restrict the sample to untreated school-grade units in the same grade-level as the treated unit and with the same open/closed campus policy (closed/unconditional open/conditional open) that the treated unit had prior to changing its policy. In addition to the outcome variable, the time-varying school/grade characteristics used for comparing the treated unit to the control units and forming the synthetic controls are: fraction Hispanic, black and white at the grade-school level, total enrollment at the grade-school level, total school enrollment, annual change in school enrollment, and percent of students at the school with free or reduced price meal eligibility. This process was conducted separately for each dependent variable in the regression analysis.

Tables 8 and 9 present results as in Section 5.1 with synthetic controls rather than the entire sample of untreated surveyed grade-schools as controls. The results show that the test score results obtained in

[39]Unlike in the standard difference-in-differences analysis, the policy changes in this analysis are not in one uniform direction. In particular, the grade-school units in the sample experience the following possible policy transitions: closed campus to unconditional open; closed campus to conditional open; unconditional open to conditional open; and unconditional open to closed campus. If treatment is defined as experiencing a change in the open/closed campus policy, then in this analysis, the coefficients of interest do not estimate the actual treatment (i.e. changing the policy during the sample period) but rather the effect of a specific policy which is mutual to some treated units, as well as some control units.

Section 5 are robust to the synthetic control method. In particular, an unconditional open campus policy is shown to have a negative effect on student test scores and a conditional open campus policy is shown to have a positive effect, in comparison to a closed campus policy. Furthermore, there is a statistically significant difference between the estimates for the effect of the unconditional versus the conditional open campus policies. These results hold for both the Z-Score analysis and for the performance-levels analysis.

Figures 5 and 4 plot trends of the average percent of students attaining each of the five performance levels, as well as for Z-Scores, in the mandatory CST exams before and after changes in policies for grade-school units experiencing a change in their open/closed campus policy, as opposed to the synthetic control grade-school units with a constant open/closed campus policy throughout the sample period. Figure 4 presents two separate trends for grade-school units who changed from a closed campus or an unconditionally open campus to a conditional open campus policy and for grade-school units who had a closed campus or unconditionally open campus policy all throughout the sample period. Figure 5 presents two separate trends for grade-school units who changed their policy from an unconditionally open campus to a closed campus and for grade-school units who had an unconditional open campus policy throughout the entire sample period. The horizontal axis in these figures is the number of years before and after the changes in the policies, with t representing the year of the change. The number of treated grade-school units that changed their policy such that their performance data goes back or forward more than five years is relatively small, and this can potentially create some noise and volatile measures of the trends at the edges of the figures. For this reason, the focus in these figures should be primarily on the trends between $t-4$ and $t+4$. According to Figure 4, following the change in policy to a conditional open campus policy, the percent of students at the basic performance level increases more rapidly than this percentage for the synthetic controls. While the results in Figure 4 are not strong evidence of the effectiveness of the incentive scheme behind the conditional open campus policy, when comparing these to the results in Figure 5, and seeing the negative effects of an unconditional open campus, arguing for the effectiveness of the conditional open campus policy becomes more compelling. The trends in Figure 5 show that following a change in policy from an unconditionally open campus policy to a closed campus policy, the percent of students at the far below basic and below basic performance levels decreases more for the treated group than the control group, and the percent of students at the proficient and advanced levels increases more than the trends in their synthetic control groups. Z-scores go up for those grade-school units which changed their policy from an unconditional to a closed campus policy, in comparison to the synthetic controls.

6.2 Changes in High School Administration Coinciding with Changes in Open/Closed Campus Policy

The identification assumption of the regressions presented in Section 5 is that students in the treated grade-school units are not experiencing any other changes at the same time that their open/closed campus policy is changing, which may affect their academic performance. One potential cause for concern is that changes

Table 8: Synthetic Control Method - The Effect of Unconditional/Conditional Open Campus Policy on Mean Scaled Score - by Subgroup

	English Language Arts				All Mandatory Exams			
Subgroup	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**N**	**R^2**	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**N**	**R^2**
All Students	-0.066***	0.046*	2,045	0.96	-0.053***	0.065**	4,368	0.81
	(0.017)	(0.026)			(0.017)	(0.025)		
Economically Disadvantaged	-0.047**	0.082***	1,663	0.84	-0.039*	0.094***	3,230	0.59
	(0.022)	(0.025)			(0.023)	(0.026)		
Not Economically Disadvantaged	-0.085***	0.053	1,771	0.94	-0.066***	0.070**	3,624	0.78
	(0.026)	(0.037)			(0.024)	(0.031)		
Black	-0.142**	0.179**	458	0.83	-0.099	0.156**	782	0.78
	(0.068)	(0.069)			(0.061)	(0.064)		
Hispanic	-0.058**	0.042	1,732	0.84	-0.047*	0.055*	3,207	0.58
	(0.023)	(0.029)			(0.026)	(0.031)		
White	-0.086***	-0.018	1,675	0.87	-0.071***	0.007	3,098	0.65
	(0.024)	(0.045)			(0.023)	(0.039)		
Male	-0.078***	0.029	2,003	0.94	-0.061***	0.056*	3,999	0.80
	(0.021)	(0.035)			(0.021)	(0.031)		
Female	-0.062***	0.054**	2,000	0.96	-0.050***	0.068***	4,005	0.82
	(0.017)	(0.023)			(0.017)	(0.023)		
Parents w/o High School	-0.018	0.086***	979	0.62	-0.016	0.094***	1,702	0.47
	(0.029)	(0.031)			(0.028)	(0.031)		
Parents w/ High School	-0.081***	-0.001	1,080	0.75	-0.058**	0.058	2,004	0.60
	(0.024)	(0.038)			(0.024)	(0.040)		
Parents w/ Some College	-0.074***	-0.030	1,429	0.75	-0.041*	0.027	2,687	0.58
	(0.023)	(0.036)			(0.023)	(0.033)		
Parents College Graduates	-0.024	0.050	1,071	0.86	-0.009	0.069	1,891	0.69
	(0.026)	(0.054)			(0.024)	(0.045)		
Parents Post-Graduates	-0.071**	0.147	693	0.90	-0.065**	0.067	1,091	0.73
	(0.033)	(0.115)			(0.033)	(0.070)		

Notes:

Dependent variable is the average Z-Score for students at the school-grade-year-test level. Each row within the ELA/mandatory splits represents a single regression for a specific subgroup. Regressions are weighted by the number of students in every school-grade-year-exam-subgroup level, in addition to the weights assigned from the synthetic control method. Time-varying school and school-grade characteristics are controlled for: percent black, percent Hispanic, percent white, and total grade enrollment at the grade level and percent eligible for free or reduced price meals and total school enrollment at the school level. Additional controls include four fourth-order polynomials in time interacted with: a dummy for a change in policy, with percent white, with total school enrollment and with free or reduced meal eligibility in the earliest year the school-grade is observed. All regressions include fixed effects at the school, year, grade and joint year-grade level. Regressions for the mandatory exams (last three columns) also include exam fixed effects. Mandatory CST Exams includes the following exams: English Language Arts (Grades 9-11), Science (Grade 10), World History (Grade 10), and U.S. History (Grade 11). Standard errors clustered at the school-grade level are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

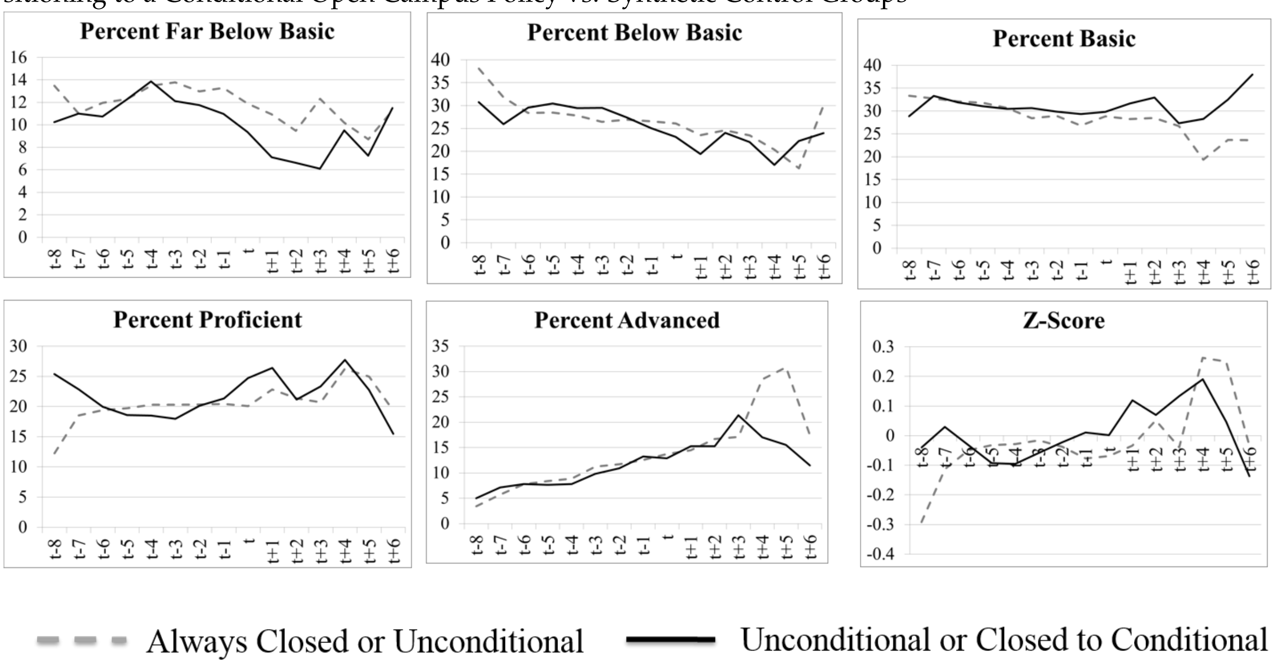
Table 9: Synthetic Control Method - The Effect of an Unconditional/Conditional Open Campus Policy on Percent of Test Takers at the Five Performance Levels

Performance Level	Far Below Basic	Below Basic	Basic	Proficient	Advanced
			English Language Arts CST Exam		
Unconditional Open Campu	1.452***	0.887**	0.341	-1.017*	-1.563***
	(0.530)	(0.429)	(0.499)	(0.580)	(0.514)
Conditional Open Campus	-1.100	-1.365**	1.434*	1.247	-0.088
	(1.005)	(0.637)	(0.843)	(0.818)	(0.722)
P-Value for Difference between Coefficient Estimates	0.0079	0.0007	0.1557	0.0040	0.0182
Fixed Effects	S,Y,G,YG	S,Y,G,YG	S,Y,G,YG	S,Y,G,YG	S,Y,G,YG
Weighted Mean of Dependent Variable	11.07	15.10	27.57	25.16	21.14
Observations	2,089	2,054	2,040	2,068	2,096
R-squared	0.86	0.91	0.86	0.83	0.97
			Mandatory CST Exams		
Unconditional Open Campu	0.888	0.551	0.774	-0.889	-1.286***
	(0.561)	(0.519)	(0.553)	(0.599)	(0.477)
Conditional Open Campus	-1.765**	-2.373***	2.255***	2.254***	-0.244
	(0.854)	(0.722)	(0.777)	(0.771)	(0.593)
P-Value for Difference between Coefficient Estimates	0.0007	0.0001	0.0431	0.0002	0.0646
Fixed Effects	S,Y,G,YG,T	S,Y,G,YG,T	S,Y,G,YG,T	S,Y,G,YG,T	S,Y,G,YG,T
Weighted Mean of Dependent Variable	10.95	18.13	27.86	24.29	18.96
Observations	4,272	4,271	4,206	4,272	4,319
R-squared	0.71	0.72	0.55	0.55	0.88

Notes:

Dependent variable is the percent of students at the school-grade-year-test level at the given performance level. Regression specifications are as in Table 8. Fixed Effects Codes: S - School Fixed Effects; Y - Year Fixed Effects; G - Grade Fixed Effects; T - Test Fixed Effects; YG - Joint Year-Grade Fixed Effects. Standard errors clustered at the grade-school level are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

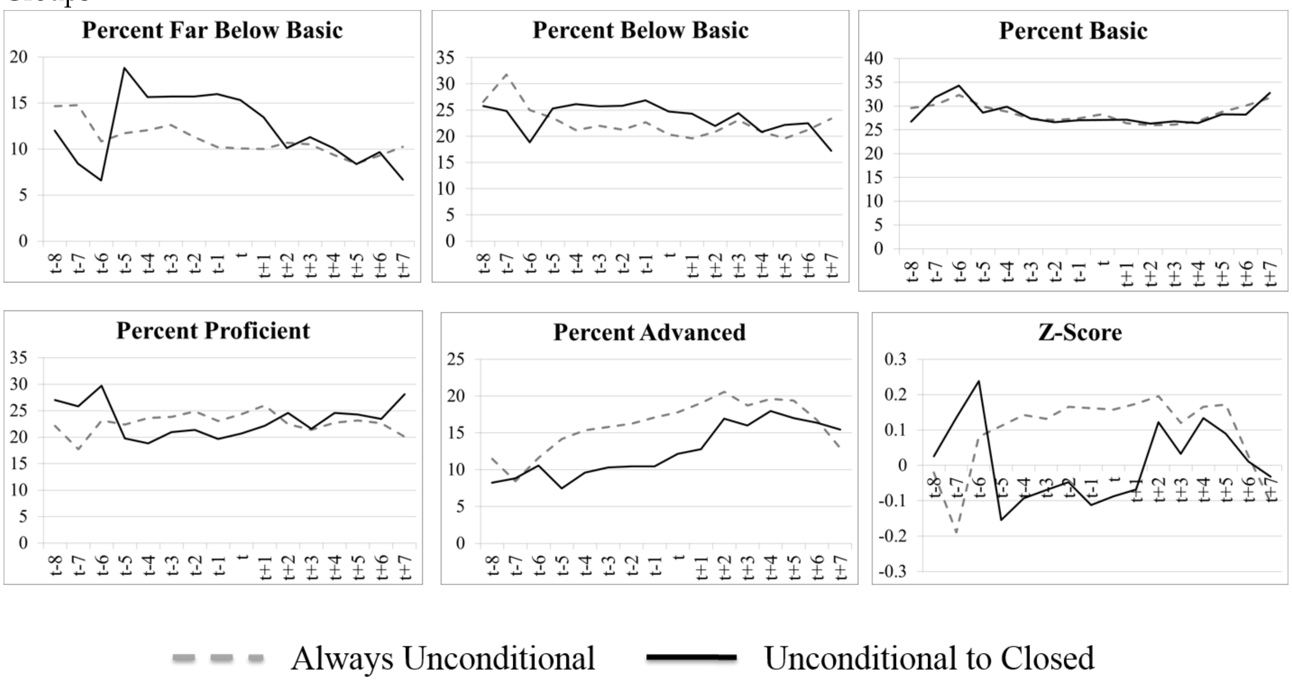
Figure 4: Trends in the Percent at the Five Performance Levels for Mandatory Exams - Grade-Schools Transitioning to a Conditional Open Campus Policy vs. Synthetic Control Groups



Notes:

The figure above presents the average percent of students in each of the five performance levels, as well as average Z-Scores (bottom right), for the Mandatory exams among grade-school units which switched to a conditional open campus policy during the sample period (solid line) and these grade-school units' synthetic controls (dotted line). The horizontal axis is the number of years before or after a change at the grade-school unit in the open/closed campus policy, with *t* representing the first year after the change.

Figure 5: Trends in the Percent at the Five Performance Levels for the Mandatory Exams - Grade-Schools Transitioning from an Unconditional Open Campus Policy to a Closed Campus Policy vs. Synthetic Control Groups



Notes:

The figure above presents the average percent of students in each of the five performance levels, as well as average Z-Scores (bottom right), for the Mandatory exams among grade-school units which switched from an unconditional open campus policy to a closed campus policy during the sample period (solid line) and these grade-school units' synthetic controls (dotted line). The horizontal axis is the number of years before or after a change at the grade-school unit in the open/closed campus policy, with *t* representing the first year after the change.

Table 10: Correlation between Changes in Open/Closed Campus Policy and Administrative Changes

Dependent Variable: Change in Open/Closed Campus Policy	School Level	School Level	Grade-School Level	Grade-School Level
Administrative Change This Year	-0.002		-0.004	
	(0.008)		(0.003)	
Administrative Change Last Year		0.022**		0.015***
		(0.011)		(0.004)
Fixed Effects	Year	Year	Year	Year
Number of Observations	2290	1832	9160	7328

Notes:
The dependent variable is a dummy variable for there being a change in the open/closed policy. "Administrative Change This Year" represents a dummy variable receiving the value of 1 if an administrative change occurred during the year of the observation. "Administrative Change Last Year" represents a dummy variable receiving the value of 1 if an administrative change occurred during the previous year. The first two columns present results from regressions run at the school level and the last two columns present regressions run at the school-grade level. The point estimates are from probit regression, and they represent the marginal change in the probability of changing the open/closed campus policy when a new administration is introduced. *** p<0.01, ** p<0.05, * p<0.1

in open/closed campus policies are occurring shortly after or simultaneous to a change in the schools' administration. A change in a school principal may result in a change in the quality or effectiveness of the school administration, thus affecting student academic outcomes (Coelli and Green (2012)). To address this concern, I collected data from the CDE on all school principal changes for the high schools in the sample for the period 2006 through 2011. Prior to the 2006-2007 school year, CDE has very partial data on school administration changes.

Probit regressions were run with the dependent variable being a dummy receiving the value one if a change took place in a school/grade-school's open campus policy that school year and the independent variable being a dummy indicating whether there was an administrative change in the school that same year, or the previous year. Regressions controlling for administrative changes from the previous school-year, rather than the current school-year, were specified to account for the possibility that it may take a year to implement drastic changes within the school, such as changing its open/closed campus policy. The results, presented in Table 10, show that while there is no correlation between experiencing an administrative change in a specific year and experiencing a change in an open/closed campus policy that same year, there is a very strong and positive correlation between a school experiencing an administration change the previous school-year and experiencing a change in its open/closed campus policy, compared to schools not experiencing an administrative change. Due to the positive findings concerning the effect of administrative change on changes in the open/closed campus policy the following school-year, the regressions presented in Section 5 were run with the addition of a dummy for each period after a change in a school's administration occurred. This resulted in adding four dummy variables to the regressions, as schools in the sample experienced up to four administration changes between the school years 2006-2007 and 2010-2011, for which administrative changes data is available.

Table 11 presents the analysis for mandatory-exam Z-Scores, with the addition of dummy variables for administration changes in the previous school year. The results in the first four columns are for regressions using the entire sample, while controlling for administrative changes in the regression specification, and the results in the last four columns are for the synthetic control method regressions, while accounting for administrative changes. Although the sample size decreased substantially, due to the availability of administrative change data only post-2006, the results presented in Section 5.1 still hold: there are statistically significant differences between the unconditional and conditional open campus estimates, indicating that the incentive scheme behind the conditional open campus policy improves Z-Scores. Furthermore, for most subgroups, there is a qualitative difference between the effect of the unconditional and conditional open campus policies, in comparison to a closed campus policy.[40]

6.3 School Districts with a Single High School

As discussed in Section 4.2, a large concern with the identification in this study is that students with certain characteristics that are correlated with academic performance select into high schools with specific policies. While the results reported in Section 5 attempt to address this concern through controlling for separate flexible time trends based on schools' demographic characteristics, an additional approach to address some of this concern is to limit the sample used for the analysis to represent students who have very limited choice in terms of their high school. These are students who are in school districts which have one single high school. Out of 255 school districts in the sample, 93 were identified as school districts with a single high school. Table 12 presents results for regressions with a sample of schools that are single high schools within their school district. According to Table 12, the qualitative results from the previous sections still hold with the limited sample of single high schools within a school district. This is although the sample size has decreased substantially. Quantitatively, some of the results appear to be of a much larger magnitude, with the effect of the conditional open campus policy on the black student population particularly standing out. For the black population, the subset of the schools that are single high schools and have a sufficiently large black population such that their test score results can be reported is particularly small. It may be that for this specific sample the effect of the conditional open campus is anomalous. For the mandatory exams, some of the results are also significantly greater in magnitude than those reported in previous results.[41]

For performance levels, results for the sample of single high schools lost their statistical significance for ELA but remained for the mandatory exams, although at larger magnitudes. Dropout rates results were

[40] The results for ELA exams, while accounting for administrative changes, were also very similar to the results presented in Table 5, including implementation of the synthetic control method. For the five performance levels, the results for mandatory exams were maintained, but the results for ELA exams were much less statistically significant, potentially due to loss of statistical power, as the sample size decreased when accounting for administrative changes. For the ELA results, while accounting for administrative changes, see Table A.2 in the Appendix.

[41] The weighted average Z-Scores for the various subgroups in the sample of single high schools were not significantly different from those of the entire sample.

Table 11: The Effect of a Conditional/Unconditional Open Campus Policy on Mean Scaled Scores for Mandatory Exams - Adding Dummy Variables to Account for Administrative Changes

	Entire Sample				Synthetic Control Method			
Subgroup	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**N**	**R^2**	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**N**	**R^2**
All Students	-0.005	0.077***	14,393	0.80	-0.047**	0.066**	2,550	0.82
	(0.026)	(0.026)			(0.023)	(0.026)		
Economically Disadvantaged	-0.013	0.105***	12,728	0.63	-0.027	0.100***	1,978	0.62
	(0.025)	(0.026)			(0.032)	(0.034)		
Not Economically Disadvantaged	0.003	0.071**	13,459	0.73	-0.040	0.076**	2,080	0.78
	(0.034)	(0.031)			(0.031)	(0.031)		
Black	0.021	0.100*	5,656	0.72	0.071	0.198	500	0.77
	(0.047)	(0.054)			(0.064)	(0.128)		
Hispanic	0.015	0.073**	12,722	0.65	-0.048	0.032	1,946	0.62
	(0.030)	(0.032)			(0.031)	(0.033)		
White	-0.027	0.066**	12,188	0.65	-0.071***	0.054	1,777	0.66
	(0.029)	(0.032)			(0.025)	(0.038)		
Male	-0.010	0.083***	14,011	0.78	-0.043	0.060*	2,350	0.80
	(0.026)	(0.027)			(0.027)	(0.031)		
Female	-0.000	0.070**	14,065	0.77	-0.052**	0.070**	2,355	0.80
	(0.029)	(0.029)			(0.023)	(0.028)		
Parents w/o High School	-0.024	0.068*	8,866	0.56	-0.086***	0.040	1,047	0.50
	(0.027)	(0.036)			(0.032)	(0.036)		
Parents w/ High School	-0.057**	0.037	11,163	0.58	-0.053	0.084*	1,221	0.64
	(0.028)	(0.037)			(0.033)	(0.049)		
Parents w/ Some College	-0.015	0.052*	11,977	0.58	-0.050	0.072*	1,577	0.61
	(0.030)	(0.029)			(0.034)	(0.039)		
Parents College Graduates	0.002	0.077**	11,045	0.63	-0.010	0.101*	1,096	0.69
	(0.033)	(0.035)			(0.046)	(0.058)		
Parents Post-Graduates	-0.084**	0.039	8,344	0.68	-0.098**	-0.105	639	0.78
	(0.037)	(0.040)			(0.044)	(0.096)		

Notes:

Dependent variable is the average Z-Score for students at the school-grade-year-test level. Each row represents a single regression for a specific subgroup. The first three columns are results for OLS specifications, and the last three columns are results for synthetic controls specifications. Regressions are weighted by the number of students in every school-grade-year level, in addition to the weights assigned from the synthetic control method, when in use. Time-varying school and school-grade characteristics are controlled for: percent black, percent Hispanic, percent white, and total grade enrollment at the grade level and percent eligible for free or reduced price meals and total school enrollment at the school level. Additional controls include four fourth-order polynomials in time interacted with: a dummy for a change in policy, with percent white, with total school enrollment and with free or reduced meal eligibility in the earliest year the school-grade is observed. All regressions include fixed effects at the school, year, grade and joint year-grade and exam level. Mandatory CST Exams includes the following exams: English Language Arts (Grades 9-11), Science (Grade 10), World History (Grade 10), and U.S. History (Grade 11). Standard errors clustered at the school-grade level are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Table 12: The Effect of a Conditional/Unconditional Open Campus Policy on Mean Scaled Scores - School Districts with One High School

	English Language Arts CST Exam				Mandatory CST Exams			
Subgroup	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**N**	$\mathbf{R^2}$	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**N**	$\mathbf{R^2}$
All Students	-0.036	0.104	2,321	0.92	-0.008	0.186***	4,936	0.73
	(0.023)	(0.071)			(0.028)	(0.056)		
Economically Disadvantaged	-0.058**	0.098**	2,172	0.71	-0.032	0.171***	4,003	0.50
	(0.026)	(0.045)			(0.029)	(0.034)		
Not Economically Disadvantaged	-0.015	0.119	2,145	0.87	0.009	0.196**	4,359	0.65
	(0.027)	(0.112)			(0.034)	(0.097)		
Black	0.086	0.527***	557	0.74	0.174*	0.186	886	0.64
	(0.091)	(0.192)			(0.091)	(0.220)		
Hispanic	-0.023	0.151***	2,142	0.77	0.017	0.222***	3,953	0.56
	(0.027)	(0.046)			(0.028)	(0.040)		
White	-0.044	-0.047	2,107	0.85	-0.025	0.030	4,126	0.61
	(0.031)	(0.074)			(0.032)	(0.059)		
Male	-0.015	0.119	2,308	0.89	0.014	0.205***	4,624	0.70
	(0.038)	(0.094)			(0.036)	(0.074)		
Female	-0.055**	0.103**	2,310	0.92	-0.027	0.173***	4,670	0.74
	(0.021)	(0.052)			(0.026)	(0.039)		
Parents w/o High School	-0.052	0.093	1,630	0.60	-0.022	0.165***	2,602	0.45
	(0.039)	(0.059)			(0.045)	(0.051)		
Parents w/ High School	-0.027	0.031	1,993	0.65	-0.018	0.104*	3,333	0.50
	(0.049)	(0.066)			(0.047)	(0.061)		
Parents w/ Some College	-0.017	0.007	2,059	0.71	0.010	0.088	3,739	0.51
	(0.026)	(0.072)			(0.026)	(0.056)		
Parents College Graduates	0.032	0.035	1,759	0.76	0.049	0.083	3,192	0.57
	(0.042)	(0.071)			(0.048)	(0.060)		
Parents Post-Graduates	0.004	0.096	1,364	0.77	-0.020	0.096	2,293	0.59
	(0.044)	(0.146)			(0.059)	(0.176)		

Notes:

The sample is limited to schools that are the only high school within their school district. Dependent variable is the average Z-Score for students at the school-grade-year-test level. Each row represents a single regression for a specific subgroup, either for a regression with ELA test score results (first four columns), or with all mandatory exams' results (last four columns). Regressions are weighted by the number of students in every school-grade-test-year level. Time-varying school and school-grade characteristics are controlled for: percent black, percent hispanic, percent white, and total grade enrollment at the grade level and percent eligible for free or reduced price meals and total school enrollment at the school level. Additional controls include four fourth-order polynomials in time interacted with: a dummy for a change in policy, with percent white, with total school enrollment and with free or reduced meal eligibility in the earliest year the school-grade is observed. All regressions include fixed effects at the school, year, grade and joint year-grade level, and for mandatory exams, there are fixed effects at the exam level. Mandatory CST Exams includes the following exams: English Language Arts (Grades 9-11), Science (Grade 10), World History (Grade 10), and U.S. History (Grade 11). Standard errors clustered at the school-grade level are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

not maintained for the sample of single high schools. In particular, the coefficient estimates on unconditional and conditional open campus policies were negative although not statistically significant, and at the grade-level, there were no statistically significant results, with the exception of the estimated effect of the unconditional open campus policy for the ninth grade, which was negative.

7 Concluding Remarks

Economists and policy makers have devoted considerable efforts toward understanding how to improve children's school performance. A large part of the existing economics literature has focused on students' school environment and less so on intrinsically motivating students to invest more effort in schooling.[42] In more recent years, economists have also been examining the effectiveness of student incentive schemes, where students are rewarded in exchange for academic outcomes. This paper contributes to the existing literature on the determinants of school performance by evaluating the effect of open/closed campus policies in high schools on student outcomes. Furthermore, because many open campus policies are conditional on students attaining certain academic or behavioral requirements, this paper also contributes to the more recent investigation in the economics of education literature on student incentive schemes and how students can be motivated to invest optimally in their schooling.

The results show that the direction of the effect of an open campus policy depends on whether the policy is conditional on students meeting academic or behavior requirements or unconditional. The evidence concerning the effectiveness of conditional open campus policies in incentivising students to improve academic performance supports past findings that students respond to incentives. This paper provides further evidence that incentivising students through short-term rewards, not related to their prospects in life or their personal sense of achievement, but rather just to being eligible to eat off-campus for lunch, may be effective in improving student academic outcomes. This paper may also provide evidence on the high value teenagers attribute to their individual autonomy, as going off campus can be seen as a realization of that value.

The main difference between this paper and most of the past literature on incentivising students is that the incentive scheme analyzed here is virtually costless.[43] This is particularly the case in comparison to other incentive schemes evaluated in past literature, which provide monetary rewards to students (Angrist and Lavy (2009); Fryer (2011); Bettinger (2012)), and are therefore quite costly.[44,45] Thus, conditional open campus policies can serve as a cost-effective means to improving student academic outcomes. Future re-

[42]See Angrist and Lavy (1999) and Hoxby (2000) regarding class size, Angrist and Lang (2004) regarding peer effects, Rockoff (2004) regarding teacher quality, and Lavy (2009) on teacher performance-related pay.

[43]There are some minimal costs associated with monitoring conditional open campus policies, to make sure those who are not eligible to leave campus are not able to leave.

[44]Two exception to this are Barua and Vidal-Fernandez (2012) on the effects of conditioning teen driving privileges on staying in school and Vidal-Fernández (2011) on the effect of requiring student athletes to pass a certain number of subjects in order to be allowed to participate in school sports on high school graduation rates.

[45]Gneezy et al. (2011) review past literature on incentives for academic outcomes, and conclude that the small size of the effects do not justify the costs associated with most of the incentive schemes.

search can investigate the effects of other policies, which provide incentives, though not through monetary or financial means, in improving student outcomes.

With the increase in child and adolescent obesity rates, there has been growing concern on the impact of open campus policies, which may increase student access to fast food establishments, on student nutrition and health outcomes.[46] A full evaluation of a conditional open campus policy should also take into account the potential negative effect of this policy through exposing high school students to unregulated foods outside of school (e.g. fast food establishments).[47] Additional work is currently under way, using the data form this paper on California high schools' open/closed campus policies, for the purpose of investigating the effect of an open campus policy on students' fitness outcomes.

[46]See Neumark-Sztainer et al. (2005) for an example of a paper from the public health literature showing that open campus policies in high schools result in students eating more frequently at fast food establishments.

[47]See Currie et al. (2010) for an analysis on the impact of high school proximity to fast food establishments on California ninth graders' BMI outcomes.

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Appendix

Comparing High Schools which Completed the Survey and the Target High Schools

Table A.1 compares several key characteristics/variables between high schools which completed the survey and high schools in the target school list to which the survey was sent. Using figures mostly as of 2011, it can be seen that the average enrollment is very similar between the survey respondents and the target high schools. The average free and reduced price meal eligibility is lower among the survey respondents, in comparison to the target high schools, and charter schools were less likely to respond to the survey, compared to their representativeness in the target school list. Also, 2011 English Language Arts CST scores and dropout rates show that Survey Respondent high schools had higher academic performance.

Accounting for Administrative Changes - ELA Results

Table A.2 is the same as Table 11 in Section 6.2, only for ELA rather than for all mandatory exams. The results from the initial analysis in Section 5.1 are maintained for the most part.

Robustness Checks for Dropout Rates

Table A.3 presents results for dropout rates from two of the robustness checks discussed in Section 6. The results in the first two columns - the synthetic control method (without accounting for administrative changes) - are consistent with the results presented in Section 5.2, and show that both a conditional and unconditional open campus policy decrease dropout rates, when compared to a closed campus policy, although the statistical significance decreases slightly, in comparison to Table 5.2. When examining the effect by grade-level, the negative effect on the dropout rate is statistically significant only for tenth and eleventh grade for the unconditional open campus policy and for the ninth grade in the conditional open campus policy. The last four columns of Table A.3 present the analysis for dropout rates - both with all the controls in the sample and with the synthetic controls - with the addition of the dummy variables for post-administrative changes periods. Here too, the results are maintained and we see that an open campus policy reduces the dropout rate, whether it is conditional or unconditional. For the grade-specific effects, while all the point-estimates are negative, they vary in their statistical significance across the two methods. [48]

[48] Figures which compare dropout rate trends between treated and synthetic controls are not as straightforward as those presented for the test scores and resulted in significant volatility. This is probably due to several reasons: first, because of the negative effect on dropout rates both in the conditional and unconditional open campus policies, the trendline for treatment could not be mutual for grade-school units that changed to a conditional open campus policy from either a closed or unconditional open campus policy, so

Table A.1: Characteristics of High Schools who Responded to Survey vs. High Schools Targeted Initially

Variable	Survey Respondents	Target Schools w/o Response	P-Value for T-Test - Differences
Number of Schools	476	603	
Number of Students in School	1570.5	1624.7	0.356
	(878.89)	(1011.21)	
Free and Reduced Price Meal	0.434	0.552	0.000
Eligibility - October 2011	(0.258)	(0.264)	
Charter Schools	0.057	0.088	0.052
	(0.232)	(0.283)	
Fraction Hispanic - 2011	0.409	0.534	0.000
	(0.260)	(0.277)	
Fraction Black - 2011	0.061	0.078	0.010
	(0.091)	(0.116)	
Fraction White - 2011	0.359	0.250	0.000
	(0.255)	(0.242)	
Dropout Rate, 9th Grade - 2011	0.731	1.279	0.000
Weighted Mean	(1.023)	(1.733)	
Dropout Rate, 10th Grade - 2011	0.858	1.455	0.000
Weighted Mean	(1.169)	(2.033)	
Dropout Rate, 11th Grade - 2011	1.180	1.948	0.000
Weighted Mean	(1.604)	(2.568)	
Dropout Rate, 12th Grade - 2011	3.764	5.631	0.000
Weighted Mean	(3.905)	(5.677)	
English Language Arts Z-Score -	0.167	-0.013	0.000
2011 Weighted Mean	(0.387)	(0.387)	

Notes:

"Survey Respondents" includes all schools that fully responded to the survey, even if they were eventually excluded from the sample (e.g., if the school changed a location during the sample period). Weighted means are weighted by the number of students in each grade-school level. T-tests for differences between weighted means are conducted by running a weighted regression with the group's mean as the dependent variable, and running a t-test for whether the coefficient for being in one group is different from zero.

Table A.2: The Effect of a Conditional/Unconditional Open Campus Policy on Mean Scaled Scores for ELA - Adding Dummy Variables to Account for Administrative Changes

	Entire Sample				Synthetic Control Method			
Subgroup	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**N**	**R^2**	**Unconditional Open Campus Policy**	**Conditional Open Campus Policy**	**N**	**R^2**
All Students	-0.020	0.036	6,322	0.96	-0.056***	0.055*	1,151	0.97
	(0.021)	(0.023)			(0.020)	(0.032)		
Economically Disadvantaged	-0.029	0.092***	6,040	0.85	-0.037	0.099**	12,728	0.63
	(0.022)	(0.026)			(0.032)	(0.039)		
Not Economically Disadvantaged	-0.015	0.014	6,063	0.94	-0.045*	0.072**	13,459	0.73
	(0.027)	(0.028)			(0.023)	(0.036)		
Black	-0.018	0.089*	3,340	0.81	-0.023	0.174	5,656	0.72
	(0.048)	(0.053)			(0.083)	(0.149)		
Hispanic	-0.003	0.053	6,060	0.87	-0.058**	0.021	12,722	0.65
	(0.027)	(0.033)			(0.028)	(0.038)		
White	-0.040*	0.001	5,692	0.91	-0.068***	0.062	12,188	0.65
	(0.022)	(0.028)			(0.023)	(0.041)		
Male	-0.022	0.032	6,295	0.94	-0.051**	0.045	14,011	0.78
	(0.022)	(0.026)			(0.025)	(0.040)		
Female	-0.022	0.037	6,305	0.95	-0.062***	0.063*	14,065	0.77
	(0.024)	(0.027)			(0.022)	(0.035)		
Parents w/o High School	-0.030	0.070**	4,833	0.75	-0.072**	0.055	8,866	0.56
	(0.027)	(0.036)			(0.035)	(0.046)		
Parents w/ High School	-0.075***	0.014	5,635	0.78	-0.073**	0.055	11,163	0.58
	(0.026)	(0.033)			(0.033)	(0.048)		
Parents w/ Some College	-0.048*	0.002	5,748	0.82	-0.070**	0.050	11,977	0.58
	(0.026)	(0.029)			(0.031)	(0.047)		
Parents College Graduates	-0.006	0.028	5,410	0.86	-0.014	0.111	11,045	0.63
	(0.031)	(0.038)			(0.038)	(0.071)		
Parents Post-Graduates	-0.075**	-0.021	4,583	0.88	-0.120**	-0.073	8,344	0.68
	(0.032)	(0.041)			(0.047)	(0.091)		

Notes:
Regression specifications as in Table 11, except that there are no exam fixed effects. *** p<0.01, ** p<0.05, * p<0.1

Table A.3: The Effect of an Unconditional/Conditional Open Campus Policy on High School Dropout Rates - Synthetic Control Method and Accounting for Administrative Changes

Dependent Variable: Dropout Rate	Not Accounting for Admin Changes		Accounting for Admin Changes			
	Synthetic Control Method		Entire Sample		Synthetic Control Method	
Unconditional Open Campus	-0.543**		-1.342***		-0.951***	
	(0.248)		(0.412)		(0.343)	
Conditional Open Campus	-0.611*		-1.125**		-0.719*	
	(0.364)		(0.502)		(0.419)	
Unconditional Open Campus - Grade 9		-0.225		-0.533*		-0.103
		(0.245)		(0.291)		(0.300)
Unconditional Open Campus - Grade 10		-0.572**		-1.074**		-0.969*
		(0.280)		(0.493)		(0.561)
Unconditional Open Campus - Grade 11		-0.708*		-1.532***		-1.553**
		(0.407)		(0.540)		(0.656)
Unconditional Open Campus - Grade 12		-0.779		-2.770**		-1.987**
		(0.784)		(1.371)		(0.987)
Conditional Open Campus - Grade 9		-0.984**		-1.148		-0.579
		(0.400)		(0.812)		(0.413)
Conditional Open Campus - Grade 10		-0.574		-1.498**		-0.394
		(0.432)		(0.703)		(0.677)
Conditional Open Campus - Grade 11		-0.401		-1.613***		-0.839
		(0.476)		(0.608)		(0.770)
Conditional Open Campus - Grade 12		-1.012		-2.305*		-2.015*
		(0.853)		(1.377)		(1.037)
Fixed Effects	S, Y, G, YG	S, Y, G, YG	S, Y, G, YG	S, Y, G, YG	S, Y, G, YG	S, Y, G, YG
Observations	2,781	2,781	8,783	8,783	1,577	1,577
R-squared	0.64	0.64	0.60	0.61	0.75	0.75

Notes:

Dependent variable is the dropout rate (in percent) for a year-school-grade observation. Regression specifications are as in Table 8 (first two columns) or as in Table 11 (last four columns). Fixed Effects Codes: S - School Fixed Effects; Y - Year Fixed Effects; G - Grade Fixed Effects; T - Test Fixed Effects; YG - Joint Year-Grade Fixed Effects. Standard errors clustered at the school-grade level are in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

the assessment of the transitions was for a smaller number of grade-school units; second, the negative effect of the conditional open campus policy is concentrated on just the ninth grade, which should limit even more the number of treated units in trends graphs.