Elite Universities and the Intergenerational Transmission of Human and Social Capital[†]

Andrés Barrios-Fernández Christopher Neilson Seth Zimmerman

February 22, 2022
Latest Version

Abstract

Do elite universities renew or reproduce the elite? Recent evidence showing that the returns to elite higher education significantly vary depending on students' social background suggests that elite universities actually increase inequality at the top. However, considering that some of the elements that open access to the elite can take some time to build and develop, intergenerational effects might be relevant to fully answer this question. This paper combines five decades of intergenerationally linked data on the educational trajectories of parents and children in Chile with a regression discontinuity design to document the joint evolution of social and human capital across generations and provide causal evidence on how elite colleges shape this evolution. We first descriptively show that parents' social capital—measured by the type of K-12 school they attended—gives important advantage to their children. Even after controlling by their parents' performance on a national college admission exam, children whose parents attended elite private K-12 schools are more likely to attend an elite K-12 school, to obtain high scores on college admission exams, and to enroll in elite colleges. Turning to our causal analyses, we show that parents' admission to an elite college program significantly changes their children's educational paths. Children whose parents did not come from an elite social background become 25% more likely to attend an elite K-12 private school and 7% more likely to attend an elite college when their parents are marginally admitted to an elite college program. These children, however, do not experience gains in test scores. Thus, although parents' marginal admission to an elite college moves them up in the social capital distribution, does not seem to affect their human capital. Our findings are not driven by generic increases in educational expenditures, but by changes in parents' and children's social environment: parents admitted to elite college programs are significantly more exposed to alumni of elite K-12 schools, and are more likely to marry high-status partners and to live near other high-status families as adults. Back of the envelope calculations show that, among high human capital families, the intergenerational gains in social capital induced by elite colleges admission accrue disproportionately to the incumbent social capital elite. Nevertheless, low social capital families are 21% more common among the beneficiaries of elite colleges admission than among the next generation's social elite as a whole. Elite colleges transmit social capital unequally, but less so than other paths through which social capital travels.

JEL Codes: I24, D64, J62
Keywords: Elite universities, intergenerational mobility, human capital, social capital.

[†] For granting us access to the administrative data we use in this project, we thank the Chilean Ministry of Education and DEMRE. Supplemental materials are available in the Online Appendix.

1 Introduction

Do elite universities renew or reproduce the elite? This question is fundamental to the academic and popular debate over the social role of elite higher education, but the evidence is ambiguous. On the one hand, students from low- and middle-income families who enroll in elite colleges go on to earn more than similar students who enroll in less selective colleges (Chetty et al., 2020). On the other hand, most students at elite colleges come from high-income families, and a social science literature originating with Bourdieu (1986, 1998) argues that these institutions' central function is to legitimate and perpetuate the elite. Recent research provides some support for the Bordieusian view. Within elite universities, students from the highest-status families are much more likely to go on to top incomes and top jobs, and social interactions among high-status peers seem to be an important reason why (Michelman et al., 2021; Zimmerman, 2019).

A central challenge in adjudicating this debate is that it is multi-generational. Students from low-status families may have difficulty navigating the elite college environment, and this may make it hard for them to make it to top jobs relative to their high-status peers. However, attending an elite college could open the doors to high-status trajectories for the *children* of low-status students, who may be more likely to attend exclusive private K-12 schools or excel academically. If this is the case, elite colleges might still expand access to the elite over multiple generations by allowing the children of their low status students to move up in the human and social capital distributions.

This paper combines five decades of data on educational outcomes for parents and children in Chile with a regression discontinuity design to provide causal evidence that elite colleges have intergenerational effects on the educational trajectories of their students' children. Independently of their social background, individuals admitted to business-oriented or medical programs in elite colleges are more likely to send their children to elite private schools, thus improving their opportunities to form social capital. The children of elite college students are also more likely to attend elite colleges themselves. Gains in educational prestige accrue despite null effects of parent admission on human capital, as measured by performance on college admissions exams. Back of the envelope calculations show that although the intergenerational gains in social capital go disproportionately to the incumbent social capital elite, low social capital families are more common among the ben-

eficiaries of elite admission than among the next generation's social elite as a whole. Elite colleges transmit social capital unequally, but less so than other paths through which this capital travels.

Chile is perhaps the only setting in which it is feasible to conduct this type of analysis at present. Three features of Chilean institutions are critical. The first feature is the availability of rich administrative data covering more than five decades of detailed educational records, and containing family identifiers that allow us to link parents with their children.

The second feature, key for our identification strategy, is that Chilean universities have used an exam-based centralized admission system since the late 1960s. This centralized admission system generates sharp admission cutoffs in all oversubscribed college-by-major combinations (henceforth, "programs"). Thus, to estimate the causal effect of admission to an elite college program on children's outcomes, we rely on a regression discontinuity design through which we compare the outcomes of children whose parents were marginally admitted and rejected from these programs. Since individuals near an admission cutoff are very similar to each other, this strategy allows us to isolate the effect of elite college programs from the effect of other potential confounders that could influence children's trajectories.

The third feature is the presence of well-studied universities and exclusive private schools that allow for clear definitions of elite college programs and proxies for social capital. On the university side, we focus on eight elite degree programs at the top two Chilean universities. These programs, focused on either business or medicine, are among the most selective programs at the national level. They are associated with the highest levels of earnings, and according to Zimmerman (2019) their students account for nearly half of top 0.1% incomes and corporate leadership positions despite making up roughly 2% of all college admits.

On the high school side, we identify a set of exclusive private K-12 schools that serve as our measures of elite social capital. These schools, which have high tuition fees and admission processes that give important advantages to their alumni, play a central role in descriptive accounts of the Chilean social and economic elite. One way to think of them is as the Chilean equivalents of schools like Eton College in the UK or Phillips Exeter in the US. They send disproportionate shares of their graduates to elite college programs, and are much more likely to attain top incomes and corporate roles than

other students in these same elite programs (Zimmerman, 2019). Social capital is a notoriously challenging concept to pin down (Dasgupta and Serageldin, 1999; Guiso et al., 2011). However, our conception of elite private schools as loci of social capital formation lies at the intersection of several leading definitions, including Coleman (1988)'s description of social capital as "a stock of productive matter ... [that] is part of a community, [or] a network" and Bourdieu (1986)'s definition of the term as resources linked to membership of a group. Both Coleman and Bourdieu (1998) take exclusive educational institutions as leading examples of sites of the production of social capital.

We begin our empirical analysis by establishing two facts about the way that social capital mediates the evolution of human capital across generations, and the extent to which the joint evolution of social and human capital depends on elite university attendance. First, we show that the relationship between parent and child test scores is approximately linear in rank, with the intercept and slope of the rank-rank relationship depending on social capital. At the bottom of the parent score distribution, children whose mothers attended an elite private K-12 school score 17 percentiles higher on average than children whose mothers attended a subsidized school. The children of the lowest-scoring elite school mothers perform similarly to children of subsidized-school mothers with scores near the median. This gap closes as mothers' scores rise: for elite school mothers, mean child rank rises by three percentiles for every 10 percentile increase in mother's score. For subsidized school mothers, child rank rises by four percentiles for every 10 percentile increase. As a result, the score gap by high school type falls to 7.1 percentiles for top-scoring mothers. Social capital also translates to other important educational outcomes: children whose mothers attended elite private schools are more likely to enroll in elite college programs.

Second, we show that social capital itself is both highly persistent and increasing in mother's human capital. 65% of children whose mothers scored at the top of the test score distribution and attended an elite private school go on to attend an elite private school themselves, compared to 30% of children whose mothers scored at the 25th percentile of the distribution and also attended an elite private school. In contrast, only 15% of children whose mothers obtained top exam scores and attended a subsidized school go on to attend elite private schools. It is considerably more difficult for children of high scoring, low social capital mothers to make it to the top of the social capital distribution than it is for the children of low scoring, high social capital mothers.

Third, we show that elite higher education predicts children's social and human capital even after controlling for parents' pre-college social and human capital. Focusing on top-scoring mothers—those within the top 1% of the test score distribution, for whom elite college attendance is a realistic option— we show that subsidized school mothers admitted to elite college programs are 15% more likely to have children with top 10% test scores, 60% more likely to send their children to elite private schools, and 30% more likely to have a child who enrolls in an elite college program. These findings suggest that elite colleges may play a role in expanding access to the tops of the human and social capital distributions across generations, but the differences may of course also be driven by selection into elite colleges on the basis of mother's attributes that we do not observe.

This last result motivates the second part of our empirical analysis, which uses a regression discontinuity design to provide causal evidence on how admission to elite college programs shapes social and human capital for one's children. Using data on application lists submitted to Chile's centralized assignment mechanism between 1976 and 2002, we identify individuals applying to elite college programs whose next best option– i.e., the program to which they would be admitted if rejected from their target program—is not an elite program. We then compare children's outcomes for parents just above and below the admissions cutoff. We find no evidence of fertility effects at the cutoff, limiting concerns about differential censoring of children's outcomes.

Parents' admission to an elite degree program raises' children's social capital. For parents who did not attend elite private schools, admission to an elite university raises the chances of their children attending such a high school by 3.5 percentage points, 24% of the below-threshold mean of 14.7%. For high social capital parents, elite admission raises elite private school attendance for their children by 5.0 percentage points, 7.4% of the below-threshold mean of 67.3%.

In contrast, elite admission does not increase children's human capital. When parents cross the elite admissions cutoff, their children's test scores are unaffected, both in the pooled sample and when splitting by parents' high school type. Despite not finding important effects on children's human capital, we find that children whose parents are admitted to elite college programs are more likely to enroll in elite colleges themselves.

We next unpack the determinants of upward human and social capital mobility for low social capital

parents. We first show that generic increases in educational spending do not explain our results. Parents admitted to elite college programs spend a little more on their children's education, but they do not send their children to just any expensive school. Some non-elite private schools have fees similar to the fees of the elite private schools. Admission to an elite college program does not change the likelihood that one's children attend expensive but non-elite private schools. It only affects the probability that children attend elite private schools.

Changes in the social environment at college and beyond are more consistent with the intergenerational social capital gains we document. Students admitted to elite college programs are exposed to more elite private school graduates in their college programs than marginally rejected students. Beyond college, their marriage market outcomes shift: they are more likely to marry private school graduates and other elite college students, even as their spouse's test scores remain unchanged. When they have children, those children's neighborhood peers are more likely to attend both elite and non-elite private K-12 schools. The idea that parents' inclusion in high-status groups mediates children's elite school attendance is consistent with the observation that private school admissions decisions depend on interviews with parents and references from members of the school community. It also reinforces Coleman (1988)'s point that "closure of the social structure"— the degree to which links within a social group are common, and ties to non-group members are less common—is critical for the development of social capital through norms, networks, and exchange relations.

To conclude, we return to our motivating question: do elite colleges renew or reproduce the elite? We conduct a simple back-of-the-envelope calculation that brings together our descriptive and quasi-experimental evidence to assess the overall impact of elite colleges on the persistence of elite social capital across generations. We find that elite colleges explain 11% of all upward social capital mobility among high human capital, low social capital families. At the same time, elite colleges reduce downward social capital mobility out of the elite for high social capital, high human capital families by 10%. Overall, about 20% of the intergenerational beneficiaries of elite colleges come from high social capital families. This 20% share is twice large as their 10% share in the population of high human capital families. However, it is far below their 65% share among the next generation's social capital elite. When it comes to the intergenerational transmission of social capital, elite colleges disproportionately benefit the incumbent social elites, but to a much lesser extent than

other processes that transmit elite social capital across generations.

This paper contributes to several strands of literature. First, we demonstrate that multi-generational effects are crucial to understanding the way elite universities shape upward mobility to the very top. A number of recent papers show that over a single generation, elite universities expand inequality by baseline social status. Michelman et al. (2021) show that social interactions between Harvard students from exclusive private high schools drive large gaps in the rates at which high- and low-status students attain top positions in business and society in the early 20th century US. Michelman et al. (2021) further show that students from the highest-income families are around 40% more likely to reach the top 1% of the income distribution than are other elite university students in the contemporary US. Turning to Chile, Zimmerman (2019) shows that admission to the same elite college programs we study here raises the rate at which students attain top incomes and corporate leadership roles, but that these gains accrue solely to male applicants from private elite schools, with effects again mediated by social interactions among this group. We show that while elite universities may expand inequality by baseline social capital in the short run, they can contribute to equalizing the distribution of social capital across families in the long run.

Second, we advance a broader literature about the distribution of earnings returns across colleges. We find that elite programs promote the accumulation of social but not human capital across generations. This extends to university *outputs* a common finding on the *input* side, which is that colleges' causal "value added" to earnings is weakly related to academic selectivity (Dale and Krueger, 2002, 2014; Hoxby, 2020; Chetty et al., 2020; Mountjoy and Hickman, 2020).[1] Universities are by definition academic institutions, but neither their inputs nor their outputs need be exclusively or even primarily academic.

Third, our findings elevate a string of papers on intra-family and intergenerational "spillover" effects by showing that effects of this type are quantitatively important for understanding what high-profile educational institutions do. Previous research uses similar designs to examine sibling spillovers on college, major, and school choice in education settings (Altmejd et al., 2021; Dustan, 2018), and to study the transmission of high school field of study from parents to children (Dahl et al., 2020). This literature provides "existence" results for various types of within-family spillovers, but leaves open

[1] Abdulkadiroğlu et al. (2014) make a similar point for academically selective public high schools.

the question about the importance of such effects for economic objects such as economic mobility. We similarly elevate papers on the marriage market effects of higher education by showing the importance of the marriage channel for mobility outcomes (Kirkebøen et al., 2021; Ge et al., 2018).

The closest paper to ours in this vein is Kaufmann et al. (2021). Kaufmann et al. (2021) use data on 1990-93 applicants to five selective Chilean universities to study how admission affects marriage and child outcomes. We innovate relative to Kaufmann et al. (2021) in two ways, both central to our analysis. First, we access data on both parent and child social status, which allows us to to examine our central question—the intergenerational transmission of social capital and its interaction with human capital mobility. Second, our data covers a much longer time span. Having more data allows us to generate qualitatively different insights, in particular by focusing on the small set of elite degree programs that Zimmerman (2019) shows generate a disproportionate share of top outcomes. We show that these elite degree programs play a crucial role in the intergenerational transmission of social capital, even compared to other programs at elite or selective universities.

Fourth, our results speak to a broader literature on intergenerational persistence in earnings, schooling, and IQ.[2] We innovate by presenting quasi-experimental evidence on how elite colleges shape intergenerational mobility, and by highlighting the important role of social capital in shaping the human capital outcomes that are the focus of many papers. The focus on elite formation distinguishes our work from previous research examining how shifts between lower levels of educational attainment and prestige affect children's outcomes (Amin et al., 2015; Behrman and Rosenzweig, 2002; Holmlund et al., 2011; Pekkarinen et al., 2009). Our finding that the rank-rank relationship between child and parent human capital is approximately linear and shifts up as social capital increases mirrors results from Chetty et al. (2014) and Chetty et al. (2019) that child and parent income are linear in rank but shifted by race/ethnicity.

Finally, we bring credible quantitative evidence to a canonical question in the social science literature on social capital. Much of the economics literature on social capital has focused on the importance of social and civic engagement for economic growth and well-being in the US and abroad, particularly as related to the development of social trust (see Guiso et al. (2011) for a

[2]See for instance Solon (1999); Anger and Heineck (2009); Black and Devereux (2010); Grönqvist et al. (2010); Chetty et al. (2014, 2017); Hertz et al. (2008); Lundborg et al. (2018).

review article and Putnam et al. (1993) for related exposition). However, Bourdieu's initial conception of social capital emphasized its role in social reproduction, with elite universities as fulcra of elite reproduction specifically (Bourdieu, 1972, 1986, 1998). Our findings support the Bourdieusian argument that elite universities help reproduce incumbent elites. The new insight we offer is that, in the long run, elite universities play a quantitatively important role in helping high human capital but lower social capital families join the social elite.

2 Institutions

The Chilean school system is organized in two education cycles: primary education—grades 1 to 8—and secondary education—grades 9 to 12. Education is provided by three types of schools: public schools, voucher schools, and non-subsidized private schools. Public schools are free and are funded through student vouchers.[3] Voucher schools are private, but they are publicly subsidized through the voucher system as well. These schools were able to charge tuition fees on top of the voucher between 1994 and 2015. However, the amount of the voucher they received decreased as their tuition fees increased. Non-subsidized private schools rely on tuition fees only and are usually considerably more expensive than voucher schools.

According to the registers of the Ministry of Education, in the class of 2018—the last one we observe in our data—40% of students attended a public school, 49.60% a voucher school, and 10.31% a private school. For this paper we further divide private schools in two categories: non-elite private schools and elite private schools. To identify elite private schools we follow an approach similar to Zimmerman (2019). We focus on the cohorts graduating from high school and entering college in the seventies and eighties, and identify a set of seven schools that consistently place their alumni in elite business and political positions.[4] All the elite private schools we identify only admitted male students until very recently. Thus, we complement the definition of elite schools with seven additional schools that the sisters of male elite students typically attend. For this exercise we

[3] In the early 1980s the Chilean school system underwent a major transformation. Public schools were transferred from the Ministry of Education to the municipalities. In addition, the funding system was changed and a voucher system was introduced.

[4] To identify these schools we relied on three reports produced by a head hunting firm—Seminarium—that characterized the education trajectories of business and political leaders in 2003 and 2010. See the Online Appendix for further details.

relied on family links available for recent cohorts (i.e., 2004–2018). All these schools admitted only female students until very recently.[5] Finally, we also classified as elite schools a group of eight private schools that derived from the old elite schools in recent years. In the 2018 class students graduating from these elite private schools represented 1.07% of their cohort.[6]

A distinctive feature of elite private schools is that, unlike most of the other schools in the country, students are admitted when they are four years old and attend the same institution until graduating from high school. This means that students attending an elite private school spend at least 14 years of their lives together. Admission to these schools usually includes some type of examination for the child, but parents interviews are particularly important. Applicants whose parents graduated from these elite institutions are typically given an advantage, and therefore entering these schools is difficult for children without an elite background. Elite schools are expensive. On top of high tuition fees, most elite schools ask families to pay a membership fee when their children are admitted. However, many non-elite private schools are similarly expensive.[7]. Thus, more than by their fees, elite schools are distinguished by their selectivity. The biggest challenge that non-elite parents must overcome to have their children admitted to elite schools is performing well in the interviews.

In the higher education system, most Chilean universities select their students through a deferred acceptance admission system. Students submit a maximum of 10 preferences, and are then allocated to specific college degree programs based only on their rank of preferences and on their performance on a national university admission exam. Although the number of universities using centralized admissions has grown over time, the two most prestigious institutions—the University of Chile and the Catholic University of Chile—have used it since its beginning.[8] Thus, in contrast to other settings, elite universities in Chile select their students only based on their academic performance. As in the case of elite private schools, the alumni of these two universities occupy a large share of business and political elite positions.[9] Among the freshmen starting at these universities in 2019,

[5]Around half of the elite private schools we identify are still single sex schools.

[6]In the Online Appendix we show that the main results of the paper are robust to different definitions of elite schools. We show that the results hold when focusing only on the "old elite schools", and also when focusing on a slightly broader definition of elite schools. The broader definition of elite schools includes institutions that rank high among the schools to which the alumni of old elite schools send their children.

[7]In the Online Appendix we present an histogram that illustrates the distribution of annual fees in non-elite and elite private schools

[8]A nice feature of the centralized admission system that we exploit is that it generates sharp admission cutoffs in every oversubscribed degree program.

[9]See the Online Appendix for further details

53.46% came from subsidized schools, 36.07% from non-elite private schools, and 10.47% from an elite private school. The over representation of non-elite and elite private school alumni was even larger in the most prestigious programs—i.e., business, law, engineering and medicine—where they represented 43.48% and 17.43% of first year enrollment. According to these figures, it is 16 times more likely to find an elite private school graduate in these programs than in the whole population.

Taking the university admission exam and applying to universities is free for students graduating from subsidized high schools (public and voucher schools). In addition, since tuition fees in Chile are relatively high, there are generous funding programs available for students. Eligibility for different types of financial aid depends on socioeconomic and academic criteria. Subsidized student loans, for instance, are currently available to everyone whose average score in the reading and math section of the admission exam is above the 40th percentile. The largest scholarship programs require a higher score and are only available for students in the bottom 70% of the income distribution.[10]

3 Data

This paper combines rich archive and administrative data from two main public agencies: the Chilean Ministry of Education and the Department of Evaluation, Assessment and Educational Records (DEMRE) of the University of Chile, which is the agency in charge of the university admission system.

DEMRE provided individual level records of the scores that college applicants obtained in each section of the university admission exam. While we had to process and digitize the records covering application years 1968–2002, the records covering 2003–2018 were already digitized. We proceeded in a similar way to recover the vector of preferences submitted by college applicants, and since we did not observe the outcomes of the admission process for the earlier years, we recovered them by replicating the admission process for this period based on a set of well known rules.[11] As in

[10]The financial aid system has undergone important transformation in recent years. In addition to making some of the benefits available to more students, new programs have been introduced. For instance, since 2015 students in the bottom 60% of the income distribution have been eligible for free higher education. Independently of their scores in the admission exam, if a university that has agreed to participate of the free higher education program admits them, they do not need to pay fees. Universities receive from the government a reference tuition fee for each student admitted under this program.

[11]The allocation algorithm used by the Chilean admission system belongs to the Gale-Shapley family. Through the DEMRE we had access to the weights given to each section of the admission exam in different colleges and majors,

the case of scores, applications and admissions data are available in electronic format from 2003 onwards. A nice feature of these data is that, in addition to scores and applications, we observe the high school each applicant attended. In addition, from 2003 onwards the data also contains self reported socioeconomic characteristics and the national id number of the applicants' parents.

The records of the Ministry of Education that we use in this project cover the period 2002 to 2018. They include the universe of students enrolled in primary and secondary education and contain information on students' school, grades and attendance. The Ministry of Education also granted us access to a dataset identifying siblings attending school at the same time between 2002 and 2015. We combine these siblings' links with the parents' links provided by the DEMRE to identify members of the same family.

Using these data we create the two samples that we later use in our analyses: the intergenerational correlations sample (IC) and the elite colleges sample (EC).

3.1 Intergenerational Correlations Sample (IC)

To build the IC sample we start by identifying students reaching their high school senior year between 2003 and 2017 and we link them with the scores they obtain in the university admission exam (around 85% of high school seniors take the exam), and with the university and major in which they first enroll. We then use the information on parents' and siblings' links described earlier, together with registers from the Ministry of Health that link children born between 1992 and 2010 with their mothers, to identify the students' parents. We identify at least one parent for 80.79% of the students in our sample. Finally, we combine these data with the parents' scores in their admission exam and with the university and degree program to which the parents were first admitted. We are able to link a little bit more than a third of the students (33.36%) with at least one of their parents' scores. When studying intergenerational correlations we use all students reaching grade 12 between 2003 and 2017. We create especial categories for cases in which we do not observe parents' high school or test scores. Panel A of Table I presents summary statistics of

and to a set of special rules used in the process (e.g., some colleges and majors require a minimum average score in the admission exam. Even if they are not oversubscribed, they do not accept applicants who do not satisfy all requirements).

this sample. Column (1) includes all high school graduates, column (2) those who register for the university admission exam, column (3) those for whom we observe their parents' id, and column (4) those whose parents took the university admission exam. The gender composition and students' age do not change much across columns. Differences are larger, however, when we look at students' academic and socioeconomic characteristics. As expected, the children of parents who also applied to college are more likely to graduate from the academic track in high school, and perform better both in high school and in the university admission exam. As a consequence, they are also more likely to enroll in college and in elite college programs. They are also more likely to attend a private high school, to come from a high income household, and to have at least one parent who completed a university degree.

3.2 Elite Colleges Sample (EC)

To build the EC sample we start instead by identifying applicants near the admission cutoff for an elite college-major between 1976 and 2002. As discussed in Section 2, we define elite college programs as business, engineering, law, and medicine degrees taught at either the University of Chile or the Catholic University of Chile. We only include individuals whose next best option—i.e., the college program to which they would have been admitted if they were rejected from their target option—is not an elite college program. For these individuals, crossing the admission threshold of their target option significantly changes the probability of attending an elite college program. We then use the information on family links to match these applicants with their children. We identify at least one children for 41.05% of them.[12] Finally, we add information on the school these children attend, as well as on their test scores in the university admission exam, and on the college and program in which they enroll. For some complementary analyses we use the geographic data produced by Barrios-Fernández (2021) to characterize the neighborhood where the children live, and the information on family links to characterize the education trajectory of the applicants' spouses. Panel B of Table I presents summary statistics for this sample. Column (1) characterizes all college applicants in our sample, while column (2) only applicants that we are able to link with their children. Columns (3) and (4) focus on the subset of individuals applying to elite

[12]Panel B of Figure IV shows that the probability of linking an applicant with a children does not change at the admission cutoff.

college programs and scoring near the admission cutoff (i.e., 25 points around the admission cutoff). Column (3) characterizes applicants who failed to gain admission, while column (4) applicants who were admitted. Individuals applying to elite college programs are balanced in terms of gender. Not surprisingly, their scores in the admission exam are considerably higher than for the rest of the population and they have a higher chance to being admitted to college. They are also more likely to come from high-SES households, as suggested by the share of them graduating from private high schools.[13]

4 Intergenerational Correlations

This section describes the mediating role that social capital plays in the transmission of human capital across generations, and the extent to which elite colleges influence the joint evolution of social and human capital.

To implement these descriptive analyses, we first compute the rank of parents and children within their cohort of college applicants. We focus on the first time they take the college admission exam, and we rely on the theoretical distribution of scores to compute their rank. The scores of the college admission exam are adjusted so they follow a normal distribution with mean 500 and standard deviation 110. The extremes of the distribution are truncated, but the minimum and maximum scores are below the first percentile and above the 99th percentile, respectively. By assigning ranks based on this theoretical distribution instead of on the one we actually observe, we overcome challenges related to missing observations.[14] We classify individuals who do not take the college admission exam in a different category that for exposition purposes we call percentile 0.

Using these ranks and our proxy of parents' social capital—type of high school attended—we estimate rank-rank correlations in test scores conditioning on parents' social capital. Here we focus our analyses on intergenerational correlations between mothers and children; in the Online Appendix we present similar analyses focusing on fathers. We distinguish between three types of high schools: subsidized schools, non-elite private schools, and elite private schools. Panel (a) of

[13] We study discontinuities in potential confounders at the cutoff in Figure IV.

[14] Although we have good coverage of parents' and children's scores, considering that the information on older cohorts comes from archive data that we digitized, there are some missing observations in earlier years.

Figure I illustrates intergenerational correlations in human capital. The rank-rank relationship between mothers' and children's scores is approximately linear. Independent of the type of school that the mother attended, we find that our human capital measure—i.e., average score on the college admission exam—is persistent across generations. We document rank-rank correlations that vary between 0.3 and 0.4, being stronger for child-mother pairs in which the mother attended a subsidized school. In addition, the figure shows that social capital raises the *intercept* of the rank-rank relationship. Children whose mothers attended elite private schools score on average 17 percentiles higher than children whose mothers had the same test score but attended subsidized schools. This difference is large. It is equivalent to a 45 percentile increase in the score of mothers who attended subsidized schools. Note, however, that this gap decreases with human capital. The difference among the children of mothers scoring in the top percentile of the college admission exam distribution is 7.12 percentile points. Although smaller, this difference is still large considering that we are comparing the children of mothers who scored at the very top of the human capital distribution.[15] When estimating these rank-rank correlations we omit mothers that we do not observe taking the exam. The maroon circle at the bottom left corner of the figure illustrates the expected rank of their children. On average, these children score near the 32nd percentile of the college admission exam. This rank is well below the expected rank of children whose mothers took the college admission exam.[16]

These differences by mothers' social capital translate into an important gap in children's probability of scoring in the top 10% of the college admission exam. As shown in panel (b) of Figure I, children whose mothers attended elite private schools have an advantage across the whole mothers' human capital distribution. When focusing on mothers scoring at the very top of the college admission exam, we find that children whose mothers attended an elite private school are 20 percentage points more likely to reach the top 10% than children whose mothers attended a subsidized school.

[15]The Online Appendix presents similar results focusing on fathers. The rank-rank correlations between fathers and their children are similar to the ones documented in this section. However, in the case of fathers the average gap between high and low social capital levels is more persistent. Children whose fathers attended an elite private school rank on average 13 percentile points above children whose parents attended subsidized schools. This difference persists across the whole human capital distribution.

[16]The Online Appendix also presents rank-rank correlations in which the rank of the children is computed using their scores in a standardized test that they take in grade 10. Results are similar to the ones discussed in this section. Using standardized tests has the advantage that all the students in a cohort take it. However, standardized tests are not applied every year in Chile. Therefore, the analyses using standardized tests come from a smaller sample, which makes some of the estimates less precise.

But not only human capital is persistent across generations. As shown in panel (c) of Figure I, social capital is also highly persistent. 65% of students whose mothers scored at the top of the college admission exam distribution and attended an elite private school go on to attend an elite private school themselves, compared to only 15% of children whose mothers also scored at the top of the exam distribution but attended subsidized schools. Although coming from a high social capital background seems to increase the chances of having high social capital as a child, mothers' human capital also matters. Children whose mothers attended an elite private school, but scored at the median of the distribution have a 40% probability of attending an elite private school themselves; this figure drops to 30% for children of elite mothers who scored at the 25th percentile. Note, however, that even these low performing elite mothers are more likely to send their children to elite private schools than high performing mothers who attended subsidized schools. It is considerably more difficult for children of high human capital, low social capital mothers to make it to the top of the social capital distribution than it is for the children of low human capital, high social capital mothers (see the Online Appendix for similar results on fathers).

Apart from influencing the scores and the type of school that children attend, parents' human and social capital seem to affect the college trajectory of their children. Panel (d) of Figure I shows that, conditional on mothers' human capital, children whose mothers attended an elite private school are more likely to enroll in an elite college program. This difference peaks at the very top of mothers' human capital distribution, where children whose mothers attended an elite private schools are twice more likely to enroll in a elite college program than children whose mothers attended subsidized schools (the Online Appendix presents similar results focusing on fathers). This result is important because it shows that the advantages of being born in a high social capital family that we discussed earlier in this section, translate into differences in outcomes as consequential as the college and major in which children specialize.

We conclude this section by studying whether parents' admission to an elite college program predicts their children's human and social capital. For this exercise, we focus on top scoring mothers (i.e., those in the top 1% of the college admission exam). Elite college programs are highly selective, and therefore only applicants scoring at the very top of the college admission exam have a realistic option of being admitted to them. As shown in Figure II, independent of the social capital level of mothers,

attending an elite college program is associated with better outcomes for their children. Our results indicate that subsidized school mothers who are admitted to an elite college program are around 15% more likely to have children with top 10% test scores, 60% more likely to send their children to elite private schools, and 30% more likely to have a child who enrolls in an elite college program. These findings suggest that elite college programs may play a role in expanding access to the top of the human and social capital distributions across generations. These differences, nevertheless, could also be driven by mothers' selection into elite colleges on the basis of attributes that we do not observe. In the next section we will carefully study whether the relationship between mothers' access to elite higher education and their children's outcomes has indeed a causal component.

5 Empirical Strategy

It is challenging to identify the causal effect of a parent's educational trajectory on their children's outcomes. Parents who follow different educational paths are likely to differ along many dimensions that could also affect their children. Therefore, we first need to isolate the effect of a parent's admission to an elite college program from the effect of potential confounders. In addition, being admitted to an elite college program could affect fertility decisions. Since we are interested in studying the influence of parents' education on their children this could be problematic, as we do not observe the outcomes of children that are not born.

A nice feature of the Chilean centralized admission system is that it generates sharp admission cutoffs in all oversubscribed programs. All of the elite programs that we study are oversubscribed. We will therefore address the identification challenges described in the previous paragraph by using a Regression Discontinuity Design (RDD). Thus, we will compare the outcomes of children whose parents nearly fail or nearly succeed in gaining admission to an elite college program. Specifically, we will estimate the following specification:

$$E_{ijcc't} = \beta_0 + \beta_1 A_{jct} + f(S_{jct}; \theta) + \mu_c + \mu_{c'} + \mu_t + \varepsilon_{ijct}, \tag{1}$$

where $E_{ijcc't}$ is an educational outcome of child i whose parent j applied to the college-major

combination c in year t and had as a next best option college-major combination c'; A_{jct} is an indicator of parent j's admission status to college-major c (i.e., takes value one if parent j scores above the admission cutoff of c); and $f(S_{jct}, \theta)$ is a linear or quadratic polynomial of the application score of parent j to college-major c wose slope is allowed to change at the admission cutoff. We follow Kirkeboen et al. (2016) and include both target and next best program fixed effects (μ_c and $\mu_{c'}$). In addition, we use the information on parents' preferences to identify individuals at relevant margins. Thus, we restrict the estimation sample to parents whose target option is an elite college program, but whose next best option is not. This guarantees that crossing the admission threshold significantly changes their probability of attending an elite college program. Finally, we include a parent-application-year fixed effect μ_t. When estimating this specification we pool mothers and fathers, but we also present results in which the specification is estimated independently for each parent.[17] Our main results focus on parents whose application scores are within 25 points of the admission cutoff (same window used in Hastings et al. (2013)). However, in the Online Appendix we show that our results are robust to multiple bandwidth choices.[18] In addition, to avoid concerns related to exam retaking, we focus on the first time a student applies to college.

This specification allows us to study the effect of a parent's admission to an elite college program on their children. Note, however, that applicants admitted to a program do not necessarily enroll in it. Unfortunately, good data on college enrollment is only available for recent years. In Figure III we illustrate the relationship between admission and enrollment in elite college programs for individuals applying to college between 2006 and 2017. Panel (a) illustrates the sharp change in admission probability at the cutoff. Students' near the admission cutoff have very similar scores, but only those above it receive an offer through the centralized admission system. Panel (b) shows how this discontinuity in the admission probability translates into enrollment. Not all students admitted to an elite college program accept the offer. This allows some students originally in the waiting list to move up and enroll in their desired program. In recent years the University of Chile and the Catholic University have introduced some special admission programs for talented students from disadvantaged backgrounds. The number of places offered through these programs is small

[17] Not many children have both of their parents near the admission cutoff of an elite college program. Pooling mothers and fathers in one specification allows us to gain some power.

[18] We show that our main results are robust to using bandwidths that vary between 5 and 45 points.

compared to the number of places offered through the centralized admission system, but they allow some applicants under the admission cutoff to enroll in elite college degrees. Therefore, although we observe a large jump in enrollment at the cutoff, it is not as large as the one we observe in admissions.[19] These results suggest that the effects of actually attending an elite college program are larger than the estimates we present in this paper.

The consistency of the estimates from a regression discontinuity design critically depends on two assumptions.

First, individuals should not be able to manipulate the running variable. In this case, the running variable is a weighted average of applicants' scores in different sections of the university admission exam. The exam is a national exam whose design, application and marking processes are completely centralized. This means that the teachers or the high school of college applicants do not play any role in the process. In addition, the scores of students in each section of the exam are normalized, and therefore students do not know ex ante the exact number of correct answers needed to obtain a specific score. College-major specific cutoffs change from year to year, and students only observe them when they learn about their applications results. All this makes manipulating scores around the admission threshold very difficult. Panel (a) of Figure IV confirms this. The distribution of scores around the admission cutoffs does not seem to have discontinuities. We further study this by implementing the manipulation test suggested by Cattaneo et al. (2018) and find no evidence of manipulation around the admission cutoffs.[20]

Second, potential confounders that could influence the outcomes of interest should be continuous around the cutoff. We study this by estimating specification (1) on a rich vector of potential confounders. As shown in panel (c) of Figure IV we find no discontinuities in the gender of the parent, in the probability that the parent attended a subsidized or a private school, in the gender of the children, or in the birth year of the children. We do find a marginally significant difference in the family size reported by the children when registering for the admission exam. However, this

[19] Special admission programs were much less common in earlier years. In addition, in the seventies and eighties there were less colleges that students admitted to elite degrees could consider as an alternative. This likely made the jump in the enrollment probability larger than in recent years. On the other hand, exam retaking was more frequent in those years since students had fewer college options available. This means that some of the students rejected from an elite college program the first time they applied, could have gained admission later on.

[20] We obtain a p-value of 0.356 and therefore fail to reject the null hypothesis of the distribution being the same at both sides of the cutoff.

difference is small. Children with a parent admitted to an elite college program report 0.12 more family members. Although the household income reported by children is not a confounder—i.e., it is likely an outcome of the treatment we study—we do not find significant differences in the share of children reporting to come from low, mid or high income households. Note, however, that the threshold that defines the highest level of income is not very high, which could hide income effects at higher levels. Indeed, it is not surprising that we do not find important differences between individuals scoring near the admission cutoffs of elite college programs along these income categories. In the Online Appendix we show that our results are robust to controlling for all the potential confounders we observe.

Finally, as discussed at the beginning of this section, an additional threat to identification that arises in the context of this study is the presence of fertility effects. If being admitted to an elite college program affects the probability of having children, this would introduce selection problems that would invalidate our results. To study whether this is the case we once more rely on specification 1 to study whether crossing an elite college program admission threshold influences fertility decisions. Panel (b) of Figure IV shows that being admitted to one of these programs does not change the probability of having children. Not finding differences in the birth year of the children either—see panel (c) in the same figure—suggests that admission to an elite college does not affect the timing of parenthood. In the Online Appendix, we also show that marginal admission to an elite college program does not affects the number of children we identify in our sample.

6 Results

This section presents our main causal estimates. First, it shows that parents' admission to an elite college does influence the education trajectories of their children. Indeed, it increases children's probability of attending an elite private school and an elite college. Then, we explore heterogeneity in our results by parents' and children's gender. Next, we discuss potential drivers of our findings. While additional expenditure on children's education does not seem to be the main driver of the results, being admitted to an elite college program significantly changes parents exposure to elite private schools graduates, improves their outcomes in the marriage market, and improves the

neighborhood in which their children grow up. The section concludes by studying whether admission to other college programs with high concentrations of elite students have similar consequences on children's outcomes.

6.1 Access to Elite College Programs and Children's Education Trajectories

This section shows how the education trajectories of the children of elite and non-elite parents change depending on their parents' admission to elite college programs. To estimate these effects we rely on specification (1). As discussed in section 5, we focus on parents for whom crossing the admission threshold makes an important difference in the probability of being admitted to an elite college program (i.e., parents whose target option is an elite college program, but whose next best option is not).

Table II summarizes our main results. According to the estimates in Panel A, parents who are admitted to elite college programs are significantly more likely to send their children to an elite private school. While the children of parents who did not attend an elite school experience an increase of 3.5 percentage points (24% increase), the children of parents who attended an elite private school experience an increase of around 5 percentage points (7.5% increase). Despite being smaller, only the effect on children of non-elite parents is statistically significant at conventional levels. Panel A also shows that most of the increase in enrollment in elite private schools comes from children that otherwise would have attended non-elite private schools.

Panel (a) of Figure V illustrates the jump that the children of non-elite parents experience at the admission cutoff (the Online Appendix presents the figure for the children of elite parents). It is worth noting that children with a parent scoring just below the cutoff of one of these elite college programs, still have a relatively high probability of sending their children to an elite private school (i.e., 14.7%). This might reflect that, as shown in Figure III, some of the individuals scoring just under the admission cutoff for elite college programs still end enrolled in them. Thus, our estimates likely represent a lower bound for the effect of actually attending an elite college program. In addition, parents marginally rejected from an elite college program still obtained very high scores in the college admission exam. Therefore, their next best options are still quite good. This seems

to still enable some of them to send their children to elite private schools.

Panel (b) in Table II shows that, despite the increase in children enrollment in elite private schools, there are no significant changes in any of the measures of human capital we use. Independent of the type of school attended by the parents, crossing the admission cutoff for an elite college program does not seem to affect children's average performance in the college admission exam or their probability of scoring in the top 1%. Panel (b) of Figure V confirms that there is no discontinuity in the probability of scoring in the top 1% of the college admission exam for children of non-elite parents who barely gain admission to elite college programs.

Finally, panel (c) of Table II shows how parents' admission to an elite college program changes their children's higher education trajectories. Both the children of non-elite and elite parents become more likely to enroll in elite colleges (i.e., Catholic University and University of Chile). As shown in panel (c) of Figure V, there is a clear jump for children whose parents did not attend an elite private school. The effect we find for children of parents who attended elite private schools is similar in size, but not statistically significant. We find no significant changes in children's probability of enrolling in an elite college program.

We conclude this section by further studying heterogeneity by parents' background. The results that we present in Figure VI indicate that the effect we find on children's probability of attending an elite private schools is similar in size for parents who attended subsidized and non-elite private schools. For none of these groups we do find a significant change in the probability of having children scoring in the top 1% of the college admission exam. The effects on college trajectories, however, seem stronger among children of non-elite private school parents. Indeed, for this group of children we even find a significant increase in the probability that they enroll in an elite college program.

The effects discussed in this section show that the educational trajectories of children of non-elite parents significantly change when their parents gain admission to elite college programs. Despite not finding significant effects on children's human capital, we do find that having a parent attending an elite college program changes their education experience opening opportunities to accumulate more social capital.

6.2 Heterogeneous Effects by Parents' and Children's Gender

This section explores whether the effects documented in section 6.1 vary depending on parents' and children's gender. For these analyses we focus on children whose parents did not attend elite private schools only. They are the group in which we are mainly interested, but in addition we do not have enough power to further split the sample of children whose parents attended an elite private school.

Table III summarizes the results of this section. The column headings indicate whether the results cover all children, only daughters, or only sons. The rows further distinguish between the effect of mothers and fathers.

We first look at the effect that a parent's admission to an elite college program has on the type of school that their children attend. According to our estimates, children's probability of attending an elite private school increases by more when the parent admitted to the elite college program is the mother. Both mothers and fathers matter, but the effect of mothers is 25% larger than the effect of fathers. In both cases, the effects are driven by parents who otherwise would have sent their children to non-elite private schools.

Interestingly, when looking at effects on children human capital we discover that the small and non-significant effects described in the previous section mask some differences between mothers and fathers. While having a mother marginally admitted to an elite college program improves both their children's average performance in the college admission exam and their probability of scoring in the top 1%, we find no significant effect when focusing on fathers.

The effects we find on children's average scores, despite being statistically significant, are relatively small. The largest estimates we find represent less than 7% of a standard deviation in the scores distribution. Effects on the probability of reaching the top 1% of the scores distribution, especially when focusing on mothers and daughters, are larger. Daughters whose mothers were marginally admitted to elite college programs are 6.6 percentage points more likely to reach the top 1%. This represents an increase of more than 60%.

Finally, when looking at the effects on children's college trajectories, our estimates indicate that

these effects are also mostly driven by mothers. Children whose mothers are marginally admitted to elite college programs are more likely to both enroll in an elite college and in an elite college program themselves. While the former effect is stronger among daughters—i.e., they become 5.6 percentage points more likely to attend an elite college—the latter effect is stronger among sons—i.e., they become 4.9 percentage points more likely to attend an elite college program.

6.3 What is behind our findings?

This section explores three potential channels that could drive our findings. It first shows that an increase in how much parents spend on their children's education is unlikely to explain our results. It continues by documenting that parents admitted to an elite college program are more likely to have elite private K-12 school graduates as classmates, and that their college trajectory influences their marriage market outcomes. Finally, it presents evidence that parents' admission to an elite college program affects the neighborhood in which their children grow up. These results suggest that the changes that parents and children experience in their social environment play an important role in explaining our findings.

6.3.1 Access to Elite College Programs and Expenditure on Children's Education

The graduates of elite college programs have high earnings compared to both the whole population and to other college graduates. In addition, they are more likely to reach leadership positions in business and in politics. Thus, the increase we observe in their children's probability of attending an elite private school might just be a consequence of additional resources and increased expenditure on their education.

To explore this possibility, we collected information on enrollment fees and tuition fees at both voucher and private schools.[21] Using this information, we study whether crossing the admission threshold of an elite college program increases the amount of money that non-elite parents spend on their children's education. Panel (a) in Figure VII illustrates the results of this exercise. We

[21] Until recently voucher schools were able to charge tuition fees on top of the voucher. This information was recorded by the Ministry of Education. Private school fees are not centralized in any public database. We collected them directly from the school websites. We were able to find information for more than 80% of the private schools to which individuals near the admission cutoff of an elite college program send their children.

do find a statistically significant difference in the fees that parents pay for their children's schools. This difference, however, is not huge. It represents an increase of 4% over the baseline. This might be due to the fact that college applicants who marginally fail to gain admission to an elite college program, still have other options available, many of which are also associated with high earnings. Indeed, Zimmerman (2019) finds that elite business and law programs only increase earnings for male students who attended private high schools.[22]

To further understand what is changing at the cutoff, we use the information on school tuition fees to classify schools in two categories: non-expensive and expensive schools. We define a school as expensive if its annual fees are at least as large as the fees of the cheapest elite private school. Within the group of expensive schools, we find a similar number of elite and non-elite private institutions (see the Online Appendix for details on the distribution of annual fees). Using this definition, we then study whether being admitted to an elite college program changes the probability of having children enrolled in any expensive school, or on elite private schools only. The results presented in Table V show that parents admitted to an elite college program are 4.30 percentage points more likely to send their children to an expensive school. Most of this increase—4.22 percentage points—is explained by an increase in children attendance to elite private schools.[23] Only a minor part of the increase—0.7 percentage points—is explained by children attending a non-elite expensive school. This result suggests that elite college programs not only change the ability or willingness to pay for children's schools. Otherwise, the increase observed in children attending non-elite and elite expensive schools would have been similar.

6.3.2 Access to Elite College Programs and the Marriage Market

Being admitted to an elite college program not only changes individuals' future performance in the labor market. It also affects their social interactions during college, and potentially the friends they make and their outcomes in the marriage market. This section studies how admission to

[22] Zimmerman (2019) finds that medicine programs do significantly increase earnings for male and female students who graduated from both subsidized and private schools. In the Online Appendix we show that our results persists when we focus on non-elite parents applying to elite business and law programs (i.e., on parents who do not experience important gains in earnings). This suggests that our findings are not driven by an income effect.

[23] This estimate differs from the one presented in Section 6.1 because this sample is slightly different. Here we did not include private schools for which we were not able to collect information on annual fees. This includes one elite private school.

these selective college programs changes exposure to elite school graduates and the characteristics of applicants' spouses.

We rely once more on specification (1), but we use a slightly different sample. The focus of these analyses is parents, so each observation corresponds to a unique parent-application pair (i.e., individuals with multiple children appear only once in the sample). In this case we cluster standard errors at the parent level instead of at the family level.

Panel (b) of Figure VII shows that exposure to graduates from elite private schools is three times larger for students marginally admitted to an elite college program than for those marginally rejected. Increased interactions with elite individuals could affect preferences for elite private schools, but also the ability of non-elite parents to send their children to these elite institutions. They might learn through their elite peers about the admission policies of these schools, or even receive direct support from them when applying. Although we are not able to distinguish between these two possibilities, this result suggests that interactions with elite school graduates influence the preferences of individuals for this type of institutions.

The social interactions that take place in college might also be relevant in terms of the friends individuals make or in terms of the person they marry. We do not directly observe marriages, but we can identify couples through their children. Since our coverage of mothers is better than our coverage of fathers, we are able to characterize more wives than husbands. However, as shown in Table IV, independently of the gender of the parent, the probability of observing his/her spouse does not change at the cutoff.

Panel (c) of Figure VII shows that non-elite parents admitted to elite college programs are more likely to have a child with someone who attended a private school. In Table IV, we further explore this difference. We find that women and men admitted to elite college programs are more likely to marry both a graduate from a non-elite and from an elite private school. Non-elite women are 20.6% more likely to marry a graduate from an elite private school, and 22.17% more likely to marry a graduate from a non-elite private school. The same figures for non-elite men are 41.6% and 13.3%. Although none of these differences is statistically significant on its own, they become significant when we combine non-elite and elite private school graduates in one category. As expected, the

increase in the probability of marrying a private school graduate is accompanied by a similar drop in the probability of marrying someone from a subsidized school.[24]

We next study how an individual's spouse's higher education changes when that individual is admitted to an elite college program. Panel (d) of Figure VII shows that individuals marginally above the admission threshold for an elite college program are more likely to marry a graduate from these programs. In Table IV, we study this change in greater detail. We show that admission to an elite college program increases the probability of marrying someone from both an elite college and from an elite college program. According to the estimates presented in the last two rows of the table, these results are largely explained by an increased probability of marrying someone from the same college and college program to which individuals are admitted. In this case, the effects are similar for men and women.

Interestingly, being admitted to an elite college program does not seem to affect the scores that one's spouse obtained in the college admission exam. This result is consistent with our finding that admission to an elite college program does not affect children's test scores either, and highlights the relevance of the social capital dimension in our findings.

Considering that an important part of elite private schools' admission process is parents' interviews, marrying someone from an elite college program might make a couple and their children more attractive for these schools. In addition, since both parents have been more exposed to elite school graduates, this could reinforce the effects of social interactions described earlier in this section.

6.3.3 Access to Top Colleges and Neighborhood of Residence

Finally, we conclude the discussion of mechanisms by studying how admission to an elite college program affects the neighborhood where individuals live as adults (see the Online Appendix for a map describing the residential distribution of individuals in our sample). We rely on rich geographic data from Barrios-Fernández (2021). This data includes individuals completing high school between 2005 and 2012 in any of the three major regions of Chile.[25] Thus, the analyses in this section focus

[24]These changes in probability are not symmetric because there is a small number of spouses for whom we do not observe the type of school attended.

[25]These regions include the Región Metropolitana de Santiago, Región de Valparaíso, and Región del Bío-Bío. More than 60% of the students completing high school during this period lived in one of these three regions.

on parents whose children are observed in this sample.

Table VI summarizes the results of this section. To characterize a neighborhood we look at the market value of the square meter and at the share of families in the top 10% of the income distribution living in a given census block.[26] In addition, we build measures of the education trajectories of parents and children living in a radius of 200 meters. We find that children whose mothers were admitted to an elite college program live in more expensive neighborhoods and are more likely to have as neighbors families in the top 10% of the income distribution. They also have more neighbors attending both non-elite and elite private schools. They are also more likely to live near other families in which at least one parent attended an elite private school, and near families in which both parents and children attended an elite school. When focusing on fathers, most of the estimates we obtain are smaller and non statistically significant.

The results described in this section indicate that elite college programs also improve the quality of the neighborhood where their alumni and their children live. This suggest that the children of non-elite parents admitted to elite college programs not only experience an improvement in their opportunities to form social capital at the school they attend, but also in the neighborhood where they live. Interactions with their neighbors might also play a role in shaping the educational and life trajectories of these children. We know that the neighborhoods where individuals grow up affect many important outcomes, including education trajectories (see for instance Chetty et al., 2016; Chetty and Hendren, 2018a,b). Turning to the Chilean setting, Barrios-Fernández (2021) shows that close neighbors influence the decision to enroll in college. These results toghether with the other changes we document on these families' social environment reinforce Coleman (1988)'s point that "closure of the social structure"—the degree to which links within a social group are common, and ties to non-group members are less common—is critical for the development of social capital through norms, networks, and exchange relations.

[26] Census blocks correspond to an actual block in urban areas. The three regions we study contain the three largests urban areas of Chile, so in most cases these variables characterize the exact block in which these children grow up.

6.4 Admission to Other College Programs and Children Education Trajectories

The results discussed so far focus on parents' admission to a set of eight elite college programs. These programs are very selective, attract large shares of students from elite private schools, and their graduates represent an important share of top 0.1% incomes (Zimmerman, 2019). However, they are not the only selective programs attracting large shares of students from elite private schools. In this section we study wether admission to other programs also influences children's educational outcomes. Considering that there are hundreds of programs in the system, studying this independently for each of them would be impractical. Therefore, we follow instead an approach in which we characterize the admission thresholds that parents face in terms of the changes that crossing them implies in terms of exposure to elite students and peer academic quality. We compute for each college program in our sample the share of students coming from elite private schools, and the average performance of their admitted students in the college admission exam. Then, using the information on parents' target and next best options, we create for each of them a variable indicating the change in the share of elite peers they would experience in case of crossing their target admission threshold (ΔE_i). We proceed in a similar way to create a variable indicating the change they would experience in terms of the academic quality of their peers (ΔQ).[27] Using these new variables we study how gaining admission to programs with different shares of elite peers influence children's education trajectories.

Using the variable measuring differences in exposure to elite peers—i.e., ΔE—we divide the sample in six different groups G_e. The first four correspond to the quintiles I to IV of the distribution of ΔE, while the last two to the deciles IX and X. We divide the last quintile in two groups to have a better understanding of what happens for larger values of ΔE. Using these variables we estimate the following specification:

$$E_{ijcc't} = \beta_0 + \sum_{e=1}^{6} \beta_e A_{ijct} \times 1(\Delta E_{ijcc'} \in G_e) + \sum_{e=1}^{6} \gamma_e 1(\Delta E_{ijcc'} \in G_e) + f(S_{jct}; \theta) + \mu_c + \mu_{c'} + \mu_t + \varepsilon_{ijct} \tag{2}$$

[27] We proxy peer academic quality in a program with the score that students admitted to that program obtained in the college admission exam.

This specification allows the effect of crossing an admission threshold to vary depending on the change it implies in exposure to elite peers. In Figure VIII we present results of this specification and of a similar specification that includes a few additional terms to also allow the effect of admissions to vary with ΔQ. Each panel of Figure VIII focuses on a different outcome, and while the figures on the left only allows differential effects by ΔE, the figures on the right also allow for differential effects by ΔQ. The results of both specifications are very similar, suggesting that differences in exposure to elite peers are not simply capturing differences in the academic quality of peers. The estimates we obtain indicate that the changes that children experience in attendance to elite schools are proportional to the changes their parents experience in exposure to elite peers when applying to college. This is consistent with the results we discuss earlier in the paper. As shown in the panel (b) of Figure VII, being admitted to one of the eight programs we defined as elite college programs significantly increases exposure to elite peers. As before, we do not find important effects on human capital. The children of parents experiencing large changes in exposure to elite peers improve their college admission exam performance by around 3 points. This is less than 3% of a standard deviation in the exam scores distribution. Finally, we find that large changes in exposure to elite peers in college also impact children's higher education trajectories making them more likely to enroll in elite college programs. Columns (1) and (2) of Table VII confirm these results using a fully parametric specification in which the indicators of different levels of ΔE are replaced by a linear term measuring this difference. As in the case of the results presented in Figure VII, controlling by ΔQ does not significantly change the coefficient we obtain on ΔE.

We conclude this section by studying whether admission to programs outside the eight we originally defined as elite programs similarly influence children's outcomes. As these eight elite programs are included in the sample we use to estimate the results discussed in the previous paragraphs, the patterns we find for being admitted to programs that increase exposure to elite peers could be completely driven by admission to this sub set of programs. To study whether this is the case in columns (3) and (4) of Table VII we add additional terms to the specification that allow the effects to be different for the children of parents applying to one of the eight original elite college programs. In the three outcomes we study—i.e., enrollment in an elite private school, average performance in the college admission exam, and enrollment in elite college programs—we find that attending one

of these eight programs boosts the gains experienced by children in their education trajectories. However, according to our results, they are not the only programs that improve children education trajectories. Other programs in which parents are exposed to elite peers also seem to significantly affect children's outcomes, including attendance to elite private schools.

7 Renewal or reproduction?

We now return to the question posed at the start of the paper: do elite colleges reproduce or renew the elite? Our approach is to conduct a simple back-of-the-envelope calculation that combines the causal effects estimated in our regression discontinuity analysis with descriptive facts on the joint distribution of human and social capital to get a sense of the aggregate effects of elite college admission on mobility in and out of the social capital elite.

From a mobility perspective, the goal of elite universities is to expand the opportunities available to talented but potentially lower-status students. With this goal in mind, we focus our analysis on high human capital parents, defined here as those whose test scores made them eligible to attend an elite college program.[28] Because our estimates show that elite college admission has little effect on human capital mobility, we focus on the intergenerational mobility of social capital.[29]

To compute the overall effects of elite college admission on upward mobility for the children of high human capital, low social capital parents, we multiply the RD estimate of the effect of elite admission on children's social capital by the share of such parents attending an elite university to obtain a rough estimate of the share whose children joined the social capital elite because of their parents' college attendance. We then scale this value by overall upward social capital mobility in this group, so that

$$\text{Upward mobility share} = \frac{Pr(c_t = 1 | s_t = 0, h_t = 1) \times \beta_1^{rdd}}{Pr(s_{t+1} = 1 | s_t = 0, h_t = 1)},$$

[28] To compute eligibility for these programs we relied on the set of rules that the centralized admission system used to compute application scores for each elite college program and the admission cutoffs we observe for them in each application year. We define an individual eligible for an elite college program if his/her scores would have allowed him/her to be admitted to any elite college program the year he/she applied for college.

[29] Results reported in Online Appendix Table D.1 show that parents' elite attendance does not affect the rate at which children attain the eligibility-based measure of high human capital that we use in this exercise.

where c_t indicates whether an individual was admitted to an elite college program in time t, s_t indicates whether and individual has high social capital (i.e., attended an elite private school), and h_t indicates whether an individual has high human capital. The key assumption here is that we can extrapolate effects observed at the admissions margin to the average admitted student at an elite college.

We find that elite colleges explain 10.82% of all the upward social capital mobility we observe among low social capital, high human capital individuals, on a base rate of 15.51%. This is a large number. For context, it is similar to the gains we would expect to see from moving 14.5% of all high human capital mothers who attend subsidized schools to elite private schools, given the descriptive relationships between parent and child school type reported in Panel C of Figure I.

A key factor preventing the mobility effects of elite college attendance from being even larger is that in comparison to high social capital individuals, few low social capital individuals attend elite college programs. As shown in Figure IX, part of this is explained by differences in the share of students eligible for elite college programs. However, we observe a large gap in elite college programs attendance even when focusing on high human capital individuals (i..e, individuals who are eligible for at least one elite college program). 47.95% of high human capital, low social capital parents attend elite college programs, compared to 70.07% of parents with high human and social capital. Abstracting from changes in eligibility cutoffs, if low social capital parents attended elite colleges at the same rate as high social capital parents, our estimated upward mobility share would rise by 40%, up to 15.06%.

We take a similar approach to obtain an estimate of the effect of elite colleges on the persistence of the incumbent elite in the parent generation. We multiply the (negative of) the RD effect estimate on child elite high school attendance by the share of high human capital, high social capital parents who attend elite universities. We then scale that value by the overall rate of downward mobility in the high human capital, high social capital population, so that

$$\text{Downward mobility share} = -\frac{Pr(c_t = 1 | s_t = 0, h_t = 1) \times \beta_1^{rdd}}{Pr(s_{t+1} = 0 | s_t = 1, h_t = 1)}.$$

We find that downward intergenerational mobility for the children of high social capital, high human

capital individuals would be 10.15% higher in the absence of elite colleges. This is relative to a base downward mobility rate of 34.51%.

Combining these two calculations allows us to compute the share of the intergenerational beneficiaries of elite college attendance who come from families with high and low social status. A 20.34% of the children of high human capital parents who elite colleges pushed into elite social capital came from high social capital backgrounds.

How should we interpret this number? Overall, 10.92% of high human capital parents also have high social capital, so the social capital elite is overrepresented among the intergenerational beneficiaries of elite college attendance by a factor of roughly two. At the same time, 65.49% of the children of high human capital parents who make it to the next generation's social capital elite come from high social capital backgrounds, so the social capital elite are *underrepresented* among the intergenerational beneficiaries of elite college attendance by about two thirds relative to overall rates of elite reproduction.

We conclude that intergenerational effects of elite university attendance on social capital accumulation are unequal but still equalizing. That is, gains accrue disproportionately to families with high levels of social capital at baseline, but less disproportionately than the aggregate of the other pathways through which social capital is transmitted across generations.

8 Conclusion

The social role of elite colleges is a topic hotly debated both in the academic and public arenas. While there is some evidence suggesting that elite college programs could promote the renewal of the elite, recent research has shown that the returns to attending elite colleges are disproportionately high for students with an elite background. This last body of evidence suggests that elite colleges instead of opening doors to the elite, contribute to legitimate and perpetuate the current elite. However, even if the benefits of attending this type of institutions are larger for individuals who already come from the elite, they still might play an important role in renewing the elite in the long run.

This paper shows that this is indeed the case and that elite colleges open the doors of the elite for the children of non-elite talented parents. We combine intergenerationally linked data covering more than five decades of parents' and children's education trajectories in Chile with a regression discontinuity design, and show that, independent of their social background, individuals admitted to elite college programs are more likely to send their children to elite private schools, thus improving their opportunities to form social capital. Admission to an elite college program does not seem to affect children's performance on the college admission exam, but it makes them more likely to also attend an elite college. Thus, even if elite colleges do not move students from low- and middle-income households to the very top of society, they do affect their offspring's opportunities by making them more likely to follow elite education trajectories.

We explore and discuss different mechanisms that could explain our results. We show that an increase in education expenditure alone is unlikely to explain our findings. Individuals admitted to elite colleges do spend slightly more on their children's education, but while we observe an increase in the probability that they send their children to elite private schools, we do not observe major changes in the probability that they send them to similarly expensive non-elite private schools. We then show that students admitted to elite college programs are much more exposed to elite private school graduates than students marginally rejected from these programs. Social interactions with alumni of elite private schools might influence their preferences for this type of schools for their children, and eventually might facilitate being admitted to these institutions. Changes in their social environment also have an effect on the marriage market. Students admitted to an elite college program are more likely to marry a high status individual and someone also admitted to an elite college program. Considering that interviews to parents are an important part of the admission process of elite private schools, the changes that we document on the marriage market could facilitate their children's admission to these institutions by making them more attractive for the schools. Finally, we show that a parent's admission to an elite college program also influences the neighborhood in which their children grow up. Specifically, children whose mothers were admitted to an elite college program have more neighbors attending both non-elite and elite private schools. This further increases their children's opportunities to form social capital.

The descriptive evidence presented in the paper highlights the importance of parents' social capital

for children's outcomes. Even after conditioning on parents' test scores, we find that children whose parents attended an elite private school are more likely to obtain high scores in the college admission exam and to attend elite college programs than children whose parents attended subsidized and non-elite private schools. This descriptive evidence also shows that social capital is highly persistent. It is considerably more difficult for the children of high scores, low social capital parents to reach the top of the social capital distribution than for children of low scores, high social capital parents. This means that it is very difficult for the average individual in the population to catch up with the elite. Our causal estimates indicate that elite colleges make the elite accessible for the children of talented parents without an elite background, attenuating in the long run some of the differences associated to social capital. The effect of elite college programs on the overall renewal of the elite, however, is limited by the fact that few non-elite individuals are eligible for an elite college program. Even when they would be admitted , they are considerably less likely to apply to an elite college program than individuals from an elite background. This suggests that policies improving non-elite individuals' performance in the college admission exam, and encouraging them to apply to and enroll in elite college programs could increase intergenerational mobility to the top and diversify the elite.

References

Abdulkadiroğlu, A., J. Angrist, and P. Pathak (2014). The elite illusion: Achievement effects at boston and new york exam schools. *Econometrica 82*(1), 137–196.

Altmejd, A., A. Barrios-Fernández, M. Drlje, J. Goodman, M. Hurwitz, D. Kovac, C. Mulhern, C. Neilson, and J. Smith (2021). O brother, where start thou? sibling spillovers on college and major choice in four countries. *The Quarterly Journal of Economics 136*(3), 1831–1886.

Amin, V., P. Lundborg, and D.-O. Rooth (2015). The intergenerational transmission of schooling: Are mothers really less important than fathers? *Economics of Education Review 47*, 100–117.

Anger, S. and G. Heineck (2009). Do smart parents raise smart children?: The intergenerational transmission of cognitive abilities. SOEPpapers on Multidisciplinary Panel Data Research 156, DIW Berlin, The German Socio-Economic Panel (SOEP).

Barrios-Fernández, A. (2021). Neighbors' effects on university enrollment. *American Economic Journal: Applied Economics*. Forthcoming.

Behrman, J. R. and M. R. Rosenzweig (2002). Does increasing women's schooling raise the schooling of the next generation? *American economic review 92*(1), 323–334.

Black, S. E. and P. J. Devereux (2010, April). Recent developments in intergenerational mobility. Working Paper 15889, National Bureau of Economic Research.

Bourdieu, P. (1972). Matrimonial strategies in the reproduction system. In *Annals. History, social sciences*, Volume 27, pp. 1105–1127. Cambridge University Press.

Bourdieu, P. (1986). *The forms of capital*. Routledge.

Bourdieu, P. (1998). *The state nobility: Elite schools in the field of power*. Stanford University Press.

Cattaneo, M. D., M. Jansson, and X. Ma (2018). Manipulation testing based on density discontinuity. *The Stata Journal 18*(1), 234–261.

Chetty, R., J. N. Friedman, E. Saez, N. Turner, and Y. Danny (2020). Income segregation annd intergenerational mobility across colleges in the united states. *The Quarterly Journal of Economics 135*(3), 1567–1633.

Chetty, R., D. Grusky, M. Hell, N. Hendren, R. Manduca, and J. Narang (2017). The fading american dream: Trends in absolute income mobility since 1940. *Science 356*(6336), 398–406.

Chetty, R. and N. Hendren (2018a, 02). The Impacts of Neighborhoods on Intergenerational Mobility I: Childhood Exposure Effects*. *The Quarterly Journal of Economics 133*(3), 1107–1162.

Chetty, R. and N. Hendren (2018b, 02). The Impacts of Neighborhoods on Intergenerational Mobility II: County-Level Estimates*. *The Quarterly Journal of Economics 133*(3), 1163–1228.

Chetty, R., N. Hendren, M. R. Jones, and S. R. Porter (2019, 12). Race and Economic Opportunity in the United States: an Intergenerational Perspective*. *The Quarterly Journal of Economics 135*(2), 711–783.

Chetty, R., N. Hendren, and L. F. Katz (2016). The effects of exposure to better neighborhoods on children: New evidence from the moving to opportunity experiment. *American Economic Review 106*(4), 855–902.

Chetty, R., N. Hendren, P. Kline, and E. Saez (2014, 09). Where is the land of Opportunity? The Geography of Intergenerational Mobility in the United States *. *The Quarterly Journal of Economics 129*(4), 1553–1623.

Chetty, R., N. Hendren, P. Kline, E. Saez, and N. Turner (2014, May). Is the united states still a land of opportunity? recent trends in intergenerational mobility. *American Economic Review 104*(5), 141–47.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American journal of sociology 94*, S95–S120.

Dahl, G. B., D.-O. Rooth, and A. Stenberg (2020). Family spillovers in field of study. Technical report, National Bureau of Economic Research.

Dale, S. B. and A. B. Krueger (2002). Estimating the payoff to attending a more selective college: An application of selection on observables and unobservables. *The Quarterly Journal of Economics 117*(4), 1491–1527.

Dale, S. B. and A. B. Krueger (2014). Estimating the effects of college characteristics over the career using administrative earnings data. *Journal of human resources 49*(2), 323–358.

Dasgupta, P. and I. Serageldin (1999). *Social capital: A multifaceted perspective*. The World Bank.

Dustan, A. (2018). Family networks and school choice. *Journal of Development Economics 134*, 372–391.

Ge, S., E. Isaac, and A. Miller (2018). Elite schools and opting in: Effects of college selectivity on career and family outcomes. Technical report, National Bureau of Economic Research.

Grönqvist, E., B. Öckert, and J. Vlachos (2010, July). The intergenerational transmission of cognitive and non-cognitive abilities. CEPR Discussion Papers 7908, C.E.P.R. Discussion Papers.

Guiso, L., P. Sapienza, and L. Zingales (2011). Civic capital as the missing link. *Handbook of social economics 1*, 417–480.

Hastings, J. S., C. A. Neilson, and S. D. Zimmerman (2013). Are some degrees worth more than others? evidence from college admission cutoffs in chile. Technical report, National Bureau of Economic Research.

Hertz, T., J. Tamara, P. Piraino, S. Sibel, S. Nicole, and A. Verashchagina (2008). The inheritance of educational inequality: International comparisons and fifty-year trends. *The B.E. Journal of Economic Analysis & Policy 7*(2), 1–48.

Holmlund, H., M. Lindahl, and E. Plug (2011). The causal effect of parents' schooling on children's schooling: A comparison of estimation methods. *Journal of economic literature 49*(3), 615–51.

Hoxby, C. M. (2020). The productivity of us postsecondary institutions. In *Productivity in Higher Education*, pp. 31–66. University of Chicago Press.

Kaufmann, K. M., M. Messner, and A. Solis (2021). Elite higher education, the marriage market and the intergenerational transmission of human capital. Technical report, Tech. rep., Working paper.

Kirkebøen, L., E. Leuven, and M. Mogstad (2021). College as a marriage market. Technical report, National Bureau of Economic Research.

Kirkeboen, L. J., E. Leuven, and M. Mogstad (2016). Field of study, earnings, and self-selection. *The Quarterly Journal of Economics 131*(3), 1057–1111.

Lundborg, P., M. Nordin, and D. O. Rooth (2018). The intergenerational transmission of human capital: the role of skills and health. *Journal of Population Economics 31*(4), 1035–1065.

Michelman, V., J. Price, and S. D. Zimmerman (2021). Old boys' clubs and upward mobility among the educational elite. Technical report, National Bureau of Economic Research.

Mountjoy, J. and B. Hickman (2020). The returns to college (s): Estimating value-added and match effects in higher education. *University of Chicago, Becker Friedman Institute for Economics Working Paper* (2020-08).

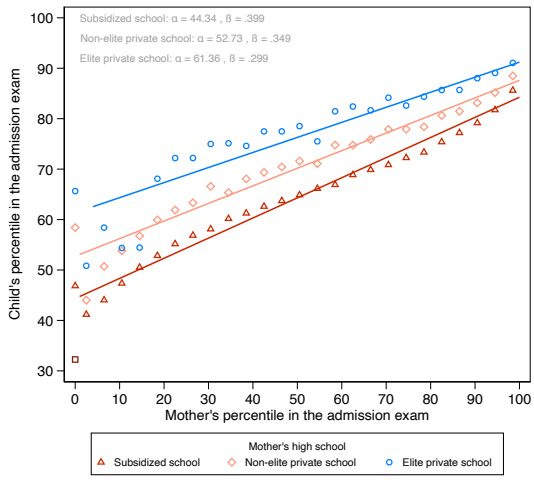
Pekkarinen, T., R. Uusitalo, and S. Pekkala Kerr (2009). School tracking and intergenerational income mobility: Evidence from the finnish comprehensive school reform. *Journal of Public Economics 93*(7-8), 965–973.

Putnam, R. D., R. Leonardi, and R. Y. Nanetti (1993). *Making democracy work*. Princeton university press.

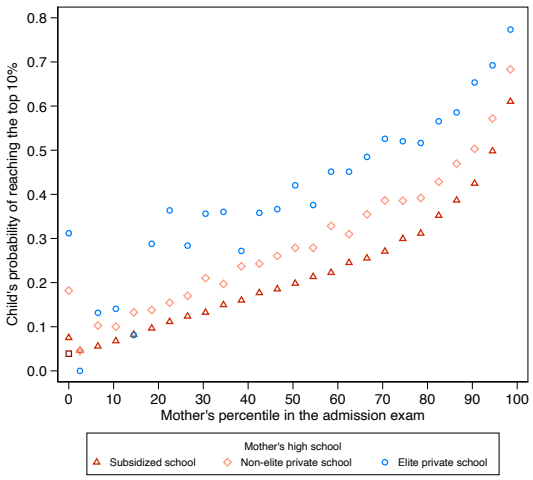
Solon, G. (1999). Chapter 29 - intergenerational mobility in the labor market. Volume 3 of *Handbook of Labor Economics*, pp. 1761–1800. Elsevier.

Zimmerman, S. D. (2019). Elite colleges and upward mobility to top jobs and top incomes. *American Economic Review 109*(1), 1–47.

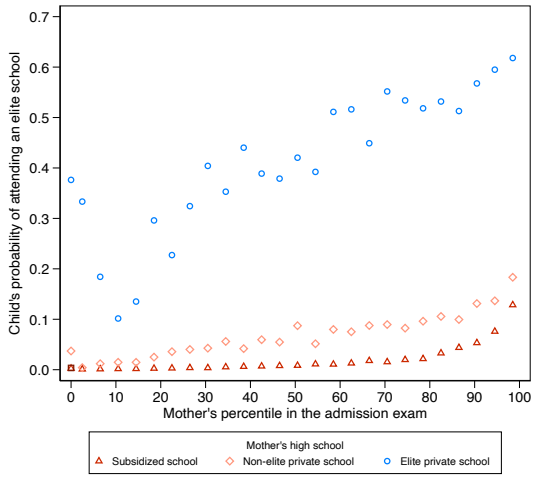
Figure I: Correlations between Mothers' Scores and Children's Outcomes



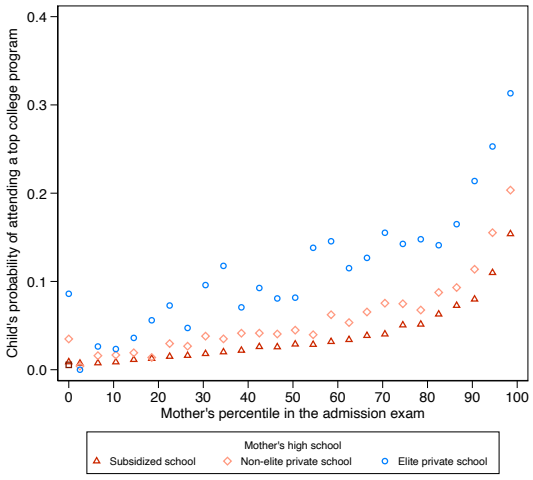
(a) Rank-rank correlations



(b) Pr. of reaching the top 10%



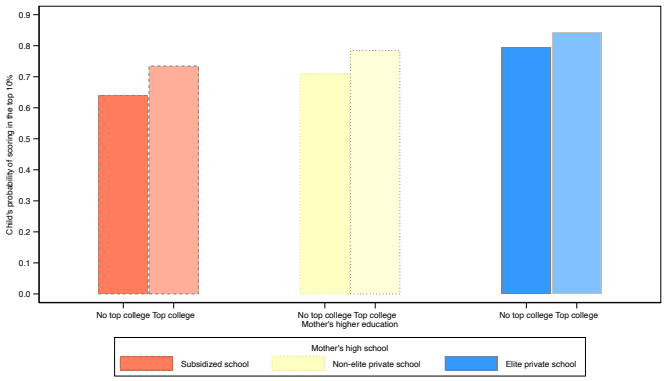
(c) Pr. of attending an elite high school



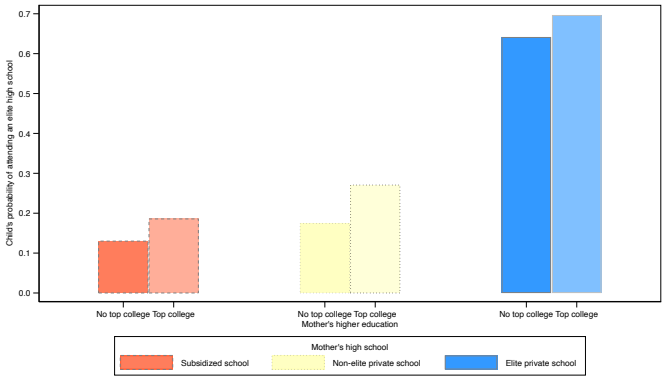
(d) Pr. of attending a top college program

This figure illustrates correlations between different children outcomes and their mothers' percentile in the university admission exam distribution. For each outcome we allow the relationship to vary depending on the type of high school attended by the mother. Panel (a) illustrates the relationship between mothers' and children's percentiles in the university admission exam. Panel (b) focuses on the probability that a child reaches the top 10% in the university admission exam distribution; panel (c) on the probability that a child attends an elite school; and panel (d) on the probability that a child attends a top college program. Zero absorb cases in which the score is not observed (i.e., the child or the mother did not take the exam). The linear relations illustrated in panel (a) ignore zeros. Maroon circles in all panels illustrate cases in which we do not observe mothers' high school and scores.

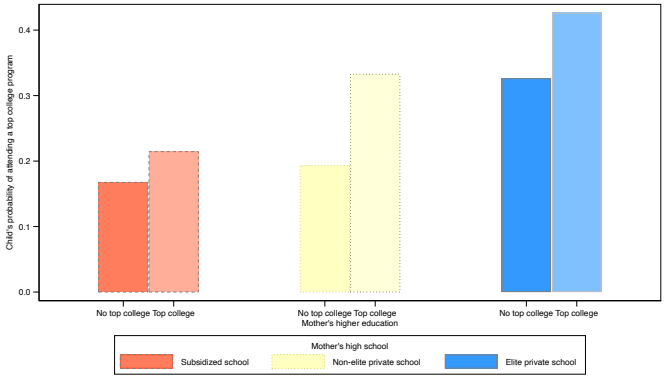
Figure II: Differences in Children's Outcomes by Top 1% Mothers' Education Trajectory



(a) Pr. of scoring in the top 10%



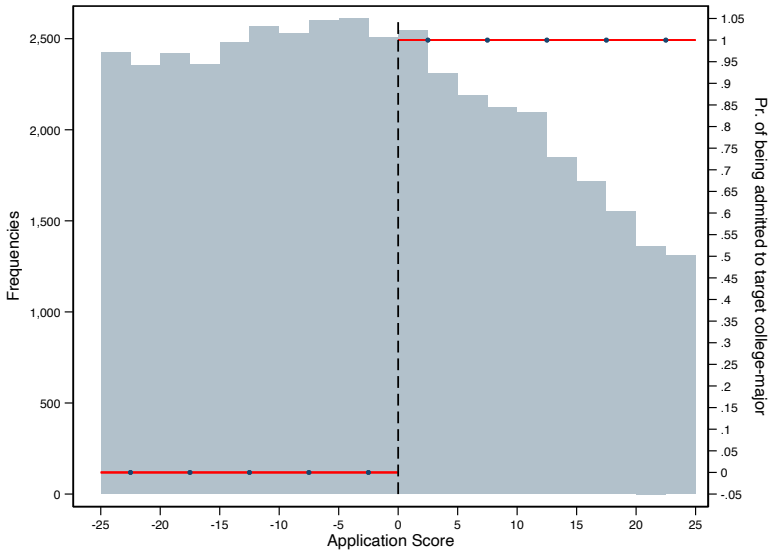
(b) Pr. of attending an elite high school



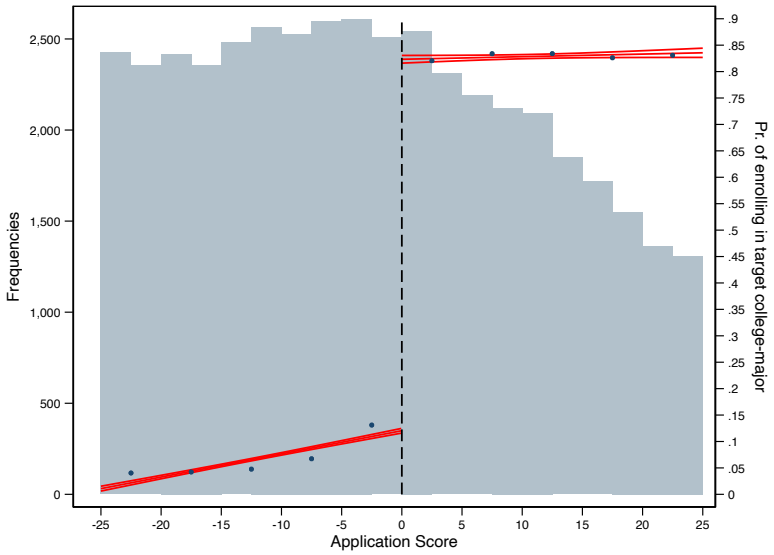
(c) Pr. of attending a top college programl

This figure illustrates differences in children's outcomes depending on their mothers' education trajectories. All mothers in the sample used to build this figure scored in the top 1% of the university admission exam.The colors of the bars change depending on the type of high school attended by the mother. Dark bars illustrate means for children whose mothers did not attend a top college program. Light bars illustrate the means for children whose mothers attended a top college program. Panel (a) focuses on the probability that a child reaches the top 10% in the university admission exam distribution; panel (b) on the probability that a child attends an elite high school; and panel (c) on the probability that a child attends a top college program.

Figure III: Pr. of Receiving an Offer and Enrolling in an Elite College Program around the Admission Cutoff



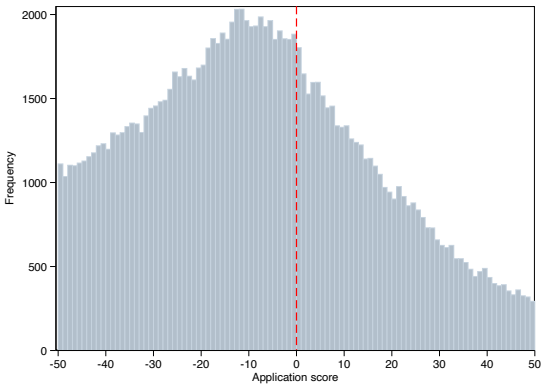
(a) Pr. of receiving an offer to the target college program



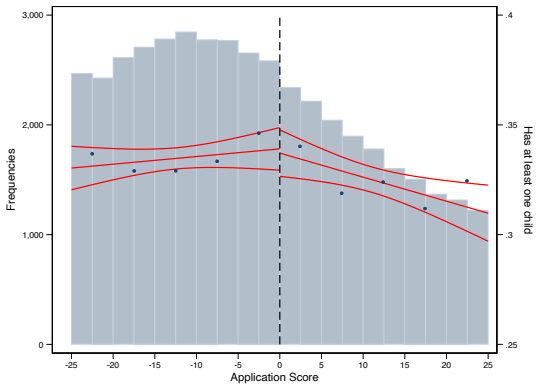
(b) Pr. of enrolling in the target college program

Panel A illustrates how the probability of receiving an offer to an elite college program through the centralized admission system changes around the admission cutoff. Panel B, instead, illustrates the change in the probability of enrolling in the target elite college program. Since we only observe actual enrollment for recent years, this figure was built using application years 2006 to 2017. The blue bars in the background illustrate the distribution of the running variable (i.e., application scores). Blue dots represent outcome means at different levels of the running variable. The red lines correspond to linear regressions and their 95% confidence intervals and were independently estimated at each side of the cutoff.

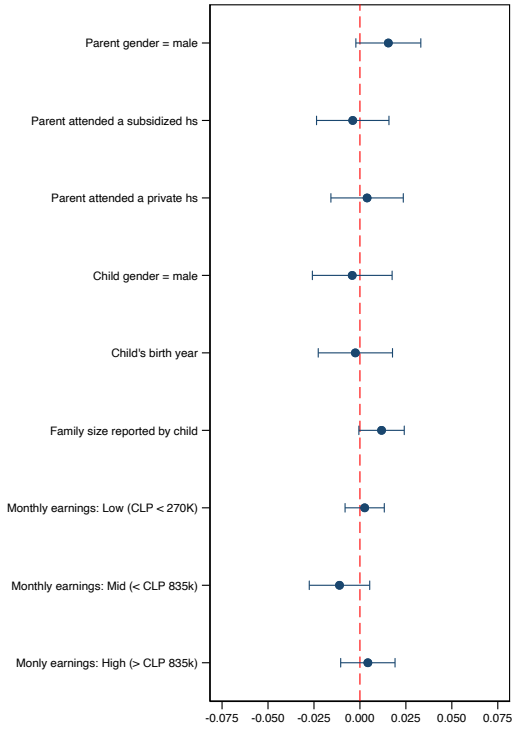
Figure IV: Distribution of Application Score around Admission Cutoffs, Discontinuities in Potential Confounders, and Fertility Effects



(a) Distribution of application score



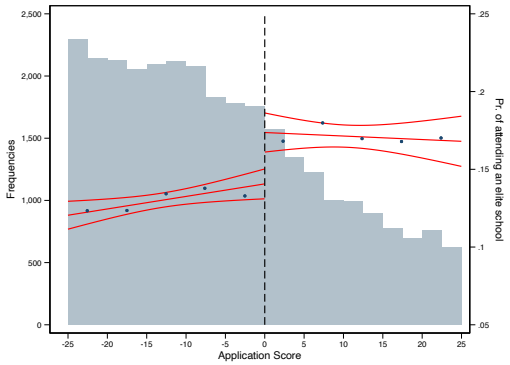
(b) Pr. of having a child



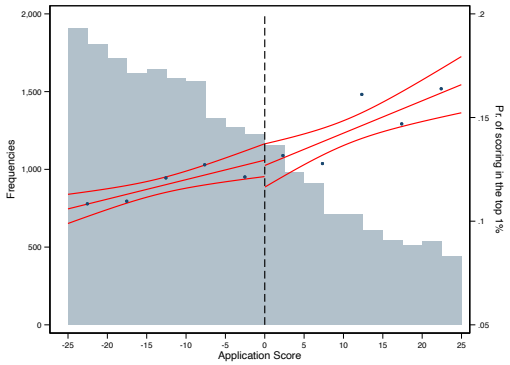
(c) Discontinuities in potential confounders

Panel A illustrates the distribution of application scores of individuals applying to elite college programs between 1977 and 2003 (i.e., the years in which we observe parents). Panel (c) uses the same sample to study how admission to an elite college program affects the probability of observing an applicant's child in our sample. Finally, panel (b) focuses on the sample of parents (i.e., applicants for whom we observe at least one child) to study discontinuities in potential confounders at the cutoff. The estimates in Panel (b) come from running specification 1 but using the potential confounders as outcomes. Blue dots represent point estimates, while blue lines 95% confidence intervals.

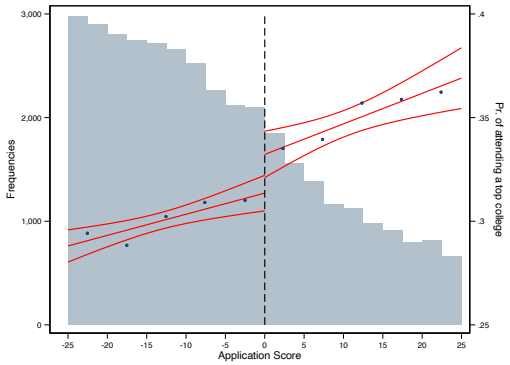
Figure V: Effect of Non-Elite Parent's Admission into a Top College Program on their Children's Education Trajectories



(a) Pr. of attending an elite school



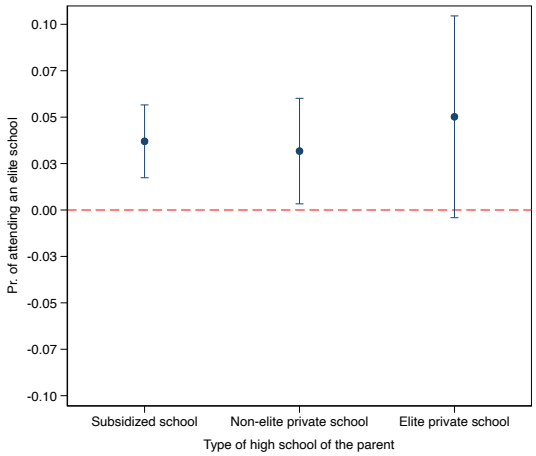
(b) Pr. of scoring in the top 1%



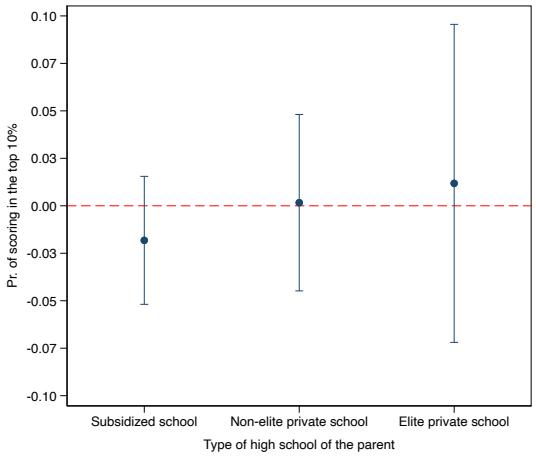
(c) Pr. of attending an elite college

This figure illustrates how the education trajectories of the children of non-elite parents change when one of their parents gains admission to a top college program. Panels (a) focuses on the probability that the children attend an elite high school, panel (b) on the probability that they score in the top 1% of the college admission exam distribution, and panel (c) on the probability that the children attend a top college (i.e., University of Chile or Catholic University). The running variable corresponds to the parents' application score to top college programs. It is centered around the admission cutoff of their target program. Each dot represents the share of children going to university at different levels of parents' application score. The red lines correspond to linear regressions and their 95% confidence intervals and were independently estimated at each side of the cutoff. The blue bars in the background illustrate the distribution of the parents' scores in the estimation sample.

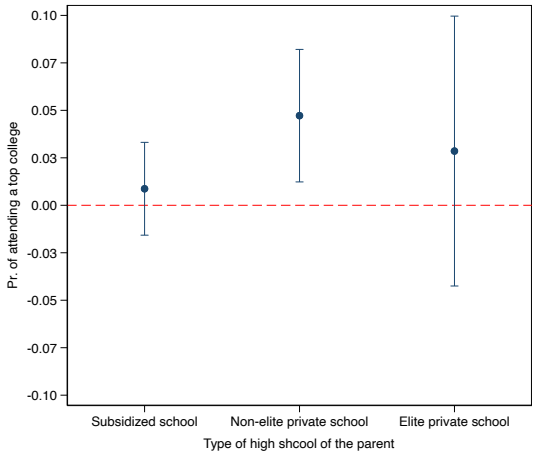
Figure VI: Effect of Parents' Admission into a Top College Program on their Children Education Trajectories by Parents' type of High School



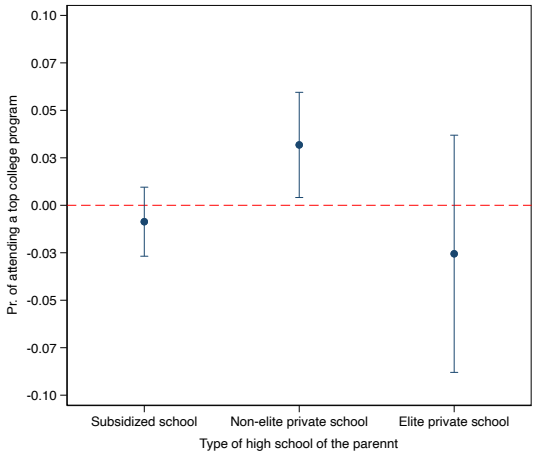
(a) Pr. of attending an elite school



(b) Pr. of reaching the top 1%



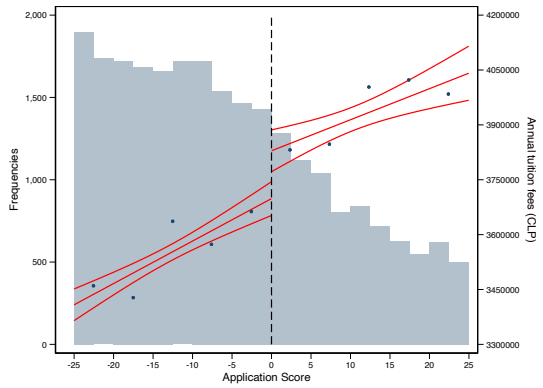
(c) Pr. of attending a top college



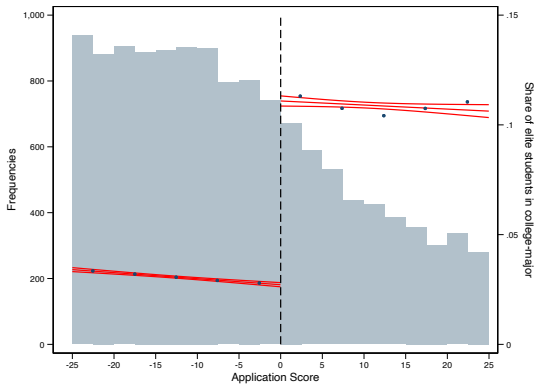
(d) Pr. of attending a top college program

This figure illustrates estimates from specification (1) independently estimated in the sample of parents from subsidized, non-elite private, and elite private high schools. The blue dots represent the estimated coefficients for the effect of having a parent admitted into a top college program. The blue lines illustrate 95% confidence intervals.

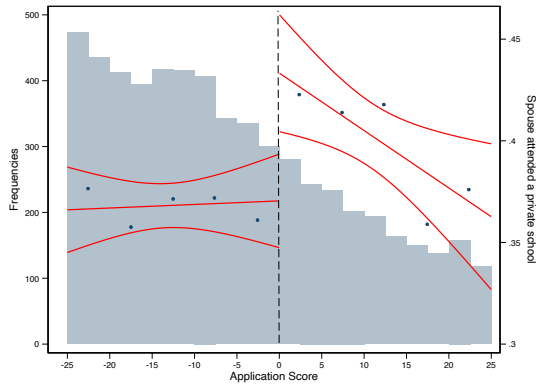
Figure VII: Effect of Admission to an Elite College Program on College Peers, Spouse's Education, and Expenditure on Children's Schools



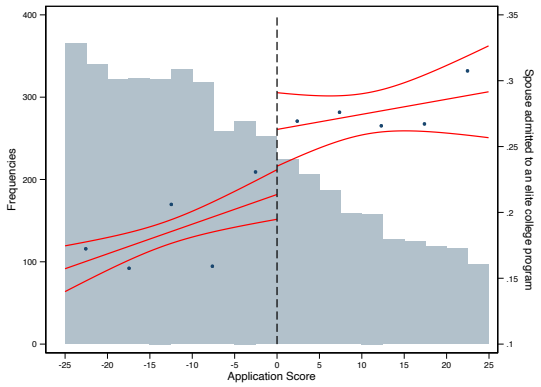
(a) Tuition fees of children's schools



(b) Share of college peers from elite schools



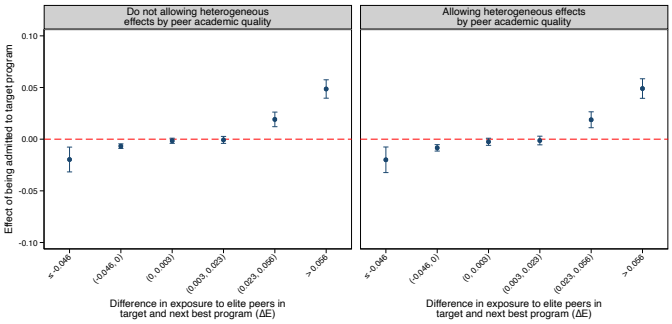
(c) Spouse graduated from any private school



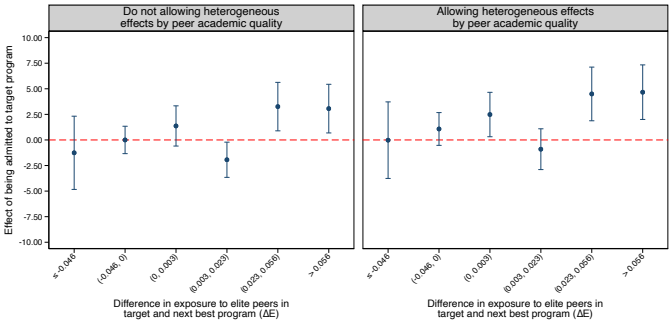
(d) Spouse admitted to an elite college program

This figure illustrates how admission to a top college program affects expenditure on children education, college peers, and spouse's education. Panel (a) studies changes in the annual fees paid in the children's schools, panel (b) changes in the share of college peers who attended an elite school, panel (c) changes in the probability of having a child with a graduate from a private school, and panel (d) changes in the probability of having a child with someone admitted to an elite college program. The running variable corresponds to parents' application score to top college programs. It is centered around the admission cutoff of their target program. Each dot represents the share of children going to university at different levels of parents' application score. The red lines correspond to linear regressions and their 95% confidence intervals and were independently estimated at each side of the cutoff. The blue bars in the background illustrate the distribution of the parents' scores in the estimation sample.

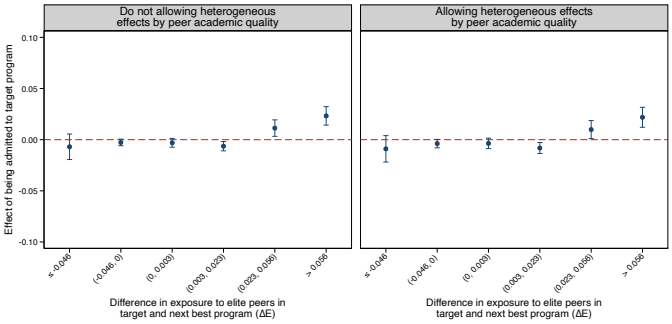
Figure VIII: Non-Elite Parents' Admission to Target Program and Children's Ed. Trajectories



(a) Pr. of attending an elite private school



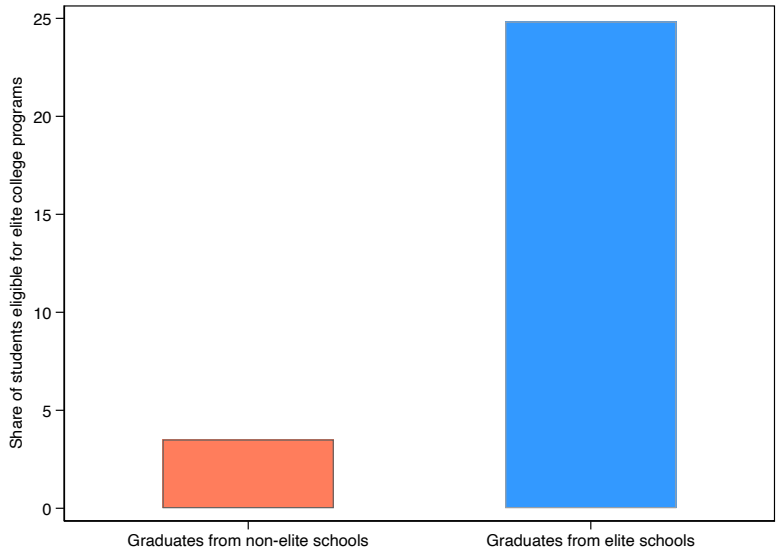
(b) Avg. score in college admission exam



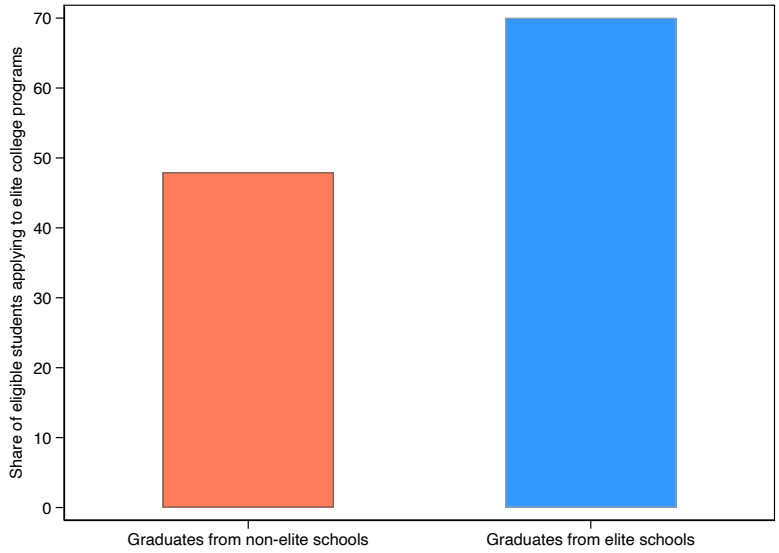
(c) Pr. of attending an elite college program

This figure illustrates how the education trajectories of the children of non-elite parents change when one of their parents gains admission to their target college program. Panel (a) focuses on the probability that the children attend an elite private school, panel (b) on the average score they obtain in the college admission exam, and panel (c) on the probability that the children attend an elite college program. The effect of admission is allowed to vary depending on the difference in the share of elite peers in the target and next best college program of a parent. We compute the difference between the share of elite peers in the target and next best options of parents (ΔE), and then use this difference to create six groups. The first four groups correspond to the quintiles I to IV of ΔE. The last two correspond to the deciles IX and X of ΔE. Each dot represents the effect that being admitted to a target college program has on children outcomes depending on the size of ΔE. The figures in the right also allow the effect to vary depending on the difference between a parent target and next best programs in terms of peer academic quality. Peer academic quality is measured by the average score that admitted students obtain in the college admission exam. The running variable corresponds to parents' application score to their target college program. The specification also includes parents' ßapplication year, target program, and next best program fixed effects.

Figure IX: Share of high school graduates qualifying and applying to elite college programs



(a) Share of students eligible for a elite college program



(b) Share of eligible students applying to an elite college program

This figure illustrates the share of parents who were eligible and applied to elite college programs. Panel (a) compares the shares of eligible individuals graduating from non-elite and elite schools. Panel (b) the shares of eligible students from non-elite and elite schools actually applying to these programs.

Table I: Summary Statistics

A. Intergenerational Correlations Sample

	All high school graduates	High school graduates registered for the admission exam	High school graduates registered for the admission exam and reporting parents id	High school graduates registered for the admission exam with parents also taking the exam
	(1)	(2)	(3)	(4)
A.1 Demographic characteristics				
Female = 1	0.52	0.53	0.54	0.52
Age in grade 12	17.88	17.83	17.82	17.79
A.2 Academic characteristics				
High school track: academic	0.57	0.65	0.66	0.84
High school gpa	5.60	5.68	5.69	5.80
Registers for the exam	0.82	1.00	1.00	1.00
Takes the exam	0.75	0.89	0.90	0.96
Math score	499.46	499.87	503.18	544.88
Reading score	495.32	495.68	499.04	539.93
Attends college	0.39	0.47	0.48	0.65
Attends en elite college	0.01	0.02	0.02	0.03
A.3 Socioeconomic characteristics				
Public school	0.44	0.40	0.39	0.25
Voucher school	0.47	0.49	0.50	0.53
Non-elite private school	0.08	0.09	0.10	0.19
Elite private school	0.01	0.01	0.01	0.03
Low income ($< CLP270,000$)	0.52	0.49	0.47	0.28
Mid income ($CLP270,000 - CLP834,000$)	0.34	0.36	0.37	0.42
High income ($> CLP834,000$)	0.14	0.15	0.16	0.30
Parental Ed. = Less than high school	0.15	0.13	0.12	0.00
Parental Ed. = Completed high school	0.52	0.52	0.51	0.36
Parental Ed. = Completed a vocational he degree	0.14	0.15	0.15	0.25
Parental Ed. = Completed a university degree	0.19	0.20	0.21	0.40
Observations	2955112	2430011	2173416	980366

B. Elite Colleges Sample

	All college applicants (1977 - 2003)	College applicants with children	Elite college applicants with children (below the admission cutoff)	Elite college applicants with children (above the admission cutoff)
	(1)	(2)	(3)	(4)
B.1 Demographic characteristics				
Female = 1	0.46	0.67	0.50	0.51
B.2 Academic characteristics				
Math score	610.22	599.44	670.91	696.83
Reading score	583.82	574.68	656.25	676.63
Admitted to any college	0.70	0.65	0.83	1.00
Admitted to an elite college	0.04	0.03	0.06	1.00
B.3 Socioeconomic characteristics				
Public school	0.44	0.48	0.31	0.25
Voucher school	0.26	0.23	0.15	0.13
Non-elite private school	0.22	0.19	0.35	0.38
Elite private school	0.03	0.02	0.08	0.13
Observations	878240	360492	8473	6603

Notes: Panel A presents summary statistics for students reaching their high school senior year between 2003 and 2017. Column (a) describes all the students in the sample, column (b) those who register for the university admission exam after completing high school, column (c) students who report their parents id, and column (d) students with at least one parent taking the university admission exam between 1967 and 2002. Panel B presents summary statistics for individuals applying to college between 1977 and 2002. Column (a) describes the whole sample, column (b) those for whom we find children, and column (c) and (d) those who in addition to having children applied to top college programs and were near the admission cutoff. Column (c) focuses on those who did not gain admission, while column (d) on those who did gain admission.

Table II: Parents' Admission to a Top College Program and Children Education Trajectories

	Non-elite parents (1)	Elite parents (2)	All parents (3)	Non-elite parents (4)	Elite parents (5)	All parents (6)
	Panel A - Effects on type of school					
	Pr. of attending an elite private school			Pr. of attending a non-elite private school		
Parent admitted to target program = 1	0.0350***	0.0502*	0.0572***	-0.0381***	-0.0569**	-0.0566***
	(0.0084)	(0.0277)	(0.0088)	(0.0108)	(0.0272)	(0.0104)
Observations	30171	4014	34189	30171	4014	34189
Counterfactual mean	0.147	0.673	0.202	0.673	0.315	0.636
	Panel B - Effects on human capital					
	Pr. of scoring in the top 1%			Avg. score in the admission exam		
Parent admitted to target program = 1	-0.0013	-0.0029	-0.0011	-2.6338	7.8403	-1.5021
	(0.0094)	(0.0495)	(0.0091)	(2.6118)	(7.5318)	(2.4649)
Observations	22745	2409	25159	19939	2005	21950
Counterfactual mean	0.121	0.205	0.128	633.577	667.824	636.484
	Panel C - Effects on type of college and program					
	Pr. of attending an elite college			Pr. of attending an elite college program		
Parent admitted to target program = 1	0.0214**	0.0286	0.0259***	0.0061	-0.0255	0.0061
	(0.0102)	(0.0362)	(0.0098)	(0.0077)	(0.0319)	(0.0075)
Observations	22745	2409	25159	22745	2409	22745
Counterfactual mean	0.302	0.439	0.315	0.135	0.236	0.145

Notes: The table presents estimates obtained from specification (1) that illustrate the effect of elite and non-elite parents admission to an elite college program on their children education trajectories. Panel A focuses on children old enough to have enrolled in primary education (i.e., born before 2014). Panels B and C focus on children old enough to have applied to college (i.e., born before 2001). This specification controls by a linear polynomial of the running variable—i.e., parents application score—which slope is allowed to change at the cutoff. The specification also includes parents' application-year fixed effect, parents' target program fixed effect, and parents' next best program fixed effect. In all cases a bandwidth of 25 points is used. Standard errors clustered at the family level are presented in parenthesis.

Table III: Non-elite Mothers and Fathers Admission to a Top College Program and Children Education Trajectories

	All children (1)	Daughters (2)	Sons (3)	All children (4)	Daughters (5)	Sons (6)
	Panel A - Type of school attended					
	Pr. of attending an elite private school			Pr. of attending a non-elite private school		
Non-elite mother admitted to target program = 1	0.0371***	0.0433**	0.0326*	-0.0415***	-0.0563***	-0.0233
	(0.0123)	(0.0171)	(0.0179)	(0.0158)	(0.0228)	(0.0223)
Observations	14215	7077	7052	14215	7077	7052
Counterfactual mean	0.161	0.159	0.165	0.714	0.715	0.714
Non-elite father admitted to target program = 1	0.0297**	0.0267	0.0314*	-0.0336**	-0.0308	-0.0368*
	(0.0116)	(0.0166)	(0.0167)	(0.0272)	(0.0388)	(0.0396)
Observations	15939	7871	7978	15939	7871	7978
Counterfactual mean	0.135	0.135	0.137	0.636	0.626	0.646
	Panel B - Human capital					
	Pr. of scoring in the top 1%			Avg. score in the admission exam		
Non-elite mother admitted to target program = 1	0.0434***	0.0664***	0.0144	8.7349**	8.1741	6.6364
	(0.0167)	(0.0226)	(0.0252)	(4.1194)	(5.7448)	(5.9517)
Observations	8453	4179	4189	6998	3433	3489
Counterfactual mean	0.141	0.107	0.175	648.215	641.581	654.704
Non-elite father admitted to target program = 1	-0.0242**	-0.0143	-0.0332*	-7.1969**	-9.3604**	-3.7154
	(0.0115)	(0.0251)	(0.0177)	(3.3881)	(4.6737)	(5.0024)
Observations	14270	7069	7112	12913	6426	6397
Counterfactual mean	0.109	0.081	0.137	625.322	619.087	631.773
	Panel C - Type of higher education institution attended					
	Pr. of attending a top college			Pr. of attending a top program		
Non-elite mother admitted to target program = 1	0.0467***	0.0559**	0.0335	0.0336**	0.0178	0.0489**
	(0.0179)	(0.0259)	(0.0254)	(0.0146)	(0.0189)	(0.0221)
Observations	8453	4179	4189	8453	4179	4189
Counterfactual mean	0.361	0.373	0.350	0.171	0.127	0.214
Non-elite father admitted to target program = 1	0.0095	0.0167	-0.0007	-0.0073	-0.0008	-0.0156
	(0.0123)	(0.0176)	(0.0175)	(0.0089)	(0.0111)	(0.0140)
Observations	14270	7069	7112	14270	7069	7112
Counterfactual mean	0.270	0.279	0.261	0.115	0.086	0.144

Notes: The table presents estimates obtained from specification (1) that illustrate the effect of non-elite parents admission to a top college program on their children education trajectories. Each row corresponds to an independent specification. At the top of each panel we focus on the effect of mothers, and at the bottom on the effect of fathers. Panel A focuses on children old enough to attend primary education (i.e., born before 2014). Panels B and C focus on children old enough to apply to college (i.e., born before 2001). This specification controls by a linear polynomial of the running variable—i.e., parents application score—which slope is allowed to change at the cutoff. The specification also includes parents' application-year fixed effect, parents' target program fixed effect, and parents' next best program fixed effect. In all cases a bandwidth of 25 points is used. Standard errors clustered at the family level are presented in parenthesis.

Table IV: Parents' admission to elite college programs, peers' eliteness, and marriage market (Non-elite parents)

	All Parents (1)	Mothers (2)	Fathers (3)
Share of elite students in college program			
Parent admitted into target program = 1	0.0872***	0.0985***	0.0718***
	(0.0017)	(0.0025)	(0.0023)
Counterfactual mean	0.030	0.028	0.032
Spouse observed = 1			
Parent admitted into target program = 1	0.0043	0.0163	-0.0136
	(0.0145)	(0.0179)	(0.0201)
Counterfactual mean	0.584	0.366	0.821
Observations	12847	6760	6005
Spouse attended an elite school = 1			
Parent admitted into target program = 1	0.0217	0.0165	0.0251
	(0.0144)	(0.0299)	(0.0166)
Counterfactual mean	0.068	0.086	0.060
Spouse attended a non-elite private school = 1			
Parent admitted into target program = 1	0.0468*	0.0672	0.0428
	(0.0262)	(0.0511)	(0.0312)
Counterfactual mean	0.317	0.303	0.323
Spouse attended any private school = 1			
Parent admitted into target program = 1	0.0671**	0.0837	0.0659**
	(0.0271)	(0.0532)	(0.0323)
Counterfactual mean	0.385	0.389	0.383
Spouse attended a subsidized school = 1			
Parent admitted into target program = 1	-0.0656**	-0.0837	-0.0635**
	(0.0271)	(0.0532)	(0.0323)
Counterfactual mean	0.618	0.611	0.622
Spouses' performance in admission exam			
Parent admitted into target program = 1	-1.0276	-3.1834	0.9484
	(5.6041)	(9.0125)	(6.8689)
Counterfactual mean	576.681	625.028	553.527
Spouse was admitted into an elite college = 1			
Parent admitted into target program = 1	0.0656**	0.0612	0.0751**
	(0.0306)	(0.0534)	(0.0382)
Counterfactual mean	0.427	0.454	0.415
Spouse was admitted into an elite program = 1			
Parent admitted into target program = 1	0.0562**	0.0839	0.0440*
	(0.0251)	(0.0512)	(0.0265)
Counterfactual mean	0.153	0.265	0.090
Spouse was admitted into target college = 1			
Parent admitted into target program = 1	0.0619***	0.1051**	0.0453*
	(0.0230)	(0.0488)	(0.0240)
Counterfactual mean	0.094	0.159	0.059
Spouse was admitted into target program = 1			
Parent admitted into target program = 1	0.0764***	0.1179***	0.0563***
	(0.0207)	(0.0443)	(0.0216)
Counterfactual mean	0.056	0.093	0.036
Observations	5727	1611	4051

Notes: The table presents estimates obtained from specification (1) on the sample of mothers and fathers applying to top college programs. The first column focuses on all mothers and parents within the bandwidth, while the rest of the columns focus on mothers and fathers for whom the spouse is observed. Each row studies how admission into a top college program changes the characteristics of the spouse. The specification controls by a linear polynomial of the running variable—i.e., a parent application score—which slope is allowed to change at the cutoff. It also includes application-year fixed effect, target program fixed effect, and next best program fixed effect. Each observation corresponds to an individual-program-application. In all cases a bandwidth of 25 points is used. Standard errors clustered at each parent level are presented in parenthesis.

Table V: Non-elite Parents Admission to Elite College Programs and Changes in Expenditure on their Children's Schools

	Pr. of observing tuition fees (1)	Tuition Fees (CLP) (2)	Pr. of attending an expensive school (3)	Pr. of attending an expensive elite school (4)	Pr. of attending an expensive non-elite school (5)
Parent admitted to target program = 1	0.0051	141,090***	0.0430***	0.0422***	0.0007
	(0.0090)	(54,361)	(0.0121)	(0.0094)	(0.0105)
Counterfactual mean	30171	24662	24662	24662	24662
Observations	0.817	3,512,941	0.337	0.154	0.183

Notes: The table presents estimates obtained from specification (1) on the sample of children whose mothers or fathers apply to elite college programs and who attend schools for which we observe annual tuition fees. Expensive schools are defined as those charging the same or more than the cheapest elite private school (i.e., CLP 4,790,000). This means that we classify all elite schools in our sample as expensive schools. The specification we use controls for a linear polynomial of the running variable—i.e., a parent application score—which slope is allowed to change at the cutoff. The specification also includes parents' application-year fixed effect, parents' target program fixed effect, and parents' next best program fixed effect. In all cases a bandwidth of 25 points is used. Standard errors clustered at the family level are presented in parenthesis.

Table VI: Children neighborhood and parents' admission to elite college programs (Non-elite parents)

	UF m^2	Share ABC1	Private school children	Private school parents	Private school family	Elite school children	Elite school parents	Elite school family
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Panel A - Mothers				
Parent admitted in target major	3.2880**	0.0425***	7.4837*	2.4137**	2.8349**	2.6195*	1.1186**	0.7975**
	(1.4811)	(0.0154)	(3.9106)	(1.2091)	(1.1557)	(1.5238)	(0.5061)	(0.4016)
Observations	2896	2896	3271	3271	3271	3271	3271	3271
Counterfactual outcome mean	51.3595	0.570	64.907	20.571	17.090	13.952	4.249	2.689
				Panel B - Fathers				
Parent admitted in target major	1.5745	-0.0009	-5.7621**	-1.3732*	-1.1898	0.9418	-0.2398	0.0830
	(1.1554)	(0.0133)	(2.5488)	(0.8067)	(0.8013)	(1.0159)	(0.3279)	(0.2576)
Observations	7387	7387	7387	7387	7387	7387	7387	7387
Counterfactual outcome mean	47.822	0.516	55.656	18.306	14.892	12.212	3.696	2.374

Notes: The table presents estimates obtained from specification (1) on the sample of children whose mothers or fathers apply to top college programs and who register for the university admission exam between 2003 and 2011 (i.e., the subsample of students for whom we observe the address where they lived the last year of high school). Each column illustrates how having a parent admitted into a top college program changes the characteristics of the neighborhood in which children live. This specification controls by a linear polynomial of the running variable—i.e., a parent application score—which slope is allowed to change at the cutoff. The specification also includes parents' application-year fixed effect, parents' target program fixed effect, and parents' next best program fixed effect. In all cases a bandwidth of 25 points is used. Standard errors clustered at the family level are presented in parenthesis.

Table VII: Non-elite Parents' Admission to Target Program and Children Education Trajectories

	Heterogeneous effects by Δ in:			
	Share of elite peers	Share of elite peers and peer quality	Share of elite peers and elite college program indicator	Share of elite peers, peer quality, and elite college program indicator
	(1)	(2)	(3)	(4)
	Panel A - Effects on pr. of attending an elite private school			
Parent admitted in target major=1	-0.0036**	-0.0024	-0.0047***	-0.0035**
	(0.0015)	(0.0015)	(0.0015)	(0.0015)
Parent admitted in target major=1 $\times \Delta E$	0.3783***	0.3940***	0.3095***	0.3287***
	(0.0326)	(0.0339)	(0.0386)	(0.0401)
Parent admitted in target major=1 $\times \Delta Q$		-0.0001***		-0.0001***
		(0.0000)		(0.0000)
Parent admitted in target major=1 $\times$ Elite Program			0.0192***	0.0203***
			(0.0061)	(0.0061)
Parent admitted in target major=1 $\times$ Elite Program $\times \Delta E$			0.0964	0.0825
			(0.0755)	(0.0759)
Observations	381721	381721	381721	381721
	Panel B - Effects on average score in admission exam			
Parent admitted in target major=1	0.9924	1.2475*	0.8332	1.1161
	(0.6769)	(0.6946)	(0.6819)	(0.6983)
Parent admitted in target major=1 $\times \Delta E$	22.7805***	26.4431***	24.3778**	29.3673***
	(8.5399)	(8.8994)	(10.5798)	(10.9776)
Parent admitted in target major=1 $\times \Delta Q$		-0.0193		-0.0223*
		(0.0133)		(0.0134)
Parent admitted in target major=1 $\times$ Elite Program			3.5804**	3.8751**
			(1.6578)	(1.6657)
Parent admitted in target major=1 $\times$ Elite Program $\times \Delta E$			-23.3084	-26.9031
			(18.5174)	(18.6252)
Observations	284054	284054	284054	284054
	Panel C - Effects on pr. of attending an elite college program			
Parent admitted in target major=1	-0.0029	-0.0024	-0.0039**	-0.0033*
	(0.0019)	(0.0019)	(0.0019)	(0.0019)
Parent admitted in target major=1 $\times \Delta E$	0.1619***	0.1689***	0.1191***	0.1287***
	(0.0324)	0.0339)	(0.0372)	(0.0388)
Parent admitted in target major=1 $\times \Delta Q$		-0.0000		-0.0000
		(0.0000)		(0.0000)
Parent admitted in target major=1 $\times$ Elite Program			0.0184***	0.0190***
			(0.0067)	(0.0067)
Parent admitted in target major=1 $\times$ Elite Program $\times \Delta E$			0.0279	0.0209
			(0.0766)	(0.0770)
Observations	322092	322092	322092	322092

Notes: The table presents estimates for the effect of non-elite parents admission to their target college program on their children education trajectories. The specifications we use in these exercises allow the effect to vary depending on the difference between parents' target and next best programs in elite peers (column 1) and in the academic quality of peers (column 2). Column 3 allows the effect to be different for the sub set of elite programs we use in the rest of the paper. Finally, column 4 allows heterogeneous effects in the three dimensions explored in the first three columns. Panel A focuses on children old enough to have enrolled in primary education (i.e., born before 2014). Panels B and C focus on children old enough to have applied to college (i.e., born before 2001). This specification controls by a linear polynomial of the running variable—i.e., parents application score—which slope is allowed to change at the cutoff. The specification also includes parents' application-year fixed effect, parents' target program fixed effect, and parents' next best program fixed effect. In all cases a bandwidth of 25 points is used. Standard errors clustered at the family level are presented in parenthesis.