Answering the call: How changes to the salience of job characteristics affects college students' decisions

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College students make job decisions without complete information. As a result, they may rely on misleading heuristics ("interesting jobs pay badly") and pursue options misaligned with their goals. We test whether highlighting job characteristics changes decision making. We find increasing the salience of a job's monetary benefits increases the likelihood college students apply by 196%. In contrast, emphasizing prosocial, career, or social benefits has no effect, despite students identifying these benefits as primary motivators for applying. The study highlights the detrimental incongruencies in students' decision making alongside a simple strategy for recruiting college students to jobs that offer enriching experiences.

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Abstract

College students make job decisions without complete information. As a result, they may rely on misleading heuristics ("interesting jobs pay badly") and pursue options misaligned with their goals. We test whether highlighting job characteristics changes decision making. We find increasing the salience of a job's monetary benefits increases the likelihood college students apply by 196%. In contrast, emphasizing prosocial, career, or social benefits has no effect, despite students identifying these benefits as primary motivators for applying. The study highlights the detrimental incongruencies in students' decision making alongside a simple strategy for recruiting college students to jobs that offer enriching experiences.

I. Introduction

Students enroll in college at least in part to prepare for a career after graduation–one which typically pays higher wages, provides greater employment stability, or offers better employment benefits than they would have received without their college education (for example, Oreopoulos and Petronijevic 2013; Heckman, Humphries, and Veramendi 2018). Students prepare for these careers during their academic courses where they explore their career interests and gain knowledge and skills aligned with a future job. Students also evaluate and prepare for their post-graduation career through their out-of-classroom experiences, such as extra-curricular programs, work, and volunteering. Many students work while enrolled in college; in 2020, 40% of full-time undergraduate students and 74% of part-time undergraduate students worked for pay while enrolled in school (Irwin et al. 2023). Many students work out of necessity, to earn money (Perna 2020). Optimally, these work positions concurrently provide students the opportunity to develop skills that have labor market returns, explore career interests, contribute to their communities, and learn how to become positive members of society. However, often students choose jobs in college that do not offer these non-pecuniary benefits (Perna 2010).

Even when paid jobs that enable college students to meet all of these goals exist, students must be exposed to these opportunities. Students who are first-generation scholars or low-income and who lack the social networks to hear about opportunities may especially struggle with informational barriers and, as a result, to find work that addresses their future goals (Arcidiacono et al. 2023; Hamilton and Morgan 2018; Ioannides and Loury 2004; Lareau 2003). Given the financial realities of most undergraduates—nationally a third of undergraduates are eligible for the Pell grant, indicating a low family income—exposing students to paid work opportunities

that also fulfill other goals can have long run benefits. However, the exposure of these enriching job opportunities is not enough—the job-related benefits that align with their goals must be *salient* (Bordalo, Gennaioli, and Shleifer 2012, 2022).

Economic theory suggests that job-related benefits will be salient depending on the extent to which they stand out compared to other options, are surprising, or are prominently displayed (Bordalo, Gennaioli, and Shleifer 2022). The salience of specific information affects behaviors—including whether a person applies for a job or not—because attention-grabbing stimuli is overweighted compared to other information (Taylor and Thompson 1982). College students ideally choose work opportunities that optimize their financial needs, as well as their career and personal interests. For jobs that satisfy several goals for college students, like tutoring, certain benefits will likely be more salient than others. In the absence of salient information about how jobs align with each of their goals, students may rely on misleading heuristics (such as "interesting jobs pay badly") and choose sub-optimal options (Baron 2014; Gigerenzer and Gaissmaier 2011).

Improving college students' ability to engage in capacity-building opportunities has always been important for advancing equity goals; but, in the wake of the COVID-19 pandemic, the nation also needs labor to support learning recovery in K-12 schools (Dorn et at. 2020). Recognizing the untapped potential of college students to advance the nation's learning goals, the Biden administration recently called on colleges to allocate Federal Work Study (FWS) funds to increase the number of college students working as tutors and mentors to K-12 students, recommending at least 15 percent of FWS funds be allocated to supporting school-aged student success (USDEO 2023). Yet it is an open question how colleges can best recruit college students to these important roles.

In this field experiment, we test the effect of making different benefits of a job salient and explore the impact on application behaviors. In partnership with a large, public university, we randomly assigned students to receive either a generic tutor recruitment email, or one of four treatment emails making a different benefit of tutoring salient. Among those assigned to the treatment, students randomly received emails about the *monetary* benefit of tutoring (emphasizing the hourly wage), the *prosocial* benefits of tutoring (emphasizing how the K-12 students would benefit), the *social* benefits of tutoring (emphasizing the chance to meet other peers), or the *career* benefits of tutoring (emphasizing skills gained from tutoring).

We find that making the *monetary* benefits of tutoring salient doubled the likelihood students applied to become tutors. Emphasizing the other benefits of tutoring had little additional impact beyond the status quo recruitment messages. Our results provide evidence that lack of information is a substantial barrier to students' job choice. They also suggest that communications directed to the entire college student body is an effective way to expose students to enriching jobs and, in turn, solicit applications.

Emphasizing the monetary benefits was far and away the most successful strategy for driving students to apply. Building on this insight, we ran a follow-up study to conceptually replicate our finding and test the impact of making the monetary benefits salient alongside another benefit (that is, whether sending an email about the monetary benefits *and* another type of benefit resulted in differential recruitment than the monetary benefits messaging alone). We find broadly consistent results—across monetary message types, application rates were similar, though largest for messages emphasizing both the monetary and prosocial benefits. In both studies, treatment effects were largest for female and nonwhite students.

The type of employment students undertake during college can have positive or negative impacts on their trajectories (see, for example, Davis 2023; Scott-Clayton 2012; Scott-Clayton and Minaya 2016). However, students' need for financial security influences what types of jobs they will pursue. Our research highlights a simple, cost-effective strategy for recruiting college students to jobs that allow them to explore careers, develop skills, build their social network, and engage with the community. Highlighting the financial benefits of these enriching jobs—particularly when a job is traditionally volunteer-based, like tutoring—can dramatically increase the likelihood students seek out more information and apply. As universities look to recruit students for jobs that benefit both the college students engaging in them and the broader community, these insights provide a guide for how to engage in outreach to ensure enough college students apply to meet local demand.

In section II, we provide background on how college students navigate occupational experiences, the demand for high-quality tutors in the wake of the COVID-19 pandemic, and how insights from behavioral economics might inform tutor recruitment. We describe the intervention in section III, and in section IV we outline our data sources for the experimental sample, with our empirical strategy in section V. We share results in section VI, followed by a discussion of the policy implications of our findings in section VII.

II. Background

A. How college students navigate occupational experiences

One of the primary goals of college is to prepare students for the workforce, and students participate in varied activities within and outside the classroom to engage in that preparation. However, financial constraints may inform which of those activities students engage in (Perna 2010). Evidence shows that after graduation, financial constraints prevent students from pursuing

public service careers, such as teaching (Rothstein and Rouse 2011). It is an open question how financial constraints during college might also prevent students from engaging in their preferred occupational exploration activities.

Research across disciplines finds that college students must cover their basic needs before they can fully engage in other elements of the postsecondary experience. In one recent example of recognition of these needs, the Pennsylvania Department of Education launched a structured support program called "PA MASLOW" (PA). The name is a nod to the research of Abraham Maslow who posited a hierarchy of needs, starting with physiological needs, arguing that individuals must satisfy the needs at one level before progressing to the next level (Maslow 1943). Although scholars debate the nuances of Maslow's hierarchy, they widely agree that students have "basic needs" such as food and housing security and struggle with college if those needs are not met (the U.S. Department of Education Basic Needs for Postsecondary Students grant program; Freudenberg, Goldrick-Rab, and Poppendieck 2019; Martinez et al. 2021).

To cover these basic needs and the costs of tuition and fees, most college students work, and more students work more hours today than in the past (Baum 2010; Scott-Clayton 2012, 2017). These work experiences can increase the return to education college graduates face (Light 2001), though may come at a cost to their academic performance or number of credits completed (Darolia 2014; Davis 2023; Stinebrickner and Stinebrickner 2003). How students work matters; for example, research on the federal work study program, which subsidizes jobs that are primarily on campus, finds when students switch from non-work study jobs to a work study job, they are able to work less and tend to have better academic outcomes (Scott-Clayton and Minaya 2016).

Beyond covering their daily expenses, college students also seek opportunities and activities that provide them with peer connections, directly advance their career through skill development, and that contribute to the broader community (Perna 2010). A paid job tutoring has the potential to achieve multiple goals that college students might have—to balance their financial obligations, to connect with peers, to build a sense of purpose and belonging by helping the local community, and to develop translatable skills for their future career (Dickinson 1999).

B. The demand for tutors

A well-established and growing body of evidence documents the large and positive impact of high impact tutoring on student outcomes (Elbaum et al. 2000; Fryer 2014; Nickow, Oreopoulos, and Quan 2020; Robinson and Loeb 2021). Given this robust and consistent evidence of tutoring's efficacy at the K-12 level, policymakers and educational leaders are encouraging and incentivizing tutoring as a strategy to mitigate the learning disruptions caused by the COVID-19 pandemic (U.S. Office of the Press Secretary 2022). Despite the considerable interest, local community organizations and tutoring providers face challenges in recruiting a sufficient number of tutors to adequately meet the existing demand (Davis 2023). To account for this difficulty recruiting tutors, states and districts are actively engaging existing tutoring providers or exploring novel strategies such as creating state tutoring corps. (Groom-Thomas et al. 2023).

While historically the most effective tutoring programs have leveraged teachers or paraprofessionals as the tutors (Nickow, Oreopoulos, and Quan 2020), enlisting college students as tutors may viably increase students' academic performance at a lower cost. Multiple studies demonstrate that college students can effectively improve student outcomes, both in reading (for examples, Allor and McCathren 2004; Denton et al. 2004; Fitzgerald 2001; Jung 2015; Lindo et

al. 2018; Mayfield 2000; Young et al. 2018) and mathematics (for examples, Cook et al. 2015; Mattera et al. 2018; Powell et al. 2015; Ritter and Maynard 2008; Swanson et al. 2014). Since the onset of the COVID-19 pandemic, additional studies have indicated the effectiveness of college students as tutors in online settings (Carlana and La Ferrara 2021; Kraft et al. 2022). Beyond academic outcomes, Carlana and La Ferrara (2021) found that online tutoring played a significant role in enhancing students' socio-emotional skills, elevating aspirations for college attendance, and contributing to improved psychological well-being. Moreover, undergraduate students who were assigned to tutor reported being more empathetic than those who were not. In addition to individual student and tutor benefits, Kraft et al. (2022) observed that online tutoring provides schools and tutoring providers with the opportunity to access a more extensive pool of tutors by largely eliminating geographical constraints, thereby expanding the supply of potential tutors. Increasing access to a diverse pool of tutors may empower school leaders to more effectively align the needs of their students with the abilities, interests, and demographic backgrounds of the tutors (Kraft et al. 2022).

In addition, while the recent research provides evidence that college students can be effective tutors, many college students who are not currently working as a tutor may be interested in working in this role delivering individualized instruction to K-12 students. Recognizing the potential of college students to advance the nation's learning goals, the Biden administration recently called on colleges to allocate FWS funds to increase the number of college students working as tutors and mentors to K-12 students, recommending at least 15 percent of FWS funds be allocated to supporting school-aged student success (USDOE 2023). Prior case study analyses of using FWS programs to recruit tutors found college students were interested in tutoring, though often struggled with the demanding nature and high workload of

providing individualized instruction–particularly given that other FWS jobs, like shelving library books, required much less effort for the same pay (Worthy and Prater 2003). An open question remains about whether colleges can recruit a substantial number of students for these roles.

C. Behavioral insights for college student recruitment

Given that tutoring may be beneficial to both college students performing the tutoring and the K-12 students they tutor and given that imperfect information often plagues college students' job search, recruitment strategies could both affect take-up and ultimately benefit both groups of students. Behavioral research findings may inform effective recruitment practices. In particular, this research shows that individuals struggle to assess multiple data points on costs and benefits as they make complex decisions (Simon 1982; Tversky and Kahneman 1974). Individuals rely on various heuristics to navigate this cognitive load, with information more "front of mind" or with greater salience receiving more weight in the decision evaluation process (Iyengar and Lepper 2006; Choi and Fishbach 2011; Bordalo, Gennaioli, and Shleifer 2022). Research provides evidence that individuals pick the path or options with the most salient benefits or least salient costs, and that interventions can elevate the salience of more ancillary costs and benefits to sway decision-making (for example, Ensaff et al. 2015; Thaler and Benartzi 2004; Madrian and Shea 2001; Kristensson, Wastlund, and Soderlund 2017).

College students seeking work opportunities may be unduly swayed by more salient characteristics of a job, such as pay or hours. Employers may lose out on high-quality applicants if they fail to communicate to prospective hires the full benefits of the positions. One salient benefit to prospective tutors might be the opportunity to engage in prosocial work—helping kids in the local community (Eisenberg, Fabes, and Spinrad 2006). The psychological literature posits prosocial motivation may improve workers' effort and efficiency (Grant and Shandell 2022), as

highlighted in one study finding a high correlation between health care workers who had higher baseline prosocial attitudes and their patients' outcomes (Brock, Lange, and Leonard 2016). This work may indicate that prosocially-motivated tutor could be more effective and more desirable to recruit. In a recent survey of tutors, the vast majority reported that their desire to support students in the local community was an important factor in becoming a tutor (Jochim, Daramola, and Polikoff 2023). Other students might be motivated by the opportunity to engage with their peers. College students often have a strong desire to feel like they belong (Fink, Frey, and Solomon 2020; Gopalan and Brady 2020; Walton et al. 2023) and the opportunity to join a cohesive peer group may not only increase applications but build a stronger tutoring corps. Studies find that individuals are willing to forego pay in order to work with their friends (Bandiera, Barankay, and Rasul 2010) and sometimes can be more productive when collaborating with known peers (Grant and Shandell 2022). Beyond the prosocial and social benefits of tutoring, employers could highlight the work-oriented benefits of tutoring. One such benefit might be career advancement opportunities. Many undergraduate students report they are primarily motivated to tutor because of the on-the-job training that might increase their chances of getting a job (Dickinson 1999; Jochim, Daramola, and Polikoff 2023). Finally, the clearest benefit of a paid tutoring position is the wages students receive. This job characteristics may be particularly important for recruiting for positions, like tutoring, that often rely on unpaid volunteers, and thus may not be commonly associated with pay. McBride et al. (2009), for example, found that introducing financial stipends as recruitment incentives proved effective in attracting a more diverse pool of tutoring candidates, and those who received stipends were more likely to persist as tutors.

An ongoing debate addresses whether emphasizing the extrinsic benefit of wages would result in suboptimal hiring—recruiting individuals who are only motivated by money—and

whether emphasizing extrinsic rewards supplants intrinsic motivation. When and how to emphasize intrinsic versus extrinsic benefits to motivate behavior is one of the core debates in behavioral science (Akin-Little et al. 2004; Dweck 1999; Lemos and Verissimo 2014; Scott-Clayton 2011). In one study, researchers find that emphasizing the intrinsic benefits of teaching results in 2.8 percentage points *fewer* high performing high schoolers choosing to pursue an education major while messages emphasizing the extrinsic benefits (for instance, salary and working conditions) *increases* the share of low-performing students interested in tutoring by 1.8 percentage points (Ajzenman et al. 2021). Another study similarly finds suggestive evidence that extrinsic rewards are slightly more effective at recruiting adolescents to a summer jobs program (Bhanot and Heller 2022). Beyond education, research finds that emphasizing the personal benefits (for example, long-term career stability or personal challenge and growth opportunities) of becoming a police officer is more effective—particularly for women and people of color—than traditional approaches that appeal to a sense of public service or their potential positive impact on the community (Linos 2018). These varied results highlight the ambiguity in how a population will respond to messaging and the need for ongoing investigation into optimal design of recruitment messaging for young adult populations. This study contributes to this ongoing line of research on how to apply behavioral change principles to improve human resource management and worker well-being.

III. Intervention Setting

We implemented the intervention at Grand Valley State University (GVSU), a public university in Michigan. GVSU enrolls about 20,000 undergraduates each year—about 88% of students attend full-time, and 25% of students received the income-based federal Pell grant

(USDOE 2024). About 81% of GVSU students are white, 6% are Hispanic, 4% are Black, and 3% are Asian.

In 2020, GVSU developed a tutoring service called "K-12 Connect" to connect college tutors with Michigan K-12 students. College tutors were paid between US$14.47 and US$17.70/hour and could work about 10-15 hours a week, meeting with their students about 2-3 times a week. These rates were among the highest starting salaries on campus. Prior to the start of the intervention analyzed in this study, about 700 college tutors had held virtual tutoring sessions with 2,500 students across the state. As K-12 tutoring demand increased, GVSU struggled to recruit enough college tutors and decided to test different strategies to ensure sufficient tutors to support local students' needs.

A. Treatment description

We developed four email message variants to test against a control group email, examining whether (a) *any* motivational messaging increased tutor sign-up relative to a generic recruitment message and (b) whether *specific* motivations for tutoring were more effective. The intervention included an initial email in June 2022 and a follow-up email a week later recruiting students to apply to be tutors starting in the fall 2022 semester. Treatment emails varied in their subject lines, the email body description of the program benefits, and the application link text. We designed the four treatment condition recruitment emails to make a different benefit of tutoring salient to recipients. We show the full recruitment email text and subject lines in Table 1. At a high level, the four treatment messages emphasized the following benefits of tutoring:

- *Monetary*: Emphasized that tutoring was a paid position
- *Prosocial*: Emphasized the academic benefits to the tutored children
- *Career*: Emphasized that tutoring would impart career skills

Table 1. Primary Study - Overview of the Emails Sent to GVSU Students

Condition	Subject Line	Header	Hyperlinked Text	Message Hook
Monetary	Looking to earn money? Sign up to be a GVSU K-12 Connect Tutor	Earn Money.	Apply Now to earn up to US$17.50 per hour by working as a tutor	GVSU undergraduates can earn money working as a tutor this year.
Prosocial	Do you want to help Michigan children in the community? Sign up to be a GVSU K-12 Connect Tutor	Help a child. Support the community.	Apply Now to support communities across Michigan while making a difference in the lives of children.	GVSU tutors help thousands of kids in 56 Michigan counties succeed in school.
Career	Are you looking to build your resume? Sign up to be a GVSU K-12 Connect Tutor	Gain Leadership Skills. Build Your Resume.	Apply now to build your resume, expand your professional network, or explore a career in teaching.	GVSU tutors receive training and gain skills that will help them succeed in many careers.
Social	Looking to meet other GVSU students? Sign up to be a GVSU K-12 Connect Tutor	Connect with other GVSU Students.	Apply now to join the great community of Grand Valley undergraduates who tutor	700+ GVSU undergrads work together to provide tutoring for students in Michigan.
Control	Sign up to be a GVSU K-12 Connect Tutor	GVSU K-12 Connect	Apply Now to Be a K-12 Connect Tutor	GVSU's K-12 Connect program provides virtual tutoring to support students in Michigan.

Notes: This table displays the specific components of the emails received by GVSU students in the primary round of the study. The columns represent the components of the emails, while the rows correspond to the details of the conditions.

- *Social*: Emphasized that students could meet more GVSU peers through the tutoring program.

- *Control*: General recruitment

Emails were clearly labeled as coming from "GVSU K-12 Connect" with a gvsu.edu email, assuring students of the validity of the messages.

IV. Data Sources and Descriptive Statistics

A. Data

Our main outcomes of interest were (1) whether students opened the email, (2) whether students clicked through to the application, (3) whether students applied to become a tutor, (4) whether students were hired as tutors. We later were able to examine (5) whether students were employed as tutors six months after the intervention as a measure of long-term impact. GVSU tracked email engagement through their email distribution platform and linked that data to students' tutoring applications and hiring data before sharing the de-identified data file with the research team.

Open rates are a commonly used metric to understand the success of an email marketing campaign, however it does not necessarily indicate people are *reading* the email. In this study, each email had a unique ID embedded in the body of the email which allowed the University's office of communication to track whether students opened the email and clicked through the link. Students could sign up for tutoring by either clicking through the links sent via the control or treatment messages, or by navigating themselves to the tutor website. Due to data privacy, the research team only observes a student as having completed an application if they did so via the emailed application link. As a result, GVSU received applications during the intervention period which were not linkable to treatment status. Thus, any overall application and hiring rates

reported in this study should be considered an undercount since students could sign up to become tutors in other ways. This should only bias the results of this analysis if students had a differential likelihood of applying via other means across conditions; because treatment assignment was random, we believe it is unlikely that students interested in tutoring in each of the control and treatment conditions would have had different rates of applying through other avenues and not through the emailed application link. For the primary study, the research team did not have access to application data outside of those collected for the intervention.

In addition to indicators of email engagement and application/hiring, GVSU shared students' responses on applications where they indicated their interest in becoming a tutor. The application comprised several sections, including general demographics (which we do not use since they are not available for non-applicants). Another section of the application incorporated both open-ended and multiple-choice questions to inquire into the motivations driving students to pursue tutoring roles.[1]

GVSU also provided limited student information, including students' sex, an indicator for whether the student was white or nonwhite, students' year of enrollment in school (for instance first year, sophomore), whether the student was an in-state or out-of-state student, if they were an education major, and whether they were over the age of 25.

B. Experimental Sample

All 15,860 undergraduate students enrolled at GVSU as of June of 2022 were included in the experimental sample. Our sample, described in Table 2, included about 7% rising first years

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[1] This section also explored whether applicants had prior experience with tutoring in general or specifically with K-12 Connect, and how they became aware of the K-12 Connect program. Furthermore, the application sought insights into subject preferences, such as interest in tutoring math, English Language Arts (ELA), or serving as a high school Academic mentorship tutor. Additionally, applicants were prompted to outline their commitment levels and specify their availability to serve as tutors.

(students who enrolled in the summer 2022 term as their first GVSU semester), 24% rising

sophomores, 26% rising juniors, and 43% rising seniors (all students in their fourth year or

beyond are categorized as "seniors," hence a larger share of seniors). About 38% of the sample

was enrolled in the summer 2022 term. About 60% were female, 19% were non-white. GVSU

was unable to provide more detailed race data, but this aligns with the publicly available data

from the College Scorecard showing that 81% of GVSU students are white (USDOE 2024).

About 9% were education majors and about 4% were out-of-state students.

V. Empirical strategy

Our field experiment was preregistered on the Registry of Efficacy and Effectiveness

Studies (REES, #13360). We conducted a student-level randomization, stratified by their year in

school (first year, sophomore, etc.) and whether they were enrolled in the summer 2022 term or

not, resulting in eight strata. To assess the impact of assignment to the treatment on our

outcomes, we used the following linear probability model:

$$Y_{ij} = \alpha + \beta_1 T_i + \gamma X_i + \delta_j + \varepsilon_{ij}$$

where Y_{ij} represents the outcome for study participant i within randomization block j, α is the

constant, T_i is an indicator for assignment to one of the four intervention arms (in models looking

at the effect of each individual conditions, T_i represents a vector of indicators for assignment to

each of the four intervention arms), X_i represents a vector of baseline demographic

characteristics for individual i including a student's sex, race (broken up by white and nonwhite),

age (above or under 25), residency status (Michigan or non-Michigan resident), and whether a

student has declared a major or minor in education, δ_j represents the randomization strata, and

ε_{ij} is a random error term.

We also preregistered some of the exploratory analyses we intended to conduct, including exploring the heterogeneity of the treatment effect by student college level (for example, first year students), gender, race, and major.

VI. Results

A. Descriptive statistics and randomization balance

As Table 2 shows, students assigned to each of the five conditions were balanced on available covariates. In the whole sample, 69% of students opened the email, 3.9% of students clicked on the application, 1.3% applied to become tutors, 0.9% were hired, and 0.4% were working as tutors six months following the intervention. These baseline statistics highlight the

Table 2. Primary Study - Experimental Sample, Balance

	Female	Non-White	Over 25 years old	Out-of-state	Pursuing Major/Minor in Education
Overall sample	0.599	0.188	0.087	0.041	0.088
Monetary	0.004	-0.008	-0.003	-0.004	0.007
	(0.012)	(0.010)	(0.007)	(0.005)	(0.007)
Prosocial	-0.005	-0.006	0.002	-0.006	0.013+
	(0.012)	(0.010)	(0.007)	(0.005)	(0.007)
Career	-0.006	0.001	-0.008	-0.007	-0.001
	(0.012)	(0.010)	(0.007)	(0.005)	(0.007)
Social	-0.010	-0.005	-0.001	-0.009+	0.006
	(0.012)	(0.010)	(0.007)	(0.005)	(0.007)
R^2	0.001	0.015	0.044	0.021	0.007
Observations	15,835	15,860	15,860	15,860	15,860

NOTES: The data presented in this table reflects the administrative data provided to the researchers by GVSU. All regressions encompass student controls and grade-level (block) fixed effects. Models include student covariates (sex, indicator for nonwhite, indicator for being older than 25, indicator for being an out-of-state student, indicator for summer and fall enrollment, and indicator for being an education major) and randomization block fixed effects (randomization was blocked by year in school and whether students were enrolled in the summer term). In impact analysis, we include the full sample with a missing female indicator.
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001

value of broad email outreach for tutor recruitment—the overall effect of email outreach was about 200 applications and 140 tutors hired. Prior to launching the experiment, the "K12-Connect" program had hired 700 tutors, with this overall recruitment effort representing a 20% increase in the number of tutors available.

B. Effects of intervention on college student behaviors

We first examined whether there was an overall treatment effect of messaging emphasizing any benefit of tutoring compared with the generic control group email. In Table 3 we report no significant overall treatment effect on email engagement, application, or hiring patterns. However, looking at the treatment effect for each condition we find large and

Table 3. Primary Study - Overall and By-Condition Effects

	Email Open Rate	Click-Thru Rate	Applied	Hired	Employed after 6 months
Control mean	0.690	0.039	0.009	0.005	0.002
Treatment	-0.002	0.000	0.004*	0.004*	0.002*
	(0.009)	(0.004)	(0.002)	(0.002)	(0.001)
R^2	0.035	0.019	0.012	0.011	0.007
Observations	15860	15860	15860	15860	15860
Monetary	0.015	0.028***	0.017***	0.011***	0.006***
	(0.011)	(0.006)	(0.003)	(0.002)	(0.002)
Prosocial	-0.009	-0.007	0.001	0.003	0.001
	(0.011)	(0.005)	(0.002)	(0.002)	(0.001)
Career	-0.008	-0.013**	-0.002	0.000	-0.001
	(0.016)	(0.004)	(0.002)	(0.002)	(0.001)
Social	-0.005	-0.008+	0.001	0.002	0.002
	(0.012)	(0.004)	(0.002)	(0.002)	(0.001)
R^2	0.036	0.024	0.016	0.012	0.009
Observations	15,860	15,860	15,860	15,860	15,860

Notes: All models control for student demographic covariates, including sex, indicator for nonwhite, indicator for being older than 25, indicator for being an out-of-state student, indicator for summer and fall enrollment, and indicator for being an education major. Each model includes a randomization block fixed effects (randomization was blocked by year in school and whether students were enrolled in the summer term). Standard errors in parentheses.
+p<0.10, *p<0.05, **p<0.01, ***p<0.001

statistically significant treatment effects of the monetary framing on nearly all outcomes.[2] We did not find statistically significant differences in whether students *opened* the email (column 1). However, students who received the monetary motivational message were 2.8 percentage points more likely to *click through* to the application (a 72% increase off the control group rate of 3.9%; column 2). Conversely, students who received the career motivation message and the social motivation message were 1.3 and 0.8 percentage points less likely to click through, respectively. We found no statistically significant difference in click rates for students in the prosocial condition relative to the control group.

Figure 1 illustrates the more active measures of engagement reported in Table 3. Students assigned the monetary condition were 1.7 percentage points more likely to complete an application (column 3; a 196% increase), 1.1 percentage points more likely to be hired as tutors (column 4; a 205% increase), and 0.6 percentage points more likely to be working as tutors six months later (column 5; a 286% increase).

We then examined whether treatment effects varied by student characteristics to see whether the overall impact analysis masked important heterogeneity in how students responded to messaging. We examine differential treatment impact on applications in Table 4. Looking by major, we find positive effects of the monetary treatment for both education majors and other majors; the effect for education majors is 4 percentage points compared to 1.5 percentage points for other majors. Looking by sex, female students were more likely to apply for tutoring positions when they received the monetary framing (a 2.6 percentage point increase compared to the control group application rate of 1.3 percentage point). For male students, none of the

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[2] Footnote: Results are consistent whether we include student controls or not.

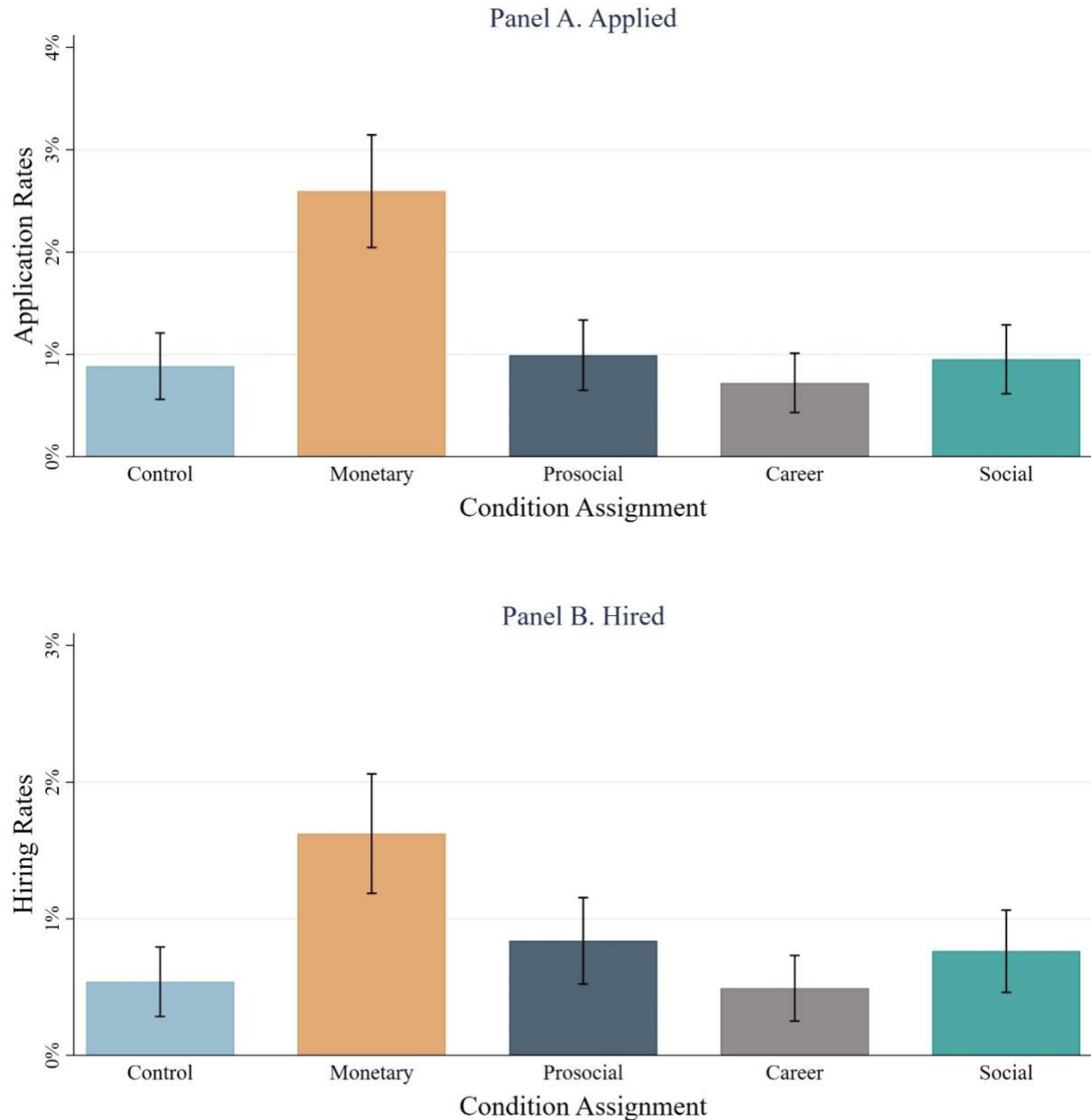**Figure 1. Impact of Condition Assignment on Application and Hiring Rates**

Notes: Error bars represent 95% confidence intervals.

framing conditions significantly affected application rates (and very few male students applied for tutoring even in the control group; 0.3% of male students compared to 1.3% of female students). Looking at the limited race data available, we found that both white and nonwhite

students were more likely to apply for tutoring when they were assigned to the monetary

treatment. Effects were qualitatively larger for nonwhite students—a 2.1 percentage point

increase compared to a 1.6 percentage point increase for white students.

Table 4. Primary Study - Overall and By-Condition Effects on Applications, By Subgroups

| | By Major | | By Sex | | By Racial Identity | | By Residency | |
	Education major	Other major	Female	Male	Nonwhite	White	Out-of-state	In-state
Control Mean	0.023	0.008	0.013	0.003	0.005	0.010	0.027	0.008
Treatment	0.019+	0.003	0.006*	0.001	0.008*	0.003	-0.010	0.005**
	(0.011)	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.015)	(0.002)
R^2	0.025	0.004	0.011	0.008	0.016	0.013	0.047	0.013
Observations	1391	14469	9492	6343	2988	12872	656	15204
Monetary	0.040*	0.015***	0.026***	0.003	0.021***	0.016***	-0.009	0.018***
	(0.017)	(0.003)	(0.005)	(0.003)	(0.007)	(0.004)	(0.018)	(0.003)
Prosocial	0.011	0.000	0.001	0.000	0.008	-0.001	0.006	0.001
	(0.014)	(0.002)	(0.004)	(0.002)	(0.005)	(0.003)	(0.020)	(0.002)
Career	0.014	-0.003	-0.002	-0.001	0.002	-0.003	-0.018	-0.001
	(0.015)	(0.002)	(0.003)	(0.002)	(0.005)	(0.003)	(0.017)	(0.002)
Social	0.010	0.000	0.000	0.001	0.003	0.000	-0.019	0.002
	(0.014)	(0.002)	(0.004)	(0.002)	(0.005)	(0.003)	(0.018)	(0.002)
R^2	0.028	0.011	0.017	0.009	0.019	0.016	0.051	0.017
Observations	1,391	14,469	9,492	6,343	2,988	12,872	656	15,204

Notes: All models control for student demographic covariates, including sex, indicator for nonwhite, indicator for being older than 25, indicator for being an out-of-state student, indicator for summer and fall enrollment, and indicator for being an education major. Each model includes a randomization block fixed effects (randomization was blocked by year in school and whether students were enrolled in the summer term). Standard errors in parentheses.
+$p<0.10$, *$p<0.05$, **$p<0.01$, ***$p<0.001$

C. Follow-up study

C1. Treatment description

After examining effects from our primary study, we collaborated with GVSU to

conceptually replicate and extend our findings. Specifically, we designed the follow-up study to

both replicate our results (for instance, whether the *monetary* messaging again outperformed the control group messaging) and to see whether the combination of monetary framing and other benefits had a differential effect on recruitment (for instance, whether *monetary + prosocial* had a different effect on recruitment compared to the *monetary* messaging alone). Given that the follow-up study occurred largely within the same pool of students as the primary study, we expected the effects of the intervention to be attenuated.

All students enrolled at GVSU in March 2023 received the recruitment email (N = 17,235), recruiting students to apply to be tutors starting in the spring/summer of 2023. In addition to answering different causal questions, this outreach also enabled the research team and GVSU to descriptively understand the effectiveness of emails distributed during the academic year as opposed to those distributed after the school year had ended (as in the primary study). Recruitment emails looked similar in formatting to the primary study with the same GVSU sender information, and again varied in terms of the email subject line, email body description of the benefit, and the link text students could click on to apply. The four treatment conditions in the follow-up study were (with full message details in Table 5):

- *Monetary*: Emphasized that tutoring was a paid position
- *Monetary + Prosocial*: Emphasized the academic benefits to the tutored children, in addition to the monetary message
- *Social*: Emphasized that students could meet more GVSU peers through the tutoring program, in addition to the monetary message
- *Control*: General recruitment

Table 5. Follow-up Study - Overview of the Emails Sent to GVSU Students.

Condition	Subject line	Header	Hyperlinked Text	Message Hook
Monetary	Earn money. Sign up to be a GVSU K-12 Connect Tutor.	Earn Money. Sign up to be a tutor.	Apply Now to earn up to US$17.50 per hour by working as a tutor.	GVSU undergraduates can earn money working as a tutor next academic year.
Monetary + Prosocial	Earn money and help kids. Sign up to be a GVSU K-12 Connect Tutor.	Earn Money. Help a child. Sign up to be a tutor.	Apply Now to earn up to US$17.50 per hour while making a difference in the lives of Michigan children.	GVSU undergrads can earn money working as a tutor next academic year. As a tutor, you will build close connections with kids and play an essential role in helping your students succeed in school.
Monetary + Career	Earn money and build your resume. Sign up to be a GVSU K-12 Connect Tutor.	Earn Money. Build Your Resume. Sign up to be a tutor.	Apply Now to earn up to US$17.50 per hour and build your resume.	GVSU undergrads can earn money working as a tutor next academic year. As a tutor, you will receive training and gain skills that can help you succeed in many careers.
Monetary + Social	Earn money and meet GVSU students. Sign up to be a GVSU K-12 Connect Tutor.	Earn Money. Connect with GVSU Students. Sign up to be a tutor.	Apply Now to earn up to US$17.50 per hour and join a great community of Grand Valley undergraduates who tutor.	GVSU undergrads can earn money working as a tutor next academic year. As a tutor, you'll join a community of over 700 other GVSU undergrads working together to provide tutoring for students.
Control	Sign up to be a GVSU K-12 Connect Tutor.	GVSU K-12 Connect. Sign up to be a tutor.	Apply Now to Be a K-12 Connect Tutor.	GVSU's K-12 Connect program provides virtual tutoring support to children.

Notes: This table displays the specific components of the emails received by GVSU students in the follow-up round of the study. The columns represent the components of the emails, while the rows correspond to the details of the conditions.

As in the primary study, students could sign up for tutoring by either clicking through the links sent via the intervention emails, or by navigating themselves to the tutor website. However, in the follow-up study the research team had access to de-identified applicant data received during the spring of 2023 that was not linkable to treatment status. Notably, in contrast to the primary study, GVSU quickly moved to implement other campus recruitment activities after the initial treatment emails were distributed. The K-12 Connect program was also more established by March 2023. Therefore, more students accessed the application outside the study emails than in the primary study.

C2. Empirical strategy

We preregistered our hypotheses and analytic plan for the follow-up study after observing the effects of the main analysis but prior to implementing the follow-up study. We examined the impact of each treatment arm compared to one another and the control group using the same model as the primary study. The only difference was that the randomization was stratified by just students' year in school (first year, sophomore, etc.) because enrollment status for the upcoming terms were not yet available.

C3. Descriptive statistics and randomization balance

Table 6 provides information on the characteristics of students in the follow-up study, as well as evidence of balance on observable characteristics across the treatment and control conditions. Overall, 60% of the sample were female, about 20% were nonwhite, 8% were over 25 years old, 4% were out-of-state students, and 8% were education majors. These are broadly similar to the demographics of students in the primary study and the overall GVSU population.

Table 6. Follow-up Study – Experimental Sample, Balance

	Female	Non-White	Over 25 years old	Out-of-state	Enrolled in Fall 2023 Semester	Pursuing Major/Minor in Education
Overall sample	0.599	0.197	0.079	0.039	0.717	0.083
Monetary	0.011	-0.007	-0.002	-0.002	-0.009	0.001
	(0.011)	(0.008)	(0.005)	(0.002)	(0.009)	(0.008)
Monetary + Prosocial	0.014	-0.004	-0.003	-0.007	-0.014	0.000
	(0.013)	(0.005)	(0.003)	(0.004)	(0.008)	(0.005)
Monetary + Career	0.001	0.002	0.005	-0.004	-0.013	-0.012
	(0.013)	(0.013)	(0.010)	(0.004)	(0.018)	(0.007)
Monetary + Social	0.004	-0.004	0.003	0.001	-0.013	-0.008
	(0.006)	(0.008)	(0.005)	(0.004)	(0.013)	(0.007)
R^2	0.000	0.013	0.044	0.012	0.164	0.003
Observations	17,200	17,235	17,235	17,235	17,235	17,235

NOTES: The data presented in this table reflects the administrative data provided to the researchers by GVSU. Models include student covariates (sex, indicator for nonwhite, indicator for being older than 25, indicator for being an out-of-state student, indicator for spring and fall enrollment, and indicator for being an education major) and randomization block fixed effects (randomization blocked on grade level). Standard errors in parentheses. In impact analysis, we include the full sample with a gender variable that includes an indicator for missing.
+ $p<0.10$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$

C4. Results

Overall, 77% of study participants opened the emails sent by K-12 Connect in March 2023, 2.3% clicked through the application, and 0.8% of the participants submitted an application. Email open rates were higher than in the primary June 2022 campaign (76% in March relative to 69% in June), but other engagement measures were slightly lower than the June 2022 campaign (2.6% of students clicked through in March relative to 3.9% in June).

In Table 7 we see that overall treatment effect replicated, showing that the pooled *monetary* messages increased the likelihood students applied to be a tutor (0.4 percentage points; a 50% increase). The fact that the monetary messages continued to induce higher engagement in

the follow-up study suggests that additional outreach can be effective, even when many students

likely already applied to be tutors during the primary study.

Table 7. Follow-up Study - Overall and By-Condition Effects

	Email Open Rate	Click-Thru Rate	Applied
Control mean	0.774	0.023	0.008
Treatment	-0.011	0.005	0.004*
	(0.008)	(0.003)	(0.002)
R^2	0.015	0.014	0.009
Observations	17,235	17,235	17,235
Monetary	-0.008	0.007+	0.005+
	(0.010)	(0.004)	(0.002)
Monetary + Prosocial	-0.025*	0.002	0.006*
	(0.010)	(0.004)	(0.002)
Monetary + Career	-0.008	0.002	0.002
	(0.010)	(0.004)	(0.002)
Monetary + Social	-0.005	0.008*	0.003
	(0.010)	(0.004)	(0.002)
R^2	0.015	0.014	0.009
Observations	17,235	17,235	17,235

Notes: All regressions encompass student controls and grade-level (block) fixed effects.
Models include student covariates (sex, indicator for non-White, indicator for being older
than 25, indicator for being an out-of-state student, indicator for spring and fall enrollment,
and indicator for being an education major) and randomization block fixed effects
(randomization blocked on grade level). Standard errors in parentheses.
+$p<0.10$, *$p<0.05$, **$p<0.01$, ***$p<0.001$

Looking by condition, we found students in the *monetary + prosocial* condition were

actually less likely to open the email relative to the control group, with no meaningful

differences for other treatment conditions. However, students in the *monetary + prosocial*

condition were more likely to apply to become tutors (a 0.6 percentage point increase compared

to the control group mean of 0.8 percentage points; a 73% increase). Individuals in the *monetary*

only condition were also 0.5 percentage points more likely to apply than the control group, and

the treatment differences for the *monetary-career* and the *monetary + social* conditions were

also positive, although less precisely estimated. The treatment effects by condition are not

statistically different from each other, thus we cannot say that the combination of monetary and other motivations is more effective than monetary framing alone.

Looking at subgroups in Table 8 we found similar trends in treatment response as the primary study, with female, nonwhite, and in-state students having statistically significant treatment effects relative to null effects for male, white, and out-of-state students, respectively. The effects for nonwhite students were particularly strong—nonwhite students were more likely to apply to become tutors when assigned to the *monetary*, *monetary + prosocial, and monetary +*

Table 8. Follow-up Study - Overall and By-Condition Treatment Effects on Applications, By Subgroups

	By Major		By Sex		By Racial Identity		By Residency	
	Education major	Other major	Female	Male	Nonwhite	White	Out-of-state	In-state
Control Mean	0.032	0.005	0.011	0.003	0.006	0.008	0.021	0.007
Treatment	-0.007	0.005**	0.005*	0.002	0.014***	0.001	0.001	0.004*
	(0.011)	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.013)	(0.002)
R^2	0.014	0.007	0.007	0.007	0.008	0.010	0.028	0.009
Observations	1472	15763	10300	6900	3390	13845	680	16555
Monetary	-0.010	0.006**	0.006+	0.003	0.019**	0.001	0.016	0.004+
	(0.013)	(0.002)	(0.004)	(0.002)	(0.007)	(0.003)	(0.020)	(0.002)
Monetary + Prosocial	-0.012	0.007**	0.009*	0.000	0.014*	0.003	0.000	0.006*
	(0.013)	(0.002)	(0.004)	(0.002)	(0.006)	(0.003)	(0.017)	(0.002)
Monetary + Career	0.010	0.001	0.002	0.002	0.006	0.001	0.003	0.002
	(0.016)	(0.002)	(0.003)	(0.002)	(0.005)	(0.002)	(0.018)	(0.002)
Monetary + Social	-0.017	0.005*	0.004	0.001	0.017**	0.000	-0.013	0.004
	(0.012)	(0.002)	(0.004)	(0.002)	(0.006)	(0.002)	(0.014)	(0.002)
R^2	0.017	0.008	0.008	0.007	0.009	0.010	0.033	0.009
Observations	1,472	15,763	10,300	6,900	3,390	13,845	680	16,555

Notes: All regressions encompass student controls and grade-level (block) fixed effects. Models include student covariates (sex, indicator for non-White, indicator for being older than 25, indicator for being an out-of-state student, indicator for spring and fall enrollment, and indicator for being an education major) and randomization block fixed effects (randomization blocked on grade level). Standard errors in parentheses.
+ $p<0.10$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$

social conditions. Notably education majors receiving the treatment messages were not more likely to apply in the follow-up study, while they had a large treatment response in the primary study. Education majors may have had more exposure to the tutoring program in general—application rates for education majors in the control group was higher in the follow-up (3.2% of education majors in the follow-up applied to become tutors compared to 2.3% in the primary study)—indicating there may have been less room for intervention effects.

E. Robustness check

We were able to identify which students were assigned to a condition in the primary study and, therefore, can explore how the intervention impacted students who a) were not present in the primary study and b) were assigned to the control group in the primary study. In Table 9 we present the results looking at these subsamples. Among the 5,601 students who were receiving the intervention for the first time in the follow-up study, we replicated our findings from the primary study. Students assigned to the *monetary-only* condition were 1 percentage point more likely to apply than students in the *control* group, translating to a 113% increase in applications. Limiting our sample to only students assigned to the control group in the primary study (*n* = 2,350), we see that the *monetary + prosocial* condition was most effective at increasing application rates (an almost 2 percentage point increase compared to the 0.7% of students who applied in the control group; a 181% increase). These results focusing on the undiluted subsamples suggest that the first introduction of this intervention is the strongest, and participants may react differently to subsequent rounds of outreach.

Table 9. Follow-up Study - Overall and By-Condition Effects by Primary Study Sample Restrictions

	Applied	
	Sample: Not in Primary Study	Sample: Primary Study Control Group
Control Mean	0.009	0.007
Treatment	0.007+	0.003
	(0.003)	(0.004)
R^2	0.008	0.008
Observations	5,601	2,350
Monetary	0.010*	0.001
	(0.005)	(0.006)
Monetary + Prosocial	0.006	0.012+
	(0.005)	(0.007)
Monetary + Career	0.002	-0.003
	(0.004)	(0.005)
Monetary + Social	0.008+	0.000
	(0.005)	(0.005)
R^2	0.009	0.011
Observations	5,601	2,350

Notes: All regressions encompass student controls and grade-level (block) fixed effects.
Models include student covariates (sex, indicator for non-White, indicator for being older
than 25, indicator for being an out-of-state student, indicator for spring and fall enrollment,
and indicator for being an education major) and randomization block fixed effects
(randomization blocked on grade level). Standard errors in parentheses.
+$p<0.10$, *$p<0.05$, **$p<0.01$, ***$p<0.001$

Visually we can see how the outreach affected applications, as illustrated in Figure 2

which maps applications by date relative to when the intervention emails were distributed.

Looking at panel A, there are large spikes in applications the day following email distribution

during the primary study. For example, the first emails went out the morning of June 24th, 2022,

and on that day GVSU received 65 applications; on June 29th GVSU sent out the follow-up

email and received 41 additional applications (over 50% of the applications were received on those two days).
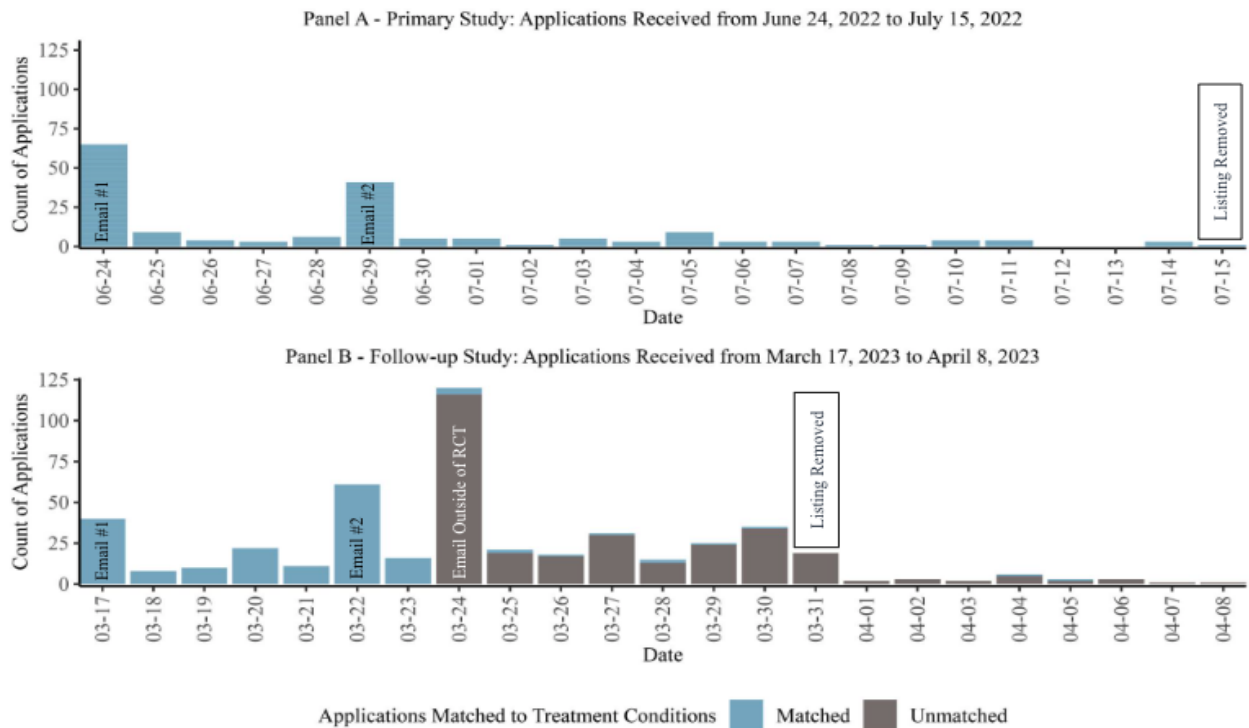

Figure 2. Timeline of Applications

Notes: The data presented in this figure illustrates the volume of tutoring applications received by GVSU in each round, with the primary round listed at the top and the follow-up round at the bottom. This visualization truncates the timelines at 23 days, corresponding to the duration for which the application was open in the initial study. In contrast, the application period in the subsequent study spanned 15 days. To indicate the dates when the applications were promoted via email, we have denoted the frequency of emails dispatched by the university to students. For instance, the inaugural email in the primary round was disseminated on June 24th, 2022, whereas in the follow-up study, it was on March 17th, 2023. Additionally, the graph marks the dissemination of reminder emails to students as "Email #2." The annotation "Listing Removed" in each figure signifies that the applications were no longer actively advertised by the university. It is important to note that a small number of applications were submitted post-removal of the listing. In the primary study, of the 195 applications received, 17 were post-listing removal. The follow-up study witnessed 514 applications, with 62 submitted after the listing ceased to be advertised. In the primary study, the research team only viewed applications that were accessed via the unique links emailed to the analytic sample, thereby we do not have information on unmatched applications. In the follow-up study we were able to view applications that were not accessed through the unique link, however we do not have access to their assigned condition.185 applications were traceable to the unique links sent to students. As the remaining applications could not be matched to the specific treatment assignments, they were excluded from the analytic sample.

In panel B of Figure 2 we distinguish between "matched" applications GVSU received (for instance, applications received via the email links we shared) and "unmatched" applications (for instance, applications students submitted after independently navigating to the application website, such as through Google search). We see similar spikes in applications during the first week of the intervention, with large numbers of applications after the first and second intervention emails were distributed. The K-12 Connect Team launched a broad campaign to recruit tutors for the upcoming school year on March 23rd, 2023, resulting in a significant surge of applications on that day. The additional outreach campaign included sending targeted messages to current and former K-12 Connect tutors, as well as to previous applicants. The recruitment strategy also included direct communications to several student groups and campus organizations.

Figure 2 also illustrates the higher overall application numbers during the follow-up study in the first week of the intervention. This supports our prediction after the primary study that if all students received the monetary messaging, there would be higher applications. In the primary study's first week, K-12 Connect received 87 applications, yielding a 0.55% "early application rate." In the first week of the follow-up study, K-12 Connect received 168 applications, resulting in a 0.97% early application rate—nearly double the number of early applications observed in the primary study. Only 17 "matched" applications were submitted in the follow-up study after the university engaged in additional outreach, which likely resulted in a lower overall application rate for each condition.

F. Descriptive insights

In addition to the impact analysis, we leveraged data on application patterns and from students' applications to understand general trends in tutor recruitment such as who applies to

become a tutor, why students report applying to become tutors, and how applications translate into hiring and tutor retention. These descriptive and conditional analyses provide valuable data for other institutions considering tutor recruitment strategies. These results come from the tutor application survey from the primary study (n = 195) and the follow-up (n = 566).

F1. Who applies to become a tutor?

In the primary study, 0.9% of all students in the control group applied to be a tutor. Looking at recruitment trends in the control group, we found consistent differences in application rates by student characteristics. Female students were more likely to apply than male students (1.3% vs. 0.3%), out-of-state students were more likely to apply than in-state students (2.7% vs. 0.8%), and education majors were more likely to apply than other majors (2.3% vs. 0.8%). We saw a similar pattern in the follow-up study, with an overall application rate of 0.8% in the control group and 1.1% of female students, 2.1% of out-of-state students, and 3.2% of education majors applying to be tutors. The high rates of applications among education majors suggest many students may want to tutor to develop specific career experience and skills.

In the primary study, first year students and seniors were the least likely to apply (0.5% and 0.3%, respectively) whereas sophomores and juniors were most likely (1.4% and 1.5%, respectively). Sophomores and juniors were again more likely to apply in the follow-up study (1.1% and 1% respectively), however we did not observe statistically significant differences in application rates across grade levels. As colleges consider email and other types of recruitment, keeping these general demographic trends in mind may help inform who is most likely to respond to general outreach and which groups may require additional, more targeted outreach.

F2. Why do students want to become tutors?

GVSU asked students on their application why they wanted to become a tutor. We present student responses from the primary study and the follow-up in Figure 3. Students specified the primary reason behind their decision to become a tutor. They could select from seven options, which aligned with the motivational messages: *prosocial*, *monetary*, *career*, and *social*. The *prosocial* category included responses expressing a desire to work with children ("I get to work with children") and those that indicated interest in supporting the community ("I get to support the surrounding community"). The *monetary* category encompassed the option "It pays well," while the *career* section included choices such as "I will develop valuable skills," "It will look good on my resume," and "I am interested in becoming a teacher." Finally, the response "I will get to meet other GVSU students" aligned with the *social* messaging.

Despite the strong treatment effect of the monetary motivation in the primary experimental study in June 2022, only 2% said they applied to be a tutor because tutoring paid well. Half of applicants said they were interested in tutoring because they wanted to work with children and 31% reported they wanted to gain career skills.

Results were similar for the follow-up study. The most common reason given for signing up for tutoring was for prosocial reasons (49%) followed by developing career skills (44%). Again, few students reported wanting to tutor because it paid well (only 6% of the respondents' top reason). Tables S1 and S2 in the Appendix show how respondents answered by their intervention condition—self-reported reasons for applying did not consistently align with the salient messaging from the recruitment messaging.

These survey insights highlight the importance of qualitative work alongside experimental tests. If the tutoring center had surveyed students *before* recruitment, they may

have hypothesized that emphasizing the prosocial components of tutoring would be sufficient to recruit enough tutors, but the experimental results show intrinsic motivations are not sufficient, and that highlighting the monetary benefit is a crucial component to prospective tutor outreach.
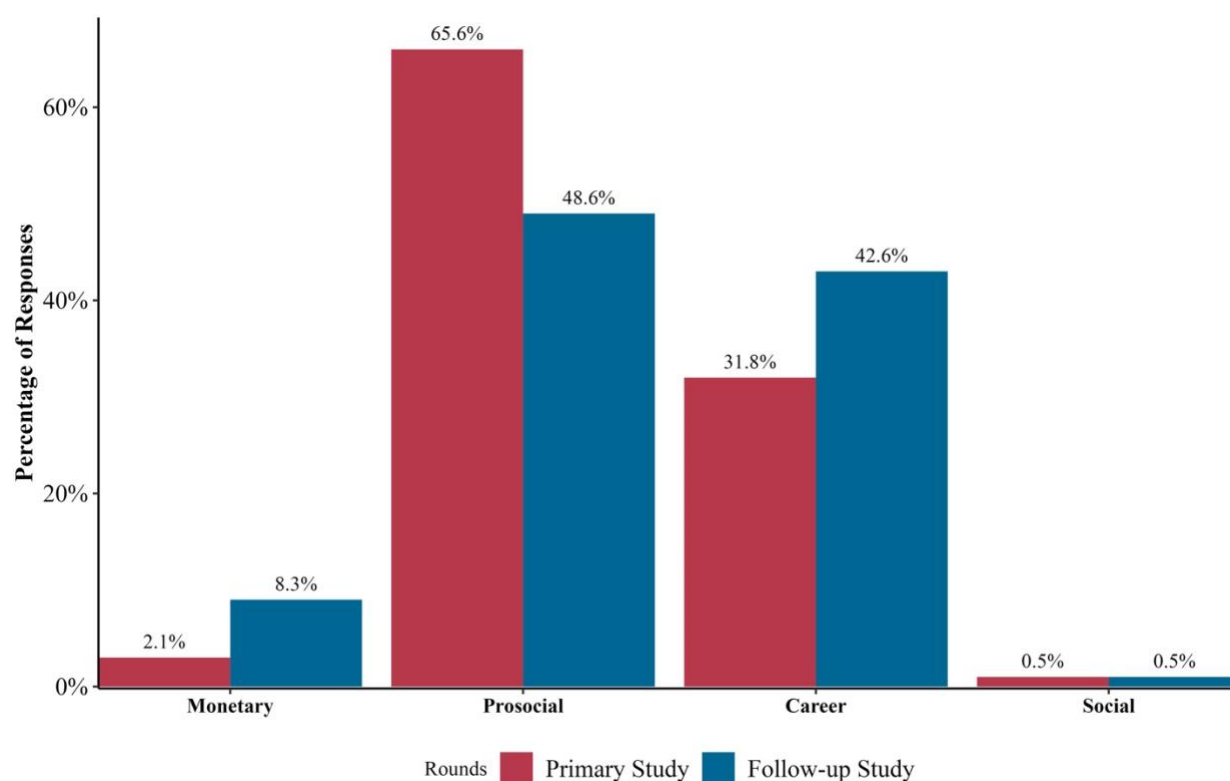

Figure 3. Self-Reported Motivations for Applying to be a Tutor

Notes: Data from the K-12 Connect Tutor application form, N=195 applicants for primary study, N=566 applicants for follow-up study. The motivations encompass the following questions: Monetary ("It pays well"; Prosocial (I get to work with children" and "I get to support the surrounding community"); Career ("I will develop valuable skills", "It will look good on my resume", and "I am interested in becoming a teacher") and Social ("I will get to meet other GVSU students").

F3. Do applications translate into long-term tutoring commitment?

One concern raised when debating whether to emphasize intrinsic or extrinsic benefits in recruitment is that the students induced to apply from an extrinsic/monetary framing may be lower quality applicants or less dedicated employees. We ran two descriptive, conditional

analyses using data from the primary study (where we observe downstream outcomes) asking (1) conditional on applying, which tutors were ultimately selected? and (2) conditional on hiring, which tutors continued working as tutors?

In Table 4 we observe that the monetary condition increased applications by 1.7 percentage points and hiring by 1.1 percentage points—very similar effects, suggesting the majority of the applicants were hired as tutors. As illustrated in Figure 4 Panel A, about 45% of applicants in the control group were ultimately hired as tutors, with slightly higher but not statistically different rates of hiring for students in the monetary, career, and social treatment conditions (where hiring rates were around 50-55%). The only notable difference was that students in the prosocial treatment were significantly more likely to get hired, conditional on application, than students in the control group—nearly 80% of students in the prosocial condition who applied were hired, a 35-percentage point difference relative to the control group. It is difficult to parse out why this may be—it could be that students motivated by prosocial framing are better fits for a tutoring position *or* that the prosocial framing signaled to prospective applicants that a prosocial mindset was desired by the tutoring center, and those applicants may have been more likely to talk about helping children and the community during their interview. We did not see any difference in the likelihood students would still be working at tutors six months later by treatment condition, illustrated in Figure 4 Panel B. About 43% of students in the control group were still tutoring six months after getting hired, with no statistically significant differences by treatment condition. These data reveal the general challenges of tutor retention after hiring, however applicants for whom the monetary benefits were made salient were not more likely to leave the job than those in other conditions.

Our conditional analyses also highlight which margins of applications are most deterministic of future engagement. In our main analysis, there was a large treatment effect on email click-throughs for students in the monetary condition and all subsequent outcomes were significantly higher for those students.
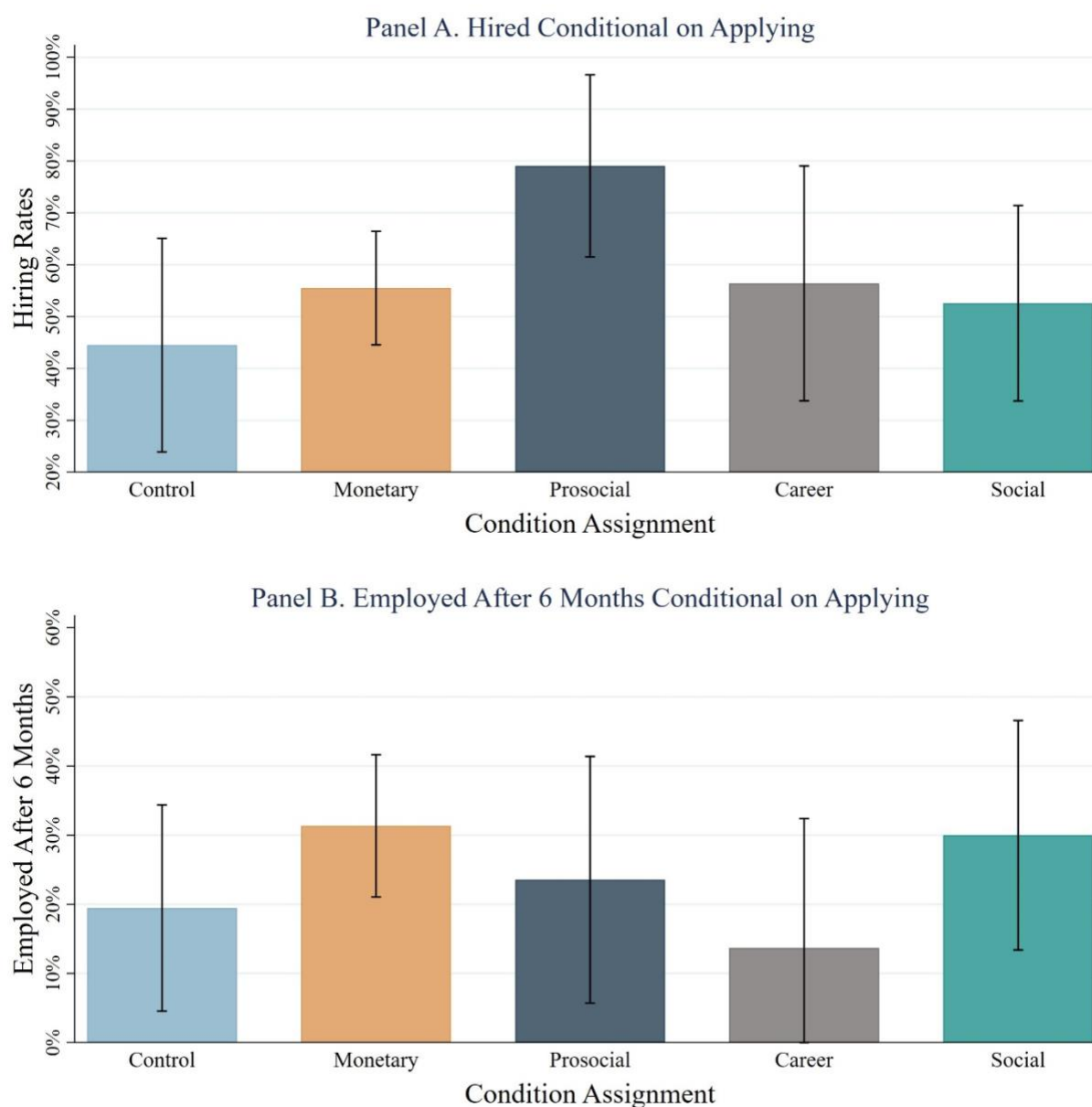

Figure 4. Impact of Condition Assignment on Hiring Rates and Employment 6 Months Later, Conditional on Applying

Notes: Error bars represent 95% confidence intervals.

VII. Discussion

College students have to balance the goals of working to earn money and goals of contributing to the community, building career skills, and developing social relationships. Tutoring K-12 students can support each of these goals, benefiting both the tutored students and the college student tutors. Yet, college students decide on jobs with imperfect information about their potential benefits. As a result, they may use heuristics that lead them to ignore job characteristics that would affect their job choice. This research demonstrates that this dynamic can substantially alter behavior and that recruitment strategies increasing the salience of overlooked characteristics can meaningfully increase applications and the pool of workers hired.

We studied recruitment using two randomized controlled trials and found large effects of emphasizing the monetary benefits of tutoring on the likelihood students applied for and subsequently were hired for tutoring positions. We found no evidence that emphasizing the prosocial (for example, helping the community), social (for example, meeting other students), or career (for example, building professional skills) benefits alone increased applications beyond generic outreach. The monetary framing increased application rates by 196 percent relative to the control group, which resulted in these students being 205 percent more likely to be hired as tutors. Notably, students recruited through the monetary messaging were equally likely to still be employed as tutors six months after the intervention as those assigned to other conditions, suggesting that the extrinsic motivator of money did not result in suboptimal hiring.

That students cared about the monetary benefits of tutoring is not surprising given many students' need to work in order to finance their education and living expenses (Scott-Clayton 2012). While we did not observe socioeconomic status measures in our study population, approximately 25 percent of students at the college receive the federal Pell grant for low-income

students. Not all students can afford to volunteer their time, but pay may have been especially important for students who desire the other benefits of tutoring, but must first address economic needs (for example, Martinez et al. 2021). The paid tutoring positions in this study were highly-paid relative to other undergraduate work. Tutors could earn up to $17.70 per hour, which is the top of the GVSU student wage range (the 2022-23 academic year student wage tiers ranged from $10.10, the minimum wage in Michigan, to $17.70).

While the importance of pay is not new, the finding that pay-focused messaging changed behavior points to both the lack of information facing college students as they make choices about jobs and, potentially, to the detrimental consequences for their job choice of relying on assumptions or heuristics that associate jobs that provide non-pecuniary with low pay. The monetary messaging may have been particularly effective, because it was surprising (Khaneman and Miller 1986)—it was likely unexpected to learn that tutoring was a well-paid position in the pool of potential jobs, driving application and subsequent hiring and persistence outcomes.

Examining longer-term outcomes in this study enables us to determine whether the initial treatment effect from the monetary messaging affects tutor persistence. One potential concern organizations may have with highlighting the monetary benefits of tutoring (or other socially oriented jobs) is that it would attract the "wrong type" of tutors—individuals only interested in the money who might not persist in the job (see, Dweck 1999). We find no evidence of this dynamic. The treatment effect of the monetary condition on applications was accompanied with significantly higher rates of being hired and remaining as tutors six months after the intervention. Moreover, we find no evidence that, conditional on applying, students in the monetary condition were any less likely to get hired than students in the control group. Similarly, we find that these students were equally likely to be still working as tutors six months later. Securing a well-paying

job appears to be top of mind for college students, and emphasizing a good wage does not result in a less dedicated pool of employees.

In the follow-up study, we conceptually replicated and extended the primary study. We designed messages reflecting dual goals students may have for work opportunities to see whether messages highlighting the monetary benefits of tutoring could be even more effective if paired with emphasis on the other benefits of tutoring. Broadly the follow-up study supports our initial finding that students are more likely to apply to become tutors when they know tutoring is a paid position. Although the pool of students was largely the same as those in our primary study and thus had received messaging from our first study, we again found a treatment effect of the monetary messages on click-through rates and applications, and only inconsistent effects of the messages emphasizing the other job benefits.

In both studies, the effect of the monetary framing was larger in magnitude for female students and non-white students. Offering a competitive hourly wage and highlighting the financial benefits of tutoring could effectively lower barriers for many potential applicants who might be deterred due to financial constraints (Carver-Thomas 2018). The increased number of non-white applicants, a group traditionally underrepresented in the teaching profession (USDOE 2022), highlights the potential for financial incentives to attract a more diverse pool of candidates. We also found suggestive evidence that for these subgroups of female and non-white students emphasizing the intrinsic rewards of supporting children and the local community, in addition to money, could induce additional applications.

This research provides insights into general patterns of college job recruitment that may inform university practices. Overall, email outreach worked in exposing students to enriching job opportunities and garnering applications. Across all the conditions in our primary study, the

tutoring site received about 200 applications. However, the large effects from the virtually costless modification of email subject line and text indicate that colleges should think carefully about how they craft recruitment messages. We estimated how many overall applications the control and treatment messages would induce if they had been sent to the whole sample: sending the control group message to all students would have resulted in about 140 applications, whereas sending the message emphasizing that tutoring was a paid position would have resulted in about 410 applications. As many school districts struggle to recruit enough tutors to meet the demand, college students offer a promising and sustainable pool of highly-motivated, knowledgeable workers with flexible schedules.

Despite the consistent effect of the monetary messaging, we found that very few students said the reason they wanted to become a tutor was because of the money; applicants instead report that helping children and engaging in career exploration are the most important reasons for applying. This disconnect between behavior and self-reported motivations could be a result of students reporting what they believed hiring managers wanted to hear on their applications, having limited self-introspection into their own cognitive processes (Nisbett and Wilson 1977), or having a genuine interest in helping the community and advancing their careers, but just needing to find paid work. Whatever the reason, this disconnect between self-reported motivations and the strong treatment effect of monetary messaging points to the limits of using self-report data alone to inform recruitment strategies and the need for rigorously testing different strategies.

Ultimately, college students develop their capacities and explore their interests in classes and in a range of extracurricular activities, including work. If they remove work options that could provide important non-pecuniary benefits because they assume that these jobs will not

meet their financial needs, they may not only hurt their own development but also reduce the contributions that they could make to others in their communities and more broadly. This study points to the ability of low-cost interventions that increase the salience of monetary returns to jobs that also provide other benefits to substantially change students application behavior and their resulting employment. Making the monetary benefits salient can have outsized impacts on the likelihood students apply for and take advantage of enriching jobs.

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Appendix

Table S1. Primary Study - Self-Reported Motivations for Applying to be a Tutor

Application Condition	Monetary[a]	Prosocial[b]	Career[c]	Social[d]	Total
Control	0%	71.43%	28.57%	0%	100%
	(0)	(20)	(8)	(0)	(28)
Monetary	4.82%	62.65%	31.33%	1.2%	100%
	(4)	(52)	(26)	(1)	(83)
Prosocial	0%	50%	50%	0%	100%
	(0)	(16)	(16)	(0)	(32)
Career	0%	59.09%	40.91%	0%	100%
	(0)	(16)	(9)	(0)	(22)
Social	0%	90%	10%	0%	100%
	(0)	(27)	(3)	(0)	(30)
Total	2.05%	65.64%	31.79%	0.51%	100%
	(4)	(128)	(62)	(1)	(195)

[a] "It pays well"

[b] "I get to work with children" and "I get to support the surrounding community"

[c] "I will develop valuable skills", "It will look good on my resume", and "I am interested in becoming a teacher"

[d] "I will get to meet other GVSU students"

Table S2. Follow-up Study - Self-Reported Motivations for Applying to be a Tutor

Application Condition	Monetary[a]	Prosocial[b]	Career[c]	Social[d]	Total
Control	6.45%	32.26%	61.29%	0%	100%
	(2)	(10)	(19)	(0)	(31)
Monetary	15.09%	41.17%	37.74%	0%	100%
	(8)	(25)	(20)	(0)	(53)
Monetary + Prosocial	7.49%	55.77%	36.54%	0%	100%
	(4)	(29)	(19)	(0)	(52)
Monetary + Career	10.26%	48.72%	41.03%	0%	100%
	(4)	(19)	(16)	(0)	(39)
Monetary + Social	0%	53.66%	43.90%	2.44%	100%
	(0)	(22)	(18)	(1)	(41)
Total	8.33%	48.61%	42.59%	0.46%	100%
	(18)	(105)	(92)	(1)	(216)

[a] "It pays well"

[b] "I get to work with children" and "I get to support the surrounding community"

[c] "I will develop valuable skills", "It will look good on my resume", and "I am interested in becoming a teacher"

[d] "I will get to meet other GVSU students"