Closing Gaps in Higher Education Trajectories: The Effect of Targeted Information and Mentorship[†]

Andrés Barrios-Fernández Josefina Eluchans-Errázuriz

Fernanda Ramírez-Espinoza

February 22, 2024

Latest Version

First Draft (Do not circulate)

Abstract

This paper exploits a large-scale RCT to evaluate in a unified setting—i.e., Chile—two interventions designed to help high school senior students to decide about their post-secondary educational trajectories. Consistently with previous research, we find that providing information alone improves students' understanding of the higher education system but does not make a difference in their probability of applying to or enrolling in college. In contrast, providing information and mentoring increases students' probability of registering and taking the college admission exam by 12.8 percentage points, of applying for funding by 10.3 percentage points, and of enrolling in higher education by 8 percentage points. The design of the RCT—i.e., offering the mentorship program to only a few students in each class—also allows us studying spillovers of the program on the classmates and friends of treated students. We find evidence of large social spillovers. Despite not improving their understanding of the higher education system, the classmates of students in the mentorship program become 5 percentage points more likely to register and take the college admission exam. Nevertheless, they do not become more likely to apply to or enroll in higher education. Close friends of treated students do improve their understanding of the higher education system and become 5 percentage points more likely to apply to university and 4 percentage points more likely to enroll in higher education. These results shed some light on the mechanisms behind peer effects in educational choices and suggest that in some settings social spillovers multiply the effect of policies designed to expand access to higher education.

JEL Codes: I24, D64, J62

Keywords: Information, mentoring, social spillovers, access to higher education.

[†] We thank Fundación Luksic for their support with the implementation of the interventions that we evaluate in this study. We especially thank Fernanda Orellana and Pablo Guarda for their work coordinating the implementation team. For granting us access to the administrative data that we use in this project, we thank the Chilean Ministry of Education and DEMRE. Finally, we thank Gonzalo Gonzalez for his excellent research assistance. Andrés Barrios-Fernández acknowledges partial support from ANID through FONDECYT grant 11230169 and from the Spencer Foundation through grant 10039719. The RCT and pre-analysis plan were registered in the AEA RCT Registry in April 2021. RCT ID: AEARCTR-0007303

1 Introduction

Despite large governmental efforts, postsecondary educational trajectories remain unequal across social groups. Students from disadvantaged backgrounds are less likely to enroll in higher education, and those who enroll typically attend less selective institutions. Although part of these differences can be attributed to a worse academic preparation and to credit constraints, they persist even when comparing similarly talented individuals who, in case of needing it, would receive generous funding (Barrios-Fernández, 2022; Hoxby and Avery, 2013). There is evidence that the lack of information, support, and encouragement play an important role in schooling decisions (Carrell and Sacerdote, 2017a). This evidence has inspired multiple interventions designed to tackle these frictions (Lavecchia et al., 2016, discusses studies evaluating some of these interventions). Low-touch interventions—such as the provision of information through letters, emails, or websites—typically do not generate large changes in students' trajectories. In contrast, high-touch interventions—such as mentoring or in-person application assistance—have shown to be very effective. High-touch interventions, however, are expensive, and therefore it is not easy scaling them up.

This paper exploits a large-scale randomized control trial (RCT) implemented in Chile during the 2021 academic year to evaluate the effects of a low-touch and of a high-touch intervention on students' postsecondary educational trajectories. The experiment reached 26,853 disadvantaged students in their senior year of high school. Out of the 229 high schools that participated in the trial, 81 were randomly allocated to a pure control group, 74 to an information-only treatment group, and 74 to an information-and-mentoring treatment group. Students in the information-only treatment group received an information package highlighting funding opportunities and discussing the benefits of attending higher education. It also directed students to official sources in which students can learn about scholarships and student loans, and compare programs and institutions along different dimensions (e.g., selectivity, retention rates, actual length, labor market outcomes of graduates). Students in the information-plus-mentoring treatment group received the same information package. In addition, a sub-sample of them—four students in each classroom—was randomly allocated to a mentorship program designed to reinforce the information package's key messages and to guide students throughout the college application

process.

Our budget only allowed us to offer the mentorship program to a few students per class. Considering this restriction and inspired by recent studies documenting large social spillovers in higher education trajectories (see for instance Altmejd et al., 2021; Barrios-Fernández, 2022; Dahl et al., 2020), we designed the RCT to measure both, the effect of the mentorship program on the treated and on their classmates—i.e., students not directly receiving mentoring. Measuring and understanding the drivers of these social spillovers is important from a policy perspective. Compared to the distribution of information packs, the mentorship program is expensive—i.e., USD 95.57 vs. USD 2.27 per student. However, if providing mentorship indirectly benefits the classmates of treated students, this could make mentoring programs more cost-effective. In addition, if some students are more likely to generate large spillovers, this is something that could be incorporated in the design of these programs to maximize their impact.

Finding cost effective ways of encouraging students to take full advantage of the educational opportunities that they have available is important as this can dramatically improve their life trajectories. In addition, at the aggregate level, reducing the waste of talent can drive economic growth and reduce inequality (Goldin and Katz, 2008).

Our results are threefold. Firstly, students in the information-plus-mentoring group assigned to the mentorship program improved their overall knowledge of the higher education system by 0.28 standard deviations. This result is mainly driven by their improved understanding of the financial aid system (improvement of 0.30 standard deviations). We also find an improvement of 0.08 standard deviations in their understanding of labor market returns, but this change is not statistically significant. Furthermore, they become 13 percentage points (pp) more likely to register and take the college admission exam. This represents an increase of 21% in the probability of registering for the exam and 23% in the probability of taking it. They also became 10.3 pp (17%) more likely to apply for funding and 8 pp (20%) more likely to enroll in higher education.

Secondly, we find that despite incorporating some of the best practices discussed in the information provision literature—i.e., salience and personalization—the provision of information alone did not make a difference in the postsecondary trajectories of students in the information-only treatment group. Despite improving their overall understanding of the system by 0.09 standard deviations, these students do not become more likely to take

the college admission exam, apply for college, or enroll in higher education. This result is consistent with previous findings showing that providing information alone is typically insufficient to change students' behavior.

Finally, when looking at students in the information-plus-mentoring group who were not assigned to the mentorship program, we find evidence of large social spillovers. The classmates of student in the mentoring program experience an increase in their overall understanding of the system similar in size to the one experienced by students in the information-only treatment group, suggesting that there is no social learning going on in the classroom. However, in contrast to them, they become 5.1 pp (8.1%) more likely to register and 4.2 pp (8.8%) more likely to actually take the college admission exam. These effects represent roughly one-third of the effect we find on students assigned to the mentorship program. We do not find, however, significant changes in these students' enrollment in higher education. The situation is slightly different when looking at close friends of treated students. They significantly improve their understanding of the higher education system and in addition, they become 6 percentage points more likely to take the college admission exam, 5 percentage points more likely to apply to university, and 4 percentage points more likely to enroll in higher education. These results suggest that social learning is relevant to actually change the educational outcomes of students and that even within the classroom, social spillovers arise only among close peers.

Considering only direct beneficiaries of the mentoring program, sending an additional student to higher education had a cost of USD 2,083. On top of the costs of the mentoring program, students enrolling in higher education have to postpone their entrance to the labor market and have to pay tuition fees (potentially through scholarships or subsidized loans). Taking the discount rate that the Chilean government uses to evaluate its projects—i.e., 6%—as reference, this implies that 2-year college programs should increase monthly earnings by USD 110 and 5-year college programs by USD 250 to make the mentoring program worth. If we include indirect beneficiaries in this calculation, the cost of sending an additional student to higher education through the mentoring program drops to USD 504. As most of the cost of sending additional students to college is given by delaying earnings and paying tuition fees, the required increase in earnings to make the investment worth remains at similar levels. Nevertheless, the direct cost of the mentoring program drops by roughly 75%.

Our results contribute to two strands of the literature. Firstly, they add to the literature studying barriers to access to higher education and interventions to overcome them. It has been recently shown that higher education has positive returns not only on average but also for marginal students (Zimmerman, 2014; Goodman et al., 2017). However, even after conditioning by students' academic preparation, we still observe large differences in postsecondary education trajectories across social groups (Barrios-Fernández, 2022; Hoxby and Avery, 2013; Patnaik et al., 2020). These differences are often attributed to credit constraints, information frictions, and behavioral barriers.[1]

These results have inspired multiple college-going interventions. Low-touch interventions as the provision of information have typically not been very effective in increasing attendance to higher education (see for instance Gurantz et al., 2019; Busso et al., 2017; Bird et al., 2019; Hyman, 2019; Hurwitz and Smith, 2018). One exception is the information intervention implemented by Dynarski et al. (2021). As part of this intervention, talented students in their senior year of high school received a personalized letter guaranteeing them free tuition in case of being admitted to a flagship public university. The intervention more than doubled applications and enrollment. In a follow-up paper, Burland et al. (2023) show that the effects are almost entirely driven by removing financial uncertainty. High-touch interventions that complement information with some personalized support generate sizeable increases in attendance to higher education (see for instance Bettinger et al., 2012; Carrell and Sacerdote, 2017b). However, these interventions are typically more expensive and, therefore, more challenging to scale up.

In this paper, we evaluate in a unified setting two large-scale interventions: one low-touch (i.e., provision of information) and one high-touch (i.e., provision of mentoring). The low-touch intervention borrows many elements from Dynarski et al. (2021). Since we focus on high schools catering to disadvantaged students, through the information intervention, we highlight a program that guarantees free higher education to all students coming from the bottom 60% of the income distribution. A nice feature of the Chilean setting is that the free higher education program is available for students with very different levels of academic

[1]Studies focusing on credit constraints include Dynarski (2000); Seftor and Turner (2002); Dynarski (2003); Long (2004); van der Klaauw (2002); Belley and Lochner (2007); Lochner and Monge-Naranjo (2012); Solis (2017); studies on information frictions include Bettinger et al. (2012); Busso et al. (2017); Dinkelman and Martínez A. (2014); Hastings et al. (2015, 2016); Hoxby and Turner (2015); Oreopoulos and Dunn (2013); Wiswall and Zafar (2013); Booij et al. (2012); Nguyen (2008); Castleman and Page (2015); Lavecchia et al. (2016) summarizes the literature on behavioral constraints.

ability.[2] Thus, we do not need to focus on talented students only, and we can study the effect of our treatment along the whole academic distribution. As in most previous studies evaluating low-touch interventions, we find that despite improving students' understanding of the higher education system, providing information alone does not change students' educational trajectories. However, when complemented with mentoring, it does generate important changes. As described earlier, the design of the RCT allows us to study spillovers of the mentoring program on the classmates and close friends of treated students. We find evidence of social spillovers in the probability of registering and taking the college admission exam among classmates and in the probability of applying and enrolling in higher education among close friends of treated students. These results suggests that these programs generate more benefits than those typically estimated when only focusing on treated students.

This last set of results contributes to the literature on peer effects on educational trajectories. Despite all the research on peer effects—see Sacerdote (2011) and Sacerdote (2014) for a comprehensive review of this literature—we know little about how peers influence educational choices, especially in the context of higher education. This paper is among the first to document social spillovers from a college-going intervention. Most of the previous work documenting peer effects on educational choices comes from siblings and focuses on primary and secondary education. Qureshi (2018), for instance, shows that an increase in the oldest sisters' schooling in Pakistan also increases their younger brothers' schooling. Gurantz et al. (2020) find that in the United States, younger siblings are more likely to take an advanced end-of-year exam if an older sibling previously passed the same exam. Similarly, Joensen and Nielsen (2018) and Dahl et al. (2020) show that older siblings influence the type of courses that their younger siblings take in high school in Denmark and Sweden, respectively. Finally, Dustan (2018) finds that students from Mexico City are more likely to enroll in a high school if an older sibling enrolled there in the past. There is little evidence of siblings' influence on higher education choices. Perhaps closer to us, Altmejd et al. (2021) and Barrios-Fernández (2022) show that older siblings influence the

[2]The free higher education program is available for any student from the bottom 60% of the income distribution who enrolls in one of the higher education institutions participating in the program. Thirty-six universities and 31 vocational higher education institutions are part of the program. There is substantial heterogeneity in the level of selectivity of these institutions. Indeed, while some of the universities in the program only admit students scoring in the top 5% of the college admission exam, others admit students scoring well below the median. In addition, vocational higher education institutions typically do not select students based on their previous academic performance.

decision to attend college, and also the exact college that their younger siblings attend. The latter study also documents large spillovers on the decision to attend college among close neighbors.

The rest of the paper is organized into six sections. Section 2 describes the Chilean education system, section 3 provides details on the information and mentoring programs, while section 4 presents the results of the baseline survey applied to high schools in the study. Then, section 5 explains our empirical approach, and section 6 discusses our results. Finally, section 7 concludes.

2 Institutions

This section describes the Chilean education institutions. It first focuses on the secondary education system, which is the level of education in which we treat the students who participate in our study. Then, it describes the higher education system emphasizing how admissions work and the funding opportunities available to disadvantaged students.

2.1 Secondary Education

In Chile, compulsory education lasts 12 years and is organized in two cycles: primary education (grades 1 to 8), and secondary education (grades 9 to 12).[3] Primary and secondary education is offered by three types of schools: public schools, voucher schools, and private schools. Public and voucher schools cater to 93% of the students in the country and are fully funded by the state through a voucher system.[4] Private schools cater for the additional 7% of the students and are fully funded through tuition fees.

After completing primary education, students can choose to continue their education in the academic or in the vocational track. Both tracks have the same curriculum until grade 10. Grades 11 and 12, however, are quite different. While students in the academic track continue under a comprehensive curriculum designed to prepare them for university, students in the vocational track specialize in work-oriented areas.[5] Students in the

[3]Students typically start primary education when they are six years old and complete secondary education when they are eighteen years old.

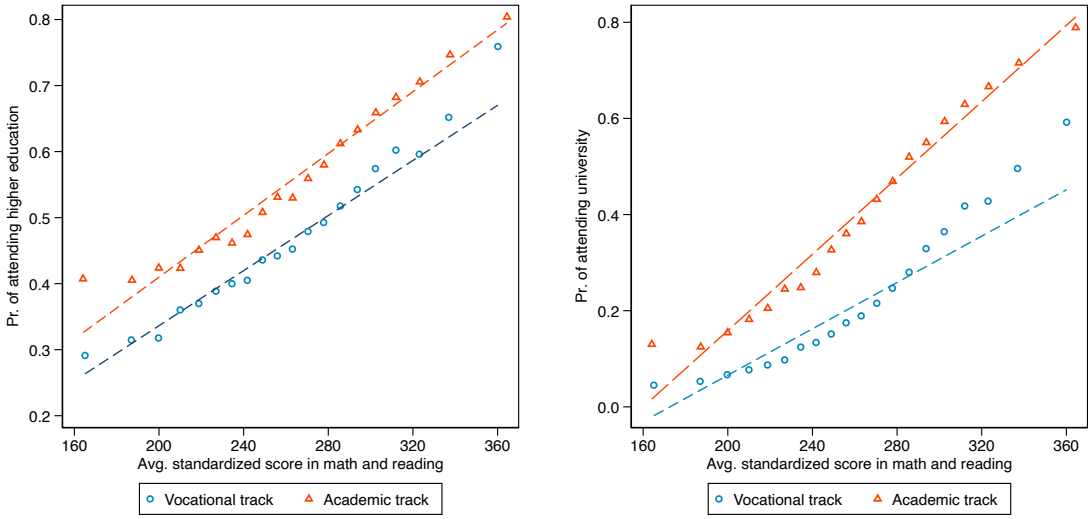
[4]Voucher schools were able to charge tuition fees until 2016. The resources they received through the voucher system were inversely proportional to the fees they charged. When the students in our sample entered high school voucher schools were phasing out tuition fees and most of them did not charge any fees.

[5]There are 34 areas among which students in the vocational track can choose (the full list of areas can be found at https://www.tecnicoprofesional.mineduc.cl/wp-content/uploads/2016/03/

vocational track represent almost 40% of the student population and typically come from disadvantaged backgrounds. Indeed, students in the vocational track are four times less likely to have a mother who attended higher education (11.5%) than students in the academic track (44.2%). There is also a large difference in their performance in standardized tests. Students in the academic track outperform students in the vocational track by 35 (0.54σ) points in math and by 30 (0.61σ) points in reading at the end of grade 10 (i.e., just before the curriculums differentiate). Finally, and perhaps not surprisingly, students in the vocational track are significantly less likely to attend higher education. They are 18 percentage points less likely to enroll in any higher education institution and 29 percentage points less likely to enroll in university than students in the academic track. Interestingly, these differences in postsecondary education trajectories are not totally explained by differences in academic performance. As shown in Figure 1, there is a large gap in higher education and university attendance even after controlling by academic performance. This gap is apparent even when focusing on students scoring at the very top of the standardized test distribution. Considering the generous funding opportunities available for disadvantaged students in Chile—see Section 2.2 for further details—this suggests that there are some frictions preventing students in the vocational track to take full advantage of their development opportunities.

`Especialidades-Formacion-TP-2013.pdf`). Note, however, that schools typically offer only a few of them. This means that in practice, students do not have the 34 areas available in the school they attend.

Figure 1: Pr. of attending higher education and university by academic ability and high school track



(a) Pr. of attending higher education

(b) Pr. of attending university

Notes: This figure illustrates the difference in the probability of attending higher education (panel a) and in the probability of attending university (panel b) between students enrolled in the academic and in the vocational track of high school after conditioning on their academic ability. Academic ability is measured by the average of students' scores in the reading and mathematics section of a standardized exam applied in grade 10 (SIMCE). Red triangles and blue circles represent the mean of the dependent variable at different test scores levels. Dashed lines correspond to linear fits.

2.2 Higher Education

In Chile, there are three types of higher education institutions: vocational training centers, professional institutes, and universities. Vocational training centers offer short degrees that last between two and three years, while professional institutes offer degrees that typically last four years. Universities are the only institutions that can grant academic degrees and their undergraduate programs last five years. Among students entering higher education in 2020, 10.7% choose a vocational training center, 29.6% a professional institute, and 59.7% a university.

Admissions to vocational training centers and professional institutes are decentralized. This means that students have to directly apply to the institutions in which they are interested. In contrast, admissions to universities are fully centralized. Students have to take a national-level admission exam (PAES) and apply to specific university-major combinations by submitting an ordered rank of their preferences through an online platform. Then, a deferred acceptance admission algorithm that uses as input their preferences and

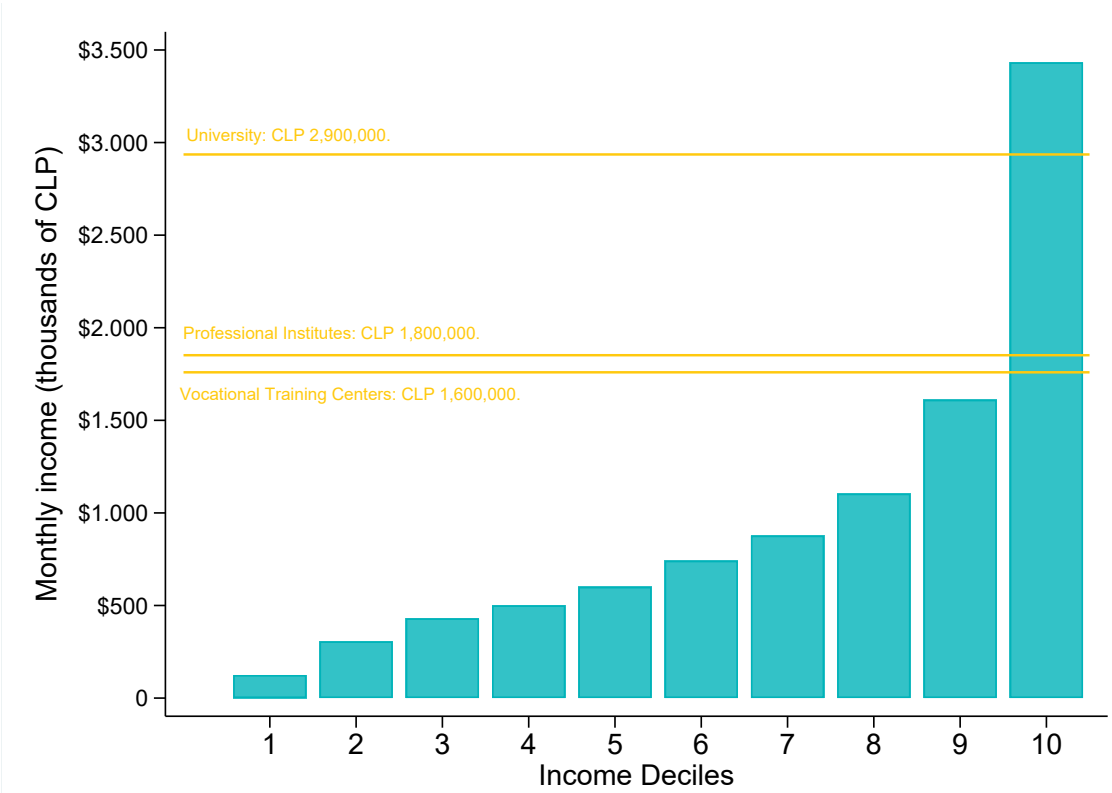
their exam scores allocates them to the highest preference for which they are eligible.

Both public and private institutions charge similarly high tuition fees. As illustrated in Figure 2, average tuition fees are high. Indeed, annual tuition fees in all higher education institutions are above the ninth decile of the per capita monthly income distribution. This means that access to funding is crucial to attend higher education for a large share of students. There are numerous funding programs offered by the government. "Free higher education"is the most generous program and it does not have any academic requirements. All students coming from households in the bottom 60% of the income distribution who enroll in an institution that participates from the "Free higher education"program do not pay tuition fees.[6] On top of this program, there are generous grants and subsidized student loans. Most grants are available to students in the bottom 70% of the income distribution, while student loans are available to all students in the country. The main difference with respect to "Free Higher Education" is that eligibility for these grants and loans also depends on academic performance. The exact eligibility rule varies depending on the type of institution that students choose, but it is not very demanding. For universities, eligibility depends on the score that students obtain in the PAES, while for vocational training centers and professional institutes, eligibility depends on high school GPA.

Most students following the vocational track in high school come from the bottom 60% of the income distribution and therefore are eligible for "Free Higher Education". The few students that are not part of this group still have available multiple alternative sources of funding. Therefore, tuition fees should not be a barrier to attending higher education for these students.

[6]37 of 58 universities, 9 of 32 professional institutes, and 22 of 50 vocational training centers participate of the "Free higher education"program.

Figure 2: Distribution of Average Household Autonomous Income and Annual Tuition Fees in Higher Education



Notes: The bars in the figure illustrate the average monthly household autonomous income by income decile. Yellow dashed lines illustrate the average annual tuition fees charged by different type of higher education institutions. See Section 2 for further details.

3 Our Intervention

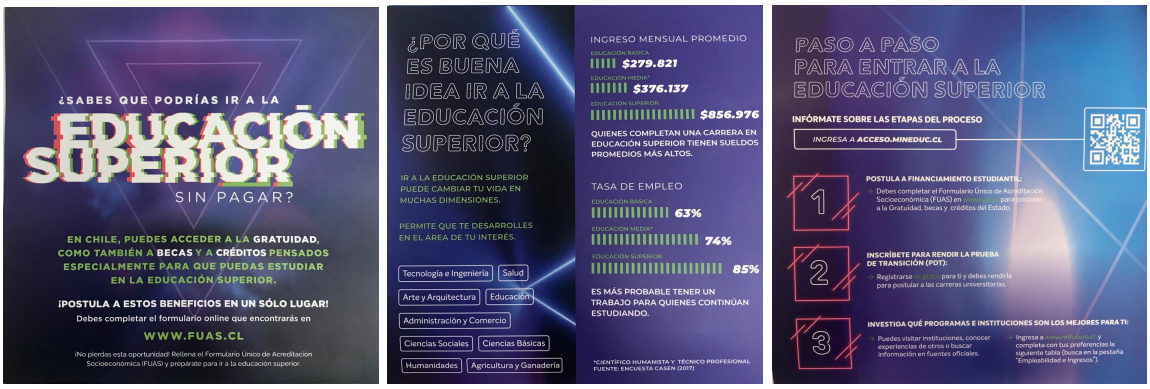
3.1 Design

We evaluate two complementary interventions designed to help high school senior students to make informed choices about their post-secondary education trajectories.

The first intervention consists in providing information through a package addressed to students on four central aspects of the higher education system. Firstly, it reminds students that if they decide to attend higher education, they are eligible to receive generous funding from the government. All the students in our sample come from relatively disadvantaged backgrounds. Thus, most of them are eligible for the "Free higher education" program. The few students non-eligible for "Free higher education" are still eligible for alternative grants and subsidized loans (see Section 2 for further details). Secondly, the information package highlights the benefits of attending higher education and presents students with

official statistics on employment and earnings. However, considering that employment and wages greatly depend on the quality of the match between a student and a major-institution combination, the package also highlights this aspect and provides students with links to official sources designed to compare programs and institutions along different dimensions, including labor market outcomes of recent graduates. Finally, the package provides students with detailed steps to apply for funding and to higher education. The material stresses important deadlines and directs students to official sources for additional details. To maximize the potential impact of this intervention, we took the design of the information package very seriously. We conducted multiple focus groups and worked with designers to ensure that the material was attractive and clear to students. Figure 3 illustrates the material that students received. Printing and delivering the information package to students had a cost of USD 2.27 per student.

Figure 3: Information package



Notes: This figure presents the information materials sent to students. The materials highlighted the availability of generous funding opportunities, the benefits of attending higher education, and the relevance of a good student-institution match. In addition, it provided information on how to apply for funding for higher education. Finally, it directed students to useful resources to compare institutions and to obtain additional information about applications. See Section 3 for further details. The following link contains a video of the information material https://andresbarriosf.github.io/video_information_pack.mp4.

The second intervention consisted of a mentorship program. This program offered additional support through mentors to four randomly chosen students in each class of a subset of high schools allocated to an information-plus-mentoring treatment group. In total, we worked with nine mentors who were either educational psychologists or school counselors. The core of the mentorship program consisted of four sessions of one hour each that we centrally designed. In each session, the mentors worked with the group of

students allocated to the program and reinforced the key messages of the information package. The sessions covered topics like deciding what to do after high school, financial aid opportunities, tools to compare institutions and programs, and college applications (in the Online Appendix A we include a detailed description of these sessions). Although the original plan was to implement these sessions in person, 48% of them were held online due to Covid-19 restrictions. Mentors were not allowed to interact with students not assigned to the program during their school visits to ensure that mentoring effects worked only through mentor or peer interactions. In addition, they were not allowed to share mentorship materials with the school or with students who were not part of the program. On top of the sessions, mentors contacted their assigned students five times between August and December. Each call had a specific goal in mind, but the general idea was to discuss students' plans after completing high school and provide information about higher education opportunities. The mentors were also available to answer students' questions about applications, funding, and admissions requirements. All the information provided by mentors came from official sources. The average cost of the mentorship program was USD 95.57 per student.

Table 1: Treatment Description

	Control	Treatment 1	Treatment 2	Treatment 3
Survey: at the beginning and end of the academic year.	✓	✓	✓	✓
Information package: each student receives an information package.		✓	✓	✓
Mentorship program: student assigned to mentorship program.			✓	
Peers in the mentorship program: student with peers assigned to mentorship program.				✓

To evaluate the effects of these interventions on students' outcomes, we randomly assigned them across high schools. From the 229 high schools participating in the study, we randomly assigned 81 to a pure control group, 74 to an information-only treatment group (treatment 1), and 74 to a combination of information and mentoring treatment group. Students in the control group did not receive the information package nor the mentorship program. Students in the information-only treatment group received the information package described earlier. Students in the information-plus-mentorship group also received the information package. In addition, four students per classroom were randomly selected to take part in the mentorship program (treatment 3). The rest of the class did not interact with the mentors but had peers participating in the program (treatment 2). All students

were invited to answer a baseline and an exit survey. In addition, all schools participating in the study received a report with aggregate statistics from the survey at the beginning of the following academic year (i.e., after the graduation of the cohort of students we study). Table 1 illustrates how the interventions map into treatment and control groups.

3.2 Implementation

This section discusses some details of the implementation of our interventions that will be useful for the interpretation of our findings.

For this study, we worked with a sub-sample of vocational track schools from three regions of Chile: Santiago, Valparaíso, and O'Higgins. These three regions concentrate roughly 60% of the population of the country. All 470 vocational high schools in these regions were invited to participate in the study and 229 accepted the invitation.

Table 2 compares these high schools with all the vocational high schools and with all the high schools in the country. Overall, the high schools in our sample are similar to other vocational-track high schools in the country. The voucher and urban schools are slightly over-represented, but this is not entirely surprising considering that we focus on the regions with the largest urban areas of Chile. Despite these differences, the high schools that participate in our study are very similar to the rest of the vocational high schools in the country in terms of the demographic and socioeconomic characteristics of their students. They are also very similar in terms of the performance of their students in standardized tests (i.e., SIMCE scores). When comparing them with all the high schools in the country—including the academic track high schools—we find that vocational track high schools cater to significantly more disadvantaged students than the average Chilean high school.

The information material was distributed through the students' high schools. In a typical year, this would guarantee a high delivery rate. However, as shown in Table **??** only half of the students in the exit survey remember to have received the information pack. Something similar occurred with the mentorship program. It was originally designed to be applied in person, but we had to adjust to the circumstances. As a result, 48% of the sessions were delivered online. Since students were not necessarily attending school, the take-up of this program was also lower than expected. While 64% of the students allocated to the mentorship program participated in at least one session, only 22% of

them completed the entire program. We will show that despite these challenges both interventions affected students' outcomes.

Table 2: Comparison between schools in the study and other schools in the country

	Schools in the Study (1)	**All Vocational Schools in the Country** (2)	**All Schools in the Country** (3)
Public School	0.424	0.508	0.263
Voucher School	0.576	0.492	0.572
Rural	0.029	0.104	0.050
Share of Female Students	0.488	0.490	0.510
Average Age	17.639	17.695	17.447
School SES Level	1.604	1.488	2.726
SIMCE Math Score	233.619	231.741	266.957
SIMCE Reading Score	232.043	231.150	251.986
Observations	229	978	3467

Note: This table compares the schools that participated of our study with all the vocational high schools and with all the high schools in the country. It describes them in terms of type, location, students' demographic characteristics, students' SES, and students' performance in standardized tests (SIMCE). The SES measure corresponds to an index generated by the Ministry of Education. It takes values from one to five, where one indicates students of very low-SES background and five indicates students of very high-SES background.

4 Baseline Survey

This section describes the baseline survey we applied to senior year students from the high schools that took part in the study. It first discusses the design and application of the survey, and then presents its main results. The Online Appendix B provides a copy of the questions in the survey and discusses its results in greater detail.

4.1 Survey Design

The survey was designed to be applied to all senior year students enrolled in any of the 229 vocational high schools that participated of the study, independently of the treatment group to which they were assigned.

The survey contained two sections. The first section was designed to learn about the plans that students had for their life after completing high school. The second section was designed to test how much these students knew about their funding opportunities and

about the higher education system in general. By contrasting the answers of these two sections, we are able to assess whether information frictions are important in the setting we study.[7]

We applied the survey during the first semester of the academic year 2021, before schools were offered to take part in any of the interventions. Since most schools were closed, the survey was applied online. Teachers and school principals helped us to distribute the survey link to their students. We collected 9,187 answers, which represents around 37% of the universe of students invited to answer the survey. Since answering the survey is not random, we cannot generalize its answers to the whole population of students enrolled in the high schools in our study. However, the share of respondents is large in comparison to other online surveys and, as shown in Table 3, the students answering the survey are similar to those not answering it along a rich vector of variables, including age, parental education, high school GPA and attendance in grade 11, and standardized test scores. The only dimension in which we find an economically significant difference is gender. Students answering the survey are 7.2 (15%) more likely to be female.

[7] For designing the survey, we carefully reviewed the Chilean higher education system, including application procedures and funding opportunities. The survey behind Hastings et al. (2016) served as inspiration for many of the questions we included in our survey.

Table 3: Students Answering and Not Answering the Survey

	Students who didn't answer the Survey (1)	*Students who answer the Survey* (2)
Gender (female)	0.472	0.072***
		(0.020)
Rural	0.018	0.009*
		(0.005)
Public School	0.395	-0.054
		(0.045)
Voucher School	0.605	0.054
		(0.045)
School SES Level	1.643	0.036
		(0.047)
SIMCE Math Score	244.327	2.564
		(1.550)
SIMCE Reading Score	250.638	3.626**
		(1.440)
Grades	5.377	0.272***
		(0.042)

Note: This table compares the students who answered the baseline survey with those who didn't. The SES measure corresponds to an index generated by the Ministry of Education. It takes values from one to five, where one indicates students of very low-SES background and five indicates students of very high-SES background.

4.2 Plans for the Future

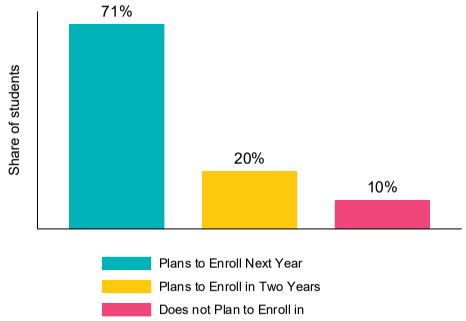
The first part of the survey collects information on students' plans after high school. We summarize the main results of this section in Figure 4.

According to the survey, despite being enrolled in vocational track high schools, 91% of the students plan to enroll in higher education one or two years after graduating from high school. Among those students planing to attend higher education, 63% would like to attend a university and 37% a vocational higher education institution (i.e., vocational training centers or professional institutes). The three most popular fields of study among them are technology (24%), business (20%), and health (19%).

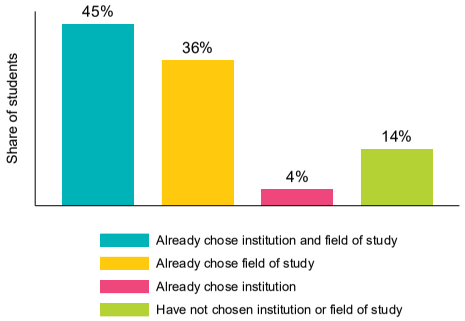
When asking students about the main factors determining their choice of higher education institution and field of study, the most important factor is their interest in the field (40%). The second most important factor is the tuition fees level (22%). Although the majority of these students come from disadvantaged backgrounds, employability and earnings after graduation are only chosen 11% and 4%, respectively. The two main concerns

that students have regarding higher education are satisfying the admission requirements to higher education (37%), and ensuring funding (35%). Other elements like academic rigor (10%), work-study compatibility (10%), and finding the right institution for them (8%) are less relevant. Finally, when asked about how they will fund their studies, only 49% of them plans to rely either on grants—i.e., free higher education or alternative scholarships— or on subsidized loans. This last figure, together with the relevance that tuition fees seem to play in the decision process of the students in the survey is surprising. As discussed in Section 2, most of these students are eligible for "Free higher education". The few who are not eligible for this program still have multiple scholarships and subsidized loans available. This suggests that the students in our sample are not fully aware of their funding opportunities.

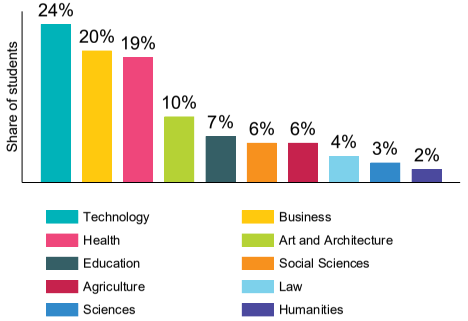
Figure 4: Interest in Higher Education and Plans for Future



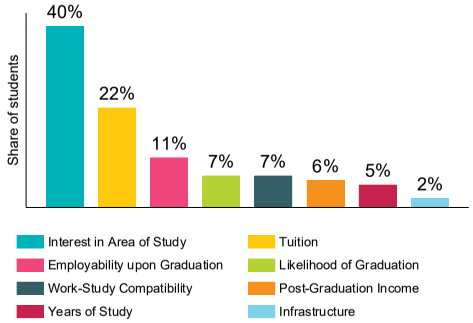
(a) Interest in Pursuing Higher Education



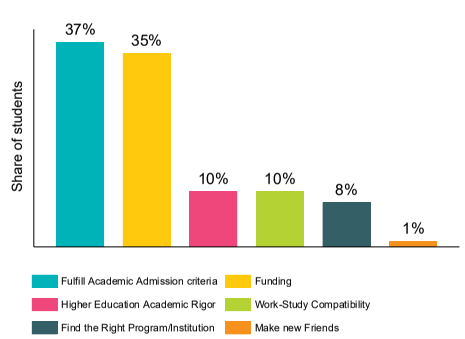
(b) Stage in the Decision Process



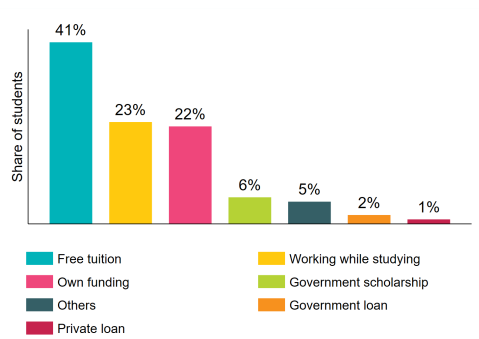
(c) Field of Interest



(d) Factors to Choose Field and Higher Education Institution



(e) Concerns Regarding Higher Education



(f) Funding Plans

Note: This figure illustrates the interests of vocational track students in higher education. Panel (a) shows the share of students planning to enroll in higher education, Panel (b) the type of institution in which they are interested, and Panel (c) the field in which they are interested. Panel (d) shows the factors that, according to students, influence their choice of higher education institution and field of study, Panel (e) the main concerns they have about attending higher education, and Panel (f) the plans they have to fund their studies.

4.3 Knowledge of the System

This section describes the results of the second part of the survey designed to measure the knowledge that students had of important features of the Chilean higher education system. We included questions about funding opportunities and graduates' labor market trajectories. In addition, we asked students about how well they believed they knew the higher education system. The exact questions behind this section are reported in the Online Appendix B.

Table 4 summarizes the results of this section. Columns (1) to (3) focus on funding opportunities, while columns (4) to (6) on labor market trajectories. Columns (1) and (4) report the shares of students in each category of perceived knowledge. According to column (1), roughly 30% of the students think they know the funding opportunities they have available well or very well. The same figure when focusing on labor market trajectories is 42%.

Interestingly, the actual knowledge that students have of funding opportunities and of labor market trajectories after higher education is not aligned with the perceptions that they have of their own knowledge. Independently on how much students believe they know about the higher education system, on average, they answer 30% of the questions about funding opportunities and 65% of the questions about labor market trajectories correctly. The table also presents two knowledge indexes created using the first component of a principal component analysis of the answers provided by students. The goal of this exercise was to reduce the dimensionality of the problem, by collapsing students' answers to multiple questions in one variable. Both indexes increase with students' perceived knowledge, suggesting that although the share of correct answers does not vary much, there is some variation in how much students actually know about higher education across perceived knowledge groups.

Table 4: Perceived Knowledge vs. Performance in a Test about Higher Education Applications, Funding, and Returns

	Area of Knowledge					
	Financial Aid			*Labor Markets Returns*		
	Shares in each Perceived Knowledge Category (1)	Share of correct Answers in each Category (2)	Knowledge Index in each Category (3)	Shares in each Perceived Knowledge Category (4)	Share of correct Answers in each Category (5)	Knowledge Index in each Category (6)
Very Little	0.199	0.272	-0.119	0.157	0.656	-0.074
A Little	0.507	0.279	-0.009	0.424	0.666	0.012
Well	0.258	0.287	0.108	0.340	0.669	0.004
Very Well	0.036	0.298	0.112	0.079	0.667	0.065
Observations	8328	8143	8143	8328	8328	8231

Note: This table compares students' perceived and actual knowledge of three aspects of higher education: Financial aid, application, and labor market returns. For each category, we compare the percentage of students with a determined self-reported knowledge and the percentage of students that have that knowledge in reality as measured by the percentage of correct answers to questions related to that category

5 Empirical Strategy

To estimate the causal effect of the information provision and mentoring interventions we use a randomized control trial. Specifically, we randomly allocated one-third of the high school networks in our sample to a control group, another third to an information-only treatment group, and the final third to a combination of information and mentoring treatment group. A few schools in our sample were part of school networks. Most of these networks consisted of two or three schools. We randomized at the network level to facilitate the implementation and to avoid potential contamination of the experiment between treated and untreated schools from the same network.[8] As explained earlier, not all the students in the information and mentoring treatment group were actually offered the mentoring program. Four students in each classroom were randomly selected to participate in the mentorship program. This feature of the RCT allows us not only to study the effect of the mentorship program on the treated individuals but also on their classmates.

The validity of the analyses that we describe below relies on the allocation of students to treatments being actually random. Table 5 reports baseline characteristics of the control and treatment groups. The first column shows the mean of the control group, whereas columns (2), (3), and (4) show the difference between the control group and the three treatment groups described earlier in this section. As shown in the table, the randomization process yielded groups that are balanced in terms of gender, rural status, school administrative dependence, school SES level, reading and math scores in standardized tests, and GPA.

Both treatments—the information provision and the mentorship program—aimed to improve the understanding that senior high school students had of the higher education system and of the funding opportunities they had available. Ultimately, the interventions aimed to impact students' aspirations and post-secondary education trajectories. To estimate the effect of the interventions on students' outcomes, we rely on specification (1):

$$Y_{is} = \alpha_0 + \alpha_1 T_{1is} + \alpha_2 T_{2is} + \alpha_3 T_{3is} + \Phi X_s + \epsilon_{is} \tag{1}$$

[8] 55.46% schools in our sample did not belong to any network. 18.34% of schools were part of a two-schools network, and 11.79% were part of a three-schools network. Only 14.41% of schools were part of a network of more than 3 schools.

where Y_{is} is the outcome of student i from school s; T_{1is} is an indicator that takes value one if the student i was enrolled in a school s assigned to the information only treatment group (i.e., treatment 1); T_{2is} is an indicator that takes value one if the student i is enrolled in a school assigned to the information and mentoring program but does not take part in the mentoring (i.e., treatment 2); and T_{3is} is an indicator that takes value one if the student i is actually assigned to the mentorship program. For precision, we control by $\mathbf{X}$—a vector of individual-level and school-level predetermined variables.[9] We cluster the standard errors at the school network level.

The estimates of interest are α_1—which measures the effect of the information treatment—α_2—which measures the effect of the information treatment and having classmates assigned to the mentorship program—and α_3—which measures the effect of the information and mentorship treatments.

Table 5: Balance Tests

	Control Mean	*Information Only*	*Information and Peers with Mentoring*	*Information and Mentoring*	*Observations*
	(1)	(2)	(3)	(4)	(5)
Gender (Female)	0.498	-0.027	0.015	-0.005	26853
		(0.040)	(0.039)	(0.050)	
Rural	0.008	0.043	0.000	-0.008*	26853
		(0.030)	(0.009)	(0.005)	
Public School	0.308	0.143	0.074	0.148	26853
		(0.113)	(0.106)	(0.120)	
Voucher School	0.692	-0.143	-0.074	-0.148	26853
		(0.113)	(0.106)	(0.120)	
School SES Level	1.604	0.121	0.031	0.043	26853
		(0.118)	(0.109)	(0.113)	
SIMCE Math Score	243.371	2.869	2.020	-1.837	19863
		(2.488)	(2.499)	(3.324)	
SIMCE Reading Score	250.358	2.053	1.833	-1.753	19793
		(2.439)	(2.298)	(3.242)	
Grades	5.435	0.054	0.015	0.127	25347
		(0.085)	(0.071)	(0.078)	

Note: The SES measure corresponds to an index generated by the Ministry of Education. It takes values from one to five, where one indicates students of very low-SES background and five indicates students of very high-SES background.

[9] Under treatment randomization, controls are not required for unbiasedness. We added them to increase the precision of our estimates. Online Appendix C presents results without controls. The coefficients are remarkably similar to the ones discussed in the main body of the paper. The controls included in our main specification are school SES level, rural school, voucher school, school SIMCE score, share of female students in the school, GPA mean (of the previous cohort), and class size.

Depending on whether the outcome variable was collected from administrative or survey data, we estimate specification 1 either on the whole sample of students enrolled in 12-grade in control and treated schools at the beginning of the academic year, or in the sample of students who answered the exit survey. In Table 6 we show that students in our sample were equally likely to answer the survey independently of the treatment group to which they were assigned. This result relieves concerns about selective attrition.

Table 6: Attrition

	Share of answer the entry survey (1)	Share of answer the exit survey (2)
Information	-0.010	0.022
	(0.050)	(0.049)
Information and Mentoring	-0.024	0.020
	(0.050)	(0.049)
Observations	229	229
Control mean	0.407	0.416

Note: This table reports the results of a specification that studies differences in response rates in the entry and exit survey depending on treatment status. Column (1) focuses on the entry survey, while column (2) on the exit survey. As shown in the table, there are no significant differences in response rates across groups. Standard errors clustered at the high school level are presented in parenthesis.

6 Results

This section presents the main results of the paper. It first discusses the effects of the interventions on the students' understanding of the higher education system. It then discusses how the interventions affected their higher education trajectories.

6.1 Effects on Understanding of the Higher Education System

The results in this section rely on the exit survey that we implemented at the end of the 2021 school year. As discussed in Section 5, we do not find evidence of differences in response rates by treatment status. This result relieves concerns about selective attrition.

Table 7 summarizes the results of this section. The first two columns present the effect of our interventions on students' perceived knowledge. As shown at the end of column (1), 48.8% of students in the control group reported knowing the financial aid system well

or very well. Students in treatment group one—i.e., information only—or in treatment group two—i.e., information and peers with mentoring—do not seem to have improved their perceived knowledge of the financial aid system. Students allocated to the mentorship program, however, are 21 percentage points (43%) more likely to answer they know the system well or very well. A similar pattern arises when looking at perceived knowledge on labor market returns. A 39.1% of the students in the control group report knowing well or very well the labor market returns to higher education. As before, students in treatment groups one and two report levels of perceived knowledge similar to the ones reported by students in the control group. Students allocated to the mentoring program improve their perceived understanding of labor market returns by 11 percentage points (28%).

Table 7: Effects on Students' Understanding of the System

	Declares Knowing the System Well or Very Well		*Indexes of Actual Knowledge of the System*		
	Financial Aid (1)	Labor Markets Returns (2)	Overall Knowledge (3)	Financial Aid (4)	Labor Markets Returns (5)
Information	0.026	0.003	0.091**	0.038	0.084***
	(0.017)	(0.015)	(0.045)	(0.051)	(0.030)
Information and Peers with Mentoring	0.016	0.007	0.086*	0.066	0.042
	(0.019)	(0.017)	(0.045)	(0.051)	(0.029)
Information and Mentoring	0.210***	0.108***	0.278***	0.297***	0.083
	(0.039)	(0.031)	(0.082)	(0.077)	(0.062)
Observations	8746	8746	7394	7424	7726
Control mean	0.488	0.391	0.000	-0.000	0.000

Note: Columns (1) and (2) present the effect of each treatment on the perception of Financial Aid and Labor Market Returns Knowledge. Column (3) presents the effect of each treatment on the General Higher Education System Knowledge Index (standardized PCA), column (4) shows the effect of each treatment on the Financial Aid Knowledge System, and column (5) presents the effect of each treatment on the Knowledge Labor Market Returns.. All specifications include socioeconomic characteristics, the share of female students, the share of students on vocational track, and class size as control variables. Errors clustered at the school network level. * p-value < .1, ** p-value < .05, *** p-value < .01

The rest of the table studies whether these differences in perceived knowledge translate into differences in actual knowledge. As explained in Section 4, to study changes in actual knowledge, students were asked multiple questions about the higher education system including requisites and application procedures of different funding programs, application procedures to higher education in general, and average employment levels and

earnings of graduates of different degrees [10]. To reduce the dimensionality of the analyses, we created three indexes using the first component of three independent principal component analyses. The first index—overall knowledge—includes all the questions testing students' knowledge of the higher education system in the survey, the second index—financial aid—only included the questions related to funding opportunities, and the third index—labor market returns—included the questions on employability and earnings (see Online Appendix C for further details).

As shown in Table 7, the three treatment groups seem to improve their overall knowledge of the system with respect to the control group. While the mentorship program seems to have been particularly effective in improving students' understanding of the financial aid programs—students assigned to the mentorship program score 0.30σ higher than students in the control group and more than 0.20σ higher than students in the other treatment groups—the information packages seem to have improved students' understanding of labor market trajectories. Although the estimates are not always precise, we find that students in the three treatment groups improve their understanding of labor market trajectories to a similar extent.

Finally, the results in this section are not consistent with social spillovers in perceived or actual knowledge. In all columns in Table 7, the effects we find on students only receiving information and on students receiving information and in addition having peers assigned to the mentorship program are very similar. Indeed, they are of similar size and never statistically different.

6.2 Effects on Higher Education Trajectories

This section studies the effects of the information and mentoring intervention on the postsecondary education trajectories of students. In contrast to the previous section, all our results rely only on administrative data. Therefore, selective attrition is not a concern here.

The results of this section are summarized in Table 8. Panel A focuses on the admission exam. Around 63% of the students in the control group register for the college admission exam, and 57% of them actually take it. Students in the information-only treatment

[10] To construct indicators on returns from higher education, we used question 4 in the second section of the entrance survey (see Appendix B). Students are asked about the salary range they believe they will be in four years after graduating from the program (business, early childhood education, and nursing). Finally, the question was considered correct if the student chooses the correct range.

group are not more likely to register or take the college admission exam, a result that suggests that the provision of information alone is not enough to change students' behavior. Students allocated to the mentorship program, however, became 12.8 percentage points more likely to register and take the exam. Their classmates not assigned to the treatment also experienced an increase in the probability of registering (5.1 percentage points) and taking (5 percentage points) the college admission exam. As shown in columns (3) to (6), these large effects were not only driven by marginal students. We find an increase in the probability that students allocated to the mentorship program and their peers score above percentiles 50, 75, 90, and 95 of the college admission exam distribution. This means that the interventions were successful in moving talented students to act and try to attend higher education.

Panel B of Table 8 focuses on students' applications for funding and on enrollment in higher education. In contrast to the results on Panel A, only the mentorship program seems to have actually changed students' probability of attending higher education. Students allocated to the mentorship program became 10.3 (17%) percentage points more likely to apply for funding, and 3.6 percentage points (20.3%) more likely to apply to university. They also became 4.7 percentage points (12.6%) more likely to attend higher education and 5.4 percentage points (17.9%) more likely to attend higher education with public funding. The increase in attendance to higher education is driven by an increase of 1.9 percentage points (8%) in attendance to vocational higher education institutions and by an increase of 2.8 percentage points (20.6%) in the probability of attending university.

We find no significant effect in any of these margins for students in the information-only treatment group or for the classmates of students allocated to the mentorship program. This last group of students, despite being more likely to register and take the college admission exam, does not become more likely to attend higher education. Failing to apply for funding seems to be an important part of the story. As mentioned earlier, students in the vocational track typically come from disadvantaged backgrounds. Therefore, funding is crucial for them to be able to attend higher education. The lack of social spillovers in the understanding of the financial aid system discussed in Section 6.1 is also consistent with this result.

Finally, in terms of the costs and benefits of the interventions, as discussed in Section 3, the information package had a cost of USD 2.27 per student, while the mentorship

program had a cost of USD 95.57 per student.[11] As shown in this section, for every 100 students assigned to the mentorship program, 8 additional students decided to enroll in higher education. This means that we spent USD 1,309 per student induced to attend higher education. Although this amount is not trivial, it only represents a fraction of the tuition fees charged by higher education institutions. It represents an 16% of the average tuition fee in vocational higher education institutions and 10% of the average tuition fee in universities. Assuming a discount rate of 6%—i.e., the discount rate that the Chilean government uses to evaluate it investments—attending vocational higher education should improve students' monthly wages by at least USD 110 to make the returns to the intervention positive. The same figure when focusing on universities should be USD 185.

[11] These interventions were implemented in Chile. To convert Chilean Pesos to US Dollars we use the observed exchange rate in December 2021. 1 USD = 849.12 CLP

Table 8: Higher Education: Admission Test and Enrollment

	Panel A: Admission Exam					
	Pr. Registers for PDT (1)	Pr. Takes the PDT (2)	Pr. Score > p50 (3)	Pr. Score > p75 (4)	Pr. Score > p90 (5)	Pr. Score > p95 (6)
Information	-0.003	-0.001	-0.000	-0.003	-0.001	-0.001
	(0.024)	(0.023)	(0.012)	(0.009)	(0.008)	(0.008)
Information and Peers with Mentoring	0.051**	0.050**	0.032**	0.029***	0.023**	0.020**
	(0.022)	(0.022)	(0.013)	(0.009)	(0.009)	(0.009)
Information and Mentoring	0.128***	0.130***	0.051**	0.024*	0.028**	0.030**
	(0.024)	(0.026)	(0.020)	(0.014)	(0.013)	(0.013)
Observations	26853	26853	26853	26853	26853	26853
Control mean	0.628	0.568	0.226	0.133	0.105	0.101
	Panel B: Applications and Enrollment					
	Pr. of applying for funding (1)	Pr. of university application (2)	Pr. of enrolling in higher ed. (3)	Pr. of . higher ed with funding (4)	Pr. of enrolling in vocational higher ed. (5)	Pr. of university enrollment (6)
Information	-0.020	-0.014	-0.006	-0.008	0.012	-0.018
	(0.021)	(0.012)	(0.014)	(0.014)	(0.012)	(0.012)
Information and Peers with Mentoring	0.007	0.008	-0.000	-0.007	0.004	-0.004
	(0.017)	(0.010)	(0.013)	(0.012)	(0.011)	(0.010)
Information and Mentoring	0.103***	0.036**	0.047**	0.054***	0.019	0.028*
	(0.021)	(0.016)	(0.018)	(0.018)	(0.016)	(0.016)
Observations	26853	26853	26853	26853	26853	26853
Control mean	0.602	0.177	0.372	0.302	0.236	0.136

Note: Panel A shows the effects of the treatments on the admission exams, column (1) displays the probability of registering for the university admission test, (2) shows the probability of taking the admission test, (3) shows the probability of obtaining a score on the test above the median, (4) displays the effect on the probability of being above the 75th percentile score on the test, (5) shows the effect on the probability of being above the 90th percentile score on the test, and (6) shows the effect on the probability of being above the 95th percentile score on the test. Panel B shows the effects of treatments on applications and enrollment in the higher education system. Column (1) displays the probability of applying for benefits to access higher education, column (2) shows the probability of applying to university, (3) shows the probability of enrolling in higher education, (4) shows the probability of enrolling in higher education with benefits, (5) displays the probability of enrolling in a technical or vocational education institution, and (6) shows the effect on the probability of enrolling in a university. All specifications include school socioeconomic characteristics, the share of female students, share of students on vocational track, and class size as control variables. Errors clustered at the school network level. * p-value < .1, ** p-value < .05, *** p-value < .01

7 Conclusion

There are large differences in the postsecondary education trajectories of students from different social groups. Although part of them can be attributed to differences in academic preparation, they persist even when focusing on talented students that have generous funding available and who would likely benefit from attending higher education. This phenomenon has been widely documented in multiple settings and has inspired multiple interventions designed to overcome the information and behavioral barriers behind it. Low-touch interventions have typically not been very effective in modifying students' trajectories. High-touch interventions have been shown to help students, but their cost makes it difficult to scale them up.

This paper evaluates in a unified setting a low-touch and a high-touch intervention designed to reduce inequality in students' postsecondary education trajectories. In line with previous research, we find that our low-touch information—i.e., provision of information—does increase students' understanding of the higher education system, but it is not enough to change their trajectories. Also in line with previous studies, we find that students who on top of receiving the information treatment were assigned to a mentorship program become significantly more likely to take the college admission exam and to enroll in higher education. We provide evidence that the mentorship program not only benefited the students participating in it. Their close friends also experienced a significant increase in their probability of applying and enrolling in higher education. These results suggest that social spillovers can make college-going interventions more cost-effective than what common estimates that ignore these indirect effects suggest.

Our results provide evidence that interventions designed to expand access to college have multiplier effects that expand through the social networks of directly treated students. The second wave of the RCT will help us to shed some light on which students are more likely to generate social spillovers and on which students are more likely to be affected by them.

References

Altmejd, Adam, Andrés Barrios-Fernández, Marin Drlje et al. (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, 10.1093/qje/qjab006.

Barrios-Fernández, Andrés (2022) "Neighbors' Effects on University Enrollment," *American Economic Journal: Applied Economics*, 14 (3), 30–60, 10.1257/app.20200360.

Belley, Philippe and Lance Lochner (2007) "The Changing Role of Family Income and Ability in Determining Educational Achievement," *Journal of Human Capital*, 1 (1), 37–89, https://EconPapers.repec.org/RePEc:ucp:jhucap:v:1:i:1:y:2007:p:37-89.

Bettinger, E. P., B. T. Long, P. Oreopoulos, and L. Sanbonmatsu (2012) "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block Fafsa Experiment," *The Quarterly Journal of Economics*, 127 (3), 1205–1242, 10.1093/qje/qjs017.

Bird, K. A., B.L. Castleman, J. T. Denning, J. Goodman, C. Lamberton, and K. O. Rosinger (2019) "Nudging at scale: Experimental evidence from FAFSA Completion Campaigns," *NBER Working Papers* (2615).

Booij, Adam S., Edwin Leuven, and Hessel Oosterbeek (2012) "The Role of Information in the Take-up of Student Loans," *Economics of Education Review*, 31 (1), 33–44, 10.1016/j.econedurev.2011.08.009.

Burland, Elizabeth, Susan Dynarski, Katherine Michelmore, Stephanie Owen, and Shwetha Raghuraman (2023) "The power of certainty: Experimental evidence on the effective design of free tuition programs," *American Economic Review: Insights*, https://www.aeaweb.org/articles?id=10.1257/aeri.20220094.

Busso, Matias, Taryn Dinkelman, A. Claudia Martínez, and Dario Romero (2017) "The Effects of Financial Aid and Returns Information in Selective and Less Selective Schools: Experimental Evidence from Chile," *Labour Economics*, 10.1016/j.labeco.2016.11.001.

Carrell, Scott and Bruce Sacerdote (2017a) "Why Do College-Going Interventions Work?" *American Economic Journal: Applied Economics*, 9 (3), 124–151, 10.1257/app.20150530.

——— (2017b) "Why Do College-Going Interventions Work?," *American Economic Journal: Applied Economics*, 9 (3), 124–51, 10.1257/app.20150530.

Castleman, Benjamin L. and Lindsay C. Page (2015) "Summer nudging: Can personalized text messages and peer mentor outreach increase college going among low-income high school graduates?," *Journal of Economic Behavior & Organization*, 115, 144–160, 10.1016/j.jebo.2014.12.008.

Dahl, Gordon B., Dan-Olof Rooth, and Anders Stenberg (2020) "Intergenerational and Sibling Spillovers in High School Majors," NBER Working Papers 27618, National Bureau of Economic Research, Inc, https://ideas.repec.org/p/nbr/nberwo/27618.html.

Dinkelman, Taryn and Claudia Martínez A. (2014) "Investing in Schooling In Chile: The Role of Information about Financial Aid for Higher Education," *Review of Economics and Statistics*, 96 (2), 244–257, 10.1162/REST_a_00384.

Dustan, Andrew (2018) "Family networks and school choice," *Journal of Development Economics*, 134 (June 2017), 372–391, 10.1016/j.jdeveco.2018.06.004.

Dynarski, Susan (2000) "Hope for Whom? Financial Aid for the Middle Class and its Impact on College Attendance," *NBER(National Bureau of Economic Research)* (7756).

Dynarski, Susan, CJ Libassi, Katherine Michelmore, and Stephanie Owen (2021) "Closing the Gap: The Effect of Reducing Complexity and Uncertainty in College Pricing on the Choices of Low-Income Students," *American Economic Review*, 111 (6), 1721–56, 10.1257/aer.20200451.

Dynarski, Susan M (2003) "Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion," *American Economic Review*, 93 (1), 279–288, 10.1257/000282803321455287.

Goldin, Claudia and Lawrence Katz (2008) "The race between technology and education," *Cambridge, MA: Harvard*.

Goodman, Joshua, Michael Hurwitz, and Jonathan Smith (2017) "Access to 4-Year Public Colleges and Degree Completion," *Journal of Labor Economics*, 35 (3), 829–867, 10.1086/690818.

Gurantz, O., J. Howell, M. Hurwitz, C. Larson, M. Pender, and B. White (2019) "Realizing your college potential? Impacts of College Board's RYCP Campaign on Postsecondary Enrollment.," *Technical Report Annenberg Institute. Brown University.*, 43 (40).

Gurantz, Oded, Michael Hurwitz, and Jonathan Smith (2020) "Sibling Effects on High School Exam Taking and Performance,"Technical Report 20-265, Annenberg Institute at Brown University, 10.26300/m1m3-8g75.

Hastings, Justine, Christopher Neilson, and Seth Zimmerman (2015) "The Effects of Earnings Disclosure on College Enrollment Decisions,"Technical report, National Bureau of Economic Research, Cambridge, MA, 10.3386/w21300.

Hastings, Justine S., Christopher A. Neilson, Anely Ramirez, and Seth D. Zimmerman (2016) "(Un)informed college and major choice: Evidence from linked survey and administrative data," *Economics of Education Review*, 51, 136–151, 10.1016/j.econedurev.2015.06.005.

Hoxby, Caroline M and Christopher Avery (2013) "Low-income high-achieving students miss out on attending selective colleges," *Brookings Papers on Economic Activity, Spring*, 10.

Hoxby, Caroline M. and Sarah Turner (2015) "What High-Achieving Low-Income Students Know About College," *American Economic Review*, 105 (5), 514–517, 10.1257/aer.p20151027.

Hurwitz, M. and J. Smith (2018) "Student responsiveness to earnings data in the College Scorecard," *Economic Inquiry*, 2 (40), 1220–1243.

Hyman, J. (2019) "Can light-touch college-going interventions make a difference? Evidence from a statewide experiment in Michigan.," *Journal of Policy Analysis and Management.*

Joensen, Juanna Schrøter and Helena Skyt Nielsen (2018) "Spillovers in education choice," *Journal of Public Economics*, 157 (November 2015), 158–183, 10.1016/j.jpubeco.2017.10.006.

van der Klaauw, Wilbert (2002) "Estimating the Effect of Financial Aid Offers on College Enrollment: A Regression-Discontinuity Approach*," *International Economic Review*, 43 (4), 1249–1287, 10.1111/1468-2354.t01-1-00055.

Lavecchia, Adam, Heidi Liu, and Philip Oreopoulos (2016) "Behavioral Economics of Education: Progress and Possibilities," in Hanushek, Eric A., S. Machin, and Ludger Woessmann eds. *Handbook of the economics of education*, 5, 1–74, Amsterdam: Elsevier, 10.3386/w20609.

Lochner, Lance and Alexander Monge-Naranjo (2012) "Credit Constraints in Education," *Annual Review of Economics*, 4 (1), 225–256, 10.1146/annurev-economics-080511-110920.

Long, Bridget Terry (2004) "Does the Format of a Financial Aid Program Matter? The Effect of State In-Kind Tuition Subsidies," *Review of Economics and Statistics*, 86 (3), 767–782, 10.1162/0034653041811653.

Nguyen, Trang (2008) "Information, Role Models and Perceived Returns to Education: Experimental Evidence from Madagascar *."

Oreopoulos, Philip and Ryan Dunn (2013) "Information and College Access: Evidence from a Randomized Field Experiment," *Scandinavian Journal of Economics*, 115 (1), 3–26, 10.1111/j.1467-9442.2012.01742.x.

Patnaik, Arpita, Matthew J Wiswall, and Basit Zafar (2020) "College Majors," Working Paper 27645, National Bureau of Economic Research, 10.3386/w27645.

Qureshi, J. A. (2018) "Additional returns to investing in girls' education: Impact on younger sibling human capital.," *The Economic Journal*, 616 (128), 3285–3319.

Sacerdote, Bruce (2011) "Peer Effects in Education: How Might They Work, How Big Are They and How Much Do We Know Thus Far?," in *Handbook of the Economics of Education*, 249–277, 10.1016/B978-0-444-53429-3.00004-1.

——— (2014) "Experimental and Quasi-Experimental Analysis of Peer Effects: Two Steps Forward?," *Annual Review of Economics*, 6 (1), 253–272, 10.1146/annurev-economics-071813-104217.

Seftor, Neil S. and Sarah E Turner (2002) "Back to School: Federal Student Aid Policy and Adult College Enrollment," *The Journal of Human Resources*, 37 (2), 336, 10.2307/3069650.

Solis, Alex (2017) "Credit Access and College Enrollment," *Journal of Political Economy*, 125 (2), 562–622, 10.1086/690829.

Wiswall, Matthew and Basit Zafar (2013) "Determinants of college major choice: Identification using an information experiment," *Review of Economic Studies*, 82 (2), 791–824, 10.1093/restud/rdu044.

Zimmerman, Seth D (2014) "The returns to college admission for academically marginal students," *Journal of Labor Economics*, 32 (4), 711–754.

A Mentoring Program

The mentoring program promoted the continuity of studies among graduating high school students. It was implemented through four one-hour teaching sessions per group (of four students) and five phone calls between August and December from a mentor assigned by the Foundation. Students could also contact mentors via phone or WhatsApp to ask questions about their transition to higher education. Mentors and students communicated during established work hours, through Foundation's mobile phones, and following a security protocol.

Sessions

Session I: Aspirations and Barriers

1. Generate a space of trust and openness in which students feel comfortable, welcomed, and accepted.
2. Empower the identification of their qualities, strengths, and skills.
3. Identify the barriers limiting their future projection in the academic field.
4. Promote openness to new development opportunities through the advantages of accessing higher education.

Session II: Choosing Careers and Higher Education Institutions

1. Analyze information regarding different occupations/professions to make responsible decisions about future education.
2. Provide students with a space for reflection regarding the construction of their life project.

Session III: Applying for Student Aid

1. Provide students with information regarding the application process for the different available funding opportunities.
2. Review together the instrument (FUAS) that allows opting for gratuity, scholarships, and/or credits.

3. Minimize the difficulties that students may encounter when applying for benefits as much as possible.

4. Promote teamwork and support among students.

Session IV: Applying for Higher Education Programs and Institutions

1. Recapitulate what has been addressed in previous workshops to establish continuity and a comprehensive understanding of the journey taken together.

2. Provide information regarding the application stages for university careers and technical professional subsystems.

3. Encourage students to remain motivated and positive toward their academic future.

B Survey

I. Entrance Survey

The entrance survey was conducted between April-May-June of 2021 and is organized into two sections. The first section asks students about their aspirations and interests in higher education. On the other hand, the second section asks about students' knowledge (and perception of knowledge) about the higher education system.

Questions in the first section

1. If you were to attend higher education, which type of institution would you apply to? Rank the options from most to least likely (1: most likely - 2: second most likely - 3: third most likely).
   (a) University.
   (b) Technical institute.
   (c) Technical training center.
2. If you were to attend higher education, which area of study would you like to specialize in? Rank only the three areas that seem most interesting to you from 1 to 3 (1: the one you like the most - 2: the second one you like the most - 3: the third one you like the most).
   (a) Business and Commerce (e.g., business administration, accounting, gastronomy, tourism, commercial engineering).
   (b) Agriculture (e.g., agronomy, veterinary medicine, forestry).
   (c) Arts and Architecture (e.g., architecture, arts, communications, design, hairdressing).
   (d) Basic Sciences (e.g., biology, chemistry, physics, geology, mathematics).
   (e) Social Sciences (e.g., public administration, social work, psychology, journalism).
   (f) Law (e.g., law, legal technician).
   (g) Education (e.g., early childhood education, pedagogy, educational psychology, education technician).

(h) Humanities (e.g., translation, literature, library science).

(i) Health (e.g., nursing, speech therapy, kinesiology, dentistry, nutrition, clinical laboratory).

(j) Technology (e.g., civil engineering, electrical engineering, mechanical engineering, mining, telecommunications, computer science).

3. If you were to attend higher education, which factors do you think are the most important when choosing a career or institution? Rank only the three factors that seem most important to you from 1 to 3 (1: the most important - 2: the second most important - 3: the third most important).

   (a) Tuition (cost of the program).

   (b) Income after graduating.

   (c) Employability after graduating.

   (d) Duration of the program.

   (e) Compatibility of studies/work.

   (f) Interest in the field of study.

   (g) Infrastructure (classrooms, libraries, computer labs, laboratories).

   (h) Probability of finishing the program.

   (i) Relationships among students.

4. If you were to take the National University Entrance Exam (PDT, formerly PSU), what scores do you think you would get?

5. Do you plan to take the National University Entrance Exam (PDT)?

6. How much do you agree with the following statements? (Strongly disagree, disagree, neutral, agree, strongly agree)

   (a) I am capable of performing well in higher education.

   (b) I am capable of being admitted to higher education.

   (c) I am capable of graduating from higher education.

   (d) Compared to my peers, I am better prepared for higher education.

7. Regarding your future education, which of the following statements best represents your current situation?
    (a) I want to enter higher education in 2022.
    (b) I want to enter higher education in 2023.
    (c) I have no intention of entering higher education for now.
8. Do you know what career you would like to study?
9. Do you know which institution you would like to study at?
10. What is your biggest concern when considering your future higher education access?
    (a) Financing my studies.
    (b) Balancing work and studies.
    (c) Meeting academic requirements for admission.
    (d) Finding a suitable program and/or institution for me.
    (e) Integrating and making new friends.
    (f) The difficulty of courses in higher education.
11. How do you plan to finance your higher education? Please indicate the percentage that you will finance through each of the following alternatives (must add up to 100%):
    (a) Personal resources/family support (%).
    (b) I will work while studying (%).
    (c) Free tuition (%).
    (d) State scholarship (%).
    (e) State credit or loan (%).
    (f) Private credit or loan (%).
    (g) Other (%).

Questions in the second section

1. What information sources have you used to learn about higher education? (Check all that apply)
   (a) Official websites (DEMRE, www.mifuturo.cl, Ministry of Education).
   (b) Private organizations and/or higher education institution websites.
   (c) Newspapers, magazines, and other print media.
   (d) Advertisements.
   (e) Higher education fairs.
   (f) Family members (parents, siblings, cousins, aunts/uncles).
   (g) Teachers and guidance counselors.
   (h) High school classmates.
   (i) Neighbors.
2. How well do you know the following aspects of the higher education system? (Four possible answers: Very little, Little, Well, Very well).
   (a) Financing opportunities.
   (b) Financing application process and requirements.
   (c) Higher education application process and requirements.
   (d) Salaries and employability of higher education graduates.
3. Mark true or false for the following statements based on your knowledge:
   (a) Individuals who complete a higher education degree have a higher probability of finding employment, on average.
   (b) The monthly income of university graduates is always higher than that of graduates from vocational institutes.
   (c) Some programs, even though they theoretically take 5 years to complete, take more than 6 years.
4. What is the average monthly salary for graduates of the following programs four years after graduating? (For higher education institutions: Centers for Technical Education (CFT), Professional Institutes (IP), and Universities).

(a) Business.

(b) Early Childhood Education.

(c) Nursing.

5. Answer the following question based on your knowledge. Approximately what percentage of students who enter a Center for Technical Education graduate?

6. Answer the following question based on your knowledge. Approximately what percentage of students who enter a Professional Institute graduate?

7. Answer the following question based on your knowledge. Approximately what percentage of students who enter a University graduate?

8. The FUAS is a form that must be completed to (check the alternative that you think is correct):

   (a) Apply to a university.

   (b) Take the PDT (Transition Test, formerly PSU).

   (c) Apply for state financing benefits.

   (d) Apply to CFT (Center for Technical Education) and IP (Professional Institute).

9. What requirements do you think are necessary to access Free Tuition? (you can mark more than one alternative):

   (a) Come from a household with incomes below the minimum wage.

   (b) Come from a household belonging to the 60% of lowest incomes in the country.

   (c) Be in the top 10% of my class.

   (d) Obtain more than 450 points in the PDT.

   (e) Finish high school with an average higher than 5.0.

   (f) Enroll in an accredited higher education institution.

   (g) Enroll in a higher education institution affiliated with Free Tuition.

   (h) There are no requirements.

10. Mark as true or false the following statements according to your knowledge:

(a) I must enroll in accredited institutions of higher education to be eligible for state scholarships and loans.

(b) I must apply for each state financing benefit separately.

(c) To apply to universities through the regular admission process, I must take the PDT.

(d) I must come from a household belonging to the 50% of lower incomes in the country to be eligible for state scholarships.

(e) All state scholarships require a score above 450 points on the PDT.

(f) There is a centralized system to apply for university programs.

(g) Registering to take the PDT (formerly known as PSU) is free for you.

II. Exit Survey

The exit survey was conducted between October and November 2021. It consists of a section with questions about students' knowledge (and perception of knowledge) about the higher education system.

Questions

1. How well do you know the following aspects of the higher education system? (Four possible alternatives: Very little, Little, Well, Very well).

   (a) Financing opportunities.

   (b) Process and requirements for applying for financing.

   (c) Process and requirements for applying to higher education.

   (d) Salaries and employability of higher education graduates.

2. What sources of information have you used to learn about higher education? (Check all that apply)

   (a) Official websites (DEMRE, www.mifuturo.cl, Ministry of Education).

   (b) Private organizations and/or higher education institution websites.

   (c) Newspapers, magazines, and other printed media.

(d) Advertisements.

(e) Higher education fairs.

(f) Family members (parents, siblings, cousins, aunts/uncles).

(g) Teachers and counselors.

(h) Classmates.

(i) Neighbors.

(j) Other.

3. Did you receive the information brochure this year?

   (a) Yes.

   (b) No.

   (c) Not sure.

4. Mark true or false for the following statements according to your knowledge:

   (a) Those who complete higher education have, on average, a greater chance of finding employment.

   (b) The monthly income of university graduates is always higher than that of graduates from professional institutes.

5. If you were to take the Transition Test (PDT, formerly PSU), what scores would you get?

6. What do you think is the average monthly salary for graduates of the following programs four years after graduating? (For higher education institutions: Technical Training Centers (CFT), Professional Institutes (IP), and Universities).

   (a) Business.

   (b) Early Childhood Education.

   (c) Nursing.

7. The FUAS is a form that must be completed to (check the alternative you think is correct):

(a) Apply to university.

(b) Take the PDT (Transition Test, formerly PSU).

(c) Apply for state financing benefits.

(d) Apply to CFT (Technical Training Center) and IP (Professional Institute).

8. What requirements do you think are necessary to access Free Education? (You can check more than one alternative):

   (a) Coming from a household with income lower than the minimum wage.

   (b) Coming from a household belonging to the 60% of lower-income households in the country.

   (c) Being in the top 10% of performance in my class.

   (d) Obtaining more than 450 points in the PDT.

   (e) Finishing high school with a GPA higher than 5.0.

   (f) Enrolling in an accredited higher education institution.

   (g) Enrolling in a higher education institution affiliated with Free Education.

   (h) There are no requirements.

9. Mark as true or false the following statements based on your knowledge:

   (a) I must enroll in accredited higher education institutions to be eligible for State scholarships and loans.

   (b) I must apply for each State funding benefit separately.

   (c) I must come from a household belonging to the 50% of lower-income households in the country to be eligible for State scholarships.

   (d) All State scholarships require scores above 450 in the PDT.

   (e) There is a centralized system to apply for university programs.

C Results without controls

This appendix contains our main results shown in Table 7 and 8, estimated without controls. The size and significance of the estimates does not meaningfully change with the inclusion of controls. Therefore, we conclude that the estimation of the effects is robust to the inclusion or exclusion of controls, and we choose to present the main results with controls to improve our precision.

In both tables, we estimate the effect of the interventions on students' outcomes, relying on specification (2):

$$Y_{is} = \alpha_0 + \alpha_1 T_{1is} + \alpha_2 T_{2is} + \alpha_3 T_{3is} + \epsilon_{is} \tag{2}$$

where Y_{is} is the outcome of student i from school s; T_{1is} is an indicator that takes value one if the student i was enrolled in a school s assigned to the information only treatment group (i.e., treatment 1); T_{2is} is an indicator that takes value one if the student i is enrolled in a school assigned to the information and mentoring program (i.e., treatment 2); and T_{3is} is an indicator that takes value one if the student i is actually assigned to the mentorship program. We cluster the standard errors at the school network level.

The estimates of interest are α_1—which measures the effect of the information treatment—α_2—which measures the effect of the information treatment and having classmates assigned to the mentorship program—and α_3—which measures the effect of the information and mentorship treatments.

Table C.I: Effects on Students Understanding of the System

	Declares knowing the system Well or Very Well		*Indexes of Actual Knowledge of the system*		
	Financial Aid (1)	Labor Markets Returns (2)	Overall Knowledge (3)	Financial Aid (4)	Labor Markets Returns (5)
Information	0.024	-0.002	0.118**	0.071	0.084**
	(0.018)	(0.018)	(0.054)	(0.059)	(0.034)
Information and peers with mentoring	0.017	0.001	0.105**	0.100*	0.033
	(0.020)	(0.018)	(0.049)	(0.057)	(0.031)
Information and Mentoring	0.210***	0.099***	0.271***	0.302***	0.066
	(0.040)	(0.033)	(0.082)	(0.079)	(0.066)
Observations	8746	8746	7394	7424	7726
Control mean	0.488	0.391	0.000	-0.000	-0.000

Note: All specification include socioeconomic characteristics, share of female students, share of students on vocational track, and class size as control variables. Errors clustered at the school network level.

Table C.II: Higher Education: Admission Test and Enrollment

Panel A: Admission Exam

	Pr. Registers for PDT (1)	Pr. Takes the PDT (2)	Pr. Score > p50 (3)	Pr. Score > p75 (4)	Pr. Score > p90 (5)	Pr. Score > p95 (6)
Information	0.013	0.018	0.015	0.004	0.001	-0.001
	(0.031)	(0.032)	(0.019)	(0.010)	(0.007)	(0.007)
Information and peers with mentoring	0.057*	0.057*	0.036*	0.031***	0.023**	0.020**
	(0.032)	(0.033)	(0.020)	(0.011)	(0.009)	(0.010)
Information and Mentoring	0.126***	0.129***	0.049**	0.024*	0.029**	0.032**
	(0.029)	(0.032)	(0.023)	(0.014)	(0.013)	(0.013)
Observations	26853	26853	26853	26853	26853	26853
Control mean	0.628	0.568	0.226	0.133	0.105	0.101

Panel B: Applications and Enrollment

	Pr. of applying for funding (1)	Pr. of applying to university (2)	Pr. of enrolling in higher ed. (3)	Pr. of enrolling in higher ed. with funding (4)	Pr. of enrolling in vocational higher ed. (5)	Pr. of enrolling in university (6)
Information	-0.014	-0.001	0.008	0.002	0.012	-0.005
	(0.028)	(0.018)	(0.021)	(0.019)	(0.015)	(0.015)
Information and peers with mentoring	0.009	0.012	0.003	-0.005	0.004	-0.001
	(0.024)	(0.018)	(0.020)	(0.017)	(0.012)	(0.015)
Information and Mentoring	0.097***	0.037*	0.043**	0.051**	0.013	0.030*
	(0.024)	(0.020)	(0.021)	(0.021)	(0.016)	(0.018)
Observations	26853	26853	26853	26853	26853	26853
Control mean	0.602	0.177	0.372	0.302	0.236	0.136

Note: Panel A shows the effects of the treatments on the admission exams, column (1) displays the probability of registering for the university admission test, (2) shows the probability of taking the admission test, (3) shows the probability of obtaining a score on the test above the median, (4) displays the effect on the probability of being above the 75th percentile score on the test, (5) shows the effect on the probability of being above the 90th percentile score on the test, and (6) shows the effect on the probability of being above the 95th percentile score on the test. Panel B shows the effects of treatments on applications and enrollment in the higher education system. Column (1) displays the probability of applying for benefits to access higher education, column (2) shows the probability of applying to university, (3) shows the probability of enrolling in higher education, (4) shows the probability of enrolling in higher education with benefits, (5) displays the probability of enrolling in a technical or vocational education institution, and (6) shows the effect on the probability of enrolling in a university.. All specification include school socioeconomic characteristics, share of female students, share of students on vocational track, and class size as control variables. Errors clustered at the school network level. * p-value < .1, ** p-value < .05, *** p-value < .01