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College Enrollment and Mandatory FAFSA Applications: Evidence from Louisiana

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Abstract

Barriers to accessing financial aid may keep students from matriculating to college. To test whether FAFSA completion is one of these barriers, I utilize a natural experiment brought about by a Louisiana mandate for seniors to file the FAFSA upon graduation from high school. Exploiting pre-treatment FAFSA completion rates as a treatment intensity in a dosage differences-in-differences specification, I find that a 10 percentage point lower pre-treatment FAFSA completion rate for a school implies a 1 percentage point larger increase in post-mandate college enrollment.

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Despite several decades in the spotlight, the Free Application for Federal Student Aid (FAFSA) remains an important barrier to college enrollment for disadvantaged students. I explore the extent that the FAFSA completion task matters and whether governments can reasonably induce matriculation via FAFSA completion by studying a unique policy implemented by the Louisiana Department of Education (LDOE). This policy mandates all high school graduates file a FAFSA in order to meet their high school graduation requirements as of the 2017-18 school year.

The initial differences in the FAFSA completion rates during the pre-treatment period across Louisiana schools provides quasi-random variation in the policy's impact. Intuitively, the policy affected schools where few students were already filing the FAFSA more than schools where nearly all students were already filing the FAFSA (and likely college bound). Utilizing this variation in pre-treatment FAFSA completion rate as a treatment intensity, I estimate a differences-in-differences framework on publicly available school level data provided by the LDOE and the Office of Student Financial Aid. This identification strategy effectively compares the change in enrollment rates over time between schools that had low pre-treatment FAFSA completion rates (more treated) to the change in enrollment rates for schools that had high pre-treatment FAFSA completion rates (less treated).

Previous experiments have documented, with varying degrees of success, that the FAFSA and its complexity have acted as a barrier to college enrollment (Dynarski, 2003, 2000; Cornwell et al., 2006; Dynarski and Scott-Clayton, 2006; Bettinger et al., 2012; Bird et al., 2019; Page et al., 2018; Castleman and Page, 2016). Notably, Bettinger et al. (2012) found that low income high school seniors were significantly more likely to enroll (and receive aid and persist in college) after researchers almost entirely completed FAFSAs for experimental participants. Following the Bettinger et al. (2012) experiment, there have been several attempts to nudge students into filing their FAFSA on time, typically through the use of text messaging reminders (Castleman and Page, 2016; Page et al., 2018; Bird et al., 2019). The idea behind these nudges is primarily informational - to notify students of a task that needs to be completed and to offer easy access to information that will help them complete their task. The largest study to date, which offers insight both into the relative importance of the information channel as well as the scalability of FAFSA nudges, is Bird et al. (2019).

They find precisely estimated null effects of nudging college intending high school students to complete the FAFSA. Their results seem to fit with more recent evidence that information interventions alone are less effective than “boots on the ground” approaches for college enrollment behavior (Bergman et al., 2019; Carrell and Sacerdote, 2017; Oreopoulos and Petronijevic, 2018).

A priori, the effectiveness of the Louisiana FAFSA mandate is ambiguous. Given that the most successful FAFSA experiments have been concentrated among the most likely to be affected by a FAFSA intervention (students eligible for aid but for whom FAFSA filing rates were low) and have been highly personalized, it may be unreasonable to expect much enrollment behavior change due to a blanket state-wide policy. Conversely, the previous research suggests that the filing of the FAFSA is far more successful in inducing matriculation than just providing information about filing the FAFSA. In this sense, the requirement by the LDOE may be strong enough to then affect college enrollment behavior.

As indication that this mandate was highly successful in increasing FAFSA filing behavior in the short-run, the average Louisiana high school increased its FAFSA completion rate among graduating seniors by 19 percentage points to about 72 percent in the post-policy period. Reduced form results of this policy indicate an increase in college enrollment rate¹ of approximately 1 percentage point for a school with a 10 percentage point lower pre-treatment FAFSA completion rate. Over the baseline enrollment rate average from the pre-treatment period (48 percent), this is a 2 percent increase. Instrumental variables estimation indicates that increasing FAFSA completion rates 10 percentage points increases college enrollment rates by 3 percentage points. There is suggestive evidence the treatment effects were larger and more concentrated among schools with a larger percentage of free and reduced-price lunch students, and that applications for merit-based scholarships also increased.

The interpretation of my reduced form estimates as causal requires the assumption that the time trends for high FAFSA completion rate schools are accurate counterfactuals for time trends in the low FAFSA completion rate schools absent the policy ever being implemented. Event studies, group-specific linear trends, additional controls for heterogeneous

¹Here college enrollment in the first fall following high school graduation is defined as a function of cohort size determined by freshman cohort three years prior - see Section 2 for more details.

trends among subgroups of students, and alternative treatment intensity measures all point to evidence that the assumptions underlying this empirical strategy are reasonable.

The empirical results offer meaningful insights. Namely, FAFSA completion is still an impediment for some students, and that, at scale, governments have the potential to affect FAFSA application behavior and consequently college enrollment behavior. The Louisiana mandate had a stronger effect on increasing FAFSA applications than previous interventions. The estimates of the effect of FAFSA completion on college enrollment based on this mandate fall short of estimates from prior interventions that offered more personalized attention to students and families such as Bettinger et al. (2012), but there is evidence that this mandate did modestly affect college enrollment behavior. A longer discussion follows in Section 6.1.

In addition to the FAFSA completion literature, this paper also contributes to literature on summer melt which generally finds positive effects of interventions during the time between high school graduation and starting college, a period when many students fail to complete all the tasks necessary to start college on time (Roderick et al., 2008; Castleman and Page, 2014; Castleman et al., 2012, 2014, 2015; Castleman and Page, 2015; Page and Gehlbach, 2017). Broadly, it also adds to literature on financial aid and college enrollment that typically finds positive effects of need-based aid on enrollment and to differential college attendance based on socioeconomic status such as Dynarski et al. (2021), Lovenheim and Reynolds (2013), Hoxby and Avery (2012), Hoxby et al. (2013), Andrews et al. (2010), Belley and Lochner (2007), Bergman et al. (2017), Dynarski (2003), McPherson and Schapiro (1991), Nielsen et al. (2010), Mattana (2018), and Page and Scott-Clayton (2016) (a recent literature review) among others.

The remainder of the paper is as follows. Section 1 and 2 offer background information on the Louisiana mandate, data sources, and descriptive statistics. Section 3 outlines a detailed description of the empirical strategy and its identifying assumptions. Section 4 presents the results, and Section 5 provides robustness checks. Section 6 concludes with a detailed discussion of the Louisiana mandate as it relates to previous literature, and implications for policy.

1 Background

Historically, Louisiana has lagged well behind other states in college readiness, ranking among the bottom states in high school graduation rates and in the number of individuals who hold a two- or four-year college degree.² However, Louisiana has also seen significant growth in its secondary outcomes recently. The graduation rate has increased about 11 percent from 2013 to 2018 while the comparable growth in the U.S. is about half that rate (5 percent increase).³ This growth is particularly stark for some subgroups including black and economically disadvantaged students who have seen an increase of 18 percent and 14 percent, respectively, during the same period, and the comparable measure for the U.S. is about an 11 percent and 10 percent increase, respectively.

Recently, the college enrollment rate for high school graduates has maintained relatively stable proportions over time in Louisiana (around 57 percent) and elsewhere (around 66 percent for U.S.). This might not seem like an achievement on face value; however, the increase in the number of students year over year going to college would have to outpace the increase in the number of those graduating high school. In other words, given that graduation rates are increasing so significantly, it remains an accomplishment to simply maintain college enrollment rates. This is more or less confirmed in Louisiana as there are persistent increases in the count of recent high school graduates enrolling in the fall while the U.S. as a whole fluctuates slightly more.⁴ There do not seem to be substantial differences in trends across subgroups in Louisiana. Again, the U.S. is more volatile, but overall the trend seems to be increasing college enrollment among minority groups.⁵

Louisiana's trends in recent years mostly mirror that of the U.S. reflecting greater prioritization of educational attainment over time. Several states including Louisiana have also enacted explicit policies to retain marginal dropouts and to better align high school require-

²Author's calculation from American Community Survey.

³Digest of Education Statistics 2019 from NCES - Table 219.46 access here: https://nces.ed.gov/programs/digest/d19/tables/dt19_219.46.asp

⁴For this reason, and discussed thoroughly in Section 2, I will define college enrollment rates to be a function of cohort size henceforth.

⁵Digest of Education Statistics 2019 from NCES - Table 302.20 access here: https://nces.ed.gov/programs/digest/d19/tables/dt19_302.20.asp

ments to suit college readiness. For example, common policies which were also implemented in Louisiana in the past several years include promoting career and technical education, increasing efforts to provide advanced placement (AP) and dual credit classes, and increasing access to standardized testing for college admissions such as paid and required ACT or SAT exams.

Much more unique to Louisiana is the implementation of a program meant to specifically encourage students to take advantage of state and federal funds and to push students to consider college enrollment via a mandate to file the FAFSA as part of high school graduation.

Across the country, filing the FAFSA is mandatory in order to obtain Pell Grants and subsidized and unsubsidized loans, the three largest types of federal financial aid for college.⁶ The form asks about students' and parents' income and assets in order to determine expected family contribution (EFC).⁷ Then the maximum amount of aid is determined based almost entirely on the cost of attendance (COA) of the college to which the student matriculates and their EFC (Dynarski and Scott-Clayton, 2008). Despite the majority of the calculation coming from just these two measures, students have to answer several questions that may not be applicable to their situation or may be difficult for their families to produce.⁸ The Office of Student Financial Aid has implemented several changes in the last decade to mitigate some of the difficulties in filing FAFSAs efficiently. These changes include allowing submissions to start earlier in the current school year (for aid beginning in the following school year), allowing family income from two years prior instead of current year's income, and the use of IRS data retrieval tool so that students can retrieve their parents' income straight from previous tax filings if they file online.⁹ From application year 2014-15 to 2017-18, the Office of Student Financial Aid reports a stable number of FAFSA submissions of about 1.9 million

⁶Tax credits are also a source of financial aid which are not determined by FAFSA completion.

⁷Parental income is not inquired about in the case of independents. For dependency requirements see <https://studentaid.ed.gov/sa/fafsa/filling-out/dependency>

⁸An example from the 2019-20 form: What were your parents' earnings from work under a Cooperative Education Program offered by a college?

⁹See https://www.irs.gov/pub/irs-utl/oc_irsdataretrievaltoolisnowavailablefor2012v4final.pdf data retrieval tool, implemented starting 2012-13, and <https://blog.ed.gov/2016/08/2-major-fafsa-changes-need-aware/> for the others, beginning in 2016.

per year.¹⁰

Prior to Louisiana's mandate roughly half of high school seniors were filing the FAFSA. This represented a larger proportion of high school seniors than the typical state.¹¹ However, given that so many students were still not filing and that Louisiana offers merit grants which require FAFSA completion, LDOE officials felt that there were too many students losing out on potential merit and need-based financial aid (March, 2016; Kaufman et al., 2018). They worked with the State Board of Elementary and Secondary Education to implement a mandate that all graduating seniors, beginning in the 2017-18 school year, 1) complete and submit a FAFSA; 2) complete and submit a Taylor Opportunity Program, a Louisiana state financial aid program which nests FAFSA completion within its requirements; 3) apply for a waiver; or 4) get written permission from a parent or legal custodian to not file the FAFSA¹² (Louisiana Office of Student Financial Assistance (LOSFA), 2019).

In addition to this requirement, the state provides information on their website on how to file the FAFSA and provides phone assistance in completing the FAFSA (Louisiana Department of Education, 2019b). More locally, there are six regions which may hold events on scholarship information and FAFSA assistance (Louisiana Department of Education, 2019a). Finally, school counselors are expected to explain the process to students and ensure they understand how to file the FAFSA (Kaufman et al., 2018).

In practice, there are two ways in which students demonstrate this requirement. Some schools may simply have the student show the school counselor the FAFSA email confirmation for a submitted FAFSA. Alternatively, school systems can also connect with another Louisiana department, Louisiana Office of Student Financial Assistance, for a list of students who have completed FAFSA applications, though this list may not be comprehensive potentially requiring them to follow up. In general, about 20 percent of graduating seniors

¹⁰FAFSA Data by Demographic Characteristics, Total 18 years or less, reported here: <https://studentaid.gov/data-center/student/application-volume/fafsa-school-state>

¹¹For comparison across states, I divide the total FAFSA completed by June in each state from the Office of Student Financial Aid (see Data section) by the Western Interstate Commission for Higher Education numbers of public and private school students.

¹²LAC 28:CXV.901.7.D Historical Registers can be found: <https://www.doa.la.gov/Pages/osr/reg/register.aspx>

choose to not submit a FAFSA, with the most common alternative being the parental opt out form (example of this form in the Appendix).¹³ Although the mandate is required from the LDOE, the implementation of the policy places the majority of the work on local schools to satisfy the requirements as they see best fit.

2 Data and Descriptive Statistics

The data are school-year observations from three sources: Louisiana Department of Education (LDOE), National Center for Education Statistics (NCES), and the Office of Student Financial Aid (Louisiana Department of Education, 2020a; Federal Student Aid, 2020). Unless otherwise stated, data comprise years 2014 through 2019. For the remainder of the paper, a year listed by itself refers to the graduating year (2013-14, henceforth 2014).

2.1 LDOE

Data from the LDOE include college enrollment, student count totals, ACT scores, graduation rates and expenditures per pupil. These numbers are posted to their website by school and year, and all data were merged to match the primary college enrollment file.

The college enrollment statistics include the number of students who graduated from each high school and, of these graduates, the percentage who enrolled in college in the fall of their graduating year. It additionally reports the percentage of the college enrolled students studying at a two-year or four-year institutions and the percentage enrolled instate. LDOE obtains these estimates from National Student Clearinghouse which reportedly captures 98 percent of all college attendees.¹⁴ For data privacy concerns, some school observations were listed as missing values, typically in cases where the cell size was fewer than 10 students. As such, this paper may not be representative of small schools.

The LDOE reports the percentage enrolled in college as the number of students enrolled in college over the total number of high school graduates. If Louisiana schools maintain the

¹³Information from discussions with LDOE official and from Louisiana Department of Education (2020b).

¹⁴The National Student Clearinghouse coverage of LA colleges and universities over this time period is balanced, allowing for unbiased estimates of the policy's effect on enrollment.

average number of students enrolled in college year over year, but increase their graduation rate, the percentage enrolled in college as a function of high school graduates will decline. Defining percent enrolled in college as college enrollment count over the freshman cohort size three years prior adjusted for movements of students across schools or migration out-of- or into- the state mitigates this issue. The starting point of using freshman cohort is because this is the final year before students have the option to drop out.¹⁵ Henceforth, percentage enrolled in college will refer to percentage as a function of cohort size, with explicit clarifications when necessary, to diminish effects of changes in high school graduation rates on the primary outcome variable.

Practically, I calculate percent enrolled in college as a function of cohort size by taking LDOE-defined percentage enrolled in college (as a function of high school graduates) times graduation rate.¹⁶ However, which students are counted in the graduation rate versus the high school graduate numbers may not be an identically overlapping set as student movements across schools and exceptions may cause the accounting to be different. As such, I additionally report estimates of the percent enrolled in college as a function of high school graduates and enrollment counts in Section 5 as additional robustness checks.

The demographic measurements come from LDOE October Multiple Statistics by Site which reports student counts by grade, total number of white, black, Hispanic, and Asian students attending a particular school for each year. LDOE additionally releases estimated current total expenditures per pupil by school for years 2014 through 2018. These are calculated based on local, state, and federal funds. Also included in these financial files are estimates of the average salary of teachers and number of full time equivalent teachers. I present the financial data in the descriptive statistics, but I do not include them as controls in the main empirical estimation given the financial data is not covered for all post-treatment

¹⁵The freshman cohort size for the current high school graduating seniors is the denominator in the high school graduation rate.

$$\begin{array}{l}
 \text{LDOE \% Enrolled} \\
 \text{Number Enrolled in College} \\
 \hline
 \text{9th Grade Cohort Size} \\
 \hline
 \text{Newly Defined \% Enrolled}
 \end{array}
 \begin{array}{l}
 \text{Number of High School Graduates} \\
 \hline
 \text{9th Grade Cohort Size} \\
 \hline
 \text{Graduation Rate}
 \end{array}
 =$$

years.¹⁷

Additionally, LDOE publishes the average ACT composite scores for a school using each student’s best exam. Because all students are required to take the ACT as of the 2012-13 school year,¹⁸ these averages are representative of the entire school. Again due to privacy concerns, some small school’s ACT scores were coded as missing values. Finally, the graduation rate is available by school for all relevant years. Some rates were suppressed as greater than 95 percent. These were top coded to be 97.5 percent. This represents about 16 percent of school-year observations.

2.2 NCES

The total number of eligible free and reduced-price lunch students divided by the total number of students in the school represents the percent free and reduced-price lunch status of a school between 2014-2019 which are obtained from the NCES Common Core data set (CCD). I employ free and reduced-price lunch status as an alternative treatment intensity measure and to test heterogeneity in treatment effects in additional robustness checks.

2.3 Office of Federal Student Aid

The Office of Federal Student Aid, part of the U.S. Department of Education, started reporting FAFSA completion and submission numbers by school level for the 2015-16 aid application cycle. These data represent the number of “first-time filing applicants who are no older than 19 at the cutoff date who will have received their high school diploma by the start of the school year to which they are applying for aid” (Office of Federal Student Financial Aid, 2019). This file contains the total number of completed FAFSAs through June of the beginning college aid year.¹⁹ The earliest data represent the senior class of 2015,

¹⁷In using just one-year post treatment test the inclusion of the extra control variable for expenditures per pupil doesn’t meaningfully change the outcome.

¹⁸<https://www.louisianabelieves.com/newsroom/news-releases/2014/08/20/report-shows-record-number-of-louisiana-students-achieving-college-level-act-scores>

¹⁹For concreteness, this captures all the FAFSAs completed by June (example: 2015) of the senior’s graduating year (example: school year 2014-15, graduates in 2015) for financial aid beginning for the next school year starting in the fall (example: 2015-16).

and the most recent report contains data for the senior class of 2020. The Office of Federal Student Aid does not report the number of completed FAFSAs for schools that have fewer than five submissions. To reiterate earlier statements, this study may not accurately reflect small schools or schools with extremely low FAFSA completion rates.

The school's completion number in June is divided by the number of high school graduates in the enrollment statistics to obtain a completion rate estimate. Note that these two sums may not cover the same universe of students within a school due to movements during the school year or age differences. Completed FAFSAs are filed correctly while submitted FAFSAs may contain errors. For this reason, I prefer using completed FAFSA rate as opposed to submitted FAFSA rate. In practice, the ratio of completed to submitted FAFSA by June during each of my sample periods is more than 0.9, implying that the vast majority of FAFSAs are completed without error.

2.4 Other Sample Selection

I drop schools coded as special education institutions. This included just four schools in my sample. Excluded from my data set are schools for which the graduating class's freshman cohort size was not available.²⁰ Additionally, two schools were removed for having small total student to teacher ratios (less than 5) or extremely large (greater than 100) ratios.²¹ The basis for this decision is to eliminate schools that may be representing non-traditional students (the former represents a special education setting and the latter removes virtual schools that may be tailored for working/older students).

I create a balanced panel by keeping schools that have the complete set of nonmissing control and outcome variables for specification (1) discussed in Section 3. In practice, this may eliminate smaller schools that had control and outcome variables suppressed due to small sample sizes. It also excludes schools that are non-traditional including charter schools or schools that closed during this time period. This deleted an additional 44 schools from my sample. A list of schools that were dropped from the sample due to the above criteria or any complications in merging is located in the Appendix. Additional data trimming removes

²⁰This included less than 30 schools.

²¹Reported by LDOE as part of their financial statistics.

about 15 percent of the schools that could be matched to the Office of Student financial data leaving exactly 259 schools represented each year. My results are robust to a non-balanced panel as well.

2.5 Descriptive Statistics

For the remainder of the paper, all graphs, tables and equations have been weighted by relative school size so as to represent the average student. Weights are defined to be the average (2014-2017) of the total number of students in a school divided by the number of grades taught.

Table 1 presents descriptive statistics of the schools in my sample partitioned into the quartile ranking of their average (over 2015 and 2016) FAFSA completion rates. Thus the “lowest” column represents the schools that had the smallest completion rate numbers in the pre-treatment period and so on.

Schools that have higher FAFSA completion rates tend to be larger schools (up through third quartile), have better ACT composite scores, higher graduation rates, and higher percentages of high school graduates attending college in the fall. The schools with lower completion rates in the pre-treatment period tend to be more diverse (percentage race is for the whole school not just for seniors) and serve more free and reduced-price lunch students. The students in low completion rate schools also attend two-year institutions more often than four-year universities. However, teacher salary and current per pupil expenditures, both calculated based on 2014-2018, are relatively similar across schools. See Figure A1 and Table A1 in the Appendix for more descriptive statistics by year.

3 Empirical Specification and Identification

Louisiana’s policy that mandates all high school graduates file the FAFSA is expected to increase FAFSA completions more for students attending schools with low pre-treatment FAFSA completion rates. This variation across schools is exploited as a treatment intensity. Intuitively, if FAFSA applications induce students to enroll in college who would not have otherwise, then the FAFSA application requirement should have a larger effect for schools

that have a greater change in FAFSA applications, or those that had lower completion rates prior to the policy. Then the net change over time in the college enrollment rate between schools that had low pre-treatment FAFSA completion rates and high pre-treatment FAFSA completion rates represents the overall reduced form effect of the mandate. I estimate this intent-to-treat effect, represented by β , in the following differences-in-differences equation:

$$Y_{st} = \alpha + \lambda_s + \gamma_t + \beta(1-(\text{Ave FAFSA Completion Rate}))_s * \text{Post}_t + \mu'X_{st} + \epsilon_{st} \quad (1)$$

The level of observation is school (s) - year (t), and outcome variable, Y_{st} , is the percentage of students enrolled in college in the fall as a function of the freshman cohort three years prior as discussed in Section 2. I consider alternative outcome variables and treatment intensity discussed in Section 5.

Treatment intensity is one minus the average FAFSA completion rate in years 2015 and 2016 for each school and is multiplied by Post_t which takes a value one only in the post-treatment periods and zero otherwise.²² School level fixed effects, λ_s , capture any time invariant characteristics that are unique to each school. Additionally, the year fixed effects, γ_t absorb any trends over time that are common across schools. Controls that vary by school and year are included in the vector X_{st} . They are the percentage of a school that is black, white, Hispanic, and Asian, ACT composite scores, and total enrollment and its square. Finally, standard errors are clustered at the school level to control for serial correlation among the error terms, ϵ_{st} (Bertrand et al., 2004; Cameron and Miller, 2015).

When can the reduced form effect, β , be thought of as a causal estimate? Given the fixed effects and school-year varying controls, this requires that there are no other omitted time-varying and school specific characteristics that are correlated with the introduction of this policy, pre-treatment completion rate intensity, and college enrollment. A common way of phrasing this is to assume the schools that had a low pre-treatment completion rate would have had similar changes in college enrollment over time relative to schools with high completion rates had the policy never been implemented, or that the “comparison” schools’ time trends represent an accurate counterfactual for the more “treated” schools. Note that

²²The closer the completion rate gets to 1, or 100%, it becomes part of the control group. It is standard to report estimates where the control group is represented by 0. Thus I define FAFSA completion rate to be 1-(completion rate) so that the control group is reaching 0 and treatment is reaching 1.

the average completion rate is based on the pre-treatment period and as such cannot be endogenous to the implementation of the policy. Moreover, the school fixed effects will capture any time invariant feature of the school that may be correlated with having lower FAFSA completion rates (as determined by pre-treatment time period).²³

One potential threat to identification lies in a policy LDOE implemented beginning in 2014 that tried to update students' career path opportunities.²⁴ If this change prompted students who would have not normally been interested in career paths (maybe those who would have dropped out) to continue their education (typically these career options have dual credit opportunities giving them a head start on a postsecondary degree), then this might be a potential concern. I obtained estimates of career and university diploma paths from 2015-19. In the Appendix, I show that the relative proportion of students electing to graduate with a career or university diploma maintains a relatively stable proportion.

A related threat involves the increases in the total number of students graduating high school which increases the pool of potential college goers even if these marginal students - with respect to high school graduation - are unlikely to be the same students on the margin of college going. As discussed in Section 1, over the sample period Louisiana experienced substantial heterogeneity in increases in high school graduation rates among different subgroups of students. This alone does not imply that parallel trends assumptions will be invalid, but does increase the likelihood that differential trends in college enrollment (or existence of differential trends in graduation rates) will violate parallel trends given any correlation between subgroups and treatment intensity (Jaeger et al., 2020). To address this potential threat, I jointly include as controls the pre-sample period shares of average ACT composite and average school-level percentage of students who identify as black, white, Asian, and Hispanic each interacted with period fixed effects as an additional check in Section 5.²⁵ This allows

²³I purposely do not include 2017 values in calculation of the treatment intensity as some FAFSA filing support was initiated in the 2016-17 school year.

²⁴They updated their career diploma requirements and removed an intermediary, basic diploma. There were no changes for the most common diploma type - university diploma. These diploma changes were in full effect by the 2017-18 school year.

²⁵I've also tried with linear trends interacted with pre-treatment shares. I choose to only report the nonparametric form because it is the least assuming and the most conservative.

for trends to vary nonparametrically across schools with similar pre-sample characteristics. For instance, schools with low shares of black students are allowed to trend differently in each year than schools with high shares of black students. The additional controls are based on recent criticisms and advances in methodologies in a host of other papers such as: Jaeger et al. (2020), Hjort et al. (2017), and Hoynes et al. (2016) for instance. As discussed formally later, the primary specification is impervious to the additional controls, and I report other tests of the validity of this empirical strategy in Section 5.

Equation (1) describes how the LDOE mandate affects on-time college enrollment behavior, or it is the reduced form estimate of the mandate with respect to matriculation. This is different from asking how FAFSA filing affects college enrollment behavior. Under the assumption that the LDOE mandate only affects college enrollment via the increase in the number of FAFSA completions, the policy can be instrumented for the FAFSA completion rate in a two-stage least squares (TSLS) approach. This assumption would be violated if the FAFSA mandate increased awareness around college enrollment or increased school (guidance counselor) involvement which in turn affected on time college enrollment, for instance.

$$\text{FCR}_{s,t} = \tilde{\alpha} + \lambda_s + \gamma_t + \tilde{\beta}(1 - (\text{Ave FAFSA Completion Rate}))_s * \text{Post}_t + \tilde{\mu}'X_{st} + \tilde{\epsilon}_{st} \quad (2)$$

$$Y_{st} = \alpha + \lambda_s + \gamma_t + \delta(\widehat{\text{FCR}})_{s,t} + \zeta'X_{st} + \epsilon_{st} \quad (3)$$

The first stage, equation (2), indicates how successful the mandate was at increasing FAFSA completion rates (FCR) across schools while the second stage, equation (3), quantifies the relationship between FAFSA completion rates and on time college enrollment. Given that it is plausible that the FAFSA mandate increased school involvement in ways that may affect college enrollment but are not directly related to FAFSA completion, these IV estimates are meant to be suggestive evidence of the causal effect between FAFSA applications and on time college enrollment. Importantly, increased awareness surrounding this policy or any college enrollment more generally would *upward* bias the IV estimates.

4 Results

4.1 Effects on FAFSA Completion

I first present evidence that the mandate increased FAFSA filing in Louisiana and that utilizing pre-treatment FAFSA completion rate as treatment intensity is a reasonable specification.

Both total completions and completion rates increased significantly starting in 2018 - see Figure 1. Noticeably, while the FAFSA completion rates across schools increased by about 19 percentage points to 72 percent post-policy, they still do not reach a 100 percent of seniors filing the FAFSA as would be expected under a mandate. In discussions with LDOE officials, most of the graduates who did not file instead opted for a parent/guardian nonparticipation release.²⁶ This accounted for the majority of the 20 percent of nonparticipation in the FAFSA *submissions*. The remaining difference represents FAFSA submissions with errors which are not considered *completed* FAFSAs. In any case, this is consistent with a large increase in FAFSA filing across schools resulting from the implementation of the mandate.

Policy makers may be concerned that the FAFSA mandate acts as a preventative measure to high school graduation completion as it adds an additional requirement. Figure 1 illustrates that high school graduation rates overall did not decrease as a result of this policy, and in fact graduation rates slightly increased each year during this period. Furthermore, as a point I address more formally in Section 5, I find no evidence that graduation rates for low FAFSA rate schools declined relative to high FAFSA rate schools upon implementation of the mandate.

Figure 2 presents the percentage change in FAFSA completion rates from 2015 to the average of 2018 and 2019. It illustrates the schools that had a low completion rate initially had the largest growth in completion rates as a result of the policy. Intuitively, these schools had the most room for growth, and it suggests that utilizing pre-treatment averages in FAFSA is an appropriate measure for treatment intensity. This trend is replicated in the percentage change in percent enrolled in college displayed in Figure 3.

Moreover, I estimated the first stage - equation (2) - where the FAFSA completion

²⁶See PDF forms of the parental release and the school waiver in the Appendix

rate is the outcome variable. These estimates are reported in Table 2. Column 1 and 2 present estimates of the policy’s effect on FAFSA completion rates from specifications without and with controls, respectively. This indicates that a school in the pre-treatment period with a zero percent completion rate would have a 41 percentage point increase in completion rate as a result of this policy relative to schools that had 100 percent completion rate in the pre-treatment period. The calculation of the differential percent increase in completion rate changes post-mandate between two schools is as follows. Post-policy, a 40 percent completion rate school’s increase in FAFSA completions is approximately 62 percent ($= (1 - .4) * .41) / .40$) relative to a 100 percent completion rate school. A 50 percent completion rate - approximately the average in Louisiana pre-mandate - school’s increase in FAFSA completions is approximately 41 percent ($= (1 - .5) * .41) / .50$) relative to a 100 percent completion rate school. Thus the differential in percentage increase for these two schools is about 1.5 ($= 62 / 41$), or that the school with 40 percent FAFSA completion in the pre-mandate period increased their FAFSA completion rate by 1.5 times that of the school with a 50 percent FAFSA completion rate in the pre-mandate period.²⁷

4.2 Main Results

As hypothesized, the estimates in Table 2 demonstrate schools that were more affected by this policy, ones with low FAFSA completion rates in the pre-treatment period, had a larger increase in percentage of students enrolled in college in the fall as indicated in columns 3 and 4. These estimates represent the reduced form estimates of β as calculated from equation (1) without and with controls, respectively. My preferred specification includes controls (column 4) which indicates that the policy increased students enrolled in college in the fall for a school with zero FAFSA completions in the pre-treatment period relative to a school with a 100 percent completion rate in the pre-treatment period by 13 percentage points. This estimate is statistically significant at the 1 percent level.

However, this magnitude is not reflective of schools in my sample as it involves comparing

²⁷Thanks to an anonymous reviewer for suggesting this example. This example can be calculated for any two choices of treatment intensity.

schools at extremes which are not well represented.²⁸ An improved measure is to compare schools within 10 percentage points of each other in pre-treatment FAFSA completion rate (or approximately a standard deviation). Given the linearity assumptions of the differences-in-differences model, this implies an increase of approximately 0.013 ($= 0.1 * 0.13$), or about 1 percentage point, for a school with a 10 percentage point lower pre-treatment FAFSA completion rate. Over the baseline enrollment rate average from the pre-treatment period (48 percent), this is a 2 percent increase. Column 3 presents the same estimates when equation (1) is run without controls, X_{st} . The addition of controls only strengthens the estimated effect of this policy on percentage enrolled from 0.07 to 0.13. The increase in coefficient with the addition of controls seems to be largely driven by the inclusion of racial demographics. High completion rate schools relative to low completion rate schools became less ethnically diverse over this time period. Given that college enrollment levels are correlated with racial demographics, this change over time would downward bias the treatment effect without additional controls for race. As such, controlling for this change in demographics seems to increase the estimate of the coefficient and the precision.

This empirical strategy is not well suited for identifying the overall state-wide effect of mandatory FAFSA on college enrollment since the year fixed effects capture any state-wide effects that are common to all schools. However, I calculate a back of the envelope estimate of the total number of students induced to matriculate post-policy to get a sense of the size of this program across all the schools in my sample. I take the expected change in FAFSA completion rate for a school (I use the average post-mandate FAFSA completion rate for a school minus the pre-treatment average FAFSA completion rate) and multiply it by the treatment effect, β . This fraction increase is multiplied by the cohort size and summed across all schools.²⁹ Roughly 500-870 more students enrolled in college on time according to this calculation based on estimates without and with controls (approximate cohort size totaled across schools in my sample is 48,000). Alternatively, the weighted average increase

²⁸See the histogram in the Appendix.

²⁹

$$\text{New Students} = \beta * \sum_{s \in \text{schools}} (\text{FCR Post} - \text{Average FCR})_s * \text{Cohort size}_s \quad (4)$$

across schools in FAFSA completion rates is approximately 19 percentage points. Without and with controls the treatment effect for a one percentage point difference in treatment intensity is $.0007 = (.01 * .07)$ and $.0013 (.01 * .13)$. Multiplying this by the 19 percentage point increase in FAFSA completion rates gives $.01 = (.0007 * 19)$ and $.02 = (.0013 * 19)$ or 1-2 percentage point increase in enrollment rates post-mandate.

Table 2 additionally reports outcome variables of the percent enrolled in two-year colleges and four-year colleges in columns 5 and 6, respectively. They are roughly similar in magnitude. I cannot parse out any compositional effects such as the policy encouraging seniors to start in four-year university instead of going first to a two-year or marginal students, those who were not planning on going to college prior to policy, starting straight in two-year versus four-year universities. It's possible both occurred. Finally, I estimate the effect on persistence in college. The LDOE only reports these estimates for 2016-2018 which substantially reduces sample size, and as such estimates should be interpreted cautiously. I do not find a statistically significant effect on persistence for low versus high FAFSA completion rate schools after the mandate was implemented. Given the short panel, it is difficult to glean whether the lack of an effect results from lack of power or a true underlying null effect.

4.3 Instrumental Variables

The first stage estimation proved to be a strong predictor of changes in FAFSA completion rates (FCR) across schools in 2018 and later - see Table 2 estimates of equation (2). Both the OLS estimates of college enrollment on FAFSA completion rate and the TSLS, equation (3), are presented in Table 3, column 2. The IV results indicate that increasing a school's FAFSA completion rate from zero to 100 percent would increase college enrollment rates among students by 33 percentage points. Interpreting these estimates as the causal effect of just the increase in FAFSA applications (as opposed to all of the support provided because of the mandate itself) and on time college enrollment requires strong assumptions. It is worth noting that the OLS estimates would be expected to be less than the IV - this borne out in the data - but also the direction of the bias given a misspecification of the IV assumptions would bias the estimate *upward*. Regardless, the magnitude is suggestive of a relationship between FAFSA completion and on time college enrollment.

4.4 TOPS Awards

As additional exploration into the effects of the Louisiana mandate, I consider the Taylor Opportunity Program for Students (TOPS) program. TOPS awards are Louisiana state funded merit-based financial aid to students attending Louisiana colleges, and consist of four levels of scholarships each varying in rigor of qualifications with the total amount of aid offered depending on the university of attendance. For concreteness, the minimum requirements for eligibility for a four-year award are a minimum composite ACT score of 20 (approximately 53rd percentile³⁰), 2.5 GPA on core classwork, and full-time attendance at a Louisiana college or university immediately following high school graduation. Historically, these scholarships have gone to students from wealthier families with about 40 percent of recipients coming from households who earn six figures or more (Louisiana Board of Regents, 2019; Emmanuel Felton, 2019).

Because the scholarships depend on threshold levels of ACT scores and GPA, we may not expect to see much change in award receipt post-FAFSA mandate given that students cannot drastically change their qualifications in their senior year (GPA might be too low to bring up in a final semester, for instance). On the other hand, the TOPS program requires submission of a FAFSA, so if this additional hurdle worked against students in applying for scholarships they were already eligible for, it could potentially increase aid receipt even among merit-based scholarships.³¹

I obtain data from the Louisiana Office of Student Financial Assistance (LOFSA) and merge it to my primary data set. Some additional schools are lost in this merge, so the sample size is smaller. Figure 4 presents the counts and percentage of graduating cohort who have applied for TOPS scholarships (processed), were eligible for awards, and received awards over the sample period. As a cautionary note, eligibility requirements for core curriculum were subject to change starting in 2018, and this likely effected eligibility for at least one of the four awards.³²

³⁰<https://www.act.org/content/dam/act/unsecured/documents/MultipleChoiceStemComposite.pdf>

³¹TOPS requires FAFSA submission unless the student can provide the office with proof that they do not qualify for federal aid.

³²For the TOPS Honors, Performance and Opportunity awards this change was negligible. See the

The figure illustrates that there is a large and distinctive jump in the number of processed applications starting exactly in 2018, a smaller increase for eligible recipients, and a smaller change for recipients. The difference between the averaged 2014-2017 counts of processed applications, eligible awardees, and recipients from the 2018-2019 post-treatment period was 4,000, 2,000, and 200, respectively, for my smaller sample. The same pattern exists for the percent of processed, eligible and received awards as a function of cohort size. The mean jump across schools in my sample from pre- to post-treatment is approximately 10 percentage points, 5 percentage points, and less than 1 percentage point increase in percent of cohort who applied, was eligible and ultimately received an award, respectively.³³

I have run equation (1) with the count and percentage of cohort of the number of processed claims, eligible students and award recipients as outcomes, and Table A3 contains these estimates. I caution interpreting these results as more than suggestive because it is not clear that the treatment intensity represents a straightforward counterfactual for merit-based scholarship receipt and because these regressions do not hold up to robustness checks. However, all the coefficients are positive indicating that low FAFSA completion rate schools exhibited larger growth in merit award processing, and consequently eligibility and receipt for lower FAFSA rate schools comparatively.

5 Robustness and Heterogeneity

Interpreting equation (1)'s results as causal necessitates that there are no other pre-treatment trends in percentage enrolled in college by completion rate status. For example, if low 2014-17 requirements : <https://regents.la.gov/wp-content/uploads/2020/06/TOPS2015.pdf>, and new requirements here (page 23): <https://www.osfa.la.gov/MainSitePDFs/TOPSCoreCurriculum2018.pdf>. Changes for TOPS Tech include fewer social studies courses, but more strict (and more credit hours) for elective courses. See old requirements here: <https://web.archive.org/web/20150922190750/https://www.osfa.la.gov/MainSitePDFs/TOPSTechCoreCurriculum.pdf> and current requirements here: <https://www.osfa.la.gov/MainSitePDFs/TOPSTechCoreCurriculum.pdf>

³³As a function of high school graduates instead of cohort size, these percentage increase from pre- to -post are 8 percentage points, 2 percentage points, and 0 percentage points for processed, eligible and received awards, respectively. This percentage is most closely tied to the completion rate which is a function of high school graduates.

completion rate schools were exhibiting mean reversion in percentage enrolled in college in the pre-treatment period, then the results in Table 2 would be biased upward. To test for any trends, I first estimate the following event study equation:

$$Y_{st} = \alpha + \lambda_s + \gamma_t + \sum_{t=-4}^1 \beta_y \mathbb{1}(\text{year-2018} = t) * (1 - (\text{Ave FAFSA Completion Rate}))_s + \mu' X_{st} + \epsilon_{st} \quad (5)$$

This is equation (1) where treatment intensity interacted with post-treatment dummy has been replaced with year dummies times the pre-treatment value of completion rate. The coefficients, β_y , are plotted in Figure 5. These coefficients are all relative to 2017, the year prior to the mandated policy, which is normalized to zero. The graph illustrates that there are no pre-treatment trends as all the coefficients are nearly zero and not statistically different from zero. Additionally, relative to 2017, there is a clear increase in the coefficients for the post-treatment years, which are statistically different from zero. I cannot reject the null that the effect in both years of post-treatment are identical. All together this suggests that the time trends assumption is reasonable, and that the policy did have an effect on college enrollment.

As evidence of a lack of compositional changes to the schools during this time, I have also run event studies with the outcome variable being each one of the main control variables. These event studies chiefly explain the relationship between changes in the control variables as function of treatment status over time. Concretely, Panel A of Figure A5 shows how percentage of black students in schools changed as a function of treatment intensity crossed with year dummies while controlling for school fixed effects and year fixed effects. Each point in this graph is an estimate of the treatment intensity variable times a year dummy and all estimates are relative to the omitted year, 2017. Generally, all these estimated parameters demonstrate that there were no meaningful changes in percentage black students across low and high FAFSA completion rate schools over this time. This is also true with percent white, ACT composite scores, and total number of students in the school. However, there are linear trends towards more Hispanic and fewer Asian students in low FAFSA completion rate schools, with the trends beginning in pre-treatment years. Given that the overall trends of these two seem to be occurring prior to the mandate's implementation and continue through, it is important to control for them in the primary specification to sufficiently deal with biases

that may arise without the controls. Note that both an increase in Hispanic students and decrease in Asian students would, based on historical data on college attending rates, likely hinder the detection of results. The fact that a treatment effect without these as additional controls is still detected is encouraging. Furthermore, these trends occurred similarly before and after the mandate suggesting that they weren't *caused* by the mandate.

Another check of the common trends assumption is to include a group-specific time trend. It is estimated in the following equation with linear time index, t :

$$Y_{st} = \alpha + \lambda_s + \gamma_t + \tilde{\beta}(1 - (\text{Ave FAFSA Completion Rate}))_s * \text{Post}_t + \eta_s(\lambda_s * t) + \tilde{\mu}' X_{st} + \tilde{\epsilon}_{st} \quad (6)$$

The coefficient $\tilde{\beta}$ in this specification varies little compared to estimates from equation (1) and is reported in Table A4. Predicted by the event study, this indicates a lack of omitted group specific time trends and represents further evidence of valid identification.

As discussed in previous sections, high school graduation rates were increasing across schools in Louisiana, with particularly large increases among underrepresented demographic groups. As the pool of high school graduates increases, so does the pool of potential college goers even if these marginal students - with respect to high school graduation - are unlikely to be the same students on the margin of college going. Differential trends among varying demographic subgroups in high school graduation or college enrollment do not imply that parallel trends assumptions will be invalid, but it does increase the likelihood of a violation given any correlation between subgroup trends and treatment intensity (Jaeger et al., 2020). This coupled with efforts in recent years from Louisiana to better align high school course work with post-graduation pursuits poses a legitimate concern for appropriate identification.

To address this potential threat, I have jointly included pre-sample period shares of all the controls: average ACT composite, and average percentage of students who identify as black, white, Asian, and Hispanic each interacted with period fixed effects as additional controls.³⁴ This allows for trends to vary nonparametrically across schools with similar pre-sample characteristics. For instance, schools with low shares of black students are allowed to trend differently in each year than schools with high shares of black students.

³⁴I've also tried with linear trends interacted with pre-treatment shares. I choose to only report the nonparametric form because it is the least assuming and the most conservative.

Table 4 reports the outcomes of high school graduation and college enrollment given these additional controls. They do not meaningfully change the reduced form treatment effect on college enrollment. The results remain statistically significant at the 5 percent level. This stands in contrast to the effect of differential controls on high school graduation rates. Prior to the inclusion of additional variables, there is evidence that low FAFSA schools have higher graduation rates than high FAFSA schools. When the additional controls are added, this effect essentially dissipates. A plausible interpretation is that high school graduation rates were increasing more among subgroups that are overrepresented in low FAFSA completion rate schools. Then the inclusion of characteristics that allow for this heterogeneity wipes out the effect of the mandate on high school graduation rates - as we would not necessarily expect the mandate to significantly increase graduation rates. However, given that the additional controls do *not* seem to affect the college enrollment outcomes despite being significantly taxing on the data, the differential trends do not appear to be a substantial threat to identification of college enrollment. Additionally, this exercise suggests that there were no negative effects of the mandate on high school graduation rates overall.

To test the robustness of the treatment intensity variable, I also calculate equation (1) where treatment intensity is defined to be just the 2015 FAFSA completion rate and just the 2016 FAFSA completion rate instead of the average. These are presented in Table 5 columns 2 and 3. I also predict FAFSA completion rates utilizing current and lagged FAFSA completion rates and school-level characteristics.³⁵ Practically, given that FAFSA completion rates only are reported starting in 2015, I regress FAFSA completion rates in 2016 on FAFSA completion rates in 2015 with current and lagged controls (the same as used in equation (1)). I then use the predicted relationship between lagged FAFSA rates and current and lagged controls to estimate a predicted 2017 FAFSA completion rate. I fix this as a treatment intensity and estimate equation (1) which is reported in column 4. Across all these specifications the main estimated treatment effect is stable.

Finally, I also include estimates where treatment intensity is the pre-treatment (2014-2017) average percent free and reduced-price lunch for each school. As noted in Table 5 column 5, the first stage is not as strong as in my preferred specification. Because of the

³⁵Thanks to an anonymous reviewer for suggesting this alternative check.

smaller first stage, it is not surprising that the reduced-form estimated effect of β from equation (1) is smaller, at 0.06. However, it is reassuring that it is positive, significant, and the Wald-DID ratio is roughly the same ($\frac{0.06}{0.195} = 31$) as the IV estimates in Section 4.3.

Additionally, I run a placebo test where I randomly reshuffle treatment intensity across schools and rerun equation (1) for 1,000 repetitions. Figure A6 plots the density of these estimated parameters, and Table A5 presents the summary statistics from this Monte Carlo exercise. The vast majority of the estimated parameters are effectively zero, implying that the possibility of finding such a large effect is not likely due to random chance.

Ideally, the effect of the FAFSA mandate on college enrollment would not singularly depend on the functional form of college enrollment. For this reason, I test alternative outcome variables to my primary including the enrollment in college as a count variable and percentage enrolled in college as a function of high school graduates. These are reported in Table 6. Both of these outcomes are positive and the percentage of high school graduates who enroll is statistically significant at conventional levels. In the case of enrollment counts, the estimates suggest that there are 29 more students from a zero percent FAFSA school enrolled in college relative to a school with 100 percent FAFSA completions. This would imply a slightly *larger* treatment effect than is predicted by the percent enrolled of freshman cohort, but is not significant at conventional levels. I also run IV estimates, presented in Table 3 column 1, on the percentage enrolled as a function of high school graduates. Estimates are very similar to the primary outcome variable with an estimate of a 2 percentage point increase in college enrollment per high school graduates compared to a 3 percentage point increase in college enrollment per cohort member per a 10 percentage point increase in FAFSA completion.

5.1 Heterogeneity

To understand which students may be most affected by the Louisiana mandate, I implement two strategies. The first splits the main sample based on school characteristics such as free and reduced-price lunch, urban/rural status, and by percentage of black students attending the school. The second uses alternative outcome variables that measure the number of black/white/economically disadvantaged students who enroll in college over their respective

cohort sizes (the number of black/white/economically disadvantaged freshman three years prior, adjusted for movements, calculated the same way as discussed in Section 2). The results of both strategies should be interpreted as descriptive evidence as the splitting of the sample and the subgroup outcomes of the second strategy significantly reduce sample sizes and the number of schools contributing to identification.

Table 7 reports the estimates of equation (1) separately by quintile of schools' average pre-treatment percentage of students on free and reduced-price lunch.³⁶ The output demonstrates that the schools which have the largest increases in students enrolling in college are located in the third and fourth quintile range of free and reduced-price lunch status (where higher indicates a school with a larger fraction of free and reduced-price lunch students). The first stage results also indicate that there was a larger change in completion rates for the lower income schools (panel A). Other sample splits, such as differences across geography and racial demographics, indicate that the treatment effects are relatively homogeneous. When equation (1) is run separately by urban/rural status or split by above or below the median fraction black students in a school during pre-treatment period, reduced form treatment effects are relatively similar across groups, see Table 8 for more details.

The first strategy's primary drawback is that it doesn't capture directly the effect for individual student characteristics. The second examination of heterogeneity replaces the main outcome variable - percentage of all students enrolling in college - with the percentage of each subgroup from a school that enrolls in college in the fall. This captures the effect of the mandate on specific subgroups of students who attend any type of school. However, LDOE first started reporting these statistics in 2016 and additionally suppresses cells they believe may affect student privacy. Both of these contribute to much smaller sample sizes and require analysis to be implemented for years 2016-2019 instead of 2014-2019.

Table 8 reports the output from these regressions. It is the case that the treatment effect is larger for black students and Louisiana's defined economic disadvantage (more encompassing than free and reduced-price lunch) relative to white students, and that economically disadvantaged students have the largest treatment effect of these three groups. However,

³⁶This is possible given there is imperfect correlation between free and reduced-price lunch status and pre-treatment FAFSA completion rate.

none are statistically significant at conventional levels. I cannot reject the hypothesis that the effect of the mandate on the percentage black students enrolling and percentage white students enrolling are the same. I also cannot reject that the effect of the mandate on the percentage of economically disadvantaged students and percentage white students are the same.

Overall, there is suggestive evidence that this policy may have been more impactful for lower income students. However, there isn't strong evidence that this policy had significant effects across racial groups.

6 Discussion and Conclusion

6.1 Comparison with Previous Work

It is important to place the results of this paper in context of the previous literature. Table 9 describes estimates from studies on FAFSA experiments and their effects on both FAFSA completions and college enrollment. I present evidence from the LDOE mandate in two ways. The first is the attenuated dosage differences-in-differences estimate described previously which is a relative measure. The second depicts only time variation where the pre-2017 average is compared to the 2018 and 2019 average across all schools. Overall, my estimates show the LDOE mandate produced a stronger effect on FAFSA completion compared to previous work and a smaller effect on college enrollment when compared to the experiment most closely related to the LDOE mandate, Bettinger et al. (2012).

The LDOE mandate had the largest first stage effects of previous studies with an average increase of 19 percentage points in FAFSA completion rates across schools. By comparison, Bettinger et al. (2012) experiment's completion arm, which filled out the FAFSA for the dependent and their parents and is most similarly related to the LDOE mandate, increased the treated group's FAFSA completion rate by about 16 percentage points. Not surprisingly, these first stage effects show that tackling the actual application hurdle had much stronger effects on FAFSA completion than did informational nudges. The information-only treatment arm³⁷ of Bettinger et al. (2012) and the large scale treatment effects in Bird et al.

³⁷The treatment gave students personalized information based on their family's income but did not com-

(2019) had no effect on FAFSA completion rates. This is despite promising previous studies on informational nudges that demonstrated text message nudging could increase FAFSA completion such as Page et al. (2018) who found a 4 percentage point increase in filing. Taken together, this is suggestive that an involved approach is more successful at increasing FAFSA completions. A complementary explanation comes from recent evidence that nudges are more successful when they are received from a source with whom the student may already be familiar (Avery et al., 2020). Counselors at the high schools were primarily responsible for the FAFSA mandate, and the trust students had for them likely played a role in the success of the program.

For the FAFSA completion effect on college enrollment, I prefer comparing my instrumental variables approach to the treatment-on-the-treated (TOT) effects of the other experiments. As my IV estimates suggest (see section 4.3), an increase in FAFSA completion rate from zero to 100 percent for a school increases the on time college enrollment rate for its students by about 33 percentage points. This estimate is large, but it is notably smaller than the 50 percentage point TOT measure found in Bettinger et al. (2012). For nudging experiments, the small first stage effects contribute to an inability to find intent-to-treat (ITT) effects in the information-only treatment arm of Bettinger et al. (2012) and in the scaled, generic information treatment of Bird et al. (2019). However, Page et al. (2018) find a positive, albeit insignificant, effect on college enrollment that also imply large TOT effects.

The LDOE mandate is most similar to the Bettinger et al. (2012) experiment's completion treatment arm, but there are several design differences that contribute to inexact replicability of the mandate relative to their experiment. First, the Bettinger et al. (2012) experiment provided families/students with important personalized estimates of expected financial aid based on local colleges' cost of attendance and the family's income. Louisiana students had to take an additional step, application to specific colleges, to obtain a similar financial aid estimate. Additionally, the Bettinger et al. (2012) experiment's financial aid estimates were provided to the parents of the dependents. If there were any positive parental effects, this would increase the treatment effects of Bettinger et al. (2012) relative to the LDOE mandate which was a task placed squarely on students.

plete the paperwork involved with the FAFSA

Moreover, the Bettinger et al. (2012) experiment selected students for whom the FAFSA was likely to be important for the ability to enroll in college, namely low income students. By comparison my LATE estimate from the IV estimation calculates the treatment effect of students who complied with the mandate, or the students who file the FAFSA *because* of the mandate alone. However, these compliers could be students for whom FAFSA completion was irrelevant in affecting college enrollment behavior. Compliers may be both students we think might benefit from financial aid as well as students who might already know their family's earnings disqualifies them for financial aid, but still plan on attending college potentially at full sticker price. Thus prior to the mandate, the latter group would have refrained from completing the FAFSA, but now do solely because of the mandate. Then they are counted as compliers, yet don't change the college enrollment numbers.

Additionally, there may be a time interaction effect given these two studies occurred a decade apart. Since there have been a multitude of measures high schools, colleges, and the federal government have taken in the last ten years to increase college enrollment, it seems reasonable that there are effectively fewer marginal students affected by the LDOE policy than who would have gained a decade earlier from the Bettinger et al. (2012) experiment. This is also a reason Bird et al. (2019) gave for their tempered first stage results.

6.2 Discussion and Policy Implications

It is clear from the descriptive and causal analysis that the Louisiana mandate significantly increased the FAFSA filing rates among its students. Across my sample, FAFSA completion rates increased an average of 19 percentage points (or about a 34 percent increase) from pre- to post-treatment periods. Schools with lower FAFSA completion rates saw significantly larger increases in post-treatment FAFSA completion rates with a 10 percentage point higher treatment intensity corresponding to roughly 4.1 percentage point increase in completion rates. Descriptive evidence implies the number of processed applications for merit-based state financial aid increased by approximately half the increase in FAFSA completions from pre- to post-treatment periods. There is no evidence that high school graduation rates suffered as a result of this mandate, and the evidence suggests that college enrollment modestly increased.

How cost effective was this mandate? Following Carrell and Sacerdote (2017), I calcu-

late approximate cost per additional college enrollee. As a special request, an employee at the Louisiana Office of Student Financial Assistance reported that the direct costs of implementing this mandate include \$125,000 in salaries and event expenses annually. Indirect costs include funds utilized by individual schools from their GEAR UP grant (offers financial assistance to schools to help students go to college) and extra time spent by staff to help answer questions and inform students of their requirements. I did not receive an estimate that approximates these indirect costs. In an attempt to address indirect costs of support staff, I assume that all support staff and administrators spent 1 percent of their time on FAFSA related activities, likely an overestimate. Under the 1 percent assumption for time spent, the total salaries from these two groups would be \$1.6 million. Added to the \$125,000 in direct salaries totals \$1.8 million. Divided by a total of 38,937 seniors in my dataset, this equates to a cost per senior of \$45.³⁸ Taking this amount per student dividing by the overall increase in college enrollment of 1 percentage point gives ($\$45/.01 =$) \$4,500 per additional enrollee.³⁹ By comparison, Carrell and Sacerdote (2017) reported a cost of \$2,400 for their intervention activity which included mentoring from a Dartmouth college student, paying for college AP/ACT fees, a \$100 cash bonus, and starting the FAFSA for the high school student. As cited by Carrell and Sacerdote (2017), by comparison Bettinger et al. (2012) costs \$1,100 per additional student enrolled while Head Start costs \$133,000.

The external validity of the results presented here as it extends to other states may, to some extent, be indeterminate and the direction of bias unclear. For example, Louisiana requires all students to take the ACT. If another state were to implement this, but did not require standardized college admissions exams, they may see more tempered results as standardized exams are often part of the application package. Or it may actually have downward biased results since mandatory standardized exams have the potential to push marginal college goers to enroll, capturing potential would-be marginal FAFSA enrollees (Hyman, 2017). Additionally, the attention surrounding both the mandate and updates to career and technical education may be particularly unique to Louisiana. These altogether

³⁸Another cost includes students' disutility of completing the FAFSA, which is difficult to estimate and is excluded from this calculation.

³⁹See Section 4 for calculation across LA. I take a conservative estimate.

could have created more confusion among counselors (downward biasing effects) or could have ultimately created joint positive effects by creating an opportunity for greater alignment among high school courses and college requirements. Previous research concludes that interventions are successful when they are local and with personalized attention or when interventions occur from sources the students already know or trust (Bergman et al., 2019; Carrell and Sacerdote, 2017; Oreopoulos and Petronijevic, 2018; Avery et al., 2020). The FAFSA mandate, and perhaps in conjunction with other diploma requirements in Louisiana, created an additional reason for counselors to connect directly with students on creating real plans for college. Recent research demonstrates the importance of counselors in disseminating information (Mulhern, 2020). This is likely at least part of the success of the FAFSA mandate and the results should be interpreted with this in mind.

In future work, it will be imperative to study other states who have recently implemented similar FAFSA mandates on high school seniors.⁴⁰ Additionally, and one avenue not directly testable here, is how the FAFSA may have affected federal, need-based financial aid receipt. It is possible that students who were already planning on attending college also gained from filing the FAFSA upon the discovery that they were eligible for financial aid of which they were previously unaware.

⁴⁰Texas and Illinois are two recent examples (Smalley, 2019) and several other states are considering this legislation.

References

- Andrews, R. J., DesJardins, S., and Ranchhod, V. (2010). The effects of the kalamazoo promise on college choice. *Economics of Education Review*, 29(5):722–737.
- Avery, C., Castleman, B. L., Hurwitz, M., Long, B. T., and Page, L. C. (2020). Digital messaging to improve college enrollment and success. Technical report, National Bureau of Economic Research.
- Belley, P. and Lochner, L. (2007). The changing role of family income and ability in determining educational achievement. *Journal of Human capital*, 1(1):37–89.
- Bergman, P., Denning, J. T., and Manoli, D. (2017). Broken tax breaks? evidence from a tax credit information experiment with 1,000,000 students. Technical report, IZA Discussion Paper.
- Bergman, P., Denning, J. T., and Manoli, D. (2019). Is information enough? the effect of information about education tax benefits on student outcomes. *Journal of Policy Analysis and Management*, 38(3):706–731.
- Bertrand, M., Duflo, E., and Mullainathan, S. (2004). How much should we trust differences-in-differences estimates? *The Quarterly journal of economics*, 119(1):249–275.
- Bettinger, E. P., Long, B. T., Oreopoulos, P., and Sanbonmatsu, L. (2012). The role of application assistance and information in college decisions: Results from the h&r block fafsa experiment. *The Quarterly Journal of Economics*, 127(3):1205–1242.
- Bird, K. A., Castleman, B. L., Denning, J. T., Goodman, J., Lambertson, C., and Rosinger, K. O. (2019). Nudging at scale: Experimental evidence from fafsa completion campaigns. Technical report, National Bureau of Economic Research.
- Cameron, A. C. and Miller, D. L. (2015). A practitioner’s guide to cluster-robust inference. *Journal of Human Resources*, 50(2):317–372.
- Carrell, S. and Sacerdote, B. (2017). Why do college-going interventions work? *American Economic Journal: Applied Economics*, 9(3):124–51.

- Castleman, B. L., Arnold, K., and Wartman, K. L. (2012). Stemming the tide of summer melt: An experimental study of the effects of post-high school summer intervention on low-income students' college enrollment. *Journal of Research on Educational Effectiveness*, 5(1):1–17.
- Castleman, B. L., Owen, L., and Page, L. C. (2015). Stay late or start early? experimental evidence on the benefits of college matriculation support from high schools versus colleges. *Economics of Education Review*, 47:168–179.
- Castleman, B. L. and Page, L. C. (2014). A trickle or a torrent? understanding the extent of summer “melt” among college-intending high school graduates. *Social Science Quarterly*, 95(1):202–220.
- Castleman, B. L. and Page, L. C. (2015). Summer nudging: Can personalized text messages and peer mentor outreach increase college going among low-income high school graduates? *Journal of Economic Behavior & Organization*, 115:144–160.
- Castleman, B. L. and Page, L. C. (2016). Freshman year financial aid nudges: An experiment to increase fafsa renewal and college persistence. *Journal of Human Resources*, 51(2):389–415.
- Castleman, B. L., Page, L. C., and Schooley, K. (2014). The forgotten summer: Does the offer of college counseling after high school mitigate summer melt among college-intending, low-income high school graduates? *Journal of Policy Analysis and Management*, 33(2):320–344.
- Cornwell, C., Mustard, D. B., and Sridhar, D. J. (2006). The enrollment effects of merit-based financial aid: Evidence from georgia's hope program. *Journal of Labor Economics*, 24(4):761–786.
- Dynarski, S. (2000). Hope for whom? financial aid for the middle class and its impact on college attendance. Technical report, National bureau of economic research.
- Dynarski, S., Libassi, C., Michelmore, K., and Owen, S. (2021). Closing the gap: The effect

- of reducing complexity and uncertainty in college pricing on the choices of low-income students. *American Economic Review*.
- Dynarski, S. M. (2003). Does aid matter? measuring the effect of student aid on college attendance and completion. *American Economic Review*, 93(1):279–288.
- Dynarski, S. M. and Scott-Clayton, J. E. (2006). The cost of complexity in federal student aid: Lessons from optimal tax theory and behavioral economics. Technical report, National Bureau of Economic Research.
- Dynarski, S. M. and Scott-Clayton, J. E. (2008). Complexity and targeting in federal student aid: A quantitative analysis. *Tax policy and the economy*, 22(1):109–150.
- Emmanuel Felton (2019). How Louisiana’s TOPS program lets state’s richest students go to school, while poor students are often left out. <https://thelensnola.org/2019/10/30/how-louisianas-tops-program-lets-states-richest-students-go-to-school-while-poor-stud>
- Federal Student Aid (2015–2020). Data Center. <https://studentaid.gov/data-center> (accessed August 2020).
- Hjort, J. et al. (2017). Universal investment in infants and long-run health: evidence from denmark’s 1937 home visiting program. *American Economic Journal: Applied Economics*, 9(4):78–104.
- Hoxby, C., Turner, S., et al. (2013). Expanding college opportunities for high-achieving, low income students. *Stanford Institute for Economic Policy Research Discussion Paper*, 12:014.
- Hoxby, C. M. and Avery, C. (2012). The missing” one-offs”: The hidden supply of high-achieving, low income students. Technical report, National Bureau of Economic Research.
- Hoynes, H., Schanzenbach, D. W., and Almond, D. (2016). Long-run impacts of childhood access to the safety net. *American Economic Review*, 106(4):903–34.
- Hyman, J. (2017). Act for all: The effect of mandatory college entrance exams on postsecondary attainment and choice. *Education Finance and Policy*, 12(3):281–311.

- Jaeger, D. A., Joyce, T. J., and Kaestner, R. (2020). A cautionary tale of evaluating identifying assumptions: Did reality tv really cause a decline in teenage childbearing? *Journal of Business & Economic Statistics*, 38(2):317–326.
- Kaufman, J. H., Cannon, J. S., Culbertson, S., Hannan, M., Hamilton, L. S., and Meyers, S. (2018). *Raising the Bar*. RAND Corporation.
- Louisiana Board of Regents (2019). TOPS Report: Analysis of the TOPS Program from 2009-2018. <https://regents.la.gov/wp-content/uploads/2019/11/2019-TOPS-Report-October.pdf>.
- Louisiana Department of Education (2014–2020a). Data Center. <https://www.louisianabelieves.com/resources/library/data-center> (accessed August 2020).
- Louisiana Department of Education (2019a). Financial Aid Calendar of Events. <http://www.louisianabelieves.com/docs/default-source/course-choice/financial-aid-calendar-of-events.pdf?sfvrsn=2>.
- Louisiana Department of Education (2019b). Financial Aid Funding My Future. <https://www.louisianabelieves.com/courses/financialaid>.
- Louisiana Department of Education (2020b). FAFSA Data Frequently Asked Questions. <https://www.louisianabelieves.com/docs/default-source/course-choice/fafsa-faqs.pdf?sfvrsn=2>.
- Louisiana Office of Student Financial Assistance (LOSFA) (2019). 2018-2019 Tops Questions and Answers. Technical report, Louisiana Board of Regents.
- Lovenheim, M. F. and Reynolds, C. L. (2013). The effect of housing wealth on college choice: Evidence from the housing boom. *Journal of Human Resources*, 48(1):1–35.
- March, S. (2016). No fafsa, no diploma for louisiana students. *Shreveport Times*, Available at <https://www.shreveporttimes.com/story/news/2016/01/13/fafsa-requirements-changing-louisiana/78686226/>, Jan. 15, 2016.

- Mattana, E. (2018). Literature review on financial aid to university students. *Baggrundsnotat, De Økonomiske Råds Sekretariat*.
- McPherson, M. S. and Schapiro, M. O. (1991). Does student aid affect college enrollment? new evidence on a persistent controversy. *The American Economic Review*, 81(1):309–318.
- Mulhern, C. (2020). Beyond teachers: Estimating individual guidance counselors’ effects on educational attainment. Technical report, Working Paper.
- Nielsen, H. S., Sørensen, T., and Taber, C. (2010). Estimating the effect of student aid on college enrollment: Evidence from a government grant policy reform. *American Economic Journal: Economic Policy*, 2(2):185–215.
- Office of Federal Student Financial Aid (2019). FAFSA® Completion by High School and Public School District. <https://studentaid.ed.gov/sa/about/data-center/student/application-volume/fafsa-completion-high-school>.
- Oreopoulos, P. and Petronijevic, U. (2018). Student coaching: How far can technology go? *Journal of Human Resources*, 53(2):299–329.
- Page, L. C., Castleman, B., and Meyer, K. (2018). Customized nudging to improve fafsa completion and income verification. *Available at SSRN 2854345*.
- Page, L. C. and Gehlbach, H. (2017). How an artificially intelligent virtual assistant helps students navigate the road to college. *AERA Open*, 3(4):2332858417749220.
- Page, L. C. and Scott-Clayton, J. (2016). Improving college access in the united states: Barriers and policy responses. *Economics of Education Review*, 51:4–22.
- Roderick, M., Nagaoka, J., Coca, V., and Moeller, E. (2008). *From High School to the Future: Potholes on the Road to College. Research Report*. ERIC.
- Smalley, A. (2019). States Looking at Ways to Promote FAFSA Completion. <https://www.ncsl.org/blog/2019/12/10/states-looking-at-ways-to-promote-fafsa-completion.aspx>.

7 Tables

Table 1: Descriptive Statistics: Mean and Standard Deviations by FAFSA Completion Rate Quartile Rankings

	Lowest		Second		Third		Highest	
HS Grads	115	(87)	140	(109)	156	(117)	141	(136)
Number of HS Grads Enrolled in College in Fall	55	(44)	73	(63)	93	(77)	98	(102)
Student Count in School (all grades)	680	(380)	776	(459)	830	(499)	774	(545)
9th Grade Cohort	163	(129)	192	(150)	213	(163)	177	(172)
Teacher Salary	50,525	(4,024)	50,369	(4,052)	50,810	(3,523)	52,345	(3,809)
Current per Pupil Expenditures	11,356	(2,122)	10,723	(1,754)	10,585	(1,876)	11,006	(2,102)
Composite ACT (out of 36)	17.54	(1.36)	18.64	(1.22)	19.35	(1.52)	21.26	(2.14)
Graduation Rate	76.96	(12.15)	80.80	(10.20)	83.78	(8.48)	88.00	(7.59)
Percent College Enrolled (9th Grade Cohort)	36.99	(10.36)	42.37	(9.70)	50.09	(9.29)	61.23	(12.23)
Percentage College Enrolled (HS Grad)	47.66	(8.96)	52.09	(8.36)	59.63	(8.46)	69.25	(10.45)
Percentage of Enrolled Attending 2 Year*	41.88	(13.42)	36.73	(13.61)	31.24	(11.28)	22.05	(11.71)
Percentage of Enrolled Attending 4 Year*	58.10	(13.46)	63.26	(13.62)	68.75	(11.29)	77.95	(11.72)
Percentage of Enrolled Attending In State*	90.08	(7.32)	92.32	(6.52)	91.74	(5.41)	88.99	(7.23)
Percentage White	33.30	(26.87)	50.41	(22.65)	51.94	(28.22)	59.00	(24.21)
Percentage Black	55.31	(27.44)	39.48	(22.27)	41.13	(28.76)	33.04	(24.05)
Percentage Hispanic	7.05	(9.53)	6.45	(8.79)	3.86	(4.07)	3.79	(3.18)
Percentage Asian	1.41	(1.96)	1.38	(1.84)	1.34	(1.75)	2.54	(3.44)
Percentage Free/Reduced Lunch	64.94	(15.11)	55.79	(14.24)	51.66	(18.52)	40.87	(17.28)
FAFSA Completion Rate (June of graduating year)	55.02	(14.08)	58.68	(11.66)	63.44	(10.07)	71.96	(10.67)
Observations	390		390		390		384	

Note: These means (standard deviations in parentheses) are weighted by the average of the 2014-2017 total number of students in a school divided by the number of grades taught (high school graduates, number of high school graduates, student count, and 9th grade cohort are all unweighted so as to reflect cross school averages). Sources include Louisiana Department of Education, NCES Common Core Data, and Office of Student Financial Aid. Averages are based on 2014-2019 except for teacher salary and current expenditures per pupil which are calculated over (2014-18) and FAFSA completion rate (2015-19). FAFSA completion rate represent completions by June of high school graduating year. The schools in each column are partitioned into quartiles based on their average FAFSA completion rate in 2015-2016. * - Percent of those enrolled in college as a function of high school graduates who attend either a 2 year university, 4 year university or attended in Louisiana state.

Table 2: Estimates of the Effect of Mandatory FAFSA Completion on Completion Rates and College Enrollment

	Completion Rate		%Enrolled in College		2-Year	4-Year
	(1)	(2)	(3)	(4)	(5)	(6)
(1-Ave Comp Rate)*Post	0.385	0.421	0.070	0.133	0.070	0.063
	(0.059)	(0.059)	(0.037)	(0.033)	(0.022)	(0.031)
Controls	no	yes	no	yes	yes	yes
N	1294	1294	1554	1554	1554	1554
R-Squared	0.799	0.816	0.886	0.909	0.697	0.937
Dep. Var. Mean	0.625	0.625	0.480	0.480	0.147	0.333

Note: Coefficients are estimates of β from equation (1) and outcome variable is listed in the columns. Standard errors are in parenthesis, clustered at the school level. Source - LDOE and Office of Student Financial Aid.

Table 3: IV Estimates using FAFSA Mandate as an Instrument

	%Enrolled in College (of HS Grad) (1)	%Enrolled in College (of 9th Grade Cohort) (2)
<i>Panel A - OLS</i>		
FAFSA Completion Rate	0.207 (0.028)	0.180 (0.026)
Controls	yes	yes
<i>Panel B - IV</i>		
FAFSA Completion Rate	0.232 (0.077)	0.334 (0.074)
Controls	yes	yes
N	1294	1294
Dep. Var. Mean	0.571	0.481

Note: Coefficients for the IV estimates based on δ from equation (3). Standard errors are in parenthesis, clustered at the school level. The data comprise years 2015-2019. Source - LDOE and Office of Student Financial Aid.

Table 4: Estimates of the Effect of Mandatory FAFSA Completion with Additional Controls

	CR		Grad Rate		%Enroll	
	(1)	(2)	(3)	(4)	(5)	(6)
(1-Ave Comp Rate)*Post	0.385 (0.059)	0.433 (0.094)	0.126 (0.038)	0.048 (0.055)	0.070 (0.037)	0.100 (0.045)
Controls	none	yes	none	yes	none	yes
N	1294	1285	1554	1542	1554	1542
R-Squared	0.799	0.828	0.853	0.867	0.886	0.915
Dep. Var. Mean	0.625	0.625	0.826	0.825	0.480	0.479

Notes: Coefficients are estimates of β from equation (1) with controls including the set originally described in text but also including pre-sample estimates of percent black, percent white, percent Hispanic, percent Asian and average composite ACT score interacted with period dummies. Standard errors are in parenthesis, clustered at the school level. Source - LDOE and Office of Student Financial Aid.

Table 5: Estimates of the Effect of Mandatory FAFSA Completion on College Enrollment
by Alternative Measures of Treatment

	Main	2015	2016	Pred 2017	FRL
	(1)	(2)	(3)	(4)	(5)
<i>Panel A - Completion Rate</i>					
(Trt)*Post	0.421	0.387	0.305	0.374	0.194
	(0.059)	(0.056)	(0.051)	(0.072)	(0.035)
Controls	yes	yes	yes	yes	yes
N	1294	1294	1294	1294	1294
<i>Panel B - %Enrolled</i>					
(Trt)*Post	0.133	0.104	0.115	0.133	0.064
	(0.033)	(0.031)	(0.032)	(0.042)	(0.017)
Controls	yes	yes	yes	yes	yes
N	1554	1554	1554	1554	1554

Notes: Coefficients are estimates of β from equation (1) and outcome variables are completion rate or percent enrolled in college as a function of ninth grade cohort. Each column is a variant on treatment intensity. For example, column two reports the coefficient of 1 minus the FAFSA completion rate in 2015 interacted with a post-treatment year dummy from equation (1). Standard errors are in parenthesis, clustered at the school level. Sources include Louisiana Department of Education, NCES Common Core Data, and Office of Student Financial Aid.

Table 6: Estimates of the Effect of Mandatory FAFSA Completion on Alternative Outcome Variables

	%Enrolled (HS Grad)	Enroll (Count)	%Persisted (9th Cohort)
	(1)	(2)	(3)
(1-Ave Comp Rate)*Post	0.078 (0.036)	29.862 (18.600)	0.014 (0.050)
Controls	yes	yes	yes
N	1554	1554	746
R-Squared	0.870	0.981	0.919
Dep. Var. Mean	0.574	138	0.360

Notes: Coefficients are estimates of β from equation (1) and outcome variable is listed in the columns - percentage enrolled in college as a function of high school graduates, enrollment count, and percentage who persisted into their second year conditional on going their first year. Standard errors are in parenthesis, clustered at the school level. Standard errors are in parenthesis, clustered at the school level. Source - LDOE and Office of Student Financial Aid.

Table 7: Estimates of the Effect of Mandatory FAFSA Completion on College Enrollment
by Free and Reduced-Price Lunch Status

	Lowest	Second	Third	Fourth	Highest
<i>Panel A - Completion Rate</i>					
(1-Ave Comp Rate)*Post	0.186	0.011	0.506	0.318	0.529
	(0.121)	(0.123)	(0.135)	(0.199)	(0.130)
N	260	260	260	260	254
R2	0.866	0.831	0.835	0.788	0.784
Dep. Var. Mean	0.677	0.618	0.598	0.586	0.604
<i>Panel B - % Enrolled</i>					
(1-Ave Comp Rate)*Post	0.072	0.017	0.221	0.174	-0.027
	(0.067)	(0.064)	(0.089)	(0.115)	(0.109)
N	312	312	312	312	306
R2	0.903	0.828	0.866	0.802	0.752
Dep. Var. Mean	0.607	0.483	0.429	0.385	0.383

Notes: Each column corresponds to a quintile ranking for a school, and equation (1) estimates β for each quintile separately. Standard errors are in parenthesis, clustered at the school level. Source - LDOE and Office of Student Financial Aid.

Table 8: Estimates of the Effect of Mandatory FAFSA Completion on College Enrollment by Rural/Urban and Racial Demographics

	Geography		Median % Black		Student Characteristics		
	Rural	Urban	Below	Above	Black	Econ Dis	White
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1-Ave CR)*Post	0.132	0.134	0.135	0.116	0.078	0.082	0.056
	(0.053)	(0.044)	(0.047)	(0.044)	(0.068)	(0.051)	(0.057)
N	1050	504	780	774	734	918	809
R-Squared	0.825	0.948	0.872	0.909	0.867	0.844	0.922
Mean	0.472	0.486	0.533	0.435	0.447	0.391	0.518

Note: Coefficients are estimated from equation (1). The first four columns are estimated from split samples based on *school* characteristics. Below median uses schools that had a below median average percent black students in the pre-treatment period. Above median uses schools that had above median average percent black students in the pre-treatment period. Urban/Rural is estimated separately based on NCES classification of geography. Columns 5 - 7 are the percent of black, economically disadvantaged, and white students of their cohort who enroll in college in the fall across all schools. Sample sizes are smaller due to data compression from LDOE. Standard errors are in parenthesis, clustered at the school level.

Table 9: Comparison of the Estimates of Previous Literature on the Efficacy of FAFSA Completion and College Enrollment

Paper	FAFSA		Enroll		LATE/TOT	Notes
	Control	Treatment	Control	Treatment		
	Mean %	Effect	Mean %	Effect		
LA Mandate - DID	53	4ppts	47	1ppt	3ppts	DID estimates, attenuated - see text for details
LA Mandate - time only variation	53	19ppts	47	2ppt	-	All schools pre - 2017 versus post - 2017; does not account for treatment intensity
Bettinger et al. (2012)^a - completion arm	40	16ppts	34	8ppts	50ppts	(Individual level experiment) Low-income dependents (mostly HS seniors with parents offered assistance at H&R Block); completion -
Bettinger et al. (2012) - info arm	40	-0.01ppts	34	-0.00ppts	-	filled out FAFSA; info - provided aid estimates
Bird et al. (2019)^b	44	-.6ppts	82/54	.3-.9ppts	-	(Individual level experiment) Low-income/first gen HS seniors who had Common Application accounts or HS seniors who apply through a “large” state sponsored portal; texted reminders to file FAFSA
Page et al. (2018)^c	43	4ppts	50	3ppts	75ppts	(School level experiment) HS seniors with Apply Texas Accounts; text message of personalized information; not all students in each school treated
Castleman & Page (2016)^d	-	-	54	14ppt	-	(Individual level experiment) Freshman at 2 year university; texted reminders to file FAFSA

Note: ^a Table 3; ^b Tables 6 and 7; ^c Tables 3 and 4; ^d Table 4; LDOE control mean is the average across all schools in pre-treatment period; These are a subset of literature, selected based on similarity to this paper. Smaller scale examples and literature on summer melt, which often has FAFSA completion as one component of broader outreach, were not included in the primary comparisons because Bird et al. (2019) has many elements from these papers, but is additionally scaled. For papers on summer melt see: Castleman et al. (2012, 2014, 2015); Castleman and Page (2015); Page and Gehlbach (2017).

8 Figures

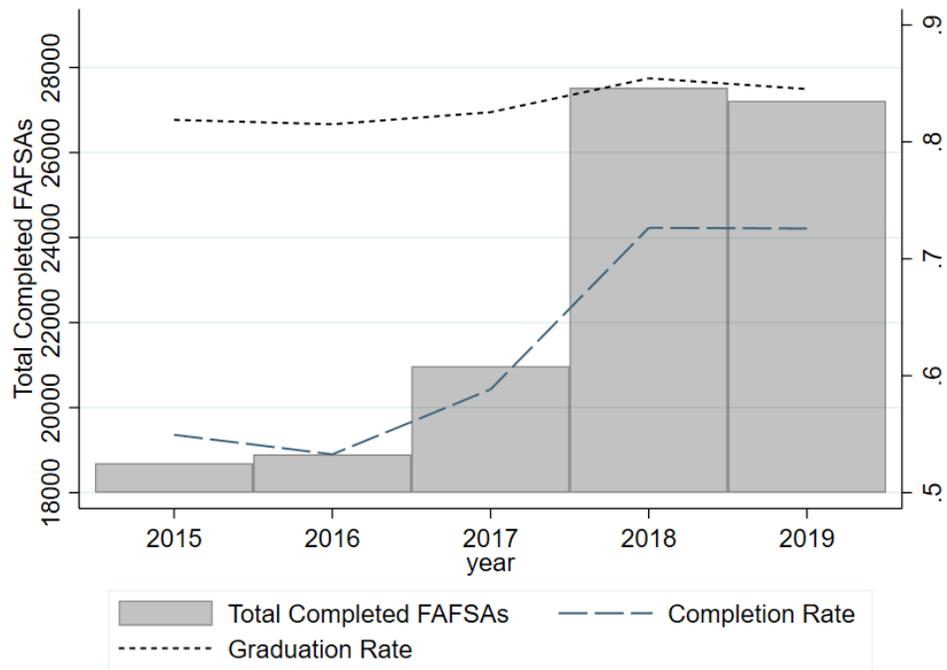


Figure 1: Total FAFSAs Completed, Completion Rate, and Graduation Rates

Note: Total completions are total FAFSA completions as of June of the students' graduating year for the schools in my sample. Completion rate and graduation rate are the weighted average of these schools. Data come from both the Office of Student Financial Aid and LDOE.

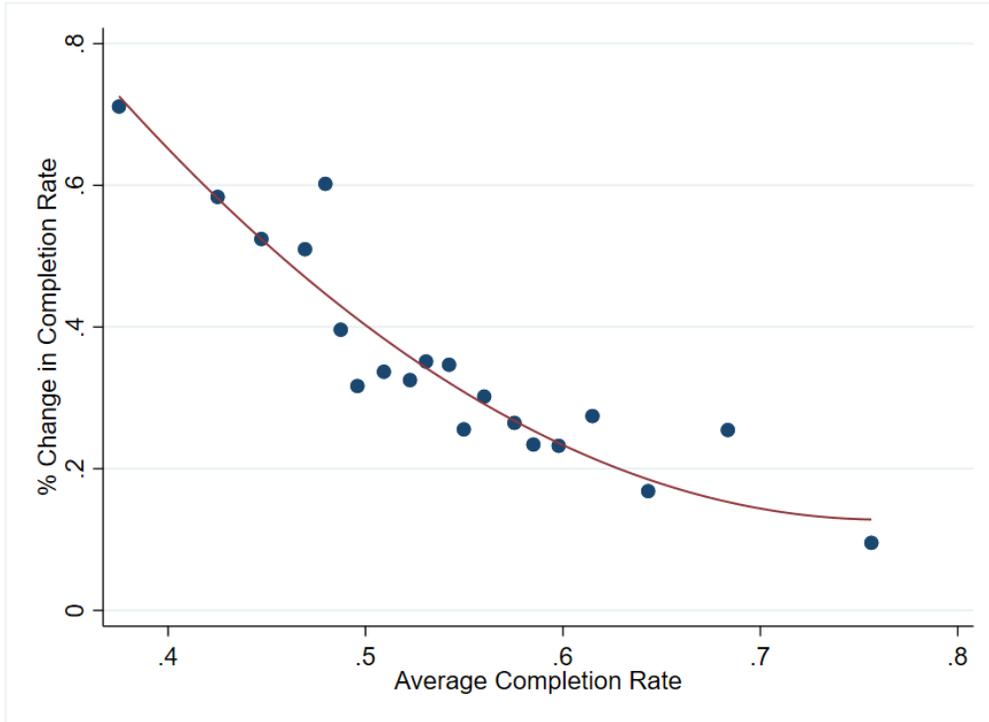


Figure 2: Percentage Change in Completion Rates from 2015 to 2018-2019 by
Pre-treatment Completion Rate Status

Note: Data come from both the Office of Student Financial Aid and LDOE. The y-axis represents the percentage change in completion rate from 2015 to the average of 2018 and 2019 ($\frac{(\text{Average Completion Rate } 2018-2019) - \text{Completion Rate } 2015}{\text{Completion Rate } 2015}$). A value of .4 is equivalent to $.4 * 100 = 40\%$ increase in completion rate from 2015 to average of 2018-2019. Each point is a weighted average of the schools which fall in 20 equally spaced bins (determined by average completion rates in 2015 and 2016). A scatter plot is available in the Appendix, Figure A2.

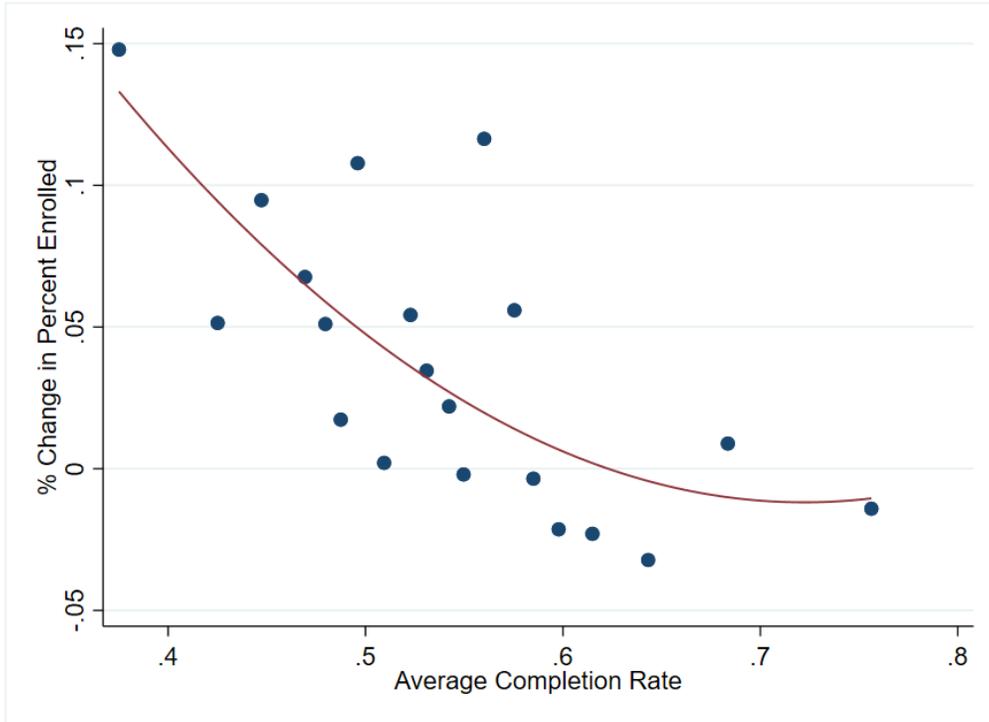
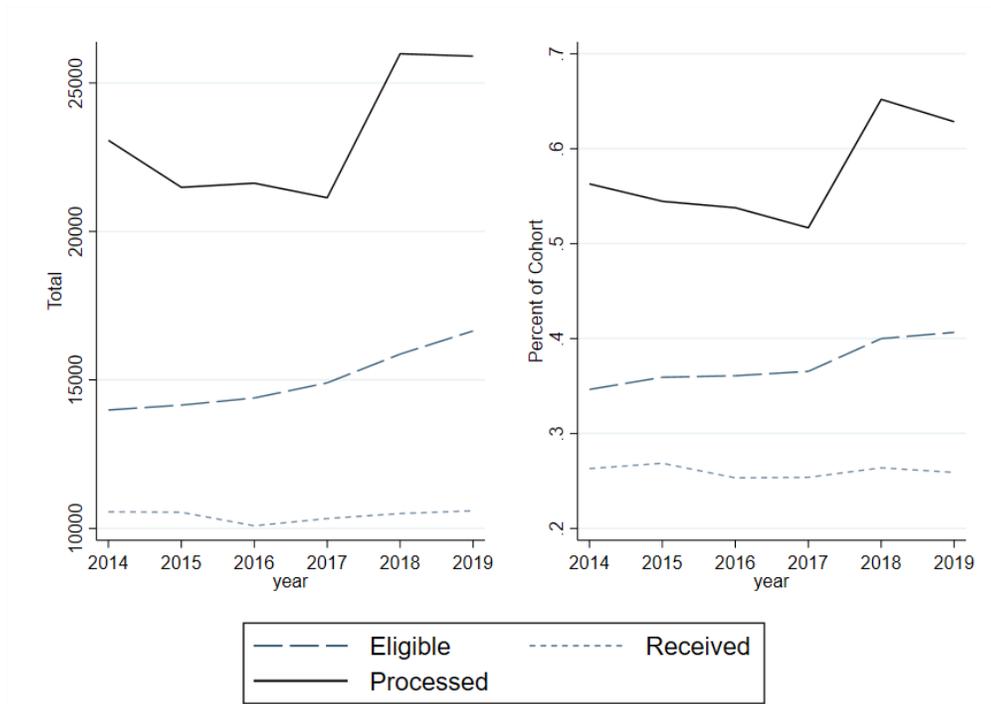


Figure 3: Percentage Change in Percent Enrolled in College in the Fall from 2015 to 2018-2019 by Pre-treatment FAFSA Completion Rate Status

Note: Data come from LDOE. The y-axis represents the percentage change in percentage enrolled from 2015 to average of 2018 and 2019 ($\frac{\text{Average Percent Enrolled 2018-2019} - \text{Percent Enrolled 2015}}{\text{Percent Enrolled 2015}}$). A value of .05 is equivalent to $.05 * 100 = 5\%$ increase in percent of freshman cohort enrolled in college from 2015 to average of 2018-2019. Each point is a weighted average of the schools which fall in 20 equally spaced bins (determined by average completion rates in 2015 and 2016). A scatter plot is available in the Appendix, Figure A3.

Figure 4: TOPS Program



Note: Total include counts of the number of TOPS applications processed, total number TOPS applications that meet eligibility requirements, and the total number of TOPS recipients. Percent of cohort comprise the total for each category divided by the cohort from three years prior (freshman cohort for each school). Percent of cohort are weighted averages across schools. These data come from Louisiana Office of Student Financial Assistance. TOPS program is *merit*-based financial aid.

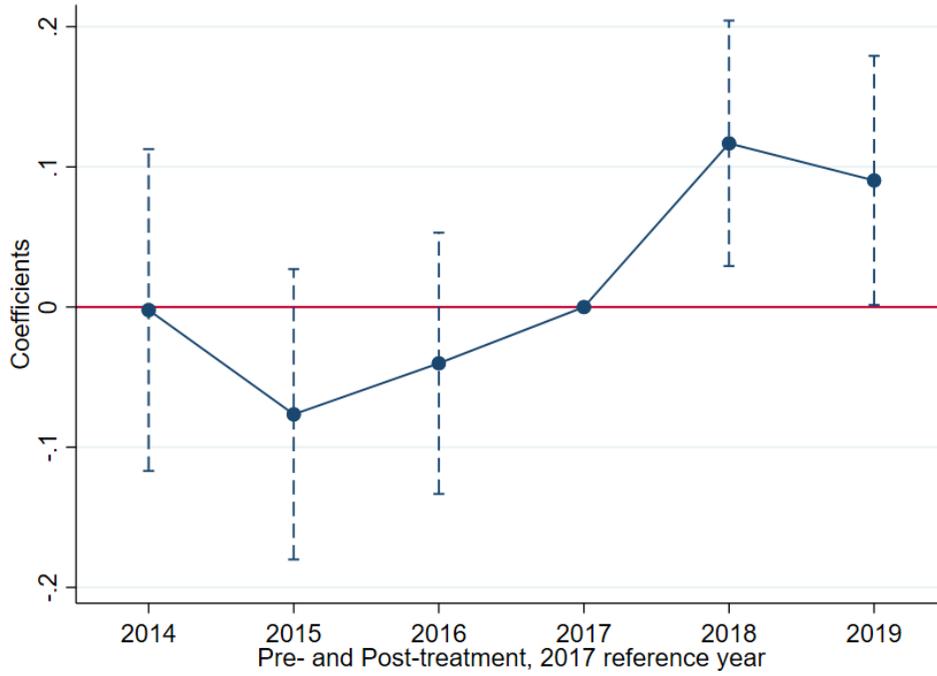


Figure 5: Event Study - College Enrollment

Note: These represent β_y from equation (5). All of the coefficients are relative to 2017. Point estimates are displayed along with their 95% confidence intervals as described in equation (5). The baseline (omitted) base period is 1 year prior to the adoption of the mandate in each reforming state, indicated by the solid vertical line in the plot. This was estimated using weights described in the text. Data come from both the Office of Student Financial Aid and LDOE.

9 A. Appendix: For online publication only

9.1 Data

In the following list are schools that were dropped either in the merging (to enrollment) or removed due to sample selection (see Data section for details).

- Abramson Sci Academy
- Academic Recovery Ombudsman
- Algiers Technology Academy
- Arlington Preparatory Academy
- Atlanta High School
- Beekman Charter School
- Benjamin Franklin High School
- C.F. Rowley Alternative School
- Caddo Virtual Academy
- Capitol High School
- Career Academy
- Cohen College Prep
- Crescent Leadership Academy
- DArbonne Woods Charter School
- Delhi Charter School
- Delta Charter School MST
- Denham Springs High School
- Dr. Martin Luther King Charter School for Sci/Tech

- Edward J Sam Accelerated School of LA
- Edna Karr High School
- Eleanor McMain Secondary School
- Epps High School
- Fair Park College Preparatory Academy
- Fair Park High School
- Frankie Ray Jackson Sr. Technical Center
- Georgetown High School
- Gibsland-Coleman High School
- Grambling State Univ. Laboratory High School
- Grand Isle High School
- G W Carver High School
- G. W. Carver Collegiate Academy
- G. W. Carver Preparatory Academy
- Hackberry High School
- Haynes Academy School for Advanced Studies
- Istrouma Senior High School
- JCFA-East
- JS Clark Leadership Academy
- John F. Kennedy High School
- John McDonogh High School
- Johnson Bayou High School
- Joseph S. Clark Preparatory High School

- KIPP Renaissance
- LA New Tech at Plain Dealing
- Lake Area New Tech Early College High School
- Lake Charles College Prep
- Lee High School
- Lincoln Preparatory School
- Lord Beaconsfield Landry-Oliver Perry Walker High
- Louisiana Connections Academy
- Louisiana School for Math Science & Arts (former Louisiana School for Math Science & Technology)
- Louisiana School for the Deaf
- Louisiana Virtual Charter Academy
- Lusher Charter School
- Mentorship Academy of Science & Technology
- Miller-McCoy Academy for Mathematics and Business
- Natchitoches Parish Technical and Career Center
- New Orleans Charter Science and Mathematics HS
- New Orleans Military & Maritime Academy
- New Orleans Center for Creative Arts
- Northdale Superintendent's Academy
- Northeast Claiborne Charter
- Northshore Charter School
- Oak Hill High School

- Pathways in Education - North market
- Pathways in Education-Louisiana Inc.
- Patrick F. Taylor Science & Technology Academy
- Phoenix High School
- Plain Dealing High School
- Pointe Coupee Central High School
- ReNEW Accelerated High School
- ReNEW Accelerated High School City Park Campus
- ReNEW Accelerated High School West Bank Campus
- Rapides High School
- Robert E. Lee High School
- Sarah Towles Reed Senior High School
- Sci Academy
- Shreveport Job Corps Opportunity Center
- Slaughter Community Charter School
- Sophie B. Wright Charter School
- South Lafourche High School
- Southern University Laboratory Virtual School
- St. James High School
- Starks High School
- Terrebonne High School
- The NET 2 Charter High School
- The NET Charter High School

- Thrive Academy
- University View Academy, Inc.
- Virtual Academy of Lafourche
- Vision Academy
- Walker High School
- Walter L. Cohen College Prep
- Youth Study Center

9.2 Tables

Table A1: Descriptive Statistics: Mean and Standard Deviation by Year

	2014	2015	2016	2017	2018	2019
	mean/sd	mean/sd	mean/sd	mean/sd	mean/sd	mean/sd
HS Grads	133 (110)	131 (111)	136 (113)	137 (115)	147 (119)	145 (119)
Number of HS Grads Enrolled in College in Fall	79 (76)	76 (75)	79 (75)	79 (77)	84 (79)	82 (78)
Student Count in School (all grades)	751 (465)	763 (475)	773 (485)	773 (487)	771 (479)	757 (475)
9th Grade Cohort	188 (155)	180 (151)	186 (154)	189 (157)	184 (156)	190 (159)
Teacher Salary	50322.55 (4627.49)	50766.48 (3604.86)	50865.97 (4083.46)	51376.22 (3643.27)	51883.13 (3893.57)	50808.76 (3360.72)
Current per Pupil Expenditures	10548.34 (1955.49)	10868.74 (1975.65)	10804.49 (1925.58)	10960.43 (1905.21)	11333.29 (2158.35)	10807.82 (1859.18)
Composite ACT (out of 36)	19.16 (2.00)	19.31 (1.94)	19.44 (1.98)	19.47 (2.00)	19.27 (2.15)	18.77 (2.20)
Graduation Rate	79.48 (9.89)	81.89 (10.11)	81.51 (9.96)	82.54 (11.02)	85.44 (9.75)	84.52 (10.50)
Percent College Enrolled (9th Grade Cohort)	47.51 (13.65)	47.67 (13.40)	47.31 (13.19)	48.01 (13.73)	49.46 (13.65)	47.84 (14.08)
Percentage College Enrolled (HS Grads)	59.08 (12.28)	57.55 (11.60)	57.30 (11.46)	57.43 (11.82)	57.32 (12.39)	55.91 (12.50)
Percentage of Enrolled Attending 2 Year*	35.62 (15.24)	31.42 (14.27)	34.96 (14.24)	31.45 (13.99)	31.11 (13.81)	31.82 (13.92)
Percentage of Enrolled Attending 4 Year*	64.32 (15.31)	68.58 (14.27)	65.04 (14.24)	68.55 (13.99)	68.89 (13.81)	68.19 (13.92)
Percentage of Enrolled Attending In State*	92.44 (5.84)	92.35 (5.99)	91.40 (6.11)	89.59 (7.41)	89.55 (7.09)	89.92 (7.08)
Percentage White	51.26 (27.09)	50.42 (27.09)	49.59 (27.18)	48.74 (27.17)	48.09 (27.18)	47.44 (27.00)
Percentage Black	41.33 (26.91)	41.56 (26.81)	41.83 (27.05)	41.95 (26.99)	42.03 (26.96)	42.02 (26.89)
Percentage Hispanic	4.05 (5.58)	4.64 (6.48)	5.00 (6.87)	5.40 (7.27)	5.83 (7.51)	6.26 (7.76)
Percentage Asian	1.67 (2.27)	1.65 (2.28)	1.63 (2.26)	1.63 (2.35)	1.66 (2.52)	1.68 (2.59)
Percentage Free/Reduced Lunch	56.56 (18.85)	53.86 (17.93)	53.17 (17.69)	56.65 (18.51)	49.41 (19.68)	48.18 (16.10)
FAFSA Completion Rate (June of graduating year)	(.)	54.95 (9.80)	53.28 (9.67)	58.83 (9.58)	72.66 (10.04)	72.59 (10.77)
Observations	259	259	259	259	259	259

Note: These means and standard deviations are weighted by average of the 2014-2017 total number of students in a school divided by the number of grades taught (high school graduates, number of high school graduates, student count, and 9th grade cohort are all unweighted so as to reflect cross school averages). Sources include Louisiana Department of Education, NCES Common Core Data, and Office of Student Financial Aid. * - Share of percent enrolled in college as a function of high school graduates who attend either a 2 year university, 4 year university or attended in Louisiana state.

Table A2: Diploma Paths

Year	Number of Students Graduating		
	Career Path	University Path	University Path
2015	9,966	29,119	75%
2016	10,077	31,152	76%
2017	9,080	31,717	78%
2018	10,285	33,652	77%
2019	11,358	33,000	74%

Note: Totals are estimates of the number of seniors who graduate on-time with diplomas that fall under two broad categories: a career path or a university path. The data come from a special request of the LDOE and are rounded down. Due to the rounding, it's simply meant to be illustrative of relatively stable trends in proportion over the sample period.

Table A4: Estimates of Completion Rate on Percentage Enrolled with Linear Trend

	(1)
(1-Ave Comp Rate)*Post	0.106
	(0.070)
N	1554
R-Squared	0.922

Note: This is run on equation (6) where outcome variable is percentage enrolled in college. Standard errors are in parenthesis, clustered at the school level. Source - LDOE and Office of Student Financial Aid.

Table A3: Estimates of the Effect of Mandatory FAFSA Completion on TOPS Program Application, Eligibility, and Receipt

	Processed	Eligible	Received
<i>Panel A - % of Cohort</i>			
(1-Ave Comp Rate)*Post	0.287	0.100	0.100
	(0.085)	(0.053)	(0.045)
Controls	yes	yes	yes
<i>Panel B - Counts</i>			
(1-Ave Comp Rate)*Post	49.123	9.034	25.485
	(31.338)	(19.752)	(17.656)
Controls	yes	yes	yes
N	1292	1292	1291

Notes: Total include counts of the number of TOPS applications processed, total number TOPS applications that meet eligibility requirements, and the total number of TOPS recipients. Percent of cohort are the percent of total for each category divided by the cohort from three years prior (freshman cohort for each school). These data come from Louisiana Office of Student Financial Assistance, LDOE, and Office of Student Financial Aid. TOPS program is *merit*-based financial aid. Standard errors are in parenthesis, clustered at the school level.

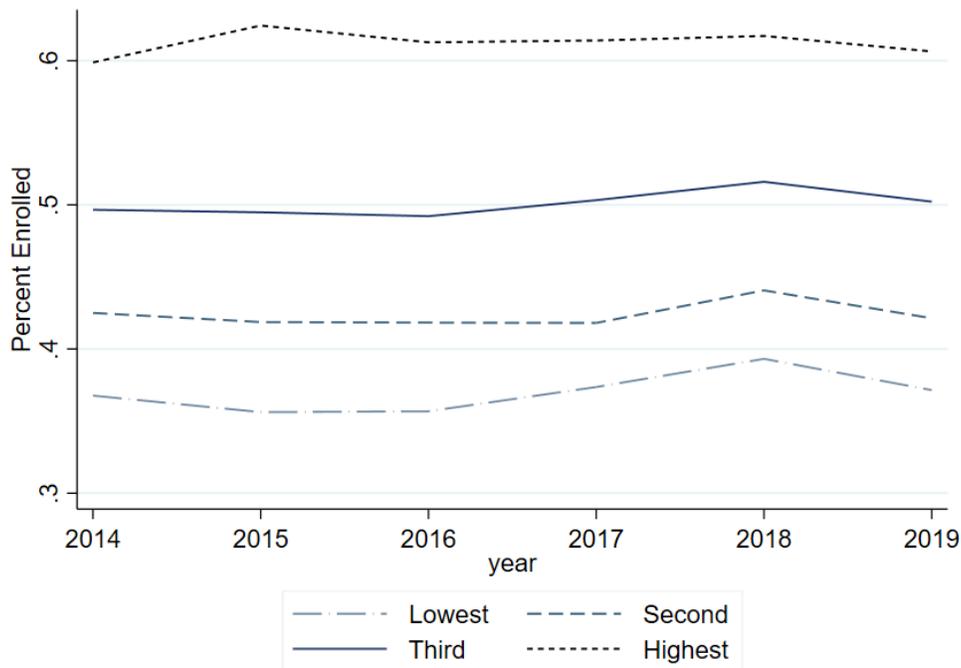
Table A5: Summary Statistics from Random Assignment of Treatment Effects (Monte Carlo Exercise)

	Mean	Std. Dev.
Beta - (DID coefficient)	-0.001	0.032
Std. Error of Beta	0.033	0.003

These are the summary statistics from the Monte Carlo exercise described in Section 5. Source - LDOE and Office of Student Financial Aid.

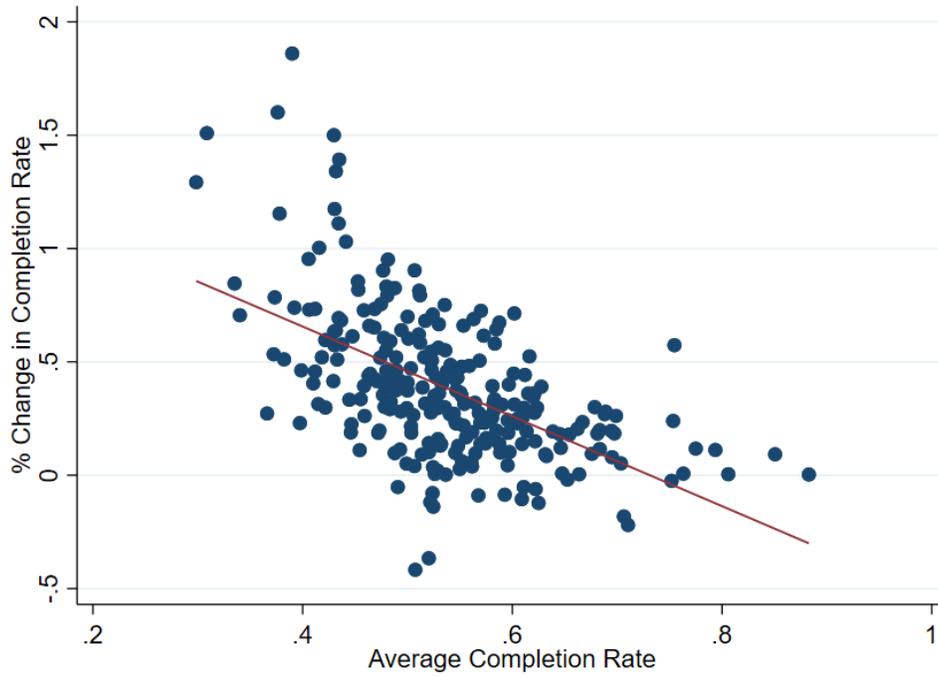
9.3 Figures

Figure A1: Percentage Enrolled in College over Time by Pre-Treatment FAFSA Completion Rate Quartile



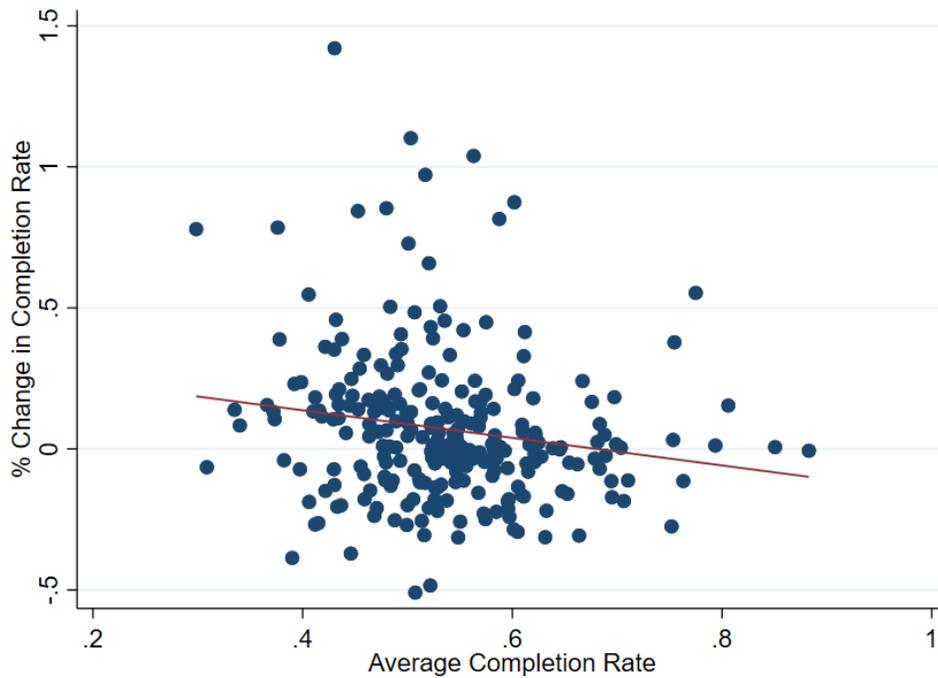
Note: Data come from the LDOE with quartile rankings dependent on data derived from the Office of Student Financial Aid. Each line represents a weighted average of the schools in that quartile and year. The schools are partitioned into quartiles based on their average FAFSA completion rate in 2015-16.

Figure A2: Percentage Change in Completion Rates from 2015 to 2018-2019 by
Pre-treatment Completion Rate Status



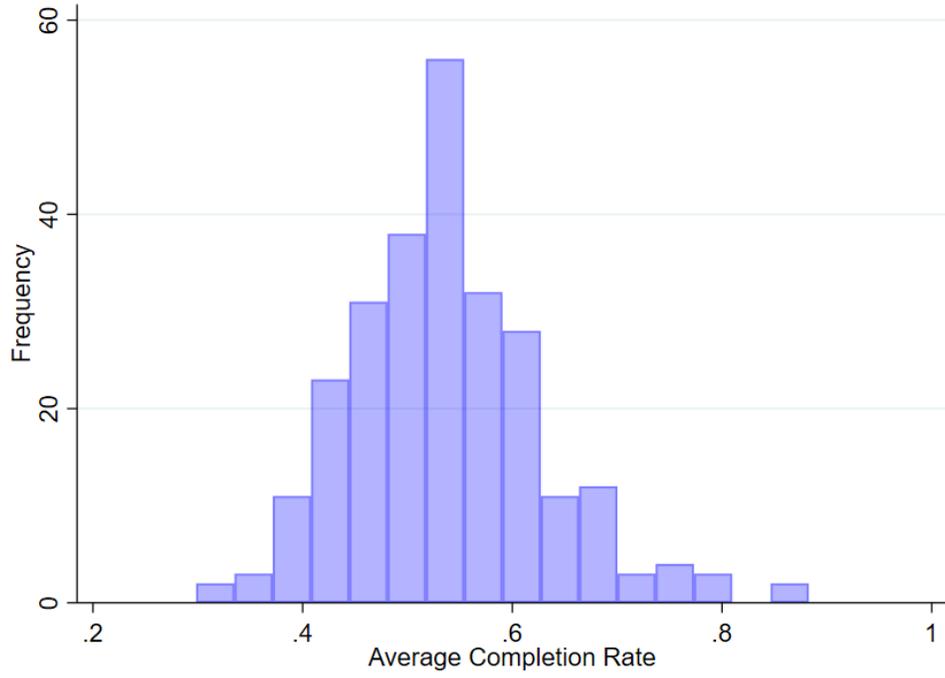
Note: Data come from both the Office of Student Financial Aid and LDOE. The y-axis represents the percentage change in completion rate from 2015 to the average of 2018 and 2019 ($\frac{(\text{Average Completion Rate 2018-2019}) - \text{Completion Rate 2015}}{\text{Completion Rate 2015}}$). A value of .4 is equivalent to $.4 * 100 = 40\%$ increase in completion rate from 2015 to average of 2018-2019.

Figure A3: Percentage Change in Percent Enrolled in College in the Fall from 2015 to 2018-2019 by Pre-treatment FAFSA Completion Rate Status



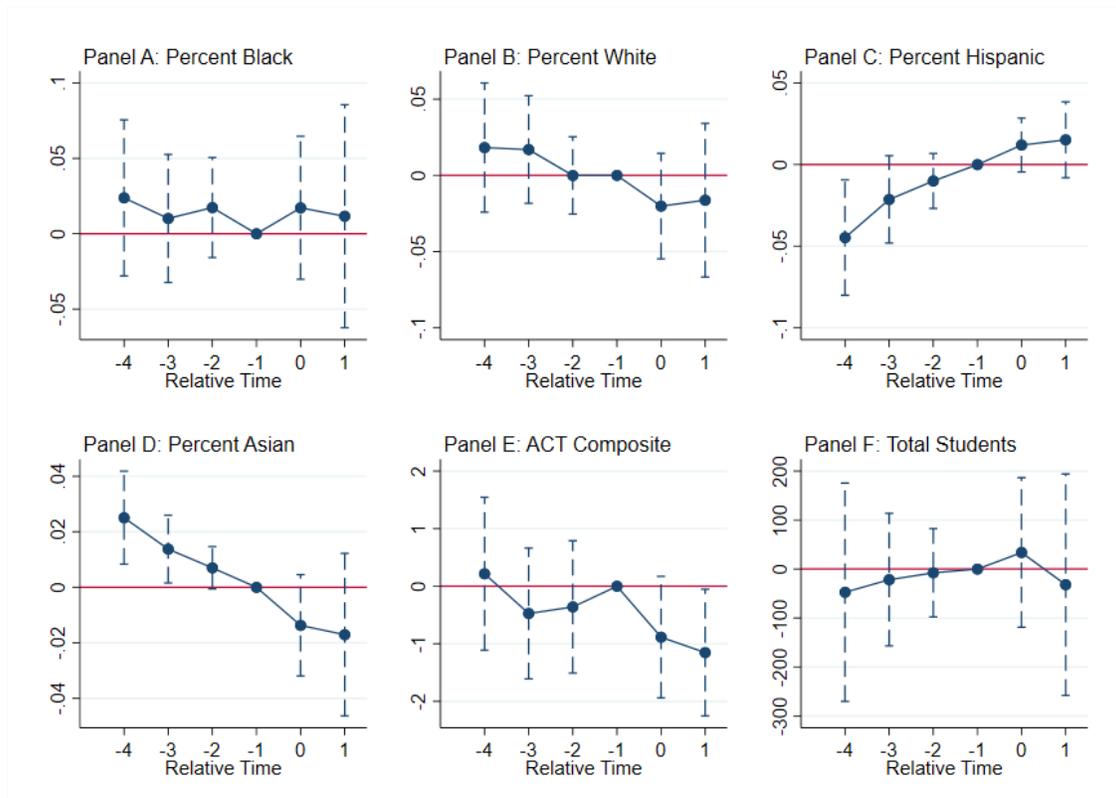
Note: Data come from LDOE. The y-axis represents the percentage change in percentage enrolled from 2015 to average of 2018 and 2019 ($\frac{\text{Average Percent Enrolled 2018-2019} - \text{Percent Enrolled 2015}}{\text{Percent Enrolled 2015}}$). A value of .4 is equivalent to $.1 * 100 = 10\%$ increase in percent enrolled from 2015 to average of 2018-2019.

Figure A4: Histogram of Completion Rate



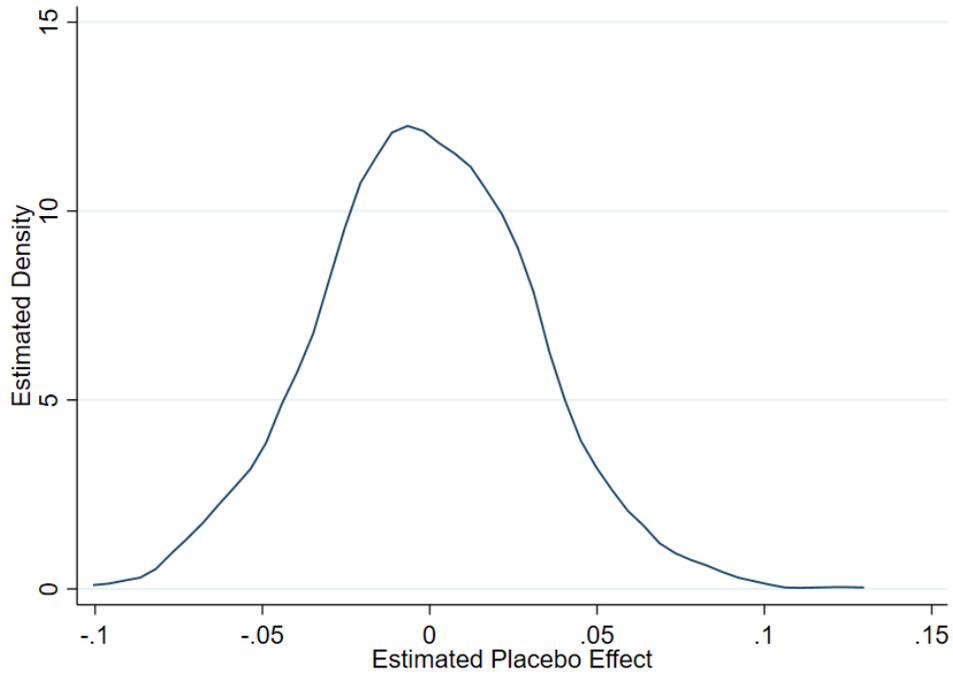
Note: Data come from LDOE and Office of Student Financial Aid.

Figure A5: Event Studies on Control Characteristics



Note: All of the coefficients are interpreted relative to 2017. Point estimates are the coefficients on the treatment intensity cross year dummies and are displayed along with their 95% confidence intervals, and outcome variables are listed in each panel. The baseline (omitted) base period is 1 year prior to the adoption of the mandate in each reforming state, indicated by the solid vertical line in the plot. This was estimated using weights described in the text. Data come from LDOE and Office of Student Financial Aid.

Figure A6: MC Simulation



Note: Data come from LDOE and Office of Student Financial Aid. This is the Kernel density of the β s from equation (1) calculated by randomly reassigning treatment effect.

PARENTAL NONPARTICIPATION FORM
Financial Aid Application Completion Requirement

LEA Name:

Beginning with 2017-2018 school year, each graduating high school senior in a Louisiana public high school will be required, as part of his individual graduation plan, to complete either the Free Application for Federal Student Aid (FAFSA) or the Taylor Opportunity Program for Students (TOPS) online application, have a parent or legal custodian certify in waiver in writing to the student's local education agency (LEA) if he refuses to complete such an application, or the LEA may apply for a waiver of this requirement through the district hardship waiver process.

Please complete this form if you are the parent of a student attending a Louisiana public high school who will graduate in the spring of 2018 or beyond, and you wish to opt out of the requirement that your child complete either the FAFSA or TOPS online application as part of his individual graduation plan.

Student Name:	Date of Birth (mm/dd/yyyy):	
Parent/Legal Guardian Name:	Name of School/Parish:	
Home Address:		
City:	State:	ZIP:
Telephone Number:	Email:	

Rationale for Nonparticipation (optional):

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I am the parent or legal guardian of the student referenced above, and I am electing to not have him complete either the FAFSA or TOPS online application as part of his individual graduation plan.

Print Parent/Legal Guardian Name:

Parent/Legal Guardian Signature: X	Date:
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HARDSHIP WAIVER FORM

Financial Aid Planning Graduation Requirement

LEA name	Superintendent name
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Each graduating high school senior in a Louisiana public high school is required to plan for postsecondary education expenses. Per Bulletin 741, students must either submit the Free Application for Federal Student Aid (FAFSA), complete the Taylor Opportunity Program for Students (TOPS) online application, or have a parent or legal custodian submit a statement of nonparticipation to the local education agency (LEA). **Per Bulletin 741, if a graduating senior is not able to fulfill these requirements due to extenuating circumstances, the LEA may apply for a waiver to be approved by the state superintendent of education to waive the student of this requirement for graduation.**

Please complete this form if you are requesting that the Louisiana Department of Education (LDOE) waive the financial aid graduation requirement for a student in your district.

Student name	LASID	Date of birth (mm/dd/yyyy)	
Name of school		Graduation year (mm/yyyy)	
Student address			
City	State	Zip	
Student telephone number(s)		Email address(es)	

Rationale for waiver

<p>Please use the space below to explain the reason(s) for the application and document attempts by the school and district to support the student and contact the family.</p>
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My signature below is to certify that our school system has made reasonable efforts to fulfil our obligations to the aforementioned student and to provide for the policy requirements in Bulletin 741.

Principal signature	Date
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