Wage Expectations and Job Search

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PRELIMINARY AND INCOMPLETE – PLEASE DO NOT CIRCULATE

Abstract

We conduct a field experiment to study how unemployed job seekers' subjective wage expectations shape their job search behavior and labor market outcomes. Using matched survey-administrative data from more than 9,000 unemployed workers in Denmark, we first document that job seekers anchor their wage expectations to their pre-unemployment wages by more than is objectively justified. A random half of the sample is provided with information about the objective wage potential of comparable workers, leading them to update their own wage expectations accordingly and to adjust their job search strategies. Ultimately, the treatment increases re-employment probabilities among both previous over- and previous under-estimators, but through different mechanisms. Initial over-estimators lower their reservation wages and increase their search effort. Initial under-estimators increase their reservation wages and redirect their job search to vacancies closer to their residence. Consistent with a reduction in search frictions in local labor markets—which is unanticipated by workers—they find re-employment sooner and at higher wages.

JEL-Codes: D83, D84, J64.

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1 Introduction

Job search is a complex process that requires job seekers to make high-stakes decisions under uncertainty. While traditional models of job search assume full information and rational expectations (Burdett and Mortensen, 1998; McCall, 1970; Mortensen and Pissarides, 1994; Pissarides, 1985), an increasing body of empirical evidence suggests the presence of information frictions and misperceptions (Krueger and Mueller, 2016; Mueller and Spinnewijn, 2023; Mueller et al., 2021). Such frictions could lead to distortions in job seekers' decisions. For example, job seekers who are overly optimistic about their earnings potential might be more selective in their job search than warranted, extending their unemployment. To date, there is limited causal evidence on how job seekers' subjective expectations influence their search behavior and re-employment prospects.

In this paper, we provide causal evidence on the role of subjective expectations about re-employment wage offers—a key fundamental in standard models of job search—in shaping the actual job search behavior of unemployed workers. We conduct a large-scale field experiment with more than 9,000 job seekers in Denmark, which combines two central features.

First, we use an information provision experiment to introduce exogenous variation in job seekers' subjective wage offer expectations. To this end, we conduct a tailored online survey in which we first elicit job seekers' prior beliefs about the re-employment wages of comparable job seekers who recently found a job. We define these comparable workers for each survey participant based on a detailed set of characteristics, including earnings, industry of employment and full- or part-time status in their previous job as well as age, gender, and duration of unemployment. Subsequently, a randomly selected half of the respondents receive information on the true average re-employment wage of comparable individuals in the recent past. We compute these objective benchmarks from the universe of Danish workers as observed in administrative records. Our identification strategy relies on respondents' prior misperceptions about the re-employment wages of comparable workers. Our information treatment seeks to "correct" these misperceptions and we anticipate treated individuals to update their own wage expectations accordingly.[1]

Second, we link our survey data to administrative data on the respondents' job search behavior from Denmark's central job search platform, *jobnet.dk*, and their labor market outcomes as observed in the Danish labor market registers. The click-by-click data from the job search platform allows us to construct detailed measures of search effort, such as the overall number of clicks on job ads and applications, as well as the targeting of

[1] See Haaland et al. (2023) for a general discussion of our identification strategy using a "passive control group" that does not receive information.

different types of jobs. We supplement this information on actual search behavior with survey-based measures of individuals' planned job search, such as their reservation wages and their willingness to adjust the occupational or geographic scope of their search. Lastly, the administrative records provide us with precise information on job seekers' labor market outcomes, including their employment status and realized wages based on employers' reports to the tax authorities.

We start by describing our respondents' prior beliefs. The average job seeker in our sample is fairly well-calibrated, overestimating the earnings potential of comparable workers by only about 2%. Yet, this average conceals considerable heterogeneity. Most notably, job seekers seem to anchor their wage expectations on their pre-unemployment wage. While the average respondent correctly anticipates the direction of wage changes experienced by other workers relative to their previous salary, they underestimate the magnitude of these changes.

Our information experiment aims to generate random variation in respondents' expectations about the wage offers they will receive. In line with a role for learning from information, we expect the exogenous change in beliefs to depend on the direction and magnitude of the "information shock". For the empirical analyses, we therefore divide our sample into five groups based on their prior perception gap—the log difference between the actual average re-employment wage of comparable workers and the respondent's prior perception. One group serves as a "neutral" reference category, consisting of participants whose perception gap is between -2.5% and $+2.5\%$. The other four groups are segmented into moderate positive and negative perception gaps (i.e., between $\pm 2.5\%$ and $\pm 15\%$) and large positive or negative perception gaps (i.e., greater than $\pm 15\%$).

Treated individuals update their expectations about the next wage offer in a manner consistent with the information they receive. For instance, those who were initially overly optimistic and received a negative information shock of 15% or more expect their next wage offer to be 4% lower than control group respondents with similar prior beliefs. Initially pessimistic job seekers who receive a positive shock of 15% or more increase their wage expectations by 5.2%. Those whose initial beliefs are confirmed by the treatment do not update their expectations about wage offers, suggesting that side-effects of the treatment, such as salience, are of minor importance (Haaland et al., 2023). The treatment effects on expected offer wages persist in a follow-up survey conducted about two weeks after the initial intervention, in which numerical anchoring or experimenter demand effects likely play a limited role (de Quidt et al., 2018).

Having established these first-stage effects of the intervention on expected wage offers, we next explore downstream effects on different dimensions of job search. The information shocks strongly pass through to job seekers' reservation wages as measured in our survey. For example, the group of highly overoptimistic job seekers—who lower their expectations about the offered wage by 4%—reduce their reservation wage by ap-

proximately 2%. Conversely, respondents that initially exhibit a high level of pessimism increase their reservation wages by an average of 4%, respectively.

Among those who were initially highly overoptimistic, treated respondents not only reduce their expected and reservation wages but also increase their search effort. Specifically, job seekers who receive a large negative shock, on average, click on 1.4 more job ads on the public employment service's official job board—an increase of approximately 25%. This response aligns with the notion that the negative update causes job seekers to recognize the need to search harder to find a suitable job. Given the increased search effort and the decreased reservation wages the treatment induces in this group, it is not surprising that job finding rates improve significantly in response to the treatment. In particular, effect sizes for re-employment correspond to five percentage points, both two and four months after the intervention. At the same time, individuals who received a negative information shock and find re-employment earn 10% lower monthly wages.

Among job seekers who are initially highly pessimistic, the treatment has no effect on search effort. However, the treatment makes exposed respondents more selective not only in terms of their wage demands but also in the geographic scope of their search. In particular, those who were initially highly pessimistic reduce their willingness to relocate and commute for a new job in response to the treatment. Consistent with these self-reported intentions, the intervention reduces the geographic radius of actual job applications registered on the official online platform of public employment services in Denmark. The treatment does not affect other observed dimensions of job search, such as targeted occupations.

The implications of these changes in search behavior for the re-employment prospects of positively shocked job seekers are ex-ante ambiguous. On the one hand, increased selectivity should reduce job finding and thereby lower re-employment prospects. On the other hand, a growing literature suggests that local job search is often more effective than job search in remote areas (Caliendo et al., 2023b; Heise and Porzio, 2022; Manning and Petrongolo, 2017; Schmutz and Sidibé, 2019). Thus, narrowing job seekers' geographic scope might enhance re-employment prospects. Our findings support this notion: Two months after the intervention, the employment rates of initially pessimistic treated job seekers are significantly higher than those of their counterparts in the control group—an effect that is driven by local employment within job seekers' own municipality.

The treatment effects on beliefs, job search decisions and labor market outcomes among respondents receiving "moderate" exogenous updates generally align with the effects among those with more extreme priors but are smaller and more noisily measured. Our intervention has small and mostly insignificant effects among respondents in the "neutral" group, whose prior beliefs are confirmed by the treatment.

Our study builds on and contributes to several strands of the literature. Most directly related, a growing body of research studies the role of subjective beliefs in unemployed

workers' search behavior (see Mueller and Spinnewijn, 2023, for an overview). This literature suggests that job seekers tend to be overly optimistic about their job finding prospects (Balleer et al., 2021; Mueller et al., 2021; Spinnewijn, 2015) and seem to misperceive their earnings potential (Caliendo et al., 2023a; Conlon et al., 2018; Drahs et al., 2018; Krueger and Mueller, 2016). In contrast to previous studies, we elicit job seekers' beliefs about the re-entry wages of recent job seekers within the same narrowly defined demographic group. This approach asks the respondents to abstract from their idiosyncratic circumstances—which are unobserved by the researcher—and thus enables us to clearly characterize misperceptions at the individual level. Most importantly, by leveraging the "ground truth" observed in administrative records in an information treatment, we show that job seekers' misperceptions causally shape their search behavior and labor market outcomes.

Other previous and concurrent work studies the role of subjective wage expectations in contexts beyond the job search of unemployed workers. For example, Cortés et al. (2023) and Jiang and Zen (2023) examine how college graduates' earnings expectations shape initial career choices, with implications for gender differences in entry-level wages.[2] Jäger et al. (2024) show that currently employed workers in Germany anchor their beliefs about outside options too strongly on their current wages, and that correcting these misperceptions changes workers' intentions regarding job switching and wage negotiations.

Studying the role of beliefs in job search is notoriously challenging due to the difficulty of surveying large samples from relevant populations. Our dataset stands out for its exceptionally large and representative sample of unemployed job seekers. Another distinctive feature of our study is its combination of rich survey data on workers' subjective beliefs with precise measures of actual job search behavior and labor market outcomes from administrative records—going beyond self-reported intentions and plans. The depth of our data allows us to examine how earnings expectations shape various aspects of job search, including its geographical and occupational scope. We thereby also speak to a literature on how individuals trade off wages against non-wage job attributes—such as local proximity—when searching for employment (Le Barbanchon et al., 2021; Escudero et al., 2024; Maestas et al., 2023).

Other field experiments in labor economics examine the effects of directing job seekers to consider specific jobs or occupations (Altmann et al., 2022; Le Barbanchon et al., 2023; Behaghel et al., 2022; Belot et al., 2019, 2022) or of broad interventions such as job fairs and mentoring that alleviate search frictions and misperceptions (Abebe et al., 2023; Alfonsi et al., 2022; Bandiera et al., 2023; Banerjee and Sequeira, 2023). While maintaining the external validity of a field experiment, our intervention is close

[2]Carranza et al. (2022) and Kiss et al. (2023) show how access to assessment results about absolute and relative skills shapes job search decisions of labor market entrants in a developing country context.

to being a clean "mechanism experiment": we isolate the effect of one key fundamental in search models—perceptions about available wage offers—on various dimensions of job search. At the same time, our findings have an important policy implication: they illustrate how a low-cost, tailored information intervention can support job seekers in finding re-employment.

Lastly, our findings speak to a literature leveraging observational data to study the determinants of job seekers' search intensity (DellaVigna et al., 2022; Faberman and Kudlyak, 2019; Marinescu and Skandalis, 2021) and reservation wages (Banfi and Villena-Roldan, 2019; Fluchtmann et al., 2024; Krueger and Mueller, 2016), including the role of subjective beliefs (Conlon et al., 2018; He and Kircher, 2023). We provide experimental evidence on how beliefs about one's earnings potential shape search effort, reservations wages and labor market outcomes.

2 Empirical setup

2.1 Unemployment benefits and job search in Denmark

Denmark's unemployment benefits system operates on a two-tier structure, similar to other developed countries. Displaced workers who have paid voluntary contributions for at least 12 months within the past three years are eligible to receive unemployment insurance (UI) benefits for up to two years. These benefits replace 90% of previous income, capped at DKK20,359 (≈USD2,850; values for 2024). When UI benefits expire, or if individuals previously chose not to contribute to the UI system (about 15% of Danish wage earners), they may apply for means-tested social assistance, which provides substantially lower support. For a single person, the maximum social assistance benefit is DKK12,326 per month (≈USD1,730).

While receiving unemployment benefits, individuals must actively search for new employment. This requirement applies to both UI and social assistance recipients, as long as they are deemed capable of working full-time by their caseworker. The official online platform of Denmark's public employment services, *jobnet.dk*, serves as the primary interface between unemployed workers and public employment services. All benefit recipients are required to log in at least once per week. The platform features a comprehensive vacancy database, which is one of Denmark's two most frequently used job boards and includes approximately 90% of all posted job openings in the country. In addition, benefit recipients must record their search activities—including details of each application—in a centralized online system (*joblog*) (see Fluchtmann et al., 2024, for further details). Typically, benefit recipients must submit at least two applications per week, while there are no restrictions on the types of jobs they can apply for.

2.2 Objective benchmarks and earnings information

Our survey elicits prior beliefs and provides information on the re-employment earnings of past job seekers similar to the respondent. Our approach of focusing on *population-level* beliefs has the core advantage that it abstracts from the individual respondent's idiosyncratic circumstances, which are unobserved by the researcher. Thereby, it facilitates a comparison of beliefs to a clearly defined "ground truth" observed in the register data and it allows us to communicate this "ground truth" to our respondents in an information provision experiment, with the aim of inducing exogenous variation in beliefs. We now describe how we define demographic cells and calculate earnings projections.

We define comparable workers as unemployed job seekers in the last ten years who shared the following seven characteristics with a given survey respondent when they found re-employment: age ($\leq$35 years, 36-50 years, $>$50 years), gender (male, female), education (at most lower secondary, upper secondary, tertiary), type of previous employment (10-29 hours per week, 30 hours per week or more), current length of unemployment in months ($\leq$3, 4-6, 7-9, 10-12, 13-18, 19-24, $>$24), previous monthly salary (ten/six brackets for previously full-time/part-time employed), and previous industry (seven categories). This approach yields a total of 14,112 demographic cells.

When specifying the cells, we had several key objectives. First, all selected characteristics have to be observable in the register data. Second, our chosen dimensions must allow survey respondents to easily self-classify. Third, the cells should be sufficiently granular for the respondents to consider them meaningful for their own situation. Fourth, the selected characteristics should be strong predictors of re-employment wages in Denmark. Finally, for ethical reasons, the information about re-entry earnings derived from the registers should meet a minimum precision standard. To this end, we set a minimum threshold of 20 observations per cell in the register data and exclude survey participants whose characteristics place them in cells below this cutoff.

For our information treatment, we calculate the average monthly re-employment earnings before taxes and deductions and excluding pension contributions within each cell. The data are taken from the Danish labor market registers and include all unemployed job seekers who found re-employment within the period 2013-2022—the ten years before we ran our survey. Appendix Table A.1 displays results from a multivariate regression of log re-employment earnings on variables capturing our seven selected demographic dimensions. The wage an individual earned in their previous job is a strong predictor of the wage in the new job, although the relationship is weaker than one: a 10% higher pre-unemployment wage is associated with a 1.5% higher re-employment wage. But also all other characteristics predict re-employment wages: men, those with higher education, middle-aged and older individuals, those who previously worked in construction or manufacturing, and those earlier in their spell secure higher re-employment wages. Collectively, the included covariates account for a substantial share of the observed wage

variation ($R^2 = 0.231$).

Are unemployment spells associated with wage hikes or wage penalties? Appendix Figure A.4 Panel A plots the log difference between re-employment and pre-unemployment earnings. On average, unemployment spells are associated with a 9 pp. decrease in earnings. Appendix Figure A.4 Panel B displays a binned scatter plot of re-employment against pre-unemployment earnings. Workers with log pre-unemployment earnings of 10.2 or higher (DKK26,900≈USD3,742) on average face wage penalties, while those with lower earnings on average achieve wage hikes.

2.3 Survey administration and sample

In October 2023, we invited 83,591 Danish unemployment benefit recipients to a voluntary survey.[3] Invitations were sent via Denmark's official digital government mail system, followed by a reminder after one week to non-respondents. The survey remained open for approximately five weeks. Everyone who completed the main survey received an invitation to a follow-up survey about a week later. To incentivize participation in both the main and the follow-up survey, we raffled a total of 30 gift cards, each worth DKK1,000 (≈USD140).

Overall, 13,234 individuals completed the main survey, yielding a response rate of 15.83%. Individuals who (i) have already accepted a job, (ii) exclusively consider part-time employment, (iii) have never been employed before, or (iv) belong to a population cell with fewer than 20 observations in the register data do not participate in the experiment but are instead directed to a shortened version of the survey. We do not make use of these observations in our analysis. As pre-specified, we additionally drop the top and bottom percentiles in terms of survey response time from the remaining sample, since extremely high or low response time likely indicates inattention to the survey. Our final sample consists of 9,322 respondents, out of which 3,912 also participated in the follow-up.

Table 1 presents summary statistics and balance checks for both the main and the follow-up sample, including population benchmarks. Our sample resembles the population of job seekers closely in terms of observables. One exception is a higher average education among our participants—a common feature in online surveys (Haaland et al., 2023). The sample is balanced between treatment and control group, both in the main and in the follow-up sample. As pre-specified, we nevertheless control for a battery of observable characteristics in all our estimations.

[3]This includes all UI beneficiaries and social assistance recipients deemed fit for full-time work by their caseworker as of October 22, 2023.

Table 1 Summary statistics

	Mean value			p-value	Mean value			p-value
	(1) Main	(2) Main Treated	(3) Main Control	(4) Treated = Control	(5) Follow	(6) Follow Treated	(7) Follow Control	(8) Treated = Control
Age								
below 36	0.33	0.33	0.33	0.72	0.27	0.27	0.27	0.97
36-50	0.27	0.27	0.26	0.78	0.25	0.25	0.25	0.96
above 50	0.41	0.40	0.41	0.56	0.48	0.48	0.48	0.94
Gender								
Female	0.56	0.57	0.55	0.19	0.52	0.54	0.50	0.02
Male	0.44	0.43	0.45	0.19	0.48	0.46	0.50	0.02
Level of education								
University	0.50	0.51	0.49	0.03	0.53	0.53	0.53	0.89
High school	0.38	0.37	0.39	0.02	0.37	0.37	0.38	0.87
Below high school	0.12	0.12	0.12	0.92	0.10	0.10	0.10	0.97
Previous employment								
full-time	0.87	0.87	0.87	0.79	0.89	0.88	0.89	0.52
part-time	0.13	0.13	0.13	0.79	0.11	0.12	0.11	0.52
Elapsed unemployment duration in months	6.64	6.59	6.69	0.52	6.78	6.69	6.88	0.40
Previous industry								
Agriculture	0.01	0.01	0.01	0.27	0.01	0.01	0.01	0.51
Manufacturing	0.12	0.12	0.12	0.72	0.12	0.12	0.13	0.27
Construction	0.05	0.05	0.05	0.54	0.04	0.04	0.05	0.30
Trade	0.22	0.22	0.23	0.23	0.20	0.20	0.20	0.97
Business services	0.21	0.21	0.20	0.64	0.23	0.24	0.22	0.41
Public sector	0.31	0.32	0.30	0.03	0.32	0.33	0.31	0.28
Other services	0.08	0.08	0.09	0.25	0.08	0.07	0.08	0.36
Previous monthly wage in DKK	31,111	31,222	31,000	0.49	33,474	33,290	33,663	0.48
F-test of joint significance				0.896				0.758
Observations	9,247	4,628	4,619	9,247	3,903	1,974	1,929	3,903

2.4 Surveys

We now describe our main survey, which includes an information provision experiment, and the follow-up survey. Appendix Figures A.1 and A.3 display flowcharts for the structure of the main and the follow-up survey. The full instructions for the two surveys can be found in Appendix B.

Background characteristics and prior beliefs Our main survey starts with eliciting respondents' background characteristics along the seven dimensions age, gender, education, current length of unemployment, and full-time or part-time status, monthly salary and industry in the previous job. Individuals who are not eligible then immediately proceed to the end of the survey. All other respondents are asked to estimate the average re-employment wage of unemployed job seekers in the last ten years "similar" to the respondent at the time when they took up a new job. We explicitly repeat the seven

demographic characteristics and explain that we are interested in average monthly gross salaries before taxes and excluding pension contributions of past job seekers sharing the seven characteristics with the respondent.

Tailored information treatment A random half of the sample is then informed about the actual average re-employment salary of Danish job seekers within the respondent's demographic cell. The information is presented as an interactive bar chart that displays the pre-unemployment wage, the respondent's prior belief about the re-employment wage, and the actual average re-employment wage in the cell as calculated from Danish register data. Above the bar chart, the actual re-employment wage of comparable workers is displayed as a numerical value. Appendix Figure A.2 displays an example treatment screen. Respondents in the control group do not receive any information and instead immediately proceed to the next part of the survey.

Posterior beliefs and survey-based outcomes After the treatment stage, we elicit the respondents' posterior beliefs and other outcomes. In particular, the respondents report point estimates of the salary they themselves expect to be offered if they receive a full-time job offer within the next four weeks. Next to the point estimate, they also report their perceived probabilities that the next offered wage falls into five different bins, which are mutually exclusive and collectively exhaustive. The bins are centered around the respondents' wage in their previous job. Finally, we elicit various outcomes related to respondents' job search behavior. For instance, the respondents report the lowest wage at which they would accept a full-time job offer within the next four weeks—i.e., their reservation wage—, their planned search effort in the following week, and measures related to the occupational and geographic scope of their search. We elicit several additional measures, which we describe as we present our results.

Follow-up survey To address the concern that immediate treatment effects on our main outcomes of interest reflect experimenter demand effects or numerical anchoring, we re-elicit these outcomes in our follow-up survey, where such concerns should be mitigated (de Quidt et al., 2018; Haaland et al., 2023). In particular, we re-elicit respondents' beliefs about the average population-level re-employment wage at the cell level, their expected wage in the next job offer (as point forecast and subjective distribution) and their reservation wage. Crucially, the follow-up survey does not provide respondents with any additional information, nor does it repeat the initial information.

2.5 Data on actual job search

To examine the effects of our intervention, we mostly rely on administrative data on job search and labor market outcomes. Compared to survey-based outcomes, such data are

immune to concerns such as experimenter demand effects, consistency bias, intention-behavior gaps, and measurement error due to imperfect recall.

We link our survey data with non-self-reported outcome data from three sources. First, we exploit comprehensive register data from Statistics Denmark on our respondents' labor market outcomes. Specifically, we observe monthly measures of workers' employment status, working hours, labor earnings and occupation as reported by their employers. Second, we leverage data on the respondents' job applications as they were collected in the centralized online system of public employment services, (*joblog*). These data enable us to examine how job seekers allocate their job applications across geographical areas and occupations. While the joblog data should give us a reliable impression of how job seekers direct their search, it does not accurately capture the intensity of search. This is because many job seekers exactly comply with the requirement of documenting two applications per week, likely omitting any further applications they submitted (Fluchtmann et al., 2024). Second, it is unclear how much effort went into each application. Therefore, we also analyze click-by-click data from the job board of public employment services hosted on *jobnet.dk*. These data allow us to approximate individuals' search intensity by tracking the number of clicks on job openings.

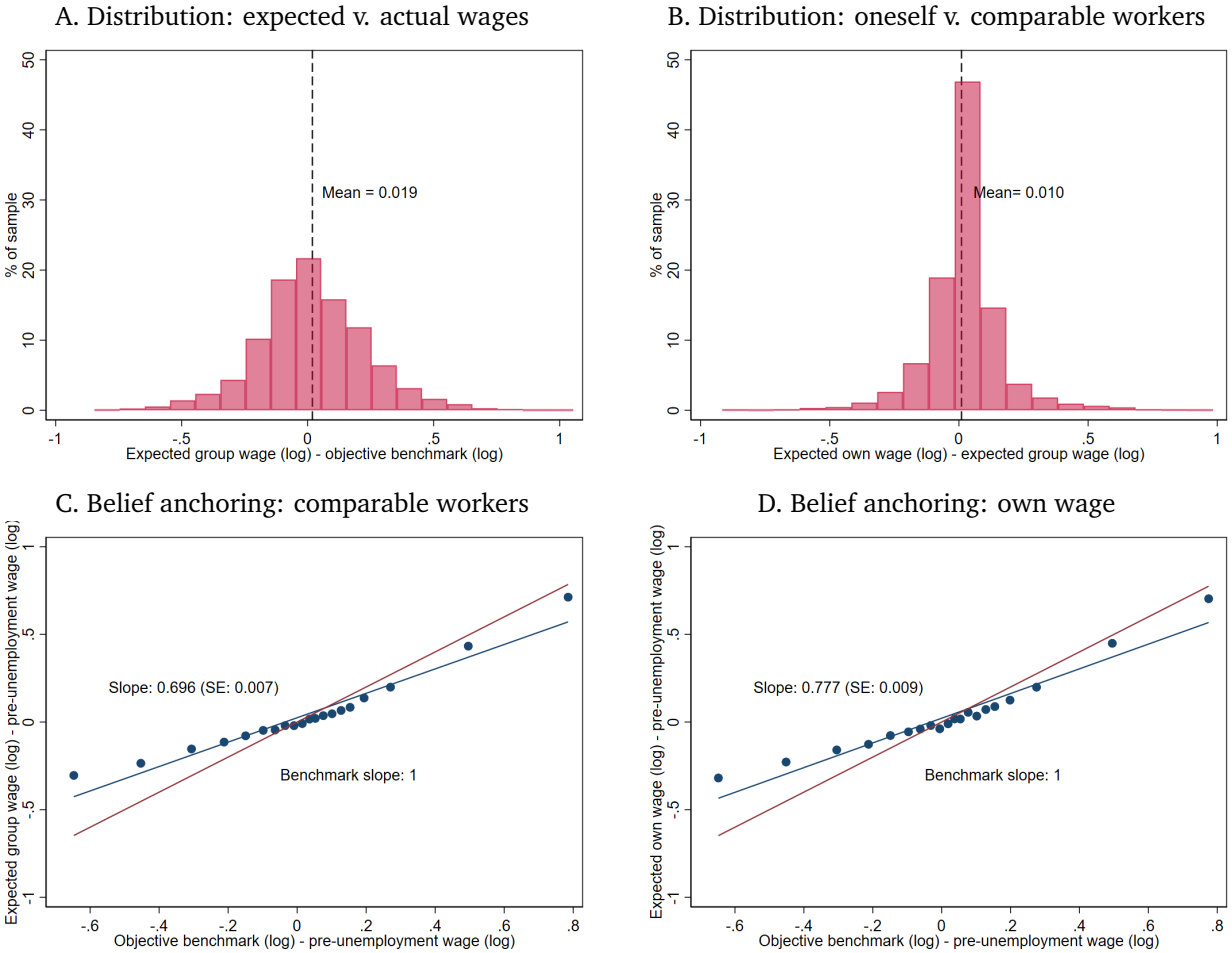
3 Results

3.1 Prior beliefs

Before examining the effects of the information treatment, we provide descriptive evidence on the respondents' earnings expectations in the absence of our intervention.

Misperceptions about earnings potential We start by comparing the respondents' prior beliefs about the re-employment wages of workers comparable to themselves to objective benchmarks. Panel A of Figure 1 presents the distribution of differences between job seekers' beliefs about the re-employment wages of comparable workers and the corresponding objective benchmarks. On average, the respondents are fairly well calibrated, overestimating re-employment earnings by only about 2%. However, this masks considerable heterogeneity, with a large share of our sample holding substantial misperceptions. For instance, 32% of our respondents exhibit an optimistic bias of more than 10%, while another 27% have a pessimistic bias of at least 10%. Appendix Table A.2 displays results from multivariate regressions of misperceptions on workers' background characteristics. Overoptimism about the earnings potential of comparable workers is most pronounced among job seekers who earned a relatively high wage in their previous job. Moreover, younger respondents, those further in their spell and those who previously worked in a full-time job tend to be more overoptimistic.

Figure 1 Characteristics of job seekers' wage expectations absent the treatment



Note: The figure illustrates job seekers' wage expectations in absence of the information intervention.
Panel A displays the distribution of differences between expected and actual re-employment wages of comparable workers. We include the full final sample, as these beliefs are elicited before the information treatment ($N = 9,322$).
Panel B displays the distribution of differences between the wage the respondents expect to be offered themselves and the re-employment wage of comparable workers. We include only individuals assigned to the control group, as beliefs about own wage offers are elicited after the information treatment ($N = 4,352$).
Panel C displays a binned scatter plot (with 20 bins) of the respondents' expected difference between average re-employment wages of comparable workers and the pre-unemployment wage against the actual wage change from pre- to post-unemployment among comparable individuals. We include the full final sample, as these beliefs are elicited before the information treatment ($N = 9,322$).
Panel D displays a binned scatter plot (with 20 bins) of the wage the respondents expect to be offered in their next job offer and the pre-unemployment wage against the actual wage change from pre- to post-unemployment among comparable individuals. We include only individuals assigned to the control group, as beliefs about own wage offers are elicited after the information treatment ($N = 4,352$).

Comparing oneself to others Next, we compare job seekers' beliefs about the reemployment wages of comparable workers to the wage they expect for themselves in their next job offer. Panel B of Figure 1 illustrates the distribution of these differences focusing on individuals assigned to the control group. On average, the respondents expect to earn slightly more than job seekers in the same demographic cell during the reference period. About 29% expect to earn the same wage as other workers with similar characteristics, while 37% expect to earn higher and 34% expect to earn lower wages. Overall, job seekers' beliefs about the wages of comparable workers and their own next offered wage are closely connected: the correlation coefficient between the two variables is 0.85, and approximately two-thirds of the respondents expect their offered wage to fall within $\pm$

10% of the average re-employment wage of comparable workers.

Anchoring on pre-unemployment wages Finally, we examine the extent to which workers anchor their beliefs about re-employment wages on the wage in their previous job. Figure 1 displays binned scatter plots of the respondents' expectations about wage changes from the previous to the next job against actual wage changes among comparable workers. Panel C is based on the respondents' beliefs about the re-employment wages of comparable workers, while Panel D is based on the wage they expect to be offered themselves. The red line with a slope of one indicates the case where the respondents' beliefs are perfectly aligned with the objective benchmark. The black horizontal line at zero indicates complete anchoring on the previous wage, implying no perceived wage change.

Panel C highlights that the respondents anticipate wage changes for their reference group directionally but systematically underestimate their magnitude. This is illustrated by the blue line indicating the fitted relationship between perceived and actual wage changes. We estimate a slope coefficient of 0.7, suggesting that job seekers perceive comparable workers' re-employment wages to be closer to pre-unemployment wages than they actually are. For instance, when the objective benchmark indicates a ten percentage point larger wage decline, the respondents only expect a decrease by seven percentage points. This anchoring effect is asymmetric: it is pronounced for those predicted to face a wage penalty, while those predicted to incur a wage increase appear more well-calibrated. We detect similar patterns for the wage changes respondents expect for themselves rather than for comparable workers (Panel D).

Overall, unemployed job seekers appear to anchor their wage expectations more strongly on their pre-unemployment wages than justified. This finding is consistent with evidence that employed workers anchor their beliefs about outside options on their current wages (Jäger et al., 2024). Anchoring on pre-unemployment wages could be underlying the empirical pattern that job seekers set reservation wages close to their pre-unemployment wage (Le Barbanchon et al., 2019; Feldstein and Poterba, 1984; Koenig et al., 2023; Krueger and Mueller, 2016).

3.2 Updating of wage expectations

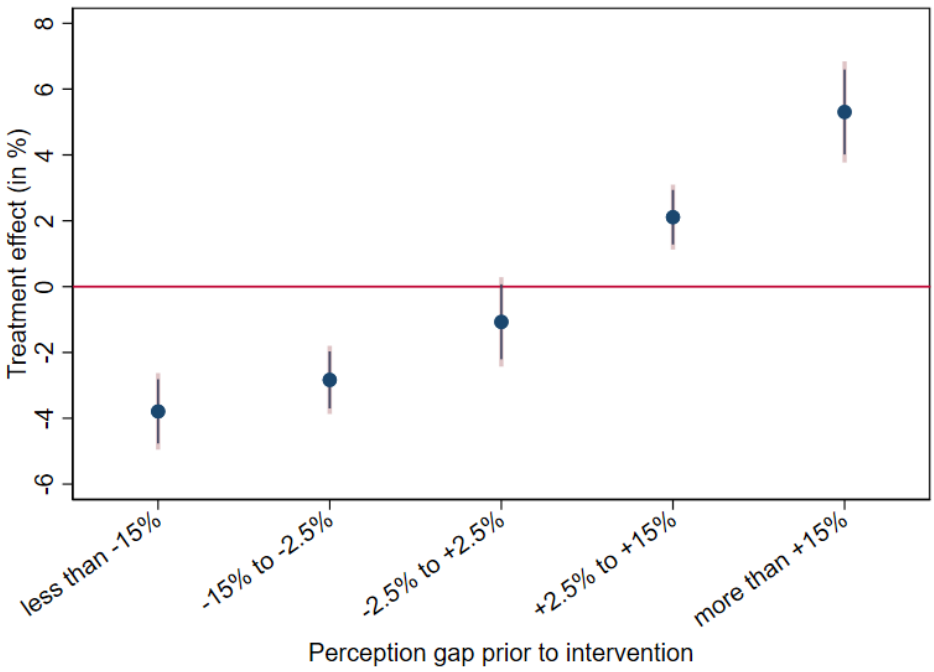
Next, we examine how job seekers update their expectations about the next wage they will be offered in response to information about the re-employment wages of comparable workers.

Treated individuals receive different information shocks depending on their prior belief and the actual re-employment wage of comparable workers: some learn that re-employment wages are higher than they previously thought, while others learn that re-employment wages are lower. To account for this, we divide our sample into five groups

with different perception gaps—the log difference between the average re-employment wage of comparable workers and the respondent's prior belief of this wage. A "neutral" group consists of respondents receiving only small information shocks, with perception gaps ranging from -2.5% to +2.5%. The other four groups are segmented into moderate perception gaps (i.e., between $\pm 2.5\%$ and $\pm 15\%$) and large perception gaps (i.e., larger than $\pm 15\%$). In our main analysis, we report treatment effects for these five groups separately. We provide robustness checks based on various alternative approaches to account for differences in perception gaps.

Point forecasts As shown in Figure 2, treated respondents consider the information about the re-employment wages of comparable workers relevant for their own expected wage offers. Specifically, individuals receiving a large positive signal—exceeding their prior belief by at least 15%—increase the wage they expect to be offered by 5.2% ($p < 0.001$) compared to control group respondents with similar prior beliefs. Conversely, job seekers receiving a large negative signal reduce their wage expectations by 3.8% ($p < 0.001$). Respondents with moderate perception gaps exhibit somewhat smaller yet highly statistically significant belief adjustments in the expected directions. Individuals in the neutral group do not significantly change their expectations about their next wage offer.

Figure 2 Treatment effects on expected wage offers



Note: The figure shows the effects in % of the information treatment (including 90%- and 95%-confidence intervals) on the wage respondents expect to be offered in their next job offer (log), separately for individuals with varying initial perception gaps regarding the earnings potential of comparable workers.
Number of observations: N=2,323 (less than -15%); N=1,980 (-15% to -2.5%); N=1,043 (-2.5% to +2.5%); N=2,178 (+2.5% to +15%); N=1,723 (more than +15%).

Persistence of belief updating One concern is that the initial changes in our respondents' expectations about their next wage offer are due to unconscious numerical anchoring on the treatment information rather than genuine belief changes (Cavallo et al., 2017). Such numerical anchoring is a short-lived phenomenon by definition and should not persist in a follow-up survey (Haaland et al., 2023). Similarly, experimenter demand effects should be mitigated in a follow-up survey, where the respondents are less likely to recall the exact details of the treatment manipulation (de Quidt et al., 2018). We therefore examine the persistence of the effects on the respondents' wage expectations in our follow-up survey conducted one to two weeks after the intervention.

Appendix Figure A.5 Panel A displays treatment effects on the respondents' beliefs about the re-employment wages of comparable individuals in the past, which we only elicit in the follow-up survey. We observe strong treatment effects in the expected directions, suggesting that the respondents remember the information they received one to two weeks earlier. Panel B presents estimated treatment effects on expectations about the respondents' own next wage offer, both as measured in the follow-up survey and as measured in the main survey among those who later also completed the follow-up. The negative updating about the wage in the next job offer among those receiving a large negative shock persists at almost the same magnitude. The effects among those with large positive or moderate perception gaps persist at a somewhat reduced size. These effects miss conventional levels of statistical significance, but are also statistically indistinguishable from the initial effects. Overall, the degree of persistence is consistent with other information provision experiments and suggests a limited role for numerical anchoring and demand effects (Haaland et al., 2023).

Subjective distributions We also examine the respondents' updating about the next wage offer as measured with a subjective probability distribution, which is centered around the individual's wage in their previous job. Appendix Figure A.6 presents treatment effects on the mean and the standard deviation implied by a respondent's distribution.[4] The estimates for the mean of the distribution are directionally aligned with our estimates based on point forecasts but somewhat smaller, One potential reason is that the respondents are more restricted in the beliefs they can express through the available bins. Receiving wage information significantly reduces the standard deviation of the perceived distribution among those in the "neutral group. This suggests that, for the group of job seekers whose initial point forecast is close to the objective benchmark, our intervention reduces uncertainty about their earnings potential. The treatment has no significant effects on uncertainty among those with moderate or large perception gaps.

[4]We calculate the mean and the standard deviations using the midpoints of the bins, assigning X and Y to the outer bins.

3.3 Job search behavior

Having established strong first-stage effects of the intervention on expected wage offers, we now explore its downstream effects on various dimensions of job search. We employ different data sources: measures elicited in our survey, the respondents' search behavior on the public employment services' job board, and the respondents' registered job applications. The main results are presented in Figure 3, while Appendix Table A.5 presents additional evidence on several complementary outcomes.

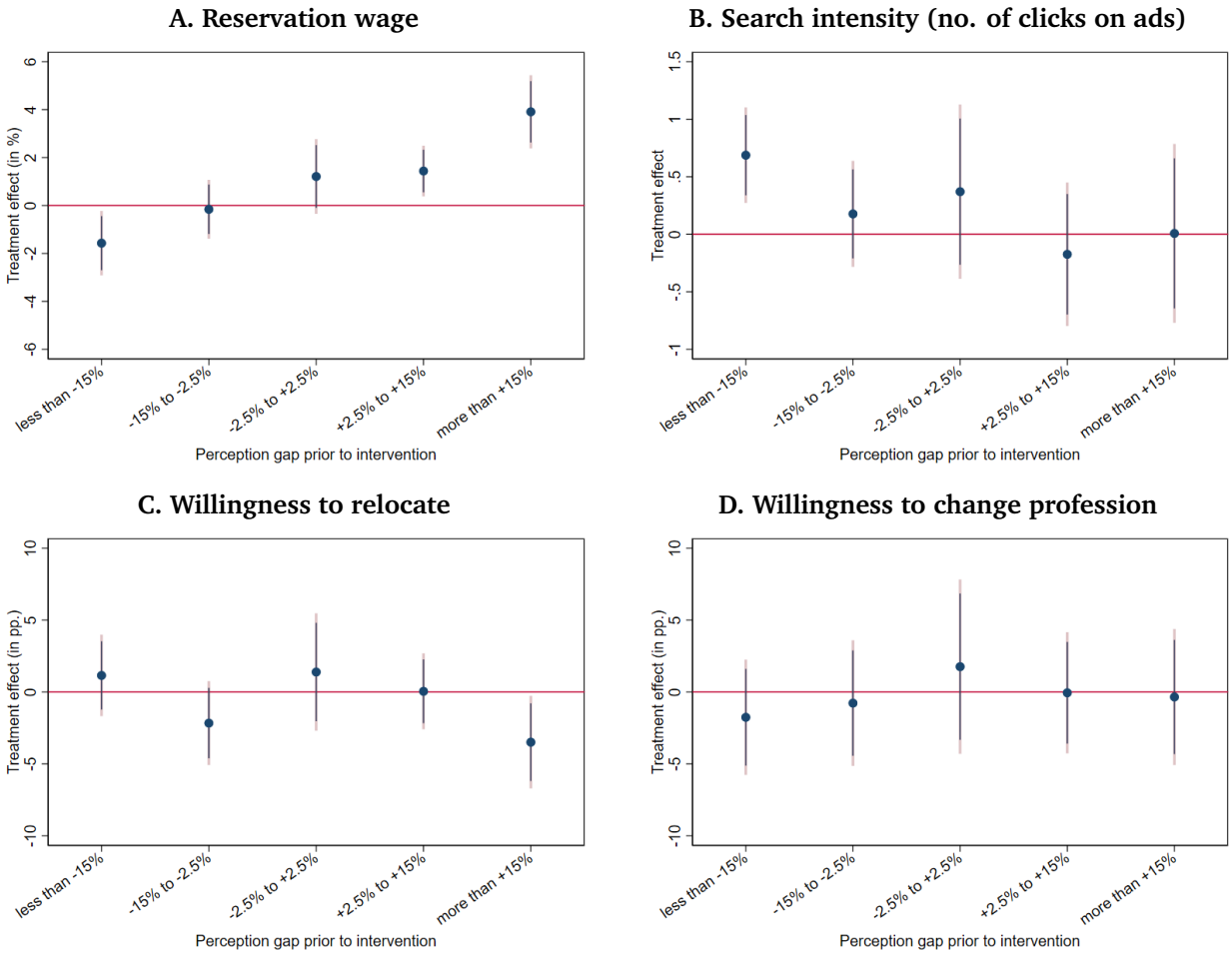
Reservation wages We start by examining treatment effects on job seekers' reservation wage—the lowest wage they would accept. As shown in Panel A of Figure 3, the information shocks strongly pass through to job seekers' reservation wages as measured in our survey. For instance, highly overoptimistic job seekers with a perception gap below -15%—who revise their wage expectation downward by 3.8%—lower their reservation wage by 1.7% ($p = 0.022$). Conversely, treated job seekers who are initially moderately or strongly pessimistic increase their reservation wages by 1.8% ($p = 0.0XX$) and 4.0% ($p < 0.001$), respectively. Moderate negative and neutral information shocks have no significant effect on reservation wages.

Search intensity Next, we analyze treatment effects on respondents' search intensity by examining their actual search behavior on Denmark's public employment services online platform. Specifically, we calculate the frequency with which job seekers click on job ads in the platform's embedded job board during the week following the survey (see Panel B of Figure 3). Our intervention encourages job seekers who were initially highly over-optimistic to increase their search activities: within this group, treated individuals click on 1.4 more job ads ($p = 0.006$), amounting to a substantial increase by 25% compared to the control group. Positive or smaller negative shocks have no significant effect on the job seekers' search intensity.

Broadness of search Upon updating their expectations about wage offers, job seekers may adjust their selectivity not only in terms of their reservation wage but also in terms of the geographical and occupational scope of their search. We therefore examine treatment effects on additional outcomes capturing these dimensions: survey measures of respondents' willingness to relocate, commute, or switch professions to secure employment as well as the geographical search radius and the occupational breadth of their actual applications registered on the online platform.[5] We find no indication that the intervention leads to an adjustment in the occupational focus of the respondents' search. However, large positive information shocks affect the geographic scope of job search: as

[5]Previous evidence by Fluchtmann et al. (2024) suggests that registered job applications are representative of the allocation of applications across regions and occupations in Denmark. At the same time, exact compliance with the reporting requirement of two applications per week is high, meaning that registered applications may not fully capture job seekers' actual search intensity. Therefore, we rely on the job seekers' clicks on job ads as a more accurate measure of their search intensity.

Figure 3 Treatment effects on job search behavior



Note: The figure shows the effects of the information treatment (including 90%- and 95%-confidence intervals) on individuals' job search behavior. The reservation wage (log), as well as the willingness to relocate and to change profession are measured in the main survey. The search intensity refers to the number of clicks on job ads on the online platform of public employment services, *jobnet.dk*, measured within the first week after the survey. We show separate estimates for individuals with varying initial perception gaps, that is, who receive varying information shocks regarding the wage potential of comparable workers.
No. of observations: N=2,323 (less than -15%); N=1,980 (-15% to -2.5%); N=1,043 (-2.5% to +2.5%); N=2,178 (+2.5% to +15%); N=1,723 (more than +15%).

shown in Panel C of Figure 3, such shocks reduce the willingness to accept a job that would require relocation by 3.5 percentage points (-27%; $p = 0.029$). As shown in Appendix Table A.5, such shocks also reduce the respondents' willingness to commute by 4.3 percentage points (-9%; $p = 0.073$). The reduced geographic scope of the respondents' search upon updating positively about their earnings potential is also visible in actual job applications submitted by the respondents (Appendix Table A.5, Column 2).

3.4 Labor market outcomes

Lastly, we examine the causal effects of shifting job seekers' beliefs on their subsequent labor market outcomes. Our primary outcomes are dummy variables indicating whether individuals are back in paid employment two or four months after the intervention, as recorded in the administrative register data. We also assess the characteristics of the

resulting job matches, including monthly earnings, working hours, and the geographic location of employment.

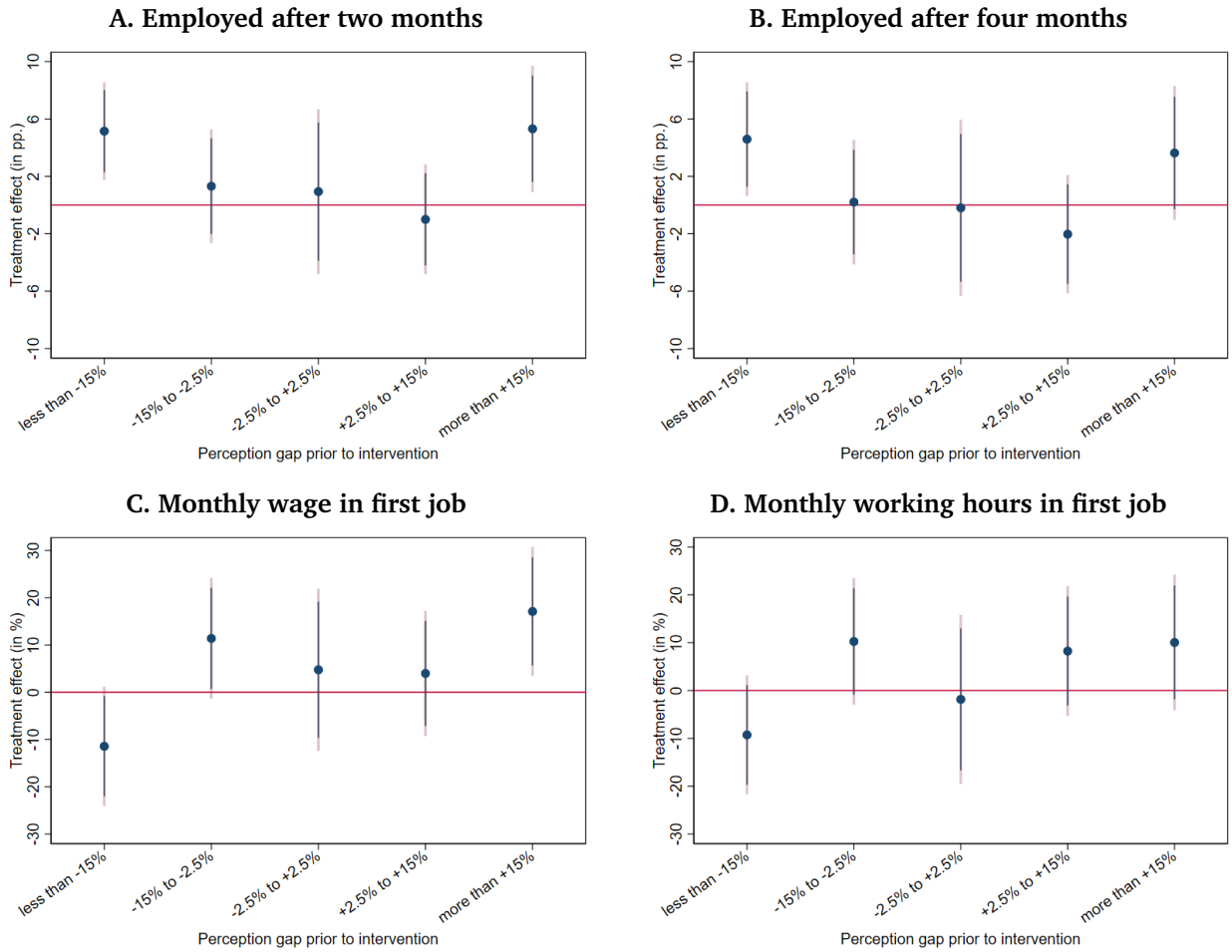
Large negative information shocks Our previous results show that job seekers who were initially highly overoptimistic lower their reservation wage and increase their search intensity in response to the information treatment. Given these adjustments in search behavior, we expect treated respondents within this group to secure employment more quickly than their counterparts in the control group. Panel A and Panel B of Figure 4 confirm that this is indeed the case: the treatment increases employment rates two and four months after the intervention by 5.0 percentage points (+19%; $p = 0.007$) and by 4.8 percentage points (+XX%;$p = 0.0XX$), respectively.

Beyond treatment effects on employment rates, we examine the realized wages and working hours in the respondents' first job after the intervention. As shown in Panel C of Figure 4, treated individuals who receive a large negative signal earn approximately 10% less than their counterparts in the control group ($p = 0.0XX$). This effect on realized wages is consistent with the reduction in job seekers' reservation wages. Moreover, Panel D of Figure 4 shows no statistically significant differences in monthly working hours between treated and non-treated job seekers. However, the treatment effect is directionally aligned with the effect on monthly wages, suggesting that the effects on earnings partially reflect changes in working hours. When interpreting the effects on wages and working hours, it is important to keep in mind that—unlike employment status—these outcomes are only observed for job seekers who ultimately secure a job. Consequently, treatment differences in wages and working hours may, to some extent, reflect a differential selection between treated and non-treated job seekers into employment.

Large positive information shocks Job seekers who were initially highly pessimistic become more selective in response to the treatment, not only by demanding a higher wage but also by reducing their search radius. The implications of these changes in search behavior for their re-employment prospects are ex-ante ambiguous. On the one hand, higher selectivity reduces the set of potential matches and should thereby lower re-employment prospects. On the other hand, previous evidence highlights the importance of spatial search frictions, which make it more difficult to find employment in remote areas (see, among others, Heise and Porzio, 2022; Manning and Petrongolo, 2017; Schmutz and Sidibé, 2019). Therefore, narrowing the geographic scope of job search could improve its effectiveness and thereby increase job finding rates. The results presented in Panel A of Figure 4 support this idea: two months after the intervention, the employment rate among initially pessimistic treated job seekers is 4.8 percentage points higher (+17%; $p = 0.030$) than among their counterparts in the control group.

Notably, the additional job matches occur primarily within the local labor market: the likelihood that job seekers are employed in the same municipality as their place of residence at the time of the main survey increases by 4.2 percentage points ($p = 0.027$; see

Figure 4 Treatment effects on labor market outcomes



Note: The figure shows effects of the information treatment (including 90%- and 95%-confidence intervals) on labor market outcomes as observed in the administrative records. We show separate estimates for individuals with varying initial perception gaps, that is, who receive varying information shocks regarding the wage potential of comparable workers.
Panel A and B consider indicators for being employed two and four months after the initial survey. No. of observations: N=2,323 (less than -15%); N=1,980 (-15% to -2.5%); N=1,043 (-2.5% to +2.5%); N=2,178 (+2.5% to +15%); N=1,723 (more than +15%).
Panel C and Panel D consider the monthly wage (log) and the number of working hours (log) in the first job after the the initial survey. The estimates are based on job seekers who secure employment within five months. No. of observations: N=1,280 (less than -15%); N=1,138 (-15% to -2.5%); N=643 (-2.5% to +2.5%); N=1,309 (+2.5% to +15%); N=1,026 (more than +15%).

Column 3 of Appendix Table A.5). Thus, local employment accounts for approximately 88% of the increase in the employment rate following a large positive information shock. At the same time, the geographical distance between the first workplace after the unemployment spell and the place of residence at the time of the main survey is 11% lower for treated than for non-treated individuals ($p = 0.089$; Column 4 of Appendix Table A.5). This explanation requires the respondents to be initially not fully aware of the difficulties in distant job search, as explained in more detail in Section 4 below.

The effect of receiving a strongly positive shock on employment rates becomes somewhat smaller and loses statistical significance at the four-month horizon (Figure 4 Panel B). Those who receive a large positive shock earn on average 5% more than similar workers in the control group ($p = 0.0XX$; Panel C), consistent with the increase in their reservation wages. They also work somewhat more hours, though the effect is statistically insignificant ($p = 0.0XX$; Panel D).

Moderate shocks and neutral group The effects on employment rates among those who receive moderate shocks or neutral information are close to zero and statistically insignificant Figure 4 Panels A and B). Similarly, there are no significant changes in monthly working hours and earnings in their first job after unemployment. These patterns are consistent with the mostly muted effects on job search behavior within these groups.

3.5 Additional evidence and robustness

We now provide some additional evidence and various robustness checks of our findings.

Correlational analysis We assess how misperceptions about the earnings potential of comparable workers are correlated with beliefs, job search and labor market outcomes of control group respondents. Specifically, we regress our main outcomes on the actual log re-employment wage of comparable workers, four dummy variables indicating perception gaps of different size (between $\pm 2.5\%$ and $\pm 15\%$ as well as larger than $\pm 15\%$, as in our experimental analysis), and control variables. The coefficient estimates on the dummies thus indicate differences compared to the "neutral" group with no misperceptions.

The results are shown in Appendix Table A.8. We focus our discussion on the two groups with large biases. Those who are initially strongly over-optimistic—with perception gaps lower than -15%—expect and demand higher wages, search less (though insignificantly so), find employment later, and earn higher wages upon re-employment. These patterns are exactly opposite to the treatment effects within this group, suggesting that the treatment offset the impact of initial biases. Among those who are initially strongly pessimistic—with perception gaps exceeding 15%—, the patterns are smaller and mostly statistically insignificant but also carry opposite signs to the experimental results: respondents in this group expect and demand lower wages, are more willing to relocate to secure employment, and need more time to find employment. Unlike our experimental evidence, this correlational analysis is susceptible to omitted variable bias, reverse causality and measurement error. Nevertheless, the results broadly align with our main evidence.

Alternative specification In our main analysis, we analyze treatment effects separately for five groups with different initial misperceptions. We now estimate the following common alternative specification on the full sample:

$$\begin{aligned} y_i = \beta_0 &+ \beta_1 \times \text{Treatment}_i \times \text{Perception gap}_i \\ &+ \beta_2 \times \text{Treatment}_i + \beta_3 \times \text{Perception gap}_i + \Pi \mathbf{X}_i + \epsilon_i. \end{aligned} \tag{1}$$

The coefficient β_1 indicates how a one unit larger information shock affects the outcome of interest. β_2 captures treatment effects to the extent they do not linearly depend on the perception gap, while β_3 controls for permanent differences across individuals with different priors. The results are shown in Appendix Table A.9. Consistent with our main evidence, the estimates of β_1 highlight statistically significant adjustments in the respondents' expected, demanded and realized wages and their search intensity, and changes in their willingness to relocate that narrowly miss statistical significance. The treatment also significantly increases re-employment rates—but independently of the perception gap. This is intuitive given our earlier evidence of positive treatment effects on re-employment rates of both initially over-optimistic and initially overly pessimistic respondents.

Other robustness Our findings are robust to various additional checks. Appendix Table A.4 excludes respondents who worked part-time in their previous job, as transitions from part-time to full-time employment may be "special" in the sense that they reflect changing life circumstances. The patterns in the restricted sample are very similar to our main evidence. Moreover, in our main analysis, we winsorize . . . at . . . to account for outliers. As shown in Appendix Table X, our results on . . . are insensitive to which exact cutoff is used for the winsorization.

4 An illustrative model

In the previous section, we documented that providing job seekers with information about their earnings potential improves job finding rates among both those who are initially over-optimistic and those who are initially overly pessimistic. At the same time, these groups adjust their search behavior in distinct ways: correcting optimistic biases makes job seekers less selective and increases their search effort, while correcting pessimistic biases makes job seekers more selective and narrows the geographic scope of their search. We now describe a stylized job search model to interpret the mechanisms behind these effects, building on standard random search models (McCall, 1970; Mueller and Spinnewijn, 2023).

Model setup While searching for jobs, individuals receive benefits b and decide about the number of applications, s_t, they send out in each period t. The set of available vacancies varies in terms of wages and non-wage attributes, such as geographical location. The probability of a successful application, resulting in an offer, $\lambda(r)$, may depend on the job's location. Job seekers are aware of the location of vacancies, and the decision to apply for positions requiring relocation is represented by $r \in \{0, 1\}$. Effort costs incurred during job search are captured by the increasing and convex function $\gamma(s)$. Before applying, job seekers do not know the exact wage associated with each vacancy. Instead, wage offers

are randomly drawn from an exogenous wage offer distribution, $F(w) \sim N(\mu, \sigma)$, where w denotes the offered wage net of any potential relocation costs. Job seekers accept a wage offer if its net value exceeds their reservation wage ϕ. If they receive multiple offers in a given period, they accept the highest net offer, $y_t = \max\{w_1, w_2, ..., w_{nt}\}$, provided that it exceeds their reservation wage. The distribution of this maximum offer is given by $F_y(y; \mu, \sigma) = F(y; \mu, \sigma)^{n_t}$, where $n_t = \lambda s_t$ represents the total number of offers received in period t.

With accurate beliefs, individuals choose their search strategy by maximizing their present value of income:

$$U_t = \max_{s_t, \phi, r} b - \gamma(s_t) + \rho \left\{ U + [1 - (1 - \lambda(r))^{s_t}] \int_{\phi}^{\infty} (V(y) - U)\, dF_y(y; \mu, \sigma) \right\} \quad (2)$$

where ρ denotes the discount factor and V describes the value of being employed at net wage y. The reservation wage ϕ, for a given number of applications s_t, is set such that the job seeker is indifferent between accepting an offer and remaining unemployed, $V(\phi) = U_t$. The optimal number of application s_t^* and the willingness to relocate r^*, trading off the cost of search against its returns, follow from the first-order conditions of Equation (2).

Building on Mueller and Spinnewijn (2023), we assume that job seekers hold subjective beliefs about the mean of the wage offer distribution $\widehat{\mu}$—which may deviate from the actual mean μ—and maximize their utility as if $\widehat{\mu}$ were the true mean. The information treatment provides treated job seekers with infromation about the earnings potential of workers similar to them. Within our framework, this may shift jobseekers' beliefs toward the actual mean μ, potentially triggering different behavioral responses depending on jobseekers' initial optimism or pessimism.

Negative update A job seeker who is initially overly optimistic ($\widehat{\mu} > \mu$) lowers her wage expectations in response to the treatment. This unambiguously leads to a reduction in her reservation wage (ϕ), which aligns with our empirical finding for negative information shocks. In a similar vein, it is conceivable that the updated beliefs lead to adjustments in other aspects of the search, such as the geographic locations of the jobs to which the agent applies. Specifically, the negative shock may cause an expansion of the search radius r. However, we find no empirical evidence of such a behavioral response, which is plausible if the additional costs of accepting distant employment are high.

The effect of beliefs on the optimal search intensity is depends on the specific functional forms. On the one hand, lower expected wages directly reduce the job seekers' incentives to apply, as the expected returns from an application decrease ("discouragement effect"). On the other hand, a reduced perceived earnings potential could lead to increased search intensity, as the job seeker may recognize the need to search harder to find a suitable job ("encouragement effect"). In our framework, this encouragement

arises because submitting more applications increases the likelihood of receiving a high-paying offer.[6] Our empirical results suggest that the encouragement effect dominates, as job seekers who receive large negative information shocks tend to increase their search effort. This response is plausible when the marginal cost of an additional application, $\gamma'(s_t)$, is relatively low or the success rate, λ, is high. Combined, the reduced wage demands and the increased search intensity plausibly explain why job seekers who receive large negative information shocks find employment more quickly than their counterparts in the control group.

Positive update A job seeker who is initially too pessimistic, $\widehat{\mu} < \mu$, increases their wage expectations in response to the treatment. The reduced pessimism leads her to be more selective in her job choices, which aligns with our empirical findings that large positive information shocks result in higher reservation wages and a smaller search radius. At the same time, we detect no adjustments in search intensity, which may reflect offsetting encouragement and discouragement effects.

It is more difficult to explain how higher selectivity can be associated with improved job finding rates. One possible explanation are spatial search frictions (Heise and Porzio, 2022; Manning and Petrongolo, 2017; Schmutz and Sidibé, 2019): job seekers may be less efficient in generating acceptable job offers when searching in remote areas ($\lambda'(r) < 0$), e.g., because of limited knowledge about the characteristics of distant labor markets or the mobility costs associated with relocation (Koşar et al., 2022). A reduced geographic scope of search—as observed in our data—can then lead to improved labor market outcomes. Moreover, if job seekers are not fully aware of the difficulties that come with searching for jobs in distant regions, they may initially search "too broadly". An intervention making job seekers more selective could then have the positive side effect of redirecting their search to the local labor market, where re-employment prospects are better.[7]

5 Conclusion

We conduct a field experiment in Denmark to understand how unemployed jobseekers' beliefs about offered wages affect their job search decisions. We first measure jobseekers' beliefs about the re-employment wages of past unemployed jobseekers with characteristics similar to themselves. A random half of the respondents is then informed about

[6] Specifically, a larger number of applications increases the expected value of the highest offer received in a given period. A similar encouragement effect is present in directed search models, where job seekers know the wage associated with each vacancy. These models typically involve a trade-off between the likelihood of receiving a job offer upon applying, λ, and the wage offered, w (Moen, 1997; Nekoei and Weber, 2017; Wright et al., 2021).

[7] This mechanism aligns with recent evidence from Caliendo et al. (2023b), who demonstrate that providing financial incentives to expand the geographic scope of the job search leads unemployed workers to increase their search radius but has adverse consequences for their labor market integration.

the actual average re-employment wages of similar workers. While prior misperceptions about remployment earnings are small on average, large fractions of the sample exhibit substantial upward or downward biases. Upon receiving information, our respondents adjust the wage they expect in their next job offer and their reservation wage towards the information. Moreover, initially over-optimistic job seekers increase their search effort and secure re-employment more quickly. Initially overly pessimistic job seekers reduce the geographic scope of their job search, which ultimately also leads to faster re-employment. One potential explanation are spatial search frictions that make geographically distant job search less efficient, which the respondents may initially not be fully aware of.

Our empirical design uniquely combines four key aspects: first, we suvey an exceptionally large sample of unemployed job seekers; second, we employ tailored survey questions that closely capture objects appearing in theoretical models of job search; third, we generate clean exogenous variation in a fundamental belief in the job search context by embedding an information provision experiment into our survey; and fourth, we match the survey data with outcomes from administrative data on job search and labor market outcomes, overcoming concerns such as experimenter demand effects, consistency bias, intention-behavior gaps, and measurement error due to imperfect recall inherent in survey-based outcomes. Our paper showcases how it is possible to obtain detailed, clear and informative evidence on the role of beliefs as a causal determinant of job search.

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Online Appendix

Wage Expectations and Job Search

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A Additional Figures and Tables **2**

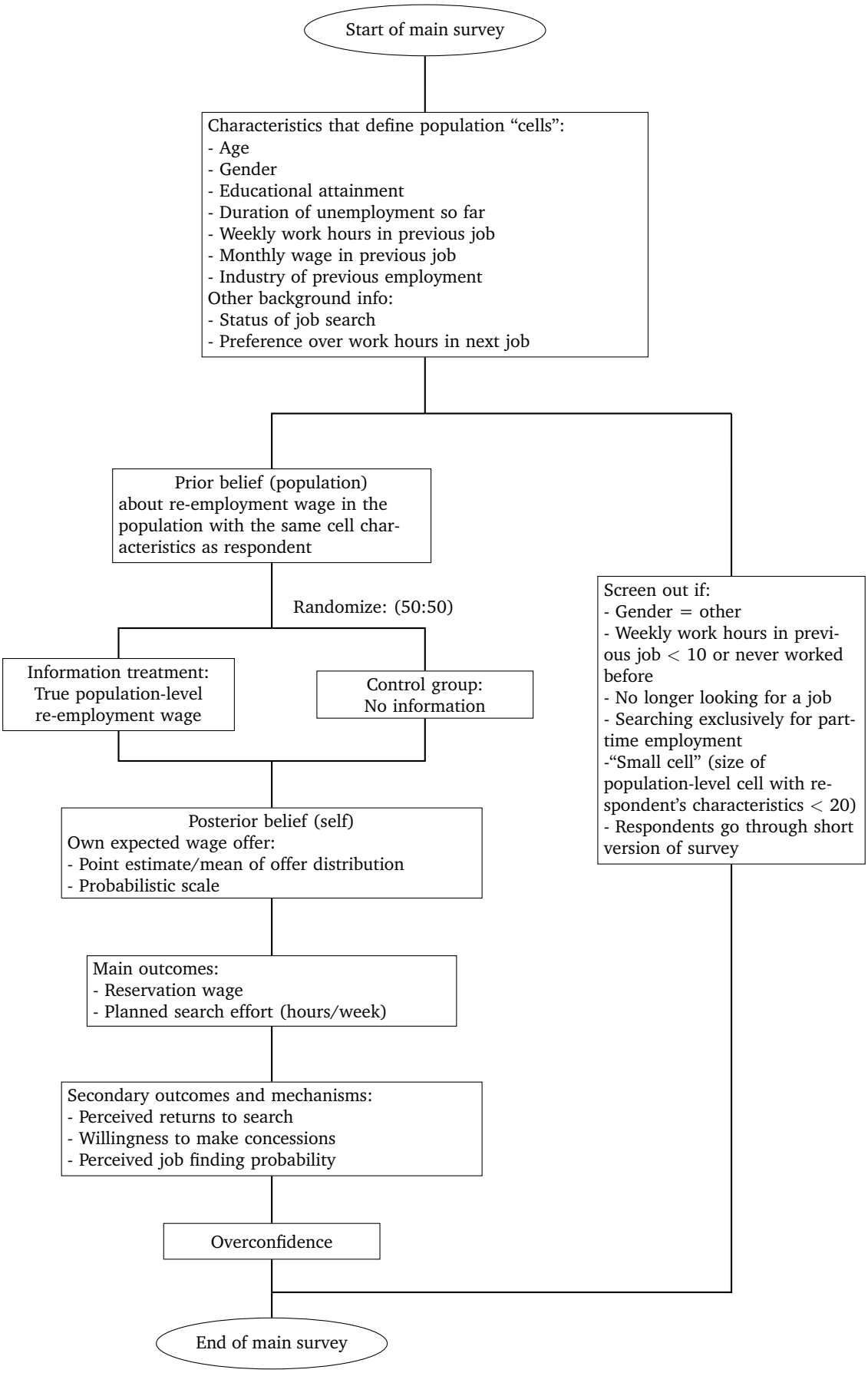
B Survey instructions translated to English **18**

B.1 Main survey 18

B.2 Follow-up survey 28

A Additional Figures and Tables

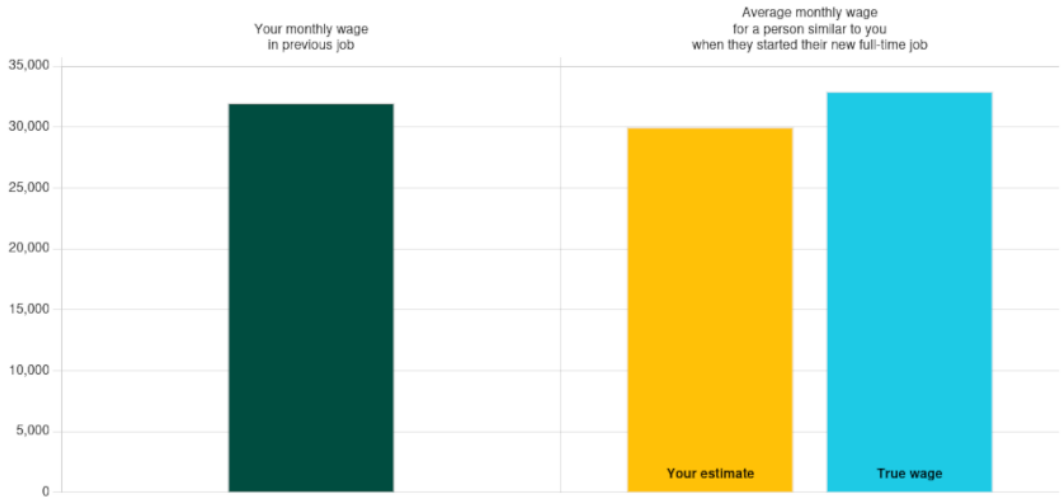
Figure A.1 Flowchart of main survey



Note: The figure shows a flowchart of the main survey.

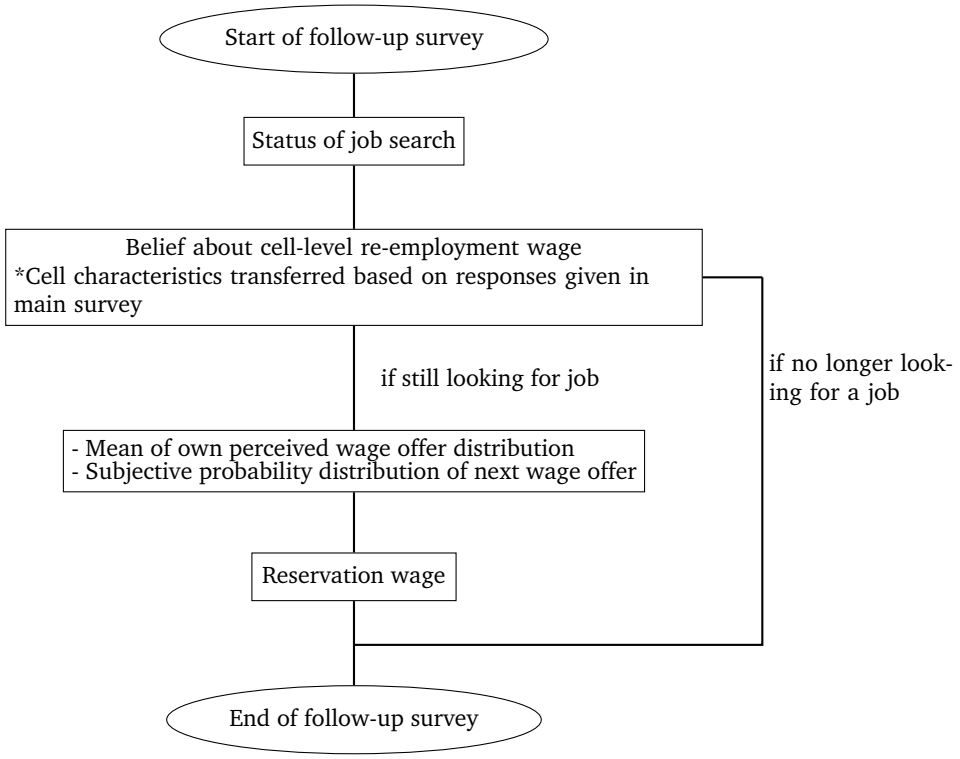
Figure A.2 Example of treatment screen

The average wage is: DKK32.930



Note: The figure shows an English translation of the treatment screen displaying information about the average re-employment wage of comparable workers, as presented to the treatment group in the survey experiment. The left bar (green) represents the respondent's own previous wage, the middle bar (yellow) shows the respondent's prior belief about the wage of comparable workers, and the right bar (blue) illustrates the actual re-employment wage of comparable workers. Above the bar chart, the actual re-employment wage of comparable workers is displayed as a numerical value.

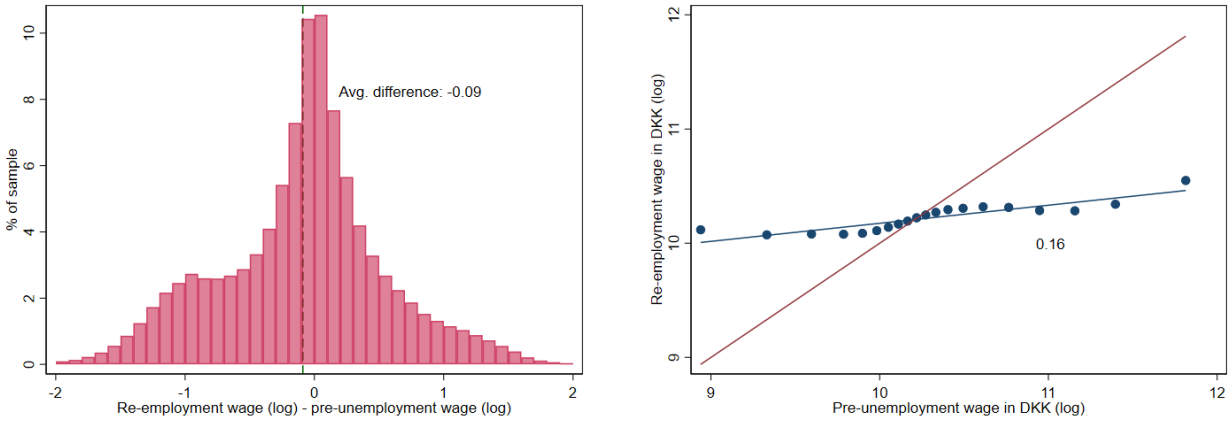
Figure A.3 Flowchart of follow-up survey



Note: The figure shows a flowchart of the follow-up survey.

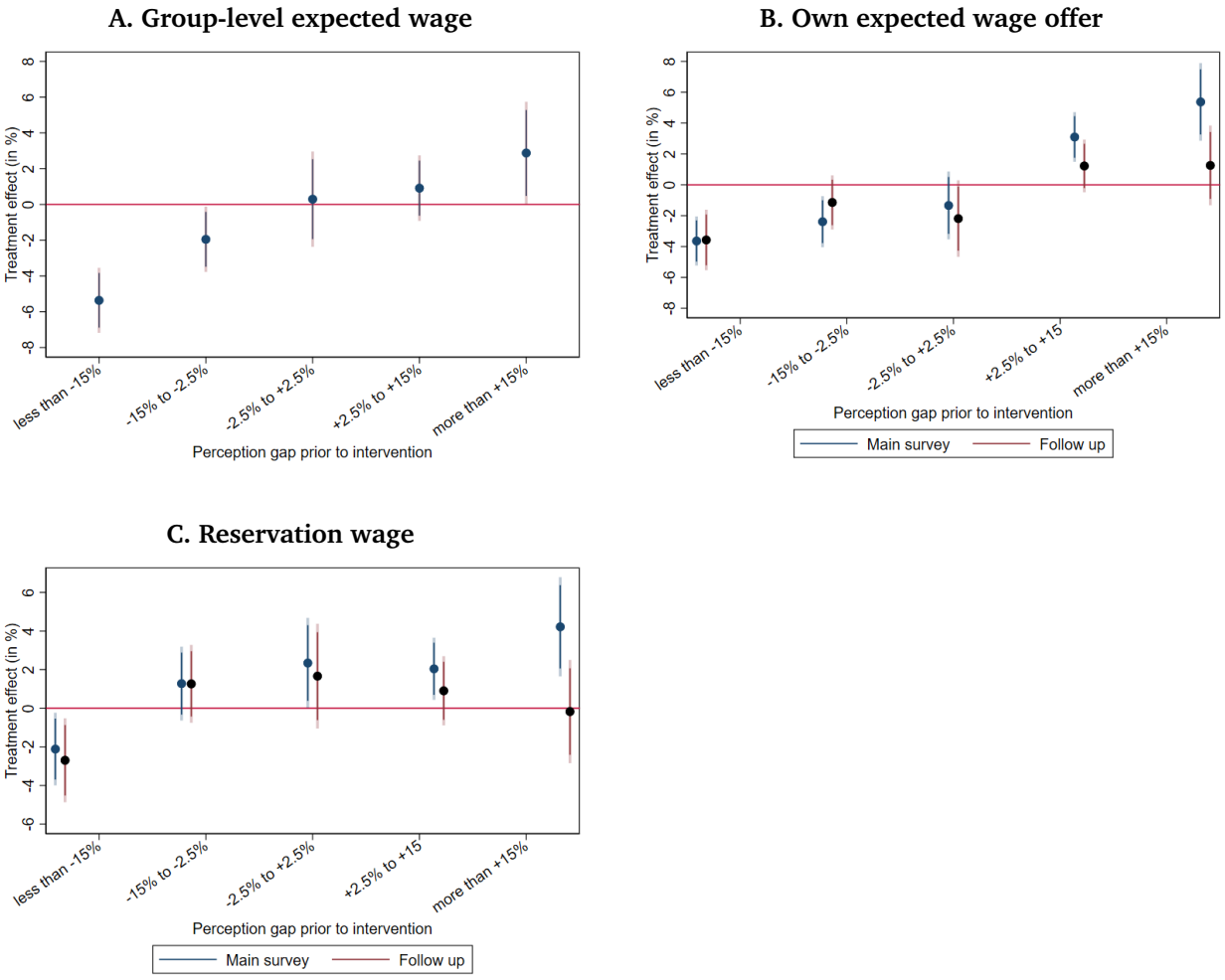
Figure A.4 Relationship between pre-unemployment wages and re-employment wages

Panel A: Histogram **Panel B: Binned scatter**



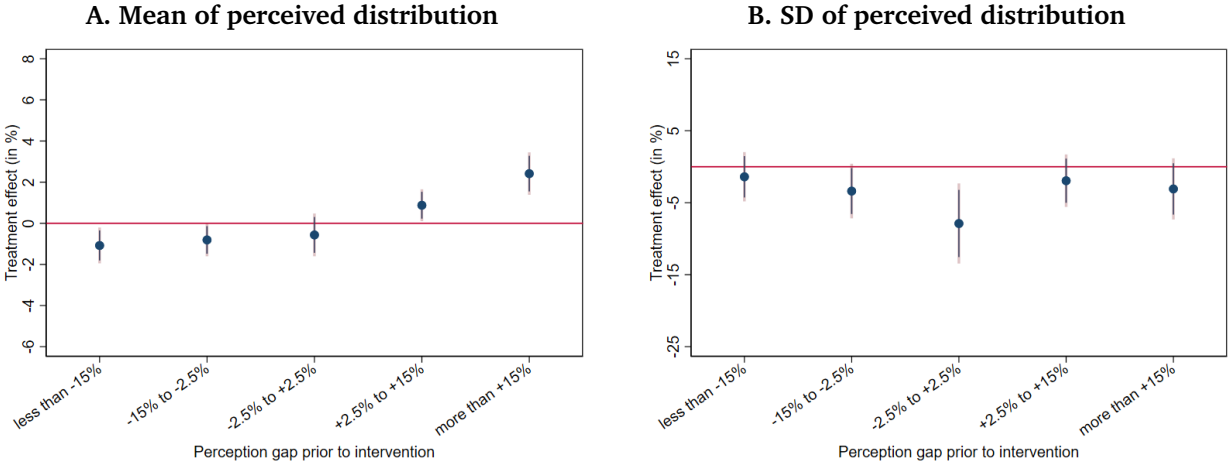
Note: The figure shows a histogram of the log difference between re-monthly employment and pre-unemployment earnings (Panel A) and a binned scatter plot of re-employment against pre-unemployment earnings (Panel B), for the sample of individuals who entered unemployment in the time period 2010-2021 and took up new full-time employment between 2013-2021 and who were previously full-time employed.

Figure A.5 Treatment effects on expected and reservation wages in follow-up survey



Note: The figure shows the effects of the information treatment (including 90%- and 95%-confidence intervals) on respondents' expected group-level re-employment wages (log) measured in the follow-up survey (Panel A), respondents' own expected wage offer (log) (Panel B) and reservation wages (log) (Panel C). The estimates are provided for respondents who completed the follow-up survey. We show separate estimates for individuals with varying initial perception gaps, that is, who receive varying information shocks regarding the wage potential of comparable workers.
No. of observations: N=1,115 (less than -15%); N=836 (-15% to -2.5%); N=408 (-2.5% to +2.5%); N=881 (+2.5% to +15%); N=663 (more than +15%).

Figure A.6 Treatment effects on perceived wage offer distribution



Note: The figure shows the effects of the information treatment (including 90%- and 95%-confidence intervals) on the mean (log) (Panel A) and the standard deviation (log) (Panel B) of the perceived wage offer distribution reported by the respondent.
No. of observations (main survey): N=2,323 (less than -15%); N=1,980 (-15% to -2.5%); N=1,043 (-2.5% to +2.5%); N=2,178 (+2.5% to +15%); N=1,723 (more than +15%).

Table A.1 Prediction of reemployment wages

Dependent variable	Monthly reemployment wage (log)
Monthly pre-unemployment wage (log)	0.138***
	(0.000)
Male	0.113***
	(0.001)
Level of education (ref: University degree)	
High school	-0.145***
	(0.001)
Below high school	-0.191***
	(0.001)
Age (ref. 35 years or below)	
36–50 years	0.0455***
	(0.001)
Above 50 years	0.0440***
	(0.001)
Previous industry (ref. Agriculture)	
Manufacturing	-0.007***
	(0.002)
Construction	0.046***
	(0.002)
Trade	-0.060***
	(0.002)
Business services	-0.002
	(0.002)
Public sector	-0.086***
	(0.002)
Other services	-0.045***
	(0.002)
Length of unemployment spell (ref: 3 months or less)	
4-6 months	-0.024***
	(0.001)
7-9 months	-0.045***
	(0.001)
10-12 months	-0.067***
	(0.001)
13-18 months	-0.095***
	(0.001)
19-24 months	-0.116***
	(0.001)
More than 24 months	-0.127***
	(0.001)
Previous job was full-time	-0.0881***
	(0.001)
Constant	9.004***
	(0.005)
No. of observations	1,448,020
R^2	0.231

Note: The table presents regression results for log monthly re-employment wages of unemployed workers in the ten years preceding our survey experiment, based on their background characteristics. Standard errors are reported in parenthesis. */**/*** indicates statistical significance at the 10%/5%/1%-level.

Table A.2 Correlates of misperceptions about reemployment wages

Dependent variable (log)	Expected–actual group wage	
	Level	Absolute
	(1)	(2)
Age (ref. 35 years or below)		
36–50 years	-0.018***	-0.011***
	(0.006)	(0.004)
50 years of above	-0.026***	-0.016***
	(0.006)	(0.004)
Male	-0.047***	-0.000
	(0.005)	(0.003)
Level of education (ref. below high school)		
High school	0.024***	-0.014***
	(0.007)	(0.005)
University	0.020***	-0.021***
	(0.008)	(0.005)
Elapsed unemployment duration (ref. 3 months or below)		
4-6 months	0.050***	0.003
	(0.005)	(0.004)
7-9 months	0.050***	0.008*
	(0.007)	(0.005)
10-12 months	0.056***	0.016***
	(0.008)	(0.005)
13-18 months	0.057***	0.017***
	(0.008)	(0.005)
19-24 months	0.061***	0.023***
	(0.011)	(0.008)
$\geq$24 months	0.052***	0.024***
	(0.010)	(0.007)
Previous industry (ref. Manufacturing)		
Agriculture	-0.052**	0.016
	(0.023)	(0.016)
Construction	-0.015	-0.004
	(0.011)	(0.008)
Trade	0.017**	0.009*
	(0.008)	(0.005)
Business services	0.010	-0.010*
	(0.008)	(0.006)
Public sector	0.002	0.008
	(0.008)	(0.005)
Other services	0.003	-0.005
	(0.010)	(0.007)
Previous salary in DKK1,000	0.007***	0.003***
	(0.000)	(0.000)
Previous job was full-time	-0.063***	-0.084***
	(0.007)	(0.005)
Constant	-0.156***	0.159***
	(0.011)	(0.008)
No. of observations	9,322	9,322
R^2 - adjusted	0.182	0.075
Mean value dep. variable	0.019	0.166

Note: The table presents regression results for the log difference between expected and actual group-level wages in levels (column 1) and absolute terms (columns 2), based on respondents' background characteristics. Standard errors are reported in parenthesis. */**/*** indicates statistical significance at the 10%/5%/1%-level.

Table A.3 Main outcomes

	Outcome								
	(1) Own exp. wage (log)	(2) Reser-vation wage (log)	(3) Clicks on ads in week 1	(4) Willing to change prof.	(5) Willing to move	(6) Employed in month 2	(7) Employed in month 4	(8) First wage (log)	(9) First hours (log)
Panel A: Large positive perception gap (large pessimism; more than +15%)									
Treatment	0.053***	0.039***	0.008	-0.003	-0.035**	0.053**	0.036	0.171**	0.101
	(0.008)	(0.008)	(0.396)	(0.024)	(0.016)	(0.022)	(0.024)	(0.069)	(0.072)
Observations	1,723	1,723	1,723	1,700	1,700	1,723	1,723	1,026	1,026
Mean of the control group	10.12	10.04	3.64	0.51	0.15	0.28	0.40	9.02	3.70
R^2	0.45	0.45	0.05	0.05	0.09	0.03	0.03	0.10	0.06
P-value for significant difference of treatment effect to neutral group	0.00	0.01	0.51	0.58	0.06	0.23	0.32	0.26	0.29
Panel B: Small positive perception gap (small pessimism; +2.5% to +15%)									
Treatment	0.021***	0.014***	-0.174	-0.001	0.000	-0.010	-0.020	0.040	0.083
	(0.005)	(0.005)	(0.318)	(0.021)	(0.013)	(0.020)	(0.021)	(0.067)	(0.069)
Observations	2,178	2,178	2,178	2,126	2,126	2,178	2,178	1,309	1,310
Mean of the control group	10.22	10.13	3.76	0.55	0.11	0.30	0.43	9.17	3.79
R^2	0.61	0.54	0.05	0.04	0.07	0.03	0.05	0.06	0.03
P-value for significant difference of treatment effect to neutral group	0.00	0.81	0.27	0.62	0.58	0.58	0.62	0.94	0.36
Panel C: Neutral (-2.5% to +2.5%)									
Treatment	-0.011	0.012	0.370	0.018	0.014	0.009	-0.002	0.048	-0.018
	(0.007)	(0.008)	(0.386)	(0.031)	(0.021)	(0.029)	(0.031)	(0.087)	(0.090)
Observations	1,043	1,043	1,043	1,022	1,022	1,043	1,043	643	643
Mean of the control group	10.31	10.19	2.88	0.53	0.12	0.31	0.46	9.20	3.86
R^2	0.64	0.52	0.08	0.09	0.09	0.04	0.04	0.12	0.09
Panel D: Small negative perception gap (small optimism; -2.5% to -15%)									
Treatment	-0.028***	-0.002	0.177	-0.008	-0.022	0.013	0.002	0.114*	0.103
	(0.005)	(0.006)	(0.235)	(0.022)	(0.015)	(0.020)	(0.022)	(0.065)	(0.067)
Observations	1,980	1,980	1,980	1,950	1,950	1,980	1,980	1,138	1,139
Mean of the control group	10.39	10.26	2.53	0.53	0.14	0.28	0.43	9.36	3.96
R^2	0.66	0.55	0.05	0.06	0.06	0.03	0.04	0.12	0.08
P-value for significant difference of treatment effect to neutral group	0.04	0.17	0.66	0.50	0.16	0.91	0.92	0.53	0.27
Panel E: Large negative perception gap (large optimism; less than -15%)									
Treatment	-0.038***	-0.016**	0.687***	-0.018	0.012	0.052***	0.046**	-0.114*	-0.093
	(0.006)	(0.007)	(0.212)	(0.020)	(0.014)	(0.017)	(0.020)	(0.064)	(0.063)
Observations	2,323	2,323	2,323	2,272	2,272	2,323	2,323	1,280	1,280
Mean of the control group	10.62	10.47	1.71	0.53	0.14	0.21	0.40	9.76	4.19
R^2	0.70	0.64	0.06	0.07	0.07	0.06	0.06	0.16	0.06
P-value for significant difference of treatment effect to neutral group	0.00	0.01	0.47	0.33	0.92	0.21	0.19	0.13	0.49

Note:

Table A.4 Main outcomes - excluding previous part-time employed

	Outcome								
	(1) Own exp. wage (log)	(2) Reser-vation wage (log)	(3) Clicks on ads in week 1	(4) Willing to change prof.	(5) Willing to move	(6) Employed in month 2	(7) Employed in month 4	(8) First wage (log)	(9) First hours (log)
Panel A: Large positive perception gap (large pessimism; more than +15%)									
Treatment	0.055***	0.042***	-0.102	0.013	-0.037**	0.042*	0.025	0.180**	0.108
	(0.008)	(0.008)	(0.447)	(0.027)	(0.017)	(0.025)	(0.026)	(0.080)	(0.083)
Observations	1,403	1,403	1,403	1,381	1,381	1,403	1,403	824	824
Mean of the control group	10.12	10.05	3.92	0.51	0.13	0.28	0.40	9.03	3.68
R^2	0.50	0.49	0.05	0.05	0.05	0.03	0.04	0.11	0.07
P-value for significant difference of treatment effect to neutral group	0.00	0.03	0.55	0.88	0.04	0.38	0.50	0.30	0.36
Panel B: Small positive perception gap (small pessimism; +2.5% to +15%)									
Treatment	0.020***	0.013**	-0.105	0.007	0.005	-0.016	-0.022	0.069	0.103
	(0.005)	(0.005)	(0.346)	(0.023)	(0.014)	(0.020)	(0.022)	(0.072)	(0.074)
Observations	1,965	1,965	1,965	1,917	1,917	1,965	1,965	1,179	1,180
Mean of the control group	10.23	10.14	3.91	0.55	0.10	0.29	0.43	9.16	3.77
R^2	0.62	0.55	0.04	0.04	0.06	0.03	0.05	0.06	0.03
P-value for significant difference of treatment effect to neutral group	0.01	0.73	0.50	1.00	0.55	0.53	0.63	0.89	0.35
Panel C: Neutral (-2.5% to +2.5%)									
Treatment	-0.005	0.016*	0.267	0.007	0.020	0.007	-0.003	0.054	-0.007
	(0.007)	(0.009)	(0.434)	(0.034)	(0.021)	(0.031)	(0.034)	(0.094)	(0.098)
Observations	895	895	895	876	876	895	895	535	535
Mean of the control group	10.31	10.20	3.08	0.56	0.10	0.31	0.44	9.20	3.84
R^2	0.66	0.54	0.08	0.07	0.07	0.03	0.03	0.13	0.10
Panel D: Small negative perception gap (small optimism; -2.5% to -15%)									
Treatment	-0.030***	-0.002	0.160	-0.015	-0.019	0.007	-0.008	0.110	0.101
	(0.006)	(0.007)	(0.263)	(0.024)	(0.015)	(0.021)	(0.024)	(0.071)	(0.073)
Observations	1,727	1,727	1,727	1,703	1,703	1,727	1,727	966	967
Mean of the control group	10.40	10.28	2.69	0.56	0.12	0.26	0.42	9.39	3.97
R^2	0.68	0.57	0.05	0.05	0.05	0.02	0.04	0.12	0.08
P-value for significant difference of treatment effect to neutral group	0.01	0.08	0.83	0.60	0.13	1.00	0.91	0.62	0.36
Panel E: Large negative perception gap (large optimism; less than -15%)									
Treatment	-0.033***	-0.013*	0.903***	-0.024	0.001	0.052***	0.034	-0.118*	-0.110
	(0.006)	(0.007)	(0.225)	(0.022)	(0.015)	(0.018)	(0.021)	(0.071)	(0.070)
Observations	2,049	2,049	2,049	2,002	2,002	2,049	2,049	1,092	1,092
Mean of the control group	10.63	10.49	1.64	0.56	0.13	0.19	0.39	9.81	4.21
R^2	0.71	0.65	0.07	0.05	0.06	0.04	0.04	0.16	0.06
P-value for significant difference of treatment effect to neutral group	0.00	0.01	0.19	0.44	0.46	0.21	0.35	0.14	0.38

Note:

Table A.5 Broadness of search

	Outcome						
	(1) Willing to commute	(2) Distance to applied jobs in month 1 (log)	(3) Employed in residence municipality in month 2	(4) Distance to first job (log)	(5) Willing to take training	(6) Number of occupations in applications in month 1 (log)	(7) Employed in previous occupation in month 2
Panel A: Large positive perception gap (large pessimism; more than +15%)							
Treatment	-0.043*	-0.070*	0.042**	-0.109*	-0.009	0.017	0.025
	(0.024)	(0.038)	(0.019)	(0.064)	(0.023)	(0.038)	(0.018)
Observations	1,700	1,425	1,723	1,034	1,700	864	1,723
Mean of the control group	0.48	1.09	0.17	2.85	0.60	0.63	0.16
R^2	0.06	0.08	0.03	0.05	0.07	0.06	0.03
P-value for significant difference of treatment effect to neutral group	0.48	0.25	0.13	0.24	0.68	0.51	0.46
Panel B: Small positive perception gap (small pessimism; +2.5% to +15%)							
Treatment	-0.004	0.000	0.009	-0.065	-0.025	0.004	0.002
	(0.021)	(0.033)	(0.017)	(0.054)	(0.021)	(0.034)	(0.016)
Observations	2,126	1,816	2,178	1,320	2,126	1,062	2,178
Mean of the control group	0.44	1.05	0.18	2.80	0.65	0.61	0.16
R^2	0.05	0.09	0.03	0.05	0.06	0.06	0.02
P-value for significant difference of treatment effect to neutral group	0.72	0.98	0.65	0.42	0.38	0.37	0.99
Panel C: Neutral (-2.5% to +2.5%)							
Treatment	-0.017	0.002	-0.004	0.013	0.006	0.060	0.003
	(0.030)	(0.051)	(0.025)	(0.084)	(0.029)	(0.054)	(0.023)
Observations	1,022	851	1,043	650	1,022	464	1,043
Mean of the control group	0.47	1.08	0.19	2.76	0.66	0.56	0.16
R^2	0.11	0.10	0.04	0.07	0.08	0.06	0.06
Panel D: Small negative perception gap (small optimism; -2.5% to -15%)							
Treatment	0.004	-0.029	0.023	0.011	-0.012	0.076*	0.013
	(0.022)	(0.037)	(0.016)	(0.063)	(0.021)	(0.039)	(0.016)
Observations	1,950	1,642	1,980	1,145	1,950	769	1,980
Mean of the control group	0.49	1.11	0.14	2.65	0.68	0.51	0.13
R^2	0.07	0.09	0.03	0.07	0.07	0.08	0.02
P-value for significant difference of treatment effect to neutral group	0.58	0.61	0.35	0.98	0.60	0.80	0.71
Panel E: Large negative perception gap (large optimism; less than -15%)							
Treatment	-0.014	0.044	0.033**	-0.081	-0.004	0.014	0.019
	(0.020)	(0.039)	(0.013)	(0.061)	(0.019)	(0.044)	(0.013)
Observations	2,272	1,889	2,323	1,289	2,272	644	2,323
Mean of the control group	0.56	1.12	0.09	2.80	0.69	0.52	0.10
R^2	0.06	0.06	0.06	0.07	0.04	0.10	0.05
P-value for significant difference of treatment effect to neutral group	0.94	0.50	0.17	0.35	0.77	0.50	0.54

Note:

Table A.6 Treatment effects by breadth of search

	Outcome			
	(1) Employed month 2 Distant search	(2) Employed month 2 Local search	(3) Employed month 4 Distant search	(4) Employed month 4 Local search
Panel A: Large positive perception gap (large pessimism; more than +15%)				
Treatment	0.117**	0.031	0.111*	0.018
	(0.059)	(0.028)	(0.062)	(0.029)
Observations	293	1,160	293	1,160
Mean of the control group	0.25	0.30	0.40	0.41
R^2	0.12	0.03	0.12	0.04
Panel B: Small positive perception gap (small pessimism; +2.5% to +15%)				
Treatment	-0.017	-0.021	-0.046	-0.009
	(0.051)	(0.023)	(0.057)	(0.025)
Observations	320	1,557	320	1,557
Mean of the control group	0.26	0.31	0.42	0.43
R^2	0.13	0.04	0.14	0.06
Panel C: Neutral (-2.5% to +2.5%)				
Treatment	0.022	0.037	0.029	-0.005
	(0.089)	(0.035)	(0.093)	(0.037)
Observations	162	725	162	725
Mean of the control group	0.33	0.31	0.42	0.46
R^2	0.17	0.06	0.19	0.07
Panel D: Small negative perception gap (small optimism; -2.5% to -15%)				
Treatment	0.020	-0.015	0.051	-0.009
	(0.053)	(0.025)	(0.058)	(0.027)
Observations	337	1,319	337	1,319
Mean of the control group	0.30	0.28	0.42	0.44
R^2	0.07	0.03	0.07	0.05
Panel E: Large negative perception gap (large optimism; less than -15%)				
Treatment	0.060	0.044**	0.068	0.043*
	(0.037)	(0.022)	(0.044)	(0.025)
Observations	521	1,466	521	1,466
Mean of the control group	0.20	0.21	0.40	0.39
R^2	0.13	0.07	0.10	0.07

Note:

Table A.7 Treatment effects by previous search intensity

	Outcome			
	(1) Employed month 2 Low intensity	(2) Employed month 2 High intensity	(3) Employed month 4 Low intensity	(4) Employed month 4 High intensity
Panel A: Large positive perception gap (large pessimism; more than +15%)				
Treatment	0.048	0.034	0.045	0.001
	(0.031)	(0.033)	(0.033)	(0.035)
Observations	942	778	942	778
Mean of the control group	0.29	0.28	0.41	0.39
R^2	0.05	0.08	0.05	0.07
Panel B: Small positive perception gap (small pessimism; +2.5% to +15%)				
Treatment	-0.012	0.000	-0.036	0.002
	(0.026)	(0.030)	(0.028)	(0.033)
Observations	1,246	928	1,246	928
Mean of the control group	0.30	0.29	0.44	0.41
R^2	0.05	0.06	0.06	0.07
Panel C: Neutral (-2.5% to +2.5%)				
Treatment	0.002	-0.007	-0.042	0.015
	(0.042)	(0.042)	(0.044)	(0.046)
Observations	555	486	555	486
Mean of the control group	0.34	0.29	0.51	0.40
R^2	0.06	0.09	0.06	0.11
Panel D: Small negative perception gap (small optimism; -2.5% to -15%)				
Treatment	-0.011	0.036	0.032	-0.028
	(0.029)	(0.029)	(0.032)	(0.031)
Observations	984	994	984	994
Mean of the control group	0.28	0.28	0.39	0.47
R^2	0.03	0.06	0.05	0.07
Panel E: Large negative perception gap (large optimism; less than -15%)				
Treatment	0.079***	0.042*	0.045	0.050*
	(0.029)	(0.022)	(0.033)	(0.026)
Observations	884	1,436	884	1,436
Mean of the control group	0.21	0.21	0.38	0.41
R^2	0.09	0.06	0.09	0.05

Note:

Table A.8 Correlational analysis

	Outcome							
	(1) Own expected wage (log)	(2) Reservation wage (log)	(3) Clicks on ads in week 1	(4) Willing to change profession	(5) Willing to move	(6) Employed in month 2	(7) First wage (log)	(8) First hours (log)
Group-level expected wage (log)	0.464***	0.329***	0.106	-0.074	-0.004	-0.017	0.200	0.085
	(0.039)	(0.038)	(1.046)	(0.074)	(0.055)	(0.065)	(0.218)	(0.217)
Perception gap *Ref: Small* -2.5% to +2.5%								
Large optimism less than -15%	0.040***	0.048***	-0.618	-0.046	0.032	-0.059*	0.197**	0.125
	(0.010)	(0.011)	(0.415)	(0.034)	(0.024)	(0.030)	(0.097)	(0.099)
Small optimism -2.5% to -15%	0.015**	0.015*	-0.160	-0.011	0.023	-0.022	0.084	0.063
	(0.007)	(0.008)	(0.313)	(0.027)	(0.018)	(0.025)	(0.079)	(0.081)
Small pessimism +2.5% to +15%	-0.020***	-0.007	0.544	0.000	0.004	-0.015	0.034	-0.027
	(0.007)	(0.007)	(0.345)	(0.027)	(0.017)	(0.025)	(0.081)	(0.083)
Large pessimism more than +15%	-0.027**	-0.019	0.539	-0.032	0.029	-0.043	-0.042	-0.073
	(0.011)	(0.012)	(0.599)	(0.034)	(0.023)	(0.032)	(0.102)	(0.105)
Observations	4,619	4,619	4,619	4,530	4,530	4,619	2,652	2,653
Mean	10.35	10.23	2.87	0.53	0.13	0.27	9.32	3.91
R^2	0.77	0.69	0.06	0.05	0.06	0.03	0.13	0.06

Note:

Table A.9 Alternative specification

	Outcome							
	(1) Own expected wage (log)	(2) Reservation wage (log)	(3) Clicks on ads in week 1	(4) Willing to change profession	(5) Willing to move	(6) Employed in month 2	(7) First wage (log)	(8) First hours (log)
Interaction	0.166***	0.090***	-1.098**	0.038	-0.047	-0.027	0.347**	0.289**
	(0.019)	(0.019)	(0.546)	(0.047)	(0.033)	(0.041)	(0.143)	(0.143)
Treatment	0.001	0.009***	0.190	-0.001	-0.006	0.023**	0.046	0.039
	(0.003)	(0.003)	(0.139)	(0.010)	(0.007)	(0.009)	(0.031)	(0.031)
Perception gap	-0.505***	-0.385***	1.961***	0.061*	-0.012	0.034	-0.505***	-0.377***
	(0.016)	(0.016)	(0.448)	(0.035)	(0.026)	(0.030)	(0.107)	(0.106)
Observations	9,247	9,247	9,247	9,070	9,070	9,247	5,396	5,398
Mean of the control group	10.35	10.23	2.87	0.53	0.13	0.27	9.32	3.91
R^2	0.74	0.67	0.04	0.04	0.06	0.03	0.11	0.05

Note:

B Survey instructions translated to English

B.1 Main survey

The screen titles, question numbers and text written in "{}"-brackets are not shown to the respondents in the survey. "XXX" in survey questions 4a and 5a are placeholders and are filled with the response options the participant ticked in the corresponding survey questions on screen 1.

Screen 0: Welcome

{Show for all arms}

Thank you very much for participating in this survey about your job search - we greatly appreciate it!

As a token of our gratitude for your time, we are giving away a total of **20 gift cards** to GoGift among those who complete the entire questionnaire (it takes approximately 15 minutes). These gift cards can be used for many things and are very easy to use in both stores and online. Each gift card is worth 1,000 DKK.

If you win one (or more) gift cards, you will receive a direct notification in your e-Boks no later than December 1, 2023.

[pagebreak]

Screen 1: Elicitation of individual characteristics

{Show for all arms}

1a
What is your age?
• 35 years or younger • Between 36 and 50 years • 51 years or older

1b
What is your gender?
• Female • Male • Other {go to Screen-out arm}

1c
What is the highest educational degree that you have completed?

1. **University degree** (Bachelor, Master, PhD) or **Professional bachelor education**
2. **Upper secondary education** (e.g. Gymnasium, Higher Commercial Examination Programme, Higher Technical Examination Programme, Higher Preparatory Examination Programme) or **vocational education** (e.g. Erhvervsuddannelser, Academy

Profession degree)

3. **Lower secondary education** (Folkeskole, efterskole) or **preparatory basic education** (e.g. FGU)

1d
What has your last employment type been?

- full-time (at least 30 hours per week)
- part-time (at least 10 and less than 30 hours per week)
- Less than 10 hours per week {go to Screen-out arm}
- I have never been employed before {go to Screen-out arm}

1e
For how many months have you been unemployed?

- Less than 3 months
- At least 3, but less than 6 months
- At least 6, but less than 9 months
- At least 9, but less than 12 months
- At least 12, but less than 18 months
- At least 18, but less than 24 months
- At least 24 months

1fa {if previous job (1d)=full-time}
What was your monthly salary (before taxes, excluding pension contributions) in your last job before becoming unemployed?

- Less than 18,000 DKK
- At least 18,000 DKK, but less than 22,000 DKK
- At least 22,000 DKK, but less than 26,000 DKK
- At least 26,000 DKK, but less than 30,000 DKK
- At least 30,000 DKK, but less than 34,000 DKK
- At least 34,000 DKK, but less than 38,000 DKK
- At least 38,000 DKK, but less than 42,000 DKK
- At least 42,000 DKK, but less than 50,000 DKK
- At least 50,000 DKK, but less than 75,000 DKK
- 75,000 DKK or more

1fb {if previous job (1d)=part-time}
What was your monthly salary (before tax, excluding pension contributions) in your last job before you became unemployed?

- Less than 9,000 DKK
- At least 9,000 DKK, but less than 12,000 DKK
- At least 12,000 DKK, but less than 15,000 DKK

- At least 15,000 DKK, but less than 18,000 DKK
- At least 18,000 DKK, but less than 24,000 DKK
- 24,000 DKK or more

1g
In which industry did you work in your previous job? If you are uncertain, please select the one that appears closest to the industry that you worked in.

- Agriculture, forestry and fishing
- Manufacturing, mining, quarrying
- Construction
- Wholesale, retail trade, transportation, accommodation and food services
- Information, communication, financial and business services
- Public administration, education, health
- Arts, entertainment and other services

[pagebreak]

Screen 2: Type of job searched for

{Show for all arms}

2a
What is the current status of your job search?
• I am still searching for a job • I have accepted a job offer {go to Screen-out arm}

2b {conditional on still searching}
You are currently looking for a job. Which type of jobs are you (primarily) searching for?

- Full-time (at least 30 working hours per week)
- Part-time (less than 30 working hours per week) {go to Screen-out arm}
- I am open for full-time or part-time jobs

[pagebreak]

Screen 3: Explanation probabilities

{Show for all arms}

In some of the following questions, we will ask you to think about the percent chance of something happening in the future. Your answers can range from 0 to 100, where 0 means there is absolutely no chance, and 100 means that it is absolutely certain.
For example, numbers like:

- 2 and 5 percent may indicate "almost no chance".
- 18 percent or so may mean "not much chance".

- 47 or 52 percent chance may be a "pretty even chance".
- 83 percent or so may mean a "very good chance".
- 95 or 98 percent chance may be "almost certain".

[pagebreak]

Screen 4: Baseline belief

{Show for arms *Control* and *Treatment*, not for arm *Screen-out*}

4a

In order to better understand the earnings potential of workers who take up a new position after a period of unemployment, we analyzed labor market statistics from recent years.

Please think about individuals who started a new **full-time job** in the last ten years and who **had similar characteristics as you have now**.

Specifically, please think about individuals who, **at the time when they took up a new full-time job** ...

I. had been unemployed for the same time as you have now [XXX months].
II. had the same level of education as you [XXX].
III. had the same age as you have now [XXX-XXX].
IV. had the same gender as you [XXX].
V. had the same monthly salary before taxes in their last job as you [XXX].
VI. worked in the same industry in their previous job as you [XXX].
VII. worked [part-time (at least 10 and less than 30 hours per week)/ full-time (at least 30 hours per week)] in their last job.

When starting their new **full-time job**, what do you think was the **average monthly salary (before taxes, excluding pension contributions)** of a person with these characteristics?

The average monthly salary before taxes was: _____ DKK

[pagebreak]

Screen 5: Information provision

{Show for arms *Control* and *Treatment*, not for arm *Screen-out*}

5a

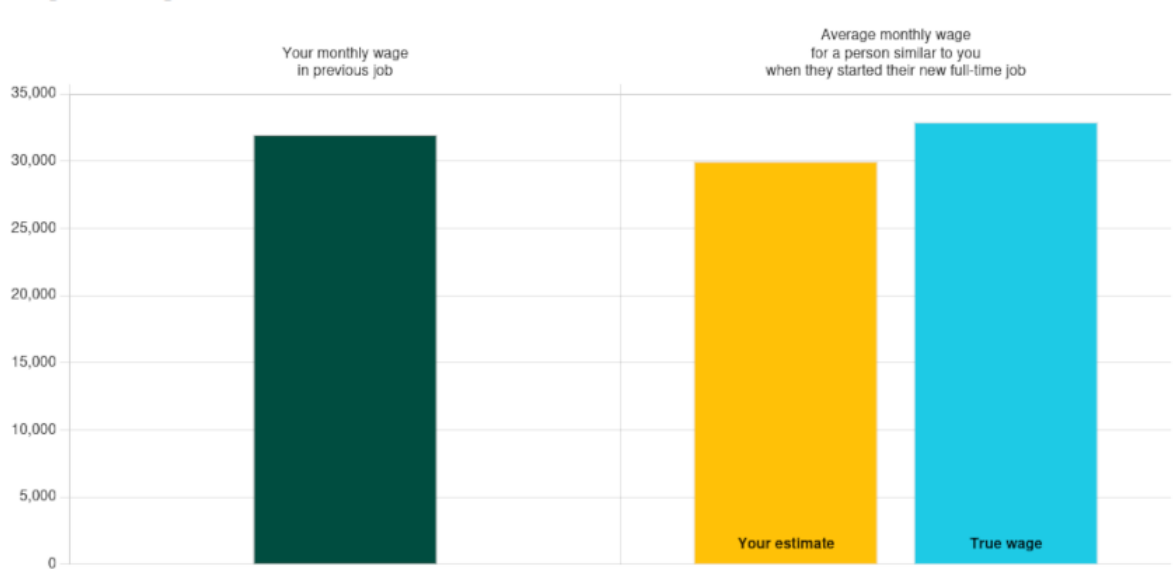
You said you think that the average monthly salary of a person similar to you when starting their new full-time job was [XXX].

We would now like to give you information on the actual average salary of individuals who, **at the time when they took up a new full-time job**,

I. had been unemployed for the same time as you as you have now [XXX months].
II. had the same level of education as you [XXX].
III. had the same age as you have now [XXX-XXX].
IV. have the same gender as you [XXX].
V. had the same monthly salary before taxes in their last job as you [XXX].
VI. worked in the same industry in their previous job as you [XXX].
VII. worked [part-time (at least 10 and less than 30 hours per week)/ full-time (at least 30 hours per week)] in their last job.

We present you the **average monthly salary** (before taxes, **excluding pension contributions**) of a person with these characteristics when starting their **new full-time job**, according to official Danish labor market statistics.

The average salary is: **XXXX DKK**



[pagebreak]

Screen 6: Perceived mean of the wage offer distribution

{Show for all arms}

6a
Imagine you were offered a **new full-time job within the next 4 weeks**: what do you think would be the **monthly salary** (before taxes, excluding pension contributions) that you would be offered?

I expect that the **offered monthly salary (before taxes, excluding pension contributions)** would be: _____ DKK

[pagebreak]

Screen 7: Subjective probability distribution regarding offered wage

{Show for arms *Control* and *Treatment*, not for arm *Screen-out*}

7a
Please imagine again you were offered a **new full-time job within the next 4 weeks**. We would now like to ask you how likely it is that the salary offered in this job would fall into different intervals. **In your view, what would you say is the percent chance that the offered monthly salary (before taxes, excluding pension contributions) would be ...**
... lower than X1 __%
... between X1 and X2 __%
... between X2 and X3 __%
... between X3 and X4 __%
... higher than X4 __%
Total: ___ %

{if previous job (1d)=full-time}

*{X1 = 0.8 * 1fa*
*X2 = 0.95 * 1fa*
*X3 = 1.05 * 1fa*
*X4 = 1.20 * 1fa*

based on midpoint in the brackets for 1fa, assigning DKK 13,000 and DKK 80,000 for the highest and lowest intervals}

{if previous job (1d)=part-time}

*{X1 = 0.8 * 1fb * 2*
*X2 = 0.95 * 1fb * 2*
*X3 = 1.05 * 1fb * 2*
*X4 = 1.20 * 1fb * 2*

based on midpoint in the brackets for 1fb, assigning DKK 6,000 and DKK 27,000 for the highest and lowest intervals}

[pagebreak]

Screen 8: Reservation wage

{Show for all arms}

8a
What is the **lowest** monthly salary (before taxes, excluding pension contributions) for

which **you would be willing** to accept a **new full-time job within the next 4 weeks**?

The **minimum monthly salary** (before taxes, excluding pension contributions) for which I would be willing to accept a **full-time job** is: _____ DKK

[pagebreak]

Screen 9: Search effort

{Show for all arms}

9a

How many hours in total do you plan to dedicate to your job search within the **next week**?

Note: By job search we refer to various activities, such as screening job ads, gathering information, writing applications, etc.

[pagebreak]

Screen 10: Perceived returns to search

{Show for all arms}

10a

Think about the type of jobs you applied to over the last weeks, or – in case you did not apply to any jobs – the types of jobs that you have been planning to apply to.

How likely is it that you will receive an offer for a full-time job of this type **within the next 4 weeks** if you spent...?

- **5 hours** per week searching: My percent chance (out of 100) of receiving an **offer for a full-time job** of this type **within the next 4 weeks** is _____ %.

- **15 hours** per week searching: My percent chance (out of 100) of receiving an offer for a **full-time job** of this type **within the next 4 weeks** is _____ %.

[pagebreak]

Screen 11: Willingness to make concession

{Show for all arms}

11a

When searching for a new job, one sometimes has to make certain concessions. What would you accept in order to find a job?

Would you...

(Tick all that apply.)

{Order randomized with “none of the above” at the bottom}

- accept a long commute to work
- accept awkward working hours
- accept a job that is below your specialized abilities
- take additional training
- accept uninteresting work
- accept awkward working conditions (noise, dirt)
- accept exhausting work
- change your residence
- change your profession
- None of the above

[pagebreak]

Screen 12: Question on job finding probability

{Show for all arms}

12a
We would now like you to think about your personal situation in the **next three months**.

How likely do you think it is that you start working in a new job within this period?

My percent chance (out of 100) to start working in a new job within the next three months is XXX.

[pagebreak]

Screen 13: Overconfidence I

{Show for all arms}

You are almost done! We have a few final questions. These are not necessarily related to your job search, but instead ask you to guess a few facts. For some of them, it is not easy to guess them right. Please try and answer the following questions as best you can.

13a
Question 1: Let us assume that you have 10,000 kr. in a savings account, which pays 10% interest each year. How much money will you have in the account after two years if you leave all the money and interest payments in the account?

_____ DKK

13b

Question 2: In a sale, a shop is selling all items at half price. Before the sale, a sofa costs 3,800 kr. How much will it cost in the sale?

_____ DKK

13c

Question 3: A second-hand car dealer sold a used car for 60,000 kr. This is two-thirds of what the car cost when new. How much did the car cost when new?

_____ DKK

13d

Question 4: Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?

• More than today • Exactly the same • Less than today

13e

Question 5: In the BIG BUCKS LOTTERY, the chances of winning a 100 kr. prize are 1%. What is your best guess about how many people would win a 100 kr. prize if 1,000 people each buy a single ticket from BIG BUCKS?

_____ people

[pagebreak]

Screen 14: Overconfidence II

{Show for all arms}

14a

What do you think, how many of the 5 questions on the last screen did you get right?

• 0 • 1 • 2 • 3 • 4 • 5

14b

All respondents to this survey are drawn from the pool of people who are registered as unemployed in Denmark as of October 22nd, 2023. We ask everyone who takes this survey the same five questions you just answered on the last screen.

Out of every 100 individuals who took our survey, how many do you think got **fewer** answers right than you?

For example, if you think you got more answers right than all other respondents, enter 100. If you think you got fewer answers right than all the other respondents, enter 0.

_____ out of 100 got **fewer answers right** than you.

{remainder popping up once respondent enters answer}

You believe that [100 - answer] got at most the same or more answers right than you did.

[pagebreak]

Screen 15: Last Screen

{Show for all arms}

15a
If you have any thoughts or input you would like to share with us, either regarding job search or the survey you have just completed, please write them in the field below:

[Text entry box]

15b
Thank you for your response.

Please remember that we are giving away a total of 20 GoGift gift cards to those who complete the entire survey. These gift cards are good for many things and are very easy to use in stores and online. Each gift card is worth 1000 DKK.

If you win a gift card, you will be notified directly in your e-Boks no later than December 1, 2023.
Please close your browser to complete the survey.

B.2 Follow-up survey

One common arm. Only individuals who completed the main survey and were screened to *Control* or *Treatment* and who completed all questions of the main survey up until question 12 are invited.

The screen titles, question numbers and text written in "{}"-brackets are not shown to the respondents in the survey. "XXX" in survey question 3a are placeholders and are filled with the response options the participant ticked in the corresponding survey questions on screen 1 of the main survey.

Screen 0: Welcome

{Show for all respondents}

Thank you very much for participating in this survey! This is a follow-up survey to one you answered last week. (Again, thank you for sharing your valuable opinions and thoughts with us last week!) Some of the questions you will find in this survey are similar to the ones you answered in the previous survey, while others are different.

Once again, as a token of our appreciation for your time, we are giving away a total of 10 GoGift gift cards among those who complete the entire questionnaire. These 10 cards are in addition to the 20 cards we gave away to those who completed the survey a week ago. The gift cards can be used for many things and are very easy to use both in stores and online. Each gift card is worth 1000 DKK.

If you win a gift card, you will receive a direct notification in your e-Boks no later than December 1, 2023.

[pagebreak]

Screen 1: Type of job searched for

{Show for all respondents}

1a
What is the current status of your job search?
- I am still searching for a job
- I have accepted a job offer

[pagebreak]

Screen 2: Explanation probabilities

{Show for all respondents}

In some of the following questions, we will ask you to think about the percent chance

of something happening in the future. Your answers can range from 0 to 100, where 0 means there is absolutely no chance, and 100 means that it is absolutely certain.

For example, numbers like:
2 and 5 percent may indicate "almost no chance".
18 percent or so may mean "not much chance".
47 or 52 percent chance may be a "pretty even chance".
83 percent or so may mean a "very good chance".
95 or 98 percent chance may be "almost certain".

[pagebreak]

Screen 3: Belief about re-employment wages of similar individuals

{Show for all respondents}

3a
About a week ago, we asked you about your personal characteristics and situation, such as your level of education and how long you had been searching for a job. Based on the information you shared with us, please think about individuals with **similar characteristics as you had at the time of our last survey and who found a new job in the last ten years**.

Specifically, please think about individuals who, **at the time when they took up a new full-time job** ...

I. had been unemployed for the same time as you [XXX months].
II. had the same level of education as you [XXX].
III. had the same age as you [XXX-XXX].
IV. have the same gender as you [XXX].
V. had the same monthly salary before taxes in their last job as you [XXX].
VI. worked in the same industry in their previous job as you [XXX].
VII. worked [part-time (at least 10 and less than 30 hours per week)/ full-time (at least 30 hours per week)] in their last job.

When starting their **new full-time job**, what do you think was the **average monthly salary (before taxes, excluding pension contributions)** of a person with these characteristics?
The average monthly salary before taxes was:
_____ DKK

[pagebreak]

Screen 4a: Perceived mean of the wage offer distribution

{Show if answer to Question 1a was “I am still searching for a job”}

4a

Imagine you were offered a **new full-time job within the next 4 weeks**: what do you think would be the monthly salary (before taxes, excluding pension contributions) that you would be offered?

I expect that the **offered monthly salary (before taxes, excluding pension contributions)** would be: _____ DKK

[pagebreak]

Screen 4b: Perceived mean of the wage offer distribution

{Show if answer to Question 1 was not “I am still searching for a job”}

4b

Imagine you were still searching for a job and you were offered a **new full-time job within the next 4 weeks**: what do you think would be the monthly salary (before taxes, excluding pension contributions) that you would be offered?

I expect that the **offered monthly salary (before taxes, excluding pension contributions)** would be: _____ DKK

[pagebreak]

Screen 5a: Subjective probability distribution regarding offered wage

{Show if answer to Question 1a was “I am still searching for a job”}

5a

Please imagine again you were offered a **new full-time job within the next 4 weeks**. We would now like to ask you how likely it is that the salary offered in this job would fall into different intervals. **In your view, what would you say is the percent chance that the offered monthly salary (before taxes, excluding pension contributions) would be** ...
... lower than X1__%
... between X1 and X2__%
... between X2 and X3__%
... between X3 and X4__%
... higher than X4__%
Total __%

{If previous job (Main survey 1d) = full-time}

*{X1 = 0.8 * Main survey 1fa*

*X2 = 0.95 * Main survey 1fa*
*X3 = 1.05 * Main survey 1fa*
*X4 = 1.20 * Main survey 1fa*
Based on midpoint in the brackets for Main survey 1fa, assigning DKK 13,000 and DKK 80,000 for the highest and lowest intervals.}

{If previous job (Main survey 1d) = part-time}

*{X1 = 0.8 * Main survey 1fb * 2*
*X2 = 0.95 * Main survey 1fb * 2*
*X3 = 1.05 * Main survey 1fb * 2*
*X4 = 1.20 * Main survey 1fb * 2*
Based on midpoint in the brackets for Main survey 1fb, assigning DKK 6,000 and DKK 27,000 for the highest and lowest intervals.}

[pagebreak]

Screen 5b: Subjective probability distribution regarding offered wage

{Show if answer to Question 1a was not "I am still searching for a job"}

5b
Again, please imagine you were still searching for a job and you were offered a **new full-time job within the next 4 weeks**. We would now like to ask you how likely it is that the salary offered in this job would fall into different intervals. **In your view, what would you say is the percent chance that the offered monthly salary (before taxes, excluding pension contributions) would be ...**
... lower than X1__%
... between X1 and X2__%
... between X2 and X3__%
... between X3 and X4__%
... higher than X4__%
Total __%

{If previous job (Main survey 1d) = full-time}

*{X1 = 0.8 * Main survey 1fa*
*X2 = 0.95 * Main survey 1fa*
*X3 = 1.05 * Main survey 1fa*
*X4 = 1.20 * Main survey 1fa*
Based on midpoint in the brackets for Main survey 1fa, assigning DKK 13,000 and DKK 80,000 for the highest and lowest intervals.}

{If previous job (Main survey 1d) = part-time}

*{X1 = 0.8 * Main survey 1fb * 2*
*X2 = 0.95 * Main survey 1fb * 2*

*X3 = 1.05 * Main survey 1fb * 2*
*X4 = 1.20 * Main survey 1fb * 2*
Based on midpoint in the brackets for Main survey 1fb, assigning DKK 6,000 and DKK 27,000 for the highest and lowest intervals.}

[pagebreak]

Screen 6: Reservation wage

{Show if answer to Question 1a was "I am still searching for a job"}

6a
What is the **lowest** monthly salary (before taxes, excluding pension contributions) for which **you would be willing** to accept a new **full-time job within the next 4 weeks**?

The **minimum monthly salary** (before taxes, excluding pension contributions) for which I would be willing to accept a **full-time job** is:
_____ DKK

[pagebreak]

Screen 7: Last Screen

{Show for all respondents}

7a
If you have any thoughts or input you would like to share with us, either regarding job search or the survey you have just completed, please write them in the field below:

[Text entry box]

7b
Thank you for your response.

Remember that we are giving away a total of 10 extra GoGift gift cards to those who complete the entire survey. These 10 cards are in addition to the 20 cards we gave away to those who completed the survey a week ago. Each gift card is worth 1000 DKK.

If you win a gift card, you will receive a notification directly in your e-Boks no later than December 1, 2023.

Please close your browser to complete the survey.