Internet Expansion & School Performance: Evidence from Colombia

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Abstract

We study the impact of a large public-policy push expanding internet access on secondary school test scores in Colombia. We use an instrumental variable approach exploiting the costliness of extending the existing internet infrastructure to connect new areas to identify causal impacts. We find that this internet expansion did have an effect on math test scores, which was concentrated in the bottom third of the test score distribution. Our estimates suggest that every 10% increase in the number of test-takers with access to the internet resulted in a 0.06 SD increase in math scores for this group. We find no significant effects on language test scores. We also present evidence that this expansion did not result in increased rates of test-taking students working or increased family incomes during this period.

1. Introduction

The World Bank estimates that the percent of the world population using the internet has increased by more than seven times since 2000 CE. Internet infrastructure is expanding across the world, connecting populations in both high- and low-income countries to the global information economy. We have seen the positive impacts of these expansions on local labor markets, but we know relatively little about its impact on education outcomes, especially in low- and middle-income contexts.[1] This paper is the first to our knowledge quantifying the impact of these internet rollouts on education outcomes. We study a public policy push in Colombia (Vive Digital) that encouraged internet providers to expand their infrastructure to bring access to previously unconnected areas. This is an important and common context because infrastructure investments remain very expensive and government intervention is often necessary to push this access into poorer and more rural areas. This is especially salient for lower-income countries. It is therefore important to not only quantify the impacts of increasing this internet access on education outcomes, but also present the beneficial effects of these government-led expansion policies.

We study the impact of Colombia's internet rollout on the test score distributions of over 5,000 individual secondary schools. Our estimates show that increasing the percent of schools' students that have access to the internet had a significant impact on mathematics test scores, particularly at the bottom of the test score distribution. The estimates suggest that for every 10% increase in the percent of students with access to the internet, it increased a school's mathematic test scores by 0.06 standard deviations in the bottom third of their test score distribution. We did not detect any similar impact on language test scores. This shows that schools that experienced the largest increases in internet access for their students during this time also experienced significant catch-up of their worst performing mathematics students, with their bottom third of test scores rising in the national distribution.

We identify causal impacts by borrowing an instrumental variable approach commonly used in the electrification literature. We employ an instrument that exploits the variation in cost of expanding this internet infrastructure associated with distance from the existing infrastructure. Our data provides us with a number of important controls for education attainment and conditional on our controls and fixed effects, we rely on a conditional independence assumption for our instrument to deliver identification. This approach allows us to focus on the variation in the supply-side of internet provision while removing the other sources of variation associated with the non-randomness of how separate municipalities may have been prioritized for connection.

We also present additional evidence that precludes various different channels through which our observed impact may be occurring and argue that this impact arises from increases in the marginal productivity of the educational investments. In other words, we believe that the internet is making it easier for this impacted subset of students to generate human capital. We show that this increase in internet access does not change students' propensity to engage in the labor force while studying. This is important because it rules

[1] Some examples are: Forman et al. (2012), Akerman et al. (2015), Hjort & Poulsen (2019).

out cases where students may be dropping out of school or entering school at higher rates as a result of this internet expansion, which would potentially lead our results to be driven by a change in the sample of test takers instead of actual learning on behalf of the test takers. We also find no impact of this internet expansion on self-reported family income, which rules out any income effects on the household's education decision problem. These estimated effects are consistent with the internet acting as an educational input that directly increases the marginal productivity of educational investments for these students.

This has important implications for policies aimed at expanding internet access into areas that are typically viewed as unprofitable. This is especially relevant for low- and middle-income countries, which share a common pattern of more modern and connected urban centers and then poorer and less developed rural areas. Our estimates show that closing the digital gap may also be an effective tool for reducing the achievement gap within schools. It seems that these policies do not just provide opportunities through the local economy, as has been documented in previous studies on the labor market effects, but also through increased educational outcomes. We also show that these internet access increases coincide with various other increases that would be consistent with a more modernizing wave affecting these areas, such as increased ownership of various home appliances. We include these changes in durable ownership as additional controls in our specification and find very similar results.

The rest of the paper is structured as follows. Section 2 presents the relevant literature, including various interventions that are focused on previous information and communications technology (ICT) interventions, papers studying internet rollouts on the labor market, and papers that have used a similar identification strategy to study the impacts of electrification. Section 3 gives a brief history of the Vive Digital Phase 1 policy and the relevant facts for our analysis. Section 4 details the sources and construction of the data that we use for our analysis. Section 5 outlines our identification strategy and presents our estimating equations. Section 6 presents our estimates of the impact of increasing internet access on test scores and on other variables that are important for the interpretation of our results. Section 7 concludes.

2. Literature

Technology-based learning interventions have enormous potential to improve education outcomes, especially in low- and middle-income countries. Many researchers have built up a significant body of evidence showing this potential, primarily based upon randomized controlled trials in a variety on countries and contexts. For example, Banerjee et al. (2007) and Linden (2008) both studied a randomized intervention in India allowing students to spend two hours a week using computer-based learning software, which found significant positive impacts on mathematics test scores. Similar studies, such as Mo et al. (2013) in China and Carillo et al. (2011) in Ecuador found positive effects of computer-based learning aids on test scores. It is worth noting however that some other papers studying similar programs have failed to find significant effects on test score outcomes, such as Goolsbee & Guryan (2006) in USA, Barrera-Osorio & Linden (2009) in Colombia, and Cristia et al. (2017) in Peru. These studies all show that digitally based instructional technologies can be important inputs into the education production function.

One of the attractive implications of using internet access as an education-enhancing technology is the ability for students and teachers to access information and instruction targeted to students' current level of knowledge. This is especially important for students who have fallen behind and may lack the prerequisite knowledge to make sense of grade-appropriate lesson plans. One randomized trial that is particularly relevant for our estimates is from Muralidharan et al. (2019) in India, which studied a cohort of students where this is the case. They study the impact of exposure to a software (Mindspark) that personalizes the instruction to students based upon their baseline knowledge. They found that once this instruction is targeted and level-appropriate, then these students showed significant increases in their independently administered test scores across their entire distribution of starting proficiency. These students were behind however, and the only detectable increase in the annual school math exams occurred for the students who scored highly in the Mindspark software, and were therefore more likely to be receiving grade-appropriate content.[2] Another relevant example comes from Carillo et al. (2011), which found positive test score impacts that were disproportionately concentrated at the top of their test score distribution. While these impacts are concentrated at the opposite end of the test score distribution than our estimated impacts, it is another important example of heterogenous effects of these interventions across the distribution.

Whereas the previous papers are studying small-scale randomized interventions that provide ICT technology for education, this paper focuses on a country-wide rollout aimed at increasing internet access. Previous research has found that increased internet access can have significant impacts on labor markets, however these studies have focused on employment rates and the labor force. Some examples include Forman et al. (2012) on wage growth in USA, Akerman et al. (2015) on labor markets in Norway, and Hjort & Poulsen (2019) on labor markets in various Sub-Saharan African economies. All of these papers have found significant impacts on labor market outcomes, but to the best of our knowledge, our paper is one of the first to evaluate one of these rollout's impact on test score distributions.

[2] This is discussed more fully in relation to our estimates in the results section.

This paper borrows its instrumental variable strategy from the electrification literature. These papers have used the fact that electricity infrastructure is expensive and that certain geographic features provide variation in the cost of expanding electricity provision. This has led these studies to construct instruments for electricity access from geographic features that make this provision more expensive. One example is the average gradient of the topography within a region, which would imply rugged terrain and make tower construction more expensive, has been used by both Dinkleman (2011) in South Africa and Grogan & Sandanand (2013) in Nicaragua. Other papers have used distance to either generation capacity, especially hydroelectric generation, or the existing electricity grid as instruments for access as the longer the distance, the more expensive it is to expand the grid. Some examples of papers using these strategies are Grogan (2016) in Colombia, Van de Walle et al. (2013) in India, Grogan (2018) in Guatemala, Lipscomb et al. (2013) in Brazil, and Squires (2015) in Honduras. This is the first paper to take such instruments from the electrification literature and apply them to study the impacts of increasing internet access.

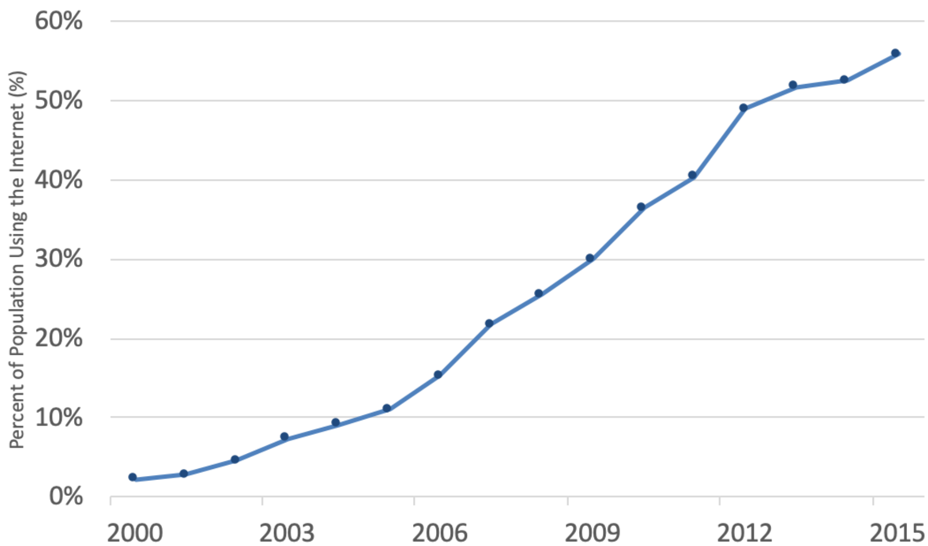
One cannot study the impact of increased internet access on education outcomes in a vacuum. Critically, there exist opportunity costs for education investments, and time spent making these investments comes at the cost of other opportunities, such as either working or leisure. This becomes especially relevant because there is good reason to expect that increasing internet access would not only increase the marginal productivity of educational investments, but would also increase the productivity of the other activities that compete for a child's time. One example is laid out in the papers mentioned above, where increased internet access may increase the wages that can be earned in the labor market. An example of substitution towards leisure comes from Malamud & Pop-Eleches (2011) in Romania, where distributing home computers to students found negative impacts on test scores, which were attenuated in the cases with stricter parental monitoring of use.

Many models have formalized household decision-making on education investments. Two examples come from both Shah & Steinberg (2017) and Bau et al. (2020) in India. In these cases, a household will apportion a child's time to investing in their education and other activities such that their marginal productivities are equalized. This household decision implies that despite its likely positive impact on the marginal productivity of investing in education, this may actually reduce a household's investment in education if the internet expansion's impact on the marginal productivity of labor or leisure is sufficiently large. The relative strength of these changes in marginal products will determine both the magnitude and direction of students' responses. It is also possible that the relative magnitudes of these effects will differ by context. The body of work in the electrification literature provides an example of this, where both the magnitudes and signs of increased electricity access on education outcomes have varied. Jimenez (2017) provides a meta-analysis of these studies noting this dispersion in results and Squires (2015) notes an example in Honduras where electrification actually reduced educational attainment, with the primary channel being substitution out of school towards labor.

3. Vive Digital Phase 1

Colombia made large gains in internet connectivity between 2000 and 2009 (See Figure 1 below). However, many gains during this period were concentrated in specific areas of the country, especially in large, urban areas. By 2010, despite these large gains, much of the country remained unconnected to Colombia's internet infrastructure. Less than 20% of Colombia's approximately 1100 municipalities were connected to the fiber optic network. Many barriers previously prevented this expansion of the internet from these concentrated areas, including the high costs of expanding the internet infrastructure. These high costs are also exacerbated by the mountainous geography of Colombia and the distance between urban centers. Colombia's limited financial capacity also precluded the State itself from making these investments.[3]

Figure 1: Percent of Population in Colombia Using the Internet: 2000 – 2015



Source: World Bank Development Indicators. Series: "Individuals using the Internet (% of population)". Accessed 29 May 2020.

We study Colombia's public policy push called "Vive Digital", which increased internet access into previously underserved areas throughout the country. Phase 1 of this program occurred between 2010 and 2014. In 2009, Colombia passed a series of laws that mandated expanding internet access as a national priority. A new government was elected in 2010 and with it came a new minister of ICT, Diego Molano Vega, who oversaw the creation and implementation of this plan.

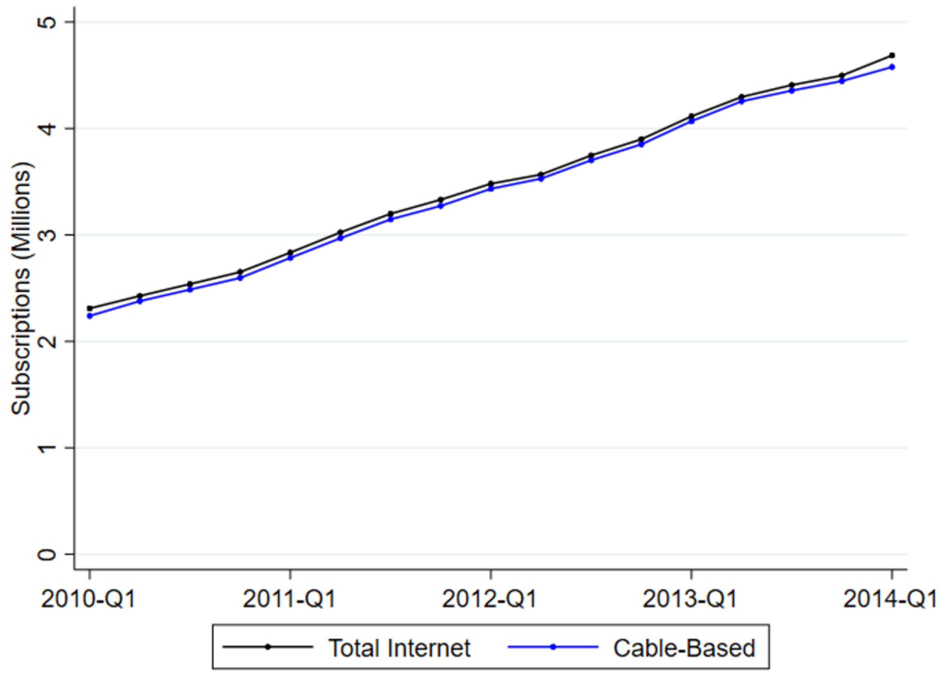
Vive Digital Phase 1 had three main objectives focused on increasing internet access and usage. These were to (i) triple the number of municipalities connected to internet infrastructure, (ii) connect 50% of Colombia's microenterprises and small and medium enterprises (SMEs) and 50% of homes, and (iii) quadruple the total number of internet connections to 8.8 million.[4] One of the four major strategies for achieving these goals included expanding the internet infrastructure to narrow the rural-urban divide in

[3] http://www3.weforum.org/docs/GITR/2013/GITR_Chapter2.1_2013.pdf - p. 112.
[4] http://www3.weforum.org/docs/GITR/2013/GITR_Chapter2.1_2013.pdf - p. 112.

internet access. During this period, the primary mode of internet provision was through cable-based technologies. These included DSL, cable, and fiber optic technologies, which accounted for approximately 97% of connections.[5] Therefore, this infrastructure expansion involved expanding these cable-based networks into municipalities which remained previously unconnected, and indeed a large public focus remained on laying new fiber optic cables.

This program was very successful and resulted in a large increase in total connections and the number of municipalities connected. Figure 2 below shows the quarterly increase in total connections within Colombia over the Vive Digital Phase 1 period. Indeed, by 2012 alone, the Colombian government had been successful in laying over 15,000km of new fiber-optic cable and installed multiple additional submarine internet cables. According to a 2013 report by the Ministry of ICT, over 250 additional municipalities became connected to fiber optic cables between 2010 and 2012, and the government noted that it was on track to connect at least another 225 by 2014.[6] This increase constitutes a large, supply-side driven increase in internet access as a result of this government policy.

Figure 2: Total Number of Quarterly Subscriptions: Q1 2010 – Q1 2014



Source: Data from Colombia's Communications Regulatory Commission (CRC). These numbers represent a stock of subscriptions in each period, not a flow.

[5] Source: Data from Colombia's Communications Regulatory Commission (CRC). Note that this is the same data presented in Figure 2.

[6] http://www3.weforum.org/docs/GITR/2013/GITR_Chapter2.1_2013.pdf - p. 112.

4. Data

Answering our research question requires very specific data. Studying school-level test distributions requires more data than is typical of a standard randomized trial as we must observe enough test-scores such that we have both (i) enough data within each school to observe a distribution, and (ii) enough schools to be able to compare the changes between them. We also require that the test scores are standardized and comparable both between schools and across time. Detailed information about the students who are taking these tests, which schools they attend, and where these schools can be located are also necessary for constructing control and geographic variables. Finally, we also require a measure of how many students have access to the internet and which municipalities have the necessary infrastructure to make that possible.

We bring together various different data sources to construct a school-level dataset that includes all of these elements. This section will cover the three major sources that we use in turn. Our test scores are based upon Colombia's SB 11 test score data, which is where we draw our outcome variables (e.g. test scores), information about the students, and measure of internet penetration. The second source includes data on locations for individual schools drawn from multiple sources within the Colombia government. The final source comes from Colombia's ICT regulator (The CRC) and includes data on which municipalities were connected to the internet. We focus on the years 2009 and 2015 as these years encapsulate the Vive Digital Phase 1 policy period and 2009 is the first year where there exists full data on our internet measure.

4.1. Saber 11 Testing Data

We use Colombia's Saber 11 (SB 11) standardized test data to measure academic achievement. This test is a national standardized test given twice a year for students finishing high school and is administered by Colombia's Institute for Education Evaluation (ICFES). It is a secondary school exit exam and is required for entry into higher education, although it is possible to take the exam at a later date after graduation. The exam covers many different subjects and we focus on two subjects that are consistent through the years and common in the literature: mathematics and language.

One of the advantages of this testing data is the very high test-taking rate, with over 90% of eligible students sitting the exam. Riehl et al. (2016) also note that the government uses these test scores to evaluate high schools, so the government tries to encourage this test taking rate to be as high as possible.[7] This is an important detail because it minimizes a common concern with these standardized tests, which is the selection problem of who chooses to write the test. This is especially salient for our paper as any such selection problem is likely to disproportionately censor a specific side of the distribution, so an observed increase in the bottom of a test score distribution may actually be generated from an exit of the lowest-scoring students from the distribution. Therefore, the very high writing rate of this exam alleviates many of these selection concerns.

[7] This is noted by Riehl et al. (2016) as they document this from personal communications with ICFES and Angrist et al. (2006) as they used the SB11 as well (p. 110).

The SB11 test score data includes a full census of every test-taker. Before taking the test, students complete a detailed socioeconomic survey about their individual and household characteristics. There is some variation in the set of questions asked, but they are also consistent enough to construct a set of comparable variables over years. As a result, this data contains approximately 560,000 test scores for each year, and includes detailed information on each student. Each test score is standardized to the number of standard deviations from the mean score for each year. This data provides our primary outcomes variables, including test scores, family incomes and student employment, socio-economic controls, and our primary treatment variable, specifically if the student has access to the internet at home.

We use this test score data to construct annual data at the school level, which is our primary unit of analysis. Each student in the data is assigned to a specific education institution by a code assigned by Colombia's National Administrative Department of Statistics (DANE), hereafter referred to as a DANE code. We use this code to construct our data at the DANE code level and to assign each code to individual municipalities and respective province (departmentos). We exclude the DANE codes for institutions that are within Colombia's five largest cities.

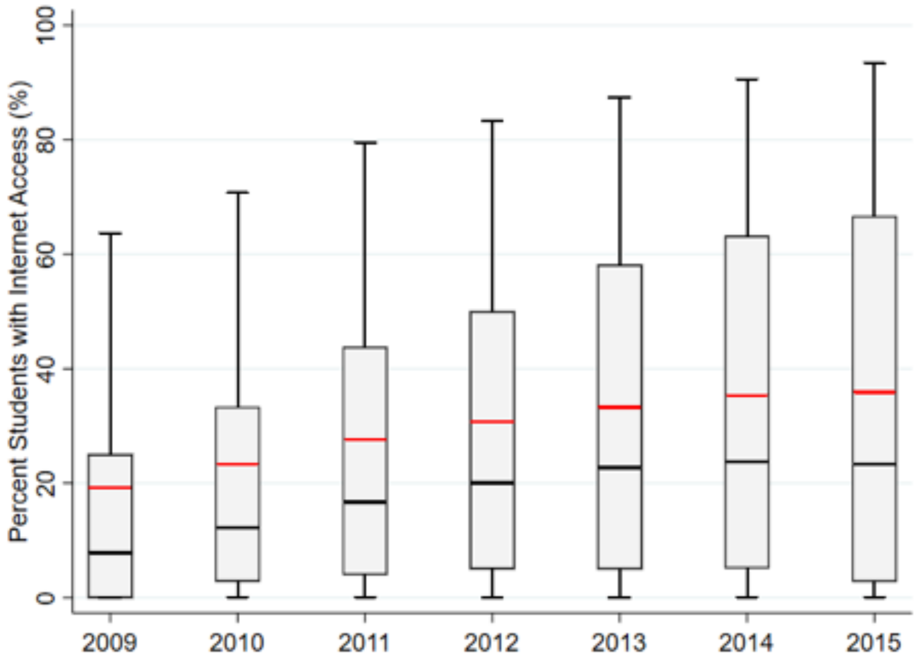
We calculate school-level test score distribution statistics, including the mean values, scores at different percentiles, and the differences between the 90th and 10th percentile scores. We also construct school-level average measure for student characteristics. For example, individual indicators for if a student lives in an urban or a rural area are converted into the percentage of students who live in a rural area for a given year. Finally, we construct our final treatment variable, which is the percent of students in any given year that have access to the internet at home. Figure 3 below shows the distribution of these values across our sample of schools for each year. It shows the large increases in the distribution of these values over the policy period.

4.2. School Location Data

We use data from both Colombia's Ministry of Education and DANE to locate the schools in our data. Both of these sources use DANE codes for educational institutions as well, so we match between the SB11 data and location data based upon these codes. The Ministry of Education provides detailed latitude and longitude data for a subset of schools in Colombia. The data from DANE provides approximate locations for these DANE codes. The most common is a town code, which when combined with shape files from DANE, allows us to construct a centroid for the towns where the schools are located. In a few extra cases for rural schools, the data allows us to locate the school in the centroid of its vereda, which is a subset of the individual municipality.[8]

Figure 3: Distribution of School-level Values for Percent of Students with Internet Access (2009 – 2015)

[8] For reference, there are approximately 33,425 unique veredas in Colombia according to GIS data from DANE. They constitute a very granular spatial measurement.

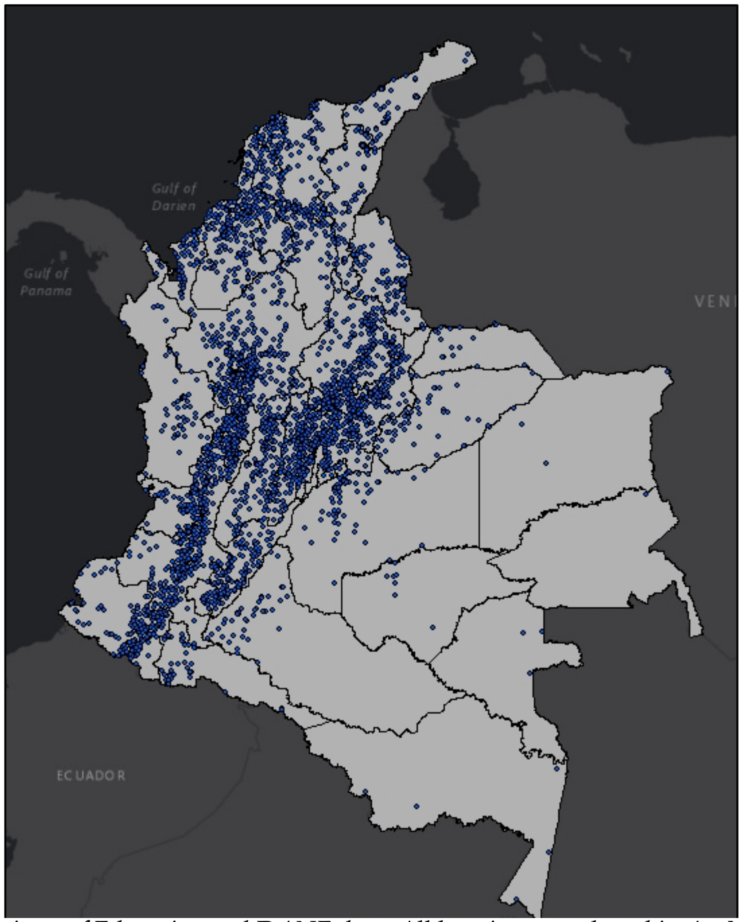


Source: SB11 Data for 2009 - 2015. The bars show the 25th to 75th percentiles. The whiskers cover the 10th and 90th percentiles. Outliers are excluded. The red (top) line within the bar represent the mean value for the sample of schools. The black (bottom) line within the bar represent the median value.

We begin by matching schools based upon the exact location data using the Ministry of Education Data. DANE codes describe an individual educational institution, so in some cases there are multiple locations associated with each code. An example of where this could occur would be if two affiliated schools were in nearby towns. In this case, we took their average coordinates and excluded any code where any of the original coordinates were more than 10km from the calculated average. We then matched the remaining schools with the DANE data, using the centroids of the towns or if the towns were unavailable, the veredas where possible. This produced a final sample of 5,205 located schools with test score data out of the total 5,744 school codes that we observe in both 2009 and 2015, which constitutes a 91% success rate.[9] Figure 4 below shows this full sample of located schools.

Figure 4: Complete set of Located Schools in Data

[9] We match 3,445 DANE codes using the Ministry of Education data. We then match a further 1,691 using the town codes from the DANE data. Finally, we match another 69 schools based upon their veredas. This gives 5,205 in total.



Sources: Colombian Ministry of Education and DANE data. All locations are plotted in ArcMap using standard base layers and shape files from DANE. The boundaries are for individual provinces. All GIS work is the authors'.

4.3. CRC Subscription Data

Colombia's Communications Regulatory Commission (CRC) also provides data on quarterly internet subscriptions. This dataset runs from the first quarter of 2010 (January-March) until the first quarter of 2014. It includes the total number of internet subscriptions at the municipality level, which can be further broken down by type (e.g. satellite or DSL) and provider. In our data, we make the distinction between cable-based" and "non-cable-based" internet provision. The former requires a physical cable connection and therefore requires necessary infrastructure to be extended in a network, such as a fiber optic connection for example. The "non-cable-based" systems do not necessarily require this, such as a satellite connection. This dataset is the primary source for the construction of our instrument. It allows us to see the number of active internet connections within each municipality, and therefore, the number of municipalities that meet any given threshold for the number of active internet connections.

5. Estimation Strategy

5.1. Identification Strategy

One challenge of studying a nationwide internet rollout is that the expansion of the network infrastructure is very unlikely to be randomly determined. There could be many reasons why certain municipalities may have been prioritized for connection as part of Vive Digital and if these reasons are correlated with education outcomes, then this would introduce bias into our estimates. Some examples may be changes in political influence of certain areas or a priority of the government to connect schools to internet connections. Vive Digital had a goal of connecting as many of Colombia's municipalities as possible over this period and so there were likely multiple factors driving the order in which municipalities became connected. Therefore, there will be multiples sources of the variation of the internet expansion over this period, including potentially confounding variation discussed above, but also variation in the cost of the expansion given the original existing infrastructure.

The places that have access to the internet may differ from those that do not in many respects that are relevant for education outcomes, and our empirical strategy addresses this issue in two ways. First, we first-difference the variables at the school level. With this, we remove any time-invariant component at the school and municipal level. The first differences control for any school-specific geographic components and any common shocks, such as the introduction of additional submarine internet cables in Colombia. Second, we use the cost of the internet expansion as our source of our variation to identify the impact of increasing internet access on test scores. We use the fact that the vast majority of internet subscriptions (> 97%) in Colombia are "cable-based" subscriptions and that the cost of expanding this infrastructure is costly and critically, that this cost increases with distance. This is especially the case in this context given Colombia's mountainous topography. We therefore use the distance of an individual school from the stock of internet infrastructure at the start of our period as an instrument for the change in internet access over this period. The logic of this instrument is the same as the many papers studying electrification in that we are focusing on part of the expansion that is driven by geographic factors and cost-minimization on the supply side.

The validity of this instrument relies on two main assumptions. The first is that this distance is indeed related to the cost of expanding this infrastructure and therefore does affect changes in internet access (relevance).The second is that while this distance does use the cost variation in expanding internet access, it only affects the change in test scores though this change in internet access. Our primary identification assumption becomes that, conditional on our socio-economic controls, within-province variation in distance to initial network infrastructure only affects test score changes through its impact on changes in internet access. In the context of a rapid expansion of internet coverage and infrastructure promoted by the national government, as it is the case of Colombia in our study period, the variation in this expansion is likely driven by two factors. The first is cost-minimization on the supply side, and this is the variation that our instrument uses to identify the impact of the change in internet access on test scores. The second factor is general policy concerns, which may drive the government to prioritize certain areas over another for this expansion beyond simple cost-minimization. This second source of variation is the variation in the changes in internet access that we aim to remove through the use of our instrument.

It is worth reiterating that we are instrumenting for the *first-difference* of the change in the percent of test takers that have internet at home, not the level. This is the common application of these geographic instruments in the electrification literature. Van de Walle et al. (2013) lay out a particularly good discussion of these instruments and lay out the central argument very well when they write: "judgments on the plausibility of the identification strategy must also depend on what other control variables are used, given that the estimator is making a conditional independence assumption".[10] The quality of our data has allowed us to include many important determinants of education investment choices and the likely demand for internet. This will critically control for the initial population characteristics and any changes in the makeup of the people who live in these areas that could drive the trajectories of internet take-up and educational outcomes. Given our controls and the short time frame, we believe that our identification assumptions are defensible.

5.2. Constructing the Distance Instrument

The first step in constructing our instrument is to determine which areas of the country were connected to the internet infrastructure at the beginning of 2010. We use the data from the CRC to determine how many cable-based internet connections existed within each municipality for each quarter. We first determine how many subscriptions are active in each municipality. We do not want to dismiss a municipality as unconnected just because it is sparsely populated however, so we convert these number of subscriptions into the number of subscriptions as a percentage of the total projected population for 2010.[11]

We categorize each municipality as connected if the number of "cable-based" subscriptions is greater than or equal to 1% of the projected population. This is preferable to simply marking a municipality as connected if it records any cable-based connections for two reasons. The first is that many municipalities record having less than 12 connections and there exists large bunching of municipalities at a single connection. If these are marked as connected, we end up with a very large number of connected municipalities. Additionally, when we compare the municipalities that are classified as connected in Q1 2010 and Q1 2014 using the rule of marking them as connected if they have at least a single connection, there are 49 municipalities that change from connected to unconnected over time, which is an undesirable property of this rule. We believe that is likely due to some measurement error. Using the 1% rule leaves only one municipality that changes from connected to unconnected, which makes it a more plausible indicator for if a municipality was actually connected to the internet infrastructure.

We use this measure of connectedness to construct a map of the municipalities that were plausibly connected to Colombia's cable-based internet infrastructure in Q1 2010. Figure

[10] Van de Walle et al. (2013) – p. 9.

[11] This uses population projections from DANE based upon Colombia's 2005 national census. It is available at: https://www.dane.gov.co/index.php/en/statistics-by-topic-1/population-and-demography/population-projections (Accessed 02 March 2020)

5 below shows the set of these municipalities. We also identify the municipalities that change from unconnected in Q1 2010 to connected by Q1 2014. We calculate the shortest distance to the nearest "connected" municipality in Figure 5 for each school in in Figure 4. This represents our measure of the linear distance of each located school to the nearest municipality connected to the starting cable-based internet infrastructure.

5.3. Estimating Equation

We estimate the impact that changes in the percent of test-takers in a school that have internet access have on the change in test scores using 2SLS on our first-differenced data. Once again, we instrument for this change in internet access with the distance of each school to the municipalities that we marked as connected for Q1 2010. The estimating equations are:

$$\Delta y_{ip} = \beta_0 + \beta_1 \Delta Inet_{ip} + \theta \Delta X_{ip} + \gamma X_{ip} + \lambda_p + \varepsilon_{ip}$$

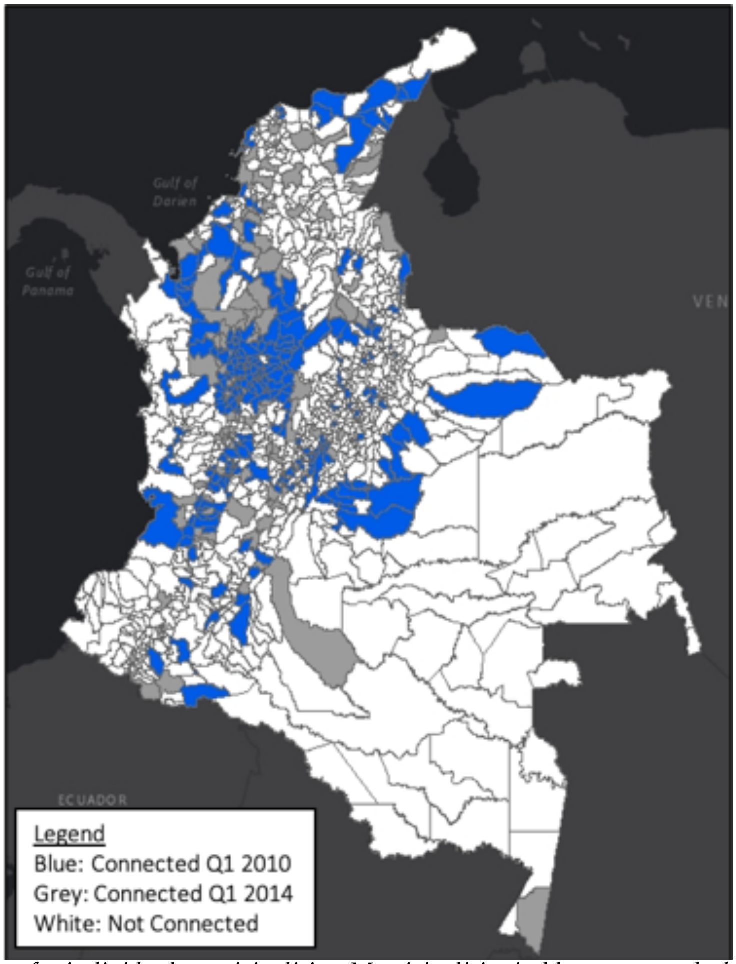
With the first stage given by:

$$\Delta Inet_{ip} = \delta_0 + \delta_1 Z_{ip} + \vartheta \Delta X_{ip} + \varphi X_{ip} + \lambda_p + \mu_{ip}$$

In the above equations, an individual school is denoted with the subscript "i", the province that the school is in is denoted by "p", and first-differenced variables are preceded by "Δ". The first-differences are constructed using the difference between the 2015 and 2009 values. For variables that are not first-differenced, they are either time-invariant or use the starting level value for 2009.

There are a few outcome variables that we will examine, each denoted by Δy_{ip}. An example here would be the change in the mean mathematics test score for a school. Our primary treatment variable is the change in a school's percent of test takers with access to the internet at home, denoted by $\Delta Inet_{ip}$. This is instrumented by our measure of the shortest distance to the nearest 2010 "connected" municipality, denoted by Z_{ip}. We also include a series of demand-side controls that are important indicators of a student's academic performance and also may affect the probability that a family invests in internet access. These include if students live in a rural or urban area, their birth year, the child's sex, and the education level of each of the parents. We include the starting levels of these controls, denoted by X_{ip}, and their first differences, denoted by ΔX_{ip}. Provincial fixed effects are denoted by λ_p. Finally, idiosyncratic error terms is denoted by ε_{ip} and μ_{ip} for each of the estimating equations.

Figure 5: Set of Municipalities Marked as "Connected" in Q1 2010 and Q1 2014



Notes: The boundaries are for individual municipalities. Municipalities in blue were marked as connected by our 1% definition in Q1 2010. Municipalities in grey were not marked as connected in 2010, but became marked as connected by Q1 2014. Municipalities in white are not marked as connected in either period. Sources: Colombian CRC. All GIS work is the authors'.

6. Results

We divide our results into three sections. The first section presents our estimates of the impact of increasing home internet access on test scores. The second section confirms that we cannot detect any impact of increased internet access on family incomes or the students' propensity to work, which are two primary alternate channels by which the internet may affect education choices. Finally, we present evidence that increased internet access has a positive effect on the purchase of other durable goods, which remains a puzzling outcome, and discuss its implications for our results. The standard errors are clustered by province in all of this section's regression tables.

The change in the percent of test takers with internet access at home is instrumented by the shortest distance to our set of connected municipalities shown in Figure 5 above. The first assumption that we verify is the relevance assumption. Table 1 below presents the estimates analogous to Equation 2 in the previous section. It also includes the relevant F-statistics for our instrument. Once we include provincial fixed effects, our reported F-statistics more than satisfy any general rules of thumb regarding weak instruments. Table 1 reports multiple specifications, including various combinations of controls, with column 5 representing our full and preferred regression estimates and fully corresponding to Equation 2. The Column 5 estimate implies that for every 100km a school is away from the boundary of its nearest connected municipality, its increase in the percentage of students with internet access decreased by 12.7% once you control for the province and demand-side variables. It is worth noting that, given Colombia's largely mountainous topography, we would expect even modest distances to pose a significant cost barrier to expanding existing infrastructure.

Table 1: First Stage: Regression of Instrument and Controls on Changes in Internet Access

	(1)	(2)	(3)	(4)	(5)
Distance to Connected	-0.062**	-0.203***	-0.174***	-0.152***	-0.127***
	(0.026)	(0.057)	(0.046)	(0.030)	(0.024)
Observations	5205	5205	5198	5200	5198
ProvFE	N	Y	Y	Y	Y
FDControls	N	N	Y	N	Y
LvlControls	N	N	N	Y	Y
Fstat	5.5	12.8	14.1	25.1	29.2
r2	0.024	0.121	0.236	0.305	0.396

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

6.1. Primary Results: Test Score Outcomes

Our preferred estimates do not show any detectable impact of increasing internet access on mean test scores for either language or mathematics. Table 2 below presents our estimates of impact of increasing the percent of the test takers with internet access on schools' mean test scores. Both the estimates for the impacts on mathematics and language scores start off as positive and statistically significant, but cease to be statistically significant once all of our controls are added. Although we cannot statistically distinguish the impact on mathematics test scores from zero, it remains large and positive. On the other hand, the impact on language scores becomes very close to zero and insignificant.

Table 2: Impacts on Mean Mathematics and Language Test Scores

	FD Mathematics Mean Test Score				FD Language Mean Test Score			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD: Pct Internet	0.00555***	0.00543***	0.00529***	0.00314	0.00581***	0.00533***	0.00350**	0.00070
	(0.00153)	(0.00162)	(0.00188)	(0.00200)	(0.00151)	(0.00194)	(0.00167)	(0.00294)
Observations	5205	5198	5200	5198	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

One immediate question from the results presented in Table 2 is if the lack of significant results is because the increase in internet access had no impact on test scores. This would generate such a result at the mean if there existed a homogenous and negligible impact across the entire test score distribution. However, it might also be that the increase in internet access only had a significant impact for a subset of the test score distribution, which may be significant for that group but not sufficiently strong to generate an effect at the mean. An example of where this may occur would be if the internet was only a useful study tool for those students who have fallen behind, which would manifest in only an impact in the bottom of the distribution. We examine the difference between the 90^{th} and 10^{th} percentile test scores to distinguish between these two cases. In the first case, where there is a homogenous negligible effect across the whole test score distribution, we would expect the variance of scores to remain nearly constant. In the second case, on the other hand, we would expect to see a change in the variance of the distribution if there exists heterogeneous impacts along the distribution. This is assuming that there is some pattern to this heterogeneity consistent with most decision-making models. If there is heterogeneity that is simply noise, then this may not necessarily be the case. If there is some monotonic or at least more smooth profile of the impact along the test score distribution, then this would be the case however.

Our estimates show that there is indeed a variance reduction in the mathematics test score distribution for schools that experienced a larger increase in internet access. Table 3 below presents our estimates of the impact of increased internet access on the 90-10 percentile spreads for both mathematics and language test scores. Our estimated impact on this spread implies that for every 10% increase in the percent of test-takers that have access to the internet, the difference between the 90^{th} and 10^{th} percentile test score in a school decreases by 0.057 standard deviations. This implies that of the two cases outlined above, the second case is likely the better fit for mathematics test scores. Combining a positive estimated impact on mean test scores and a tightening of the distribution implies that the gains were larger for those at the bottom of the test score distribution.

There was no detectable impact on the 90-10 percentile spread for language test scores. It remains positive and loses significance with the addition of more controls, similarly to the impact on mean math scores present above. Table 5 and Figure 7 below will both present information on what is happening to the distribution in this case. Despite this positive spread overall, when viewed in concert with the negligible impacts on mean language scores, we conclude that no real story of impact is emerging for language test scores. It appears that the case of language test scores is much more similar to the first of the two cases outlined above and that increased internet access appears to not have impacted any segment of the distribution much at all.

Table 3: Impacts on 90-10 Percentile Spreads for Mathematics and Language Test Scores

	FD Mathematics 90-10 Spread				FD Language 90-10 Spread			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD: Pct Internet	-0.00318	-0.00422**	-0.00458**	-0.00566**	0.00678***	0.00686***	0.00343	0.00353
	(0.00201)	(0.00213)	(0.00232)	(0.00245)	(0.00233)	(0.00255)	(0.00288)	(0.00306)
Observations	5205	5198	5200	5198	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

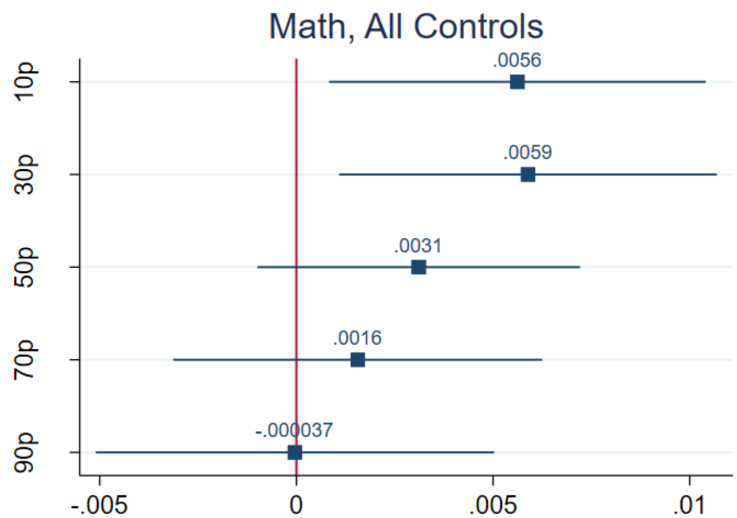
*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Finally, we show estimated impacts along different points in the mathematics test score distribution that explain this variance reduction. This is important because a variance reduction may indicate either a relative gain at the bottom of the test score distribution or a relative decline at the top of the distribution. We do so by taking different percentile scores for each school and year and using the changes in those percentile scores as our outcome variable. This provides estimated impacts of increased internet access on different points in the test score distribution. Table 4 & Table 5 below present the estimated impacts of internet access on specific mathematics and language test score percentiles respectively. Figure 6 & Figure 7 visualizes the analogous preferred estimates from Table 4 & Table 5. We focus on the 10-30-50-70-90 percentiles, but our results are qualitatively similar if we use different percentiles, such as 20-40-60-80.

Our results do show statistically significant and large, positive impacts of increased internet access on the 10th and 30th percentile scores for mathematics. These results imply that for every 10% increase in the proportion of test-takers with internet access, the mathematics test scores increase by 0.056 and 0.059 standard deviations for the 10th and 30th percentiles respectively. This shows is a large impact in the bottom third of the test score distribution with a decline in impact further towards the top of the distribution and with a quite small and insignificant impact by the 70th percentile. The heterogeneous impacts across the test score distribution explains the positive, but insignificant impact on mean mathematics scores. Reassuringly, it appears that increasing internet access had large, positive effects on the bottom of the test score distribution, and while having little to no effect, did not have any negative consequences for test scores at the top of the distribution.

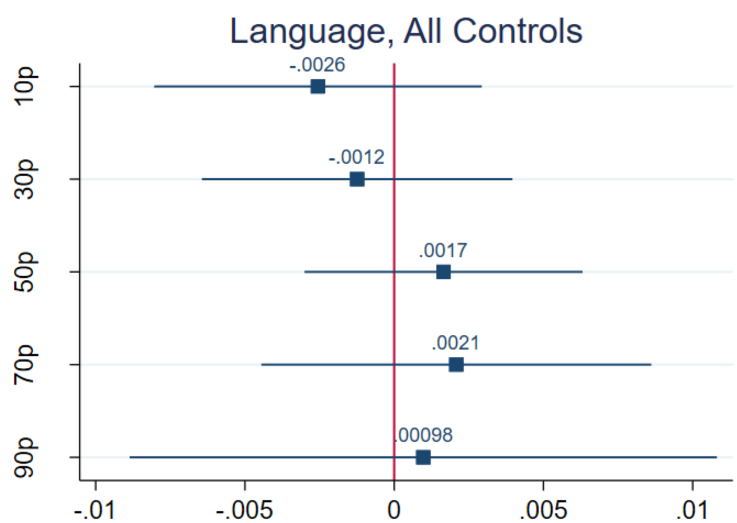
Our estimates for the impact on language test scores tell a different story. There remains no detectable impact on any specific percentile of the language test score distribution. When combined with our previous results that found no detectable impact on the mean or 90-10 percentile spread of the language test score distribution, this strengthens our interpretation that increasing internet access has simply had a negligible effect on language test scores. There is a little bit of a shape to the estimates of the individual percentile scores, but they all remain close to zero and both statistically and economically insignificant.

Figure 6: Preferred Coefficient Estimates for 10th, 30th, 50th, 70th, & 90th Percentile Mathematics Test Scores



Notes: These results are analogous to Columns 6-10 in Table 4 below. Coefficients and 95% confidence intervals are presented. The y-axis shows the corresponding percentile for each estimate.

Figure 7: Preferred Coefficient Estimates for 10th, 30th, 50th, 70th, & 90th Percentile Language Test Scores



Notes: These results are analogous to Columns 6-10 in Table 5 below. Coefficients and 95% confidence intervals are presented. The y-axis shows the corresponding percentile for each estimate.

Increasing the percent of students with access to the internet had a small, but significant impact on lower performing students over this period. Our estimates, which suggest a 10% increase in internet access increases test scores by 0.06 SD in the bottom third if the mathematics test score distribution, remain small but are also not implausibly so given the estimated impacts of other educational interventions. For example, Angrist et al. (2002) evaluated a voucher lottery program in Colombia that subsidized the cost of attending private school and found that winners increased their test scores by 0.2 standard deviations. Aguero & Beleche (2013) found that increasing the days of instruction in a school year in Mexico increased test scores by 0.04-0.07 SD per 10 days. Bellei (2009) found that moving from half day to full day instruction in Chile increased test scores by 0.05-0.07 SD in mathematics and 0.00-0.12 SD in Language. These are all examples of education interventions in nearby middle-income countries that produced impacts similar in magnitude to what we have observed in the bottom of the mathematics test score distribution.

These estimates imply that closing the digital gap between areas within Colombia will also go some way to close education achievement gaps. These test scores are all standardized, so these estimated increases at the bottom of the mathematics test score distribution for these schools imply that these students are actually increasing in their placement in the national distribution. Therefore, schools that experienced the largest increases in internet access also saw the largest increases in the national ranking of their mathematics test scores, specifically for those students in the bottom of the individual schools' test score distributions. This shows that equalizing internet access through expanding internet infrastructure (or likely through any other means) can lead to catching up of education outcomes relative to the whole country.

Table 4: Impacts on 10th, 30th, 50th, 70th, & 90th Percentile Mathematics Test Scores

	(1) p10	(2) p30	(3) p50	(4) p70	(5) p90	(6) p10	(7) p30	(8) p50	(9) p70	(10) p90
FD: Pct Internet	0.00700***	0.00756***	0.00575***	0.00463***	0.00382**	0.00562**	0.00589**	0.00311	0.00156	-0.00004
	(0.00208)	(0.00178)	(0.00150)	(0.00141)	(0.00176)	(0.00244)	(0.00245)	(0.00209)	(0.00239)	(0.00258)
Observations	5205	5205	5205	5205	5205	5198	5198	5198	5198	5198
Pctile	10	30	50	70	90	10	30	50	70	90
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	N	N	N	N	Y	Y	Y	Y	Y
LvlControls	N	N	N	N	N	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 5: Impacts on 10th, 30th, 50th, 70th, & 90th Percentile Language Test Scores

	(1) p10	(2) p30	(3) p50	(4) p70	(5) p90	(6) p10	(7) p30	(8) p50	(9) p70	(10) p90
FD: Pct Internet	0.00141	0.00391***	0.00636***	0.00759***	0.00818***	-0.00255	-0.00124	0.00165	0.00208	0.00098
	(0.00140)	(0.00144)	(0.00128)	(0.00186)	(0.00288)	(0.00280)	(0.00265)	(0.00238)	(0.00333)	(0.00502)
Observations	5205	5205	5205	5205	5205	5198	5198	5198	5198	5198
Pctile	10	30	50	70	90	10	30	50	70	90
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	N	N	N	N	Y	Y	Y	Y	Y
LvlControls	N	N	N	N	N	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Given the high cost of extending physical infrastructure, this is far from a cost-effective method of increasing education outcomes. Our estimates imply that a 10% increase in internet access produces similar estimates to some increases in school days (Mexico) or daily instruction hours (Chile), but it was only on a subset of the test score distribution in our case instead of the mean, further limiting the scope of the benefits. Beyond this comparison, there are many interventions that have improved test scores at a significantly lower cost. For example, a monetary bonus program based upon teacher performance in India studied by Muralidharan & Sundararaman (2011) increased test scores by at least 0.15 SD at the cost of only $4 per year on average.[12] However, we do view this catchup induced by increasing internet access as an additional positive effect associated with the inevitable expansion of internet infrastructure in many middle- and low-income countries.

[12] The $4 per student number is calculated by De Ree et el. (2018) in their discussion of the paper. (p. 1031)

6.2. Alternative Channels: Propensity to Work and Family Incomes

There are two alternative channels that could generate changes in education outcomes beside a direct impact on the marginal return to studying that are important to consider. As discussed in the literature section, a general model of household decision making will show households weighing the return on educational investments against the opportunity costs, including the other potential productive uses of childrens' time. Both of these channels arise from the well-established positive effects of internet access on the labor market. The first is that increases in labor productivity may lead work to displace school and study time if the impact on labor productivity is sufficiently large to dominate the positive effects on studying. The second is the effect on adults' labor productivity and ultimately family income. In the case that a household views investing in a child's education as a normal good, then we would also expect an increase in internet access to generate positive income effects. It is worth noting that both of these forces likely work against each other with respect to their effects on educational investments, but they remain important factors in the decision making process.

This is particularly important given our estimated impacts concentrating in the lower portion of the mathematics test score distribution. An alternative explanation that could generate these results is if the internet induced more students to drop out and enter the labor force and if these marginal students were disproportionately located in the bottom of these test score distribution. This would lead the exit of the lowest test scores as opposed to increases in scores that were at the bottom of the distribution to potentially drive our estimated increases. It is, however, worth noting that these students need not be concentrated in the bottom of the distribution, and in some cases, students with the highest levels of starting human capital may be more likely to be drawn into the labor force. Where these affected marginal students are located within the test score distribution will depend on the complementarity between the starting level of human capital and the internet's effects on the marginal productivity of education investments and labor. It certainly can be the case however that these marginal students are located in the bottom of the distribution, and it is important to confirm that these alternative channels are not driving our results.

We present estimates in Table 6 below with two different outcome variables to test for the presence of these alternative channels. The first is the change in self-reported family income. This variable is collected from the test taker as part of the SB 11 testing data. It asks the student to choose certain bands of their parents' income relative to the minimum wage.[13] This is an imperfect measure, both because it is structured within bands and is self-reported by the student. However, it is the only straightforward measure of family income available to us for this test. The second is the changes in the percent of students that report also working a job. As our sample is for test-takers, this will only capture a change in the percentage of students that both work and attend school and will not capture any students that drop out entirely. However, we think it reasonable to expect

[13] For example, one of the choices is if their parents earn between 3 times and 4 times the minimum wage. We convert this into an index with a value of 1 if the parents earn between 1 and 2 times the minimum wage, 2 if the parents earn between 2 and 3 times the minimum wage, etc.

that if labor force opportunities are increased sufficiently to draw some marginal students to drop out, we would also be very likely to see an increase in the students who also work while studying. While certainly possible, we find it unlikely that we would observe students dropping out to work in the labor market and not also see some rise in students attempting to do both.

We find no evidence that this internet expansion led to a significant increase in family incomes or in the propensity for children to work. Our estimates of the impact of increased internet access on both outcome variables are small and far from significant. This is reassuring and we take this as evidence that our results in the previous section are likely occurring through the direct effect of increased internet access on studying productivity. We are examining a relatively short time period and our results do not preclude any longer term impacts of increased internet access on incomes and labor market outcomes, but it appears that in this case, any such impacts were not immediately occurring.

Table 6: Impacts on Percent of Students that Work & Self-Reported Family Income

	FD Propensity to Work				FD Family Income			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD: Pct Internet	0.02809	0.01522	-0.10162	-0.02015	0.00360*	0.00170	0.00527*	0.00276
	(0.06384)	(0.06015)	(0.10802)	(0.08307)	(0.00202)	(0.00205)	(0.00290)	(0.00284)
Observations	5196	5189	5191	5189	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

6.3. Impact on Durable Good Purchases

We present evidence that this increased internet access is also related to the increase in the purchase of various durable household goods during this time. We include various different outcome variables for each of the following goods: (i) washing machine, (ii) microwave, (iii) oven, (iv) car, (v) DVD player, and (vi) a modern floor. Each of the variables are based on a binary question asked to the test taker as part of the SB 11 testing data. Therefore, these variables represent the change in the percent of test takers for an individual school and year who indicate that their household does own this item.

Table 7 below presents the results of the impact of increasing internet access of the change in the percent of test takers' households that own these durable goods. With a single exception, it appears that the increase in internet access is associated with large and significant increases in households' acquisition of these other durable goods. This is to some extent a puzzling result. One interpretation of these results is that increased access to the internet also made individuals more likely to purchase these goods. An explanation along these lines could be internet access provides more information about these goods and investments and perhaps makes them more easily accessible. While certainly possible, the magnitudes of our estimates may suggest some alternative explanation.

Table 7: Impacts on Ownership of Durable Goods

	Washer	Microwave	Oven	Car	DVD	Floor
	(1)	(2)	(3)	(4)	(5)	(6)
FD: Pct Internet	0.29586**	0.28063***	0.36819***	0.29532***	0.25136	0.27487***
	(0.12267)	(0.03816)	(0.07511)	(0.04698)	(0.17706)	(0.05933)
Observations	5198	5198	5198	5198	5198	5198
ProvFE	Y	Y	Y	Y	Y	Y
FDControls	Y	Y	Y	Y	Y	Y
LvlControls	Y	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

The finding that using this variation in distance from our starting infrastructure is leading changes in internet access to also coincide with changes in other durable ownership may suggest that something important is occurring along this geographic dimension. However, our previous results show that it is not the case that these schools that experience the largest increases in internet access are also seeing increases in the family income of the students. Similarly, it is unlikely that these differences are driven by migration or a change in the makeup of the population as we control for other key demand variables, including rurality and parents' education. One explanation is that these areas are further from the traditional core, urban areas in Colombia may be experiencing a general push towards modernization. There may have been other policy-led efforts or natural catch-up of these more removed areas that lead these two increases (internet and durables) to coincide. However, given that this does not coincide with income increases or changes in the makeup of the population, these changes in durable ownership may also be driven by supply-side increases.

The extent to which this is concerning depends on the extent that this modernizing force is also important for education outcomes, holding constant incomes and our included controls. While we think it plausible that our identifying assumptions may remain unviolated, we also redo the analysis including all of the variables for the changes in the rates of durable ownership from Table 7 as additional controls. In this case, our estimates remain largely unchanged and qualitatively similar. Table 8 below presents these results for the impact on mean scores and 90-10 percentile spreads for both mathematics and language scores, both with and without the addition of the changes in durables ownership for easy comparison. It also includes the impact on the propensity to work and self-reported family income analogous to Table 6 with the changes in durables ownership also included. Our results remain also very similar for the impact on the percentile of test scores for both mathematics and language.

Table 8: Previous Results with Previous Controls and Changes in Durables Ownership as Additional Controls

	FD Math Mean		FD Lang Mean		FD Math 90-10		FD Lang 90-10		FD Work	FD Family Income
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(1)
FD: Pct Internet	0.00314	0.00390	0.00070	0.00069	-0.00566**	-0.00629**	0.00353	0.00461	-0.05815	-0.00049
	(0.00200)	(0.00249)	(0.00294)	(0.00355)	(0.00245)	(0.00306)	(0.00306)	(0.00393)	(0.10141)	(0.00360)
Observations	5198	5198	5198	5198	5198	5198	5198	5198	5189	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
LvlControls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Durables	N	Y	N	Y	N	Y	N	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%. The impact of our instrument on the change in the percent of students with access to the internet remains statistically significant, with* *a coefficient estimate ($\hat{\delta}_1$) of -0.104 with an estimated standard error or 0.018. The relevant F-Stat remains far larger from any rule of thumb for identifying weak instruments, with at F-stat of 32.510.*

7. Conclusion

This paper shows that increasing internet access can have significant impacts on test scores. We studied the internet infrastructure rollout as part of the Vive Digital Phase 1 program in Colombia to identify the impacts of increasing internet access on high school test scores. Our estimates suggest that increasing internet access had a negligible impact on language test scores, but did have a significant impact on certain segments of the mathematics test score distribution. Specifically, we did not find a statistically significant impact on mean mathematics test scores, but it did have a significant impact on the bottom third of the distribution. Our estimates suggest that for every 10% increase in the percent of test takers that have access to the internet at home, there is a 0.06 SD increase in a school's mathematics test scores in the bottom third of the distribution.

This internet infrastructure expansion was the result of a large, government-directed policy push. We are not arguing that this constitutes a cost-effective method of increasing test scores as there are various randomized interventions that have delivered substantially larger test score gains for a fraction of the cost of large infrastructure investments. Instead, these test score gains should be viewed as another previously undocumented positive byproduct of these internet expansions. We know that increasing the necessary internet infrastructure to areas that were previously unconnected has modernizing effects on the labor market and our estimates now show that these effects also have effects on education outcomes. The inevitable rollout of internet access across middle- and low-income countries not only provides an opportunity to modernize these local economies, but also to generate some catch-up in education outcomes and this constitutes another newly documented and important impact of encouraging these internet expansions.

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A1. Appendix Tables: Full 2SLS Tables with Controls

Table 2A1: Impacts on Mean Mathematics and Language Test Scores

	FD Mathematics Mean Test Score				FD Language Mean Test Score			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD: Pct Internet	0.00555***	0.00543***	0.00529***	0.00314	0.00581***	0.00533***	0.00350**	0.00070
	(0.00153)	(0.00162)	(0.00188)	(0.00200)	(0.00151)	(0.00194)	(0.00167)	(0.00294)
FD: Pct Male		0.00123***		0.00101**		-0.00059		-0.00104**
		(0.00040)		(0.00044)		(0.00039)		(0.00042)
FD: Pct Rural		-0.00006		-0.00013		-0.00044		-0.00098*
		(0.00038)		(0.00047)		(0.00031)		(0.00053)
FD: Average Age		-0.05472***		-0.08155***		-0.05134***		-0.07404***
		(0.00430)		(0.00592)		(0.00412)		(0.00539)
FD: Mother Post-Sec.		0.00125		0.00277*		0.00225***		0.00361***
		(0.00112)		(0.00143)		(0.00087)		(0.00135)
FD: Mother Secondary		-0.00136**		0.00002		-0.00081		0.00179**
		(0.00065)		(0.00098)		(0.00056)		(0.00086)
FD: Mother Primary		-0.00023		-0.00021		-0.00058		-0.00015
		(0.00030)		(0.00059)		(0.00042)		(0.00061)
FD: Father Post-Sec.		0.00150		0.00106		0.00097		0.00184
		(0.00105)		(0.00132)		(0.00107)		(0.00121)
FD: Father Secondary		0.00008		-0.00049		0.00009		-0.00009
		(0.00064)		(0.00091)		(0.00084)		(0.00096)
FD: Father Primary		0.00040		0.00003		0.00047		0.00016
		(0.00039)		(0.00055)		(0.00036)		(0.00053)
2009: Pct Male			-0.00120***	-0.00055			-0.00063*	-0.00107***
			(0.00036)	(0.00040)			(0.00033)	(0.00031)
2009: Pct Rural			0.00121***	0.00065**			0.00043	-0.00005
			(0.00035)	(0.00028)			(0.00034)	(0.00046)
2009: Average Age			-0.00553	-0.05844***			0.00086	-0.04613***
			(0.00610)	(0.00697)			(0.00437)	(0.00509)
2009: Mother Post-Sec.			0.00265**	0.00275*			0.00231**	0.00260*
			(0.00106)	(0.00156)			(0.00105)	(0.00148)
2009: Mother Secondary			0.00129	0.00120			0.00121	0.00219*
			(0.00084)	(0.00117)			(0.00100)	(0.00125)
2009: Mother Primary			-0.00040	-0.00011			0.00036	0.00064
			(0.00063)	(0.00087)			(0.00065)	(0.00088)
2009: Father Post-Sec.			-0.00011	-0.00125			0.00182*	0.00070
			(0.00113)	(0.00147)			(0.00101)	(0.00135)
2009: Father Secondary			-0.00090*	-0.00177**			-0.00013	-0.00112
			(0.00054)	(0.00087)			(0.00074)	(0.00104)
2009: Father Primary			-0.00053	-0.00047			-0.00047	-0.00047
			(0.00052)	(0.00070)			(0.00042)	(0.00057)
Observations	5205	5198	5200	5198	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 3A1: Impacts on 90-10 Percentile Spreads for Mathematics and Language Test Scores

	FD Mathematics 90-10 Spread				FD Language 90-10 Spread			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD: Pct Internet	-0.00318	-0.00422**	-0.00458**	-0.00566**	0.00678***	0.00686***	0.00343	0.00353
	(0.00201)	(0.00213)	(0.00232)	(0.00245)	(0.00233)	(0.00255)	(0.00288)	(0.00306)
FD: Pct Male		0.00261***		0.00277***		0.00068		0.00028
		(0.00060)		(0.00078)		(0.00084)		(0.00096)
FD: Pct Rural		-0.00059		-0.00070		0.00142**		0.00113
		(0.00050)		(0.00059)		(0.00071)		(0.00080)
FD: Average Age		0.01379		0.01956*		0.01791***		0.01845***
		(0.00845)		(0.01048)		(0.00544)		(0.00646)
FD: Mother Post-Sec.		0.00479***		0.00060		0.00162		0.00291
		(0.00184)		(0.00192)		(0.00236)		(0.00267)
FD: Mother Secondary		0.00266*		0.00152		-0.00115		0.00027
		(0.00136)		(0.00175)		(0.00143)		(0.00172)
FD: Mother Primary		0.00047		0.00088		0.00082		0.00145
		(0.00046)		(0.00090)		(0.00108)		(0.00126)
FD: Father Post-Sec.		0.00103		0.00528***		-0.00156		-0.00048
		(0.00130)		(0.00159)		(0.00207)		(0.00264)
FD: Father Secondary		-0.00043		0.00231*		0.00071		0.00168
		(0.00129)		(0.00119)		(0.00118)		(0.00153)
FD: Father Primary		-0.00075		-0.00093		-0.00076		-0.00073
		(0.00049)		(0.00073)		(0.00071)		(0.00097)
2009: Pct Male			-0.00151***	0.00017			-0.00109*	-0.00082
			(0.00041)	(0.00050)			(0.00064)	(0.00064)
2009: Pct Rural			-0.00053	-0.00041			-0.00031	0.00004
			(0.00043)	(0.00040)			(0.00063)	(0.00060)
2009: Average Age			0.00641	0.01670*			-0.01092	0.00101
			(0.00694)	(0.00999)			(0.00706)	(0.00856)
2009: Mother Post-Sec.			-0.00633***	-0.00842***			0.00094	0.00280
			(0.00177)	(0.00201)			(0.00273)	(0.00319)
2009: Mother Secondary			-0.00243*	-0.00227			0.00035	0.00011
			(0.00128)	(0.00167)			(0.00130)	(0.00147)
2009: Mother Primary			0.00008	0.00069			0.00001	0.00117
			(0.00079)	(0.00144)			(0.00150)	(0.00182)
2009: Father Post-Sec.			0.00528***	0.00767***			0.00279	0.00154
			(0.00159)	(0.00204)			(0.00232)	(0.00314)
2009: Father Secondary			0.00487***	0.00582***			0.00027	0.00143
			(0.00178)	(0.00166)			(0.00109)	(0.00141)
2009: Father Primary			0.00053	-0.00034			0.00092	0.00004
			(0.00077)	(0.00119)			(0.00122)	(0.00174)
Observations	5205	5198	5200	5198	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 4A1: Impacts on 10th, 30th, 50th, 70th, & 90th Percentile Mathematics Test Scores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	p10	p30	p50	p70	p90	p10	p30	p50	p70	p90
FD: Pct Internet	0.00700***	0.00756***	0.00575***	0.00463***	0.00382**	0.00562**	0.00589**	0.00311	0.00156	-0.00004
	(0.00208)	(0.00178)	(0.00150)	(0.00141)	(0.00176)	(0.00244)	(0.00245)	(0.00209)	(0.00239)	(0.00258)
FD: Pct Male						-0.00034	0.00075	0.00076	0.00122**	0.00243***
						(0.00066)	(0.00061)	(0.00050)	(0.00056)	(0.00049)
FD: Pct Rural						-0.00007	0.00029	-0.00016	0.00003	-0.00077
						(0.00072)	(0.00049)	(0.00045)	(0.00051)	(0.00054)
FD: Average Age						-0.09421***	-0.08504***	-0.07956***	-0.07457***	-0.07464***
						(0.00778)	(0.00749)	(0.00688)	(0.00740)	(0.00818)
FD: Mother Post-Sec.						0.00236	0.00274**	0.00257*	0.00286*	0.00296
						(0.00174)	(0.00135)	(0.00138)	(0.00155)	(0.00191)
FD: Mother Secondary						-0.00112	-0.00034	0.00041	0.00058	0.00040
						(0.00134)	(0.00102)	(0.00092)	(0.00099)	(0.00165)
FD: Mother Primary						-0.00101	-0.00018	0.00010	0.00037	-0.00012
						(0.00090)	(0.00060)	(0.00069)	(0.00073)	(0.00068)
FD: Father Post-Sec.						-0.00095	-0.00111	0.00113	0.00237*	0.00434**
						(0.00166)	(0.00142)	(0.00124)	(0.00130)	(0.00170)
FD: Father Secondary						-0.00095	-0.00136	-0.00089	-0.00049	0.00136
						(0.00109)	(0.00116)	(0.00096)	(0.00105)	(0.00130)
FD: Father Primary						0.00089	-0.00006	-0.00001	-0.00014	-0.00004
						(0.00076)	(0.00069)	(0.00060)	(0.00068)	(0.00068)
2009: Pct Male						-0.00053	-0.00037	-0.00067	-0.00065	-0.00036
						(0.00047)	(0.00047)	(0.00043)	(0.00052)	(0.00062)
2009: Pct Rural						0.00074**	0.00111***	0.00067**	0.00044	0.00033
						(0.00037)	(0.00035)	(0.00031)	(0.00038)	(0.00031)
2009: Average Age						-0.06584***	-0.06838***	-0.06064***	-0.05271***	-0.04914***
						(0.00629)	(0.00774)	(0.00739)	(0.00837)	(0.01046)
2009: Mother Post-Sec.						0.00682***	0.00509***	0.00327**	0.00154	-0.00161
						(0.00192)	(0.00185)	(0.00156)	(0.00136)	(0.00219)
2009: Mother Secondary						0.00216	0.00094	0.00144	0.00147	-0.00011
						(0.00138)	(0.00101)	(0.00127)	(0.00115)	(0.00180)
2009: Mother Primary						-0.00070	-0.00030	0.00030	0.00068	-0.00001
						(0.00121)	(0.00080)	(0.00102)	(0.00096)	(0.00111)
2009: Father Post-Sec.						-0.00484**	-0.00281*	-0.00157	0.00024	0.00283
						(0.00208)	(0.00163)	(0.00136)	(0.00129)	(0.00198)
2009: Father Secondary						-0.00471***	-0.00277**	-0.00158	-0.00120	0.00111
						(0.00104)	(0.00109)	(0.00105)	(0.00113)	(0.00142)
2009: Father Primary						0.00002	-0.00087	-0.00060	-0.00059	-0.00032
						(0.00098)	(0.00083)	(0.00084)	(0.00091)	(0.00081)
Observations	5205	5205	5205	5205	5205	5198	5198	5198	5198	5198
Pctile	10	30	50	70	90	10	30	50	70	90
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	N	N	N	N	Y	Y	Y	Y	Y
LvlControls	N	N	N	N	N	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 5A1: Impacts on 10th, 30th, 50th, 70th, & 90th Percentile Language Test Scores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	p10	p30	p50	p70	p90	p10	p30	p50	p70	p90
FD: Pct Internet	0.00141	0.00391***	0.00636***	0.00759***	0.00818***	-0.00255	-0.00124	0.00165	0.00208	0.00098
	(0.00140)	(0.00144)	(0.00128)	(0.00186)	(0.00288)	(0.00280)	(0.00265)	(0.00238)	(0.00333)	(0.00502)
FD: Pct Male						-0.00094	-0.00093	-0.00112**	-0.00091*	-0.00065
						(0.00078)	(0.00057)	(0.00048)	(0.00047)	(0.00056)
FD: Pct Rural						-0.00177**	-0.00123**	-0.00040	-0.00051	-0.00064
						(0.00076)	(0.00058)	(0.00048)	(0.00057)	(0.00077)
FD: Average Age						-0.08608***	-0.07219***	-0.06775***	-0.07050***	-0.06763***
						(0.00714)	(0.00493)	(0.00501)	(0.00766)	(0.00568)
FD: Mother Post-Sec.						0.00222	0.00249	0.00339***	0.00513***	0.00513**
						(0.00189)	(0.00169)	(0.00123)	(0.00145)	(0.00230)
FD: Mother Secondary						0.00243*	0.00131	0.00151*	0.00180**	0.00270*
						(0.00125)	(0.00105)	(0.00085)	(0.00087)	(0.00153)
FD: Mother Primary						-0.00071	-0.00063	-0.00037	0.00019	0.00074
						(0.00098)	(0.00089)	(0.00074)	(0.00069)	(0.00076)
FD: Father Post-Sec.						0.00288*	0.00271*	0.00134	0.00099	0.00240
						(0.00167)	(0.00138)	(0.00131)	(0.00150)	(0.00201)
FD: Father Secondary						-0.00053	0.00059	-0.00051	-0.00031	0.00115
						(0.00109)	(0.00099)	(0.00073)	(0.00106)	(0.00178)
FD: Father Primary						0.00054	0.00045	0.00006	0.00025	-0.00019
						(0.00084)	(0.00067)	(0.00060)	(0.00062)	(0.00069)
2009: Pct Male						-0.00080*	-0.00055	-0.00109***	-0.00110***	-0.00162***
						(0.00046)	(0.00039)	(0.00041)	(0.00037)	(0.00046)
2009: Pct Rural						-0.00023	-0.00027	0.00019	0.00016	-0.00018
						(0.00051)	(0.00044)	(0.00038)	(0.00052)	(0.00077)
2009: Average Age						-0.05122***	-0.04690***	-0.03828***	-0.04505***	-0.05021***
						(0.00568)	(0.00494)	(0.00590)	(0.00836)	(0.00785)
2009: Mother Post-Sec.						-0.00004	0.00127	0.00302**	0.00458***	0.00275
						(0.00208)	(0.00168)	(0.00149)	(0.00159)	(0.00216)
2009: Mother Secondary						0.00283*	0.00102	0.00195*	0.00239*	0.00295*
						(0.00147)	(0.00133)	(0.00110)	(0.00143)	(0.00176)
2009: Mother Primary						0.00053	0.00034	0.00051	0.00035	0.00170
						(0.00128)	(0.00115)	(0.00097)	(0.00103)	(0.00127)
2009: Father Post-Sec.						0.00065	0.00113	0.00104	0.00006	0.00219
						(0.00200)	(0.00145)	(0.00128)	(0.00153)	(0.00213)
2009: Father Secondary						-0.00198	0.00040	-0.00113	-0.00118	-0.00054
						(0.00131)	(0.00113)	(0.00088)	(0.00114)	(0.00181)
2009: Father Primary						-0.00053	-0.00016	-0.00027	0.00026	-0.00048
						(0.00114)	(0.00077)	(0.00082)	(0.00074)	(0.00098)
Observations	5205	5205	5205	5205	5205	5198	5198	5198	5198	5198
Pctile	10	30	50	70	90	10	30	50	70	90
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	N	N	N	N	Y	Y	Y	Y	Y
LvlControls	N	N	N	N	N	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 6A1: Impacts on Percent of Students that Work & Self-Reported Family Income

	FD Propensity to Work				FD Family Income			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD: Pct Internet	0.02809	0.01522	-0.10162	-0.02015	0.00360*	0.00170	0.00527*	0.00276
	(0.06384)	(0.06015)	(0.10802)	(0.08307)	(0.00202)	(0.00205)	(0.00290)	(0.00284)
FD: Pct Male		0.07136***		0.06345***		0.00027		0.00105*
		(0.01395)		(0.01725)		(0.00042)		(0.00059)
FD: Pct Rural		0.00843		0.00123		-0.00034		-0.00017
		(0.01312)		(0.01713)		(0.00060)		(0.00072)
FD: Average Age		3.39865***		3.34839***		-0.00359		0.00759*
		(0.27827)		(0.32756)		(0.00342)		(0.00435)
FD: Mother Post-Sec.		-0.01652		-0.00011		0.00819***		0.00954***
		(0.02624)		(0.03564)		(0.00144)		(0.00188)
FD: Mother Secondary		-0.04534		-0.00815		0.00281***		0.00366**
		(0.02819)		(0.05037)		(0.00098)		(0.00158)
FD: Mother Primary		-0.02673		-0.02761		0.00177***		0.00227***
		(0.02080)		(0.03152)		(0.00037)		(0.00072)
FD: Father Post-Sec.		0.00946		-0.00001		0.00615***		0.00559***
		(0.02870)		(0.03446)		(0.00125)		(0.00131)
FD: Father Secondary		0.01549		0.00121		0.00229***		0.00079
		(0.02685)		(0.03817)		(0.00065)		(0.00104)
FD: Father Primary		0.01831		0.01447		0.00075**		0.00036
		(0.02280)		(0.02939)		(0.00030)		(0.00067)
2009: Pct Male			-0.04722***	-0.01476			0.00071	0.00139**
			(0.01015)	(0.01234)			(0.00048)	(0.00061)
2009: Pct Rural			-0.02838	-0.01028			0.00035	0.00040
			(0.02218)	(0.01548)			(0.00040)	(0.00038)
2009: Average Age			-2.16276***	-0.04710			0.01282**	0.01781**
			(0.36673)	(0.39621)			(0.00583)	(0.00700)
2009: Mother Post-Sec.			0.02172	0.03780			0.00041	0.00277*
			(0.02665)	(0.04006)			(0.00118)	(0.00156)
2009: Mother Secondary			0.06969*	0.04999			-0.00027	0.00119
			(0.03960)	(0.05814)			(0.00100)	(0.00165)
2009: Mother Primary			0.04189	-0.00529			-0.00099	0.00109
			(0.03106)	(0.04236)			(0.00064)	(0.00106)
2009: Father Post-Sec.			-0.04019	-0.02306			0.00004	-0.00063
			(0.02698)	(0.03889)			(0.00135)	(0.00172)
2009: Father Secondary			-0.03172	-0.02908			-0.00221*	-0.00328**
			(0.02911)	(0.03410)			(0.00125)	(0.00143)
2009: Father Primary			-0.03126	-0.00874			-0.00092	-0.00064
			(0.02433)	(0.03190)			(0.00062)	(0.00102)
Observations	5196	5189	5191	5189	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 7A1: Impacts on Ownership of Durable Goods

	Washer	Microwave	Oven	Car	DVD	Floor
	(1)	(2)	(3)	(4)	(5)	(6)
FD: Pct Internet	0.29586**	0.28063***	0.36819***	0.29532***	0.25136	0.27487***
	(0.12267)	(0.03816)	(0.07511)	(0.04698)	(0.17706)	(0.05933)
FD: Pct Male	0.03000	-0.00008	0.05204	0.01362	0.03905	-0.01001
	(0.02429)	(0.01705)	(0.03520)	(0.02408)	(0.03812)	(0.02511)
FD: Pct Rural	-0.06069*	-0.02220	0.02836	0.02535*	0.02836	-0.03106*
	(0.03457)	(0.02075)	(0.03005)	(0.01485)	(0.03387)	(0.01630)
FD: Average Age	0.00083	-0.39106**	-0.49485	-0.47234***	-1.14560**	-0.29578
	(0.34136)	(0.17298)	(0.31701)	(0.16112)	(0.48175)	(0.28531)
FD: Mother Post-Sec.	0.41257***	0.16227**	0.16742**	0.19132***	0.27499***	0.09560
	(0.06351)	(0.07006)	(0.07996)	(0.04947)	(0.09375)	(0.06193)
FD: Mother Secondary	0.26248***	0.05704*	-0.00557	-0.01662	0.12363**	0.01363
	(0.04755)	(0.03181)	(0.05572)	(0.03333)	(0.06264)	(0.06181)
FD: Mother Primary	0.09493**	0.02890	-0.01419	0.01682	0.09313	-0.03148
	(0.04046)	(0.01997)	(0.04105)	(0.01998)	(0.06522)	(0.04115)
FD: Father Post-Sec.	-0.17737***	0.01777	-0.03689	-0.04000	-0.04034	0.18143***
	(0.05256)	(0.04749)	(0.06306)	(0.03934)	(0.10663)	(0.06208)
FD: Father Secondary	-0.17105***	-0.01424	-0.03253	-0.03977	-0.12564	0.02387
	(0.04528)	(0.02845)	(0.04373)	(0.03428)	(0.08427)	(0.04852)
FD: Father Primary	-0.06569	-0.03098	-0.01985	-0.04497**	-0.10239	0.05461
	(0.05167)	(0.02006)	(0.04260)	(0.02012)	(0.06225)	(0.03559)
2009: Pct Male	-0.02535	-0.01821	0.00857	0.02667	-0.02765	-0.00174
	(0.01839)	(0.02132)	(0.02167)	(0.01778)	(0.02693)	(0.02418)
2009: Pct Rural	-0.00003	0.01338	0.05913***	0.03041**	0.02567	0.03693***
	(0.02157)	(0.00852)	(0.01836)	(0.01271)	(0.03475)	(0.01059)
2009: Average Age	0.77898**	0.19950	0.78201**	0.17852	-0.15686	0.68518**
	(0.35118)	(0.29167)	(0.36672)	(0.18317)	(0.42707)	(0.30373)
2009: Mother Post-Sec.	0.23694***	0.22883***	0.16784*	0.15214**	0.29189**	-0.03673
	(0.06769)	(0.07342)	(0.09141)	(0.06348)	(0.14557)	(0.09138)
2009: Mother Secondary	0.06493	0.04845	-0.06238	-0.03299	0.04714	-0.06414
	(0.07146)	(0.04670)	(0.07053)	(0.04331)	(0.11234)	(0.05974)
2009: Mother Primary	0.11350*	0.04304	-0.03999	-0.00572	0.09155	-0.11067**
	(0.06160)	(0.02692)	(0.04480)	(0.02393)	(0.09943)	(0.04887)
2009: Father Post-Sec.	-0.31273***	-0.17982***	-0.06307	-0.05385	-0.30310**	0.04610
	(0.06936)	(0.06494)	(0.07644)	(0.05850)	(0.12172)	(0.07810)
2009: Father Secondary	-0.22982***	-0.04807	-0.05557	-0.02864	-0.27618***	-0.01814
	(0.05693)	(0.04440)	(0.05563)	(0.04287)	(0.10386)	(0.07142)
2009: Father Primary	-0.06580	-0.04175	0.01789	-0.05365**	-0.12834	0.05087
	(0.06818)	(0.03157)	(0.03692)	(0.02244)	(0.08503)	(0.04339)
Observations	5198	5198	5198	5198	5198	5198
ProvFE	Y	Y	Y	Y	Y	Y
FDControls	Y	Y	Y	Y	Y	Y
LvlControls	Y	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

A2. Appendix Tables: OLS Specifications

Table1A2: First Stage: Regression of Instrument and Controls on Changes in Internet Access (Full)

	(1)	(2)	(3)	(4)	(5)
Distance to Connected	-0.062**	-0.203***	-0.174***	-0.152***	-0.127***
	(0.026)	(0.057)	(0.046)	(0.030)	(0.024)
FD: Pct Male			0.057**		0.058**
			(0.025)		(0.027)
FD: Pct Rural			-0.121***		-0.162***
			(0.022)		(0.026)
FD: Average Age			0.568**		-0.189
			(0.248)		(0.226)
FD: Mother Post-Sec.			0.413***		0.287***
			(0.053)		(0.071)
FD: Mother Secondary			0.183***		0.264***
			(0.048)		(0.057)
FD: Mother Primary			-0.053**		0.044
			(0.020)		(0.032)
FD: Father Post-Sec.			0.198***		0.161***
			(0.038)		(0.052)
FD: Father Secondary			0.094**		0.124**
			(0.038)		(0.051)
FD: Father Primary			-0.009		-0.002
			(0.020)		(0.019)
2009: Pct Male				-0.039*	0.011
				(0.020)	(0.021)
2009: Pct Rural				-0.164***	-0.140***
				(0.018)	(0.017)
2009: Average Age				-0.055	-0.169
				(0.262)	(0.267)
2009: Mother Post-Sec.				-0.153**	-0.064
				(0.074)	(0.086)
2009: Mother Secondary				0.147***	0.250***
				(0.049)	(0.059)
2009: Mother Primary				0.128***	0.142***
				(0.025)	(0.038)
2009: Father Post-Sec.				-0.027	-0.069
				(0.062)	(0.077)
2009: Father Secondary				0.167***	0.150**
				(0.043)	(0.061)
2009: Father Primary				0.003	-0.011
				(0.031)	(0.027)
Observations	5205	5205	5198	5200	5198
ProvFE	N	Y	Y	Y	Y
FDControls	N	N	Y	N	Y
LvlControls	N	N	N	Y	Y
Fstat	5.548	12.794	14.160	25.171	29.164
r2	0.024	0.121	0.236	0.305	0.396

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 2A2: Impacts on Mean Mathematics and Language Scores (OLS)

	FD Mathematics Mean Test Score				FD Language Mean Test Score			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD: Pct Internet	0.00173***	0.00072***	0.00180***	0.00051**	0.00217***	0.00105***	0.00194***	0.00045
	(0.00026)	(0.00026)	(0.00026)	(0.00024)	(0.00034)	(0.00031)	(0.00043)	(0.00035)
FD: Pct Male		0.00148***		0.00116***		-0.00036		-0.00103**
		(0.00039)		(0.00040)		(0.00038)		(0.00039)
FD: Pct Rural		-0.00065*		-0.00056		-0.00098***		-0.00102***
		(0.00034)		(0.00038)		(0.00025)		(0.00029)
FD: Average Age		-0.05179***		-0.08228***		-0.04868***		-0.07410***
		(0.00346)		(0.00584)		(0.00396)		(0.00565)
FD: Mother Post-Sec.		0.00329***		0.00351**		0.00411***		0.00368***
		(0.00110)		(0.00142)		(0.00084)		(0.00122)
FD: Mother Secondary		-0.00050		0.00072		-0.00002		0.00185**
		(0.00048)		(0.00085)		(0.00056)		(0.00068)
FD: Mother Primary		-0.00051		-0.00009		-0.00084*		-0.00014
		(0.00031)		(0.00061)		(0.00043)		(0.00063)
FD: Father Post-Sec.		0.00243**		0.00153		0.00181*		0.00188*
		(0.00103)		(0.00127)		(0.00091)		(0.00103)
FD: Father Secondary		0.00054		-0.00014		0.00051		-0.00006
		(0.00060)		(0.00086)		(0.00072)		(0.00074)
FD: Father Primary		0.00037		0.00004		0.00044		0.00016
		(0.00041)		(0.00057)		(0.00040)		(0.00054)
2009: Pct Male			-0.00133***	-0.00052			-0.00069**	-0.00107***
			(0.00037)	(0.00039)			(0.00033)	(0.00031)
2009: Pct Rural			0.00063***	0.00028			0.00017	-0.00009
			(0.00015)	(0.00016)			(0.00017)	(0.00017)
2009: Average Age			-0.00637	-0.05943***			0.00048	-0.04622***
			(0.00687)	(0.00715)			(0.00459)	(0.00530)
2009: Mother Post-Sec.			0.00208**	0.00255*			0.00206*	0.00258*
			(0.00098)	(0.00144)			(0.00102)	(0.00150)
2009: Mother Secondary			0.00180**	0.00186*			0.00144	0.00225**
			(0.00076)	(0.00109)			(0.00103)	(0.00109)
2009: Mother Primary			0.00009	0.00030			0.00058	0.00068
			(0.00053)	(0.00091)			(0.00056)	(0.00078)
2009: Father Post-Sec.			-0.00010	-0.00134			0.00183*	0.00069
			(0.00114)	(0.00142)			(0.00103)	(0.00135)
2009: Father Secondary			-0.00027	-0.00134			0.00015	-0.00108
			(0.00050)	(0.00088)			(0.00083)	(0.00092)
2009: Father Primary			-0.00051	-0.00048			-0.00046	-0.00047
			(0.00052)	(0.00069)			(0.00043)	(0.00058)
Observations	5205	5198	5200	5198	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 3A2: Impacts on 90-10 Percentile Spreads for Mathematics and Language Test Scores (OLS)

	FD Mathematics 90-10 Spread				FD Language 90-10 Spread			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD: Pct Internet	0.00020	-0.00045	0.00005	-0.00045	0.00186***	0.00130***	0.00083	0.00020
	(0.00035)	(0.00038)	(0.00033)	(0.00031)	(0.00044)	(0.00045)	(0.00055)	(0.00056)
FD: Pct Male		0.00241***		0.00247***		0.00098		0.00047
		(0.00059)		(0.00074)		(0.00078)		(0.00090)
FD: Pct Rural		-0.00012		0.00016		0.00073		0.00058
		(0.00057)		(0.00058)		(0.00071)		(0.00080)
FD: Average Age		0.01145		0.02102*		0.02137***		0.01752**
		(0.00842)		(0.01059)		(0.00545)		(0.00666)
FD: Mother Post-Sec.		0.00316**		-0.00088		0.00403**		0.00386
		(0.00153)		(0.00172)		(0.00191)		(0.00234)
FD: Mother Secondary		0.00196		0.00013		-0.00013		0.00115
		(0.00130)		(0.00148)		(0.00133)		(0.00158)
FD: Mother Primary		0.00070		0.00063		0.00049		0.00161
		(0.00046)		(0.00087)		(0.00104)		(0.00122)
FD: Father Post-Sec.		0.00029		0.00436**		-0.00047		0.00011
		(0.00130)		(0.00169)		(0.00197)		(0.00265)
FD: Father Secondary		-0.00080		0.00161		0.00125		0.00213
		(0.00138)		(0.00125)		(0.00105)		(0.00141)
FD: Father Primary		-0.00072		-0.00094		-0.00080		-0.00072
		(0.00049)		(0.00076)		(0.00072)		(0.00095)
2009: Pct Male			-0.00134***	0.00011			-0.00118*	-0.00078
			(0.00043)	(0.00052)			(0.00061)	(0.00064)
2009: Pct Rural			0.00024	0.00033**			-0.00075**	-0.00043
			(0.00015)	(0.00015)			(0.00036)	(0.00041)
2009: Average Age			0.00752	0.01866*			-0.01155	-0.00025
			(0.00672)	(0.00976)			(0.00739)	(0.00892)
2009: Mother Post-Sec.			-0.00557***	-0.00802***			0.00052	0.00254
			(0.00180)	(0.00221)			(0.00275)	(0.00321)
2009: Mother Secondary			-0.00312**	-0.00357**			0.00074	0.00094
			(0.00139)	(0.00148)			(0.00121)	(0.00131)
2009: Mother Primary			-0.00058	-0.00013			0.00038	0.00169
			(0.00081)	(0.00144)			(0.00137)	(0.00165)
2009: Father Post-Sec.			0.00527***	0.00785***			0.00279	0.00143
			(0.00164)	(0.00211)			(0.00235)	(0.00316)
2009: Father Secondary			0.00404**	0.00496***			0.00074	0.00199
			(0.00175)	(0.00148)			(0.00095)	(0.00127)
2009: Father Primary			0.00050	-0.00031			0.00093	0.00003
			(0.00085)	(0.00124)			(0.00126)	(0.00176)
Observations	5205	5198	5200	5198	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 4A2: Impacts on 10th, 30th, 50th, 70th, & 90th Percentile Mathematics Test Scores (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	p10	p30	p50	p70	p90	p10	p30	p50	p70	p90
FD: Pct Internet	0.00161***	0.00156***	0.00185***	0.00164***	0.00181***	0.00065*	0.00050**	0.00063**	0.00040	0.00020
	(0.00038)	(0.00022)	(0.00026)	(0.00029)	(0.00032)	(0.00035)	(0.00024)	(0.00026)	(0.00027)	(0.00031)
FD: Pct Male						-0.00006	0.00106*	0.00090*	0.00128**	0.00241***
						(0.00058)	(0.00052)	(0.00046)	(0.00057)	(0.00051)
FD: Pct Rural						-0.00089	-0.00061	-0.00057	-0.00017	-0.00073
						(0.00061)	(0.00044)	(0.00039)	(0.00044)	(0.00044)
FD: Average Age						-0.09559***	-0.08654***	-0.08025***	-0.07490***	-0.07457***
						(0.00770)	(0.00728)	(0.00677)	(0.00739)	(0.00822)
FD: Mother Post-Sec.						0.00377**	0.00427***	0.00328**	0.00319**	0.00289
						(0.00172)	(0.00145)	(0.00139)	(0.00150)	(0.00178)
FD: Mother Secondary						0.00020	0.00109	0.00107	0.00089	0.00034
						(0.00109)	(0.00100)	(0.00088)	(0.00095)	(0.00144)
FD: Mother Primary						-0.00077	0.00008	0.00022	0.00042	-0.00014
						(0.00091)	(0.00065)	(0.00074)	(0.00077)	(0.00068)
FD: Father Post-Sec.						-0.00007	-0.00016	0.00157	0.00257**	0.00430**
						(0.00159)	(0.00133)	(0.00117)	(0.00126)	(0.00171)
FD: Father Secondary						-0.00028	-0.00063	-0.00056	-0.00033	0.00133
						(0.00111)	(0.00105)	(0.00088)	(0.00094)	(0.00127)
FD: Father Primary						0.00090	-0.00005	-0.00001	-0.00014	-0.00004
						(0.00079)	(0.00074)	(0.00062)	(0.00070)	(0.00069)
2009: Pct Male						-0.00047	-0.00030	-0.00064	-0.00063	-0.00036
						(0.00042)	(0.00045)	(0.00042)	(0.00053)	(0.00064)
2009: Pct Rural						0.00003	0.00034	0.00031	0.00027	0.00036**
						(0.00016)	(0.00020)	(0.00020)	(0.00020)	(0.00017)
2009: Average Age						-0.06772***	-0.07042***	-0.06158***	-0.05315***	-0.04905***
						(0.00664)	(0.00807)	(0.00747)	(0.00827)	(0.01040)
2009: Mother Post-Sec.						0.00643***	0.00467***	0.00308**	0.00145	-0.00159
						(0.00188)	(0.00152)	(0.00142)	(0.00129)	(0.00226)
2009: Mother Secondary						0.00340***	0.00229**	0.00206	0.00176	-0.00017
						(0.00120)	(0.00104)	(0.00131)	(0.00121)	(0.00159)
2009: Mother Primary						0.00008	0.00055	0.00069	0.00086	-0.00005
						(0.00120)	(0.00090)	(0.00112)	(0.00111)	(0.00114)
2009: Father Post-Sec.						-0.00502**	-0.00300*	-0.00165	0.00020	0.00283
						(0.00206)	(0.00149)	(0.00132)	(0.00130)	(0.00201)
2009: Father Secondary						-0.00389***	-0.00188*	-0.00117	-0.00100	0.00107
						(0.00102)	(0.00093)	(0.00097)	(0.00104)	(0.00138)
2009: Father Primary						-0.00001	-0.00089	-0.00062	-0.00059	-0.00032
						(0.00100)	(0.00081)	(0.00085)	(0.00093)	(0.00083)
Observations	5205	5205	5205	5205	5205	5198	5198	5198	5198	5198
Pctile	10	30	50	70	90	10	30	50	70	90
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	N	N	N	N	Y	Y	Y	Y	Y
LvlControls	N	N	N	N	N	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 5A2: Impacts on 10th, 30th, 50th, 70th, & 90th Percentile Language Test Scores (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	p10	p30	p50	p70	p90	p10	p30	p50	p70	p90
FD: Pct Internet	0.00141***	0.00155***	0.00211***	0.00282***	0.00327***	0.00051	0.00004	0.00057	0.00102**	0.00071*
	(0.00043)	(0.00039)	(0.00033)	(0.00036)	(0.00040)	(0.00049)	(0.00043)	(0.00035)	(0.00038)	(0.00035)
FD: Pct Male						-0.00111	-0.00100	-0.00106**	-0.00085**	-0.00064
						(0.00079)	(0.00060)	(0.00049)	(0.00041)	(0.00039)
FD: Pct Rural						-0.00126**	-0.00102**	-0.00057*	-0.00069*	-0.00068
						(0.00056)	(0.00040)	(0.00032)	(0.00034)	(0.00044)
FD: Average Age						-0.08523***	-0.07183***	-0.06806***	-0.07080***	-0.06770***
						(0.00741)	(0.00518)	(0.00524)	(0.00782)	(0.00585)
FD: Mother Post-Sec.						0.00135	0.00213	0.00369***	0.00544***	0.00521**
						(0.00159)	(0.00158)	(0.00125)	(0.00131)	(0.00200)
FD: Mother Secondary						0.00162	0.00097	0.00180***	0.00208**	0.00277*
						(0.00108)	(0.00084)	(0.00061)	(0.00080)	(0.00145)
FD: Mother Primary						-0.00086	-0.00069	-0.00032	0.00024	0.00075
						(0.00095)	(0.00089)	(0.00079)	(0.00075)	(0.00077)
FD: Father Post-Sec.						0.00234	0.00248*	0.00153	0.00118	0.00244
						(0.00171)	(0.00136)	(0.00121)	(0.00131)	(0.00163)
FD: Father Secondary						-0.00095	0.00042	-0.00036	-0.00017	0.00119
						(0.00095)	(0.00089)	(0.00061)	(0.00080)	(0.00142)
FD: Father Primary						0.00053	0.00045	0.00006	0.00025	-0.00019
						(0.00083)	(0.00068)	(0.00061)	(0.00063)	(0.00069)
2009: Pct Male						-0.00083*	-0.00057	-0.00108**	-0.00109***	-0.00161***
						(0.00048)	(0.00041)	(0.00041)	(0.00035)	(0.00044)
2009: Pct Rural						0.00021	-0.00008	0.00003	0.00001	-0.00022
						(0.00026)	(0.00019)	(0.00018)	(0.00020)	(0.00026)
2009: Average Age						-0.05006***	-0.04642***	-0.03869***	-0.04546***	-0.05031***
						(0.00612)	(0.00515)	(0.00584)	(0.00852)	(0.00797)
2009: Mother Post-Sec.						0.00019	0.00137	0.00294*	0.00450***	0.00273
						(0.00221)	(0.00178)	(0.00144)	(0.00155)	(0.00218)
2009: Mother Secondary						0.00207	0.00070	0.00222**	0.00266**	0.00301*
						(0.00134)	(0.00116)	(0.00099)	(0.00129)	(0.00151)
2009: Mother Primary						0.00005	0.00014	0.00068	0.00052	0.00174*
						(0.00127)	(0.00110)	(0.00098)	(0.00090)	(0.00094)
2009: Father Post-Sec.						0.00076	0.00118	0.00100	0.00002	0.00218
						(0.00203)	(0.00148)	(0.00126)	(0.00153)	(0.00214)
2009: Father Secondary						-0.00248**	0.00019	-0.00095	-0.00101	-0.00050
						(0.00119)	(0.00105)	(0.00087)	(0.00104)	(0.00147)
2009: Father Primary						-0.00052	-0.00016	-0.00027	0.00026	-0.00049
						(0.00117)	(0.00079)	(0.00084)	(0.00075)	(0.00100)
Observations	5205	5205	5205	5205	5205	5198	5198	5198	5198	5198
Pctile	10	30	50	70	90	10	30	50	70	90
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	N	N	N	N	Y	Y	Y	Y	Y
LvlControls	N	N	N	N	N	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 6A2: Impacts on Percent of Students that Work & Self-Reported Family Income (OLS)

	FD Propensity to Work				FD Family Income			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FD: Pct Internet	0.02762**	0.03608***	0.00581	0.03448**	0.00441***	0.00261***	0.00561***	0.00380***
	(0.01027)	(0.01187)	(0.01309)	(0.01657)	(0.00032)	(0.00042)	(0.00047)	(0.00057)
FD: Pct Male		0.07023***		0.06041***		0.00022		0.00099
		(0.01482)		(0.01829)		(0.00049)		(0.00065)
FD: Pct Rural		0.01105		0.01030		-0.00022		0.00001
		(0.01123)		(0.01196)		(0.00054)		(0.00058)
FD: Average Age		3.38553***		3.36369***		-0.00415		0.00788*
		(0.28654)		(0.32844)		(0.00319)		(0.00441)
FD: Mother Post-Sec.		-0.02563		-0.01591		0.00779***		0.00925***
		(0.01916)		(0.02773)		(0.00113)		(0.00158)
FD: Mother Secondary		-0.04918*		-0.02276		0.00264***		0.00338***
		(0.02826)		(0.04336)		(0.00082)		(0.00116)
FD: Mother Primary		-0.02545		-0.03027		0.00183***		0.00222***
		(0.02004)		(0.03200)		(0.00037)		(0.00069)
FD: Father Post-Sec.		0.00539		-0.00952		0.00597***		0.00541***
		(0.02751)		(0.03416)		(0.00118)		(0.00134)
FD: Father Secondary		0.01348		-0.00603		0.00220***		0.00065
		(0.02819)		(0.04017)		(0.00074)		(0.00114)
FD: Father Primary		0.01843		0.01435		0.00076**		0.00036
		(0.02320)		(0.02981)		(0.00030)		(0.00069)
2009: Pct Male			-0.04329***	-0.01540			0.00073	0.00138**
			(0.01047)	(0.01243)			(0.00049)	(0.00062)
2009: Pct Rural			-0.01040	-0.00250			0.00041*	0.00055**
			(0.00893)	(0.00803)			(0.00021)	(0.00024)
2009: Average Age			-2.13696***	-0.02645			0.01290**	0.01820**
			(0.36594)	(0.40048)			(0.00593)	(0.00714)
2009: Mother Post-Sec.			0.03946	0.04199			0.00047	0.00285*
			(0.03097)	(0.04215)			(0.00119)	(0.00164)
2009: Mother Secondary			0.05388*	0.03632			-0.00032	0.00093
			(0.03170)	(0.04687)			(0.00091)	(0.00132)
2009: Mother Primary			0.02662	-0.01387			-0.00104*	0.00092
			(0.02325)	(0.03897)			(0.00054)	(0.00092)
2009: Father Post-Sec.			-0.04069	-0.02113			0.00004	-0.00059
			(0.03041)	(0.03830)			(0.00137)	(0.00172)
2009: Father Secondary			-0.05108*	-0.03805			-0.00227**	-0.00345**
			(0.02785)	(0.03854)			(0.00103)	(0.00141)
2009: Father Primary			-0.03188	-0.00842			-0.00092	-0.00064
			(0.02504)	(0.03197)			(0.00063)	(0.00104)
Observations	5196	5189	5191	5189	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 7A2: Impacts on Ownership of Durable Goods (OLS)

	Washer	Microwave	Oven	Car	DVD	Floor
	(1)	(2)	(3)	(4)	(5)	(6)
FD: Pct Internet	0.33959***	0.31054***	0.28021***	0.22094***	0.27800***	0.24272***
	(0.02816)	(0.01683)	(0.03307)	(0.02672)	(0.03416)	(0.02450)
FD: Pct Male	0.02752	-0.00177	0.05703*	0.01784	0.03754	-0.00819
	(0.02617)	(0.01664)	(0.03355)	(0.02351)	(0.03920)	(0.02651)
FD: Pct Rural	-0.05344	-0.01724	0.01379	0.01302	0.03278	-0.03638**
	(0.03202)	(0.01998)	(0.02864)	(0.01512)	(0.03222)	(0.01672)
FD: Average Age	0.01305	-0.38270**	-0.51943	-0.49312***	-1.13816**	-0.30476
	(0.34443)	(0.17327)	(0.33200)	(0.16707)	(0.49652)	(0.28849)
FD: Mother Post-Sec.	0.40013***	0.15377**	0.19244**	0.21247***	0.26742**	0.10474*
	(0.05462)	(0.07247)	(0.08572)	(0.04761)	(0.09970)	(0.06074)
FD: Mother Secondary	0.25087***	0.04909	0.01781	0.00314	0.11655*	0.02217
	(0.04929)	(0.03400)	(0.05780)	(0.03384)	(0.05849)	(0.06374)
FD: Mother Primary	0.09284**	0.02747	-0.00998	0.02038	0.09186	-0.02995
	(0.04183)	(0.02096)	(0.04365)	(0.02013)	(0.06770)	(0.04238)
FD: Father Post-Sec.	-0.18512***	0.01247	-0.02129	-0.02682	-0.04506	0.18713***
	(0.04474)	(0.04720)	(0.06058)	(0.03830)	(0.09515)	(0.06070)
FD: Father Secondary	-0.17694***	-0.01827	-0.02069	-0.02975	-0.12922*	0.02820
	(0.03616)	(0.02632)	(0.04570)	(0.03451)	(0.07544)	(0.04722)
FD: Father Primary	-0.06585	-0.03108	-0.01955	-0.04471**	-0.10248	0.05472
	(0.05236)	(0.02034)	(0.04350)	(0.02081)	(0.06311)	(0.03627)
2009: Pct Male	-0.02588	-0.01857	0.00964	0.02758	-0.02797	-0.00135
	(0.01864)	(0.02140)	(0.02153)	(0.01832)	(0.02702)	(0.02470)
2009: Pct Rural	0.00617	0.01763**	0.04664***	0.01985	0.02945*	0.03237***
	(0.01347)	(0.00774)	(0.01496)	(0.01214)	(0.01714)	(0.00959)
2009: Average Age	0.79553**	0.21083	0.74871*	0.15037	-0.14679	0.67302**
	(0.35530)	(0.28993)	(0.36716)	(0.18760)	(0.45810)	(0.30827)
2009: Mother Post-Sec.	0.24031***	0.23114***	0.16106*	0.14641**	0.29395*	-0.03921
	(0.06859)	(0.07465)	(0.09183)	(0.06364)	(0.14734)	(0.09303)
2009: Mother Secondary	0.05401	0.04098	-0.04042	-0.01442	0.04049	-0.05612
	(0.07092)	(0.04678)	(0.06567)	(0.04399)	(0.10507)	(0.06307)
2009: Mother Primary	0.10667*	0.03837	-0.02625	0.00590	0.08739	-0.10565**
	(0.06148)	(0.02840)	(0.04900)	(0.02295)	(0.10191)	(0.04909)
2009: Father Post-Sec.	-0.31121***	-0.17878**	-0.06612	-0.05643	-0.30217**	0.04499
	(0.06937)	(0.06601)	(0.08010)	(0.05960)	(0.12313)	(0.07947)
2009: Father Secondary	-0.23706***	-0.05302	-0.04100	-0.01632	-0.28059***	-0.01281
	(0.05037)	(0.04477)	(0.05947)	(0.04316)	(0.10135)	(0.07004)
2009: Father Primary	-0.06560	-0.04162	0.01749	-0.05398**	-0.12822	0.05072
	(0.06941)	(0.03218)	(0.03810)	(0.02320)	(0.08658)	(0.04424)
Observations	5198	5198	5198	5198	5198	5198
ProvFE	Y	Y	Y	Y	Y	Y
FDControls	Y	Y	Y	Y	Y	Y
LvlControls	Y	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

A3. Appendix Tables: Reduced Form Specifications

Table 2A3: Impacts on Mean Mathematics and Language Scores (OLS)

	FD Mathematics Mean Test Score				FD Language Mean Test Score			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SCHOOL: Dist 1pct Grid	-0.00112***	-0.00094***	-0.00081***	-0.00040	-0.00118**	-0.00093*	-0.00053	-0.00009
	(0.00032)	(0.00030)	(0.00029)	(0.00028)	(0.00058)	(0.00054)	(0.00032)	(0.00039)
FD: Pct Male		0.00154***		0.00120***		-0.00029		-0.00100**
		(0.00040)		(0.00040)		(0.00038)		(0.00039)
FD: Pct Rural		-0.00072**		-0.00064*		-0.00108***		-0.00110***
		(0.00034)		(0.00037)		(0.00025)		(0.00029)
FD: Average Age		-0.05164***		-0.08214***		-0.04831***		-0.07417***
		(0.00347)		(0.00570)		(0.00401)		(0.00561)
FD: Mother Post-Sec.		0.00349***		0.00367**		0.00445***		0.00381***
		(0.00108)		(0.00141)		(0.00084)		(0.00125)
FD: Mother Secondary		-0.00037		0.00085		0.00016		0.00197**
		(0.00050)		(0.00085)		(0.00058)		(0.00072)
FD: Mother Primary		-0.00052		-0.00007		-0.00086*		-0.00012
		(0.00031)		(0.00061)		(0.00043)		(0.00065)
FD: Father Post-Sec.		0.00258**		0.00157		0.00202**		0.00195*
		(0.00102)		(0.00126)		(0.00089)		(0.00101)
FD: Father Secondary		0.00059		-0.00010		0.00059		-0.00001
		(0.00059)		(0.00087)		(0.00073)		(0.00073)
FD: Father Primary		0.00035		0.00003		0.00042		0.00016
		(0.00040)		(0.00058)		(0.00042)		(0.00055)
2009: Pct Male			-0.00141***	-0.00052			-0.00077**	-0.00106***
			(0.00037)	(0.00039)			(0.00033)	(0.00030)
2009: Pct Rural			0.00034**	0.00021			-0.00014	-0.00015
			(0.00015)	(0.00016)			(0.00016)	(0.00015)
2009: Average Age			-0.00582	-0.05897***			0.00066	-0.04625***
			(0.00671)	(0.00695)			(0.00489)	(0.00525)
2009: Mother Post-Sec.			0.00184*	0.00255*			0.00178*	0.00256*
			(0.00095)	(0.00141)			(0.00102)	(0.00147)
2009: Mother Secondary			0.00206**	0.00199*			0.00172	0.00236**
			(0.00078)	(0.00109)			(0.00107)	(0.00110)
2009: Mother Primary			0.00028	0.00034			0.00080	0.00074
			(0.00052)	(0.00090)			(0.00057)	(0.00079)
2009: Father Post-Sec.			-0.00025	-0.00147			0.00173	0.00066
			(0.00115)	(0.00140)			(0.00104)	(0.00132)
2009: Father Secondary			-0.00001	-0.00130			0.00045	-0.00101
			(0.00051)	(0.00091)			(0.00089)	(0.00093)
2009: Father Primary			-0.00052	-0.00050			-0.00046	-0.00048
			(0.00052)	(0.00069)			(0.00045)	(0.00059)
Observations	5205	5198	5200	5198	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 3A3: Impacts on 90-10 Percentile Spreads for Mathematics and Language Test Scores (OLS)

	FD Mathematics 90-10 Spread				FD Language 90-10 Spread			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SCHOOL: Dist 1pct Grid	0.00064*	0.00073**	0.00070**	0.00072**	-0.00137*	-0.00119	-0.00052	-0.00045
	(0.00032)	(0.00028)	(0.00029)	(0.00027)	(0.00079)	(0.00070)	(0.00050)	(0.00044)
FD: Pct Male		0.00238***		0.00244***		0.00107		0.00049
		(0.00059)		(0.00073)		(0.00078)		(0.00091)
FD: Pct Rural		-0.00008		0.00022		0.00059		0.00056
		(0.00056)		(0.00057)		(0.00070)		(0.00078)
FD: Average Age		0.01140		0.02063*		0.02180***		0.01779**
		(0.00830)		(0.01061)		(0.00560)		(0.00659)
FD: Mother Post-Sec.		0.00305*		-0.00102		0.00445**		0.00392
		(0.00158)		(0.00171)		(0.00192)		(0.00236)
FD: Mother Secondary		0.00189		0.00002		0.00010		0.00120
		(0.00133)		(0.00149)		(0.00131)		(0.00157)
FD: Mother Primary		0.00070		0.00063		0.00046		0.00161
		(0.00046)		(0.00087)		(0.00103)		(0.00122)
FD: Father Post-Sec.		0.00020		0.00437**		-0.00021		0.00009
		(0.00128)		(0.00166)		(0.00192)		(0.00263)
FD: Father Secondary		-0.00082		0.00160		0.00135		0.00212
		(0.00137)		(0.00123)		(0.00104)		(0.00143)
FD: Father Primary		-0.00071		-0.00092		-0.00083		-0.00074
		(0.00049)		(0.00076)		(0.00071)		(0.00095)
2009: Pct Male			-0.00134***	0.00011			-0.00122*	-0.00078
			(0.00043)	(0.00052)			(0.00061)	(0.00064)
2009: Pct Rural			0.00022	0.00039**			-0.00087**	-0.00045
			(0.00015)	(0.00015)			(0.00035)	(0.00040)
2009: Average Age			0.00666	0.01765*			-0.01111	0.00042
			(0.00696)	(0.00994)			(0.00746)	(0.00883)
2009: Mother Post-Sec.			-0.00563***	-0.00806***			0.00042	0.00257
			(0.00178)	(0.00217)			(0.00279)	(0.00322)
2009: Mother Secondary			-0.00311**	-0.00368**			0.00086	0.00100
			(0.00139)	(0.00148)			(0.00118)	(0.00127)
2009: Mother Primary			-0.00051	-0.00011			0.00045	0.00167
			(0.00081)	(0.00144)			(0.00136)	(0.00165)
2009: Father Post-Sec.			0.00540***	0.00806***			0.00269	0.00130
			(0.00162)	(0.00207)			(0.00234)	(0.00314)
2009: Father Secondary			0.00411**	0.00497***			0.00085	0.00196
			(0.00177)	(0.00148)			(0.00093)	(0.00130)
2009: Father Primary			0.00051	-0.00028			0.00093	0.00001
			(0.00085)	(0.00125)			(0.00126)	(0.00176)
Observations	5205	5198	5200	5198	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 4A3: Impacts on 10^{th}, 30^{th}, 50^{th}, 70^{th}, & 90^{th} Percentile Mathematics Test Scores (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	p10	p30	p50	p70	p90	p10	p30	p50	p70	p90
SCHOOL: Dist 1pct Grid	-0.00142***	-0.00153***	-0.00117***	-0.00094**	-0.00077*	-0.00071**	-0.00075**	-0.00039	-0.00020	0.00000
	(0.00038)	(0.00032)	(0.00033)	(0.00037)	(0.00044)	(0.00033)	(0.00032)	(0.00028)	(0.00032)	(0.00033)
FD: Pct Male						-0.00002	0.00110**	0.00094**	0.00131**	0.00242***
						(0.00057)	(0.00052)	(0.00046)	(0.00057)	(0.00051)
FD: Pct Rural						-0.00098	-0.00067	-0.00067*	-0.00023	-0.00076*
						(0.00060)	(0.00042)	(0.00037)	(0.00042)	(0.00044)
FD: Average Age						-0.09527***	-0.08615***	-0.08015***	-0.07487***	-0.07463***
						(0.00753)	(0.00704)	(0.00665)	(0.00732)	(0.00824)
FD: Mother Post-Sec.						0.00397**	0.00443***	0.00347**	0.00331**	0.00295
						(0.00171)	(0.00144)	(0.00137)	(0.00150)	(0.00178)
FD: Mother Secondary						0.00037	0.00121	0.00123	0.00100	0.00039
						(0.00110)	(0.00100)	(0.00089)	(0.00095)	(0.00143)
FD: Mother Primary						-0.00076	0.00008	0.00023	0.00044	-0.00013
						(0.00091)	(0.00064)	(0.00074)	(0.00077)	(0.00068)
FD: Father Post-Sec.						-0.00004	-0.00016	0.00163	0.00262**	0.00433**
						(0.00155)	(0.00131)	(0.00116)	(0.00125)	(0.00170)
FD: Father Secondary						-0.00025	-0.00063	-0.00050	-0.00029	0.00135
						(0.00111)	(0.00105)	(0.00088)	(0.00095)	(0.00127)
FD: Father Primary						0.00088	-0.00007	-0.00002	-0.00014	-0.00004
						(0.00079)	(0.00074)	(0.00063)	(0.00070)	(0.00069)
2009: Pct Male						-0.00047	-0.00030	-0.00064	-0.00063	-0.00036
						(0.00042)	(0.00045)	(0.00042)	(0.00053)	(0.00064)
2009: Pct Rural						-0.00005	0.00028	0.00023	0.00022	0.00034*
						(0.00018)	(0.00018)	(0.00019)	(0.00018)	(0.00017)
2009: Average Age						-0.06679***	-0.06938***	-0.06116***	-0.05297***	-0.04914***
						(0.00618)	(0.00768)	(0.00730)	(0.00830)	(0.01054)
2009: Mother Post-Sec.						0.00646***	0.00471***	0.00307**	0.00144	-0.00160
						(0.00183)	(0.00149)	(0.00138)	(0.00128)	(0.00224)
2009: Mother Secondary						0.00356***	0.00242**	0.00221*	0.00186	-0.00012
						(0.00117)	(0.00103)	(0.00130)	(0.00120)	(0.00160)
2009: Mother Primary						0.00010	0.00054	0.00074	0.00090	-0.00001
						(0.00117)	(0.00088)	(0.00111)	(0.00109)	(0.00115)
2009: Father Post-Sec.						-0.00523**	-0.00322**	-0.00178	0.00014	0.00283
						(0.00202)	(0.00148)	(0.00130)	(0.00130)	(0.00199)
2009: Father Secondary						-0.00387***	-0.00189*	-0.00112	-0.00096	0.00111
						(0.00105)	(0.00095)	(0.00101)	(0.00107)	(0.00138)
2009: Father Primary						-0.00004	-0.00093	-0.00064	-0.00060	-0.00032
						(0.00100)	(0.00082)	(0.00085)	(0.00093)	(0.00083)
Observations	5205	5205	5205	5205	5205	5198	5198	5198	5198	5198
Pctile	10	30	50	70	90	10	30	50	70	90
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	N	N	N	N	Y	Y	Y	Y	Y
LvlControls	N	N	N	N	N	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 5A3: Impacts on 10th, 30th, 50th, 70th, & 90th Percentile Language Test Scores (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	p10	p30	p50	p70	p90	p10	p30	p50	p70	p90
SCHOOL: Dist 1pct Grid	-0.00028	-0.00079*	-0.00129**	-0.00154**	-0.00166	0.00032	0.00016	-0.00021	-0.00026	-0.00012
	(0.00033)	(0.00046)	(0.00051)	(0.00075)	(0.00098)	(0.00034)	(0.00033)	(0.00032)	(0.00046)	(0.00066)
FD: Pct Male						-0.00109	-0.00100	-0.00103**	-0.00079*	-0.00060
						(0.00079)	(0.00060)	(0.00048)	(0.00040)	(0.00039)
FD: Pct Rural						-0.00135**	-0.00103**	-0.00066**	-0.00085**	-0.00079*
						(0.00057)	(0.00041)	(0.00030)	(0.00034)	(0.00044)
FD: Average Age						-0.08560***	-0.07196***	-0.06807***	-0.07089***	-0.06781***
						(0.00733)	(0.00509)	(0.00518)	(0.00781)	(0.00585)
FD: Mother Post-Sec.						0.00149	0.00214	0.00386***	0.00573***	0.00541**
						(0.00162)	(0.00164)	(0.00128)	(0.00133)	(0.00199)
FD: Mother Secondary						0.00176	0.00098	0.00195***	0.00235***	0.00296**
						(0.00114)	(0.00090)	(0.00067)	(0.00083)	(0.00144)
FD: Mother Primary						-0.00083	-0.00068	-0.00030	0.00028	0.00078
						(0.00097)	(0.00089)	(0.00080)	(0.00077)	(0.00077)
FD: Father Post-Sec.						0.00247	0.00251*	0.00161	0.00132	0.00255
						(0.00170)	(0.00131)	(0.00118)	(0.00128)	(0.00163)
FD: Father Secondary						-0.00085	0.00044	-0.00030	-0.00005	0.00127
						(0.00095)	(0.00087)	(0.00058)	(0.00079)	(0.00144)
FD: Father Primary						0.00054	0.00046	0.00005	0.00024	-0.00020
						(0.00084)	(0.00068)	(0.00062)	(0.00064)	(0.00070)
2009: Pct Male						-0.00083*	-0.00057	-0.00107**	-0.00108***	-0.00161***
						(0.00047)	(0.00041)	(0.00040)	(0.00035)	(0.00044)
2009: Pct Rural						0.00013	-0.00009	-0.00005	-0.00013	-0.00032
						(0.00024)	(0.00016)	(0.00016)	(0.00017)	(0.00026)
2009: Average Age						-0.05079***	-0.04669***	-0.03856***	-0.04540***	-0.05037***
						(0.00586)	(0.00505)	(0.00592)	(0.00852)	(0.00799)
2009: Mother Post-Sec.						0.00012	0.00135	0.00291**	0.00445***	0.00269
						(0.00220)	(0.00176)	(0.00141)	(0.00149)	(0.00215)
2009: Mother Secondary						0.00219	0.00071	0.00237**	0.00291**	0.00319**
						(0.00136)	(0.00115)	(0.00100)	(0.00130)	(0.00151)
2009: Mother Primary						0.00017	0.00016	0.00075	0.00065	0.00183*
						(0.00127)	(0.00111)	(0.00098)	(0.00094)	(0.00095)
2009: Father Post-Sec.						0.00082	0.00122	0.00092	-0.00009	0.00213
						(0.00199)	(0.00148)	(0.00124)	(0.00151)	(0.00212)
2009: Father Secondary						-0.00236*	0.00022	-0.00088	-0.00087	-0.00039
						(0.00119)	(0.00104)	(0.00087)	(0.00109)	(0.00150)
2009: Father Primary						-0.00050	-0.00015	-0.00029	0.00024	-0.00050
						(0.00117)	(0.00080)	(0.00084)	(0.00076)	(0.00100)
Observations	5205	5205	5205	5205	5205	5198	5198	5198	5198	5198
Pctile	10	30	50	70	90	10	30	50	70	90
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	N	N	N	N	Y	Y	Y	Y	Y
LvlControls	N	N	N	N	N	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 6A3: Impacts on Percent of Students that Work & Self-Reported Family Income (OLS)

	FD Propensity to Work				FD Family Income			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SCHOOL: Dist 1pct Grid	-0.00568	-0.00264	0.01548	0.00255	-0.00073	-0.00029	-0.00080	-0.00035
	(0.01420)	(0.01096)	(0.01560)	(0.01059)	(0.00054)	(0.00040)	(0.00053)	(0.00039)
FD: Pct Male		0.07222***		0.06230***		0.00036		0.00121*
		(0.01515)		(0.01846)		(0.00047)		(0.00061)
FD: Pct Rural		0.00658		0.00451		-0.00054		-0.00061
		(0.01134)		(0.01247)		(0.00052)		(0.00052)
FD: Average Age		3.40739***		3.35220***		-0.00262		0.00706
		(0.28604)		(0.33066)		(0.00336)		(0.00421)
FD: Mother Post-Sec.		-0.01017		-0.00599		0.00889***		0.01034***
		(0.01625)		(0.02674)		(0.00104)		(0.00148)
FD: Mother Secondary		-0.04255		-0.01350		0.00312***		0.00439***
		(0.02765)		(0.04229)		(0.00085)		(0.00128)
FD: Mother Primary		-0.02756		-0.02852		0.00168***		0.00239***
		(0.02029)		(0.03188)		(0.00039)		(0.00073)
FD: Father Post-Sec.		0.01244		-0.00320		0.00649***		0.00604***
		(0.02605)		(0.03316)		(0.00119)		(0.00132)
FD: Father Secondary		0.01691		-0.00125		0.00245***		0.00114
		(0.02778)		(0.04014)		(0.00073)		(0.00113)
FD: Father Primary		0.01819		0.01453		0.00074**		0.00035
		(0.02326)		(0.02988)		(0.00031)		(0.00069)
2009: Pct Male			-0.04330***	-0.01497			0.00051	0.00142**
			(0.01070)	(0.01254)			(0.00054)	(0.00066)
2009: Pct Rural			-0.01166	-0.00744			-0.00051**	0.00002
			(0.00802)	(0.00724)			(0.00019)	(0.00019)
2009: Average Age			-2.15711***	-0.04371			0.01253*	0.01734**
			(0.35943)	(0.40103)			(0.00621)	(0.00690)
2009: Mother Post-Sec.			0.03750	0.03907			-0.00040	0.00260
			(0.03025)	(0.04171)			(0.00137)	(0.00166)
2009: Mother Secondary			0.05483*	0.04494			0.00050	0.00188
			(0.03102)	(0.04633)			(0.00099)	(0.00142)
2009: Mother Primary			0.02885	-0.00816			-0.00032	0.00148
			(0.02377)	(0.03897)			(0.00055)	(0.00092)
2009: Father Post-Sec.			-0.03767	-0.02167			-0.00010	-0.00082
			(0.02861)	(0.03731)			(0.00149)	(0.00169)
2009: Father Secondary			-0.04876*	-0.03207			-0.00133	-0.00286*
			(0.02750)	(0.03801)			(0.00101)	(0.00142)
2009: Father Primary			-0.03153	-0.00849			-0.00090	-0.00067
			(0.02493)	(0.03206)			(0.00065)	(0.00102)
Observations	5196	5189	5191	5189	5205	5198	5200	5198
ProvFE	Y	Y	Y	Y	Y	Y	Y	Y
FDControls	N	Y	N	Y	N	Y	N	Y
LvlControls	N	N	Y	Y	N	N	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*

Table 7A3: Impacts on Ownership of Durable Goods (OLS)

	(1) Washer	(2) Microwave	(3) Oven	(4) Car	(5) DVD	(6) Floor
SCHOOL: Dist 1pct Grid	-0.03755*	-0.03562***	-0.04673***	-0.03748***	-0.03190	-0.03489***
	(0.02084)	(0.00900)	(0.01386)	(0.00900)	(0.02272)	(0.01000)
FD: Pct Male	0.04722**	0.01625	0.07346**	0.03080	0.05368	0.00598
	(0.02254)	(0.01808)	(0.02720)	(0.02270)	(0.03447)	(0.02665)
FD: Pct Rural	-0.10868***	-0.06772***	-0.03136	-0.02256	-0.01241	-0.07565***
	(0.03125)	(0.02275)	(0.03091)	(0.01347)	(0.03256)	(0.01849)
FD: Average Age	-0.05514	-0.44415**	-0.56451	-0.52821***	-1.19316**	-0.34778
	(0.36137)	(0.19175)	(0.35209)	(0.18363)	(0.47891)	(0.29473)
FD: Mother Post-Sec.	0.49749***	0.24282***	0.27311***	0.27609***	0.34714***	0.17450**
	(0.06422)	(0.08225)	(0.08624)	(0.04750)	(0.11022)	(0.06421)
FD: Mother Secondary	0.34057***	0.13111***	0.09162	0.06133	0.18997***	0.08618
	(0.05551)	(0.04563)	(0.06334)	(0.03634)	(0.06518)	(0.07425)
FD: Mother Primary	0.10799**	0.04129*	0.00206	0.02985	0.10422	-0.01935
	(0.04761)	(0.02228)	(0.04533)	(0.02098)	(0.07197)	(0.04518)
FD: Father Post-Sec.	-0.12963**	0.06305	0.02252	0.00765	0.00022	0.22578***
	(0.05212)	(0.05562)	(0.06591)	(0.03707)	(0.09908)	(0.06112)
FD: Father Secondary	-0.13424***	0.02068	0.01328	-0.00302	-0.09436	0.05807
	(0.04480)	(0.03545)	(0.05131)	(0.04197)	(0.08193)	(0.04876)
FD: Father Primary	-0.06620	-0.03146	-0.02048	-0.04548*	-0.10282	0.05414
	(0.05502)	(0.02235)	(0.04426)	(0.02235)	(0.06572)	(0.03594)
2009: Pct Male	-0.02210	-0.01513	0.01262	0.02992	-0.02489	0.00128
	(0.01978)	(0.02508)	(0.02048)	(0.01967)	(0.02829)	(0.02290)
2009: Pct Rural	-0.04156**	-0.02600***	0.00745	-0.01104	-0.00961	-0.00165
	(0.01691)	(0.00622)	(0.01742)	(0.00806)	(0.01673)	(0.00781)
2009: Average Age	0.72909*	0.15218	0.71992*	0.12872	-0.19925	0.63883*
	(0.38031)	(0.32830)	(0.38585)	(0.19025)	(0.43050)	(0.31634)
2009: Mother Post-Sec.	0.21805**	0.21092**	0.14434	0.13329**	0.27584*	-0.05428
	(0.08097)	(0.08042)	(0.09807)	(0.06535)	(0.15237)	(0.09187)
2009: Mother Secondary	0.13888*	0.11859**	0.02965	0.04082	0.10996	0.00456
	(0.07249)	(0.05375)	(0.06919)	(0.04849)	(0.10834)	(0.06813)
2009: Mother Primary	0.15537**	0.08276***	0.01212	0.03608	0.12713	-0.07177
	(0.06702)	(0.02890)	(0.05161)	(0.02424)	(0.10579)	(0.05171)
2009: Father Post-Sec.	-0.33302***	-0.19907**	-0.08831	-0.07410	-0.32033**	0.02725
	(0.07853)	(0.07331)	(0.08471)	(0.06183)	(0.13027)	(0.08148)
2009: Father Secondary	-0.18551***	-0.00603	-0.00042	0.01559	-0.23853**	0.02304
	(0.05219)	(0.04936)	(0.06649)	(0.05019)	(0.10725)	(0.06806)
2009: Father Primary	-0.06900	-0.04479	0.01391	-0.05684**	-0.13106	0.04790
	(0.07126)	(0.03452)	(0.03987)	(0.02510)	(0.08977)	(0.04464)
Observations	5198	5198	5198	5198	5198	5198
ProvFE	Y	Y	Y	Y	Y	Y
FDControls	Y	Y	Y	Y	Y	Y
LvlControls	Y	Y	Y	Y	Y	Y

*Notes: Standard errors clustered at the provincial level are included in parentheses. Significance levels: * 10%, ** 5%, *** 1%.*