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Global Freelancing Platforms, Signaling and Labor Market Outcomes: Evidence from Jordan

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Response to Reviewers:	We have attached the Response to Reviewers document.

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Registered Report Stage 1: Proposal

Global Freelancing Platforms, Signaling and Labor Market Outcomes: Evidence from Jordan

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Abstract

This study evaluates the impact of expanding search opportunities on the labor market outcomes and digital platform engagement of young men and women in Jordan. Utilizing a randomized controlled trial (RCT), participants are randomly assigned to one of three groups: a control group, a treatment group receiving access to a global digital freelancing platform (T1), and another treatment group receiving platform access along with a mentoring intervention (T2). The primary objectives are to measure changes in employment status, on and off the platform, and to assess the effectiveness of the mentoring treatment in enhancing assertiveness in platform engagement. Preliminary findings will provide insights into the role of digital platforms and mentors in influencing employment outcomes and platform engagements in emerging markets. The results inform policymakers and practitioners interested in leveraging digital tools and mentorship to improve youth employment prospects in contexts with low labor demand.

Keywords: Digital Platforms, Mentoring, Jordan, Employment Networks

JEL codes: J23, J24, O33

Study pre-registration: We will register this study in the AEA RCT Registry before starting the intervention.

Proposed timeline *(required):* Data will be collected at three key three points: baseline (June-July 2024), pre-treatment data (April right before executing the intervention), and endline (after 3 months of intervention in July). We have collected the baseline data with the support of the IGC country team in Jordan and have planned the pre-treatment data collection with IGC country team. We have selected the mentors for the intervention and are working on developing the training material.

1. Introduction

In many developing countries, youth unemployment rates are staggeringly high, exceeding 30% as a share of labor force participants (World Bank, 2023). Such high unemployment rates can potentially impede economic growth, create poverty traps, prevent family formation and threaten political instability. For this reason, many resources have been dedicated to understanding why youth unemployment rates are so high and what interventions can mitigate their impact.

Broadly speaking, three arguments have been made. The first argument is that labor demand in developing countries is particularly low. Depending on the context, increased regulations may further inhibit firm entry and expansion, especially in the formal private sector. Second, workers do not have the specific skills required by employers, implying that supply-side limitations (e.g. lack of worker technical and soft skills) are the culprit. Third, there are matching frictions such that workers and employers are not able to find appropriate matches, which discourages hiring due to expected increases in turnover and training costs for the firm.[1]

To test the presence of supply-side constraints and matching frictions, most interventions in the literature provide jobseekers with job training or job search assistance, and measure labor market outcomes before and after the intervention. While most programs yield at least modest positive effects on employment and earnings, they usually do not pass a cost-benefit test (Carranza and McKenzie, 2024). This indicates that most interventions are too costly and therefore not scalable.

Furthermore, if labor demand is low relative to labor supply (i.e. the number of job vacancies relative to unemployed individuals), general equilibrium challenges can arise even when supply-side and matching interventions are successfully implemented. In other words, even in the best-case scenario where all workers are upskilled and well-informed about employers and the job search process, how can (almost) all workers find jobs when there are a limited number of job openings? Hence, we hypothesize that job search assistance and job training programs are complementary, and can plausibly become scalable and cost-effective, but only when there is a policy or intervention that induces a labor demand shock.

This study induces a significant and comprehensive labor demand shock in Jordan, a low-middle income country that is characterized by a high youth unemployment rate of approximately 40%. Our main intervention introduces young jobseekers to the largest online freelancing platform, Freelancer, where over 65 million employers and jobseekers interact from 247 countries in a global marketplace. Employers post tasks and projects, and workers compete to secure temporary employment contracts by placing bids. We partner with Freelancer and gain access to click-by-click data for our sample of users to uncover the black-box of salary negotiations, which was hitherto limited due to data constraints. We are able to observe the initial bids as well as the final

[1] Matching frictions may be attributed to workers lacking sufficient information about employers or worker inability to effectively signal their skills.

closing bids and payouts, allowing us to fully study the impact of the intervention on the negotiation process on the platform.

In our experiment, jobseekers that are introduced to the platform constitute the first treatment group (T1). A secondary treatment group (T2) will receive platform access to Freelancer and an additional mentoring intervention, where local successful users of the platform guide jobseekers by providing them with tips on how to maximize gains on the platform. The control group does not undergo any intervention. We ask the following research questions:

1.) What is the impact of access to Freelancer on the employment status and earnings accrued by respondents on and off the platform? [Compare control group to treated groups]

2.) Among the two treated groups, what is the impact of the mentoring intervention on engagement on the platform?

3.) How do the results vary by the following characteristics: gender, English language proficiency, and social class?

We expect access to a global jobs digital platform to expand the existing network of the respondents and improve their employment prospects by exposing them to a larger set of firms that demand labor. Since membership on the platform is relatively cheap—where the lowest membership is about $54 per year, the intervention is scalable such that users can sustain themselves on the platform even if they accrue modest earnings. Furthermore, bringing in local successful users of the platform is expected to have a positive mentoring effect and thereby enhance the employment prospects of our treated sample on and off the platform. In fact, differences in employment outcomes between beneficiaries in the two treatment arms provide an estimate for the role of mentorship. This is an important contribution since literature has either made theoretical contributions (Athey, Avery, and Zemsky, 2000) or has found indirect positive impacts of mentorship (Biasi and Sarsons, 2022; Matsa and Miller, 2013).

We primarily contribute to a growing literature on the impact of online job platforms. For example, studies have taken place in India (Afridi et al, 2022; Chakrovorty et al, 2023), Mozambique (Jones and Sen, 2022), South Africa (Wheeler et al, 2022), El Salvador (Fazio et al, 2025) and Bangladesh (Das et al, 2025). However, our intervention differs from most studies in at least one of three different ways.

First, unlike most studies on online platforms, Freelancer is a global, not national job platform. In fact, workers are encouraged to search for employment opportunities in any country that demands their skills, casting a broader net on the possible set of opportunities that workers face. Notably, introducing workers to a global marketplace online is similar to a migration model without the costs. In fact, preliminary evidence using summaries of user-level data from Freelancer (2017-2024) indicates that Jordanian jobseekers on the platform are most likely to complete projects in

locations where Jordanians usually seek migration opportunities: the US, the UK, Australia and the Gulf Cooperation Council (GCC) countries.

Second, while there are a few studies that have examined the labor market outcomes of training users to freelance on global digital platforms such as Upwork and Fiverr (Fazio et al, 2025; Das et al, 2025), the interventions are costly, calling into question issues related to efficiency and scalability. A key advantage of our intervention is that the cost per beneficiary is about $12, almost all of which is used to compensate the mentors for providing coaching sessions; this implies the cost of the first treatment arm is zero. This is in stark contrast to the above-mentioned studies whose interventions cost $423 per beneficiary (Fazio et al, 2025) and $700 per beneficiary (Das et al, 2025). Relatedly, our intervention contains minimal requirements from respondents, which we hope will increase session attendance and participation on the Freelancer platform. Our sessions are short, attendance is optional (since beneficiaries can choose what sessions to attend), and we do not require beneficiaries to have minimum educational/experience credentials, pass tests, complete activities, own a computer, or speak/read/write English proficiently. In fact, mentors will provide the sessions in the respondents' mother tongue, Arabic. Furthermore, our mentors will not provide training in specific skills (e.g. web design), but offer guidance on how to use the platform, e.g. place bids, receive payments, adjust expectations, etc. This not only lowers the cost of the intervention and enables us to have a larger sample size, but it also allows us to isolate the impact of a positive demand shock on labor market outcomes. In other words, given the current skill set of Jordanian youth, can they be globally competitive and find promising employment opportunities using online job portals?

Finally, our intervention also differs from contemporaneous and previous studies as workers are not applying for full-time or even part-time jobs on the platform but are applying for projects or specific tasks. This is akin to a digital platform for piece-rate work. In fact, the platform attracts a number of employers who have temporary and uneven shortages of labor demand. Most employers post tasks or projects that can be completed within weeks or months. This flexible structure—where employers can hire workers for a short period of time and test their technical and soft skills--is preferable for employers and is in stark contrast to the rigid labor market regulations found in many developing settings. In the context of Jordan, Groh et al (2016) interpret the lack of long-term gains in employment, following an intervention where wage subsidy vouchers are randomly allocated to jobseekers, as worker productivity falling short of employer expectations given a high binding minimum wage.[2]

Hence, the flexible structure of a global freelancing platform works for the benefit of both the employers and the freelancers. Employers get workers on flexible employment terms and can

[2] Specifically, the study shows that there are significant short-run gains in employment for treated jobseekers–who were granted wage subsidy vouchers in a randomized control trial–but this did not translate into better employment outcomes in the long-run. They argue that even when a worker gained meaningful work experience that was specific to her field, employers did not want to retain employees beyond the expiration of the voucher period because the employee's productivity was not sufficiently high relative to the binding minimum wage.

convert the freelancers into full-time employees if they are satisfied with their performance. The jobseekers on the other hand get professional experience which feeds into working towards their aspirational jobs. The flexibility helps the workers too as they can work from home and there are no reputational costs associated with online work which has been documented as a major explanation for high rates of unemployment in Jordan, also referred to as reservation prestige by Groh et al (2015).

Through our mentoring intervention, we also contribute to the broad literature on job search assistance. In our experiment, mentors are locals (Jordanian nationals) who have been successful in regularly securing projects and are highly rated on Freelancer. These mentors have been selected with help from the Freelancer platform and are closely relatable to the Jordanian demographic we have considered in our study. We hire these mentors to share their experiences on the platform and provide jobseekers with tips on how to make the most of the platform.

We expect mentoring to have a positive impact on the outcomes of jobseekers by aiding them in several dimensions that have proven to be effective in the job search assistance literature: a.) effectively signal jobseekers' skills to employers (Abebe et al, 2021, Carranza et al, 2022), b.) adjust wage expectations or reservation wages (Alfonsi, Namubiru and Spaziani, 2022), c.) emphasize the importance of the platforms' employer ratings, which are similar to having past employers' reference letters (Abel, Burger, and Piraino, 2020), and d.) build resilience to increase search intensity, even when job offers are far from ideal (Abel et al, 2019, Allemand et al, 2023). Providing workers with training on how to use an online marketplace is also a less costly alternative when compared to other active labor market policies, such as the provision of public sector jobs (Gehrke and Hartwig, 2018) or wage subsidy programs (McKenzie, 2017).

2. Data

Data collection and processing

Our proposed timeline includes three key data collection points: baseline (June-July 2024), pre-treatment (right before implementing the intervention in April 2025), and endline (three months post-intervention in July 2025).

1. **Baseline (June-July 2024)**: We have completed an initial survey with 2,400 jobseekers aged 18-34 residing in three major regions of Jordan—Amman, Irbid, and Zarqa. This survey was conducted with support from the IGC Jordan country team.

2. **Pre-treatment Data Collection (April 2025)**: Right before the intervention begins, we will gather employment data for both the treatment and control groups. This pre-intervention data will allow us to document employment trends nine months after the baseline.

3. **Endline (July 2025)**: In July 2025, three months after the intervention, we will collect final employment data.

Additionally, in collaboration with Freelancer, we will construct a high-frequency engagement dataset using platform click data from the intervention period through to the endline. We plan to begin this data collection in late April 2025, after the intervention. Endline data and the high-frequency panel will be available from June 2025 for analysis.

Table 1 – Proposed timeline

	June 2024	July 2024	April 2025	July 2025	August 2025
Baseline					
Pre-treatment Data/ Intervention					
Endline					
Analysis					

Motivation/Contribution

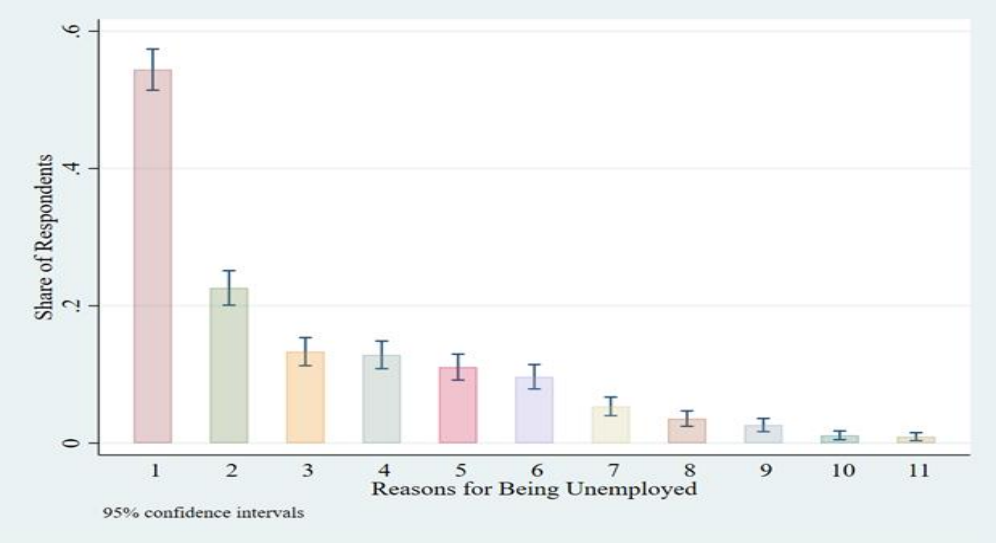
Thus far, the literature has shown little evidence in support of the argument that online job platforms provide jobseekers with better employment opportunities (Cassandra and McKenzie, 2024). It is then reasonable to question why and how our treatment–providing jobseekers with access to and information about Freelancer– would yield different results from other similar interventions. To address this major concern, we use descriptive evidence from Freelancer and our baseline survey data to show that our intervention is novel and may be beneficial for our context of Jordanian jobseekers.

Preliminary Evidence from Baseline Survey Data and Freelancer User Data

Freelancer is a freelancing platform where employers from around the world engage in flexible hiring, allowing workers to undertake tasks for a few hours per week. Upon task completion, workers are paid an hourly rate that is consistent with the employers' compensation structure. This is a novel intervention and a striking departure from other studies for the following reasons.

a.) **Access to Global Labor Demand:** First, unlike other job platforms, Freelancer is not a national, but a global platform. Hence, jobseekers from countries with few employment opportunities (or low demand overall) have the most to gain. To gauge the perspective of young jobseekers on their potential employment opportunities in Jordan, we asked unemployed respondents to list the major barriers to securing employment. The most prevalent response was "I believe there are no jobs available". These sentiments are echoed by a number of academics, policymakers and young people. Thus, the local labor market may be too limited and the solution to the high unemployment rate in Jordan may lie in expanding the job search process beyond the national borders to the global labor market. At the same time, only a handful of jobseekers in our baseline survey have ever used global freelancing platforms like Upwork and Freelancer.

Figure 1–If you are unemployed, why have you NOT been working during the past 12 months?



Notes: Authors' baseline survey data where the sample size for this variable is restricted to unemployed individuals (N=1057). Reasons for being unemployed are listed from the most frequently reported to the least reported. The number denotes choices as follows. 1) No work available at all, 2) No work with suitable pay is available 3) My family/peers/community do not approve of the job offer, 4) No work suitable to experience and qualification is available, 5) No work with a suitable schedule is available, 6) No work with a suitable location is available, 7) No work in a suitable organization or firm is available, 8) No full-time or permanent contract work is available, 9) Jobs where there is professional growth are not available, 10) I do not enjoy the tasks associated with job offers received, and 11) The managers/co-workers of the firm/organization (where I received job offers) have a bad reputation.

b.) **Search for Tasks not Jobs:** Typically, online work platforms are created to match employers with workers who are seeking full-time jobs. However, most firms are not interested in hiring full-time workers, resulting in insufficient demand and very low success rates of online job platforms. In fact, labor demand can be further inhibited by policies where social or legal contracts obligate

firms to hire permanent full-time employees with wages and benefits above market level (Kanbur, 2017). Such an environment can prohibit firms– especially small and medium-sized firms who face binding budget constraints–from hiring workers altogether or induce them to enter the informal sector (Maloney, 2004). This indicates that workers may be more successful in finding paid employment gigs on a platform like Freelancer, where employers search for workers to complete specific tasks and projects. There are two benefits to this setup. First, workers can acquire and build a versatile skill set on the platform by interacting with a variety of employers, which might in turn serve as a steppingstone to eventually securing a full-time job. Second, from the employer's perspective, hiring a worker for a short period of time is not a major financial commitment relative to hiring a full-time employee (who may be unqualified) with high wages and benefits.

To get a sense of why increased access to Freelancer may benefit Jordan employers and jobseekers, we compare the top skills listed by Jordanian users in 2024 (refer Figure 2a), to the top 10 in-demand skills listed by Jordanian, GCC employers and international employers who post tasks on the platform (refer Figure 2b). While there is significant overlap in which skills are in demand (e.g. graphic design, knowledge of PHP, and website design), some of the most commonly listed skills by Jordanian users (e.g. data entry, Excel) are not in demand in Jordan or the GCC but are in demand in other countries around the world. This implies that in addition to Jordanian firms having insufficient labor demand, there may be a mismatch between skills demanded and skills supplied. Additionally, it appears that GCC countries and Jordan have strikingly similar preferences for the top skills in demand. However, firms in the GCC have overall greater labor demand (for tasks) and are likely to make better wage offers.

Figure 2a– Top skills listed by Jordanian users [Freelancer Data, 2024]

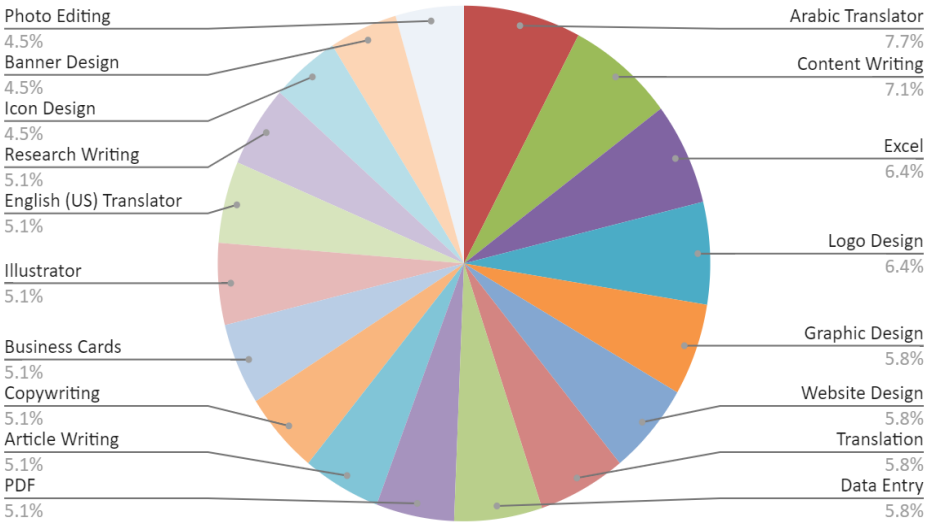
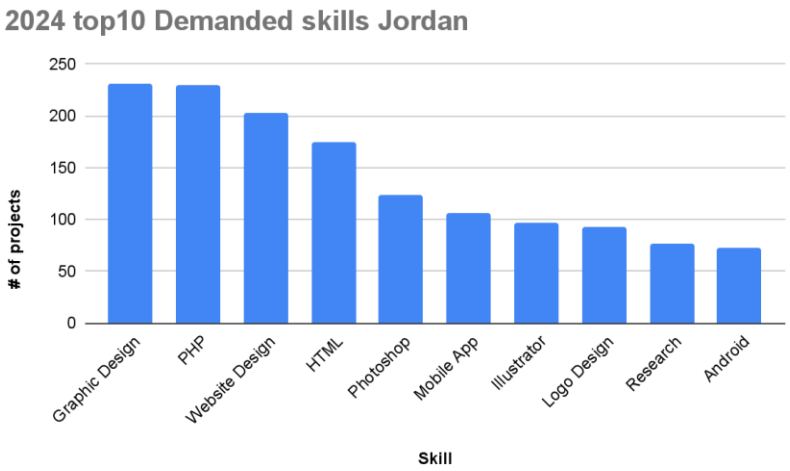
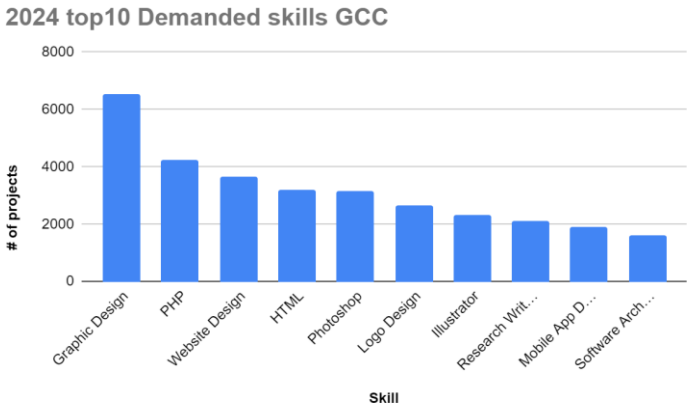


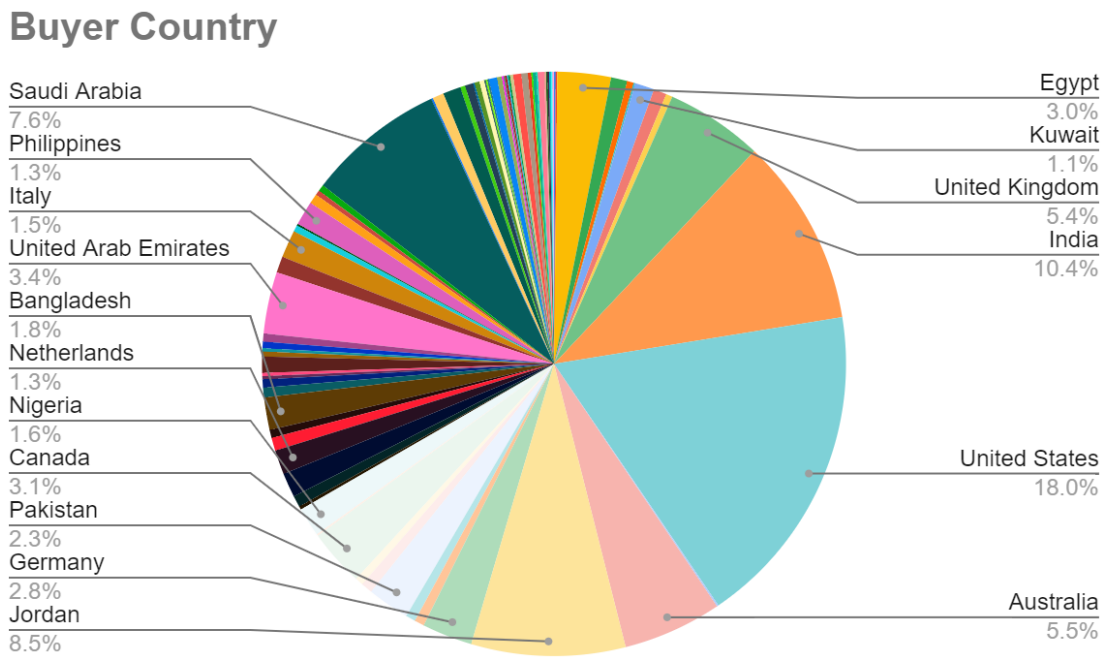
Figure 2b–Top skills demanded by employers in Jordan, GCC, and Worldwide [Freelancer Data, 2024]





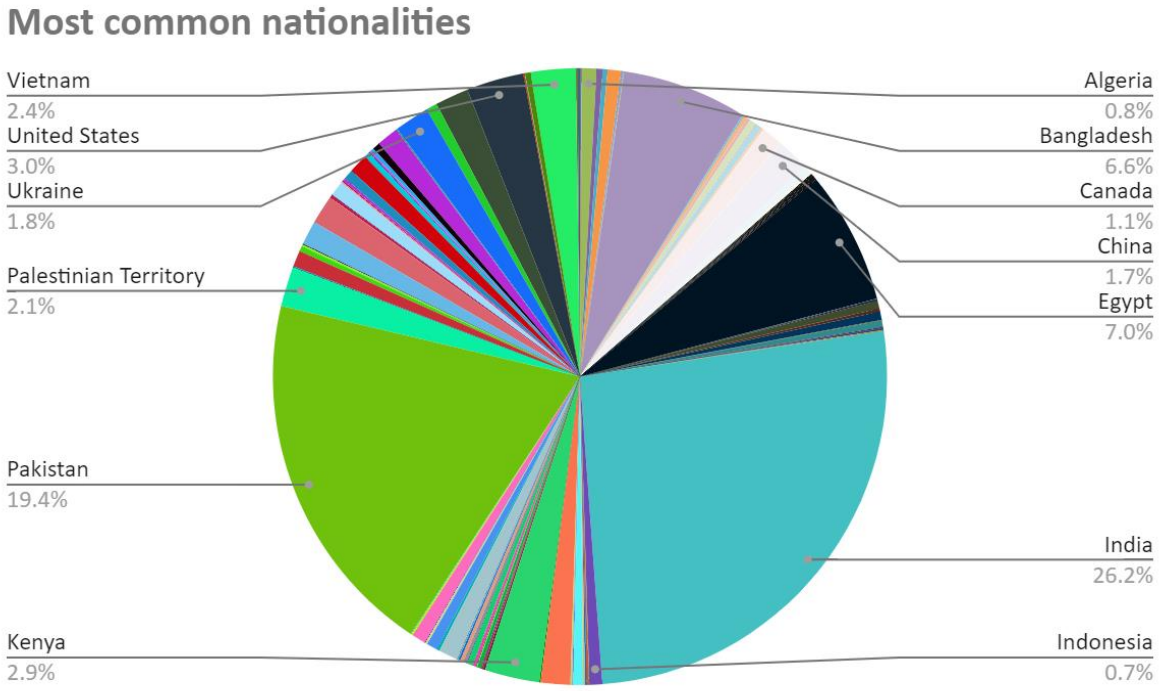
c.) **Accessing Global Wage Offers:** The interaction of jobseekers and employers in a global marketplace also implies that wages are (almost) cleared at the global, not national, level. If this holds, then workers in low-wage countries like Jordan will find it lucrative to secure employment matches in higher-wage countries respectively. We find evidence for this using Freelancer data. For example, between 2017-2023, Figure 3a shows that Jordanian users on Freelancer accumulated earnings from firms in primarily higher-wage countries, including the US, Australia, the UK, and a number of GCC countries (KSA, UAE, etc.).[3] Likewise, Jordanian employers from 2017-2023 hired workers that were primarily from lower-wage countries such as India, Pakistan, Bangladesh, and Egypt (Figure 3b). These descriptive data underscore the global presence of Freelancer.

Figure 3a–Who are Jordanian Jobseekers Offering their Services to? [Freelancer Data]



[3] 10% of Jordanian jobseekers offered their services to Indian firms. This may be attributed to differences in wages or labor demand between India and Jordan in specific sectors (i.e. high tech, etc.).

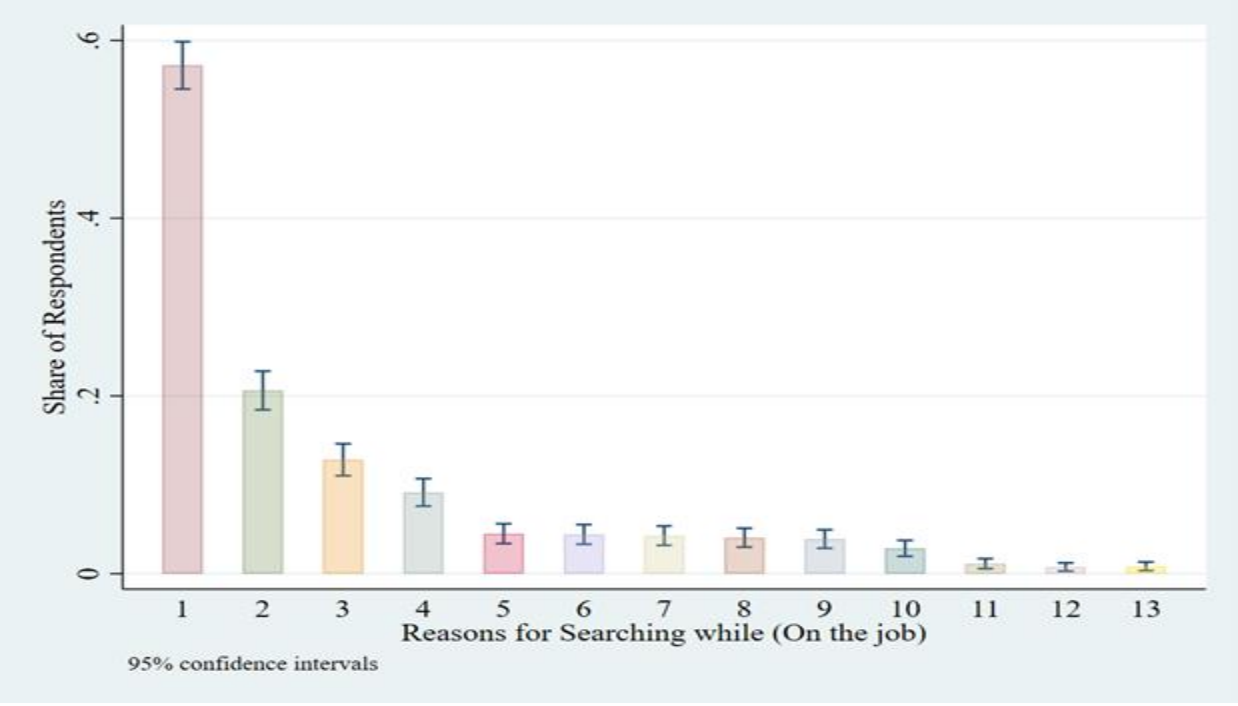
Figure 3b–Where do Jordanian Employers hire Workers From? [Freelancer Data]



d.) **Workers are Unsatisfied and Unrealistic with respect to Wages in Jordan:** Assessing global wage offers is a relevant intervention in the Jordanian context where over half of employed jobseekers in our sample listed "pays a low wage" as a reason for searching for work (Figure 4). While higher wages are the most commonly listed reason for searching, these workers are also hoping that more intensive searching can lead to higher quality matches through gainful employment in the public sector, in a firm with better future prospects and/or the formal sector (Figure 4). In summary, on-the-job searchers are unsatisfied with their current wages and the wage offers they receive; note that this can also be deduced from the unemployed sample in Figure 1, where "no work with suitable pay is available" is listed as the second most common reason for being unemployed.

In addition to being unsatisfied with the wage offers received, there is also evidence that jobseekers are unrealistic, as evidenced by the gap between actual wages (of those employed) and reservation wages. To measure reservation wages for each sector, we asked jobseekers what is the lowest wage offer they are willing to accept for a public sector job, a formal private sector job and an informal private sector job. We distinguish between those who have some labor market experience (ever employed) and those who have never worked (never employed).

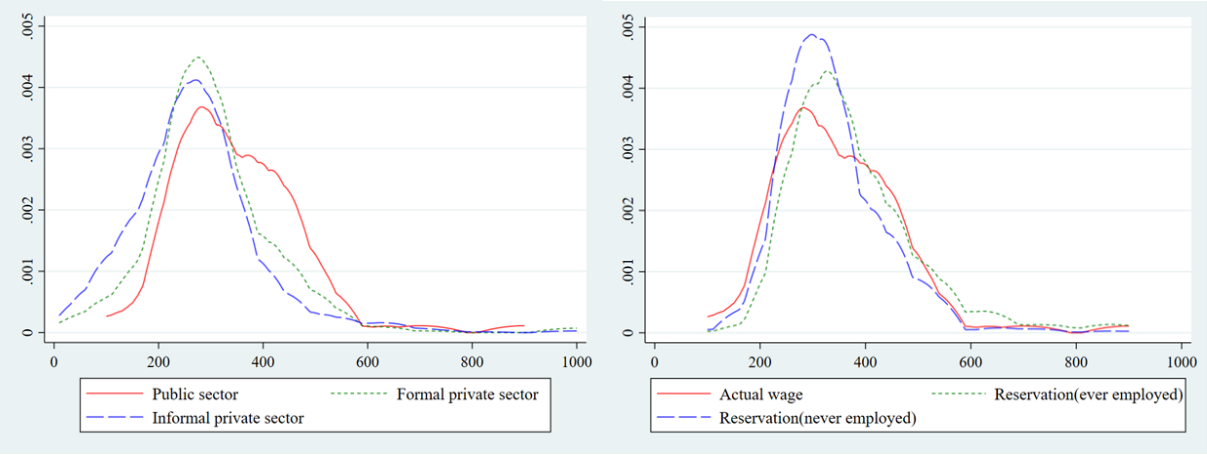
Figure 4–Reasons reported for on-the-job search.



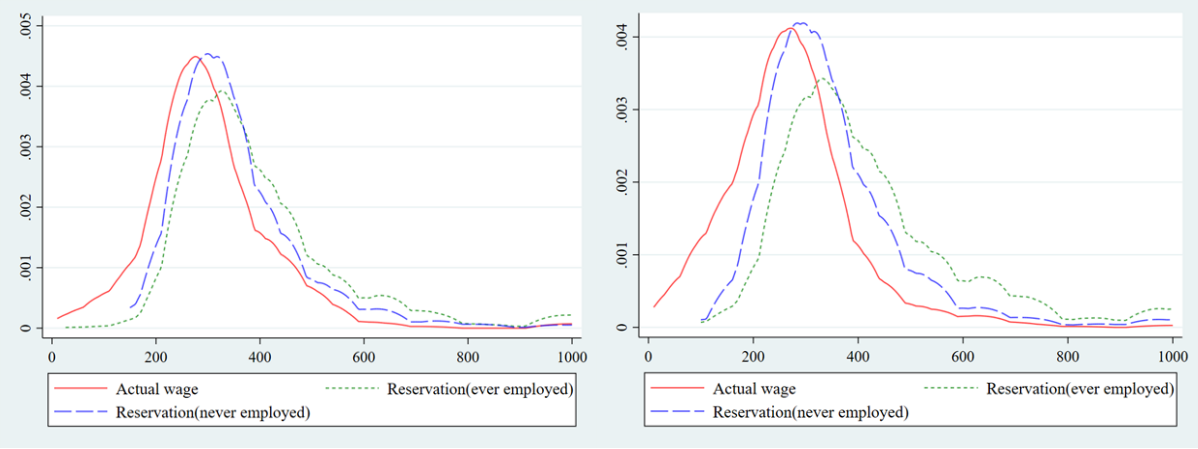
Notes: Data source is authors' baseline survey data where the sample size for this question is restricted to employed individuals (N=1329). Reasons for searching while (on the job) are listed from the most reported to the least reported one. The number denotes choices as follows. 1) The job pays a low wage, 2) It is not a public sector job, 3) There are no future prospects for me here, 4) It is not a formal sector job, 5) Not within my field, 6) Temporary contract, 7) I do not enjoy the job 8) Inflexible Schedules (Little to No remote options), 9) Cannot Get Enough Hours, 10) Long Commute, 11) My family does not approve of the job, 12) My boss does not treat me well, and 13) I do not get along with my co-workers.

In Figure 5(a), we show the distribution of wages in the public sector, the formal private sector and the informal private sector. In terms of raw differences, public sector wages are approximately 22% higher than formal private sector wages (p=0.03 in Kolmogorov-Smirnov test), which in turn are 16% higher than informal sector wages (p=0 in Kolmogorov-Smirnov test). Figures 5(b)-(d) plot actual wages along with reservation wages for the ever employed and never employed, separately for each sector (b–public sector; c–formal private sector; d–informal private sector). We show that for both groups, the ever employed and the never employed, the reservation wages are significantly higher than actual wages in the formal and informal private sectors (p=0 in Kolmogorov-Smirnov test). In the public sector, the reservation wages are much closer to the actual wage distribution. This implies that jobseekers are better informed about public sector wages, although, for the ever employed, the reservation wages significantly exceed actual wages in the public sector.

Figure 5– How do Actual Wages and Reservation Wages differ by Sector and Labor Market Experience?



5(a) 5(b)



5(c) 5(d)

Note: Data source is baseline survey data. In Figure (a), we restrict the sample to employed individuals and plot their actual monthly wages in the public sector, the formal private sector and the informal private sector. In (b), the actual wage distribution is plotted for public sector workers. The two other distributions represent the reservation wages in the public sector for those with at least some labor market experience (ever employed) and no labor market experience (never employed). In Figures (c) and (d), the exercise in (b) is replicated for the formal private sector and the informal private sector respectively.

These results suggest that workers are unsatisfied and unrealistic with their wage prospects. If our intervention introduces jobseekers to Freelancer and they can access more productive firms that are perhaps located in richer countries (i.e. OECD and GCC countries), they should hopefully be able to meet their wage expectations. That said, platforms like Freelancer may not be able to address the issue of "reservation prestige", the notion that workers may not only look for a certain level of pay but also a minimum level of prestige associated with a given job or firm (Groh et al,

2015). This is worth noting since in addition to pay, most workers cited the public sector and formality status as major concerns.

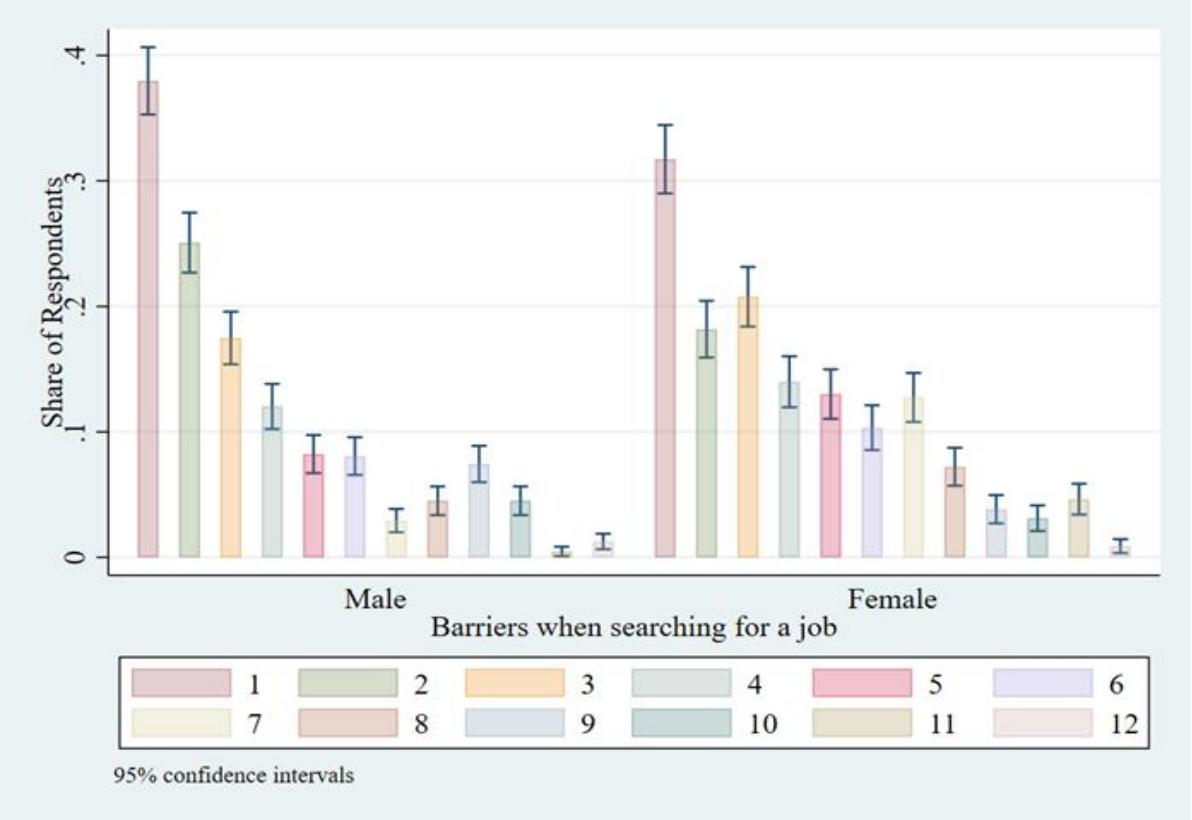
e.) Opportunities for Flexible Jobs and Remote Work: Thus far, we have focused on the two most cited reasons for being unemployed (according to our respondents)–no jobs available and no work with suitable pay is available. However, Freelancer may sufficiently reduce other types of barriers for workers, who want an opportunity to engage with employers to garner professional experiences.

For example, Figure 6 shows that young male and female jobseekers believe there are many barriers to finding a job. In addition to a lack of available jobs in general (the most reported response by both genders), a considerable portion of workers are tired of looking for jobs and believe there are no suitable jobs, where both genders hover around 25%. Other significant barriers for females include the lack of required experience and family responsibilities, each affecting about 20% of respondents. Both genders report studying and the lack of personal connections (wasta) as less significant but notable barriers. This figure highlights gender-specific differences in job search barriers, with males being more affected by job availability perceptions and females facing a broader range of significant obstacles.

Likewise, Figure 1 shows that at least 10% of respondents list each of the following reasons as major barriers to finding employment: my family/peers/community do not approve of the job offers received (this one was primarily listed by women as shown in Appendix Figure A1); no work suitable to experience and qualification is available; no work with a suitable schedule is available and no work in a suitable location is available.

The intervention offers a platform for jobseekers to interact with large private and public sector employers in a flexible hiring setup that is mostly remote work (making it suitable for women and young jobseekers). In turn, firms can engage with a broader pool of workers with flexible hiring terms and pay based on performance, including workers without formal credentials, and mitigate the robust impact of family attributes and social connections. In fact, approximately 60% of our respondents believed that getting a high-status or high-paying job depends on one's social connections and networks. While many of these respondents also believe that one's qualifications are relevant for labor market success, the weight given to social connections suggests that Freelancer may serve as an equalizing force for disadvantaged groups.

Figure 6–Main barriers to job search reported by respondents (By Gender)



Notes: Source: Authors' baseline survey data where the sample size for this question is 2386. Reasons for barriers when searching for a job are listed from the most reported to the least reported: 1) Believe there are no jobs, 2) Tired of looking for jobs, 3) No suitable job, 4) Because of studying, 5) Do not have the required experience, 6) Lack of personal connections(wasta), 7) Family responsibilities, 8) Do not know an effective way to look for a job, 9) Do not need work, 10) Employers prefer males to females in hiring and vice versa, 11) Opposition of a family member, and 12) Health conditions do not allow

3. Research Design

a. Objectives and hypotheses

The main objective of this study is to experimentally estimate the impact of expanding employment networks, combined with an informational mentoring intervention, on the labor market outcomes of young men and women in Jordan. We are running an experiment in collaboration with Freelancer with two treatment arms -

Treatment 1 (T1): Access to the platform only.

Treatment 2 (T2): Access to the platform plus the mentoring treatment.

We expect access to a global jobs digital platform to expand the existing network of respondents and improve their employment prospects by exposing them to a larger set of global employers. Furthermore, bringing in local successful users of the platform is expected to have a positive mentoring effect and thereby enhance the employment prospects of our treated sample.

b. Main outcomes of interest

We have two sets of primary outcome variables - (1) employment outcomes (whether employed, type of employment, days employed, job offers received, and monthly earnings), both on and off the platform, and (2) user engagement on the Freelancer platform (registration on the platform, number of bids placed, number of bids won, value of bids won and employer ratings of the workers). We will also capture the changes in mental health indicators to better understand whether there are tradeoffs associated with higher engagement on the platform (e.g. more loneliness, not having co-workers/mentors, stress).

We will also explore a number of subsidiary outcomes to understand the underlying mechanisms. This would include changes in job search intensity, changes in purchases, and investments in upskilling of the respondents to make better use of the Freelancing platform. To detect whether a change in reservation prestige (i.e. changes in attitudes about what is prestigious work) is a potential channel for changes in activity on the platform, we can compare the reservation wages in the three main sectors (public/formal/informal sectors) at the baseline with those from the endline survey. If there is a decline in the reservation prestige associated with (in-person) formal and public sector jobs, then we expect the reservation wages to increase for those jobs.

We also aim to evaluate the effectiveness of the mentoring treatment and mentor characteristics (e.g. success rate, earnings accumulated on the platform) in influencing various dimensions of labor market engagement on Freelancer. These dimensions include bid submissions, price quotes, final wage offer agreed upon after negotiation, and employer ratings.

c. Testable hypotheses

We expect to test the following hypotheses:

<u>Impact of Platform Access on Employment Status:</u>

Hypothesis 1: Users in Treatment 1 (T1) will have a higher likelihood of being employed and thereby accumulate higher earnings from employment on the platform compared to those with no access (control group, if applicable).

Hypothesis 2: Users in Treatment 2 (T2) will have an even higher likelihood of being employed, accruing more earnings from employment on the platform compared to those in Treatment 1 (T1).

Note that we measure labor market outcomes on and off the platform to observe changes over time and potentially identify tradeoffs between spending more time on in-person jobs vs. online freelancer jobs. Thus, the impact of joining the platform on labor market outcomes off the platform is an empirical question.

Impact of Platform Access on Engagement on the Freelancer Platform:

Hypothesis 3: Users in T1 will demonstrate increased engagement on the Freelancer platform, as measured by the number of bids placed, proportion of bids won, value of bids won and rating of the workers on the platform.

Hypothesis 4: Users in T2 will show higher levels of engagement (more bids, more competitive pricing, more successful negotiations) compared to users in T1.

Heterogeneity analysis by Gender, English proficiency, Social Class and Family Background:

Hypothesis 5: The impact on employment status and platform engagement will not differ by social class (father/parental education) and family background (father's occupation/sector of employment).

Hypothesis 6: The impact on employment status and platform engagement will differ by gender (between men and women) and English language proficiency.

d. Power Analysis

Our sample comprises respondents from the three governorates of Amman, Irbid and Zarqa. We will conduct a stratified random assignment at the region level. For the power analysis for the overall employment, our null hypothesis is that the intervention does not affect the employment rates in Jordan. Our alternative hypothesis is that our intervention increases the employment rate by 9 to 16 percent points.

Calculation of the alternative hypothesis:

The alternative hypothesis has been calculated as per the statistics provided by the collaborating platform 'Freelancer'. These statistics were drawn exclusively for the users in the three regions under study in Jordan. According to the platform data, between 2000-2024, our study area had 40,897 users. Using the estimates from Freelancer, we know that of the paid users, about 80% are actively bidding on the platform. Of the paid bidders on the platform, approximately 16% are awarded a project and 9% earn from these bids; average earnings are $1,245. We assume the conservative success rate of 9% on the platform. We consider this as a lower bound on gainful

employment. The platform also offers other modes for earning in the form of contests. These contests allow users to compete for freelancing jobs, where employers post a prize amount, and freelancers share their work (without receiving a job offer). The freelancer who wins the contest gains the prize amount, but the remaining freelancers do not earn any amount for their effort and do not receive reviews. However, many employers give feedback to freelancers who have done high quality work and will typically contact them to consider them for future jobs.

Size effect in terms of percentage points:

The total respondents in our sample are 2,386, of which 1,329 respondents are employed (i.e. 55.70%). If the intervention increases the employment rate by 9 percentage points, this means that around 215 respondents will find work on the platform {(9/100) *2386==215}. This implies that the number of respondents who will be employed after the intervention will go up to 1544 (i.e. 64.70%). Thus, we take the size effect to be 9 percentage points.

Intra-cluster correlation:

There are a total of 148 clusters in the sample. From each cluster, between 12-40 households have been interviewed, depending on the size of the cluster.

Sample size required to carry out a cluster sampling with 80% power and 5% significance:

To find the sample size (number of clusters) required to do a cluster sampling with a power of 80% and a significance level of 5%, we use the intra cluster correlation and the effect size calculated above. We get an estimate of the average cluster size required to be 13 and the required sample size per arm being 598. In our sample we have an average cluster size of 17 and the sample size per arm is over 790. Therefore, the study is sufficiently powered to detect the impact of the treatment on the employment rates. As we have limited data on the engagement on the Freelancing platform, we are not able to carry out the power calculations of the minimum detectable effect for all the variables of interest.

e. Sampling

The team conducted face-to-face interviews with Jordanian men and women aged 18 to 34 years who were actively looking for work. The targeted sample size for the study was 2,400 interviews (as per the budget limitations). It was distributed among the targeted governorates of Amman, Irbid, and Zarqa based on the actual population distribution as per the Department of Statistics (DOS, 2023) for the age group under study of 18-34 years. Following the stratification as per the population of the three regions of interest, 1,354 interviews were allocated to Amman Governorate, 595 to Irbid Governorate, and 460 to Zarqa governorate. This sample produces a margin of error

of 2.0% for all three governorates, and less than 5% in each governorate at a 95% confidence level and a 50% prevalence level.

Each governorate was considered a separate stratum, so stratified random sampling was used as follows:

Stage 1: Distributing the sample size allocated to the governorate (stratum) across its sub-regions based on the size of the population in each sub-region.

Stage 2: Distribution of interviews in the sub-region of each governorate across gender and age groups based on the known population distribution according to DOS (2023).

Stage 3: These respondents were selected through a household sampling strategy. The strategy was to divide the number of households each area by the sample allocated to that area to estimate the skip interval (nth) for each governorate. On average the skip interval was 10 households. The table below (Table 3) lists the estimates used for selecting the respondent from each household.

The respondents who were unavailable at the time of the interview were re-contacted once and if they were still not available for interview, a replacement household was picked that location.

Table 2: Recruitment of respondents

Governorate	Total Number of H.H according to the sample	Total number of neighborhoods	Skip Interval	Total number of interviews
Irbid	**5781**	**66**	**10**	**595**
Zarqa	**3614**	**40**	**8**	**460**
Amman	**9316**	**103**	**7**	**1345**
Summary	**18711**	**209**	**8**	**2400**

During the baseline survey, we were able to survey 2,386 of the target respondents. Some of the neighborhoods are small in size and thereby had very few surveys. We have clubbed the small neighborhoods in such a manner that the minimum cluster size in a neighborhood is 12 respondents. This gives us a total of 138 localities from which our respondents are drawn.

f. Methodology & Intervention

This study employs a randomized controlled trial (RCT) to evaluate the impact of two interventions on the labor market outcomes and platform engagement of young men and women in Jordan. Participants will be randomly assigned to one of three groups: a control group, a Treatment 1 (T1) group which receives access to a digital freelancing platform (i.e., Freelancer), and Treatment 2 (T2) group which receives both access to the platform and an additional mentoring intervention.

The study targets young adults in Jordan who are interested in improving their employment prospects. We have received initial funding from the International Growth Centre (IGC) Jordan country program to collect data to better understand the constraints and challenges faced by young and inexperienced jobseekers. Using this funding, we have surveyed 2386 individuals in the 18-34 age group in early June 2024 from the three major regions of Jordan - Amman, Irbid, and Zarqa. The data collection was done in collaboration and assistance from the IGC Jordan country team.

These 2386 participants (stratified by the region) will be randomly assigned to one of the three groups:

Control Group: No intervention.

Treatment 1 (T1): Participants will be provided access to the Freelancer platform, which will allow them to search for job opportunities, place bids, quote prices, and negotiate with potential employers. At the end of the pre-treatment data collection, the respondents will be informed about Freelancer and the one-month free subscription on the platform for new users. They will then be asked whether they wanted to know more about joining the platform and the registration process. Upon consent, they will be shown a digital brochure and a short video (about 1-2 minutes in duration), which provide instructions on how to register; they will also be given a hard copy of printed instructions on the registration process. The links to the reference material used in the intervention are available in Appendix B. This was followed up with a registration link via text message on the registered mobile number of the respondents.

Treatment 2 (T2): Participants will receive the same access to the Freelancer platform as T1, but with additional access to a mentoring program. This program will feature success stories, mentoring sessions, and motivational content designed to inspire and guide participants in their freelancing careers. Stories will cover testimonies from successful freelancers who started in similar circumstances. The inaugural mentoring session will include an in-person session in each of the three governorates under study in Jordan. This will be followed by two-hours of weekend (Friday and Saturday) virtual sessions with experienced freelancers for everyone in the mentoring group (irrespective of whether they attend the in-person session or not) for a month. This will offer avenues for the mentees to inquire about how to effectively use the platform and get feedback on their Freelancer profiles. During the pre-treatment data collection, the (treated) respondents will

be informed about the (in-person and online) mentoring sessions by successful mentors on the Freelancing platform. These mentors have been recruited after a thorough interview process run in collaboration with the platform. To ensure the mentors are relatable, we made sure that the mentors are Jordanian citizens who are of the same gender and age group as their mentees. In this way, the newly recruited freelancers can identify with and learn from the mentors when the latter describe their own journeys.

On the first day of the mentoring session, the respondents assigned to this treatment arm will be shown the process to onboard the Freelancer platform and how the one-month free membership is activated. For the rest of the training, they receive guidance on the profile creation and a guided explanation of the various features of the platform they can use to amplify their profile for a wider reach. During the in-person training session of 2 hours that covers various examples and anecdotal experiences of the mentors, the respondents will have time to clarify any doubts or queries. This is followed by weekly sessions, which are arranged for the respondents to have online weekly meetups with the mentors who provide feedback during the first session. In total, each respondent has access to four weekend meetups (a total of eight contact points) with their mentors. The respondents are informed about the nature of this weekly assistance service on the day of the in-person mentoring session; they also receive reminders through WhatsApp and Freelancer one day before each session. To ensure data protection, we will create mentoring groups on the Freelancing platform and keep the engagement with the mentors there.

Assignment to treatment arms- We will randomly assign the treatment at the neighborhood level. We have divided the neighborhoods in each of the three governates as depicted in the table below. All respondents in a neighborhood get assigned to the same treatment. Randomization will be done using a computer-generated random number sequence to ensure that the assignment is both random and unbiased.

Table 3: Assignment of respondents to treatment

Governorate	Total number of neighborhoods	Control group	Treatment 1	Treatment 2
Irbid	**37**	**13**	**12**	**12**
Zarqa	**27**	**9**	**9**	**9**
Amman	**74**	**26**	**24**	**24**
Summary	**138**	**48**	**45**	**45**

4. Analysis

a) Statistical model

To causally estimate the labor market impact of accumulating experiences gained through digital platforms, we use a standard ANCOVA specification as follows:

$$Y_i = \alpha + \beta_1 T_1 + \beta_2 T_2 + \theta Y_{0i} + X_i + \varepsilon_i$$

where Y_i is the work status of individual i at the Endline (unemployed/employed, formal/informal, wages); Ti is a dummy variable indicating whether individual i is assigned to the treatment ; T_1 is an indicator for treatment 1 and T_2 is an indicator for treatment 2. Y_{0i} is the baseline employment status of individual i, X_i are a set of baseline characteristics for individual i and ε_i is the idiosyncratic error term. For the outcome variables where we do not observe values at the baseline, e.g., the platform engagement variables and employment outcomes on the platform, we will use the OLS specification as follows:

$$Y_i = \alpha + \beta_1 T_1 + \beta_2 T_2 + X_i + \varepsilon_i$$

The standard errors in all specifications are clustered at the level of randomisation of treatment, the neighborhood.

b) Heterogeneity Analysis

We are interested in testing for heterogeneity by Gender, English proficiency, Social Class and Family Background. We will follow a standard heterogeneity analysis on all these dimensions for the main outcome variables of employment and platform engagement.

c) Robustness Checks

i. Multiple outcome and multiple hypothesis testing

We will use Michael Anderson's False Discovery Rate (FDR) q-values to address false positives from multiple hypothesis testing for the two sets of primary outcomes.

ii. Attrition

We will address selective attrition concerns in two ways: (1) entropy balancing and (2) inverse-probability weights (IPW). In entropy balancing, we construct weights that produce baseline balance among the non-attritors and then run the main outcome regressions on the non-attritors using those weights. Similarly in IPW, we use the inverse-probability weights to construct the probability of attrition and use these weights to correct for any systematic attrition and re-run the regressions.

iii. Randomization inference testing and bootstrapping

The experiment involved 138 localities randomly assigned to three treatment categories with 45 clusters in each of the groups. While the number of clusters are higher than the rule of thumb of 30 clusters, we check the asymptotic validity of our results using two robustness checks: (1) randomization inference p-values from tests of the sharp null that the treatment had no effect and (2) wild-cluster bootstrap.

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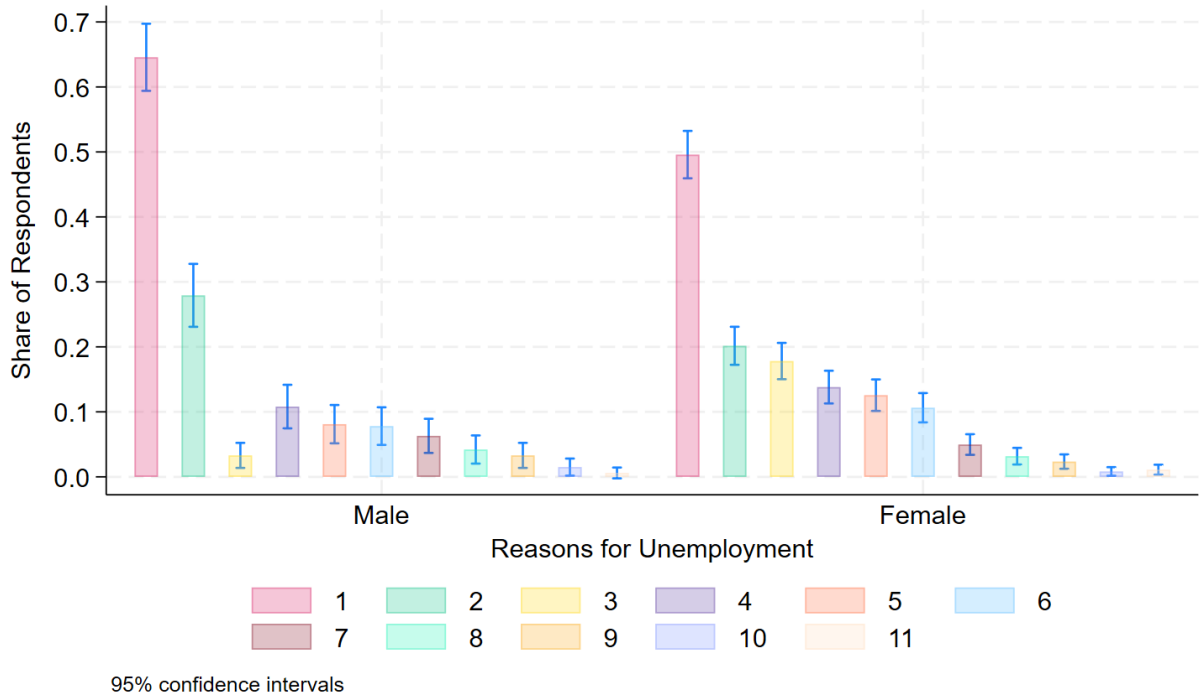
6. Appendices

Appendix A: Additional Figures and Tables

Appendix Figure A1–If you are unemployed, why have you NOT been working during the past 12 months?



Notes: Authors' baseline survey data where the sample size for this variable is restricted to unemployed individuals (N=1057). Reasons for being unemployed by gender are listed. The number denotes choices as follows. 1) No work available at all, 2) No work with suitable pay is available 3) My family/peers/community do not approve of the job offer, 4) No work suitable to experience and qualification is available, 5) No work with a suitable schedule is available, 6) No work with a suitable location is available, 7) No work in a suitable organization or firm is available, 8) No full-time or permanent contract work is available, 9) Jobs where there is professional growth are not available, 10) I do not enjoy the tasks associated with job offers received, and 11) The managers/co-workers of the firm/organization (where I received job offers) have a bad reputation.

Table A.1: Back-checks and Comparison for Baseline data with JLMPS 2016 data

	Baseline data		JLMPS 2016	
	Male	Female	Male	Female
Unemployment rate	26.38	64.69	22.27	50.16
Monthly earning (Public sector) (JOD)	356.02	350.89	389.09	423.07
Monthly earning (Formal private sector) (JOD)	322.05	286.20	387.65	323.74
Monthly earning (Informal private sector) (JOD)	286.92	227.91	291.95	211.37
Reservation wage (Public sector) (JOD)	368.10	325.59	317.08	305.21
Reservation wage (Formal private sector) (JOD)	385.03	336.43	330.34	303.59
Reservation wage (Informal private sector) (JOD)	391.49	334.27	329.26	306.61

Notes: Authors' baseline survey data for different labor market indicators where the sample size for this variable is restricted to employed individuals (N=1329). Calculations for monthly earnings and reservation wages in Jordanian Dinars (JOD) from the JLMPS 2016 dataset (OAMDI, 2018) were restricted to individuals aged 18–34 in the three governorates of Amman, Irbid, and Zarqa where the sample size for this variable is limited to employed individuals (N= 6,223). The JLMPS 2016 data was also cleaned to remove missing values, outliers, and invalid entries.

The table above compares broad employment outcome variables from the baseline survey data with a similar sample from the latest available wave of the Jordanian Labor Market Panel Survey, JLMPS 2016. Overall, the descriptive statistics are comparable, although our sample is more disadvantaged, especially in terms of wages. This is likely because we targeted jobseekers, regardless of employment status. To ensure that wages have not changed dramatically between 2016 and the timing of our baseline data collection (2023), we consider descriptive statistics from DOS (2024). According to DOS (2024), among males, 5.2% earn less than 200 JD, 30.2% fall within the 200–299 JD range, 50% are in the 300–499 JD category, and 14.4% earn 500 JD or more. If young male job seekers, who are unsatisfied with their current jobs, are in the bottom 50% of the wage distribution, their average earnings should be in the range of 250-350 JD; this is consistent with our estimates below. Likewise, for females, DOS (2024) reports that 19.4% earn below 200 JD, 28.9% are in the 200–299 JD range, 34.1% fall within the 300–499 JD category, and 17.5% earn 500 JD or more. This implies that women in our sample should earn about 200-250 on average, which is consistent with what we find.

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Appendix B: Supplementary Material

Mentor Profiles: In our experiment, mentors are locals (Jordanian nationals) who have been successful in regularly securing projects and are highly rated on Freelancer. We advertised the mentoring position on the partner Freelancing platform and after a thorough interview process have selected them. These mentors are closely relatable to the Jordanian demographic we have considered in our study. The details on the selected mentors are available in the online link below:

https://www.dropbox.com/scl/fi/qov38nwxd4m9tvjcuq1c6/Freelancer-Interviews_Mentor-Profiles.docx.pdf?rlkey=duk86hkjjuh0dzja3uthhxp5b&st=e7xquqfv&dl=0

Questionnaire: The Arabic and English versions of the questionnaire are available in the links below:

Arabic: https://www.dropbox.com/scl/fi/9h98x36q93qoj0it1v4y1/digitized-survey.pdf?rlkey=4av1l89x9fujwe7rpdgct3n2z&st=mw2zlseu&dl=0

English: https://www.dropbox.com/scl/fi/f8bbi7httzffhr7dyjgtn/Questionnaire_Latest-19-02-2025.pdf?rlkey=517zgshmhlasxt7w36jmgly3o&st=z3xd4pzs&dl=0

Appendix C: Data quality checks and handling missing data

Data is collected using tablets through Surveycto/ODK software. The software contains a set of in-built quality checks that ensure that no illogical answers are accepted. It is programmed to display an error alert if there is any issue in the entered data or a discrepancy between any answers. Moreover, we have prepared a data quality checks do-file that runs a data quality test on the responses collected from the field on a daily basis. With these checks we keep track of the number of respondents covered each day, scanning for any duplicate entries and the gender presentation from each locality.

We did not encounter any missing variables in the baseline data. All the consenting respondents submitted all questions in the survey. We will attempt to minimise missing data and attrition for the future rounds by switching to two repeat attempts to make contact with the respondent (instead of one attempt used at baseline). If there are missing variables, we will use the sample with missing data and run a robustness check with a balanced panel and the Inverse-Probability Weights (IPW).

7. Administrative information *(required)*

Funding: We received funding from IGC Jordan for the data collection.

Institutional Review Board (ethics approval): We have IRB approval from NYU Abu Dhabi for conducting this study.

Declaration of interest: The authors declare having no competing interests.

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