

1 Project ICFES: Evidence from a referral field experiment\* 1

2 Manuel Munoz,<sup>†</sup> Ernesto Reuben,<sup>‡†</sup>Reha Tuncer<sup>§</sup> 2

3 June 2, 2025 3

4 **Abstract** 4

5 Lorem Ipsum ([Beaman, Keleher, & Magruder, 2018](#)) 5

6 **JEL Classification:** C93, D03, D83, J24 6

7 **Keywords:** productivity beliefs, referrals, field experiment, skill identification, social 7  
8 class 8

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\*We obtained Institutional Review Board approvals from NYU Abu Dhabi (HRPP 2024-50) and the University of Luxembourg (ERP 24-028). The study design was preregistered in the OSF Registries prior to data collection (see <https://doi.org/10.17605/OSF.IO/V9T3W>).

<sup>†</sup>Luxembourg Institute of Socio-Economic Research

<sup>‡</sup>Division of Social Science, New York University Abu Dhabi

<sup>§</sup>University of Luxembourg

# 1 Introduction

Equally qualified individuals may face very different labor market outcomes depending on their socioeconomic status (SES). A key driver of this inequality is due to differences in social capital,<sup>1</sup> with recent empirical work characterizing its most important facet as the “share of high-SES friends among individuals with low-SES” because it correlates strongly with labor market income (Chetty et al., 2022). A lack of social capital means a lack of access to individuals with influential (higher paid) jobs and job opportunities. In economic terms, it implies having worse outcomes when using one’s network to find jobs conditional on the capacity on leveraging one’s social network.<sup>2</sup>

Referral hiring, the formal or informal process where firms ask workers to recommend qualified candidates for job opportunities, is a common labor market practice which makes evident the role of differences in social capital. As referrals must originate from the networks of referrers, the composition of referrer networks becomes a crucial channel that may propagate inequality: Similar individuals across socio-demographic characteristics tend to form connections at higher rates (McPherson, Smith-Lovin, & Cook, 2001), making across SES (low-to-high) connections less likely than same-SES connections (Chetty et al., 2022). Referrals will thus reflect similarities in socio-demographic characteristics present in networks even in the absence of biases in the referral procedure, i.e., referring at random from one’s network according to some productivity criteria.

Evidence shows referrals can be biased under substantial pay-for-performance incentives beyond what is attributable to differences in network compositions, at least for the case of gender (Beaman et al., 2018; Hederos, Sandberg, Kvissberg, & Polano, 2025). A similar bias against low-SES may further exacerbate outcomes of low-SES individuals: If job information are in the hands of a select few high-SES which low-SES have already

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<sup>1</sup>See for example Bourdieu (1986); Loury (1977) for pioneering work on the relationship between social position and human capital acquisition.

<sup>2</sup>See for example Lin, Ensel, and Vaughn (1981); Mouw (2003) for differential outcomes while using contacts in job search, and Pedulla and Pager (2019); Smith (2005) specifically for the effects of race conditional on network use. fill in citation sociology reading from slides

limited network access to (social capital hypothesis), and high-SES referrers are biased against low-SES, referring other high-SES at higher rates than their network composition, we expect referral hiring to disadvantage low-SES. The empirical question we answer is whether there is a bias against low-SES once we account for the network SES composition in a controlled setting.

In this study, we focus on the role of SES in referrals by investigating whether individuals who are asked to refer someone tend to refer a same-SES candidate. We also explore potential mechanisms behind referral patterns under different incentives. To this end, we conducted a lab-in-the-field experiment with 734 participants in a Colombian university where different SES groups mix together. Participants were instructed to refer a qualified student for tasks similar to the math and reading parts of the national university entry exam (equivalent of SAT in US system). To incentivize participants to refer qualified candidates, we set earnings dependent on referred candidates' actual university entry exam scores.

Referral hiring in the labor market can range from firm-level formal referral programs asking employees to bring candidates to simply passing on job opportunities between network members (Topa, 2019). As participants in our study are students at the university referring based on exam scores, we abstract away from formal referral programs with defined job openings. Our setting instead resembles situations where contacts share opportunities with each other without the need for the referred candidate to take any action. This also eliminates reputational concerns as there is no firm (see for example Bandiera, Barankay, and Rasul (2009); Witte (2021)). At the same time, national university entry exam scores are still objective, widely accepted measures of ability, and we show evidence that referrers in our setting possess accurate information about these signals.

We find strong evidence that networks of high- and low-SES participants exhibit SES-homophily. Both groups are connected at higher rates with their own SES group than what would be at random given actual group shares at the university (Figure 1a). As students take more courses together within the same program, their networks dwindle in

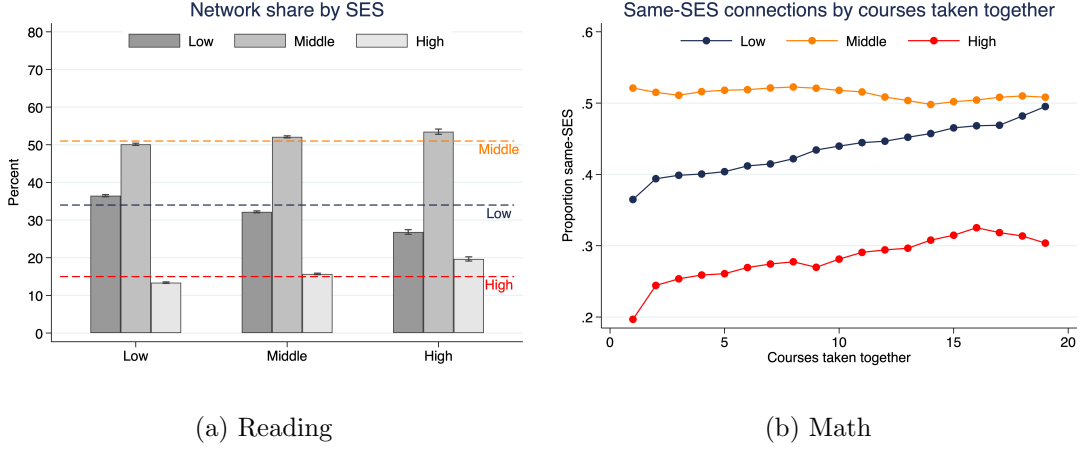
size (Figures 2a and 2b), and become more homogenous in SES-shares (Figure 1b). We identify selection into academic programs as a key mechanism. The private university where our study takes place implements exogenous cost-based program pricing and does not offer SES-based price reductions. These result in programs with very large cost differences within the same university (Figure 3a). We find that average yearly fees paid increase with SES, and the high-SES share in the most expensive program at the university, medicine, drives the network segregation across SES (Figure 3b).

Do segregated networks account for all the differences in SES referral rates across SES groups? Same-SES referrals are 17% more common than is suggested by referrer networks. High- and low-SES referrers under refer each other by 50%. Yet, controlling for networks, our results suggest only low-SES students show significant same-SES homophily in referrals. Regardless of SES, referrals identify highly able individuals, and are characterized by a very high number of courses taken together. The latter underlies the impact of program selection in referrals, where the smaller and more homogenous choice sets come into play. Our treatment randomized participants across two different incentive schemes by adding a substantial monetary bonus (\$25) for the referred candidate on top of the pay-for-performance incentives. We provide evidence that treatment incentives did not change the referral behavior across the same-SES referral rate, the number of courses taken together with the referral candidate, and the candidate's exam scores.

This paper extends various the literature

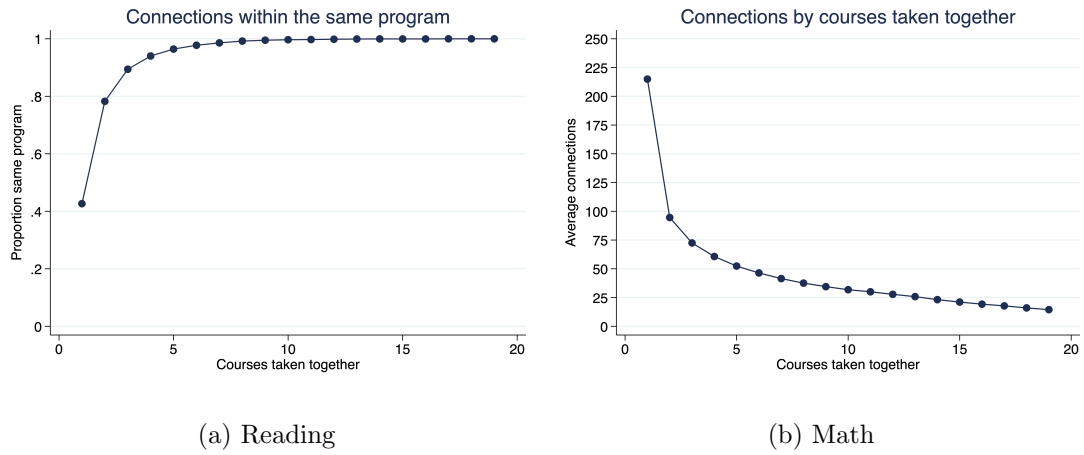
The remainder of the paper is organized as follows. Section 2 begins with the background and setting in Colombia. In Section 3 we present the design of the experiment. In Section 4 we describe the data and procedures. Section 5 discusses the results of the experiment. Section 6 concludes. The Appendix presents additional tables and figures as well as the experiment instructions.

Figure 1: Effect of the Bonus on Referrals



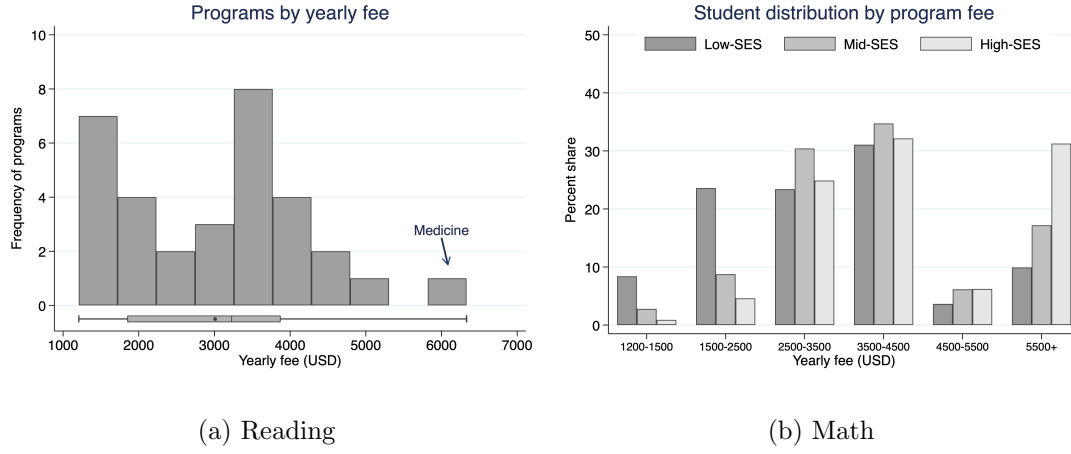
*Note:* The top panel compares the reading scores and tie strength of referrals across conditions. The bottom panel shows the average standardized math and tie strength of referrals across conditions. We test differences in across conditions using two-sample  $t$ -tests and find no meaningful differences. For both math and reading, treatment causes no significant changes in referral performance or tie strength.

Figure 2: Effect of the Bonus on Referrals



*Note:* The top panel compares the reading scores and tie strength of referrals across conditions. The bottom panel shows the average standardized math and tie strength of referrals across conditions. We test differences in across conditions using two-sample  $t$ -tests and find no meaningful differences. For both math and reading, treatment causes no significant changes in referral performance or tie strength. considering the net average monthly wage stands at \$350 and minimum legal wage is at \$200 in 2025

Figure 3: Effect of the Bonus on Referrals



*Note:* The top panel compares the reading scores and tie strength of referrals across conditions. The bottom panel shows the average standardized math and tie strength of referrals across conditions. We test differences in across conditions using two-sample  $t$ -tests and find no meaningful differences. For both math and reading, treatment causes no significant changes in referral performance or tie strength. considering the net average monthly wage stands at \$350 and minimum legal wage is at \$200 in 2025

88	<b>2 Background and Setting</b>	88
89	<b>3 Design</b>	89
90	<b>4 Results</b>	90
91	<b>4.1 Descriptives</b>	91

Table 1: Selection into the experiment

	<b>Admin Data</b>	<b>Sample</b>	<b><i>p</i></b>
Reading score	62.651	65.183	0.000
Math score	63.973	67.477	0.000
GPA	3.958	4.012	0.000
Low-SES	0.343	0.410	0.000
Med-SES	0.505	0.499	0.763
High-SES	0.153	0.091	0.000
Female	0.567	0.530	0.060
Age	21.154	20.651	0.000
Observations	4,417	734	5,151

*Note:* This table compares characteristics between the full administrative sample and the experimental sample. *p*-values for binary outcomes (Low-SES, Med-SES, High-SES, Female) are from two-sample tests of proportions; for continuous variables, from two-sample *t*-tests with unequal variances. All reported *p*-values are two-tailed.



Table 2: Balance between treatments

	<b>Baseline</b>	<b>Bonus</b>	<b><i>p</i></b>
Reading score	64.712	65.693	0.134
Math score	67.366	67.597	0.780
GPA	4.003	4.021	0.445
# connections	173.40	176.88	0.574
Tie strength	3.939	3.719	0.443
Low-SES	0.419	0.401	0.615
Med-SES	0.492	0.506	0.714
High-SES	0.089	0.094	0.824
Female	0.529	0.531	0.947
Age	20.576	20.733	0.380
Observations	382	352	734

*Note:* This table presents balance tests between **Baseline** and **Bonus** conditions.  $p$ -values for binary outcomes are from two-sample tests of proportions; for continuous variables, from two-sample  $t$ -tests with unequal variances. All reported  $p$ -values are two-tailed. Tie strength refers to the number of classes taken together. # connections refers to the number of individuals in referrer choice sets, otherwise called the “network degree”. Low-SES, Med-SES, and High-SES are binary variables indicating the share of participants in estrato 1 and 2, 3 and 4, or 5 and 6, respectively.

Table 3: Distribution of referrals by area

Area	Only one referral	Both areas	Total
Verbal	65	608	673
Math	61	608	669
Total	126	1,216	1,342

*Note:* The table shows how many referrers made referrals in only one area versus both areas. “Only one referral” indicates individuals who made referrals exclusively in that area. “Both areas” shows individuals who made referrals in both verbal and math areas. The majority of referrers (608) made referrals in both areas.

Table 4: Summary statistics for network members by nomination status

	Verbal		Math	
	Not Referred	Referred	Not Referred	Referred
Reading z-score	0.070 (0.003)	0.509 (0.039)	0.079 (0.003)	0.465 (0.040)
Math z-score	0.079 (0.003)	0.452 (0.042)	0.087 (0.003)	0.590 (0.043)
GPA z-score	-0.066 (0.003)	0.705 (0.041)	-0.069 (0.003)	0.711 (0.041)
Tie strength z-score	-0.153 (0.003)	2.690 (0.091)	-0.184 (0.003)	2.488 (0.090)
Low-SES	0.334 (0.001)	0.374 (0.019)	0.338 (0.001)	0.384 (0.019)
Med-SES	0.515 (0.001)	0.513 (0.019)	0.513 (0.001)	0.507 (0.019)
High-SES	0.151 (0.001)	0.113 (0.012)	0.149 (0.001)	0.109 (0.012)
Observations	128,174	673	127,481	669

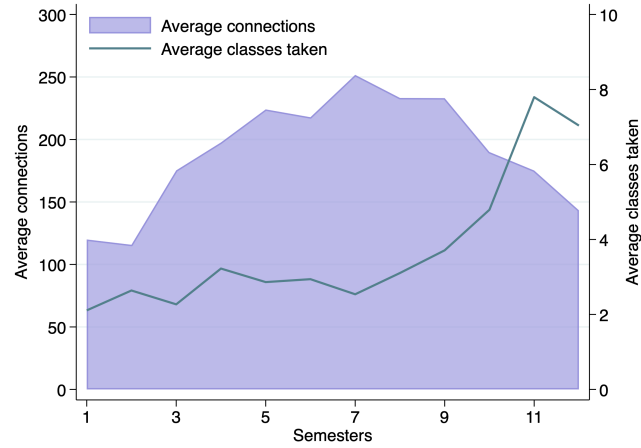
*Note:* Standard errors in parentheses. GPA, test scores, and tie strength are standardized at the network level. For each referrer’s network, we first calculated the mean and standard deviation of each measure. We then computed the average of these means and standard deviations across all referrers. Each individual’s score was standardized using these network-level statistics. The standardization formula is  $z = (x - \bar{x}_{network}) / \sigma_{network}$ , where  $\bar{x}_{network}$  and  $\sigma_{network}$  are the average of network means and standard deviations, respectively. Low-SES, Med-SES, and High-SES are binary variables indicating the share of participants in estrato 1 and 2, 3 and 4, or 5 and 6, respectively. Tie strength measures the number of connections between individuals.

Table 5: Comparison of math and verbal scores by SES group and data source

	Math			Verbal		
	Network	Admin	Sample	Network	Admin	Sample
Low-SES	66.976 (0.052)	61.653 (0.346)	67.813 (0.694)	64.738 (0.043)	60.974 (0.274)	66.058 (0.574)
Mid-SES	65.627 (0.039)	64.531 (0.224)	66.859 (0.580)	63.685 (0.032)	63.154 (0.183)	64.779 (0.436)
High-SES	67.781 (0.077)	67.330 (0.416)	70.610 (1.295)	64.966 (0.063)	64.892 (0.341)	66.397 (1.214)
Observations	128,150	4,415	669	128,847	4,403	673

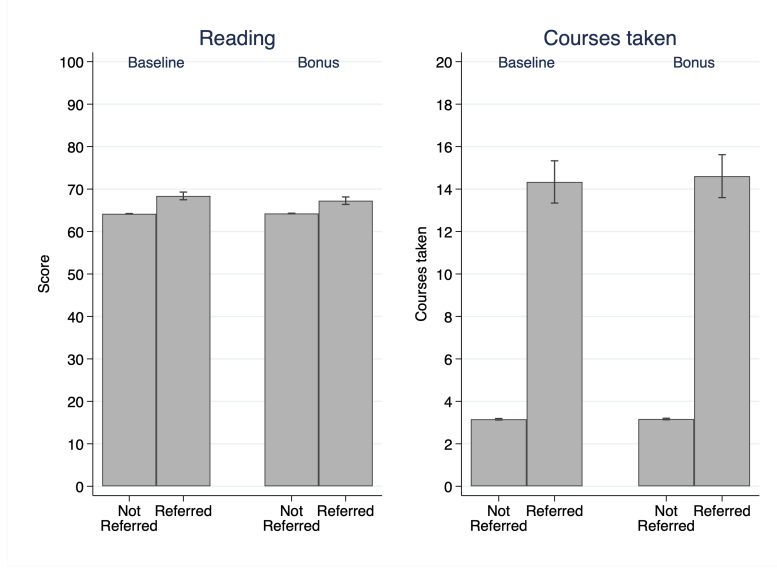
*Note:* Standard errors in parentheses. The table presents mean scores with standard errors for math and verbal tests across the entire network, the admin data, and the sample. Admin data consistently shows lower scores than both network and the sample across all SES groups consistent with selection, with the largest gaps occurring for the Low-SES. Differences between network and sample scores are generally smaller than those between either and the admin data.

Figure 4: Participant network size and tie strength by time spent at UNAB

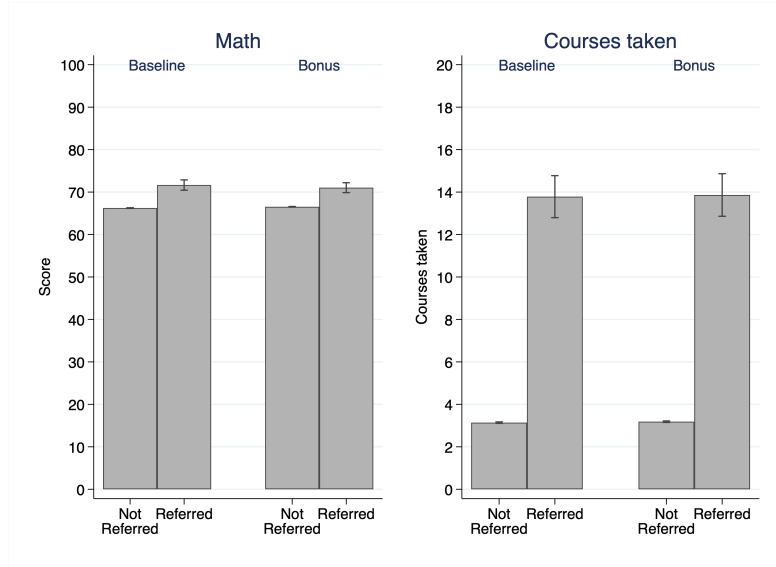


*Note:* This figure displays the average number of connections for referrers in blue and the average number of classes they have taken together with their connections in green across semesters spent at UNAB. The data shows an increase in the number of classes taken together as students progress in their programs, with the connections peaking around 7 semesters and dropping as certain students finish their bachelor's.

Figure 5: Effect of the Bonus on Referrals



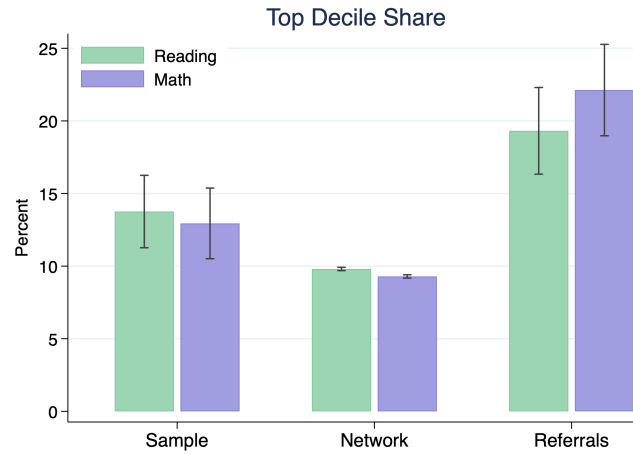
(a) Reading



(b) Math

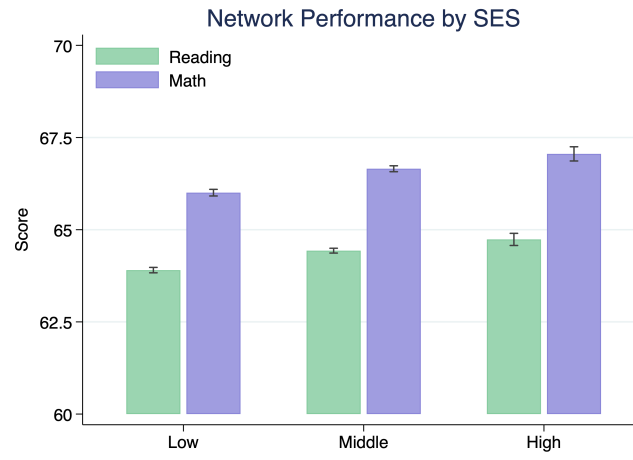
*Note:* The top panel compares the reading scores and tie strength of referrals across conditions. The bottom panel shows the average standardized math and tie strength of referrals across conditions. We test differences in across conditions using two-sample  $t$ -tests and find no meaningful differences. For both math and reading, treatment causes no significant changes in referral performance or tie strength.

Figure 6: Top decile performer share across the sample, network and referrals



*Note:* This figure displays the percentage share of top decile individuals according to the admin data across three dimensions. First bar shows referrers in the sample of participants. Second bar is the share of top decile individuals in their networks. Third column shows the share of top decile among the referrals made. We test differences between proportions across these three groups using two-sample tests of proportions. For both math and reading scores, the differences between Sample and Network ( $p < 0.001$ ), Sample and Referrals ( $p < 0.005$ ), and Network and Referrals ( $p < 0.001$ ) are all statistically significant.

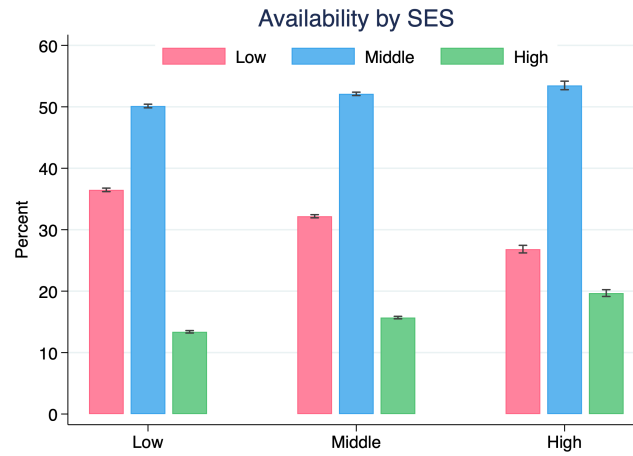
Figure 7: Participant network performance by subject and SES



*Note:* This figure displays the network average math and reading z-scores across referrer SES. We test differences between scores across SES using paired  $t$ -tests. For both math and reading scores, all differences between SES groups are statistically significant (all  $p \leq 0.001$ ).

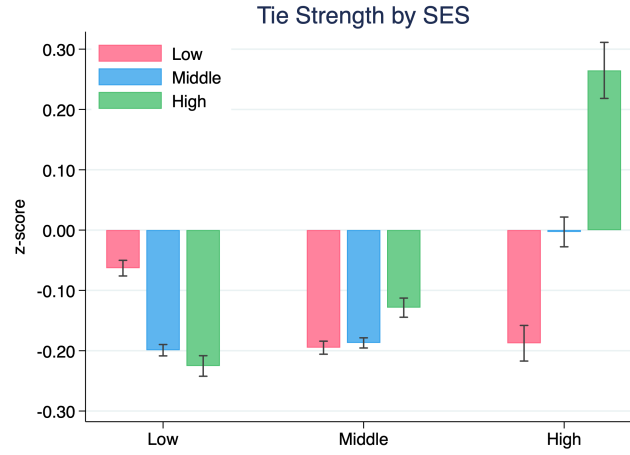


Figure 8: Participant network composition by SES



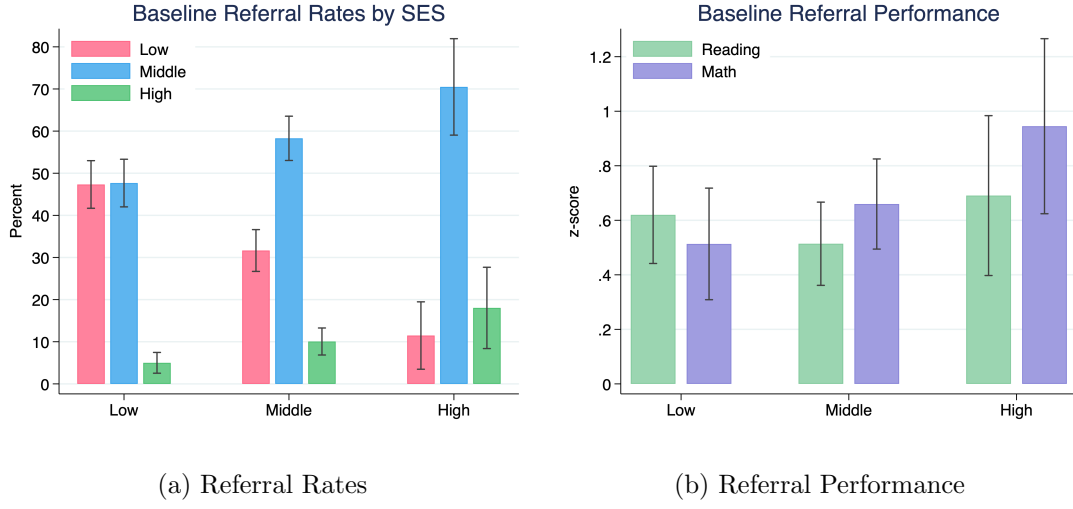
*Note:* This figure displays the composition of networks by SES. We test differences in proportions of peer connections across SES groups using two-sample tests of proportions. All differences are statistically significant ( $p < 0.001$ ): Low SES students are more likely to connect with Low SES peers than Middle or High SES students; Middle SES students form more connections with Middle SES peers than Low SES students; and High SES students have the highest proportion of High SES connections.

Figure 9: Participant network composition by SES



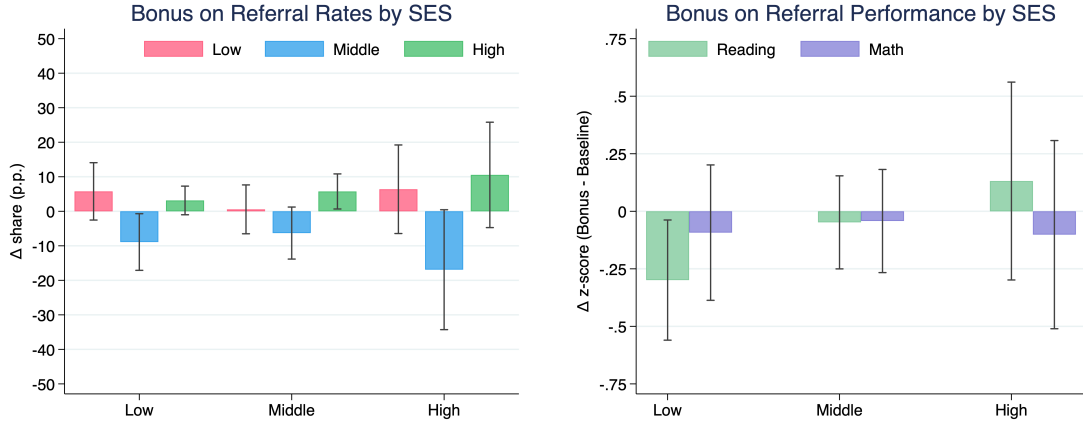
*Note:* This figure displays the standardized tie strength by SES. We test differences in standardized tie strength across SES groups using two-sample  $t$ -tests. All differences are statistically significant ( $p < 0.001$ ) except for the comparison between Middle and High SES students' connections to Low SES peers ( $p = 0.65$ ). The standardized tie strength for High SES students with other High SES students is substantially positive (0.26), while all other tie strengths are negative or near zero.

Figure 10: Baseline Referral Patterns by SES



*Note:* The left panel shows the distribution of referrals across SES in the baseline condition. We test differences in SES shares across SES groups using two-sample tests of proportions. All differences are statistically significant ( $p < 0.1$ ). The right panel shows the average standardized math and reading scores of referred students by referrer's SES. We test differences in z-scores across SES groups using two-sample  $t$ -tests and find no statistically significant differences in reading scores across SES groups (all  $p > 0.36$ ). For math scores, we observe marginally significant differences between Low and High SES students ( $p = 0.08$ ) and between Middle and High SES students ( $p = 0.18$ ), with High SES referring peers with higher math performance.

Figure 11: Effect of the Bonus

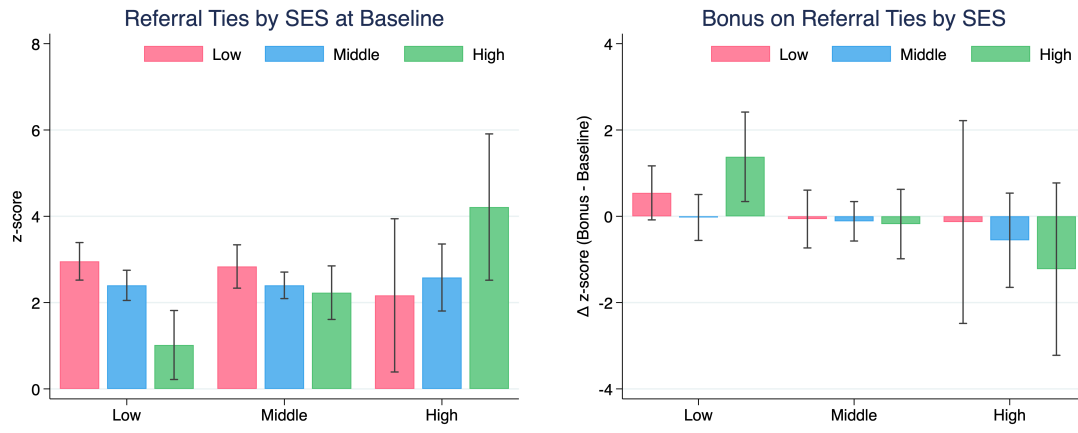


(a) Changes in Referral Rates

(b) Changes in Referral Performance

*Note:* The left panel shows the changes in referral rates across SES. We test differences in SES shares across conditions using two-sample tests of proportions. For Low-SES, only the change in referral share of Middle-SES is statistically significant ( $p = 0.034$ ). For Middle-SES, only the change in referral share of High-SES is statistically significant ( $p = 0.027$ ). For High-SES, only the change in referral share of Middle-SES is statistically significant ( $p = 0.059$ ). The right panel shows the differences in math and reading z-scores across SES. We test differences in SES shares across conditions using two-sample  $t$ -tests. For both reading and math scores, the only statistically significant difference is in the reading scores for Low-SES ( $p = 0.026$ ).

Figure 12: Effect of the Bonus on Tie Strength

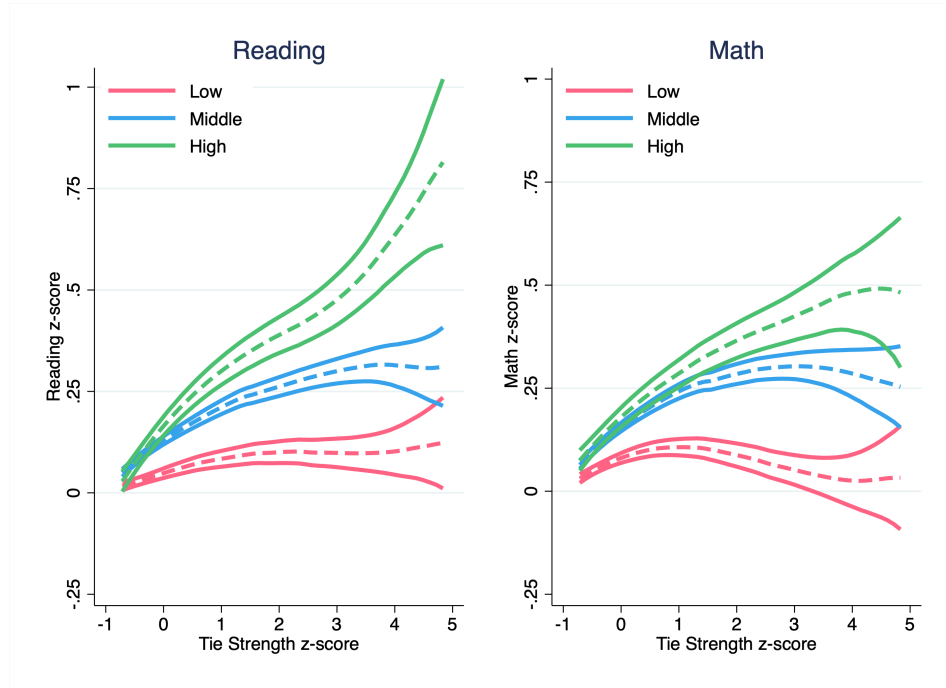


(a) Changes in Referral Rates

(b) Changes in Referral Performance

*Note:* The left panel shows the changes in referral rates across socioeconomic strata (bonus minus baseline). The right panel shows the differences in average standardized math and reading scores of referred students by referrer's SES.

Figure 13: Performance by Tie Strength and SES



*Note:* This figure shows local polynomial regressions of network math and reading z-scores by social tie strength across socioeconomic status groups with 95% confidence intervals. Higher SES have steeper positive relationships between tie strength and the average performance those in their network across reading and math scores.

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129	<b>A</b>	<b>Additional Figures and Tables</b>	129
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130	<b>A.1</b>	<b>Additional Figures</b>	130
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131	<b>B Experiment</b>	131
132	<i>We include the English version of the instructions used in Qualtrics. Participansts saw</i>	132
133	<i>the Spanish version. Horizontal lines in the text indicate page breaks and clarifying</i>	133
134	<i>comments are inside brackets.</i>	134
135	<b>Consent</b>	135
136	You have been invited to participate in this decision-making study. This study is directed	136
137	by [omitted for anonymous review] and organized with the support of the Social Bee Lab	137
138	(Social Behavior and Experimental Economics Laboratory) at UNAB.	138
139	In this study, we will pay <b>one (1)</b> out of every <b>ten (10)</b> participants, who will be	139
140	randomly selected. Each selected person will receive a fixed payment of <b>70,000</b> (seventy	140
141	thousand pesos) for completing the study. Additionally, they can earn up to <b>270,000</b>	141
142	(two hundred and seventy thousand pesos), depending on their decisions. So, in total,	142
143	if you are selected to receive payment, you can earn up to <b>340,000</b> (three hundred and	143
144	forty thousand pesos) for completing this study.	144
145	If you are selected, you can claim your payment at any Banco de Bogotá office by	145
146	presenting your ID. Your participation in this study is voluntary and you can leave the	146
147	study at any time. If you withdraw before completing the study, you will not receive	147
148	any payment.	148
149	The estimated duration of this study is 20 minutes.	149
150	The purpose of this study is to understand how people make decisions. For this, we will	150
151	use administrative information from the university such as the SABER 11 test scores of	151
152	various students (including you). Your responses will not be shared with anyone and your	152
153	participation will not affect your academic records. To maintain strict confidentiality, the	153
154	research results will not be associated at any time with information that could personally	154

155 identify you. 155

156 There are no risks associated with your participation in this study beyond everyday risks. 156

157 However, if you wish to report any problems, you can contact Professor [omitted for 157

158 anonymous review]. For questions related to your rights as a research study participant, 158

159 you can contact the IRB office of [omitted for anonymous review]. 159

160 By selecting the option “I want to participate in the study” below, you give your con- 160

161 sent to participate in this study and allow us to compare your responses with some 161

162 administrative records from the university. 162

163 • I want to participate in the study [advances to next page] 163

164 • I do not want to participate in the study 164

165 \_\_\_\_\_ 165

## 166 **Student Information** 166

167 Please write your student code. In case you are enrolled in more than one program 167

168 simultaneously, write the code of the first program you entered: 168

169 [Student ID code] 169

170 What semester are you currently in? 170

171 [Slider ranging from 1 to 11] 171

172 \_\_\_\_\_ 172

173 [Random assignment to treatment or control] 173

174	<b>Instructions</b>	174
175	The instructions for this study are presented in the following video. Please watch it	175
176	carefully. We will explain your participation and how earnings are determined if you are	176
177	selected to receive payment.	177
178	[Treatment-specific instructions in video format]	178
179	If you want to read the text of the instructions narrated in the video, press the “Read	179
180	instruction text” button. Also know that in each question, there will be a button with	180
181	information that will remind you if that question has earnings and how it is calculated,	181
182	in case you have any doubts.	182
183	<ul style="list-style-type: none"> <li>• I want to read the instructions text [text version below]</li> </ul>	183
184	<hr/>	184
185	In this study, you will respond to three types of questions. First, are the belief questions.	185
186	For belief questions, we will use as reference the results of the SABER 11 test that you	186
187	and other students took to enter the university, focused on three areas of the exam:	187
188	mathematics, reading, and English.	188
189	For each area, we will take the scores of all university students and order them from	189
190	lowest to highest. We will then group them into 100 percentiles. The percentile is a	190
191	position measure that indicates the percentage of students with an exam score that is	191
192	above or below a value.	192
193	For example, if your score in mathematics is in the 20th percentile, it means that 20	193
194	percent of university students have a score lower than yours and the remaining 80 percent	194
195	have a higher score. A sample belief question is: “compared to university students, in	195
196	what percentile is your score for mathematics?”	196
197	If your answer is correct, you can earn 20 thousand pesos. We say your answer is correct	197

198 if the difference between the percentile you suggest and the actual percentile of your 198  
199 score is not greater than 7 units. For example, if you have a score that is in the 33rd 199  
200 percentile and you say it is in the 38th, the answer is correct because the difference is 200  
201 less than 7. But if you answer that it is in the 41st, the difference is greater than 7 and 201  
202 the answer is incorrect. 202

203 The second type of questions are recommendation questions and are also based on the 203  
204 mathematics, reading, and English areas of the SABER 11 test. We will ask you to think 204  
205 about the students with whom you have taken or are taking classes, to recommend from 205  
206 among them the person you consider best at solving problems similar to those on the 206  
207 SABER 11 test. 207

208 When you start typing the name of your recommended person, the computer will show 208  
209 suggestions with the full name, program, and university entry year of different students. 209  
210 Choose the person you want to recommend. If the name doesn't appear, check that you 210  
211 are writing it correctly. Do not use accents and use 'n' instead of 'ñ'. If it still doesn't 211  
212 appear, it may be because that person is not enrolled this semester or because they did 212  
213 not take the SABER 11 test. In that case, recommend someone else. 213

214 You can earn up to 250,000 pesos for your recommendation. We will multiply your 214  
215 recommended person's score by 100 pesos if they are in the first 50 percentiles. We will 215  
216 multiply it by 500 pesos if your recommended person's score is between the 51st and 216  
217 65th percentile. If it is between the 66th and 80th percentile, we will multiply your 217  
218 recommended person's score by 1000 pesos. If the score is between the 81st and 90th 218  
219 percentile, you earn 1500 pesos multiplied by your recommended person's score. And if 219  
220 the score is between the 91st and 100th percentile, we will multiply your recommended 220  
221 person's score by 2500 pesos to determine the earnings. 221

222 The third type of questions are information questions and focus on aspects of your 222  
223 personal life or your relationship with the people you have recommended. 223

224	<b>Earnings</b>	224
225	Now we will explain who gets paid for participating and how the earnings for this study	225
226	are assigned. The computer will randomly select one out of every 10 participants to pay	226
227	for their responses. For selected individuals, the computer will randomly choose one of	227
228	the three areas, and from that chosen area, it will pay for one of the belief questions.	228
229	Similarly, the computer will randomly select one of the three areas to pay for one of the	229
230	recommendation questions.	230
231	<b>Additionally, if you are selected to receive payment, your recommended per-</b>	231
232	<b>son in the chosen area will receive a fixed payment of 100 thousand pesos.</b>	232
233	[Only seen if assigned to the treatment]	233
234	Each person selected to receive payment for this study can earn: up to 20 thousand pesos	234
235	for one of the belief questions, up to 250 thousand pesos for one of the recommendation	235
236	questions, and a fixed payment of 70 thousand pesos for completing the study.	236
237	Selected individuals can earn up to 340 thousand pesos.	237
238	<hr/>	238
239	[Participants go through all three Subject Areas in randomized order]	239
240	<b>Subject Areas</b>	240
241	<b>Critical Reading</b>	241
242	For this section, we will use as reference the Critical Reading test from SABER 11, which	242
243	evaluates the necessary competencies to understand, interpret, and evaluate texts that	243
244	can be found in everyday life and in non-specialized academic fields.	244
245	[Clicking shows the example question from SABER 11 below]	245

Although the democratic political tradition dates back to ancient Greece, political thinkers did not address the democratic cause until the 19th century. Until then, democracy had been rejected as the government of the ignorant and unenlightened masses. Today it seems that we have all become democrats without having solid arguments in favor. Liberals, conservatives, socialists, communists, anarchists, and even fascists have rushed to proclaim the virtues of democracy and to show their democratic credentials (Andrew Heywood). According to the text, which political positions identify themselves as democratic?

- Only political positions that are not extremist
- The most recent political positions historically
- The majority of existing political positions
- The totality of possible political currents

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## Mathematics

This section references the Mathematics test from SABER 11, which evaluates people's competencies to face situations that can be resolved using certain mathematical tools.

[Clicking shows the example question from SABER 11 below]

A person living in Colombia has investments in dollars in the United States and knows that the exchange rate of the dollar against the Colombian peso will remain constant this month, with 1 dollar equivalent to 2,000 Colombian pesos. Their investment, in dollars, will yield profits of 3% in the same period. A friend assures them that their profits in pesos will also be 3%. Their friend's statement is:

- Correct. The proportion in which the investment increases in dollars is the same as in pesos.

270	• Incorrect. The exact value of the investment should be known.	270
271	• Correct. 3% is a fixed proportion in either currency.	271
272	• Incorrect. 3% is a larger increase in Colombian pesos.	272
273	<hr/>	273
274	<b>English</b>	274
275	This section uses the English test from SABER 11 as a reference, which evaluates that	275
276	the person demonstrates their communicative abilities in reading and language use in	276
277	this language.	277
278	[Clicking shows the example question from SABER 11 below]	278
279	Complete the conversations by marking the correct option.	279
280	• Conversation 1: I can't eat a cold sandwich. It is horrible!	280
281	– I hope so.	281
282	– I agree.	282
283	– I am not.	283
284	• Conversation 2: It rained a lot last night!	284
285	– Did you accept?	285
286	– Did you understand?	286
287	– Did you sleep?	287
288	<hr/>	288
289	[Following parts are identical for all Subject Areas and are not repeated here for brevity]	289



290	<b>Your Score</b>	290
291	Compared to university students, in which percentile do you think your <b>[Subject Area]</b>	291
292	test score falls (1 is the lowest percentile and 100 the highest)?	292
293	[Clicking shows the explanations below]	293
294	How is a percentile calculated?	294
295	A percentile is a position measurement. To calculate it, we take the test scores for all	295
296	students currently enrolled in the university and order them from lowest to highest. The	296
297	percentile value you choose refers to the percentage of students whose score is below	297
298	yours. For example, if you choose the 20th percentile, you're indicating that 20% of	298
299	students have a score lower than yours and the remaining 80% have a score higher than	299
300	yours.	300
301	What can I earn for this question?	301
302	For your answer, you can earn <b>20,000 (twenty thousand) PESOS</b> , but only if the	302
303	difference between your response and the correct percentile is less than 7. For example, if	303
304	the percentile where your score falls is 33 and you respond with 38 (or 28), the difference	304
305	is 5 and the answer is considered correct. But if you respond with 41 or more (or 25 or	305
306	less), for example, the difference would be greater than 7 and the answer is incorrect.	306
307	Please move the sphere to indicate which percentile you think your score falls in:	307
308	[Slider with values from 0 to 100]	308
309	<hr/>	309

310 **Recommendation** 310

311 Among the people with whom you have taken any class at the university, who is your 311  
 312 recommendation for the [Subject Area] test? Please write that person's name in the 312  
 313 box below: 313

314 **Important:** You will not be considered for payment unless the recommended 314  
 315 person is someone with whom you have taken at least one class during your 315  
 316 studies. 316

317 Your response is only a recommendation for the purposes of this study and we will **not** 317  
 318 contact your recommended person at any time. 318

319 [Clicking shows the explanations below] 319

320 Who can I recommend? 320

321 Your recommendation **must** be someone with whom you have taken (or are taking) a 321  
 322 class. If not, your answer will not be considered for payment. The person you recommend 322  
 323 will not be contacted or receive any benefit from your recommendation. 323

324 As you write, you will see up to 7 suggested student names containing the letters you 324  
 325 have entered. The more you write, the more accurate the suggestions will be. Please 325  
 326 write **without** accents and use the letter 'n' instead of 'ñ'. If the name of the person 326  
 327 you're writing doesn't appear, it could be because you made an error while writing the 327  
 328 name. 328

329 If the name is correct and still doesn't appear, it could be because the student is not en- 329  
 330 rolled this semester or didn't take the SABER 11 test. In that case, you must recommend 330  
 331 someone else. 331

332 My earnings for this question? 332

333 For your recommendation, you could receive earnings of up to 250,000 (two hundred and 333  
334 fifty thousand) PESOS. The earnings are calculated based on your recommendation's 334  
335 score and the percentile of that score compared to other UNAB students, as follows: 335

- 336 • We will multiply your recommendation's score by \$100 (one hundred) pesos if it's 336  
337 between the 1st and 50th percentiles 337
- 338 • We will multiply your recommendation's score by \$500 (five hundred) pesos if it's 338  
339 between the 51st and 65th percentiles 339
- 340 • We will multiply your recommendation's score by \$1000 (one thousand) pesos if 340  
341 it's between the 66th and 80th percentiles 341
- 342 • We will multiply your recommendation's score by \$1500 (one thousand five hun- 342  
343 dred) pesos if it's between the 81st and 90th percentiles 343
- 344 • We will multiply your recommendation's score by \$2500 (two thousand five hun- 344  
345 dred) pesos if it's between the 91st and 100th percentiles 345

346 This is illustrated in the image below: 346

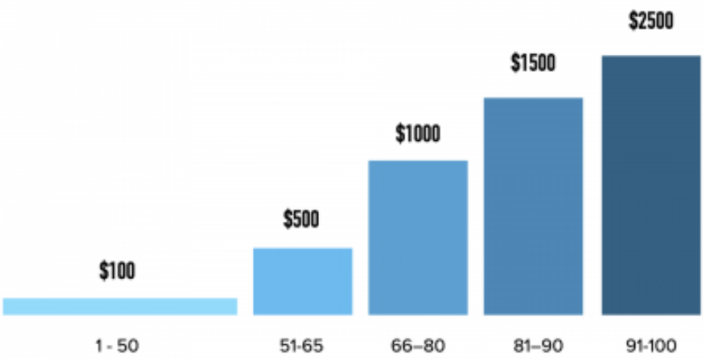


Figure B.1: Earnings for recommendation questions

347 For example, if your recommendation got 54 points and the score is in the 48th percentile, 347

348 you could earn  $54 \times 100 = 5400$  PESOS. But, if the same score of 54 points were in the 348  
349 98th percentile, you could earn  $54 \times 2500 = 135,000$  PESOS. 349

350 [Text field with student name suggestions popping up as participant types] 350

351 

---

 351

## 352 Relationship with your recommendation 352

353 How close is your relationship with your recommendedation: “[Name of the student 353  
354 selected from earlier]”? (0 indicates you are barely acquaintances and 10 means you are 354  
355 very close) 355

356 [Slider with values from 0 to 10] 356

357 

---

 357

## 358 Your recommendation’s score 358

359 Compared to university students, in which percentile do you think [Name of the student 359  
360 selected from earlier]’s score falls in the [Subject Area] test (1 is the lowest percentile 360  
361 and 100 the highest)? 361

362 [Clicking shows the explanations below] 362

363 How is a percentile calculated? 363

364 A percentile is a position measurement. To calculate it, we take the test scores for all 364  
365 students currently enrolled in the university and order them from lowest to highest. The 365  
366 percentile value you choose refers to the percentage of students whose score is below 366  
367 yours. For example, if you choose the 20th percentile, you’re indicating that 20% of 367  
368 students have a score lower than yours and the remaining 80% have a score higher than 368  
369 yours. 369

370 What can I earn for this question? 370

371 For your answer, you can earn **20,000 (twenty thousand) PESOS**, but only if the 371  
372 difference between your response and the correct percentile is less than 7. For example, 372  
373 if the percentile where your recommended person's score falls is 33 and you respond with 373  
374 38 (or 28), the difference is 5 and the answer is considered correct. But if you respond 374  
375 with 41 or more (or 25 or less), for example, the difference would be greater than 7 and 375  
376 the answer is incorrect. 376

377 Please move the sphere to indicate which percentile you think your recommended per- 377  
378 son's score falls in: 378

379 [Slider with values from 0 to 100] 379

380 \_\_\_\_\_ 380

## 381 Demographic Information 381

382 What is the highest level of education achieved by your father? 382

383 [Primary, High School, University, Graduate Studies, Not Applicable] 383

384 What is the highest level of education achieved by your mother? 384

385 [Primary, High School, University, Graduate Studies, Not Applicable] 385

386 Please indicate the socio-economic group to which your family belongs: 386

387 [Group A (Strata 1 or 2), Group B (Strata 3 or 4), Group C (Strata 5 or 6)] 387

388 \_\_\_\_\_ 388

389	<b>UNAB Students Distribution</b>	389
390	Thinking about UNAB students, in your opinion, what percentage belongs to each socio-	390
391	economic group? The total must sum to 100%:	391
392	[Group A (Strata 1 or 2) percentage input area]	392
393	[Group B (Strata 3 or 4) percentage input area]	393
394	[Group C (Strata 5 or 6) percentage input area]	394
395	[Shows sum of above percentages]	395
396	<hr/>	396
397	<b>End of the Experiment</b>	397
398	Thank you for participating in this study.	398
399	If you are chosen to receive payment for your participation, you will receive a confirma-	399
400	tion to your UNAB email and a link to fill out a form with your information. The process	400
401	of processing payments is done through Nequi and takes approximately 15 business days,	401
402	counted from the day of your participation.	402
403	[Clicking shows the explanations below]	403
404	Who gets paid and how is it decided?	404
405	The computer will randomly select one out of every ten participants in this study to be	405
406	paid for their decisions.	406
407	For selected individuals, the computer will randomly select one area: mathematics,	407
408	reading, or English, and from that area will select one of the belief questions. If the	408
409	answer to that question is correct, the participant will receive 20,000 pesos.	409

410 The computer will randomly select an area (mathematics, critical reading, or English) to 410  
411 pay for one of the recommendation questions. The area chosen for the recommendation 411  
412 question is independent of the area chosen for the belief question. The computer will 412  
413 take one of the two recommendations you have made for the chosen area. Depending on 413  
414 your recommendation's score, you could win up to 250,000 pesos. 414

415 Additionally, people selected to receive payment for their participation will have a fixed 415  
416 earnings of 70,000 pesos for completing the study. 416

417 \_\_\_\_\_ 417

## 418 **Participation** 418

419 In the future, we will conduct studies similar to this one where people can earn money 419  
420 for their participation. The participation in these studies is by invitation only. Please 420  
421 indicate if you are interested in being invited to other studies similar to this one: 421

422 [Yes, No] 422