

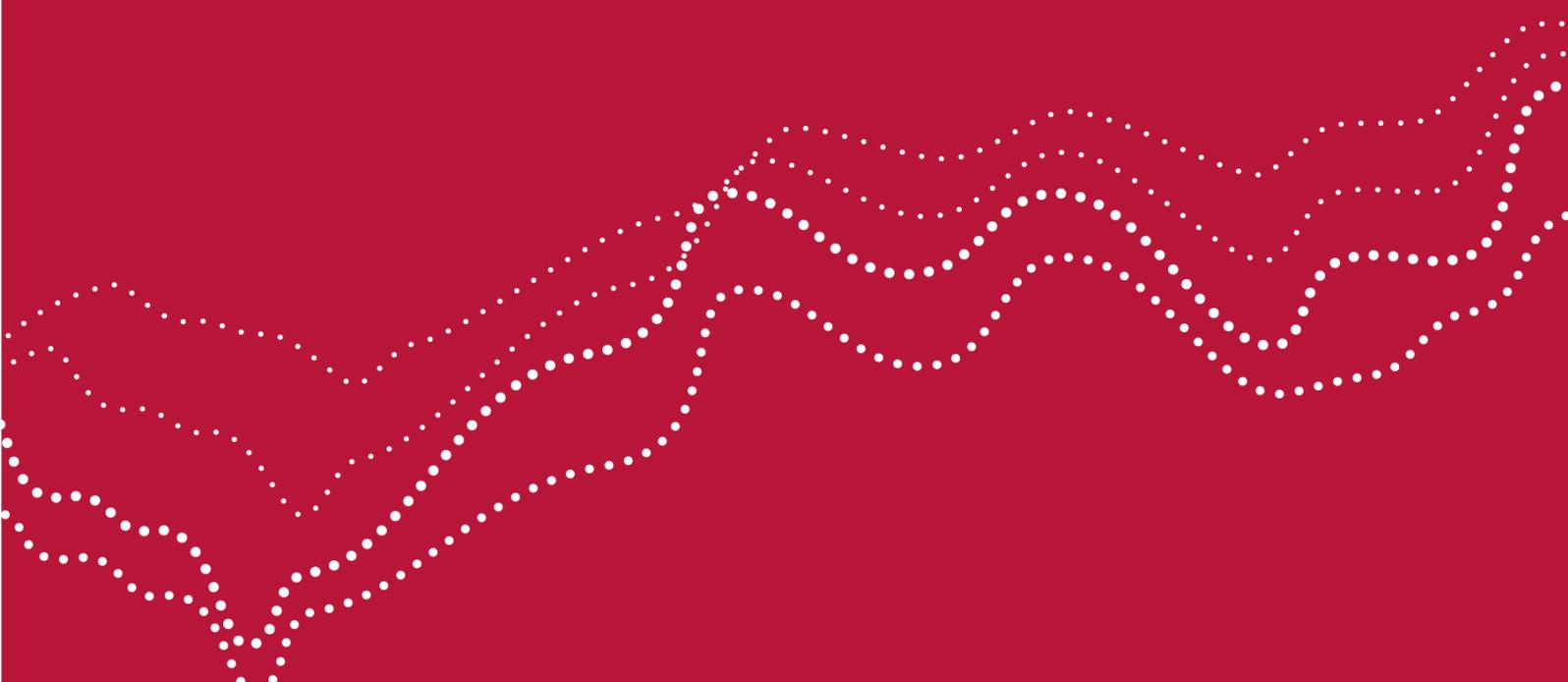
Improving outreach among university students

Results from a RCT in the Basque Country

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ABSTRACT

We set up an experiment that aims to improve the registration rate at PES of last year undergraduate students of the University of the Basque Country. The results of this experiment show large gains from information-enhancing interventions on PES if designed holistically. We estimate the effects of receiving two interventions. The first information campaign, which only tells students about the potential benefits of registering is not effective in improving their intention to register at PES. However, when students are informed on both the benefits of registering at PES and on the existence of a close and custom-tailored service to students their intention to register at PES increases by more than 10 percentage points.

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IMPLEMENTED BY:

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1. Introduction

The economic crisis that hit in 2008, together with recent events in 2020, have both left a particularly worrisome fingerprint in the labour prospects of the European youth. Youth unemployment has in recent years overcome other labour-market related issues, settling itself as one of the top priorities to be faced by many European countries. As part of this agenda, European authorities have recognised the importance of supporting a specific group of the youth notably exposed to the risk of experiencing social exclusion: young people between 20 and 29 who are neither employed nor involved in education or training, commonly referred to as NEETs.

In Europe, there are almost 10 million NEETs. They represent 16.4% of young people in Europe between 20 and 29 years old. Young people from the South and East of Europe are notably more affected by this phenomenon. Only in Spain, there are almost one million NEETs (19.6%). In the Basque Country, the Spanish region where this research is conducted, there are 18,441 NEETs. They represent 9.9% of young people in the Basque Country, the lowest rate in Spain.

Despite this low rate, NEETs in the Basque Country are still a pressing challenge. There is evidence that the conditions at the start of the labour history of young people have a scarring effect in their work trajectories, persistently hampering their access to more stable jobs, higher wages, and shorter unemployment states (Arulampalam et al., 2001; Gregg and Tominey, 2005). Being a NEET thus increases the risk of social exclusion and diminishes the probability of obtaining stable employment. This challenge is even more alarming in the long run, as the hardships the youth face when accessing quality jobs do not only have an impact on their wellbeing but also has long term costs, which may last for their entire remaining working lifetime. Bringing NEETs into employment, education, or training thus yields numerous promises.

Recognising these potential gains, governments throughout the world devote substantial resources to policies and programs to tackle youth unemployment and reducing the NEET share. European countries are sensitive to this phenomenon and have supported many initiatives to improve their labour market opportunities. At the European level, the *European Youth Guarantee (YG)* was introduced in 2013 to combat youth unemployment. This program seeks that all youth that participates in the program receives an employment, training, or apprenticeship offer after finishing their studies or becoming unemployed. Recognising effective outreach work as an essential ingredient in the activation of the youth, the European Council decided in 2014 that European member states needed to improve their cooperation on reaching out to the NEETs, devoting more effort to sharing successful experiences and best practices (see Hall et al., 2015).

Seven years in, policies resulting from YG still lack comprehensive evaluations in a cross-country framework. How effectively are young people supported in the labour market? The *Youth Employment PartnerSHIP* project aims to answer this question by evaluating both the efficacy and the efficiency of employment initiatives targeting youth in Spain, Hungary, Italy, and Poland.

As part of the *Youth European PartnerSHIP*, this study reports the impact of a policy intervention to improve the outreach of the Public Employment Services (PES) to NEETs in the Basque Country. By offering NEETs that are facing difficulties in transitioning towards employment the possibility to register at their offices to receive assistance and access to programs such as the YG, the PES offices seek to contribute to increase both the labour force participation as well as employment rates of the youth.

The report thus explores how PES could adapt their strategies to better support young people on the labour market. The Basque Country has however remarkably unique characteristics in terms of outreach among NEETs that must be considered when designing such intervention. Figure 1 reports the outreach rate for NEETs in each Spanish region. As shown in Figure 1, the Basque Country is one of the regions with the highest outreach among NEETs.

Figure 1 Outreach rates for NEETs across the Spanish regions



Source: own elaboration based on the Spanish LFS.

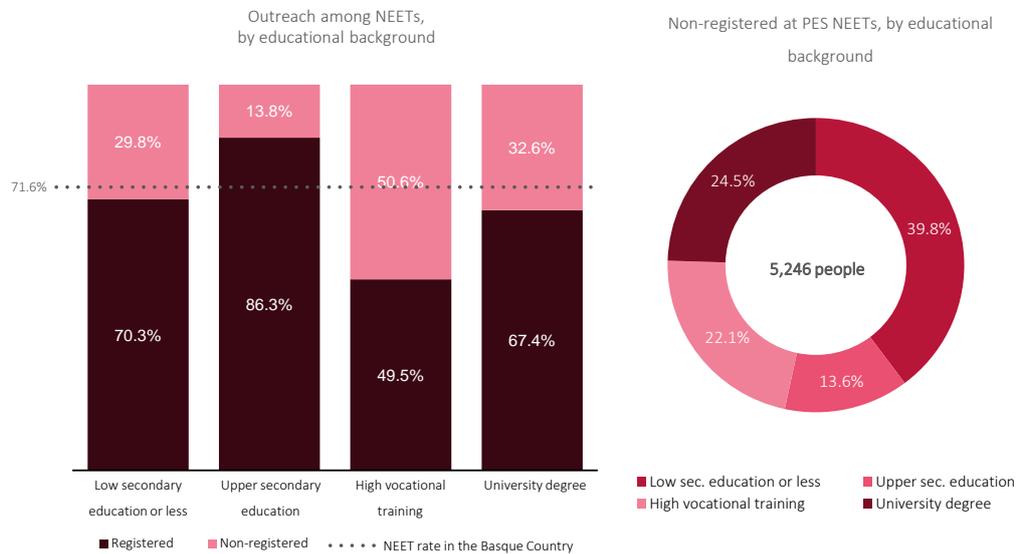
Note. Groups correspond to the fifth quintiles of the variable distribution.

In particular, while based on the Spanish LFS, the average outreach rate for NEETs in Spain is 62.9%, the Basque Country has a 71.6% outreach rate for this collective. This large, almost ten points difference vis-a-vis the Spanish average makes the Basque Country the region with the second-highest outreach among NEETs. Consequently, given its high outreach levels, there seems to be little room for a successful outreach-enhancing policy intervention if implemented in the Basque Country in a non-targeted fashion.

A different picture however emerges when one looks at the educational background of NEETs in the Basque Country. Figure 2 reports in its left panel the outreach rate among NEETs across their *different educational backgrounds*—whether their highest educational attainment is low secondary education or less, upper secondary education, high vocational training, or a university degree. The outreach rate of each of these collectives is shown in green. As reported in the left panel of Figure 2, the Basque Country still has a substantive room for improving the outreach of NEETs with highest educational attainments. In particular, while as previously introduced, the Basque Country has a 71.6% outreach rate among NEETs, NEETs that hold a high vocational training degree have an outreach rate that is 22.3 percentage points lower. NEETs that has attained university have also a lower than the average registration at PES rate: their outreach rate is 4.2 percentage points lower. Major outreach problems in the Basque Country thus come from highly educated individuals. Indeed, this phenomenon is particular to the Basque Country—the gap in outreach rate across educational backgrounds is more substantial in the Basque Country than in Spain as a whole, see Figure A1 in Appendix A.1.

The importance of highly educated individuals on explaining NEET rates in the Basque Country is also highlighted when exploring the educational background of non-registered NEETs only. This is the collective that PES seeks to intervene to improve outreach. The right panel of Figure 2 reports the proportion of each educational background group on non-registered NEETs. We observe how NEETs that have attained high vocational training or university represent a large share of non-registered NEETs—the 46.6% of non-registered at PES NEETs. We find particularly worrying the large share of NEETs that hold a university degree. Despite having achieved the highest of the educational attainments considered, many young people in this collective still remain unregistered at the PES. Indeed, the share of non-registered NEETs with a university degree in the Basque Country is about 25% as opposed to less than 10% in Spain as a whole—see Figure A1 in Appendix A.1.

Figure 2 Young NEETs and their educational background, Basque Country



Source: own elaboration based on the Spanish LFS.

According to Basque reality, we set up an experiment that aims at improving registration at PES of last year undergraduate students of the University of the Basque Country (hereinafter UPV/EHU). *The experiment is part of an online questionnaire filled in by approximately 500 students.* Those survey respondents that declare not being already registered at PES are the actual experiment participants; they receive a longer version of the questionnaire with a survey block devoted to the experiment. In that block, non-registered students are randomly divided into three groups: two treatments and one control group. Students that state that they are already registered at the PES are thus excluded from the experiment—as they have already discovered that PES might help to improve their labour force participation¹.

Through its two interventions, the experiment explores whether improving the knowledge of the services offered by PES among university students that are not already registered at the PES can bring gains in outreach. By targeting the exposure to these information interventions to university students about to start their labour market trajectories we seek to reduce the fall into the NEET status before it actually occurs. This will thus potentially affect the prevalence of NEET status among individuals with educational attainment, reducing the NEET rate of the Basque Country.

¹ Students do not know that the actual participation in the experiment hinges on the answer to the question of whether they are already registered or not at the PES and hence, they do not have an incentive to lie on this matter. Furthermore, they still receive a (smaller) compensation for answering those initial questions even if they are not actually participating in the experiment.

The rest of this report is structured as follows. Section 2 explains the methodology of this study. Section 3 covers the descriptive analysis. Section 4 provides the results of the experiment. Section 5 concludes.

2. Methodology

In this section, we review the methodology used for carrying out the analysis by describing *(i) the process of designing the experiment* and *(ii) the methods implemented to estimate the impact of the interventions*. In the context of this project, at the same time, sharing the methodology developed will enrich and ultimately contribute to improving evidence-based policy interventions across Europe.

The methodology section is divided into three main parts. The first part concerns the design of the experiment, where we cover how we select the target population of the experiment from all students that participate in the survey. We then turn to explain in more depth each of the interventions, discussing their content and how they are assigned at random. Finally, the third part of this section provides a theoretical overview of the methods used in order to estimate the effect of the interventions. We motivate our estimation technique choice as well as describe why randomisation methods are especially reliable when compared to non-experimental methods. We also explain the basic theoretical framework behind the analysis of multiple treatment experiments as ours.

2.1. Experimental design

This section explains how the experiment is designed. As introduced in the previous section, the experiment is part of a survey sent to undergraduate students in their last year of their degree². We now explain in more depth how the participants of the experiment are selected from the survey participants³.

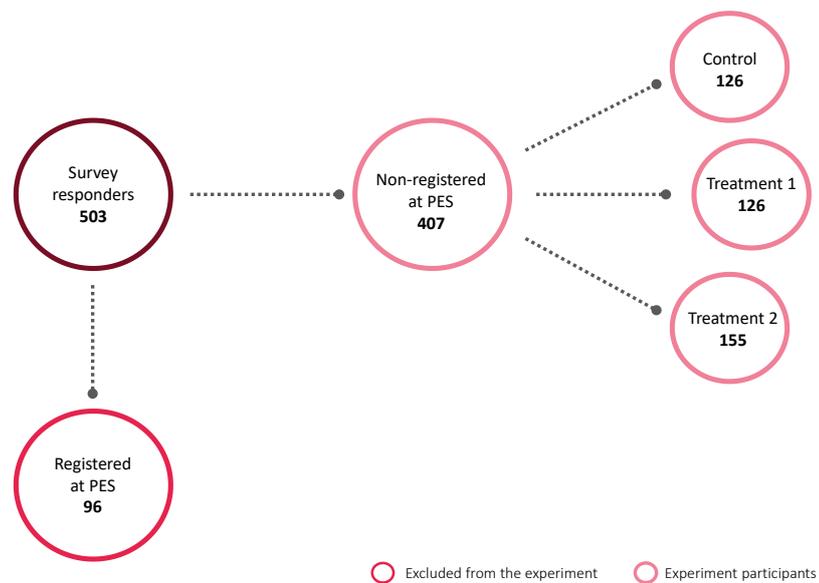
Figure 3 graphically illustrates the process of selecting the experiment participants among survey responders. The process starts by looking at the student's reported situation regarding their registration at the PES office. Since the goal of our intervention (experiment) is precisely to increase the rate of students registered at the PES, the 93 students who respond that they are already registered at the PES are excluded from the experiment. They represent 19.1% of the total amount of survey respondents.

² The survey was sent via email to all last year students at the UPV/EHU. It was closed off from further participants after roughly 500 valid responses were recorded, due to budget constraints (respondents were given a compensation for answering).

³ The whole design process of the experiment is provided in Appendix A2.4, which reviews the project pipeline.

The remaining 407 survey respondents are not registered at PES. As anticipated in the introduction, this set of students are the ones that actually participate in the experiment. As explained later on in greater detail, the experiment tests the effects of two interventions. Experiment participants are thus randomly assigned to two treatment groups and one control group. As Figure 3 shows, 126 students are exposed to treatment 1 (about one-third of non-registered students). 155 students receive treatment 2 (about forty percent of non-registered students). The remaining 126 did not receive any treatment at all and are thus assigned to the control group (about one-third of non-registered students). In the next section, we review each of these two treatments, explaining in greater detail what they consist of and clarifying how are they allocated at random.

Figure 3 From survey responders to experiment participants



2.2. Experimental treatments

In our experiment, we test the effects of two information interventions. *The first of these interventions consists of informing non-registered students about the potential benefits of registering.* Specifically, students are told that PES offers scholarships, delivers training courses, and grants access to the Youth Guarantee System—which promises a good-quality offer of employment, continued education, an apprenticeship or a traineeship within a period of four months of becoming unemployed or leaving formal education to people under 25 years old.

The second intervention consists of both informing non-registered students about the potential benefits of registering as well as providing them the information on the

proximity and customization of the PES offices. In particular, students in this group are also informed that there is a PES office in each of the UPV/EHU campuses that offers counseling tailored to university students. The rationale for the use of information-based interventions is that knowledge on the potential benefits of being registering at PES or the proximity of a custom-tailored service should increase the relevance of PES for students and thus improve the effectiveness of these campaigns.

In order to test the efficacy of our two proposed interventions, we set up an experiment with three groups (two treatment groups and one control group). Table 1 summarises the experimental treatments.

Table 1 Summary of the experimental treatments

Experimental assignment mechanism	Treatment group assigned	Information received
Born in January, April, July, or October	Control group	No information at all
Born in February, May, August, and November	Treatment 1	Potential benefits of registering (scholarships, training courses, and access to the YGS)
Born in March, June, September, and December	Treatment 2	Potential benefits of registering and the proximity and customization of the PES office (scholarships, training courses, and access to the YGS + the existence of an PES office in each of the campus that offers customized counseling to university students)

Approximately one-third of the non-registered students are exposed to the first intervention, and they thus receive information on the potential benefits of registering at PES only. We call this intervention treatment 1. Another third of non-registered students are exposed to the second intervention, receiving both information on the potential benefits and on the proximity and customisation of the PES office. We call this intervention treatment 2. The remaining one-third of the non-registered students received no information at all and are thus assigned to the control group.

To randomly expose non-registered students to one of the three possible treatment groups, we use their month of birth as the randomisation device. In our experiment, depending on their month of birth, non-registered students are assigned to either treatment 1, treatment 2, or the control group. Receiving the interventions thus depends on this specific mechanism and not on other competing factors such as the gender of the student, her ability, or her previous work experience. While the month of birth might be a crucial predictor of performance in outcomes in other contexts (say, weight-improving interventions on small children) and hence not valid as a randomisation device, in the context of our experiment the month of birth is not expected to affect the intention to register of the students that participate in a

predictable way. For example, it is hard to tell whether non-registered students born in May will tend to show higher intention to register at PES than their peers born in April.

We nonetheless take into account the existing evidence on higher performance in outcomes among those born early in the year vis-a-vis those born in the last months of the year (a pattern known as the relative age effect, see for instance Bedard and Dhuey, 2006; Muller and Lionel, 2016). To reduce any potential difference in maturity among the youngest and oldest experiment participants, we intersperse assignment to each treatment group in the following fashion. We assign non-registered students born in January, April, July, or October to the control group: they do not receive any information on the PES. Non-registered students born in February, May, August, and November receive treatment 1. Non-registered students born in March, June, September, and December receive treatment 2 (see Table 1).

In practice, students that participate in the experiment are assigned to each treatment group through their month of birth by receiving a different version of the online questionnaire. All students that participate in the survey fill in two initial blocks regarding their background characteristics. Students that report not being registered at the PES at the time the survey is launched continue on to the experiment and are exposed to one of the three treatment status depending on their month of birth. Non-registered students assigned to one of the two treatment groups thus see a third block, where they receive one of the two possible interventions described in Table 1. Non-registered students assigned to the control group skip this third block and are thus not exposed to any information on PES. After having read the information in the block 3 – treated students – or immediately after block 2 for students assigned to the control group, all students answer in a fourth block whether they are planning to register at PES. Further details on the design of the questionnaire are available in Appendix A2.2 and A2.3.

2.3. Empirical strategy

Once we have properly introduced the experiment design, the content of each intervention and the randomisation device we now turn to discuss the techniques employed in this study to estimate the effect of receiving either of the two treatments. We begin this discussion by motivating why a randomised experiment is the most reliable method for estimating the effect of receiving a policy intervention.

2.3.1. Rationale for an experimental study

The quest for discovering whether a given policy, program, or intervention has been effective in achieving its desired goals is typically framed in a counterfactual fashion.

From this perspective, the researcher wonders what would have been the performance in outcomes had the program not taken place. Observing the reality under study with and without the effect of the program is the most reliable way to ensure that the changes observed when the program is introduced can be attributed to the program itself—and not to changes in context, or differences in the treated (those who receive the program) and non-treated (those who do not receive the program) population.

In non-experimental settings, receiving treatment usually depends on an array of complex factors. Take, for instance, the case of being one of the 93 university students registered at PES of the study. For them, registration does not come from the exposure to a randomised intervention specifically designed to increase their registration at PES. Instead, their choice of registering is potentially driven by factors such as their education level, or their socio-economic situation. Critically, some of those factors that explain registration at PES will be unknown and non-observable in the data. Studying the drivers of registration or evaluating the effectiveness of a program to improve registration rates under this non-experimental perspective is thus a non-straightforward process.

Interventions allocated at random are however better suited to discover their impact. When the intervention is randomised, each participant will have the same probability of being assigned to the treatment group—as in a lottery. Crucially, and precisely because of randomisation, the characteristics of the experiment participants will also distribute homogeneously across the treatment and control groups. Individuals in either the control or the treatment groups will thus present similar observable and non-observable background characteristics: they will only differ in their treatment status. Consequently, under a randomised experiment *any observed differences in the outcome of interest can be attributed to the effects of the program*. This capacity of isolating the effect of policy interventions is what makes experiments so important for analysing which interventions work best. Randomised experiments, when feasible, are thus considered the most reliable method for estimating the impact of a given intervention.

In our experiment, since each treatment is allocated at random by using the month of birth of the student, individuals in either the control or the treatment groups will present similar observable and non-observable background characteristics. In this case, randomisation ensures that factors such as their gender or the employment status of their parents do not determine why some of them end up receiving treatment. In particular, randomisation will guarantee that the treatment groups present statistically equivalent averages across all their characteristics. In our experiment, the treatment groups should, for instance, have a similar proportion of previously employed individuals.

2.3.2. Estimation method

Randomisation will hence remove all those competing factors that could potentially affect intention to register at PES. The estimated impact of the intervention can therefore be attributed to the average performance in outcomes for those that received treatment against its counterpart among individuals in the control group. This difference is known as the *Average Treatment Effect* (ATE). As it has already been mentioned, since randomisation gets rid of all factors that could otherwise explain performance in outcomes, we can safely interpret the reported ATE as the true effect of receiving the intervention (in our case, receiving various levels of information on the PES).

Some last minor caveat applies for our randomised experiment on university students. We designed an experiment with two possible treatments, receiving either information on the potential benefits of registering or receiving both information on the potential benefits of registering and information on the proximity and customisation of the PES office.

In a multiple treatment experiment, there will be an ATE for each treatment vs control comparison. In our experiment, the first of these pairwise ATE would be the average intention to register at PES for all last-year university students informed of the potential benefits of registering information treatment compared to the average intention to register at PES for all last-year university students receiving no information at all. Under the same principle, the relative effectiveness of receiving treatment 2 will be measured as the average intention to register at the PES for all last-year university students informed both of the potential benefits as well as on the custom-tailored program compared to the average intention to register at PES for all last-year university students receiving no information at all (see Appendix A2.1 for further details on estimating the effects of the program in a multiple treatment setting).

3. Descriptive analysis

This section describes the characteristics of the students that participate in the survey. As stated in the previous section, these students can be generally divided into two main groups. The first collective is that of those students already registered at the PES. Students in this group did not actually participate in the experiment as they were already registered at PES. Despite not being the target group of the experiment, we are nonetheless interested in exploring their main characteristics and finding out which of them better explain their registration at the public employment office. This process could also provide valuable information that can then be considered when designing outreach-enhancing interventions for those not yet registered.

Non-registered at PES students is the second group of students in this study. This set of students is the target population and the one exposed to the treatments. Describing them will allow us to understand more precisely which are the factors that are associated with being willing to sign up at PES.

For both registered and non-registered students, we perform a two-step descriptive analysis. Firstly, we explore which characteristics are associated with either being already registered at PES or to being willing to sign up at PES. Secondly, we test through a probit model estimation which of their characteristics affect the probability of registering at PES or to the probability of being willing to register at PES once we take into account the relative importance of all the background characteristics. This analysis allows us to know whether the differences among groups are statistically significant—and therefore associated with the likelihood of being registered or being willing to register.

To describe the first group (students already registered at the PES), we cover in section 3.1 the main demographic, tertiary education and labour market characteristics of the students that participated in the survey, and look for those that concentrate a substantive proportion of registered students. Section 3.1 continues with a probit model estimation in order to identify which of those characteristics are actually statistically significant and associated with registration at PES when controlling for all the other variables. As section 3.1 describes in more detail, analysing their statistical profile is expected to shed some light on how to improve outreach among non-registered students.

For non-registered students, we will compare in section 3.2 whether receiving treatment 1 or treatment 2 seems to increase at the exploratory level their intention to register at the public employment offices rate vis-a-vis not receiving treatment at all. Section 3.2 also reviews which of their main background characteristics better explain their intention to register at PES. We report the distribution of non-registered students with regard to their demographic, educational, and labour market characteristics. After this analysis, we estimate using a probit model which of all background characteristics are associated with being willing to register at PES.

Finally, before moving to the results of the experiment, section 3.3 closes the descriptive analysis by studying the background characteristics of each treatment group to ensure that the groups do not differ remarkably in their background characteristics.

3.1. Profiling students already registered at PES

3.1.1. Explanatory analysis

We now turn to describe the group of students already registered at PES. We begin by graphically exploring which background characteristics are associated with a higher or lower proportion of students that already use the public employment offices as a job searching tool. To perform this task, we report the proportion of registered and non-registered students in each characteristic and look for those that concentrate a substantive proportion of registered students. A high proportion of registered individuals among students from a given characteristic would suggest that belonging to that collective is associated with registration at PES. As a reference, we compare the registration at PES rate within each group to the one observed for all survey participants (see section 2.1). That is, a higher than 19.1% proportion of individuals registered at PES among students from a given background trait would be indicative of an association between that characteristic and already being registered at the public employment offices. For example, a proportion of registered individuals greater than 19.1% among female students would imply an overrepresentation of females among registered at PES students, which would provide some support to the idea that being female seems to increase the probability of being registered at PES.

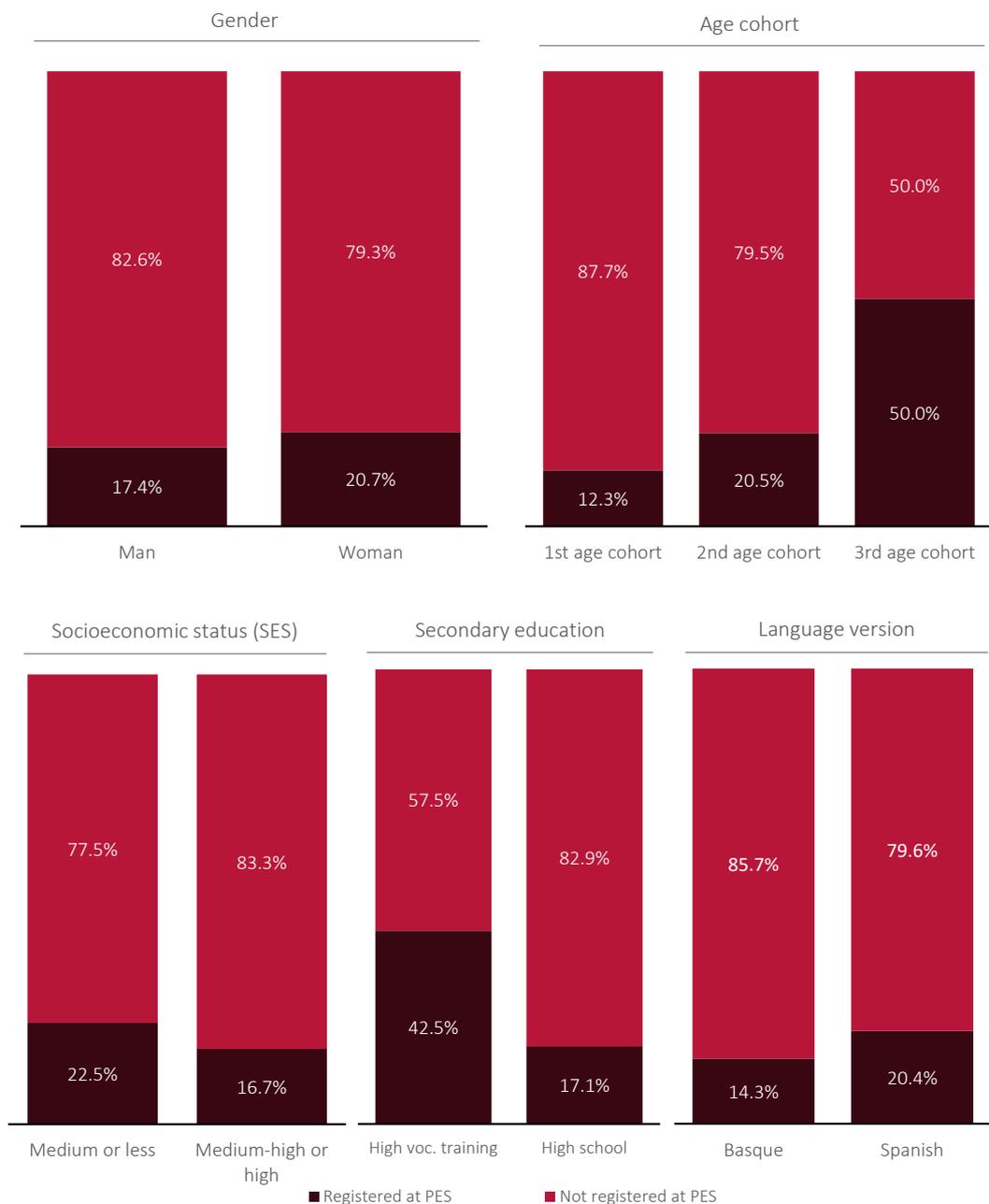
We start the profiling of the students already registered at PES by focusing on their main demographic characteristics. Before discussing any found patterns, we briefly introduce these characteristics and how are they defined. We analyse the following five demographic characteristics of the students: their gender, their age cohort, their socioeconomic status, their pre-university education background, and the language they used for answering the questionnaire. The age cohorts are constructed in the following fashion. Students born after 1998 are grouped into the first age cohort. Students from this age group are finishing their university studies at their expected rhythm, as their graduation year is the expected one given their age. This is the group of the youngest students. Students born between 1993 and 1997 are grouped into the second age cohort. They are finishing their undergraduate degree between one and five years later to the date predicted provided their age. Finally, students born before 1993 are grouped into the third age cohort. This is the group of the oldest students.

For the socioeconomic status of the students, we asked students to classify their household-level socioeconomic status (SES). Statuses are then grouped into two groups to ensure that neither of the categories is too small. In particular, we group those students that see themselves as upper-middle class or upper class, and those that consider they are members of the low or middle class. In terms of the pre-university education background, we divide students by their secondary education path—whether they pursued high vocational training or high school before starting their tertiary

education studies. Finally, we group students by their language used to fulfill the questionnaire, Basque, or Spanish.

We now explore which demographic characteristics are associated with a higher or lower proportion of students that already use the PES services. Figure 4 reports the proportion of registered and non-registered students across these demographic characteristics.

Figure 4 Profiling of survey participants: demographics (Outreach rate reported)



The proportion of registered at PES students in each demographic group is shown in green. Concerning their *age*, registered individuals are particularly numerous among older students. In particular, one half of those belonging to the third age cohort are registered at PES. By contrast, only 12.3% and 20.5% of those in the first and second age cohorts belong to this group, respectively. *This suggests that age is associated with being registered at PES. Several factors could explain this pattern.* Being older is naturally associated with other background characteristics of the respondent that could well explain their high registration at PES. For example, older students are more likely to have worked previously. We will isolate each of the potential explanatory factors at the end of this exploratory analysis.

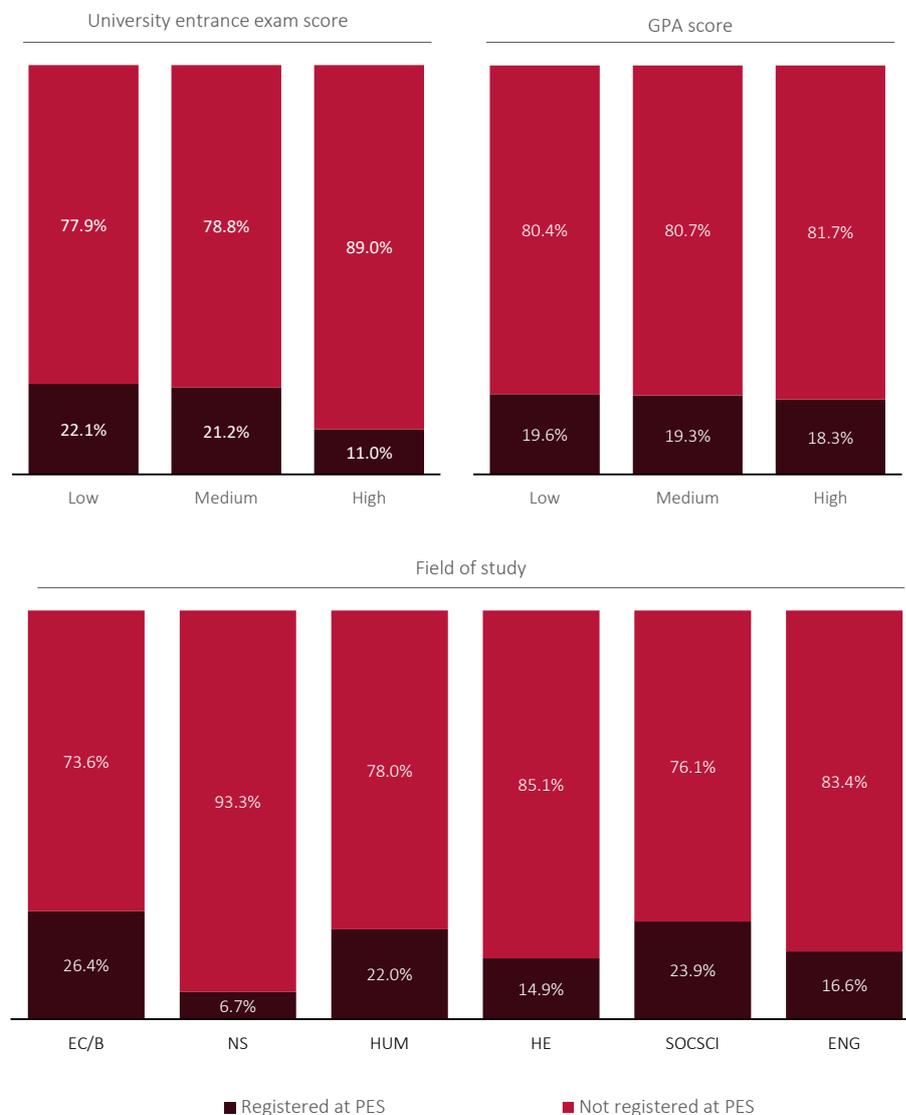
Focusing on their *pre-university education background* we also observe substantive differences in registration at PES rates across its types. Specifically, *registration at PES is remarkably higher among those students that pursued high vocational training before starting their tertiary education studies*—42.5% of them are registered at PES. By contrast, only 17.1% of those responders that went to high school are registered at PES. This finding might be driven by the explicit theoretical and practical scope of high vocational training education in Spain. All high vocational training students also receive a mandatory course to offer them counseling and improve their employability and labour market integration—this course also teaches students on the different job searching strategies at their disposal.

The remaining demographic dimensions show relatively smaller differences. In terms of their *gender*, for example, we find that the proportion of females registered at PES is barely superior to the one observed for all responders. For males, this rate is 3.3 percentage points lower. Similarly, when looking at their *socioeconomic status*, we find that there are relatively more registered individuals among students that place themselves in the working or middle class than among those students that see themselves as upper-middle class or upper class. Finally, for the *language version* of the questionnaire, we find that the share of registered at PES students among those that fulfilled the questionnaire in Spanish is barely superior to the one observed for all responders. Among students that answered in Basque, however, the rate of registered students is relatively lower (14.3%).

We now turn to the main tertiary education characteristics of the registered students, briefly introducing how they are defined. We analyse three main tertiary education characteristics: their university entrance exam score, the average mark in their undergraduate degree (their GPA), and their field of study. We transform both the entrance exam score and the GPA into mark groups that represent low, medium, and high marks. For their GPA, students are divided into those scoring below 6.5 points (low GPA), those with marks between 6.5 and 7 points (medium GPA), and a third group with scores over 7.5 (high GPA). For the university entrance exam score—with a maximum score of 14 points in Spain—, students are divided into those scoring below 8 points (low

admission score), those with marks between 8 and 10.5 points (medium admission score), and a third group with scores over 10.5 (high admission score). Finally, the last tertiary education characteristic of the student is their fields of study. Students are classified in terms of the field of the study of their undergraduate degrees—Economics and Business, Natural Sciences, Humanities, Medicine and Health, Social Sciences, and Engineering and Technology. We now explore which tertiary education characteristics are associated with a higher or lower proportion of students that already use the PES services. The proportion of registered and non-registered at PES individuals across their tertiary education characteristics is provided in Figure 5.

Figure 5 Profiling of survey participants: tertiary education characteristics



Note: Codes for field of study: EC/B: Economics and Business; NS: Natural Sciences; HUM: Humanities; HE: Medicine and Health; SOCSCI: Social Sciences; ENG: Engineering and technology

Concerning the *university entrance examen score* we observe that the proportion of registered individuals with low and medium admission scores is close to the one observed for the whole sample of students—about 20%. However, this rate is 50% lower among those students that best performed in the university entrance exam. *Best performing students tend to show lower registration at PES rates.* A tentative explanation for the former might come from a stronger conviction among students with better marks that their qualifications and more competitive educational profiles will help them to find a job more easily without the PES help, which will, in turn, translate into lower interest in this job searching tool. Similarly, students with the highest university entrance examen scores might be more interested in pursuing further education studies—as they perceive education as a task they are good at. *These explanations must be however read with caution as no such pattern exists for the GPA of the students.* We report in Figure 5 that no substantive differences appear across the registration at PES rates of the different GPA score groups. In any of them, the proportion of registered at PES students is close to 20%. The methods employed at the end of this section will bring some light on this respect.

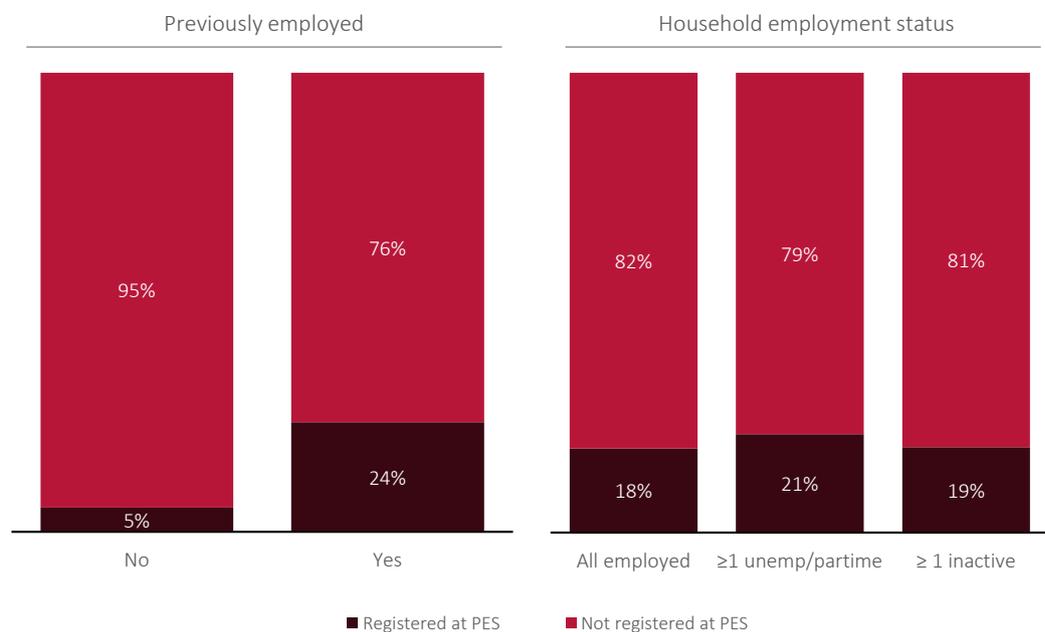
We close the discussion of the tertiary education characteristics of the survey participants by looking at registration at PES rates across the different *fields of study of undergraduate degrees.* We observe lower registration at PES rates among *undergraduate students belonging to science-related degrees.* In particular, only 6.7% of those responders enrolled in a Natural Science degree have signed up in the public employment offices. Likewise, only 14.9% and 16.6% of those students belonging to Medicine and Health and Engineering and technology bachelors are registered at PES, respectively. By contrast, students in Economics and Business, Humanities, and Social Sciences degrees have higher concentrations of registered at PES students. This gap might come from a more extended perception of better employment perspectives among Science, Technology, Engineering, and Mathematics (STEM) students and undergraduates in Medicine and Health degrees. At the same time, students from the medical school often face long career pathways, which might explain why their intention to register at PES is the lowest among all fields of study.

Finally, we describe students already registered at PES in terms of their labour market characteristics. We focus on two characteristics: whether the students have been previously employed and the employment status of their parents. The first of these variables classifies students between those that have previously had a job and those that have not. The employment status of the student's parents is classified as follows: the first group is composed by those students that have all their legal guardians employed, the second is formed by those that have at least one guardian unemployed or working part-time, and the third group encompasses those students which have at least one of their legal guardians inactive. We expect that the student with previous

work experience or from less secure socioeconomic environments might stronger perceptions of the importance of registering at PES.

The descriptive analysis of the labour market characteristics of students registered at PES is presented in Figure 6. As commented previously, we look for characteristics where registered at PES students are particularly concentrated. Concerning having already been *previously employed*, we report that *the proportion of registered individuals is particularly low among those that have not worked previously*.

Figure 6 Profiling of survey participants: labour market characteristics



Specifically, only 5.3% of them are registered at PES. Among students previously employed, by contrast, this rate is substantively higher: 23.9% of them are registered at PES. This finding is extremely relevant for our outreach-enhancing intervention. A low proportion of registered individuals among those that have not worked previously might be read in two ways. Firstly, students could be postponing their job search activities until after they finish tertiary education. We should, however, remember that the experiment targets last-year university students, and we thus expect some interest in PES as a job searching tool among them—independently from their previous labour market experience. At the same time, and not necessarily as a competing explanation, the observed low registration rate among not previously employed students might suggest that the labour market might actually be the main channel through which students discover the services of the employment offices. Not employed students would hence ignore the benefits of being registered at PES. Under that scenario, we expect our intervention to be effective in fostering intention to register at PES. We also observe the *employment status of the legal guardians* of survey responders. We classify their

employment status at the household level. As shown in Figure 6, there are no major differences for the registered at PES rates of students with tutors in either of these three employment statuses.

3.1.2. Probit model

As anticipated, once the group of students registered at PES has been exhaustively described at the exploratory level, we develop a probit model estimation in order to identify which of all survey characteristics are statistically significant and associated with registration at PES controlling for all the other variables. This analysis allows us to know whether the differences among groups are statistically significant—and therefore associated with the likelihood of being registered. For example, we found in the exploratory analysis discussed above that being older is one of the main characteristics of those students already registered at PES. We nonetheless notice the links between people in the older groups and their background characteristics that could well explain their higher registration rate. e.g. having worked previously. The more formal test introduced now will allow us to estimate the effect of being older on registration at PES while considering the effect of having worked previously and all other background characteristics. Thanks to this approach, we will be able to better discern which factors are associated with being already registered. In turn, this will provide valuable information that can then be considered when designing interventions to improve outreach for those students not yet registered.

To perform this analysis, we use maximum likelihood to estimate a probit model. In our case, we are interested in understanding which of the considered background characteristics affect the probability of registering at PES. As individuals are either registered or not at PES, the dependent variable would take the value 1 for those that meet the condition of being registered, and 0 otherwise.

Before discussing the results, we briefly describe how to interpret them. To interpret the results, we provide the marginal effects of each factor. The marginal effect of each factor measures the change in the dependent variable when that factor changes—keeping all the other factors constant. For example, the marginal effect of belonging to the third cohort on the probability of registering at the public employment offices would be the contribution of this factor to the probability of being registered while all remaining characteristics are kept constant. In the analysis, as all variables are measured in levels, the constant level will be one of the levels in that variable. For gender, for instance, we choose being male as the base level, while for age we choose belonging to the youngest age cohort.

The individual that has all the characteristics at its base levels is known as the reference individual. In our study, we take as the *reference individual the profile of a male student,*

belonging to the first age cohort that sees himself as belonging to the working or middle class, that has completed high vocational training before starting his undergraduate degree, that has a low university entrance exam mark, that has a low GPA, that studies a social science or humanities bachelor, that has not worked previously, that has all legal tutors in his household working and answered the survey in Basque.

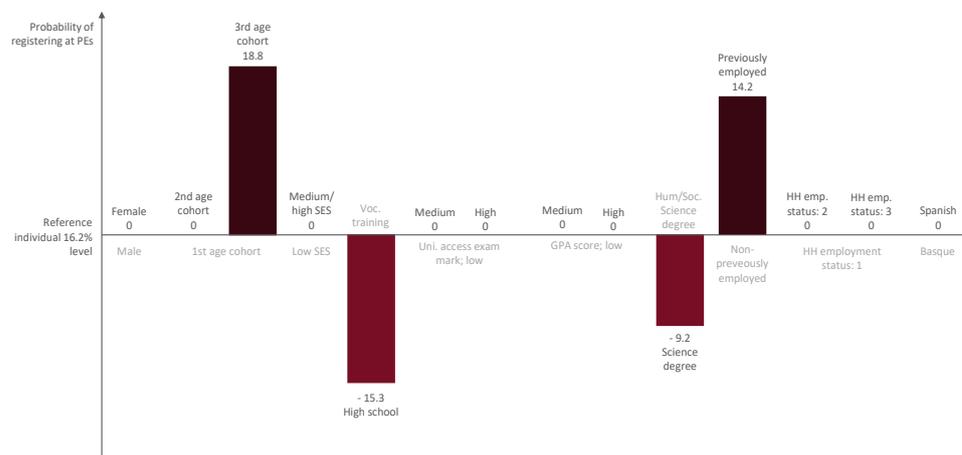
To interpret the results of the analysis, we represent graphically how each of the potential factors affects the probability of registering at PES. Each of the marginal effects of the factors is presented in the horizontal axis of the figure. The impact each background characteristic has is measured on a reference individual. In the figure, the characteristics of this reference individual are shown in grey text and the level of the horizontal axis shows the probability of the reference individual of registering at the public employment office. The probability of registering at PES for the rest of the individuals is then calculated based on this reference. From this perspective, the coefficient of being female students will show whether a student that shares the same characteristics of the reference individual but is female instead of male has more or less probability of being registered at PES. We then show the impact of age, that is, what would be the probability of registering at PES for reference individual that belongs to the second or the third age cohort—instead of belonging to the first age cohort. The same reasoning applies to the remaining variables presented in Figure 7. For example, belonging to the third age cohort positively affects the probability of registering at PES in 18.7 percentage points. This means that, as compared to the reference individual, which belongs to the first age cohort, a student from the third age cohort that has the same other characteristics (included in the estimation) of a non-registered individual has a probability of being registered 18.7 percentage points higher. Conversely, a negative value, like having completed high school before starting tertiary education (vis-a-vis having completed high vocational training) decreases the probability of registering at PES in 15.3 points.

We now provide the estimation results of the determinants of being registered at PES. With regard to age, Figure 7 shows that *being older notably affects the probability of being registered at PES. In particular, belonging to the third age cohort increases the probability of being registered by 18.7 percentage points—over the 16.2% reference value.* This implies that the probability of registering for those belonging to the third age cohort is more than twice as large as the one of the reference individual, which belongs to the first age cohort. This confirms the pattern found for age during the exploratory analysis. Since in this case we are also controlling for the previous working experiences, we can conclude that being an older student affects the probability of being registered at PES, even when we take into account all the remaining characteristics of the students. This higher probability could be related to other variables related to the age but unobservable in the data, such as greater maturity or less financial support from their parents.

Moreover, *having worked previously is likewise associated with a greater probability of registering at PES. In particular, those that have worked previously have a probability of being registered 14.2 percentage points higher* than the reference individual, which has not worked previously. This finding is coherent to the obtained at the exploratory analysis. Now, after isolating the effect of previous work experience from other background characteristics, we still found that this dimension greatly influences the probability of registering at PES. This suggests that most of the students either postpone the use of the public employment offices until they start working or do not know of their services. *Information campaigns targeted at this group hence offer great opportunities for improving outreach among non-registered students.*

Two other characteristics negatively influence the probability of signing up at PES. As shown in Figure 7, *for those that completed high school before starting their tertiary education studies their outcome probability drops by 15.3 percentage points.* Given that the reference value is 16.2%, students in this group will have a probability of registering that is almost 0. The probit model thus confirms the importance of high school on registration at PES. As posited during the exploratory analysis, this might be driven by the absence of any course during high school education that teaches job searching strategies.

Figure 7 Registration at PES determinants among registered students



The other factor negatively affecting the probability of registering at PES is being a science undergraduate. Students in the reference group but *studying a science degree have a 9.2 percentage point lower probability of registering at PES*—as compared to their peers, which have a probability of registering at PES of 16.2%. This gap might come from a more extended perception of better employment perspectives.

To sum up, belonging to the older cohort and having worked previously are the two factors that predict higher registration at PES. Conversely, being a science student or coming from the high school secondary education path predict lower intention to register at PES. The remaining background characteristics—being female, being upper-middle class or upper class, having medium admission scores, having high admission scores, having a medium GPA score, having a high GPA score, having at least one legal guardian working part-time or unemployed, having at least one legal guardian inactive—do not affect registration at PES. One should notice that for some of the characteristics, such as GPA scores, the exploratory analysis revealed relatively large differences in the rate of registered students. However, the probit model discerns what is the relative contribution of each characteristic to the intention to register the students once isolated its impact.

3.2. Statistical profiling of students not registered at PES

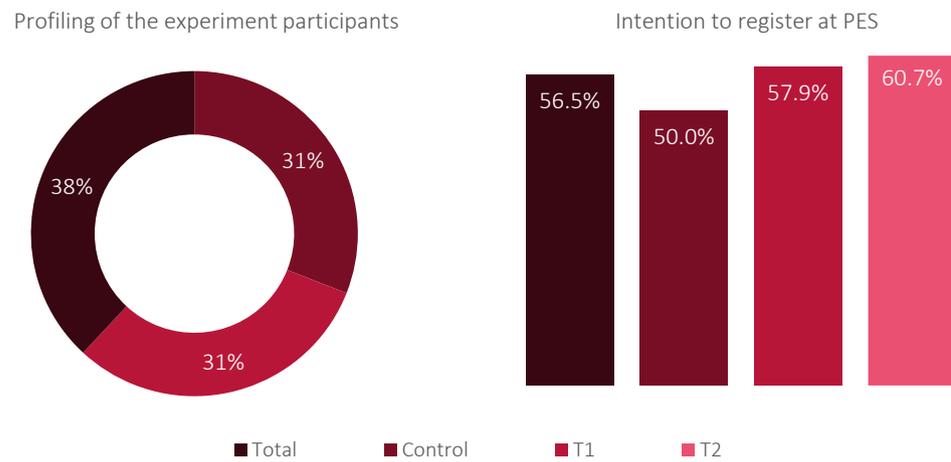
3.2.1. Exploratory analysis

As previously stated, one of the major outreach problems in the Basque Country comes from highly educated individuals. To properly understand their situation, this section provides an encompassing statistical profiling of those students not registered at PES—the experiment participants. We report the distribution of non-registered students with regard to their demographic, educational, and labour market characteristics. At the same time, we explain how the outcome of interest—intention to register at PES—changes across these characteristics. This will allow us to understand more precisely which are the factors that are associated with being willing to sign up at PES. This exhaustive description will, in turn, enlighten in which collectives the intervention could be particularly effective or which of them seem to require additional reinforcing policies to increase their intention to register at PES.

We begin the statistical profiling by considering the *treatment status of the student*. Regarding their distribution, we observe that both the control and the treatment 1 group encompass 31% of the students. The remaining 38% is composed of students exposed to treatment 2. In terms of their intention to register at PES, we clearly observe how the intention to register increases with the exposition to treatment. In particular, while only half of the students in the control group show interest in registering at PES, those in either of the treatment groups have greater than the average intention to register rate: treatment 1 increases intention to register by 7.9%; treatment 2 seems even more effective, improving willingness to register by 10.7%. Figure 6 thus suggests that the proposed experiment has made an impact on the outcome of interest. *Receiving either of the two treatments is positively correlated to the intention to register*

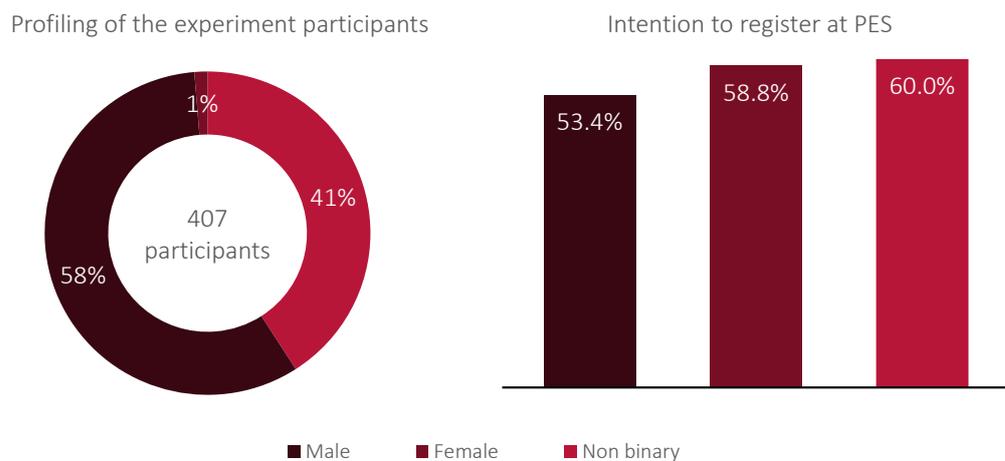
at PES. Later on, we check in the result section more in depth whether there is evidence of the effectiveness of the program beyond this initial exploratory analysis.

Figure 8 Intention to register at PES, by treatment group



In terms of their *gender*, we observe a higher proportion of females among students. Of the 407 students not registered at PES, 226 are females, 176 are males and 5 are non-binary— 52%, 41%, and 1% of experiment participants, respectively. In addition, *the intention to register at PES rate is higher among female and non-binary students*, as about 60% of students in these groups are willing to register at the public employment offices. For males, the intention to register at PES rate is 5.4 percentage points lower (53.4%).

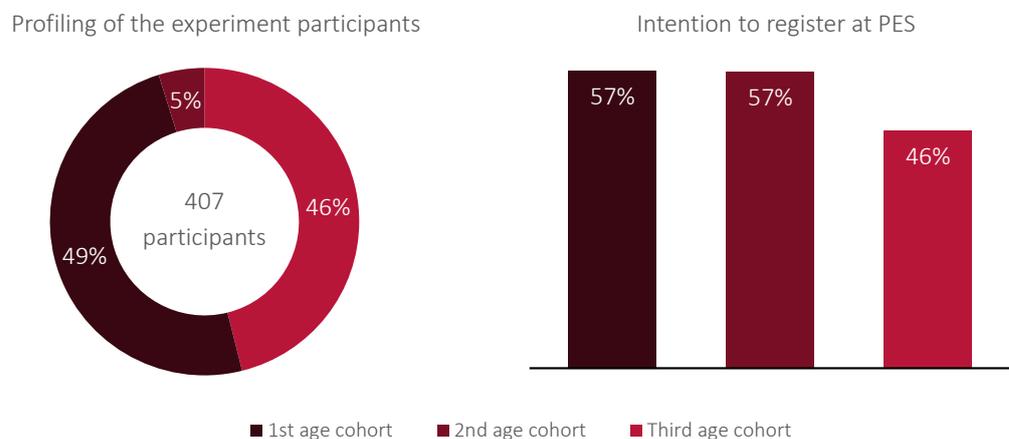
Figure 9 Intention to register at PES, by gender



With regard to their *age*, we find that the majority of the students belong to the first or the second age cohort—with these two groups representing approximately 50% and 45% of non-registered students. As shown in Figure 8, the remaining 5% is composed of those in the third age cohort. *In terms of intention to register at PES rates, we observe*

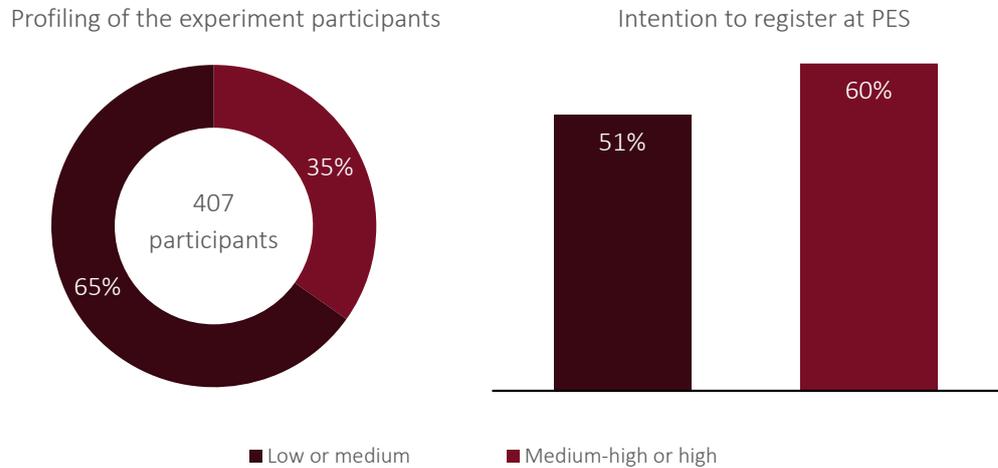
that those in the third group show remarkably lower rates than their counterparts from younger age cohorts. Only 45.8% of the non-registered students belonging to the third age cohort show interest in registering at PES—about 11 percentage points less than students from the other cohorts. However, we have to take into account the results shown in section 3.1, where belonging to the third age cohort was the most important factor predicting registration at the public employment offices. This suggests that non-registered individuals from the third age cohort are a very specific group, distinctive to their same age cohort counterparts that are already registered at PES. For example, while registered students from the older cohort represent 20% of all registered students, non-registered students from the older cohort are just 5% of all non-registered students. Non-registration among older students thus seems a rare residual state among students from this age. They could be probably a selected group of students. For instance, pursuing tertiary education for older students might signal dissatisfaction with their current labour market performance and, in turn, with the services offered by the employment offices to improve the former. Similarly, it might be the case that students in the oldest age cohort, especially those that are planning to retire themselves, go to university for the sake of learning and hence are not very interested in registering at PES. Older cohort non-registered at PES students could again be a very selected group with higher inactivity rates.

Figure 10 Intention to register at PES, by age cohort



Inequalities also appear when we profile students according to their *socioeconomic status (SES)*. As shown in Figure 11, students from different socioeconomic status present disparities in their willingness to register at the public employment offices. In particular, there is about a 10 percent point difference in their intention to register rates (50.6% vs. 60.2% for students from a low-medium and medium-high SES, respectively). *Well-off students thus tend to show greater interest in registering at PES.*

Figure 11 Intention to register at PES, by socioeconomic level



Concerning their *pre-university education*, Figure 12 shows that the vast part of the non-registered students that participated in the study went to high school. Only 7% of the students pursued high vocational training. In terms of their intention to register rates, 65.2% of the students that come from high vocational training show interest in signing up. By contrast, those in high school show an intention to register rate of 56.0%. *Having completed high school is thus a factor negatively affecting the probability of being registered at PES.* This finding is similar to the one observed for already registered individuals and might be driven by the absence of any course during high school education that teaches job searching strategies.

Figure 12 Intention to register at PES, by secondary education studies

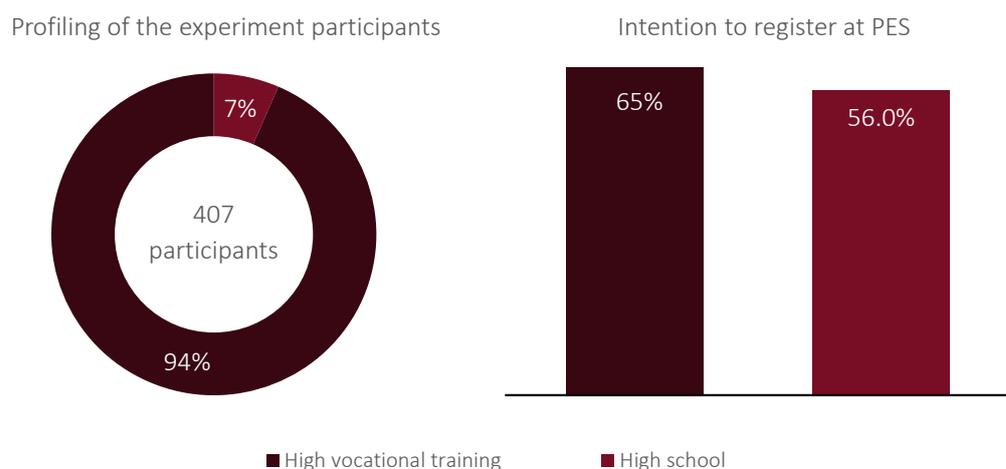


Figure 13 provides the statistical profiling of the intention to register at PES in terms of the *GPA* of the non-registered students. As shown in Figure 13, each of the groups of students with the worst and best GPA marks represents 27% of the total amount of student participants. Students with medium GPAs are the most numerous group: about

45% of students are in this category. In terms of their intention to register rates, intention is higher among students at the mid-range of GPA scores. Specifically, the 60.2% of students in this GPA group affirm they will register at PES. Students with either lower or higher GPA marks show similar intention to register rates. For both cases, their rate is about 7 percentage points lower than that of their mid-range GPA score counterpart. At least from an exploratory standpoint, it seems that students at the extremes of the GPA score distribution show lower intention to register rates.

Figure 13 Intention to register at PES, by GPA

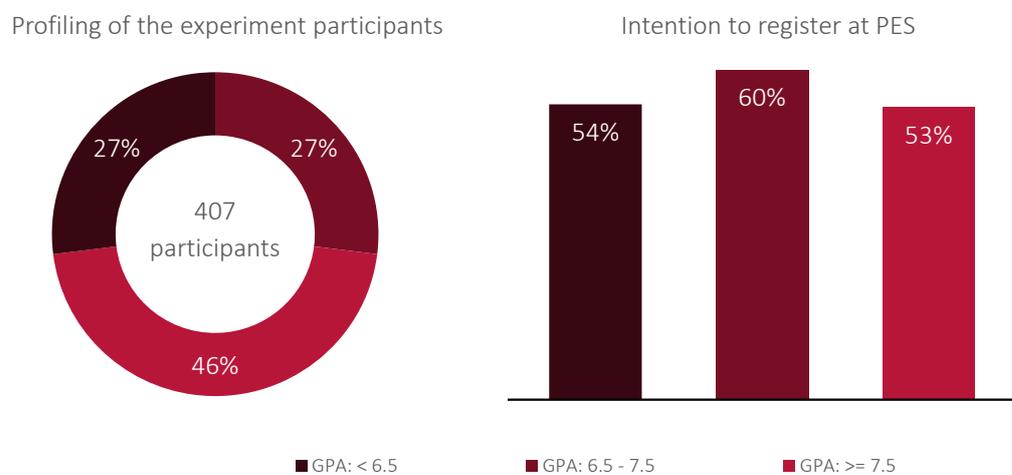
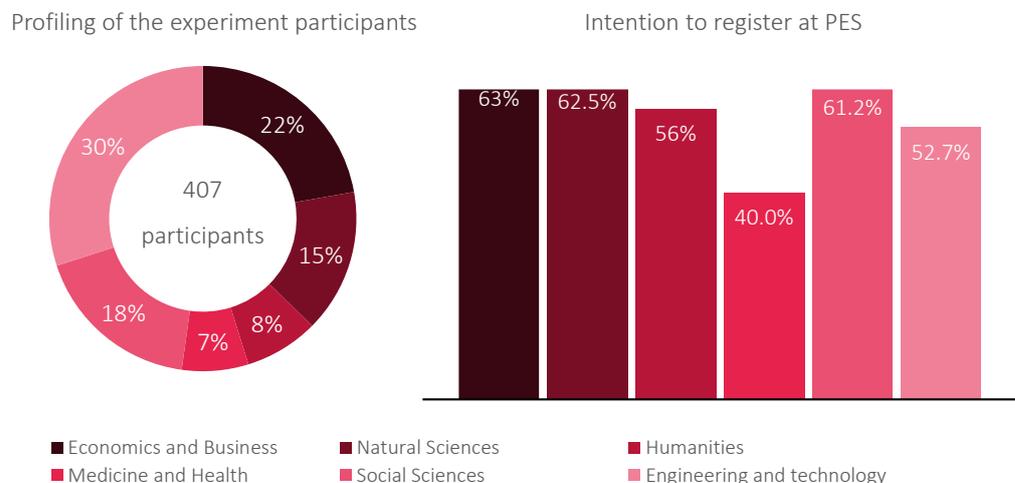


Figure 14 analyses how the intention to register differs across the *fields of studies* of undergraduate students. Of the 407 non-registered at PES students that fulfilled the questionnaire, the 30% come from engineering and technology degrees.

Figure 14 Intention to register at PES, by science degree achievement



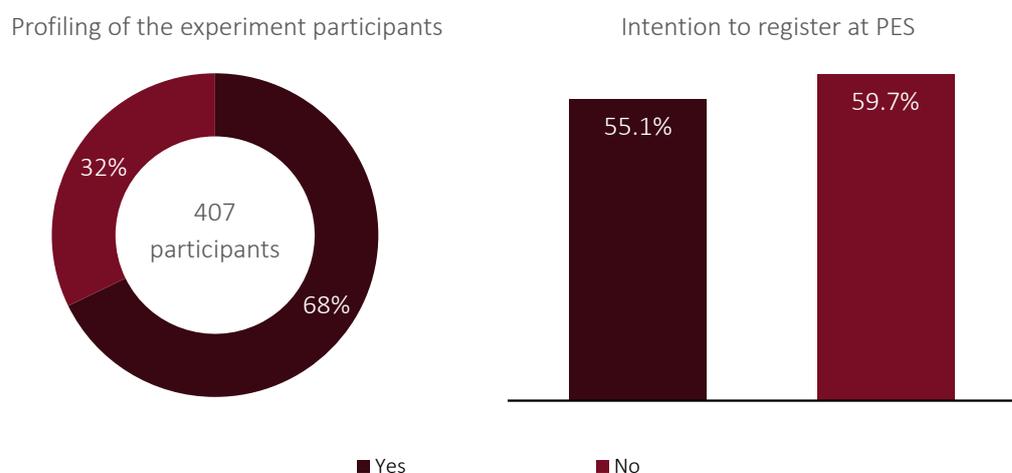
As shown in the figure, each of the fields of Economics and Business and Social Science degrees represents one-fourth of non-registered students. Students in the Natural

Science field are a relatively smaller group—15% of non-registered students. Finally, the less numerous fields are those of Medicine and Health and Humanities, encompassing 7% and 8% of the students, respectively. As Figure 14 shows, students in Economics and Business, Natural Sciences, and Social Science degrees have the highest intention to register at PES rates—with intention to register rates about 62%.

The latter is promising given that these groups represent large shares of the total amount of non-registered students. However, the most numerous groups, that of students from engineering and technology degrees shows a low intention to register rate. In particular, only half of the students in engineering and technology degrees are willing to register at the public employment offices. *Students in Medicine and Health show the lowest intention to register rate (40.0%)*. Overall, intention to register at PES seems to be lower among non-registered students from science degrees—except for Natural Science undergraduates. This pattern was also observed for the group of students that are registered at PES.

We also profile in Figure 15, students on whether they have *worked previously*. Of the 407 students not registered at PES, 283 have worked previously and 124 have not—the 68% and 32%, respectively). The intention to register at the public employment offices is higher among those students that have never worked, as about 60% of students in these groups are willing to register at PES. For students that have worked previously, the intention to register at PES rate is 4.6 percentage points lower (55.1%). This pattern is the opposite to the one observed for already registered individuals— for them, having worked previously was a positive determinant of the probability of being registered at PES.

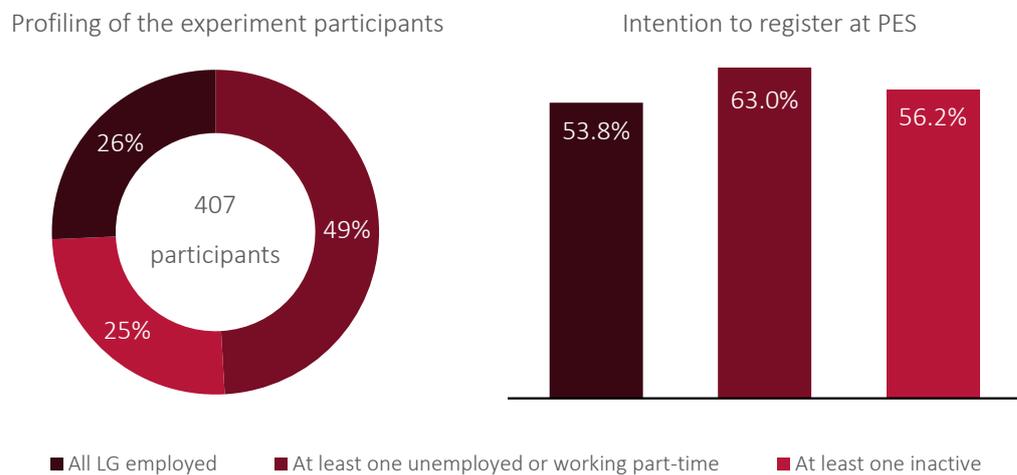
Figure 15 Intention to register at PES, for previously employed and non previously employed individuals



We close the statistical profiling of the intention to register at PES by analysing the *employment status of the legal guardians of the student*. As shown in Figure 16, half of the non-registered students have all their legal guardians employed. The remaining 50%

is divided into equal shares between those either having at least one guardian unemployed or working part-time or by those who have at least one of their legal guardians inactive. Concerning their intention to register at PES rates, Figure 16 shows that only 53.8% of the students that have all their legal guardians employed are willing to register at PES. The intention to register rate is slightly higher among non-registered students with at least one of their legal guardians inactive—in particular, 56.2% shows interest in registering at PES. Finally, *the group showing more willingness to register at PES is that of students with at least one legal guardian unemployed or working part-time (63,0%)*. This might suggest that being in a household with a less secure economic environment might foster greater interest in registering at PES.

Figure 16 Intention to register at PES, by employment status of the legal guardians of the student



3.2.2. Probit model

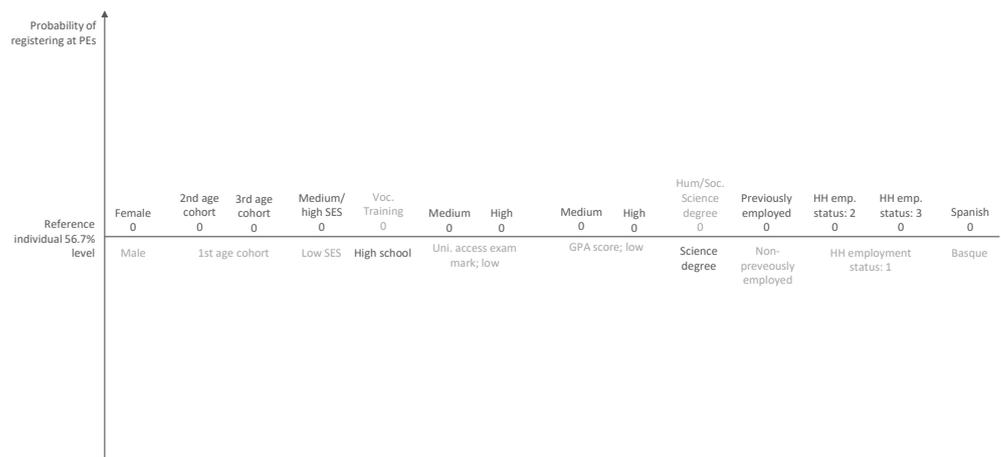
After providing the statistical profiling of the group of students non-registered at PES we identify though another probit model the factors that make students willing to register at the public employment office. Again, this tool allows us to isolate the importance each factor has on fostering intention to register at PES. We consider the same factors employed in section 3.1 to explain the variable of interest. The only new factor introduced is the probability of not being registered at PES. The latter is obtained from the first probit model as follows. We include this additional control variable in order to take into account the potential bias among the students in our sample (see Heckman, 1997). After estimating which factors affect the probability of being registered, we use the background characteristics of the students to predict their probability of registering at PES. For example, a science undergraduate student from the high school path would have a low probability of being registered, as these two factors contributed negatively to the outcome. Once the probability of being registered is predicted for all students of the study, we calculate the probability of not being registered at PES as the inverse of that

probability. For example, a student with a 63.6% probability of being registered would have a 36.4% probability of non-registering. This step allows us to compare individuals with similar probability of being non-registered, taking into account that not all students in the sample are equally likely to be registered at PES. For some of them, their characteristics make them less likely to be registered at PES, which could affect their likelihood of being willing to signup at PES.

Other characteristics of the analysis remain unchanged. As for the first probit model, we also provide the marginal effects of each factor. Results are interpreted as in Figure 5 (see the end of section 3.1 for further details). *As the reference individual, we again consider the profile of a male student, belonging to the first age cohort that sees himself as belonging to the low or middle class, that has completed high vocational training before starting his undergraduate degree, that has a low university entrance exam mark, that has a low GPA, that studies a social science or humanities bachelor, that has not worked previously, that has all legal tutors in his household working, that answered the survey in Basque and has an average probability of not being registered at PES.*

Figure 17 provides the estimation results of the determinants of the intention to register at PES. The probability of being willing to register at PES for the reference individual is 56.7%. *We find that there is no evidence that any of the considered factors drive intention to registered at PES.* Neither of the considered background characteristics affects significantly the probability of registering at PES.

Figure 17 Intention to register at PES determinants among non-registered students



3.3. Characteristics by treatment group

This section closes the descriptive analysis by taking a look at the background characteristics of each treatment group of the experiment. Table 2 shows again the information received in each intervention. By looking at the background characteristics across treatment groups, we ensure that students exposed to either treatment 1, treatment 2, or no treatment at all do not differ remarkably in their background characteristics. This process is known as balance assessment. Given that the treatment is assigned at random, we expect that treatment groups will show no substantive differences in their characteristics. If the experiment has effectively divided the population of students into homogeneous groups we can then conclude that any changes in their intention to register at PES of those treated vis-a-vis the control group must come from the fact that the program has affected their intention to use the public employment office as a job searching tool.

Table 2 Summary of the experimental treatments

Experimental assignment mechanism	Treatment group assigned	Information received
Born in January, April, July, or October	Control group	No information at all
Born in February, May, August, and November	Treatment 1	Potential benefits of registering (scholarships, training courses, and access to the YGS)
Born in March, June, September, and December	Treatment 2	Potential benefits of registering and the proximity and customization of the PES office (scholarships, training courses, and access to the YGS + the existence of an PES office in each of the campus that offers customized counseling to university students)

To assess balance in experiments with multiple treatments, it is common practice to carry out the analysis across treatment pairs. The background characteristics of treatment 1 are hence compared to the ones from those in the control group. The same reasoning applies to the comparison of treatment 2 and the control group. These pairwise comparisons are usually made in terms of mean differences for each background characteristic. For example, assessing balance on the GPA score of treatment 1 and the control group would require comparing whether the average GPA score of those students that received treatment 1 is similar to the average GPA score of students that did not receive any treatment. To assess that all characteristics are balanced enough, it is common practice to use a threshold for mean differences. We follow the widely used 0.1 threshold for balance in mean differences proposed by (Stuart et al., 2013) as indicative of good balance.

Table 3 provides the balance results by treatment pairs for the list of demographics, tertiary education, and labour market-related characteristics considered in this study. As earlier introduced, pairwise comparisons over the 0.1 threshold for mean differences would be indicative of imbalance in that specific characteristic and are marked in grey. Since treatment is randomly allocated, we expect good balance across most of the background characteristics.

Table 3 Balance by treatment pair - control vs. each treatment group

	Mean (Control)	Mean (T1)	Mean (T2)
Gender	0.4524	0.4127	0.4323
Man	0.5397	0.5714	0.5548
Woman	0.0079	0.0159	0.0129
Non-binary			
Age			
1st age cohort	0.381	0.4127	0.5484
2nd age cohort	0.5397	0.5159	0.4194
3rd age cohort	0.0794	0.0714	0.0323
Household socio-economic status	0.5794	0.6587	0.6000
High School education	0.9206	0.9365	0.9677
University admission exam mark	89.9630	91.7880	90.8830
Field of study			
Economics and Business	0.2222	0.1587	0.2129
Natural Sciences	0.1429	0.127	0.1419
Humanities	0.0635	0.0556	0.1097
Medicine and Health	0.0714	0.119	0.1032
Social Sciences	0.1587	0.1825	0.1548
Engineering and Technology	0.3413	0.3571	0.2774
GPA	6.8481	7.0149	7.0457
Previously employed	0.7222	0.7143	0.6581
Legal guardians' employment status			
Main legal guardian: employed	0.7857	0.8413	0.8452
Second legal guardian employed	0.6984	0.5794	0.7032
No second legal guardian	0.0635	0.127	0.0581
Both legal guardians employed	0.5238	0.5079	0.5161
At least one guardian unemployed or working part time	0.2143	0.246	0.2194
Remaining HH employment status: Inactive	0.2619	0.246	0.2645

Note: 0.1 threshold for balance in mean differences. Pairwise comparisons over the threshold would be indicative of imbalance in that specific characteristic, and are marked in grey.

As shown in Table 3, *treated and control individuals do not notably differ in the levels of the vast majority of the characteristics considered.* We hence conclude that randomisation worked properly. A few characteristics appear to be imbalanced, however. For the comparison of the control group vs. treatment 1, just two covariates—GPA, and second legal guardian employed—are above the threshold for balance for mean differences. As shown by Table 3, students exposed to treatment 1 present relatively higher university admission exam marks and a lower proportion of employed second legal guardians. The characteristics of the control group and non-registered students in treatment 2 appear to be imbalance for the 1st and 2nd age cohort, and the GPA. In particular, there is a greater proportion of students from the first age cohort in the treatment 2 group, while the control group has a larger share of students from the second cohort. In terms of educational performance, students exposed to treatment 2 have relatively better GPA scores⁴. We will check in the result section whether the estimated effect of the program considerably changes if one accounts for those imbalances.

Once we have explored in section 3.2 the intention to register at PES of non-registered students across their treatment status and once that we have discussed in this section who each group stands in terms of balance, we turn to evaluate the two information interventions, addressing the main results of the experiment.

4. Results

As introduced in the previous sections, we have identified that a substantial share of outreach problems in the Basque Country come from highly educated individuals. Accordingly, we set up a randomised experiment that explores whether improving the knowledge of the services offers by PES among university students can bring gains in outreach. In this section, we provide the results of the experiment, assessing whether the designed interventions are effective in improving the intention to register for last-year university students. This is the central part of this study, because the most important goal of this experiment is that the obtained results and the experiences from other countries in the partnership could help to improve the assistance of the Public Employment Offices to the youth.

As explained in section 2.2, in the experiment, students that are not registered at PES are classified into three groups (two treatment groups and one control group). One-third of the non-registered students are exposed to treatment 1, which consists of receiving

⁴ Imbalance for GPA scores in both pairwise comparisons invites to read with caution the intention to register results for that characteristic presented in the profiling of non-registered students.

information on the potential benefits of registering at PES. In particular, students are told that PES offers scholarships, delivers training courses, and grants access to the Youth Guarantee System. One-third of non-registered students are exposed to treatment 2, which combines informing non-registered students about the potential benefits of registering with the provision on the proximity and customization of the PES office. In particular, students in this group are also informed that there is a PES office in each of the campus of the UPV/EHU that offers customised counseling to university students. The remaining third received no information at all and are assigned to the control group. In this section, we are interested in finding whether receiving either of these treatments enhancing student's knowledge on PES services increases their intention to register at PES as compared to the intention to register of non-registered students in the control group. This will let us know whether the lack of information is important for highly educated individuals in order to be registered and if the type of information matters, or if information is not the reason for them not registering.

To measure the impact of treatment, we estimate the average treatment effect (ATE) of each of the two interventions. First, we compare the intention to register at PES of those with information on the potential benefits of registering (treatment 1) versus the rate of those receiving no intervention at all (control). In the second one, we compare the intention to register at PES of those with information on the potential benefits of registering and information the proximity and customisation of the PES office (treatment 2) with the rate of those that do not receive information at all (control). These estimations use a regression model for the ATE. Regression is a widely used estimation tool that will allow us to (i) estimate the ATE effect and (ii) extend the analysis to ensure that the minor imbalances observed in Table 2 are not biasing the estimation of the effect of treatment. We nonetheless expect that the estimated effect of receiving treatment does not vary after the introduction of this set of factors, as randomisation ensures that the effect of receiving the program is independent of any other factor that could affect intention to register at PES.

ATE results are interpreted in a similar fashion to the probit models—see section 3 for their discussion. To measure the impact of treatment on the intention to register at PES rate, we graphically represent the effect of receiving either of the two treatments in the horizontal axis⁵. The situation of those in the control group is used as a reference by setting the probability of being willing to register at PES rate of the control group at the level of the horizontal axis. Hence, the magnitude of the plotted treatment effects should be interpreted as the marginal impact of the treatment, 1 or 2 in each case.

We now turn to discuss the results of the experiment. We first report in Figure 18 the results of a model that only considers the effects of the interventions—that is, without adding controls to the specification. When we do not account for the characteristics of

⁵ Complete estimations can be found in the annex.

the students, we find that students that received no intervention have a probability of registering at PES of 50.0%. That is, when students are not offered any information, one out of two students is willing to register at PES. We now explore whether receiving any of the two treatments increases the intention of register. Gains in just one of the interventions would imply that the type of information received matters.

As shown in Figure 18, there is no evidence receiving information on the potential benefits of registering at PES (treatment 1) improves the intention to register of those exposed to this program. Those students that receive this intervention show a similar probability of registering at PES that their control group counterparts. Hence, informing students about the scholarships, training courses, and the Youth Guarantee System that being register at PES entitles does not impact the intention to register at the public employment office of university students. However, when students are exposed to both the potential benefits of registering at PES and the existence of a close and customised PES service, we observe large positive gains in the intention to register rate of these students. Specifically, their probability of registering is 10.6 percentage points higher (60.6% vs 50.0%). Hence, if students are also told that there is a PES office in each campus and that that office offers customised counseling to university students they show a substantively higher intention to register at PES.

Figure 18 Results of the experiment. Intention to register at PES estimates of each treatment.

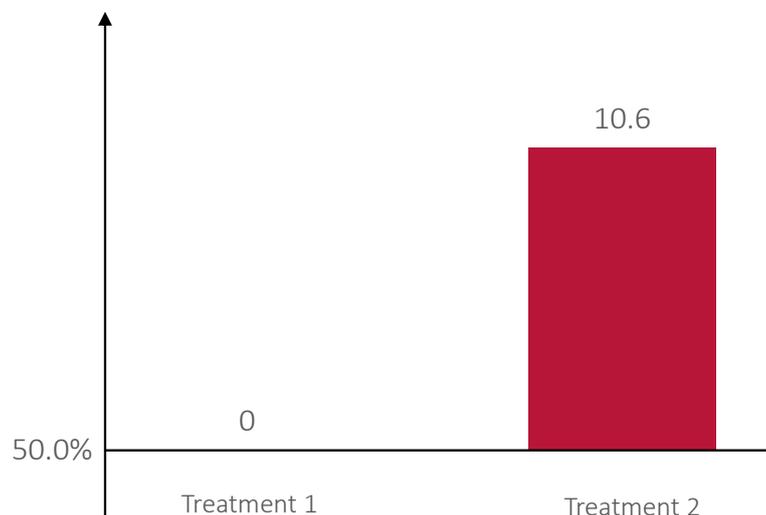
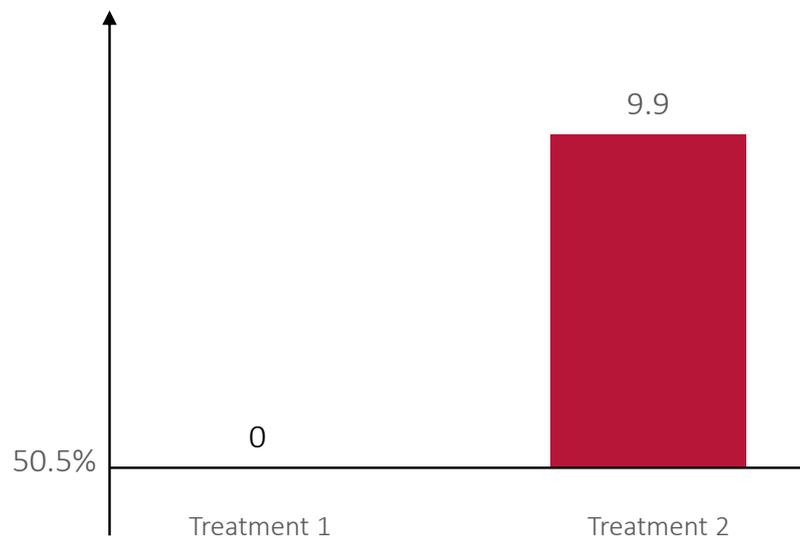


Figure 19 shows the impact of receiving either of the two treatments when one accounts for the effects of the characteristics of the students. Given that being exposed to treatment does not depend on students' characteristics but on randomisation and given that it has been proved that the observable characteristics do not affect in the intention to register, we do not expect major changes on the size of the effect estimated for the interventions after introducing the characteristics as control variables.

As the figure shows, the results of the experiment remain close to the ones obtained with no adjustment. In fact, the estimated intention to register for those in the control group is very similar to the one observed in Figure 18. After considering the effects of the characteristics of the students, the probability of registering at PES of students that did not receive any information is 50.5%. As for the estimation without controls, the potential benefits of registering treatment remains ineffective in improving intention to register. Treatment 2 increases the probability in 9.9 percentage points—and hence barely changes from the 10.6 estimate provided above. As expected, adding controls does not change the estimated impact of the two designed interventions. The estimated effect is also robust to the implementation of different matching techniques (see Table A2 in Appendix A.1).

Figure 19 Results of the experiment. Intention to register at PES estimates of each treatment, with controls



In summary, *while informing students about the potential benefits of registering at PES does not affect their probability to intent to register at the PES, providing them with additional information on the proximity and customization of the PES office does have a positive impact.* The estimated impact on the probability of intending to register at PES of receiving treatment 2 is notably large in magnitude (an about 10 percentage point increase in the outcome of interest). We hence learn from this experiment that a small relatively inexpensive intervention is able to increase to a large extent the intention to register at PES of highly educated individuals, which might ultimately improve outreach for this collective. We also learn that the type of information that is giving to them does matter. In particular, it seems that proximity and customization of the PES is a key factor for university students.

5. Concluding remarks

The economic crisis that hit in 2008 has left a particularly worrisome fingerprint in the labour prospects of the European youth. Youth unemployment has in recent years overcome other labour-market related issues, settling itself as one of the top priorities to be faced by many European countries. As part of this agenda, European authorities have recognized the importance of supporting the NEETs, a group of the youth notably exposed to the risk of experiencing social exclusion.

In the Basque Country, where this intervention takes place, there is still substantial room for improving the outreach of NEETs with highest educational levels. In terms of the composition of non-registered individuals, a non-negligible part of outreach problems in the Basque Country also comes from highly educated individuals. Indeed, the gap in outreach rate across educational backgrounds is more substantial in the Basque Country than in Spain as a whole.

Taking into consideration this outreach issue particular to the Basque Country, we set up an experiment that aims at improving registration at PES of last year undergraduate students of the University of the Basque Country. By targeting university students about to start their labour market histories, we seek to reduce the fall into the NEET state before it actually occurs. This will thus potentially affect the prevalence of NEET status among individuals with educational attainment, reducing the NEET rate of the Basque Country.

We set up an experiment with three groups (two treatment groups and one control group). Depending on their month of birth, non-registered students are assigned to either of the groups. The experiment tests the effects of two information interventions. First, we inform non-registered students about the potential benefits of registering at PES—access to scholarships, training courses, and the Youth Guarantee System. The second intervention combines information on the potential benefits of registering with the provision of distance information to the PES office—that is, that there is an on-campus PES office that offers customised counseling to university students.

Of the students that participate in the survey, about 19% are registered at PES. We find that the determinants of being registered at PES among university students are belonging to the older cohort and having worked previously. These two factors predict higher registration at PES. Conversely, being a science student or coming from the high school secondary education path predict lower intention to register at PES.

The remaining 81% of the students that filled in the survey are non-registered at PES, which is indicative of the great opportunities for improving outreach in this collective. We find that receiving either of the two treatments is positively correlated to the intention to register at PES and that the intention to register increases with the

exposition to treatment. When looking at the background characteristics that could drive intention to register at PES, we find that none of them significantly affects the intention to register. Treatment groups are also balanced in most of the background characteristics. Being exposed to treatment thus does not depend on students' characteristics but on the random allocation of treatment.

The results of this experiment show large gains from information-enhancing interventions on PES if designed holistically. We estimate the effects of receiving two interventions. The first information campaign, which only tells students about the potential benefits of registering is not effective in improving their intention to register at PES. Students that receive that intervention show intention to register rates that are not statistically significant from those that receive no intervention at all. However, when students are informed on both the benefits of registering at PES and on the existence of a close and custom-tailored service to students their intention to register at PES increases by more than 10 percentage points (from around 50% to 60%).

This experiment is expected to have a second phase. By the end of the academic course, we will ask PES whether the students that participated in the experiment have actually registered in the PES or not and the registration date⁶. The final aim of this second part of the experiment is to measure the impact of the treatment not in intermediate indicators such as the intention to register at PES but on the final outcome, registration at PES. If we are not able to obtain this information, we will directly reach students out again in order to ask them about their registration at PES⁷.

⁶ This step would require coordination between the UPV and the PES in order to preserve the anonymity of all the participants.

⁷ The contact will be done only with the 294 students that agreed to be contacted in the first questionnaire (58.6% of the students that participated in the survey; see Annex 2.3 for the model survey in English).

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Appendix

A.1. Additional tables and figures

Table A. 1 Probit regression models

		Estimated probability	
		Being Registered (1)	Registering (2)
Reference		0.1616	0.5647
Mean probability		0.19277	0.5667
Male	Female	-0.00651 (0.0357)	0.0705 (0.0540)
1st age cohort	2nd age cohort	0.0456 (0.0395)	-0.0186 (0.0714)
	Third age cohort	0.188* (0.0975)	-0.154 (0.250)
Household SES: low	SES: medium or high	-0.0574 (0.0354)	0.0920 (0.0791)
Vocational training	High school education	-0.153* (0.0885)	-0.153 (0.203)
Univ. admission mark: low	Medium	-0.000744 (0.0381)	-0.0424 (0.0610)
	High	-0.0297 (0.0490)	-0.00362 (0.0780)
GPA score: low	GPA score: medium	0.00166 (0.0404)	0.0320 (0.0629)
	GPA score: high	-0.00848 (0.0487)	-0.0625 (0.0775)
No science degree	Science degree	-0.0922** (0.0394)	-0.0865 (0.113)
Non previously employed	Previously employed	0.142*** (0.0333)	-0.0472 (0.141)
All parents employed	At least one un. or working part-time	0.00783 (0.0419)	0.0678 (0.0639)
	At least one inactive	-0.00634 (0.0430)	0.0316 (0.0634)
	Prob. of not registering at PES		0.0787 -1085
Reference		0.1616	0.5647
Mean probability		0.19277	0.5667
Basque	Spanish	0.0229 (0.0416)	0.0901 (0.0666)
Observations		498	402

Figure A. 1 NEETs and their educational background, Spain

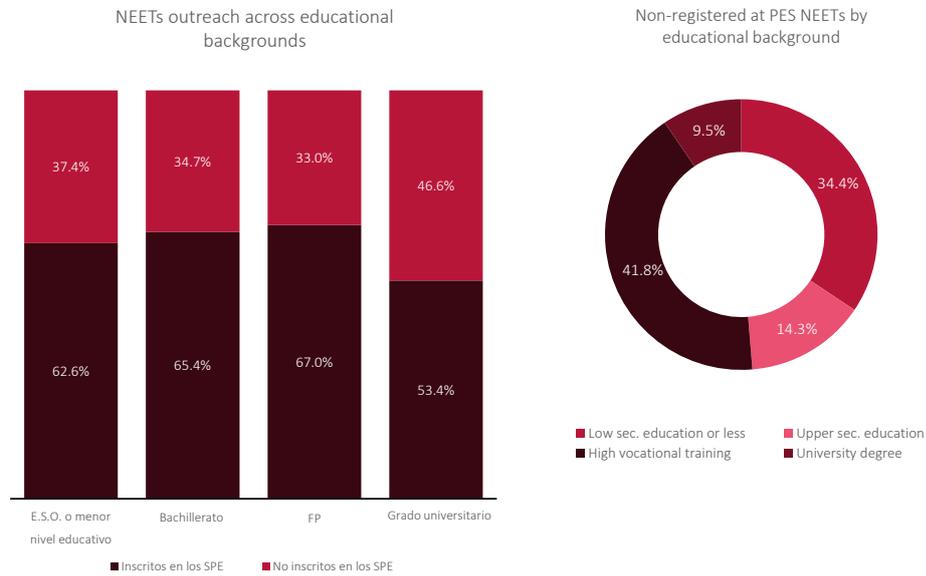


Figure A. 2 RCT and matching ATE estimates

Panel A: RCT and NN matching algorithms					
	(RCT)	(NN)	(5NN)		
Intercept	0.50***	0.46***	0.5***		
	(0.04)	(0.06)	(0.05)		
T1 estimate	0.08	0.12	0.08		
	(0.06)	(0.08)	(0.06)		
T1 + T2 estimate	0.11*	0.09*	0.11*		
	(0.06)	(0.07)	(0.06)		
N (C, T1, T2)	126, 126, 155				
NN: matched and unmatched obs. (C vs T1)	63, 63		117, 9		
NN: matched and unmatched obs. (C vs T2)	63, 63		122.4		
Panel B: weighting algorithms					
	(IPW)	(TWANG)	(CBPS)	(NPCBPS)	(EBAL)
Intercept	0.48***	0.49***	0.48***	0.49***	0.49***
	0.05	0.05	0.05	0.05	0.05
T1 estimate	0.09	0.11	0.09	0.08	0.08
	0.07	0.07	0.07	0.07	0.07
T2 estimate	0.12*	0.09*	0.1*	0.11*	0.11*
	0.06	0.06	0.06	0.06	0.06
ESS (C, T1, T2)	114, 118, 142	114, 108, 140	113, 110, 135	112, 115, 138	114, 117, 140

A.2. Further details on methodology

A.2.1 Causal Effects in a multiple treatment experiment

Inference on the causal effects of a program on the set of analysed outcomes involves addressing the performance of its target population had the program not taken place. Following the microeconomic literature on program evaluation, we now introduce the potential outcome framework. For a binary treatment, let the treatment indicator D_i define treatment status ($D = 1$ if individual i receives treatment and zero otherwise). The potential outcomes are then defined as the outcome level of that individual when she receives $Y_i(1)$ and not receives treatment $Y_i(0)$. Then, the individual treatment effect τ_i for i can simply be written as this difference in outcomes: $\tau_i = Y_i(1) - Y_i(0)$.

Adapting the binary potential outcomes framework to a multiple treatment setting, the treatment indicator D_i now denotes the number of potential interventions being studied with $D_i = 3$ in our case study. Every respondent would thus have a potential outcome if she receives any of the three alternative interventions. For an individual, we denote these potential outcomes as $Y_i[d]$ for $d = 1, 2$ and 3 . In our experiment, $Y_i(1)$ denotes the individual's potential outcome had she not received any treatment, $Y_i(2)$ denotes the individual's potential outcome had she receive the potential benefits of registering information treatment or Treatment 1, and $Y_i(3)$ the potential benefits of registering information and the proximity and customization of the PES office information treatment, or Treatment 2. For a given participant, the causal effect of interest is defined as the pairwise difference among two selected potential outcomes for that participant. That is, the possible causal effects are now the set all possible pairs of treatments: control versus treatment 1; control versus treatment 2; and treatment 1 versus treatment 2. Then, the individual treatment effect τ_i for i can be written as $\tau_i = Y[d'] - Y[d'']$, where d' and d'' denote each pairwise received intervention. The three resulting treatment effects thus measure how effective a given intervention is vis-a-vis another one.

One cannot estimate individual causal effects due to the fundamental problem of causal inference: it is not possible to observe an individual under each of the multiple considered interventions. Instead, we only observe what happens to an individual under the intervention condition she actually receives—where the unobserved outcome is known as the counterfactual. For example, in the context of our experiment, a given recipient is either receiving treatment 1, receiving treatment 2, or not receiving any treatment.

To estimate the counterfactual, the researcher focuses on a set of population-level causal estimands. We will estimate the average treatment effect (ATE)⁸. In a multiple treatment framework, the ATE of intervention d' relative to intervention d'' is the comparison of mean outcomes had the entire population been observed under one intervention, d' , versus had the entire population been observed under another intervention, d'' . In our experiment, one of these pairwise ATE would be for instance the average intention to register at PES had all last-year university students been offered the potential benefits of registering information treatment compared with the average intention to register at PES had all last-year university students received no intervention at all. Table 1 summarizes the three ATEs that might be estimated in our study, each for each possible pairwise comparison.

The fundamental issue is then choosing a credible estimation to the counterfactual. For experimental data, the mean outcome of untreated individuals $E[Y(0)]$ would result in an unbiased estimation of the counterfactual, as treatment randomization should ensure that treatment participation does not depend on other factors affecting performance in outcomes. For example, random allocation should ensure that treatment 1 individuals are not systematically different to control individuals in their observed and non-observed characteristics. That is, control individuals should not be for instance characterized by systematic differences in their average GPA, as comparing the average intention to register at PES in this pairwise comparison will mix the effect of receiving T1 with the differences in intention to register at PES driven by the intrinsic differences in GPA. The random allocation of treatment is thus expected to provide a credible estimation of the counterfactual and an unbiased ATE estimand.

A.2.2 The design of the questionnaire

As explained in this report, all students at the University of the Basque Country enrolled in the last year of their undergraduate degree received a questionnaire via email to participate in the experiment. We cover here in more detail how this questionnaire is designed to set up a randomised experiment that estimates the effectiveness of improving the intention to register at PES among university students.

⁸ We argue that ATE estimands—and not average treatment effect on the treated (ATT) estimands—are better suited for clarifying which of the tested measures are more effective on improving outreach among the whole population of university students. This is the case when every intervention might be appropriate for the whole population under study. In our experiment, no information, information on the potential benefits of registering and information on the potential benefits of registering and on the the proximity and customization of the PES office might be offered to every student in the study. This contrasts to experimental designs where treatment might not be generalizable to the whole population of the study. For example, when evaluating the potential disincentives of minimum income schemes among unemployed workers using observational data, estimating the ATT would be of greater interest as this kind of program might be too specific to the targeted population. In these settings, the ATT will evaluate the effect of treatment on those individuals that the program treats.

The questionnaire—available in Appendix 2.3—collects *both (i) the treatment and the outcome question and (ii) rich background information on the socioeconomic characteristics, and past labour market histories of last year undergraduate students*. It is organized into four main blocks. The first block encompasses socio-demographic questions such as the gender, age, field of study, or the grade point average (GPA) of each participant. In the second block of questions, we ask for information on their past labour market history: whether students have ever had a job, whether students have ever been registered at PES, whether students are currently registered at PES, and the working status of their legal guardians.

The experiment itself is introduced in the remaining two blocks of the questionnaire—the third and fourth blocks. It should be noticed that not all students filled in these two blocks. In particular, those that declared to be currently registered at PES did not participate in the experiment as they are already registered at PES and ended their survey in block two. By contrast, non-registered at PES students participated in the experiment by answering the third and fourth blocks. We now explain in more detail what these two blocks consist in. In the third block, students not registered at PES at the time we conducted the survey randomly receive treatment as follows. Non-registered students born in January, April, July, or October are assigned to the control group: they did not receive any information on the PES. Non-registered students born in February, May, August, and November receive treatment 1. Non-registered students born in March, June, September, and December receive treatment 2. After having read the information in block 3 – groups 1 and 2 – or immediately after block 2 for group 3, we asked whether non-registered students are planning to register at the PES.

We collaborated with the PES office at the university as well as the Dean of Students to send the survey via an official university email to all last year undergraduate students, who received it in their official university email. Students received the email in both Spanish and Basque, as is customary at the university, and had the possibility of conducting the survey in both languages as well. The following section thus presents a translation of the actual survey conducted. Note that depending on what the student answered to some of the questions, the survey automatically jumped to one question or another.

A.2.3 Model survey in English

As part of the Youth Employment PartnerSHIP European project, the UPV/EHU seeks to better understand the profile of its students, their job searching tools as well as their field of study, and their household-level socio-economic conditions.

The goals of this survey are thus marked within the Youth Employment PartnerSHIP European project and this survey hence collects different information to the one

obtained through the phone questionnaire that PES launches three years after obtaining the university degree.

Your responses will not be used for any other reason other than for statistical purposes. Participation in the survey is strictly voluntary and very important for the program.

DO NOT FORGET TO:

1. Answer all questions without skipping any of them.
2. Answer the questionnaire with honesty. Your responses will be kept confidential and do not have any repercussions.

Once you finish the survey (about 5 minutes) you will be asked to provide your UP/EHU email address where you will receive a 5 euro Amazon voucher from the Youth Employment PartnerSHIP European project. *

(*) Until the funds available for that purpose in the Youth Employment PartnerSHIP European project budget are spent. Only valid for full replies and valid university email addresses.

(*) Mandatory field

1. Email address (*)

Socio-demographic questions

2. What did you study before starting your undergraduate degree? (*)

Please check only one response.

- High school - Scientific-Technological
- High school - Bio-health
- High school - Social sciences
- High school - Humanities
- High school - Arts
- Vocational training - Technical
- Vocational training - Bio-health
- Vocational training - Social Sciences

- Over 25 years old

3. What was your university entrance exam mark? Please use a decimal point [.] and not a comma [,] to indicate the decimal place. (*)

4. Which is the field of study of the undergraduate degree you are currently enrolled in? (*)

Please check only one response.

- Economics and Business (Business Administration, Actuarial Science, Criminology, Law, Labour Relations...)
- Natural Sciences (Biology, Biochemistry, Biotechnology, Science and Ciencia y Food Science and Technology, Physics, Mathematics, Environmental Science, Nutrition, Geology, Chemistry...)
- Humanities (Anthropology, Fine arts, Design, Philosophy, Philology, Geography, History, Translation and Interpreting)
- Medicine and Health (Nursing Pharmacy Medicine, Odontology...)
- Social Sciences (Political Science, Physical Activity and Sport Science, Communication and Media Studies, Education Studies, Pedagogy, Journalism, Psychology, Psychopedagogy, Advertising, Sociology, Social Work...)
- Engineering and Technology (Architecture, Engineering degrees, Sailing...)

5. When did you start the degree you are currently enrolled in? (*)

6. Which is your current GPA? (If you cannot remember your exact GPA, please provide an approximation. Please use a decimal point [.] and not a comma [,] to indicate the decimal place.) (*)

7. What is the socioeconomic level of your family? (*)

Please check only one response.

- Low

- Medium-low
- Medium
- Medium-high
- High

8. What is the gender of your legal guardian (the main head of the household)? (*)

Please check only one response.

- Female
- Male
- Non-binary

9. What is his/her employment status? (*)

Please check only one response.

- Employed
- Working part-time
- Unemployed
- Inactive, retired, or works at home

10. If employed or working part-time, what is his/her occupation? (*)

11. What is the gender of your second legal guardian? (*)

Please check only one response.

- Female
- Male
- Non-binary

12. What is his/her employment status? (*)

Please check only one response.

- Employed
- Working part-time
- Unemployed
- Inactive, retired, or works at home

13. If employed or working part-time, what is his/her occupation? (*)

Questions about employment

Nowadays, people use different ways of searching for a job and finds some of them more effective than others.

14. Which of these services you would use for looking for a job? Rank them from 1 to 4 (being 1 your first choice) (*)

- Online job search sites (LinkedIn, Infojobs...)
- Family and friends connections
- Public Employment office at UPV/EHU
- Other Public Employment service (Lanbide at the Basque Country, for instance)

Lanbide is the Public Employment Service of the Basque Government to support and offer job counseling to the population that is searching for a job.

15. Would you use any other job searching strategy? (*)

16. Have you ever been employed? (*)

Please check only one response.

- Yes Jumps to question 17
- No Jumps to question 19

17. How many jobs have you previously had? (*)

Please check only one response.

- 1
- 2
- 3
- More than 3

18. How did you get your previous job? (*)

Please check all that apply.

- Online job search sites (LinkedIn, Infojobs...)
- Family and friends connections
- Public Employment office at UPV/EHU
- Other Public Employment office
- Other: _____

19. Have you ever been registered at Lanbide? (*)

Please check only one response.

- Yes Jumps to question 20
- No Jumps to question 26
- I don't know / I can't remember Jumps to question 27
- Not at Lanbide, but at the PES of my region Jumps to question 20

20. Are you currently registered at Lanbide? (*)

Please check only one response.

- Yes
- No Jumps to question 26

21. Why did you decide to register at Lanbide? (*)

Please check all that apply.

- I thought it would help in finding a job more easily
- I must as part of an administrative process
- The company that hired me asked me to do so
- My relatives insisted on its importance
- To access to certain benefits (courses, discounts...)
- Other: _____

22. Are you currently registered at the PES of your region? (*)

Please check only one response.

- Yes
- No Jumps to question 26

23. Why did you decide to register in your region? (*)

Please check all that apply.

- I thought it would help in finding a job more easily
- I must as part of an administrative process
- The company that hired me asked me to do so
- My relatives insisted on its importance
- To access to certain benefits (courses, discounts...)
- Other: _____

24. Which gender best describes you? (*)

Please check only one response.

- Female
- Male

- Non-binary

25. When were you born (year)? (*)

Jumps to question 39

Questions about employment

26. Why you never registered at Lanbide? (*)

Please check all that apply.

- I have never needed it
- I don't know how to use it
- I don't think it would be useful
- I do not meet the criteria for signing up

Socio-demographic questions

27. Which gender best describes you? (*)

Please check only one response.

- Female
- Male
- Non-binary

28. When were you born (year)? (*)

29. Which is your month of birth? (*)

Please check only one response.

- January Jumps to question 30
- February Jumps to question 32
- March Jumps to question 35
- April Jumps to question 30
- May Jumps to question 32

- June Jumps to question 35
- July Jumps to question 30
- August Jumps to question 32
- September Jumps to question 35
- October Jumps to question 30
- November Jumps to question 32
- December Jumps to question 35

30. Are you considering to registering at Lanbide? (*)

Please check only one response.

- Yes
- No

31. Why? (*)

Jumps to question 39

32. Do you know that by registering at Lanbide you get access to an array of scholarships and training courses,... as well as to the Youth Guarantee scheme, which makes easier that firms hire young people? (*)

Please check only one response.

- Yes
- No
- I have heard from some of those services, but I did not know all of them / I do not know what they are all about exactly

33. Are you considering to registering at Lanbide? (*)

Please check only one response.

- Yes

- No

34. Why? (*)

Jumps to question 39

35. Do you know that by registering at Lanbide you get access to an array of scholarships and training courses,... as well as to the Youth Guarantee scheme, which makes easier that firms hire young people? (*)

Please check only one response.

- Yes
- No
- I have heard from some of those services, but I did not know all of them / I do not know what they are all about exactly

36. Do you know that you can sign up at Lanbide at its UPV/EHU office? There is a public employment office at each campus, and it offers customized counseling to university students. (*)

Please check only one response.

- Yes
- No
- I have heard from these public employment offices, I was not aware of what they consist on exactly.

37. Are you considering to registering at Lanbide? (*)

Please check only one response.

- Yes
- No

38. Why? (*)

39. We thank you for your participation in this survey. We now need your official UPV/EHU student email address (@ikasle.ehu.eus) to deliver you the 5 euros Amazon voucher.

This last step is completely voluntary; you just need to provide your email address if you like to receive your voucher. In such a case, your identity will be not disclosed to other entities nor mentioned in any public document or employed for any other purposes.

40. We might need to get in touch with you over the next few months to ask you some additional questions. Do you consent to this process? (*)

Please check only one response.

- Yes, I want you to use the email address given to contact me again over the next few months.
- No, I do not want you to reach me

A.2.4 The project pipeline

We provide an overview of the project pipeline, consisting of five main stages:

- i) project proposal and its approval*
- ii) project planning*
- iii) project review*
- iv) launch of the experiment*
- v) post-launch management*

The process of setting up the experiment begins by reaching the stakeholders involved in the executive and administrative tasks of the former. The UPV/EHU has a PES office on each of its campuses that we wanted to use for the purposes of the experiment. We thus set an in-person meeting with the Vice Rectorate and the PES office at UPV/EHU several months in advance to launching the experiment. We translate them the opportunities for improving outreach in the Basque Country by focusing on university students. We also present our draft proposal for the design of the experiment, based on an online survey with a randomized block where treatment would be assigned. Both partners find the proposal sound and we adjust some of its details to fit the goals of all stakeholders. For instance, we all agreed on the need for ensuring students' privacy at

all stages of the experiment. After some follow-up meetings where we close minor details, the stakeholders approve the proposal.

Once the proposal is approved, we begin to build a more detailed project plan. One of its most relevant tasks is the design of the questionnaire itself. We thus revise the draft survey structure and review it with survey experts from the university. We then write it in Spanish and Basque, the two co-official languages in the Basque Country, and hire an external vendor to create the online platform for the experiment. Another task at this stage of the project pipeline is that of ensuring enough survey responses. We anticipate the former as one of the major potential problems of the design of the experiment. An insufficient amount of responses could force us to launch further survey rounds, raising potential comparability issues that could naturally affect the credibility of the experiment findings—especially if we were forced to change the incentive structure during the survey process to ensure enough responses. We hence plan to provide a small monetary incentive to those students that fulfilled the questionnaire. We compare different alternatives and finally opt for a 5 euros Amazon voucher. This voucher is expected to be valued by university students, fostering participation. At the same time, Amazon vouchers are straightforward to deliver. We assign the external vendor the task of administrating the gift to survey responders, which are sent to the university email address.

As part of the project plan, we also prepare the email to be sent to the students on the launch day. We take care of all details in the email to make it catchy enough and obtain as many answers as possible. For example, we prepare an email subject that attracts attention and creates curiosity. In a brief and energetic greeting, we also highlight that the message will be sent to 4th-grade students, thus creating a sense of group belonging. In the first paragraph, we present the project, sharing our interest in improving the services of employment offices to young people as the reader—again reinforcing the sense belonging to a group and long-term reward. In the second paragraph, we explain that obtaining the reward is relatively simple, highlighting the short time needed for obtaining the final amount. We also place the call to action in an engaging a personal style and remind students that only the first 500 responses will receive the voucher, thus creating a sense of urgency. Finally, we conclude the message, wishing the reader enjoys her gift by activating the loss aversion and endowment effect biases, responsible for the reader to value more and not to lose something that "is already his or hers". As another part of the project plan, we also assign the external vendor the task of filtering the target group of students for the experiment from all university students. We decide to target undergraduate students enrolled in last year—as they are more directly affected by the benefits of being registered at PES. To that purpose, we plan to ask students to fill out their university email, which works as a unique identifier for undergraduate students enrolled in last-year courses.

After planning all these tasks, the project moves to an in-review stage, where we perform several iterations until the project met all requirements from stakeholders and does not require any final revisions. We launch the project on February 18th, 2020 at 11.00 am. We reach the desired sample size after 30 minutes. We collect some extra survey responses in the event we need to discard duplicated responses from students seeking to receive more than one Amazon voucher and finally close the survey. We then review survey responses to ask for university emails to those students that have not provided theirs, to detect duplicates, and to double-check outliers—whether students starting university this year are indeed last year students coming from other universities, for instance. Once we complete all these checks, we ask the vendor to deliver the Amazon vouchers.



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