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Francisco Cabrera-Hernández
CIDE

María Padilla-Romo
University of Tennessee and IZA

Cecilia Peluffo
University of Florida

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Full-Time Schools and Educational Trajectories: Evidence from High-Stakes Exams*

This paper estimates the effects of extending the school day during elementary school on students' education outcomes later in life. We do so in the context of Mexico City's metropolitan area, where a large-scale program introduced in 2007 extended the school day from 4.5 to 8 hours in schools that adopted the program. We exploit cohort-by-cohort variation in students' full-time school enrollment during elementary school to identify the longer-term effects on their performance in a high-school admission exam, subsequent placement, and preferences over high schools. The results indicate that full-time schools have positive and long-lasting effects on students' performance, increasing high-stakes test scores by 4.9 percent of a standard deviation. Exposure to full-time schooling also increases students' probability of choosing highly-selective high schools as their top choices, especially among students from low-SES schools.

JEL Classification: I21, I25, J01

Keywords: full-time schools, high-stakes exams, education, Mexico

Corresponding author:
María Padilla-Romo
Department of Economics
University of Tennessee
514 Stokely Management Center
Knoxville, TN 37916
USA

E-mail: mpadill3@utk.edu

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1 Introduction

Implementing effective education policies to improve academic outcomes and productivity is central to fostering economic development. In this context, full-time schools (FTS) have shown promising results in improving education quality and promoting equity in the short term.[1] However, the evidence on long-term effects of investments in education—such as the expansion in public FTS—is limited. Understanding these impacts is imperative for a complete assessment of the benefits and costs of FTS.

This paper provides new evidence on the effects of FTS on educational trajectories, considering a large-scale program that extended the school day by three-and-a-half hours in public elementary schools in Mexico. Due to data restrictions or lack of exogenous variation in education exposure, evaluating the trajectory of the effects of investments in education at different educational stages is typically challenging. We overcome identification challenges by combining a large-scale policy change with rich individual-level data on students' educational trajectories, including measures of academic performance and student preferences over schools. We leverage quasi-experimental variation in the staggered roll-out of Mexico's FTS program and linked administrative records on low-stakes and high-stakes test scores in Mexico City's metropolitan area to identify causal effects of exposure to FTS during elementary school on high-stakes test scores, high school placement, and preferences over highly-selective high schools later in life.

To recover the causal effects of interest, our identification strategy exploits the variation in exposure to FTS across schools and over time. Because elementary schools were incorporated into the FTS program in different academic years, two-way-fixed effects (TWFE) regressions are potentially biased (e.g., de Chaisemartin and D'Haultfœuille, 2020; Sun and Abraham, 2021; Goodman-Bacon, 2021).[2] We implement the diagnostic test proposed by Goodman-

[1] See, for example, Bellei (2009); Cabrera-Hernández (2020); Agüero et al. (2021); Padilla-Romo (2022).

[2] The FTS was first introduced in the academic year 2007-2008, covering 500 schools in 15 states. Over time, it was gradually extended to other schools and states. By 2018, more than 25,000 schools distributed across all states in Mexico had implemented the program (see Cabrera-Hernández, 2020; Padilla-Romo, 2022).

Bacon (2021) to evaluate the extent to which the staggered implementation of the FTS program is likely to bias the TWFE estimates in our setting. Furthermore, we present our main results using the Interaction-Weighted (IW) estimator proposed by Sun and Abraham (2021), which produces estimates that are robust to both dynamic effects and heterogeneous treatments across schools adopting the FTS program at different time periods.

Our data come from the Mexican Secretariat of Public Education. The data contain information from *ENLACE* (National Assessment of Academic Achievement in Schools), a low-stakes standardized exam administered annually to elementary school students to evaluate their general performance in mathematics and language. This information allows us to determine if students were exposed to FTS in elementary school and the degree of exposure in years. We also use information from *COMIPEMS* (Metropolitan Commission of Public Institutions of Higher Secondary Education), a high-stakes high school admission exam, and its context questionnaire. Our analytical sample contains information on the elementary schools where students were enrolled between 2007 and 2013, the middle schools they attended, high school admission exam scores, self-reported non-cognitive outcomes, and information on family background and demographics. In addition, we observe the students' reported complete ranking of preferences over high school options.

We examine the effects of the extension in FTS availability on a set of complementary outcomes. Our main analysis focuses on high-stakes test scores, which are strong predictors for long-term academic achievement and labor force outcomes (Ebenstein et al., 2016; Machin et al., 2020). We find that being enrolled in an FTS for all six years of elementary school education increases high school placement test scores by 9.5 percent of a standard deviation. In addition, we estimate the effects on students' preferences over high schools, which may be interpreted as a proxy for academic aspirations and motivation. On average, exposure to FTS in elementary school education increases the probability of choosing one of the ten most selective public high schools in the Mexico City metropolitan area as their top choice by one percentage point. For students from low-SES backgrounds, the effect reaches 1.3 percentage points, and for students from high-SES backgrounds is estimated at 0.4 percentage points. We also analyze the associated effects of FTS on high school placement. Full-time schooling increases the probability that students attend more selective high schools: 13 of each 100 students ever exposed to the FTS program during elementary school are placed in more-preferred schools on their priority list. Moreover, we find that FTS increases students' probability of taking a high school admission exam and graduating on time.

Students with lower average elementary-school pre-intervention test scores experience more pronounced increases in the probability of taking the high school placement exam. This suggests that exposure to FTS in elementary school changes the composition of students taking the high school admission exam. We follow the approach developed by Lee (2009) and provide bounds on the estimated effects under extreme assumptions about the new test scores induced by this endogenous sample selection process.[3] Exposure to FTS in elementary school significantly increases performance in the high-stakes high school admission exam even under these extreme assumptions, which implies that our main conclusions are robust to the nonrandom selection of students taking the high school admission exam and that our estimates are likely to be downward biased.

While a large fraction of literature has focused on the importance of cognitive skills, non-cognitive skills are also strong determinants for long-term success in economic and behavioral outcomes (Heckman, 2006; Heckman et al., 2006, 2013).[4] Using data on self-reported non-cognitive outcomes, we provide evidence of the effects of FTS on non-cognitive skills, which may mediate the effects on test scores. Our estimates suggest that exposure to FTS improved oral communication, the ability to learn independently, and the ability to plan school activities for girls. The results also suggest that FTS improved self-reported work ethic skills for girls and for students from lower socioeconomic backgrounds.

This paper contributes to the literature on the effects of FTS on academic achievement

[3]That is, we assume that the students entering the sample are either at the top or the bottom of the COMIPEMS' test score distribution.

[4]Hanushek and Woessmann (2008) find that for several economic and social outcomes, the effects of non-cognitive and cognitive gains (from the lowest to the top of the skills distribution) are comparable.

and non-cognitive outcomes. Existing studies on the effects of FTS concentrate on short-term low-stakes test scores (Cerdan-Infantes and Vermeersch, 2007; Bellei, 2009; Dias Mendes, 2011; Xerxenevsky, 2012; Llambí, 2013; Orkin, 2013; Almeida et al., 2016; Hincapie, 2016; Cabrera-Hernández, 2020; Agüero et al., 2021; Padilla-Romo, 2022), mothers and grandmothers' labor supply (Nemitz, 2015; Contreras and Sepúlveda, 2017; Padilla-Romo and Cabrera-Hernández, 2019; Cabrera-Hernández and Padilla-Romo, 2020; Garganta and Zentner, 2020; Berthelon et al., 2022), child labor (Kozhaya and Flores, 2022), divorce (Padilla-Romo et al., 2022), teen pregnancy, and youth crime (Berthelon and Kruger, 2011). Outcomes in the long run have received less attention. For the case of Chile, it has been shown that FTS delays childbearing, increases years of schooling (Dominguez and Ruffini, 2021), improves performance on test scores taken during adulthood but does not significantly affect labor market outcomes (Pires and Urzua, 2010). For the city of Buenos Aires (Argentina), Llach et al. (2009) document a positive association between extension in the school day in primary school and high school completion and no effects on labor market outcomes using a retrospective survey on 380 individuals. We add to this literature by providing results on the unexplored causal link between access to FTS in elementary school and performance in high-stakes exams, student preferences, and academic placement later in life.

The analysis proceeds as follows. Section 2 provides background information on the structure of Mexico's education system, the FTS program, and the centralized high school admission process in Mexico City's metropolitan area. Section 3 describes the data used for our analysis. Section 4 presents the identification strategy. Section 5 presents the main results. Section 6 discusses the robustness of our findings to sample selection, and Section 7 concludes.

2 Background

2.1 The Full-Time Schools Program

Mexico's education system comprises preschool (ages 3-5 years), elementary school (grades 1-6), middle school (grades 7-9), high school (grades 10-12), and higher education. Elementary school enrollment is nearly universal, achieving over 99% since the 2000/01 academic year. Moreover, net enrollment rates have been increasing sharply over the last two decades for higher levels of education. High school net education enrollment went through a remarkable increasing trend at the national level; it grew from 34.1% in 2000/01 to 60.2% in 2015/16.[5]

Approximately 92% of elementary school students attend a public school, with a typical school day of four-and-a-half hours, either in the morning (8:00 am-12:30 pm) or in the afternoon shift (2:00 pm-6:30 pm). Starting in the 2007/08 academic year, the government created an FTS program aiming to improve the quality of education and promote equity, which increased the length of the school day in public elementary schools that adopted the program. Participating schools extended their school day from four-and-a-half to eight hours.[6] During its first academic year of implementation (2007/08), the program was introduced in 500 elementary schools, and by 2018 it had been implemented in more than 25,000 schools, reaching more than three million students all over Mexico and nearly 80% of all Mexican municipalities. Due to its coverage and resources, the FTS has been one of Mexico's most important educational interventions in recent decades (Coneval, 2018).

Every academic year, the Ministry of Education provided the states with the program's operation rules denoting its goals and the characteristics of the schools to be targeted. The rules also denote how the additional funding due to the program could be allocated. Over time, the FTS program has targeted urban and rural schools that had one teacher per class; operated in either a morning or an afternoon shift but not both; those with low academic

[5]For middle school education, the national net enrollment rate increased by 21.4 percentage points, which was 66.5% in 2000/01 and grew to 87.9% in 2015/16.

[6]The typical school day in schools adopting the FTS program starts at 8:00 am and ends at 4:00 pm.

achievement in the ENLACE exam; and those in high-poverty areas. FTS funds could be used to supplement teachers' salaries, acquire teaching materials, equip schools for the extended schedule, and provide school lunches.

2.2 Mexico City's High School Admissions: COMIPEMS Exam

Our analysis takes place in Mexico City's metropolitan area, which has the highest middle-school and high-school net enrollment rates across all Mexican states. In Mexico City, enrollment has expanded considerably since the early 2000s, reaching universal enrollment in middle school in 2015/16 and increasing from 51.4% in 2000/01 to 83.9% in 2015/16 in high school. Public education covers most students, with roughly 91% and 83% of middle and high school students in Mexico City enrolled in public schools.

Nine different school subsystems offer public high school education in Mexico City's metropolitan area.[7] Before 1996, each subsystem had its own admission process. This meant that students had to take different admission exams for each subsystem. In 1996, all nine subsystems agreed to form the *Metropolitan Commission of Public Institutions of Higher Secondary Education* (COMIPEMS) to achieve inter-institutional coordination and jointly meet the demand for high school education in Mexico City's metropolitan area. In practice, this implies the existence of a single application process and the offering of the same high school admission exam (COMIPEMS exam) to all students. This high-stakes exam is the sole determinant of high school admission.[8]

Students may take the COMIPEMS exam during their last year of middle school (grade 9) or later. Every year, in February and March, students respond to a context questionnaire and a preference ranking with up to twenty high schools. In June, aspiring students take the

[7] For example, one subsystem is run by the National Autonomous University of Mexico (UNAM), and another one is organized by the National Polytechnic Institute (IPN), offering a more vocational-oriented high school education.

[8] The COMIPEMS exam contains 128 multiple-choice questions on ten subjects: math, math ability, reading, verbal ability, biology, physics, chemistry, geography, civics and ethics, and history. The composite score is the sum of all ten sections and ranges between 0 and 128. We normalize test scores for each academic year to have a mean of zero and a standard deviation of one.

COMIPEMS exam and are assigned to a high school using a Gali-Shapley algorithm. That is, all applicants are ranked from the highest to the lowest test score. Then, the applicant at the top of the performance distribution is assigned to her most preferred high school with open spots (the applicant is assigned to her next preferred school if the most preferred high school is full). Only one spot at a particular high school is offered; thus, the lower the result on the test, the higher the chance of being placed in a less-preferred option. This process is carried on until all applicants have been assigned to a high school. In Mexico City's metropolitan area, there are more spots at high schools than applicants. Thus, the sorting process and the exam stakes are about high-school preferences and not access.

3 Data

We use individual-level and school-level data from the Mexican Secretariat of Public Education. The individual-level data consist of linked information on low-stakes test scores in elementary school and high-stakes test scores for a high-school admission exam. In addition, our dataset incorporates individual-level preferences over high schools, demographic information, and self-reported non-cognitive outcomes for students taking a high-school admission exam. In terms of school-level data, we use the information on elementary schools' participation in the FTS Program and the share of Progresa beneficiaries in 2007.[9]

Low-stakes test scores come from ENLACE, a diagnostic test taken by elementary schools in grades three to six. This test evaluates skills in mathematics, language, and a third rotating subject each year and is offered to students in public and private schools in all states in Mexico. Importantly, ENLACE identifies the elementary school of enrollment for students taking the test. Information on high-stakes test scores, students' preferences over high schools, demographics, and self-reported non-cognitive outcomes come from COMIPEMS and its context questionnaire. As described in Section 2.2, the COMIPEMS exam is taken by students applying to public high schools in Mexico City's metropolitan area. To determine

[9]Progresa is a conditional cash transfer targeted at poor households.

exposure to FTS in elementary school, we use linked data from ENLACE, considering the school in which the applicants were enrolled the first time they took the ENLACE test. This information, combined with data on elementary schools' participation in the FTS program, provides a measure of exposure to the program in elementary school. By using initial school enrollment to determine exposure to the program, we avoid having non-monotonic changes in treatment status and shield our estimates against endogenous school switching during elementary school.[10]

Our sample covers the universe of students who attended an elementary school in Mexico City's metropolitan area, took the ENLACE exam at least once between 2007 and 2013, and applied to a public high school between 2010 and 2019. We drop students enrolled in elementary schools that adopted the program in 2007/08 because many of these schools were in a pilot run and already full-time before their incorporation into the program. We further restrict our sample to students taking the COMIPEMS exam for the first time to avoid practice effects and give re-takers a larger weight in the estimation.[11]

In our preferred specification, we also control for whether and when elementary schools adopted the Quality Schools program and the Secure School program. The Quality Schools program was launched in the academic year 2001/02 to improve the quality of education by enhancing infrastructure and decentralizing schools' decision-making processes. The Secure School program, introduced in the 2007/08 academic year, aims to prevent violence and drug addiction in schools by providing participant schools with technical and financial support. The information on when and whether schools adopted these programs comes from Mexico's Ministry of Education.

To estimate how FTS affects high school placement, we rely on information from the

[10] Padilla-Romo (2022) documents endogenous school switching as a response to the implementation of the FTS program. We address this issue by relying on the first elementary school of enrollment, as reported by ENLACE, which implies that we recover intent-to-treat estimates. In addition, in our baseline specification, we control for students' gender and mothers' level of education.

[11] In our sample, 87.88% of students take the COMIPEMS exam once, 11.25% twice, and 0.87% three or more times. Importantly, we are able to identify past enrollment for the large majority of students taking the COMIPEMS exam because 96.67% of the students who took COMIPEMS in our sample also took the ENLACE exam at least once.

Ministry of Education on each high school's admission cutoff. This information, combined with students' priority lists, allows us to make a counterfactual analysis to quantify the share of students placed in schools ranked above the schools they would have been otherwise assigned in the absence of the FTS program.

Table 1 shows summary statistics, separately for students enrolled in elementary schools that adopted the program between 2008/09 and 2012/13 (ever FTS), for those enrolled in non-adopting schools (never FTS), and for the overall sample. The probability of taking the COMIPEMS exam is 56% for students in schools that ever adopted the FTS program and 52% for those students in never adopting elementary schools. Students in ever-adopting schools have slightly lower ENLACE test scores than students in schools that never extended the school day. On average, 10% of students were enrolled in elementary schools that ever adopted the program. The average student enrolled in an ever-FTS has higher COMIPEMS test scores and is more likely to choose highly-selective high schools as his or her top choice. In addition, students in ever-FTS are more likely to be enrolled in schools that also participated in the Quality Schools program and the Secure School program. Moreover, mothers' education level is higher for students in ever-FTS than in never-FTS. These underlying differences between ever-treated and never-treated students highlight the importance of controlling for observed and unobserved students' characteristics that might be correlated with whether or not and when their elementary schools adopted the FTS program.

Table 2 presents descriptive statistics for non-cognitive outcomes. This information comes from COMIPEMS' context questionnaire. We define a set of indicator variables related to self-reported abilities to plan school activities, express ideas in writing, express ideas orally, and learn independently. These variables are equal to one for students reporting that they consider themselves very skillful in a particular task and zero otherwise. The table also shows measures of self-reported abilities related to work ethic, such as class participation, on-time completion of homework, and fulfill assigned tasks when working on teams. We define indicators equal to one when students report performing these always or almost always and zero otherwise. Given that the questions on self-reported non-cognitive outcomes vary by year, we focus on a subset of questions and years in which the subset of variables we analyze remain unchanged.[12] On average, the share of students reporting being very skillful in planning school activities and expressing their ideas orally and in writing are 0.211, 0.263, and 0.240, respectively. The shares of students reporting participating in class, completing homework on time, and fulfilling assigned group tasks always or almost always are 0.296, 0.487, and 0.591, respectively. The differences in these outcomes across students in ever and never-adopting schools are relatively small.

4 Identification Strategy

To put our main estimates in context and study the trajectory of the effects of exposure to FTS along different educational stages, we begin our analysis by identifying the contemporaneous effects of FTS on low-stakes test scores in Mexico City's metropolitan area. We estimate the following TWFE model, which leverages within-student variation in exposure to full-time schooling:

$$LS_{iet} = \alpha_i + \gamma_t + \beta FTS_{et} + \epsilon_{iet} \tag{1}$$

where LS_{iet} is the standardized ENLACE test score of student i, first enrolled in elementary school e at year t; α_i are student fixed effects; γ_t are academic year fixed effects; FTS_{et} indicates whether elementary school e has adopted the FTS program at year t; and ϵ_{iet} is an error term that we allow to be correlated within elementary schools. Our coefficient of interest, β, measures the average effect of full-time schooling on low-stakes test scores in the short run.

To identify the longer-term effects of FTS on students' performance in high-stakes exams, we exploit cohort-by-cohort variation in students' FTS enrollment during elementary school.

[12] For the variables on Table 2 we use the information from 2016 to 2019.

We estimate the following fixed effects regression:

$$HS_{iect} = \nu_e + \theta_c + \delta FTS_{iec} + X_{iect}\beta + u_{iect} \tag{2}$$

where HS_{iect} is the composite test score for student i, first enrolled in elementary school e in cohort c, and taking the COMIPEMS exam in academic year t;[13] ν_e are elementary-school fixed effects; θ_c are cohort fixed effects; FTS_{iec} is an indicator variable that equals one if student i was ever exposed to full-time schooling; X_{iect} are student characteristics, including gender and mothers' education; and u_{iect} is an error term that we allow to be correlated within elementary schools. Our coefficient of interest, δ, measures the average effect of full-time schooling during elementary school on high-stakes test scores in the longer run.

We further allow our model to capture dynamic effects before and after the first exposure to FTS with the following event-study specification:

$$HS_{iect} = \nu_e + \theta_c + \sum_{k \neq -1} \delta_k FTS_{ieck} + X_{iect}\beta + u_{iect} \tag{3}$$

Our variable of interest, FTS_{ieckt}, indicates the degree of exposure to full-time schooling in elementary school for student i, first enrolled elementary school e in cohort c who takes the COMIPEMS exam in year t. For $k \geq 0$, this variable is equal to one if the student was enrolled in a full-time elementary school for $k+1$ years.

Given the staggered implementation of the FTS program and the possibility of heterogeneous treatment effects across schools and over time, we estimate Equation 3 using the Interaction-Weighted (IW) estimator proposed by Sun and Abraham (2021), which estimates the effects of being in an elementary school that has implemented the FTS program for $k+1$ years as compared to schools that never adopted the program between the academic years 2008/09 and 2012/13. These estimates are robust to both dynamic effects and heterogeneous

[13] Cohorts are defined using the students' grade and academic year the first time they took the ENLACE exam.

treatments across groups of schools that adopted the FTS program at different time periods.

Our coefficients of interest are δ_k. For $k \geq 0$, they measure the average effect of being enrolled in a full-time elementary school for $k+1$ years. These coefficients are identified under the standard common trends assumption: absent the FTS program in elementary school, students' COMIPEMS scores would have followed the same trends in adopting and non-adopting elementary schools. The pre-treatment estimates ($k < -1$) allow us to empirically test for divergent trends between treated and never-treated schools prior to the adoption of the program. Figure 2 shows that treated and never-treated schools followed the same trajectory prior to program adoption, which provides support to our identification strategy.

Dynamic difference-in-differences specifications with staggered treatment timing, such as ours, become unbalanced in time relative to treatment. There are more lag periods (and fewer lead periods) for elementary schools treated earlier than for those treated later, and vice-versa. In fact, we have an unbalanced time to event panel that goes from $k = -6$ to $k = 5$, which is balanced only for event time $k \in \{-2, -1, 0, 1, 2, 3\}$. Therefore, the estimated coefficients outside this time window must be interpreted with caution as they only rely on variation across earlier (lags) or later (leads) treated cohorts.

5 Main Results

5.1 Low-Stakes Test Scores

Previous work has identified positive short-run effects of full-time schooling on academic achievement in Mexico (Cabrera-Hernández, 2020; Padilla-Romo, 2022). Before estimating the effects of exposure to full-time schooling in elementary school on high school admission test scores, we evaluate whether the short-term effects of FTS on low-stakes test scores identified in the literature for all of Mexico extend to Mexico City's metropolitan area and remain robust when taking into account the staggered implementation of Mexico's FTS program.[14]

To do so, we rely on the model in Equation 1. TWFE estimates, presented in Panel A of Table 3, show that, on average, exposure to FTS in elementary schools increases low-stakes test scores of students in Mexico City's metropolitan area by 5.5 percent of a standard deviation. Recent literature on TWFE models has highlighted that TWFE estimates can be biased if the effects are heterogeneous across students enrolled in elementary schools that adopted the FTS program for the first time in different years or when the treatment effects are dynamic (e.g., Sun and Abraham, 2021; de Chaisemartin and D'Haultfœuille, 2020; Goodman-Bacon, 2021). We address this issue by performing the decomposition proposed by Goodman-Bacon (2021) on a modified version of the model presented in Equation 1. This decomposition provides a diagnostic test to examine the extent to which the staggered implementation of the FTS program is likely to bias the TWFE estimates.[15] In addition, we re-estimate the effects using the IW estimator proposed by Sun and Abraham (2021), which is robust to heterogeneous and dynamic treatment effects.

Because the Goodman-Bacon (2021) decomposition requires a balanced panel, we first construct this panel by restricting the sample to students who are observed in the ENLACE data for four consecutive years. In Panel B of Table 3, we replicate the TWFE estimates presented in Panel A for this sub-sample. A first observation is that the results on the sub-sample of students observed in four consecutive years are close in magnitude and statistical significance to the results in Panel A. Then, using this sub-sample, we re-center the data by defining an alternative time dimension considering the observation order of each student (i.e., $t = 1, 2, 3, 4$ for the first, second, third, and fourth observation of each student). Following this procedure, we build a "balanced" panel of students in which we are able to implement

[14] This is particularly important because the composition of students in Mexico City's metropolitan area is quite different from the rest of the country. In 2007, the average standardized ENLACE composite test score was 19 percent of a standard deviation for students in Mexico City's metropolitan area and -2 percent of a standard deviation for students in the rest of the country.

[15] Goodman-Bacon (2021) shows that TWFE estimates from staggered treatments are a weighted sum of canonical two-by-two estimates. The weights add up to one and tell us the importance of the kind of comparisons being made. Ideally, we want to compare students exposed to FTS to non-exposed students (never-treated or not yet treated).

the Goodman-Bacon (2021) decomposition. The results of this decomposition, presented in Panel B of Table 3, show that TWFE estimates attach more than 98% of weight to two-by-two comparisons between treated students and never-treated students, which implies that the potential bias due to the staggered implementation of the FTS program in these estimates is likely to be small.

Consistent with the diagnostic result provided by the decomposition presented in Table 3, estimates using the IW estimator indicate that, on average, exposure to FTS increases elementary school students' low-stakes test scores by 4.6 percent of a standard deviation. These estimates use the sample of students observed four times (excluding always-treated students) and exploit the full temporal variation in the data instead of relying on re-centered time effects. Figure 1 shows the dynamic effects by the time of exposure. Point estimates are weakly increasing, with an average effect of 2 percent of a standard deviation for students exposed one year to FTS and reaching 9.4 percent of a standard deviation after three years of exposure to the extension of the school day.

5.2 High-Stakes Test Scores

Table 4 shows the estimated effects of full-time schooling during elementary school on the COMIPEMS exam standardized test scores based on Equation 2. Column 1 presents the TWFE estimates for the baseline specification that controls for elementary school fixed effects, cohort fixed effects, an indicator of whether the student is a female, and an indicator of whether the student's mother has at most middle-school education.[16] In the second panel of Column 1, we perform the decomposition proposed by Goodman-Bacon (2021). The TWFE estimator attaches more than 99% of weight to non-problematic comparisons (i.e., those that use never-treated or later-treated students as controls), which suggests that (as in the case of short-term estimates discussed in Section 5) the bias in the TWFE estimator

[16]For this specification, we use all variables aggregated at the elementary school and cohort level, keep a balanced panel of schools, and weigh observations by the average number of students in the elementary school-cohort cells.

is likely to be small.

Columns 2 through 4 report estimated results using the IW estimator. Column 2 presents the baseline specification in Equation 2 and shows that the point estimate is close to the TWFE estimate in Column 1. In Column 3, we also control for whether and when elementary schools adopted the Quality Schools program. In Column 4, we present our preferred specification that additionally controls for whether and when elementary schools adopt the Secure School program.[17] For all specifications, the estimated effects indicate that full-time schooling during elementary school has long-lasting effects on students' cognitive outcomes, increasing their performance in the COMIPEMS high-school admission exam. The estimated effects in Column 4 indicate that the FTS program increases high-stakes test scores by 4.9 percent of a standard deviation for students ever enrolled in an FTS during elementary school.

Next, we evaluate how the effects vary with the time of exposure. Figure 2 shows the evolution of the estimated effects of full-time schools on high-stakes test scores for the years prior to and after an elementary school first adopted the FTS program based on Equation 3. We additionally control for schools' participation in the Quality Schools and the Secure School programs. All estimates are relative to the year prior to the adoption of the FTS program. The estimated coefficients for the years prior to program adoption are close to zero and statistically insignificant, providing support for the common trends assumption. The estimated effects of full-time schooling on high-stakes test scores increase with each year of students' exposure to the FTS program in elementary school. The estimated effects grow from 0.2 percent of a standard deviation for students exposed to FTS for one year to 9.5 percent of a standard deviation for students exposed all six years of elementary school education.[18]

[17]As discussed in Section 3, Quality Schools and Secure School programs are public initiatives with the objective of improving academic achievement and safety in schools, respectively.

[18]Given that students are enrolled in elementary school for six years, the endpoints in this design are binned at -4 and 5. This specification implies assuming that the effect of FTS on high-stakes scores is constant prior to and after the endpoints of the window. This limited effect window is equivalent to an infinite event window for which $\delta_k = \delta_{\underline{k}}$ for all $k < \underline{k}$ and $\delta_k = \delta_{\overline{k}}$ for all $k > \overline{k}$ (Schmidheiny and Siegloch,

To put the estimated effects on test scores in context, we further show how these increases in high school admission exam scores affect the quality of schools that students attend. We do so by comparing each high school's cutoff score in students' priority lists in a given year to the observed and counterfactual test scores.[19] Out of the 130,239 students ever enrolled in a full-time elementary school, 17,306 students are placed in higher-ranked schools in their priority list compared to the ones they would have been assigned in the absence of the FTS program. On average, roughly 13 out of 100 students exposed to full-time schooling are placed in more-preferred high schools, which is likely to affect the composition of high school peers, the probability of graduating from high school, and college enrollment (e.g., Jackson, 2010; Pop-Eleches and Urquiola, 2013; Dustan et al., 2017; Estrada and Gignoux, 2017).

In Figure 3, we allow for heterogeneous effects for different types of students. We estimate our preferred specification separately for males and females, students whose mothers' education level is low or high, and students enrolled in schools with a low and high share of low-SES students (proxied with the pre-intervention share of Progresa beneficiaries in their school). The results indicate that all groups benefit from FTS, with point estimates that range from 3.6 to 6.2 percent of a standard deviation. Female students experience the largest increases in test scores. On average, COMIPEMS' test scores are 12.6 percent of a standard deviation lower for girls than for boys. The difference in the effects between males and females of 2.6 percent of a standard deviation represents 20% of the gender gap in the COMIPEMS exam.

5.3 On-time Graduation

By improving short-term cognitive outcomes, full-time schooling has the potential to increase the probability of graduating on time. For example, in the context of Mexico and using within twins variation in ENLACE test scores, de Hoyos et al. (2021) show that higher sixth-grade

2019).

[19] Counterfactual test scores are calculated using the estimated coefficient from our preferred specification in Column 4 of Table 4 and the COMIPEMS standard deviation for every year. That is, we subtract 4.9 percent of a standard deviation from the observed COMIPEMS scores.

ENLACE scores are associated with a positive probability of on-time graduation from middle school and high school.

For every student in the COMIPEMS sample, we observe whether and when students received their middle school diplomas.[20] We use this information to generate an on-time graduation indicator that equals one if students receive their middle school diploma the year their cohort graduated and zero otherwise.[21] We also observe the student's age when he or she took the test.

Using our preferred specification and the IW estimator, columns 1 and 2 of Table 5 show the estimated effects of FTS on the probability of on-time graduation and students' age when taking the test, respectively. The point estimates indicate that exposure to full-time schooling during elementary school increases the probability of graduating on time by 1.4 percentage points and decreases the age at which the test was taken by 0.065 years (or 24 days). In panels (a) and (b) of Figure 4, we further show heterogeneous effects by the student's gender, mother's level of education, and socioeconomic status. The estimated increases in the probability of on-time graduation and decreases in age at test are of similar magnitude and statistical significance across different types of students, which indicate that FTS resulted in general improvements in educational trajectories.

5.4 Non-Cognitive Outcomes

Both cognitive and non-cognitive skills have been found to be relevant determinants of schooling and socioeconomic success (Heckman, 2000; Carneiro and Heckman, 2003). Because investment in education has the potential of generating returns in dimensions other than academic achievement measured by test scores gains, we examine the link between FTS and non-cognitive outcomes, focusing on measures of self-reported abilities and school work ethic

[20] The student's middle-school diploma is a requirement for high school admission. In the COMIPEMS sample, 5.48% of students were not assigned to a high school because they did not present a middle-school diploma.

[21] For example, a student enrolled in third grade in the 2010 ENLACE exam should have graduated from middle school in 2016. Then, our outcome is equal to one if students received their middle school diploma in 2016 and zero if they did not receive a diploma or did so after 2016.

and participation. The Context questionnaire section on self-reported non-cognitive skills changes over time. Consequently, our estimates on non-cognitive outcomes rely on a small sub-sample of years, using homogeneous questions.[22] Considering this data restriction, the results in this section should be interpreted with caution and as suggestive evidence of the potential effects of FTS on non-cognitive skills.

We allow the effects to vary by gender, school's socioeconomic status (proxied by the pre-intervention share of students receiving Progresa in their school), and maternal education. The evidence suggests that exposure to FTS improved girls' self-reported oral communication abilities, learning independently, and planning school activities (Figure 5), which might explain the larger effects for girls' test scores. Self-learning also improved for students in schools with larger shares of low-SES populations. The estimates also suggest gains in skills related to work ethic for girls and for students whose mothers have relatively lower levels of formal education. These gains reflect improvements in-class participation and timely completion of homework. We also find an increased probability of fulfilling assigned tasks when working on teams for students belonging to schools with larger shares of low-SES individuals and for students whose mother has middle-school or lower formal education (Figure 6).

5.5 Students' Preferences

There are several potential mechanisms through which full-time schooling can shape individual preferences for high schools, including information, beliefs, and peer exposure. Moreover, by generating short-term academic gains and improving non-cognitive skills, FTS have the potential to improve self-esteem, motivation, and academic ambition.

To shed light on these issues, we explore how full-time schooling affects the quality of the high school students choose as their first choice. Our measures of high school quality are calculated using the standardized high schools' 2010-2019 average cutoff scores. Specifically,

[22]For the variables considered in this section, we use the information for the period 2016-2019.

we examine the effects of full-time schooling on the probability that a student's first choice is ranked in the first five or the first ten high schools, ordered in terms of their average cutoff scores. These results are shown in Figure 7. Panels (a) and (b) present the estimated effects of FTS on the probability that a student's first choice is in the top 5 and in the top 10 most selective public high schools in the Mexico City metropolitan area, respectively. Each panel shows point estimates and 95% confidence intervals for the overall sample and separately by students' gender, mother's education level, and socioeconomic status. Overall, FTS increase the probability of students choosing a high school ranked in the top 5 and in the top 10 as their first choice by roughly one percentage point (or 2.7% and 2% of the mean of students in ever-FTS whose first choice is in the top 5 and in the top 10, respectively).

When separating the effects on school choices by gender, mother's education, and SES, we find point estimates that are higher for men, for students whose mothers' level of formal education is low, and for students likely to be low-SES. However, the differences are only statistically significant when comparing the effects for students in high-SES and low-SES schools. While we cannot test this hypothesis formally, this evidence is consistent with the possibility that with longer school days, students and their parents may receive more and better information about school quality and its long-term benefits, which is particularly important for low-SES families that may face higher costs of collecting and interpreting information (Hastings and Weinstein, 2008).[23] These results on preferences are also consistent with our findings regarding the potential improvement in non-cognitive skills, such as learning independently, among students from low-SES schools.

[23]Hastings and Weinstein (2008) shows that receiving information on the academic quality of schools increased the share of parents choosing higher-performing schools. Moreover, Hastings et al. (2015) shows that providing information on degree-specific earnings decreases the demand for the lowest earning programs, even more so among low-SES students.

6 Test-Taking Behavior

As noted in Section 3, our sample comprises students in Mexico City's metropolitan area who took the ENLACE exam at least once between 2007 and 2013 and took the COMIPEMS high school placement exam between 2010 and 2019. That is, we do not observe long-term outcomes for students who migrated out of Mexico City's metropolitan area, dropped out of school, or enrolled in a private high school after middle-school graduation. Each of these actions may be affected by the degree of students' exposure to full-time schooling. Consequently, sample selection bias may hinder our ability to causally identify long-term effects.

To examine this issue, we begin by estimating the effects of full-time schooling on the probability of ever taking the COMIPEMS. In Figure 8 and Column 1 of Table 6 we show the estimated results for our preferred dynamic specification and additionally control for state-by-cohort fixed effects. Overall, students' probability of taking the COMIPEMS exam increases with every year of exposure to the FTS program; the point estimates increase from being non-statistically different from zero for students exposed for less than four years to 2.3 percentage points (or 4.1% of the mean in ever-FTS) for students exposed during all six years of elementary school education. These increases in test-taking behavior can be interpreted as FTS reducing the probability of students dropping out of school or FTS inducing students from the private high school system to enter the public system.

To get a sense of which type of students are entering the sample, in Column 3 of Table 6, we further interact our treatment variables with the pre-intervention (fixed at 2007) normalized school-level average ENLACE score.[24] The probability of taking the exam decreases as pre-intervention test scores increase, which indicates that low-achievers (at baseline) are more likely to take the COMIPEMS exam when exposed to FTS than high achievers.

Since lower achieving students are more likely to take the high school admission exam

[24]In Column 2 of Table 6, we re-estimate our model in Column 1 using the OLS estimator. Our results are robust to using this alternative estimator, which is more flexible and allows us to include the interactions of our years from treatment indicators with pre-intervention test scores in Column 3.

when they are exposed to longer school days, our estimates are likely to be downward biased.[25] To further examine how endogenous nonrandom selection can affect our results, we evaluate the robustness of our main estimates by making extreme assumptions about sample selection and using the method proposed by Lee (2009). That is, we assume that students entering the sample each year (relative to treatment) are either the lowest or highest-performing students in the COMIPEMS exam. Then, we drop the set of treated students at the top and the bottom of the treated students' COMIPEMS test score distribution considering the effect on the probability of taking the exam for each treatment window.[26] Using these restricted samples, we estimate the lower and upper bounds for the effects on COMIPEMS test scores. The results, in panels (a) and (b) of Figure 9, indicate that even under these extreme assumptions, FTS have positive and statistically significant effects on high-stakes test scores and that our main conclusions are robust to endogenous effects of FTS on test-taking behavior.

7 Conclusion

This paper provides new evidence on the persistence of the effects of full-time schooling on high-stakes test scores, subsequent placement, on-time graduation, and preferences over high schools. We use linked administrative data on elementary school enrollment and a high-school admission exam in Mexico City's metropolitan area. We focus on students exposed to full-time schooling during elementary school (grades 1-6). The results indicate that full-time schools have long-lasting benefits for children. Full-time schooling positively affects children's probability of graduating from middle school on time, high school admission test scores, subsequent placement, and preferences for high-quality high schools.

Girls experience significantly larger gains in high-stakes test scores later in life, with

[25] The increase in the probability of on-time graduation and the reduction in age at test are compatible with improvements in educational trajectories that are likely to result in reductions on drop-out rates.

[26] Specifically, we drop 0.5, 1.0, 1.0, and 2.3 percent of students in the upper and lower tails of the COMIPEMS test score distribution of students exposed to treatment for 3, 4, 5, or 6 years, respectively.

differences in the estimated effects by gender equivalent to 20% of the gender gap in test scores. Moreover, the effects on preferences for top high schools concentrate in students from low-SES schools. These results suggest that FTS are helping to close the demand gap for high-quality schools among more and less disadvantaged children.

A back-of-the-envelope calculation implies that 13 out of 100 students exposed to the FTS program during elementary school are placed in higher-ranked high schools on their priority list. Moreover, FTS exposure may have long-lasting consequences on overall students' success beyond high school, as elite public high schools in Mexico City increase future academic performance in low-stakes tests (Dustan et al., 2017), and offer better quality education in terms of smaller class sizes, fewer students per computer, better peers, and more college-educated teachers (Estrada and Gignoux, 2017).

Our findings indicate that full-time schooling is an effective policy to improve educational trajectories for all students and to close the gender gap in high-stakes test scores.

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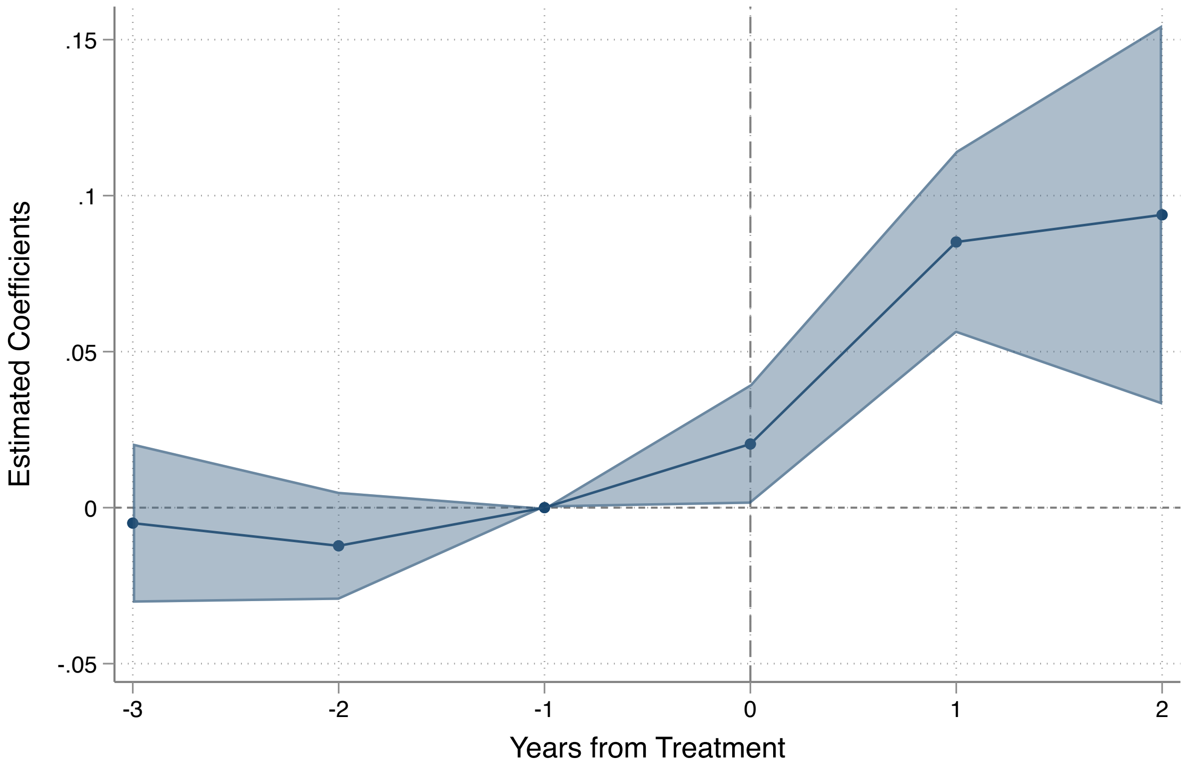
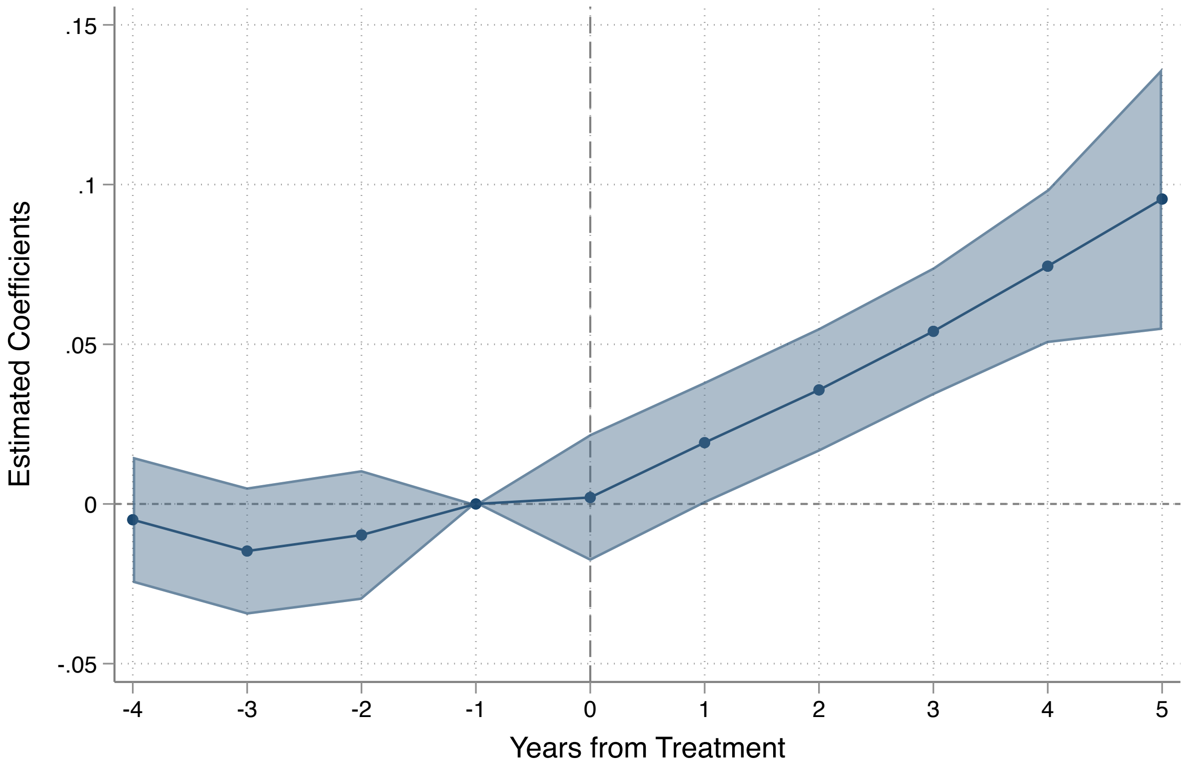
Figure 1: Short-Term Effects of Full-Time Schools on Low-Stakes Test Scores



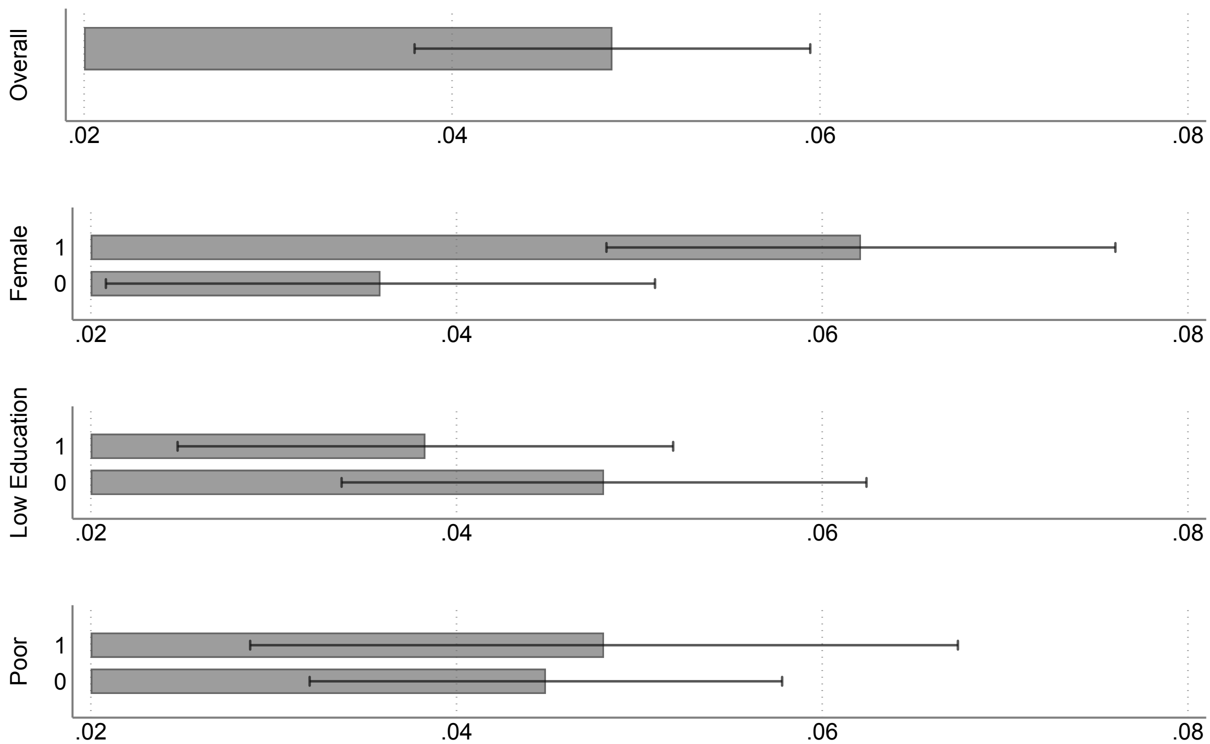
Notes: This figure shows estimated IW coefficients and their 95% confidence intervals for indicators for the years prior to and after an elementary school adopted the FTS program. All estimates come from a single regression that controls for student fixed effects, academic year fixed effects, and indicators for whether and when elementary schools adopted the Quality Schools program and the Secure School program. The average effect on test scores is 4.6 percent of a standard deviation ($p - value < 0.001$). Standard errors are clustered at the elementary school level. Our regression model is estimated using the *eventstudyinteract* package developed by Sun (2021).

Figure 2: Persistent Effects of Full-Time Schools on High-Stakes Test Scores



Notes: This figure shows estimated IW coefficients and their 95% confidence intervals for indicators for the years prior to and after an elementary school adopted the FTS program. All estimates come from a single regression that controls for elementary school fixed effects, cohort fixed effects, gender, mothers' education, and indicators for whether and when elementary schools adopted the Quality Schools program and the Secure School program. On the horizontal axis, "-4" indicates four or more years prior to treatment, and "5" indicates five or more years from treatment. Standard errors are clustered at the elementary school level. Our regression model is estimated using the *eventstudyinteract* package developed by Sun (2021).

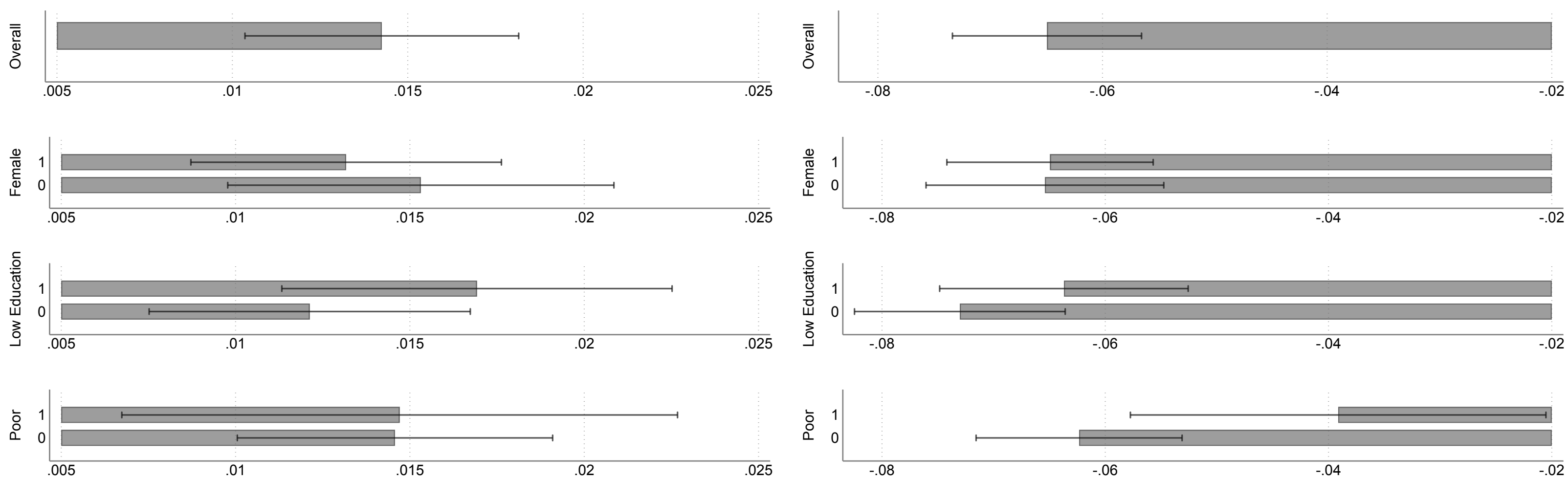
Figure 3: Persistent Effects of Full-Time Schools on High-Stakes Test Scores by Gender, Mothers' education Level, and Socioeconomic Status



Notes: This figure shows estimated IW coefficients and their 95% confidence intervals for a post-adoption of the FTS program indicator. All estimates come from different regressions that (when possible) control for elementary school fixed effects, cohort fixed effects, gender, mothers' education, and indicators for whether and when elementary schools adopted the Quality Schools program and the Secure School program. Standard errors are clustered at the elementary school level. The regression models are estimated using the *eventstudyinteract* package developed by Sun (2021).

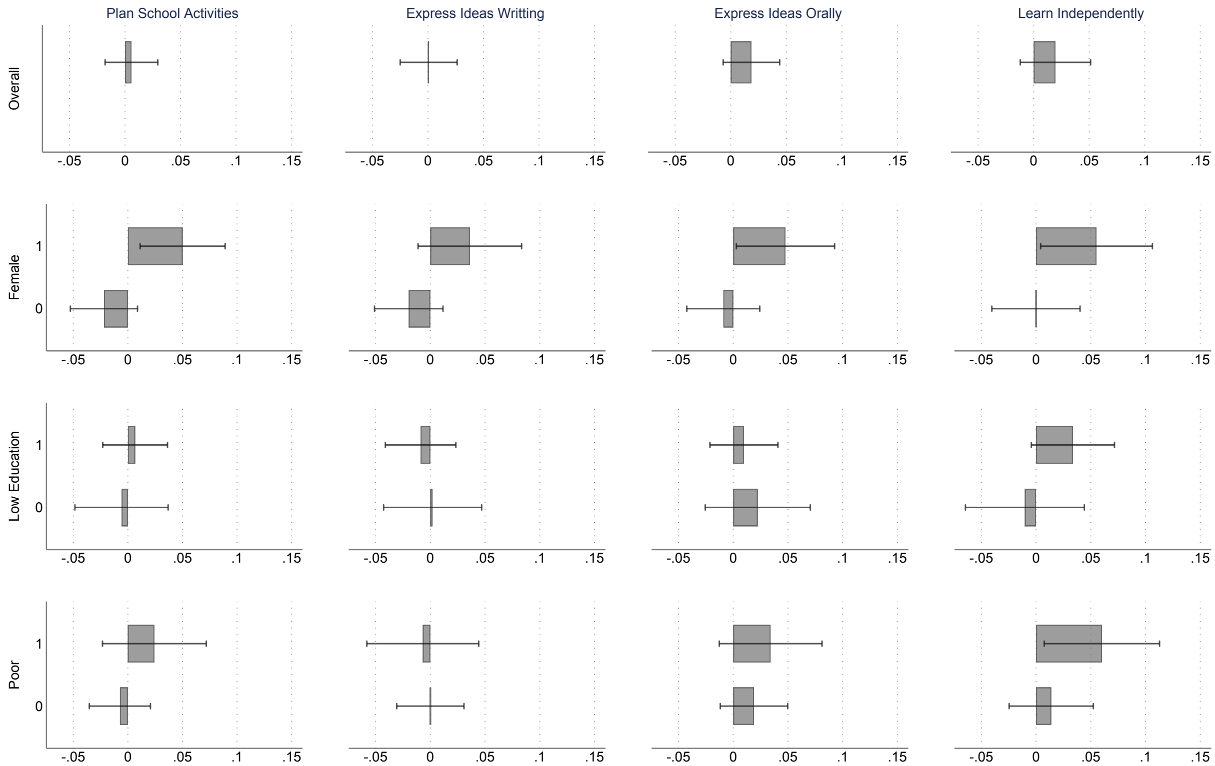
Figure 4: Persistent Effects of Full-Time Schools on On-time Graduation and Age at Test by Gender, Mothers' Education Level, and Socioeconomic Status

(a) On-time Graduation | **(b)** Age at Test



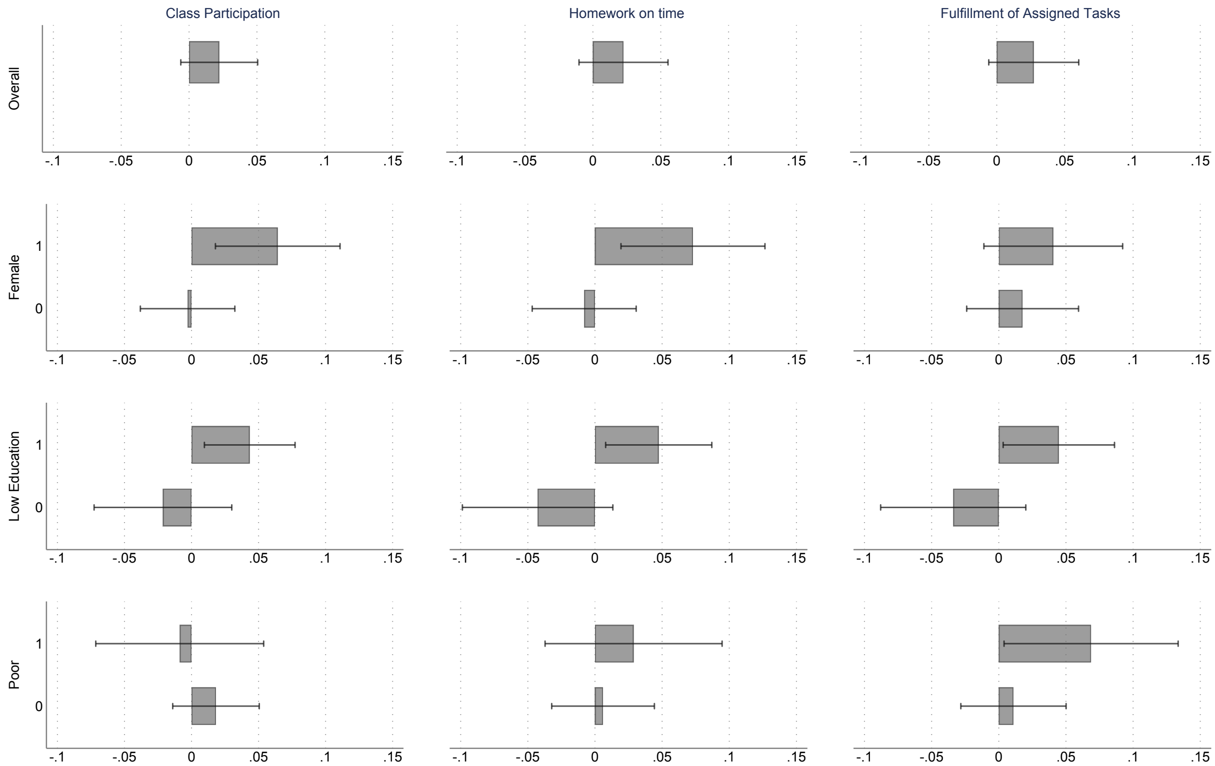
Notes: This figure shows estimated IW coefficients and their 95% confidence intervals for a post-adoption of the FTS program indicator. All estimates come from different regressions that (when possible) control for elementary school fixed effects, cohort fixed effects, gender, mothers' education, and indicators for whether and when elementary schools adopted the Quality Schools program and the Secure School program. Standard errors are clustered at the elementary school level. The regression models are estimated using the *eventstudyinteract* package developed by Sun (2021).

Figure 5: Persistent Effects of Full-Time Schools on Non-Cognitive self-reported Abilities



Notes: This figure shows estimated IW coefficients and their 95% confidence intervals for a post-adoption of the FTS program indicator. All estimates come from different regressions that (when possible) control for elementary school fixed effects, cohort fixed effects, gender, mothers' education, and indicators for whether and when elementary schools adopted the Quality Schools program and the Secure School program. Standard errors are clustered at the elementary school level. The regression models are estimated using the *eventstudyinteract* package developed by Sun (2021).

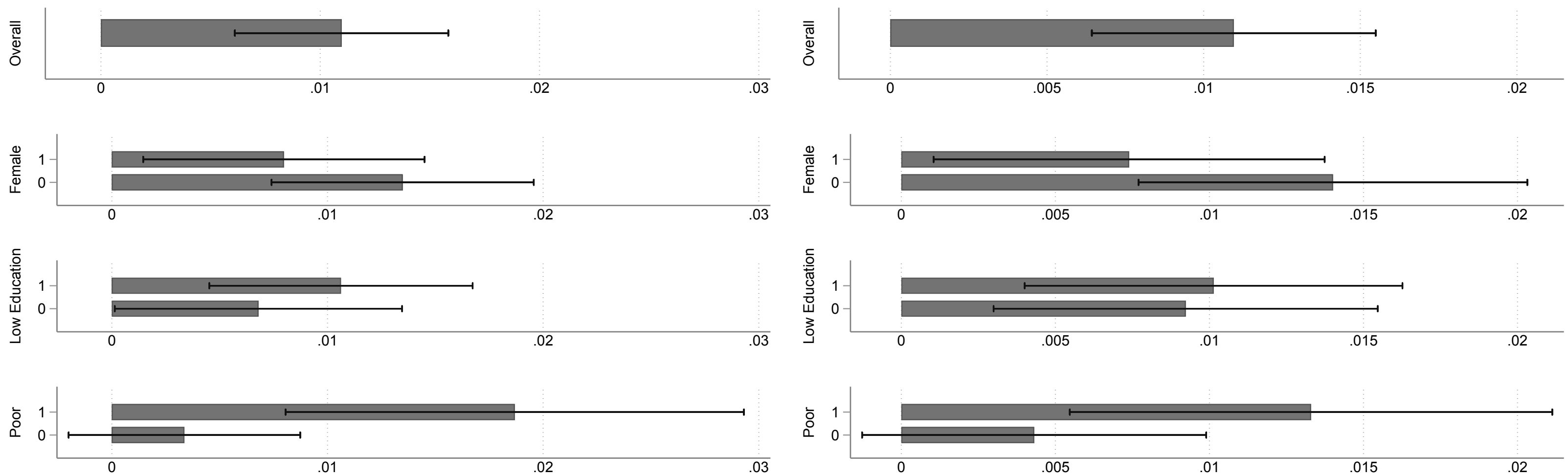
Figure 6: Persistent Effects of Full-Time Schools on self-reported Work Ethic



Notes: This figure shows estimated IW coefficients and their 95% confidence intervals for a post-adoption of the FTS program indicator. All estimates come from different regressions that (when possible) control for elementary school fixed effects, cohort fixed effects, gender, mothers' education, and indicators for whether and when elementary schools adopted the Quality Schools program and the Secure School program. Standard errors are clustered at the elementary school level. The regression models are estimated using the *eventstudyinteract* package developed by Sun (2021).

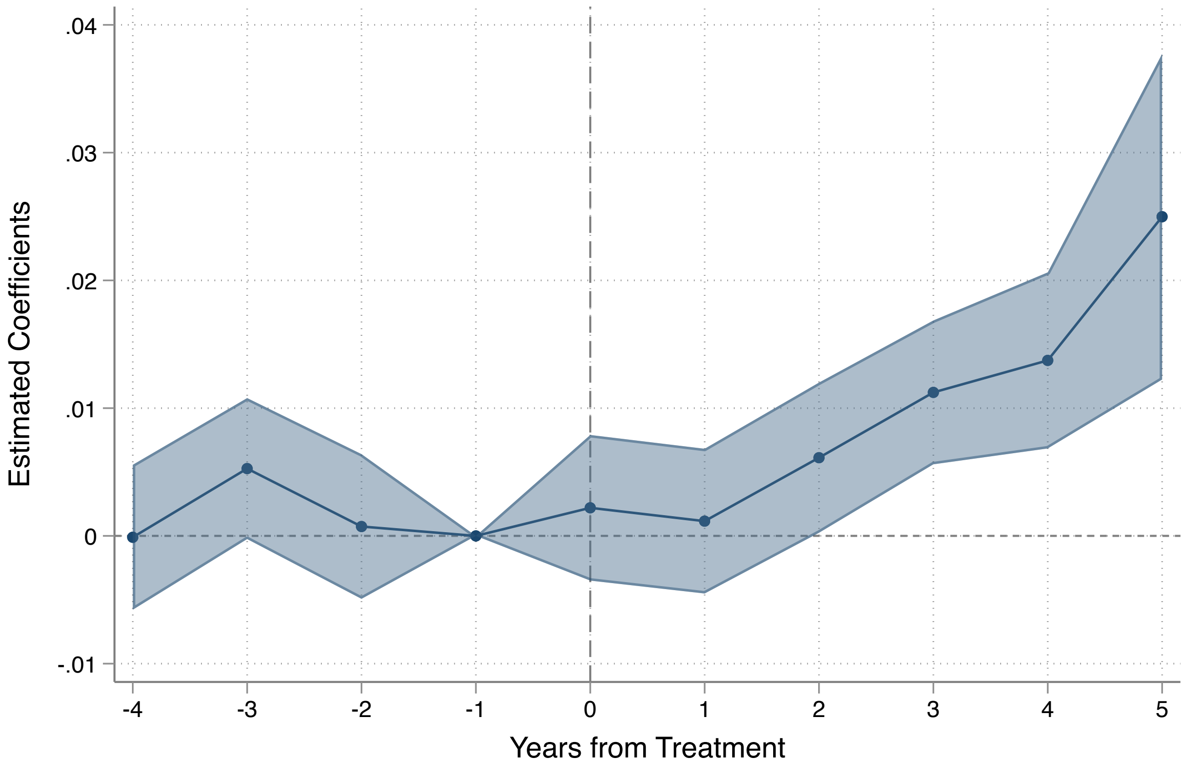
Figure 7: Persistent Effects of Full-Time Schools on Students' Preferences for High Schools

(a) Top 5 **(b)** Top 10



Notes: This figure shows estimated IW coefficients and their 95% confidence intervals for a post-adoption of the FTS program indicator. All estimates come from different regressions that (when possible) control for elementary school fixed effects, cohort fixed effects, gender, mothers' education, and indicators for whether and when elementary schools adopted the Quality Schools program and the Secure School program. Standard errors are clustered at the elementary school level. The regression models are estimated using the *eventstudyinteract* package developed by Sun (2021).

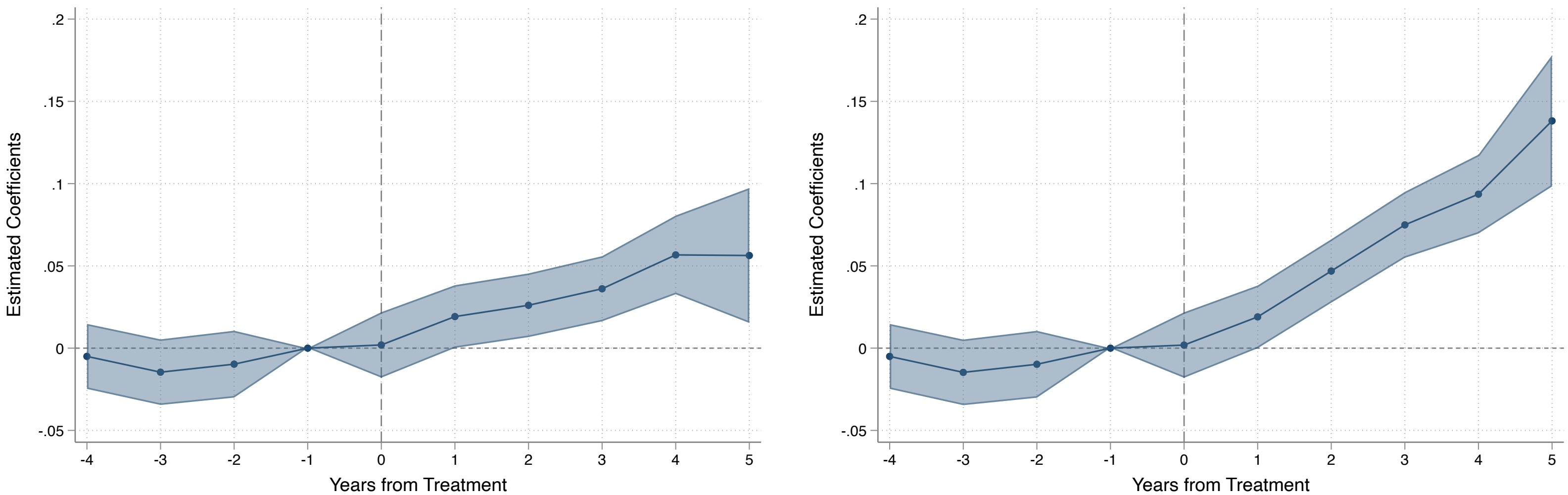
Figure 8: Persistent Effects of Full-Time Schools on the Probability of Ever Taking the COMIPEMS Exam



Notes: This figure shows estimated IW coefficients and their 95% confidence intervals for indicators for the years prior to and after an elementary school adopted the FTS program. All estimates come from a single regression that controls for elementary school fixed effects, cohort fixed effects, state-by-cohort fixed effects, gender, and indicators for whether and when elementary schools adopted the Quality Schools program and the Secure School program. On the horizontal axis, "-4" indicates four or more years prior to treatment, and "5" indicates five or more years from treatment. Standard errors are clustered at the elementary school level. Our regression models are estimated using the *eventstudyinteract* package developed by Sun (2021).

Figure 9: Lee (2009)'s Bounds of the Persistent Effects of Full-Time Schools on High-Stakes Test Scores

(a) Lower Bound **(b)** Upper Bound



Notes: This figure shows estimated IW coefficients and their 95% confidence intervals for indicators for the years prior to and after an elementary school adopted the FTS program. All estimates for each panel come from a single regression that controls for elementary school fixed effects, cohort fixed effects, gender, mothers' education, and indicators for whether and when elementary schools adopted the Quality Schools program and the Secure School program. On the horizontal axis, "-4" indicates four or more years prior to treatment, and "5" indicates five or more years from treatment. Standard errors are clustered at the elementary school level. Our regression models are estimated using the *eventstudyinteract* package developed by Sun (2021).

Table 1: Summary Statistics by Full-Time Schooling

	(1) Ever FTS	(2) Never FTS	(3) Total
ENLACE Test Score (SD)	-0.020	0.002	0.000
	(0.979)	(1.002)	(1.000)
Ever Took COMIPEMS	0.558	0.521	0.525
	(0.497)	(0.500)	(0.499)
COMIPEMS Test Score (SD)	0.096	0.002	0.012
	(0.994)	(1.001)	(1.000)
Age at Test	15.227	15.164	15.170
	(0.560)	(0.544)	(0.546)
Graduated on Time	0.874	0.893	0.891
	(0.331)	(0.309)	(0.311)
Top Choice in the Top 5	0.378	0.267	0.278
	(0.485)	(0.442)	(0.448)
Top Choice in the Top 10	0.509	0.366	0.380
	(0.500)	(0.482)	(0.485)
Female	0.506	0.506	0.506
	(0.500)	(0.500)	(0.500)
Mother Middle School Education or Lower	0.473	0.559	0.550
	(0.499)	(0.496)	(0.497)
Ever Full Time School	1.000	0.000	0.102
	(0.000)	(0.000)	(0.303)
Ever Quality School	0.959	0.636	0.669
	(0.199)	(0.481)	(0.471)
Ever Secure School	0.957	0.761	0.781
	(0.203)	(0.427)	(0.414)
Above Median Progresa	0.268	0.525	0.499
	(0.443)	(0.499)	(0.500)

Notes: The ENLACE sample consists of 4,604,135 students observed over time between 2007 and 2013 and totaling 11,866,301 observations. The COMIPEMS sample consists of 2,415,382 students that took the COMIPEMS exam for the first time between 2010 and 2019. Each cell shows the mean and standard deviation (in parentheses) of the listed variable for ever-treated and never-treated FTS. Never-treated schools are schools that had not adopted the program between 2007/08 and 2012/13.

Table 2: Summary Statistics of Self-Reported Noncognitive Skills by Full-Time Schooling

	(1) Ever FTS	(2) Never FTS	(3) Total
Plan School Activities	0.210	0.211	0.211
	(0.407)	(0.408)	(0.408)
Express Ideas in Writing	0.245	0.239	0.240
	(0.430)	(0.427)	(0.427)
Express Ideas Orally	0.271	0.262	0.263
	(0.444)	(0.440)	(0.440)
Learn for Themselves	0.315	0.310	0.310
	(0.464)	(0.462)	(0.463)
Class Participation	0.295	0.296	0.296
	(0.456)	(0.456)	(0.456)
Homework on Time	0.484	0.487	0.487
	(0.500)	(0.500)	(0.500)
Fulfillment of Assigned Tasks	0.591	0.591	0.591
	(0.492)	(0.492)	(0.492)

Notes: The sample consists of 1,003,844 students that took the COMIPEMS exam for the first time between 2016 and 2019. Each cell shows the mean and standard deviation (in parentheses) of the listed variable for ever-treated and never-treated FTS. Never-treated schools are schools that had not adopted the program between 2007/08 and 2012/13.

Table 3: Short-term Effects of Full-Time Schools on Low-Stakes Test Scores

	(1)	(2)	(3)
Panel A: All students			
FTS × After	0.057***	0.055***	0.055***
	(0.009)	(0.009)	(0.009)
N	10,705,061	10,705,061	10,705,061
Student fixed effects	yes	yes	yes
Year fixed effects	yes	yes	yes
Quality Schools Program	no	yes	yes
Secure School Program	no	no	yes
Panel B: Balanced panel			
FTS × After	0.051***	0.048***	0.048***
	(0.010)	(0.010)	(0.010)
N	5,395,828	5,395,828	5,395,828
	Decomposition		
Never vs. timing	0.051 [0.982]		
Early vs. late	0.000 [0.008]		
Late vs. early	-0.000 [0.005]		
Always vs. timing	-0.000 [0.005]		
Student fixed effects	yes	yes	yes
Re-centered year fixed effects	yes	yes	yes
Quality Schools Program	no	yes	yes
Secure School Program	no	no	yes

Notes: Each column in each panel represents a different regression. In columns 2 and 3, we further control for whether and when elementary schools adopted the Quality Schools Program and the Secure School Program, respectively. Standard errors are clustered at the elementary school level. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Table 4: Persistent Effects of Full-Time Schools on High-Stakes Test Scores

	TWFE (1)	IW (2)	IW (3)	IW (4)
FTS × After	0.047*** (0.005)	0.044*** (0.005)	0.046*** (0.005)	0.049*** (0.005)
N	61,750	2,204,018	2,204,018	2,204,018
	Decomposition			
Never vs. timing	0.047 [0.983]			
Early vs. late	0.000 [0.008]			
Late vs. early	-0.000 [0.010]			
Quality Schools Program	no	no	yes	yes
Secure School Program	no	no	no	yes

Notes: Each column represents a different regression. Estimates in Column 1 use a balanced panel of schools and are weighted using the average number of students in the school. All estimates in columns 2 through 4 control for gender and mothers' education. In columns 3 and 4, we further control for whether and when elementary schools adopted the Quality Schools Program and the Secure School Program, respectively. Standard errors are clustered at the elementary school level. Estimates in columns 2 through 4 are estimated using the *eventstudyinteract* package developed by Sun (2021). *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Table 5: Persistent Effects of Full-Time Schools on Age at Test and On-Time Graduation

	Graduate on time (1)	Age at test (2)
FTS $\times$ After	0.014***	-0.065***
	(0.002)	(0.004)
N	2,265,611	2,265,611

Notes: Each column represents a different regression. All estimates control for elementary school fixed effects, cohort fixed effects, state-by-cohort fixed effects, gender, and whether and when elementary schools adopted the Quality Schools Program and the Secure School Program. Standard errors are clustered at the elementary school level. Estimates in columns 1 and 2 are calculated using the *eventstudyinteract* package developed by Sun (2021). *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Table 6: Persistent Effects of Full-Time Schools on Test Taking

	IW (1)	TWFE (2)	TWFE (3)
Exposed 1 Year	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)
Exposed 2 Years	-0.000	-0.000	-0.000
	(0.002)	(0.003)	(0.003)
Exposed 3 Years	0.005*	0.005*	0.004
	(0.003)	(0.003)	(0.003)
Exposed 4 Years	0.010***	0.010***	0.009***
	(0.002)	(0.002)	(0.002)
Exposed 5 Years	0.010***	0.011***	0.011***
	(0.003)	(0.003)	(0.003)
Exposed 6 Years	0.023***	0.025***	0.027***
	(0.005)	(0.005)	(0.005)
Exposed 1 Year × $ENLACE_{2007}$			-0.006**
			(0.003)
Exposed 2 Years × $ENLACE_{2007}$			-0.005**
			(0.003)
Exposed 3 Years × $ENLACE_{2007}$			-0.008***
			(0.003)
Exposed 4 Years × $ENLACE_{2007}$			-0.006**
			(0.003)
Exposed 5 Years × $ENLACE_{2007}$			-0.009***
			(0.003)
Exposed 6 Years × $ENLACE_{2007}$			0.001
			(0.004)
N	4,603,510	4,603,510	4,495,296

Notes: Each column represents a different regression. All estimates control for elementary school fixed effects, cohort fixed effects, gender, and whether and when elementary schools adopted the Quality Schools Program and the Secure School Program. Standard errors are clustered at the elementary school level. Estimates in Column 1 are calculated using the *eventstudyinteract* package developed by Sun (2021). *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.