Job Ads as Signals:

Evidence from a Priced Amenity and Worker Beliefs*

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Abstract

Discrete choice experiments are widely used to estimate workers' willingness to pay (WTP) for job amenities under the assumption that workers evaluate each attribute in isolation. We test this assumption by embedding an amenity with a known market price — a well-known monthly public transport pass — in a large-scale choice experiment with 6,000 German workers. Stated WTP for the pass is roughly twice its market price, while WTP for other amenities matches prior estimates. A complementary belief-elicitation experiment shows that advertising any amenity causally shifts beliefs about unlisted characteristics of the employer. Posted wages similarly signal the amenity bundle so that wage variation, the money metric for WTP calculation, is itself contaminated by belief spillovers. In general, workers infer that higher pay comes with better amenities but also more stress. The belief spillovers we document imply that individual-amenity WTP estimates capture perceived bundles rather than isolated attributes. These findings factor into the measurement of non-wage compensation and the estimation of monopsony power.

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1 Introduction

Economists have long recognized that jobs are bundles of wages and non-wage amenities (Smith, 1776, Book I, Ch. X, Part I), with non-wage amenities making up a substantial share of the overall value of a job (Maestas et al., 2023; Mas, 2025). When a worker chooses a job, they weigh not only pay but also amenities such as flexibility, dignity, or the ability to work remotely (Dube et al., 2022; Mas and Pallais, 2017; Wiswall and Zafar, 2017). Despite their importance, non-wage amenities are notoriously hard to price. A large literature estimates hedonic compensating differentials in existing datasets (Rosen, 1974, 1986), though with a mixed track record (see, e.g., Brown, 1980). A key innovation in recent years has been the proliferation of stated-choice (and actual choice) experiments, in which respondents select among hypothetical (and actual) jobs that experimentally vary in attributes and pay (see, e.g., Maestas et al., 2023; Wiswall and Zafar, 2017, and an overview in Table 1). Their appeal lies in combining experimental control over workers' choice sets and the offered amenities with behavioral realism: by randomly varying wages and amenities, discrete choice experiments allow researchers to directly identify the trade-offs workers make between pay and job attributes and thereby recover willingness to pay (WTP) estimates for unpriced amenities (Mas, 2025).

Yet, despite these advantages, the use of discrete choice experiments to infer WTP for job attributes requires the assumption that workers evaluate each attribute in isolation. When an experimenter varies one attribute, e.g., the option to work from home or generous parental leave, the resulting difference in choice probabilities is interpreted as reflecting the worker's WTP for that specific attribute alone. In reality, however, jobs are bundles of correlated amenities chosen endogenously and interdependently by employers (Mas, 2025). Empirically, employers that offer one attractive amenity tend to offer others as well (Sockin, 2022); similarly, employers offering better amenities tend to pay higher wages (Pierce, 2001; Roussille and Scuderi, 2025; Sockin, 2022). Jobs are, moreover, experience goods (Jovanovic, 1979), many features cannot be observed before accepting a position, so job advertisements may function as signals about the broader employment package, conveying information beyond what is explicitly listed (Milgrom and Roberts, 1986). As a consequence, workers might infer a job offering remote work to feature greater autonomy and trust, or one advertising generous parental leave may be taken as evidence of a family-friendly culture and amenities. Experimentally varying one amenity may shift worker beliefs about the many unlisted ones, potentially biasing WTP estimates. In the extreme, the observed variation in choices could *only* reflect workers' perceptions of correlated job attributes rather than valuation of the experimentally varied attribute itself. This inference problem parallels insights from the signaling and employer learning literature, where non-productive worker traits still convey information about worker productivity (Altonji and Pierret, 2001; Arrow, 1973; Farber and Gibbons, 1996; Spence, 1973), and from work on advertising for experience goods (Milgrom and Roberts, 1986; Nelson, 1970, 1974).

To test the proposition that job ads function as signals, we bring two complementary experimental designs. The first is a large-scale discrete choice experiment that follows the methodology now standard in the literature (Maestas et al., 2023; Mas and Pallais, 2017; Wiswall and Zafar, 2017): 6,000 representatively sampled German workers each make ten pairwise choices between

hypothetical job offers that randomly vary in the wage and up to seven non-wage attributes. As in leading implementations, respondents select the job title most relevant to their own occupation and the job ads are designed to resemble actual postings. Our innovation within this otherwise standard design is to embed an amenity with a known market price — the *Deutschlandticket*, a monthly public transport pass priced at €63 — whose cost provides an objective upper bound on any worker's true WTP, and thereby a direct benchmark for evaluating implied WTP estimates. The Deutschlandticket is increasingly offered by employers, with about 7 percent of German job postings advertising a free or subsidized ticket. The second, complementary design is a belief-elicitation experiment that measures how amenities and posted wages in a job advertisement shift workers' beliefs about unlisted employer characteristics such as workplace culture, management quality, and coworker composition.

Workers' WTP for the Deutschlandticket is roughly twice its market price, even though WTP estimates for all other amenities align closely with prior findings in the literature. The implied WTP for the ticket amounts to 2.9 percent of pre-tax annual income, compared to an actual cost of 1.6 percent. That the Deutschlandticket is a salient benefit but with less than universal take-up (15 to 25% of adults, i.e., a majority voluntarily forgoing the ticket at its current price, Gaus and Link, 2025) reinforces that the market price is a genuine upper bound on the WTP. Importantly, the experiment detects qualitatively plausible heterogeneity in dimensions we had pre-registered: workers living in cities, and those who use public transport report substantially higher WTP for the ticket. We find estimates for unpriced amenities such as scheduling flexibility and paid vacation that closely match those in a large body of prior work (see, e.g., Maestas et al., 2023), suggesting that the overvaluation we document reflects a general feature of stated-choice designs rather than a peculiarity of our setting. The most natural explanation for the inflated WTP — that workers misperceive the ticket's price — is directly contradicted by the data: roughly 80 percent of respondents correctly report the price at the end of the experiment within €10 of the actual price, a treatment arm that displays the market price during the choice task has no discernible effect on stated WTP, and restricting the sample to respondents who demonstrate accurate price knowledge leaves the overvaluation intact. The overvaluation is consistent with the signaling mechanism described above: listed amenities may shift workers' perceptions of the broader job package, so that the implied WTP reflects the value of a perceived bundle rather than the amenity alone.

Our belief-elicitation experiment provides direct evidence that the signaling channel operates: across every amenity we test, listing it in a job advertisement causally shifts workers' beliefs about unlisted employer characteristics. Concretely, for the Deutschlandticket — the amenity for which we can benchmark the WTP overvaluation — randomly including it in a job ad increases the perceived likelihood that the employer offers employee discounts and a company pension, but also shifts beliefs along dimensions unrelated to compensation, such as the firm's commitment to sustainability and the share of women it employs. The effects are broader still for work from home, an amenity that has received particular attention since the pandemic (Barrero et al., 2023; Cullen et al., 2025): listing it shifts every one of the ten unlisted belief dimensions we measure, with workers inferring a more pleasant atmosphere, a family-friendly employer, flatter

hierarchies, and reduced stress. Open-ended free-text responses confirm that these inferences arise spontaneously and are causally affected by the treatment (drawing on causal inference methods for text in Modarressi et al., 2025, and Egami et al., 2022, to implement the analysis of open-ended texts advanced by Haaland et al., 2025). We find that workers are substantially more likely to characterize the job as offering a positive workplace culture when any amenity is listed, and significantly less likely to anticipate a stressful work environment when work from home appears. The belief spillovers we document have direct implications for WTP estimates: because listing an amenity changes perceptions of the job along unlisted dimensions, the choice response in the DCE conflates the value of the listed amenity with the perceived changes in the broader bundle.

The spillover we document is not confined to non-wage amenities: the posted wage, the reaction to which underpins all WTP calculations, also signals the amenity bundle, so that spillovers also contaminate the wage metric used to infer amenity valuations from choice behavior.[1] Higher posted wages causally lead workers to believe that jobs offer a more positive workplace culture, but also that it is more stressful — consistent with real-world patterns in which higher-paying jobs tend to be both better-resourced and more demanding (Nagler et al., 2025). The bias in WTP estimates thus operates on both sides of the ratio — the numerator, because listed non-wage amenities signal unlisted ones, and the denominator, because wage variation in job ads signals amenity changes — further calling into question the interpretation of any individual amenity valuation from choice experiments.

The signaling also runs from amenities to wages: when job ads omit a salary — as the vast majority do — workers use the listed amenities to infer what the job pays.[2] To test this mechanism directly, we include a final belief-elicitation design in which workers are shown a job ad without a posted salary, with the listed amenities again randomized, and are asked to state their expected earnings for the position. Listing specific amenities causally raises workers' expected pay for most amenities we vary. Workers thus appear to believe that better non-wage amenities come with higher, not lower, pay — the opposite of what a simple compensating differentials framework would predict. This finding adds to a growing body of evidence that wages and amenities are positively correlated in reality (Pierce, 2001; Roussille and Scuderi, 2025; Sockin, 2022), and suggests that workers have internalized this pattern: rather than expecting a trade-off between pay and most amenities, they infer that employers offering attractive non-wage packages are also likely to pay well.

Our evidence that listed amenities and wages contaminate WTP estimates through belief spillovers implies the broader proposition that job ads function as signals about the full employment package. This is consistent with a growing body of evidence from different literatures. In the directed search literature, Banfi and Villena-Roldan (2019), Escudero et al. (2024), Audoly

[1] This is consistent with evidence in **?** who show in a field experiment that randomly assigning higher wages to otherwise identical vacancies leads external raters to perceive jobs to have better working conditions overall.

[2] Batra et al. (2023) document that only 14% of job ads in the US include pay information; the corresponding figure is 16 percent for Germany (Indeed Hiring Lab, 2026). Audoly et al. (2024) show that job attributes described in job ads are meaningful (though not perfect) predictors of employer attractiveness.

et al. (2024), and Jalal (2026) provide evidence that workers use non-wage job ad content to direct their applications. [3]

Our findings have direct consequences for how researchers measure the value of non-wage amenities. If WTP for each individual amenity is inflated because it captures the perceived value of a correlated bundle, then summing WTP estimates across amenities — as is commonly done to quantify the non-wage component of total compensation — will systematically overstate the importance of non-wage amenities relative to pay. The bias is not uniform: it will be largest for amenities that are strongest signals of overall job quality, and may even reverse sign for amenities that signal offsetting disamenities, such as free meals at the office signaling an expectation of long hours (see Mas and Pallais, 2020). The direction and magnitude of the bias for any given amenity depends on how workers perceive its correlation with unlisted features — a quantity our belief-elicitation experiment is designed to measure, and with the spillover of wage variation into perceived amenities.

Precisely because wage variation in job ads signals changes in the amenity bundle, our findings also have implications for the estimation of labor market power. A large literature estimates the elasticity of labor supply to the firm from workers' responses to wage variation — whether in stated-choice experiments, real vacancy data, or quasi-experimental designs — and uses these elasticities to infer the degree of monopsony power (see, e.g., Kline, 2025; Manning, 2021). If a higher wage is interpreted by workers as a signal of better amenities, the observed labor supply response will conflate the pure wage effect with the perceived amenity improvement, overstating workers' sensitivity to wages per se. The implied degree of monopsony power would then be understated. Moreover, because the signaling content of a wage change may differ depending on whether the worker is being recruited or is considering leaving, recruitment and separation elasticities will generally diverge even absent other search frictions.

Our results also suggest practical lessons for the design of stated-choice experiments. A pre-registered treatment arm in which respondents are prompted to assume that all unlisted attributes of the two jobs are identical has no discernible effect on WTP estimates — consistent with Dafoe et al.'s (2018) finding that information equivalence is difficult to restore by instruction alone. Simple verbal prompts cannot override the inferences workers naturally draw from job ad content. More promising approaches include eliciting beliefs about correlated features directly, as we do, to estimate the omitted variable bias; using open-ended prompts to surface what is top of mind for workers when they read a job ad (Ferrario and Stantcheva, 2022; Haaland et al., 2025); and designing control treatments around the most salient inferences. Importantly, our findings are not an indictment of stated-choice methodology per se: because the signaling mechanism we document plausibly extends to actual job choice (stated choices predict real choices closely; see Maestas et al., 2023; Mas and Pallais, 2017; Wiswall and Zafar, 2017), the issue is not that stated-choice experiments are unrealistic, but that individual-amenity WTP estimates — whether from stated or actual choices — should be interpreted as capturing the value of a perceived bundle rather than isolated attribute.

[3] Jalal (2026) also shows that job seekers only imperfectly predict posted wages when those are omitted from an ad, consistent with evidence on imperfect information about outside options (Jäger et al., 2024).

2 Hypothetical Choice WTP Estimates from the Literature

Stated choice experiments have become the dominant method of eliciting workers' willingness to pay for a wide range of job attributes. In Table 1, we provide an overview of the estimated willingness to pay for amenities and disamenities in the literature. These range from tangible benefits such as work schedules, health insurance, and paid leave to broader features of the workplace, such as autonomy or hostility, to the identity of coworkers. Their increasingly frequent use in the literature highlight that this method has become central for valuing attributes that are not traded (or tradeable) and hence no market price is available.[4]

However, Table 1 also shows that the interval of the estimated WTP for a specific job attribute can be wide. For example, scheduling flexibility is valued anywhere from 2 to 19.2% of an average worker's wage. The willingness to pay to avoid undesirable job characteristics, such as shift work or workplace harassment, spans similarly wide intervals. Some of these differences can be explained by variation in the wording in the studies, experiment design, differences between respondent samples (Mas and Pallais, 2017), or in the definition of the amenities themselves. For example, Desiere and Walter (2025) estimate that workers are willing to pay almost 10 times more to avoid a night shift compared to avoiding a morning shift.

3 Setup of Hypothetical Choice Experiment

Eliciting willingness-to-pay The first module of the experiment focuses on estimating respondents' willingness to pay for different amenities. We recruited a representative sample of 6,000 individuals from the German working-age population who were actively in the labor force. They were recruited through the online survey provider Bilendi, and the survey was administered in January and February of 2025. Each respondent was first asked to provide a number of demographic details, including, age, gender, employment status, state, and type of region (i.e., large city, smaller town, or rural). For descriptive statistics of the sample, see Appendix Table A1.

In designing our experiment, we take a number of steps to try and mimic authentic job search for each participant. First, rather than asking workers to choose between jobs for a nondescript or general position, we tailor the ads to the specific job title that is most relevant to the worker. Workers were asked to type in their current occupation, and out autocomplete algorithm matches it to one of the 500 most common job titles in Germany as per Indeed vacancy data. Respondents are incentivized with the promise of information on the wage structure for for that job title. We use this occupation across all parts of the experiment whenever the respondent is asked to state preference or make choice about jobs.

Second, we ask respondents about their current pay and calibrate the wages displayed in the

[4]Table 1 shows that stated choice experiments are not used to estimate the value of attributes which have a market price. The amenities that come closest to having a monetary value are health insurance, pensions and paid leave, but their WTP will also depend on an individual's risk aversion, expectations about the future, and discount factor, which are likely to play a negligible role in the case of the Deutschlandticket.

hypothetical jobs based on the full-time equivalent.[5]

Third, we design each hypothetical job ad to have a similar structure to job ads as they would appear on Indeed. The job title is included as part of the survey question ("Compare the two following job ads for a position as paralegal"), and the job ads include a blurred out space where the employer name would be in a real job ad, to give the impression that each ad is associated with a given employer. By varying the length of the blurred space, it would reinforce these are ads for different employers. Below that, we list the wage and pay frequency as well as the hours per week, which is held fixed at 40 hours, as it would appear in a real ad. From there, we list the number of paid vacation days and any additional amenities. We keep the structure of the ad as a free text (list) rather than constructing an explicit table comparing the amenities.

We chose amenities that would be broadly applicable for any work setting: number of vacation days, subsidized lunch, flexible work time, and training opportunities. We also randomly included work from home for the subset of respondents who stated that it is (in general) possible work from home in their occupation. A half of these respondents were randomly shown the option to work from home (some or all days). The other half was offered subsidized lunch, alongside the rest of the sample for whom work from home is not possible in their line of work.

Importantly, we also included a fringe benefit whose market price provides an objective upper bound on what any worker would rationally be willing to pay: the Deutschlandticket (*Germany ticket*). Introduced in May 2023, the Deutschlandticket allows unlimited travel on nearly all local and regional public transport across Germany for a fixed subscription fee of 63 euros per month when we fielded our experiment.[6] The Deutschlandticket is a salient but not universal benefit, owned by roughly 15 to 25 percent of adults in 2023 (Gaus and Link, 2025), and increasingly offered by employers, with about 7 percent of German job postings in June 2025 advertising a free or subsidized ticket. Because the Deutschlandticket's price is fixed, uniform, and fully observable, it provides a direct benchmark for testing whether the stated-choice experiment recovers the true willingness to pay for a job amenity with a known market value.

Each respondent is asked to make 10 pairwise decisions between two hypothetical jobs that randomly vary in their wage, a free Deutschlandticket, and the other amenities considered. To ensure that workers were prepared for this comparison and understood each alternative, we started the experiment by listing all the possible amenities and explaining that the job ads correspond to individualized vacancies based on real job postings. A sample of these pairwise decisions is presented in Figure 1. In this example, the left-hand side job ("job A") offers 25 days of paid leave, the possibility to work from home 2 days a week, a free Deutschlandticket, training opportunities, and flexible work schedule. The right-hand side job ("job B") offers a larger allowance of paid leave (30 days), Deutschlandticket and training opportunities, but

[5]Wages are drawn randomly from a uniform distribution ranging from 20 percent below to 30 percent above the the stated full-time equivalent monthly earnings.

[6]The Deutschlandticket covers, with few exceptions, all local and regional buses, trams, metros, S-Bahn, and regional train services (RB/RE) across Germany. As a publicly available subscription, it effectively acts as a commuting subsidy when provided by employers, while also being valid for non-work travel. According to Indeed job postings, about 7 percent of job ads in Germany in June 2025 advertised a free or subsidized Deutschlandticket; see Appendix Figure A1 for trends over time. Employers can get a 5% discount on the price.

doesn't mention other amenities. It also pays 700 euros a month more. For each comparison p, we record whether worker i chooses job A, $1(\text{Job A chosen})_{i,p}$.

Belief elicitation The second module of the experiment focuses on eliciting respondents' beliefs about amenities and characteristics of the job not disclosed in the job ads. We present the respondents with 4 questions. Each includes a randomly chosen job ad from the first module on willingness-to-pay elicitation.

In the first question, we present the respondent with a pair of hypothetical job ads and ask them which job is more likely to contain a specific amenity or characteristic. We randomly list 5 of the following 10 general, broadly applicable attributes: employee discounts and benefits, high share of women in the workplace, job is stressful and high-pressured, pleasant work atmosphere, regular team events, employer cares about sustainability, employer is family-friendly, employer is young and dynamic, flat hierarchy, occupational pension scheme. This setup mirrors the WTP elication but measures the signalling value of the content of vacancies.

The second question again randomly selects 5 of the 10 attributes, but shows the respondent one job ad and asks them to indicate the probability that the job has the given attribute. We use a 5-point Likkert scale with explicitly associated probabilities.

The third question, we ask the respondent to provide a free-text description of their beliefs about the employer associated with a particular vacancy. We randomly show the respondents one of two possible versions of this question: either to write about possible advantages and disadvantages in this job, or to write what they think about the position (without further prompts). This question allows us to elicit general impressions about the job ad beyond the 10 attributes listed above.

The fourth and final question asks the respondent to guess the wage of a job ad. We present them again with two job ads, this time without any wage information, and ask which ads is likely to pay more, and by how much. This question allows us to observe respondents' associations between amenities and expected pay.

We randomize the order of these questions within the module. We consider a number of alternative specifications and sensitivity checks. Embedded in the experiment is one attention check which allow us to consider a highly-attentive sub-sample. We also observe how much time each person spent completing the experiment, allowing us to exclude participants who were exceptionally quick in answering.

4 Deriving WTP in Discrete Choice Experiments and the Role of Unlisted Amenities

4.1 Standard WTP Calculation in Discrete Choice Experiments

With these pairwise choices recorded, we closely follow the estimation procedure outlined in Maestas et al. (2023) for estimating the willingness to pay for each unpriced attribute. Let $w_{i,c,p}$ indicate the wage that worker i is offered for job alternative $c \in \{A, B\}$ for the pairwise decision

$p \in \{1...8\}$, and $a'_{i,c,p}$ the vector of non-wage job attributes. We assume that the utility of each job alternative $V_{i,c,p}$ is represented by a linear indirect utility function,

$$V_{i,c,p} = \alpha + a'_{i,c,p}\beta_i + \delta_i ln(w_{i,c,p}) + \varepsilon_{i,c,p} \tag{1}$$

The coefficients on log wages and each job attribute are allowed to vary for each individual i, and we assume the errors $\varepsilon_{i,c,p}$ are distributed as i.i.d. Extreme Value Type I random variables. Under this assumption, the probability that a worker selects the job offering the bundle $\{w_{i,A,p}, a'_{i,A,p}\}$ as opposed an alternative job with bundle $\{w_{i,B,p}, a'_{i,B,p}\}$ is given by

$$Pr(V_{i,A,p} > V_{i,B,p}) = \frac{exp\Big[(a'_{i,A,p} - a'_{i,B,p})\beta_i + \delta_i(ln(w_{i,A,p}) - ln(w_{i,B,p}))\Big]}{1 + exp\Big[(a'_{i,A,p} - a'_{i,B,p})\beta_i + \delta_i(ln(w_{i,A,p}) - ln(w_{i,B,p}))\Big]}. \tag{2}$$

Simplifying the model by removing individual heterogeneity in the utility derived from wages $\delta_i = \delta$ and non-wage attributes $\beta_i = \beta$ allows the parameters to be recovered through a logit specification. Estimating logit models separately for varying demographic groups g produces group-level coefficients β_g and δ_g for comparison.

With these parameters, we can derive a willingness to pay estimate for each job attribute a. Define WTP_i^a as the corresponding wage decrease that would make individual i indifferent between not having attribute a at wage level w_i and having attribute a but experiencing a reduction in wage to $w_i - WTP_i^a$. From the linear indirect utility function, WTP_i^a solves

$$\delta_i ln(w_i) = \beta_i^a + \delta_i ln(w_i - WTP_i^a). \tag{3}$$

Rearranging equation (3), we have that

$$WTP_i^a = w_i \times \Big[1 - exp(\frac{-\beta_i^a}{\delta_i})\Big]. \tag{4}$$

The experiment includes 2 separate treatment arms, both regarding on information provided in the introduction to the experiment. First, we randomize whether we explicitly state the market price of the Deutschlandticket (63 euros per month). This will allow us to test whether respondents who were given this information value the ticket closer to its market price. The second treatment arm randomly includes the prompt *"All other attributes of the jobs are identical."*. This is a standard guidance in discrete choice experiments and we aim to test whether it matters for respondents' valuation of the different amenities.

4.2 WTP Bias from Correlated Amenities

The standard WTP calculation assumes that workers evaluate each job attribute independently, so that the coefficient β_r on amenity r isolates the utility from that amenity alone. In practice, however, jobs are bundles of correlated amenities, and workers may use the attributes they observe to form beliefs about those they do not. We now formalize how this inference biases WTP estimates.

Suppose the worker observes the wage w_j and a single amenity A_{jr}, but not the remaining amenities A_{jk} for $k \neq r$. If the worker forms beliefs about the unobserved amenities using their knowledge of the joint distribution, then under joint normality:

$$\mathbb{E}[A_{jk} \mid A_{jr}] = \mu_k + \frac{\text{Cov}(A_{jk}, A_{jr})}{\text{Var}(A_{jr})}(A_{jr} - \mu_r). \tag{5}$$

That is, observing an amenity above its mean leads the worker to revise upward their expectation of any positively correlated amenity.

Substituting these conditional expectations into the indirect utility function yields the worker's expected utility given the observed amenity and wage:

$$\mathbb{E}[V_{jt} \mid A_{jr}, w_{jt}] = \alpha' + \delta \ln w_{jt} + \beta_r^* A_{jr}, \tag{6}$$

where the coefficient on the observed amenity is

$$\beta_r^* = \beta_r + \sum_{k \neq r} \beta_k \, \gamma_{kr}, \qquad \gamma_{kr} \equiv \frac{\text{Cov}(A_{jk}, A_{jr})}{\text{Var}(A_{jr})}. \tag{7}$$

The estimated coefficient β_r^* thus captures not only the worker's true valuation of amenity r (β_r), but also a weighted sum of the valuations for all other amenities (β_k), with weights given by the regression coefficients γ_{kr} of each unobserved amenity on the observed one. This has the structure of a standard omitted variable bias.

The implied WTP inherits this bias. Using β_r^* in place of β_r:

$$WTP_r^* = w \left[1 - \exp\left(-\beta_r^*/\delta\right)\right]. \tag{8}$$

If amenities are independent, $\gamma_{kr} = 0$ for all $k \neq r$, and $\beta_r^* = \beta_r$: the standard estimator recovers the true WTP. When amenities are correlated, however, the sign and magnitude of the bias depend on the interaction of workers' valuations (β_k) and the perceived correlations (γ_{kr}). Two cases are of particular interest:

— *Positive correlations and positive valuations.* If attractive amenities tend to co-occur — as the empirical evidence suggests (Sockin, 2022) — and workers value them positively, then $\beta_k \gamma_{kr} > 0$ for most k, and WTP will be *inflated* relative to the true valuation of amenity r.

— *Negative signals.* If the presence of an amenity signals a correlated disamenity — for example, free gourmet food at the office signaling an expectation of long hours — then $\beta_k \gamma_{kr} < 0$ for that dimension, and WTP will be biased *downward*.

Finally, the bias is not limited to the numerator of the WTP expression. The wage coefficient δ is identified from workers' responses to wage variation. But if a higher posted wage also signals a better amenity bundle, the estimated δ will absorb perceived amenity changes in addition to the pure marginal utility of income. In this case, both β_r^* in the numerator and δ in the denominator of WTP are contaminated by belief spillovers, and the direction of the overall bias in WTP_r^*

becomes ambiguous without direct measurement of the spillover magnitudes — precisely the object our belief-elicitation experiment is designed to recover.

5 Willingness to Pay for a Deutschlandticket

We first estimate the willingness to pay for each job attribute following the methodology outlined in Section 3 for the full sample of respondents. The results, presented in Figure 2, demonstrate that these job attributes are indeed amenities (as opposed to dis-amenities) since we observe a positive willingness to pay for each. We estimate that the average worker would forego 2.1 percent of their wage if their employer offered for one additional day of paid vacation, 2.8 percent for a subsidized lunch, 2.9 percent for training opportunities, 6.5 percent for a flexible work schedule, 8.2 percent for a hybrid work arrangement, and 12.4 percent to be able to fully work from home. Importantly, as displayed in Section 2, these estimates fall close to those found in the rest of the literature. The average estimate for the willingness to pay for a flexible work schedule is 9 percent, whereas that for an additional day of paid vacation is 1.8 percent. We take this as evidence that the takeaways from our experiment are representative for stated choice experiments more broadly.

Turning to the focal amenity, the Deutschlandticket, we estimate that the willingness to pay is 2.9 percent. Given an average annual wage of 47,884 euros across our sample, this equates to a willingness to pay of 1,387 euros per year. This estimate is 83 percent larger than the actual cost of purchasing a Deutschlandticket for one year, which is 756 euros.

Despite the overvaluation on average, the experiment detects qualitatively plausible heterogeneity across groups, suggesting the stated-choice methodology captures real variation in preferences even as it inflates levels.

Heterogeneity by location and relevance. The extent to which an individual is willing to pay for an amenity will inherently reflect their intentions to utilize the amenity. In the case of the Deutschlandticket, since not everyone utilizes public transit, nor has access to plentiful public transit options, we anticipate differences in willingness to pay to correlate with differences in access and utilization. Consistent with this hypothesis, we observe that offerings of the Deutschlandticket in job ads is strongly correlated with population density (see Appendix Figure A2).

Each respondent was prompted whether they live in an area that would be described as a city, a town, or rural. Naturally, public transit options will be more abundant in cities and towns—where there is, for instance, the U-Bahn and S-Bahn—than in more rural areas. We anticipate workers living in rural areas will therefore value the Deutschlandticket less, i.e., exhibit less willingness to pay for it. We test whether the stated choice experiment detects such differences by repeating the estimation process described in Section 3 separately for the three categories of urbanicity. The results are presented in Figure 3.

Although we observe a positive willingness to pay for each designation, what is noteworthy is the differences that arise between them. Workers who live in city areas exhibit the highest

willingness to pay at 4.5 percent, those in rural areas the lowest willingness to pay at 2.4 percent, and those in town areas lie in between.[7] These differences we observe by urbanicity are statistically significant: We can reject that the willingness to pay among workers in rural areas is equal to that of those who live in city areas or in town areas. This is the case when we consider wages in logs, in which case they can be interpreted in percentages, or in levels.[8] The difference in WTP between workers in cities and those in towns is less discernible, consistent with the two exhibiting similar rates of Deutschlandticket ownership (Gaus and Link, 2025). The stated choice experiment thus appears to identify differences in willingness to pay which align with plausible differences in preferences, despite the overvaluation of the ticket on average.

Heterogeneity by fraction of income. Since workers were asked to state their current income, and this was used to calibrate the wages in the job ads , we have meaningful wage dispersion within our sample. Since the cost of the Deutschlandticket is fixed at 63 euros regardless of income, the Deutschlandticket will constitute a greater fraction of the wage for low-earners as opposed to high-earners. Since the Deutschlandticket would thus constitute a relatively more expensive purchase for low-earners, we anticipate low-earners to exhibit a greater WTP than high-earners.

To this end, we partition the sample into twenty bins according to the average wage among the alternatives they are presented during the stated choice experiment, and then estimate WTP for the Deutschlandticket following the procedure outlined in Section 3 separately for each bin. These bin-specific estimates are then plotted in Figure 4 against the annual cost of the Deutschlandticket as a fraction of the average wage for the bin. We also plot a 45-degree line, as this would indicate equality between the experiment-produced WTP estimates and the actual cost of purchasingdatta a Deutschlandticket.

Two aspects are worth highlighting. First, the inflated nature of the WTP estimates is not driven by outliers but is broad-based. Second, there is a clear positive relation between how much the Deutschlandticket would cost as a fraction of income and WTP. The Pearson correlation across the twenty bins is robustly positive (0.671, p-value = 0.001), and the linear line of best fit through the estimates has a slope of 1.19 (p-value = 0.000)—indicating a one-percentage-point increase in the cost as a fraction of income is associated with a 1.2 percentage point increase in WTP. Even when we take an overly conservative approach and assume workers believe the Deutschlandticket is entirely tax free (Appendix Figure A4), we draw the same conclusions. While some bins exhibit a WTP for the Deutschlandticket that is similar to the Deutschlandticket's post-tax cost burden (Panel (b) of Figure 4, the WTP remains at least one percentage point above the post-tax cost burden for many others.

[7] Although it is not implausible to postulate those in rural areas would exhibit a willingness to pay that is on average near zero, take-up of the Deutschlandticket in rural areas is non-zero (Gaus and Link, 2025), suggesting the Deutschlandticket has use in rural areas but the price is prohibitive for many.

[8] When estimated in levels in column (2), the WTP estimate no longer follows equation (3), but rather

$$WTP_i^a = \frac{\beta_i^a}{\delta_i}.$$

Put together, the stated choice experiment appears to capture *differences* in willingness to pay, which align with plausible differences in resource constraints, despite the overvaluation of the Deutschlandticket on average. Specifically, lower-wage workers are willing to forego a greater fraction of income for a Deutschlandticket.

Heterogeneity by stated preference. A natural validation of the experiment's sensitivity to genuine preference variation is to examine whether respondents who spontaneously identify the Deutschlandticket as a positive attribute of the job also express a higher stated WTP for it. In the open-ended free-text component of the survey respondents were asked to describe their impressions of a job ad in their own words. We classify respondents as "mentioning" the Deutschlandticket if they list it among the positive features of the job in their response. Figure 3 reports WTP separately for these two groups. Workers who mention the Deutschlandticket as a 'pro' exhibit a WTP of 4.6% of their wage, compared with 2.8% for those who do not; the difference is statistically significant ($p = 0.011$ in log wages, $p = 0.034$ in post-tax euros). This pattern is consistent with the stated-choice procedure capturing meaningful variation in the intensity of preferences for the Deutschlandticket across workers.

The corresponding estimates in post-tax terms are approximately €116 and €74 per month for those who do and do not mention the Deutschlandticket. For the latter, the WTP is near the conservative estimate of the ticket's market value (€77). The overvaluation of the ticket is thus concentrated among those who actively highlight the ticket as a benefit, suggesting that greater salience of the amenity amplifies rather than corrects the inflation in stated WTP.

Heterogeneity by attention. A separate concern is whether the overvaluation is an artifact of inattentive survey completion or of respondents failing to register the price of the Deutschlandticket. To address this, we exploit variation in price knowledge among the subset of respondents who were randomly not shown the market price of the Deutschlandticket during the choice task. At the end of the survey, all respondents were asked to report the price. We classify as "price-knowledgeable" those who report a price within €10 of the actual cost of €63.

Table A7 presents WTP estimates separately for those who know and do not know the correct price, among respondents in the non-price-disclosure arm. Workers with accurate price knowledge exhibit a WTP of approximately 4.9% of their monthly wage, or €210 in pre-tax euros — a figure more than three times the actual cost of the Deutschlandticket. By contrast, workers who cannot correctly state the price exhibit a WTP of just 1.7%, or roughly €74 per month, which falls just below our most conservative estimate of the market price of the Deutschlandticket in pre-tax income. These results show that inattentiveness or lack of information are unlikely to drive the estimated WTP: the overvaluation relative to the market price is *smaller* among the uninformed respondents.

Tax Treatment of the Employer-Provided Deutschlandticket Under German tax law, an employer-provided Deutschlandticket is de facto always taxed, though the route through which taxation occurs varies. If the employer pays a subsidy on top of the regular wage, the subsidy is nominally tax-exempt under § 3 Nr. 15 EStG — but the exempt amount reduces the

employee's deductible commuting allowance (*Entfernungspauschale*) euro for euro, so the tax benefit is fully clawed back through a smaller deduction.[9] Alternatively, the employer can opt to pay a flat-rate tax (*Pauschalversteuerung*) of 25 percent on the subsidy (§ 40 Abs. 2 Satz 2 EStG), in which case the subsidy is not offset against the commuting allowance — but the benefit is still taxed, albeit at the employer's expense. If neither provision applies, the benefit is treated as regular taxable income. In all three cases, the Deutschlandticket is taxed either at the employee's full marginal rate (directly, or indirectly through the commuting allowance clawback) or at a flat rate of 25 percent borne by the employer.

To ensure that our results are not driven by the tax adjustment, we additionally report what we regard as a very conservative post-tax benchmark that treats the Deutschlandticket as if it were an entirely untaxed benefit. Given the institutional reality just described, this assumption is too generous to the null hypothesis: in practice, the benefit is always at least partially taxed. We nevertheless report this benchmark to address the possibility that some respondents may (incorrectly) perceive the employer-provided ticket as tax-free and factor this into their choices. Even under this deliberately conservative assumption, the average stated WTP of approximately €77 per month exceeds the ticket's market price of €63. The overvaluation is far more pronounced for the subgroups documented above where the Deutschlandticket is most relevant: among workers who use public transport, the post-tax WTP amounts to approximately € 141 per month, more than twice the ticket price, leaving no ambiguity about the overvaluation even under the most favorable assumptions for the null. We present the estimated post-tax dollar equivalent value of all amenities in Appendix Table A2.

6 Spillover Beliefs from What is Posted in the Ad

6.1 Beliefs Over Unlisted Amenities from Listed Amenities

While job ads can be informative by, for instance, specifying particular skill requirements and tasks or highlighting specific fringe benefits, they are by no means exhaustive. Job ads inherently balance brevity—to keep the job seeker engaged—and comprehensiveness—to offer relevant information, while also balancing screening, to weed out candidates, and signaling, to entice applications. Given their signaling function, to the extent that information that is unflattering may be omitted entirely,[10] workers may struggle to understand the dis-amenities of the workplace (Sockin and Sojourner, 2023). Consequently, job ads are an incomplete summary for the complete bundle of amenities.

To fill this vacuum of information regarding unlisted job attributes (which may include the wage), workers may draw inference over what is not stated from that which is.[11] Such beliefs

[9]The employer must report the tax-exempt subsidy in line 17 of the annual wage tax certificate (*Lohnsteuerbescheinigung*), and the amount is offset against the commuting allowance in the employee's tax return.

[10]It is not obvious that an employer would never want to include unflattering information in an ad, as doing so may offer the job seeker a more realistic job preview—which is associated with greater offer acceptance rates and reduced turnover (Ash et al., 2025; Wanous, 1973).

[11]For instance, Burn et al. (2022) show that job-ad language related to age-related stereotypes deters

may draw on correlations that exist in the real world. For instance, job postings that mention the Deutschlandticket are more likely to offer other benefits, e.g., remote work, a flexible schedule, a company pension, and professional development (Appendix Table A3) than similar postings that do not mention the Deutschlandticket; further, job postings that mention a Deutschlandticket are more likely to mention other attributes of the job that workers may consider amenities, e.g., gender diversity, tolerant politics, and dynamism (Appendix Table A4).

Experimental Approach In our discrete choice experiment, we randomly varied seven amenities: vacation days, training opportunities, subsidized lunch, flexible schedule, hybrid work from home, full work from home, and a free Deutschlandticket. To gauge whether mentioning any of these amenities in a job ad shifts workers' beliefs about other, unlisted amenities, we included in our experiment additional randomization exercises regarding beliefs over ten (dis-)amenities that the literature has established workers value. This includes: employee discounts, team events, a pension, stress, a pleasant atmosphere, sustainability, female employment share, family friendliness, young and dynamic, and flat hierarchies.

We incorporated three complementary approaches to understanding beliefs over unlisted amenities. The first involved presenting each worker with a single job where it was randomized which, and how many, amenities were listed. The worker was asked, for each of the ten unlisted amenities on a 5-item Likert scale, the probability the employer who listed that ad offered the amenity. The order in which the ten prompts were presented was we randomized across participants to mitigate any possible fatigue-related bias. In the second exercise, we presented the worker with a pair of job ads, each of which had a randomized set of listed amenities. We then asked, for each of the ten unlisted amenities, the employer of which of the two ads is more likely to offer that amenity. Both of these approaches pin down unlisted beliefs in a structured manner—and because the results of the latter align with those of the former, we relegate discussion of the second approach to the Appendix. The third exercise captures unlisted beliefs in an unstructured fashion through free-text responses. Each worker was presented with a single ad where again, it was randomized the amenities that were listed, and the worker was asked to describe in their own words their impressions of the job. Using modern natural language processing tools, we can identify what, if any, unlisted amenities are written.

To analyze the results from the first approach, let $B_{i,b}$ represent the 5-item Likert response that worker i reports for their belief regarding unlisted amenity b. The five options were: 'very unlikely' (0–20%), 'unlikely' (20–40%), 'equally likely' (40–60%), 'likely' (60–80%), and 'very likely' (80–100%), The treatment—which was randomized by worker is whether each amenity a was included in the set of amenities A_i that was presented to them in the job ad, which we capture through the indicator $1(a \in A_i)$. We then estimate,

$$B_{i,b} = \sum_a \beta_a 1(a \in A_i) + \gamma X_i + \epsilon_{i,b}, \tag{9}$$

where X_i is a vector of worker characteristics. Under this framework, the coefficient β captures

older workers from applying—meaning job seekers may plausibly infer the company employs a younger workforce and draw on any such associations that may imply about the workplace.

the causal effect of mentioning each amenity on unmentioned belief b.

Effect on Structured Beliefs For ease of exposition, we present the results for only two of our amenities, our focal amenity of interest, the Deutschlandticket, and work from home, which has received increased attention since the Covid-19 pandemic (e.g., Barrero et al., 2023; Cullen et al., 2025), in Figure 5; we relegate the results for the other amenities included in our discrete choice experiment to Appendix Figure A5. Regardless of which amenity we consider though, the takeaway is clear: the incidence of one amenity shifts beliefs over other components of the amenity bundle.

Looking first at the Deutschlandticket, we observe that when a worker is randomly presented an ad that includes it, their beliefs over pecuniary and non-pecuniary aspects of the workplace adjust. While workers are 7 percentage points more likely to believe the employer offers discounts to their employees and 3 percentage points more likely to believe there will be a company pension, they are also 2 and 5 percentage points more likely to believe the firm employs a high share of women and cares about issues related to sustainability, respectively. While other beliefs may shift somewhat, we cannot statistically reject that they are unchanged.

Turning to work from home, the shift in beliefs is remarkable, in that *every* unlisted amenity we consider is shifted in response to an employer advertising work from home. For all ten dimensions, the shift is in the direction of an improved amenity bundle with, for instance, a pleasant atmosphere that is family friendly with a pension and reduced stress. The magnitude of the shifts are non-trivial at 4–7 percentage points, with the largest shifts in percentage terms occurring for the employer is family friendly, cares about sustainability, and offers a young and dynamic workplace.

For the other amenities, we briefly summarize the effects here and point interested readers to Appendix Figure A5. For free lunch, the largest shift is in employee discounts (11 percentage points), followed by the workplace being a good and pleasant atmosphere. For a flexible schedule, workers are 6 percentage points more likely to believe the employer is family friendly, with smaller but significant improvements in all other dimensions, including less stress. For hybrid work from home, workers increasingly believe the employer offers team events, cares about sustainability, and is young and dynamic. For training opportunities, the most pronounced shift is in team events (5 percentage points). Last, for additional days vacation, workers increasingly believe the employer is family friendly and offers a good, pleasant atmosphere.

The effects on beliefs from the second approach—in which we offered each worker a pairwise comparison of job ads, randomized each ad's amenities, and asked about unlisted beliefs—only serve to bolster these results. As the results comport with those observed for the single-ad exercise, we relegate the estimates for each amenity to Appendix Figure A6. A worker is 40 percentage points more likely to believe the employer advertising work from home is family friendly, and 28 percentage points more likely if they advertise a flexible schedule. They are 21 percentage points more likely to believe the employer advertising training opportunities offers a pension, and 23 percentage points more likely to believe the employer advertising a Deutschlandticket cares about sustainability. And when it comes to a good and pleasant atmosphere or being young and

dynamic, the presence of *any* amenity increases the likelihood the worker believes that to be the case for the advertising employer.

Effect on Unstructured Beliefs The ten structured beliefs we elicit may not capture all dimensions along which workers update when reading a job ad. To allow respondents to reveal their inferences in their own words, we included an open-ended module in which workers were shown a single job ad — with amenities again randomized — and asked either to describe the advantages and disadvantages of the position, or to state their general impressions of the job (following Ferrario and Stantcheva, 2022; Haaland et al., 2025). To assess any linkages between the structured beliefs intervention and the open-ended beliefs intervention, we randomized the order in which they were presented to the worker.

Before turning to a systematic analysis, it is instructive to read how workers describe the jobs they are shown. The open-ended responses reveal that workers spontaneously draw inferences about pay, stress, workplace culture, and employer type from the limited information in the ad — precisely the kind of belief spillovers our structured elicitation is designed to measure.

A first set of responses illustrates how workers use the posted wage and listed amenities to infer stress and performance expectations. One respondent, seeing a relatively high salary, wrote: *"For EUR 5,000 gross per month, I would start working there immediately. It's probably stressful at times given the salary, and quite a lot is expected of employees, but I would accept that."* Another respondent inferred the following from a high posted salary: *"High performance pressure due to the good pay. Young company, cannot afford to have employees take paid vacation."* A low wage triggered a different inference: *"Relatively low salary, therefore either a greedy boss or a family business = high pressure."* Notably, in these anecdotal cases, both high and low wages led to inferences about stress — but through different channels.

Workers also inferred stress and working conditions from the *absence* of amenities. One respondent wrote: *"Traditional company, few vacation days suggest possible understaffing and a lot of stress."* Another drew a rich set of inferences from the lack of flexibility: *"I would expect it to be a more stressful environment because you don't have the option to work exclusively from home — meaning office communication would be more important, and since there are no flexible hours, more people would be in the office at the same time each day and good teamwork would matter a lot."*

A second set of responses illustrates how the presence of amenities shapes perceptions of employer type and workplace culture. When amenities were listed, respondents inferred: *"I think this is a young, family-friendly company that cares about and values its employees"* and *"A young, dynamic team, motivated employees."* One respondent explicitly connected the generosity of the benefits package to firm size: *"A job at a large company (a small company probably couldn't afford such advantageous benefits!). And 35 days of vacation is a lot! Well above the CBA standard — I think!"* When fewer amenities were listed, the inferences reversed: *"More of a traditional law firm, probably with older partners. No flat hierarchies. The offer is, in my opinion, the bare minimum these days"* and *"I think this is rather a conservative employer with rigid structures, rather inflexible, and it can also get stressful quite often."*

These responses illustrate the signaling mechanism at the individual level: workers do not evaluate amenities in isolation but use them to construct a broader narrative about the employer. The systematic analysis that follows confirms these patterns at scale.

We next analyze the free-text responses using the causal inference framework for text outcomes proposed by Modarressi et al. (2025) (building on the sample-splitting approach in Egami et al., 2022).[12] The method proceeds in two steps. First, we test whether the content of the open-ended responses differs systematically between treated and control respondents by using a large language model (LLM) to predict treatment status from the text in a held-out sample. We assess statistical significance via a permutation test. Second, conditional on detecting an effect, we prompt the LLM to discover thematic dimensions that distinguish treated from control responses, score the held-out sample on these themes — with the LLM blind to treatment status — and estimate causal effects of the treatment on each theme.

For the first step, we average accuracy over 50 independent sample splits to stabilize the estimates. Table 3 reports the results across all experimentally varied amenities. Posted wages and vacation days are most strongly reflected in the text, with accuracy improvements of roughly 8 percentage points over majority-rule prediction ($p < 0.001$). Flextime and training opportunities also produce statistically significant differences (2.5–3.5 percentage points, $p < 0.05$). For the Deutschlandticket, the effect is detectable but modest in magnitude ($\Delta = 1.0$ pp), consistent with the ticket being a less salient feature in respondents' overall impressions of the job than, e.g.,, the wage or vacation time. Subsidized lunch produces no detectable effect.

For the second step, to facilitate comparison across amenities, we consolidate the LLM-generated themes into a unified set of 17 dimensions covering seven aspects of job quality — pay, vacation, other benefits, flexibility, workplace climate, stress, and career development — each measured in both a *focus* variant (how strongly the text discusses the topic) and a *valence* variant (how positively it is evaluated), plus three general dimensions: overall stance toward the offer, specificity of the response, and skepticism toward the ad. The full list of unified themes and their descriptions is reported in Table 4.

Figure 8 presents the causal effects of each amenity on these unified themes. Three patterns stand out. First, across nearly all amenities, the treatment improves workers' *general stance* toward the offer, with effect sizes ranging from 0.07 to 0.27 standard deviations, confirming that listed amenities causally shift the overall evaluation of the job. Second, each amenity most strongly affects the theme most directly related to it: flextime increases focus on and positive evaluation of flexibility (0.28 and 0.36 SD, respectively), training shifts the discussion toward career development (0.33 and 0.38 SD), and higher wages raise the positive evaluation of pay (0.35 SD). Third, and most relevant for our argument, amenities also shift themes *unrelated* to the listed attribute. The Deutschlandticket increases focus on workplace climate (0.12 SD) and the positive evaluation of other benefits (0.12 SD), while reducing focus on stress (0.07 SD) and on career development (0.09 SD). Flextime increases the positive evaluation of workplace climate (0.07 SD) and reduces focus on stress (0.07 SD). Higher wages increase focus on stress and

[12] We also used an "old-school" BERTopic model to extract topics from the free responses and identify effects on topics such as "positive workplace culture" or "stressful or hard job" in Appendix Figure A7.

workload (0.08 SD), consistent with the structured belief results. These cross-domain spillovers — where listing one amenity shifts how respondents *spontaneously* discuss unrelated job features — provide converging evidence that workers treat job ads as signals about the full employment package, including in dimensions completely unmentioned in an ad.

Which Amenities Are Listed? Given that workers derive beliefs over unlisted amenities based on the amenities that are listed, presumably differences in the bundle of listed amenities should generate differential responses from workers—particularly with regards to their willingness to pay for each amenity. A miniature meta-analysis from the literature that estimates the willingness to pay for working from home suggests this is the case. We identified eight papers from the literature that estimate the willingness to pay to fully work from home through stated choice experiments. Four included the number of working hours as an additional job attribute (Lewandowski et al., 2025; Mas and Pallais, 2017; Nagler et al., 2024; Schouwer and Kesternich, 2024) and the other four did not (Curull-Sentís et al., 2025; Datta, 2019; Maestas et al., 2023; Van Landeghem et al., 2024). When the number of working hours was not included, the average willingness to pay was 16 percent of the wage (Appendix Figure A8). When the number of working hours was included though, the average willingness to pay was 6 percent of the wage—10 percentage points lower. To the extent that work from home interacts with hours or scheduling suggests estimation of willingness to pay is sensitive to which amenities are listed.

Motivated by this pattern, we incorporated into the experiment a randomization that shuffled the bundle of amenities presented. Among those who stated that the nature of their job would allow for working from home, we randomized whether the job ads they were presented in the discrete choice experiment either: (i) included work from home or hybrid work, or (ii) subsidized lunch. Both arms included four of the same amenities in the ads: the Deutschlandticket, training opportunities, flexible schedule, and additional vacation days. We record the difference in WTP estimates between the two arms in Appendix Table A8. We find that when estimated in pre-tax or post-tax euros, we can reject the joint null hypothesis at conventional significance levels—indicating that for at least one amenity, we can conclude the WTP causally shifted due to the rest of the amenity bundle presented.

Can the Right Instructions Wash Away These Correlations? A simple corrective for possibly eliminating these spillover beliefs would be to instruct workers to shut down such spillovers. This would involve telling workers to assume all else is the same between the two jobs, which would be akin to some version of implementing covariate control (Dafoe et al., 2018), but over background information that is not explicitly presented. Indeed, this has become common practice in the literature involving discrete choice experiments (e.g., Folke and Rickne, 2022; Maestas et al., 2023; Wiswall and Zafar, 2017).

While this may work in theory, we explicitly test whether this is the case in practice. We embedded in our experiment a randomized bifurcation. One-half of participants were instructed in the introductory prompt for the discrete choice experiment to assume all else is identical about the two jobs; the other half was not. We can then calculate the difference in WTP between these two treatment arms for each of the seven listed amenities. None of the differences are statistically

significant (Appendix Table A9), and we fail to reject the joint null hypothesis with p-values above 0.9. Why this intervention does not work is not clear; perhaps it is because workers fail to fully internalize the instruction, or perhaps these spillover correlations are embedded in how humans process new information about jobs. Nevertheless, whatever the reason may be, we interpret this evidence as definitive that this nudge of a corrective is an ineffective remedy for addressing spillovers in beliefs.

6.2 Beliefs Over Unlisted Amenities from Pay

Workers' beliefs over unlisted amenities may not only be altered by the amenities that are listed in an ad, but the posted wage itself. To the extent that workers have expectations over the types of jobs and workplaces that offer comparatively high wages, observing different wage levels, even for the same vacancy, will instill different beliefs over the amenity bundle. Although workers will broadly sort towards ads with greater posted wages (Belot et al., 2022; Jalal, 2026), if workers believe improved amenities come alongside higher wages (Ouimet and Tate, 2023; Sockin, 2022), then some of this sorting behavior may reflect an amenity-driven response rather than a response to the higher pay itself.

When eliciting workers' beliefs over unlisted amenities, both in a structured and an unstructured framework, the wage was randomly varied across ads. We can estimate the causal effect that the posted wage has on beliefs by estimating how beliefs vary between workers who were presented with ads of varying wages. In Figure 6, we can see that workers' beliefs update *broadly positively* on unlisted features of the amenity bundle. When the job pays more, the worker perceives the employer as increasingly likely to offer employee discounts, team events, a company pension, a good and pleasant atmosphere, and prioritize sustainability. Not all amenities update positively though: workers are also more likely to believe the job is more stressful. Interestingly, workers are less likely to think there is a high share of women at the employer when the posted wage is greater, possibly reflecting workers internalizing that women sort towards lower-paying employers (Morchio and Moser, 2024).

What are the implications of these non-zero cross-correlations that arise when we exogenously shift the posted wage? Well, since job seekers' responses to wages necessarily conflate responses to pay and responses to perceived amenities, then labor supply elasticities to the firm will inherently reflect this duality. As such, the wage-only elasticity will fall below empirically estimated elasticities—leading to inflated estimates of monopsony power. Though, we caveat it may be near-impossible to separate the two if workers make inferences about the employer in response to any shift in pay. Taking the perspective that jobs are experience goods (Jovanovic, 1979; Menzio and Shi, 2011), in which amenities are realized once in—and over the duration of—the match, this would imply the signaling value of, and thus workers' responses to, wages differ ex ante during search and interim while on the job. In turn, recruitment labor supply elasticities should be greater than separation elasticities; and as such, the separation elasticity will be an imperfect proxy for the recruitment elasticity in estimating monopsony power (Manning, 2003).

6.3 Beliefs Over Wages from Listed Amenities

While greater wages can act as a signal for both amenities (e.g., caring about sustainability) and dis-amenities (e.g., stress), presumably such signaling may occur bilaterally. That is, when the pay is absent from an ad, the amenities that are listed could plausibly act as a barometer for what the worker expects with regards to pay. Given that posted wages are frequently absent from job ads (Batra et al., 2023) and workers may have especially diffuse beliefs over the actual pay ranges when not displayed (Jalal, 2026), job seekers may lean on the listed amenities to glean pay.

To test for this spillover channel, we presented workers with a pair of job ads in which amenities were randomized across the two ads. Both ads intentionally omitted the posted wage. We then prompted each worker to report which ad they believed offered a higher wage and by what percent they believed that wage to be higher. (They could report the two pay similarly). Since the amenities that were listed were assigned randomly between the two ads, we can discern the causal effect each amenity has on wage expectations. The results for each of the seven amenities are depicted in Figure 7.

Evidently, workers' beliefs about pay are partly governed by the amenities that are advertised. All but one of the amenities demonstrate a significant effect on perceived pay. And, not all amenities induce workers to raise the expected wage. Some, such as work from home, a flexible schedule, ad regular training opportunities, cause workers to believe the job pays more—each on the order of around 0.5-1.5 percentage points. This may reflect workers internalizing real-world correlations, e.g., a pay premium among work-from-home opportunities (Cullen et al., 2025). Others, such as an additional vacation day and the Deutschlandticket, cause workers to revise down the wage they would expect to receive—each on the order of about 0.5 percentage point. Based on this dichotomy, it could be workers perceive compensating wage differentials when the amenity is pecuniary in nature, but augmenting wage differentials when the amenity is non-pecuniary in nature. We hope future work will explore this bifurcation further.

7 Conclusion

Our paper provides evidence that job advertisements function as signals about the full employment package, with consequences for how researchers measure the value of non-wage amenities and labor market power. By embedding an amenity with a known market price — the Deutschlandticket — in a large-scale discrete choice experiment, we document that stated willingness to pay substantially exceeds the amenity's market value, even though WTP estimates for all other amenities align with the prior literature. A complementary belief-elicitation experiment identifies a general mechanism: listing any amenity in a job ad causally shifts workers' beliefs about unlisted employer characteristics, including workplace culture, management quality, and coworker composition. Posted wages similarly signal the amenity bundle, contaminating the wage-based metric that underpins all WTP calculations.

Our findings clarify what discrete choice experiments measure. Even when stated choices closely predict actual job choices (Maestas et al., 2023; Mas and Pallais, 2017; Wiswall and Zafar,

2017), the resulting WTP estimates do not isolate the value of individual amenities. Because workers recognize that amenities tend to co-occur, experimentally varying one feature of a job shifts, perhaps rationally, perceptions of many others. The WTP that researchers recover is the value of a perceived bundle, not of an isolated attribute. At an extreme, the estimated WTP could reflect only the value of correlated, unlisted amenities rather than the experimentally varied attribute itself.

This reinterpretation carries practical implications. Summing individual amenity WTPs to quantify the non-wage share of total compensation as is common in the literature will systematically overstate its importance. Additionally, labor supply elasticities estimated from wage variation in job ads or choice experiments will conflate pure wage responses with perceived amenity changes, overstating workers' sensitivity to wages and hence understating monopsony power. The divergence between what wage variation signals during recruitment and during ongoing employment (where, however, wage changes and changes in the amenity bundle may also covary) suggests that hiring and separation elasticities will generally differ, even absent other search frictions.

Our results also point to directions for future work. First, while we document that workers' belief updating is qualitatively consistent with actual amenity correlations in job posting data, a fuller characterization of the mapping between perceived and real-world bundling will allow researchers to sign and potentially correct the bias in WTP estimates [work in progress]. Second, extending the belief-elicitation approach to actual job choice settings — where the signaling mechanism plausibly operates with equal or greater force — would test whether the patterns we identify in stated-choice experiments carry over to real labor market decisions. Third, our finding that explicitly prompting respondents to assume all unlisted attributes are identical has no effect on WTP estimates (consistent with Dafoe et al., 2018) suggests that restoring information equivalence in survey experiments is challenging based on modifying instructions. Developing experimental designs that can credibly isolate the value of individual amenities — or, alternatively, embracing the bundle interpretation and designing experiments accordingly — remains an open challenge.

Finally, if workers draw inferences about unlisted amenities from what employers choose to advertise, this creates scope for strategic communication by firms. Employers may advertise amenities not only to attract workers who value them directly, but also to signal broader job quality and shape applicant pools. Understanding how firms optimize over the informational content of job ads, and how this interacts with the signaling equilibrium we document, is a natural next step.

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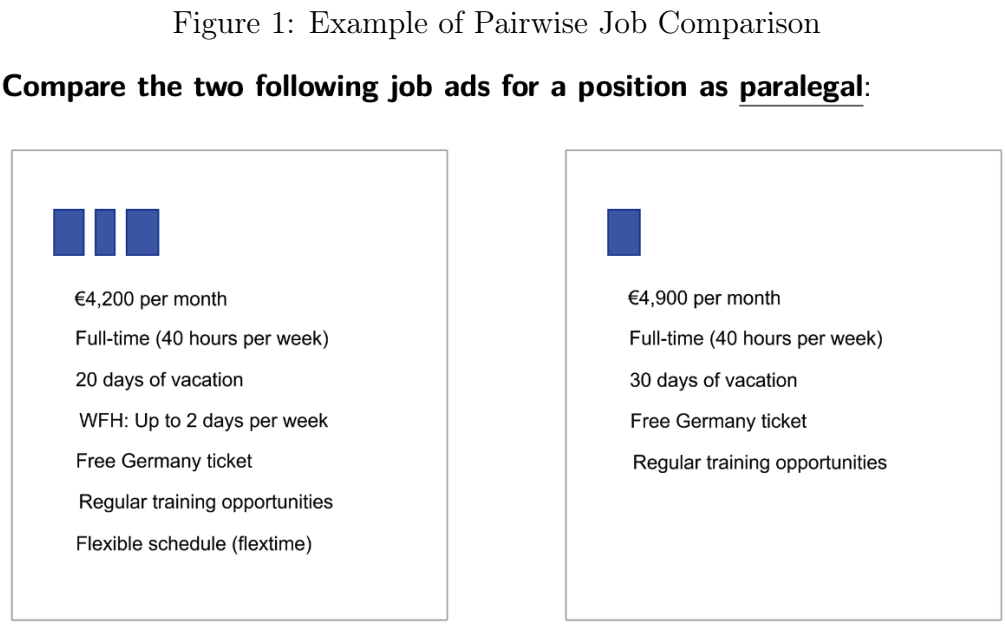
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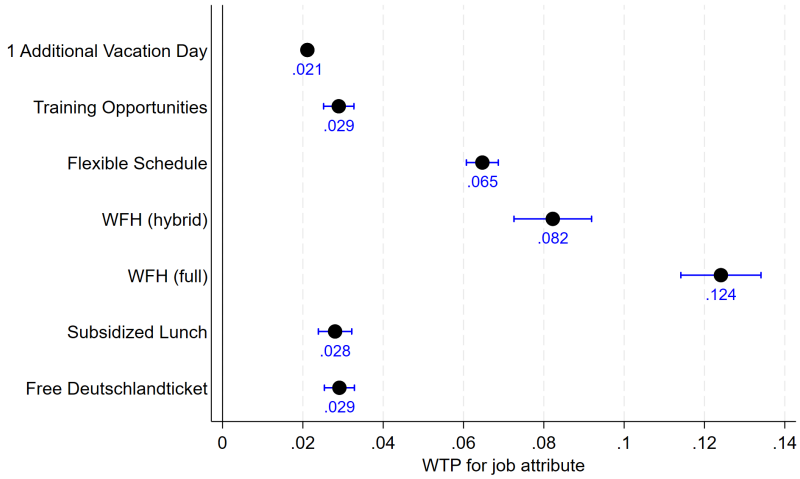
Figures

Figure 1: Example of Pairwise Job Comparison



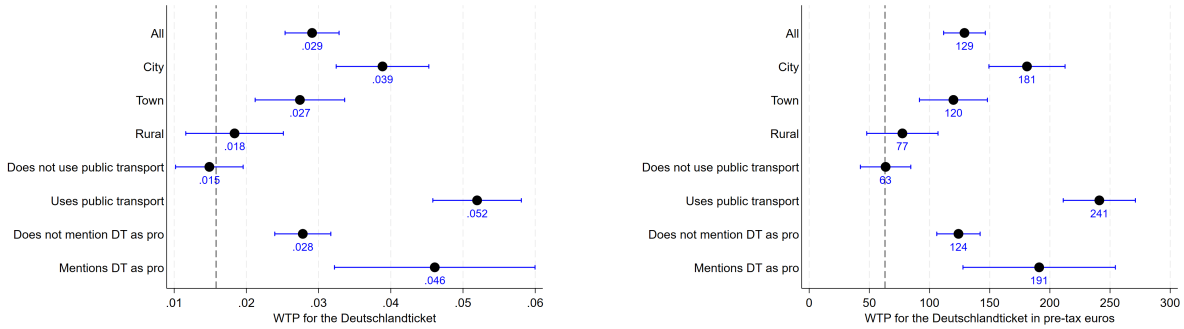
Notes: The figure shows a typical comparison of two hypothetical job ads for a specific occupation (paralegal in this case) that differ in a number of amenities and pay.

Figure 2: WTP for Job Amenities from Hypothetical Choice Experiment



Notes: This figure presents the willingness to pay (WTP) estimates for each of the seven non-wage amenities that are randomly varied across hypothetical jobs. Standard errors are clustered by worker. Horizontal lines denote 95% confidence intervals.

Figure 3: Heterogeneity in Willingness to Pay for the Deutschlandticket

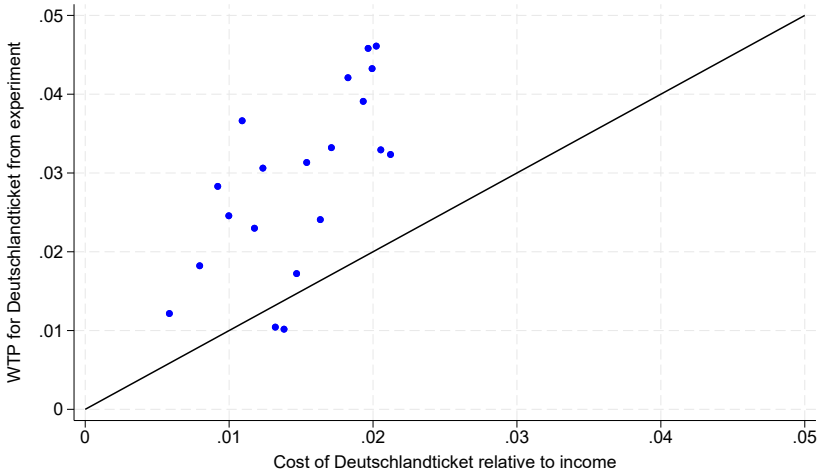


(a) Log wage

(b) Wage in euros

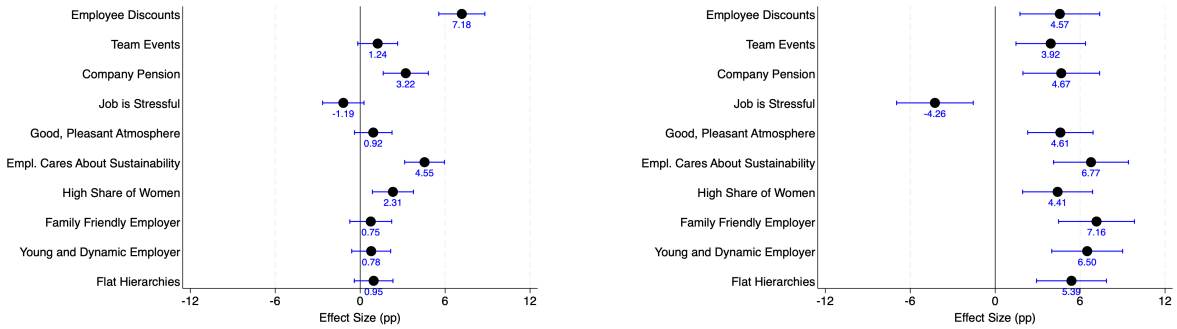
Notes: This figure depicts the willingness to pay (WTP) estimates for the Deutschlandticket from the stated choice experiment for different sub-samples. Panel (a) displays estimates using the natural logarithm of wages and panel (b) wages in levels. Horizontal lines denote 95% confidence intervals. Vertical dashed line indicates the upper bound for willingness to pay.

Figure 4: WTP by Wage-Equivalent of Deutschlandticket



Notes: This figure depicts the willingness to pay (WTP) estimates for the Deutschlandticket from the stated choice experiment for workers of varying wage levels against the actual dollar cost of purchasing a Deutschlandticket as a fraction of the wage. Each dot indicates a 5-percentile bin of the wage distribution. Solid diagonal line represents the 45 degree line. Correlation is 0.665 (p-value = 0.001) and linear slope through scatter dots is 1.64.

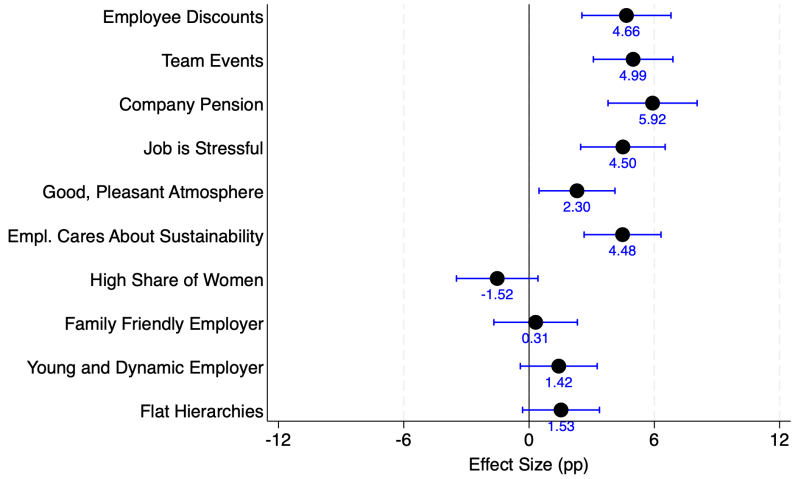
Figure 5: Structured Beliefs Over Unlisted Amenities by Which Amenities Listed



(a) Deutschlandticket listed (b) Work from home listed

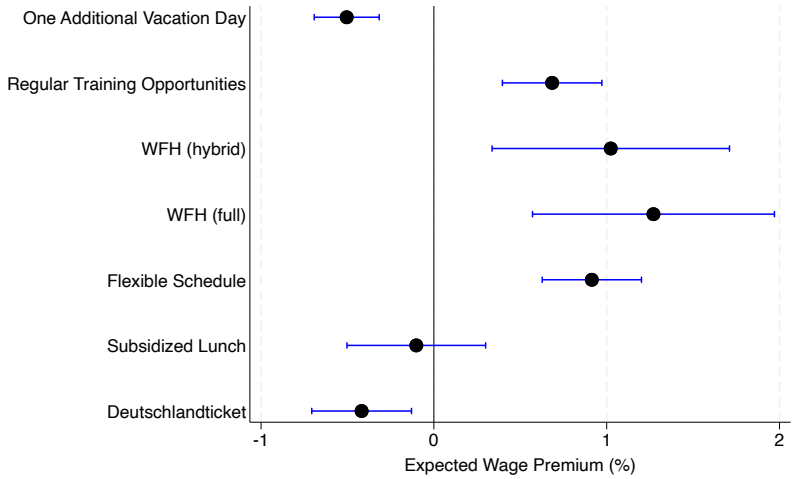
Notes: This figure presents the estimated effect of listing an amenity in a job ad on workers' beliefs about ten unlisted employer characteristics, based on the single-ad structured belief elicitation. Each coefficient is estimated from equation (9), where the dependent variable is the worker's 5-item Likert-scale response regarding the probability that the employer offers a given characteristic (expressed in percentage points). Effects are reported in percentage-point changes in perceived probability. Horizontal lines denote 95% confidence intervals. Panel (a) shows effects when the Deutschlandticket is listed; panel (b) shows effects when work from home is listed.

Figure 6: Beliefs Over Unlisted Amenities Based on the Posted Wage



Notes: This figure presents the estimated effect of the posted wage (log) on workers' beliefs about ten unlisted employer characteristics, based on the single-ad structured belief elicitation described in Section 6. Each coefficient is estimated from equation (9), where the wage is randomly varied across ads and the dependent variable is the worker's 5-item Likert-scale response regarding the probability that the employer offers a given characteristic. Effects are reported in percentage-point changes in perceived probability per log-point increase in the posted wage. Horizontal lines denote 95% confidence intervals.

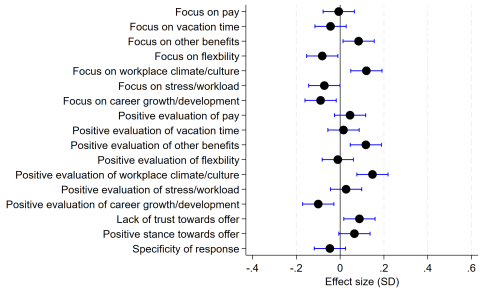
Figure 7: Beliefs Over Unlisted Wage of the Job by Which Amenities are Listed



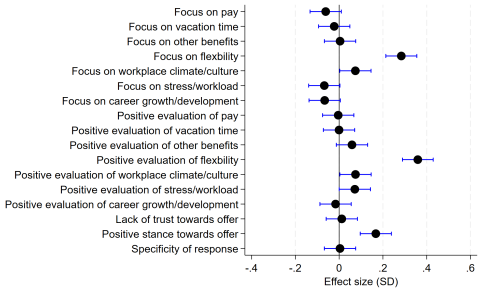
Notes: This figure presents the estimated effect of listing each amenity in a job ad on workers' expected wage for the position, based on the wage-elicitation design described in Section 8. Workers were shown a job ad without a posted salary and asked to state the expected wage premium relative to an otherwise identical ad with no listed amenities. Each coefficient is expressed as a percentage-point change in the expected wage premium. Horizontal lines denote 95% confidence intervals.

Figure 8: Causal Effects of Listed Amenities on Unified Themes in Free-Text Responses

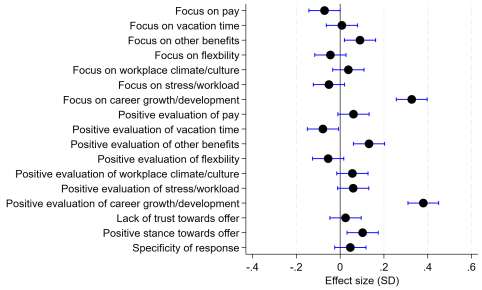
(a) Deutschlandticket



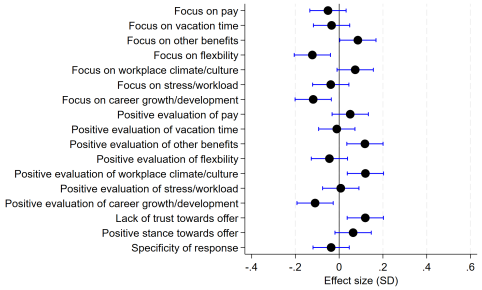
(b) Flex time



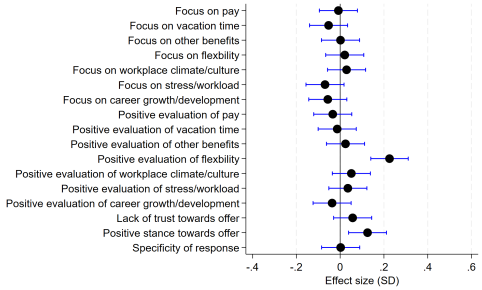
(c) Training



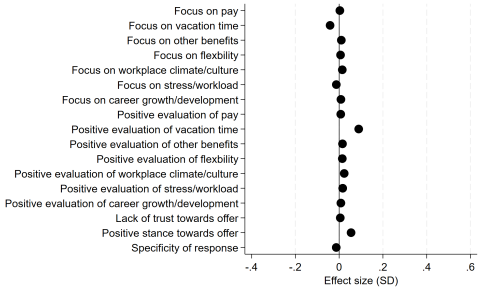
(d) Lunch



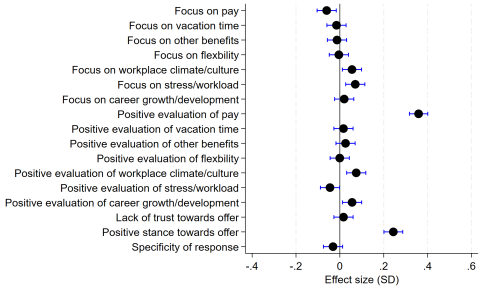
(e) WFH



(f) Vacation



(g) Wage



Notes: Each panel displays OLS coefficients from regressions of standardized theme scores on treatment indicators in the held-out sample. The LLM was blind to treatment status when scoring texts. Themes were manually consolidated into a unified set of 17 dimensions (see Table 4). For ticket, flex, training, and lunch, the treatment is a binary indicator. For WFH, the regressor takes values 0 (none), 1 (partial), or 2 (full). For vacation, the treatment is the number of days (25, 30, or 35). For wage, the regressor is the within-income-decile tercile of posted wage. Error bars represent 95% confidence intervals.

Tables

Table 1: Overview of Existing Willingness to Pay Estimates for Job Attributes as a Percent of the Wage

Amenity	**WTP**	**Papers**
Retirement plan	41.3	Franco and Rodríguez-Valencia (2023)
Permanent contract	37.9	Datta (2019), Non et al. (2022)
Holiday & sick pay	31.3	Datta (2019)
Moderate physical activity	14.5	Maestas et al. (2023)
Horizontal corporate culture	12.8	Aum et al. (2025)
WFH (full)	12.7	Curull-Sentís et al. (2025), Datta (2019), Schouwer and Kesternich (2024), Lewandowski et al. (2025), Mas and Pallais (2017), Van Landeghem et al. (2024), Maestas et al. (2023), Nagler et al. (2024)
Health insurance	12.6	Eriksson and Kristensen (2014), Feld et al. (2022), Franco and Rodríguez-Valencia (2023)
Autonomy	11.9	Datta (2019), Non et al. (2022), Maestas et al. (2023)
Good atmosphere	11.6	Collis and Effenterre (2025), Curull-Sentís et al. (2025), Ward (2022), Folke and Rickne (2022)
Sitting	11.2	Maestas et al. (2023)
Meaningful work	10.5	Schouwer and Kesternich (2024), Non et al. (2022), Van Landeghem et al. (2024), Maestas et al. (2023)
WFH (hybrid)	10.2	Collis and Effenterre (2025), Datta (2019), Lewandowski et al. (2025), Van Landeghem et al. (2024), Vij et al. (2023), Nagler et al. (2024)
Skill development	9.7	Collis and Effenterre (2025), Eriksson and Kristensen (2014), Folke and Rickne (2022), Maestas et al. (2023)
Future career prospect	9.2	Aum et al. (2025)
Flexibility	9.0	Curull-Sentís et al. (2025), Datta (2019), Eriksson and Kristensen (2014), Schouwer and Kesternich (2024), Mas and Pallais (2017), Nagler et al. (2025), Van Landeghem et al. (2024), Folke and Rickne (2022), Maestas et al. (2023)
Teamwork	8.8	Aum et al. (2025), Collis and Effenterre (2025), Non et al. (2022), Maestas et al. (2023)
Flexible hours worked	5.6	Schouwer and Kesternich (2024), Wiswall and Zafar (2017)
Free meals	3.7	Feld et al. (2022)
Vacation day	1.8	Nagler et al. (2025), Maestas et al. (2023)
Free daycare	1.5	Feld et al. (2022)
Gender parity	1.0	Högn et al. (2025), Schuh (2024)
Share of male employees	0.1	Wiswall and Zafar (2017)
Disamenity	**WTP (to Avoid)**	**Papers**
Shift work	24.8	Desiere and Walter (2025)
Sexual harrasment	23.3	Adams and Walia (2025), Collis and Effenterre (2025), Curull-Sentís et al. (2025), Folke and Rickne (2022)
Manager conflict	21.5	Curull-Sentís et al. (2025), Folke and Rickne (2022)
10% chance of losing job	17.9	Van Landeghem et al. (2024), Wiswall and Zafar (2017)
Working overtime	13.8	Aum et al. (2025), Non et al. (2022)
Deadlines	9.6	Nagler et al. (2025)
Multitasking	7.0	Nagler et al. (2025)
Working on weekends	6.1	Feld et al. (2022)
Commuting	4.2	Curull-Sentís et al. (2025), Feld et al. (2022), Poudel and Singleton (2024), Van Landeghem et al. (2024), Nagler et al. (2024)
Performance pay	1.0	Non et al. (2022)

Notes: This table summarizes the average WTP estimate for job attributes based on stated choice experiments in the literature. *Gender parity* is defined as 50% share of women in the workplace, and any change from this share is interpreted as a decline in diversity.

Table 2: WTP for Deutschlandticket by Whether Worker Knows its Price of 63€Among Workers Not Shown the Price in Job Ads

	Monthly wage in logs	Monthly wage in euros
	(1)	(2)
Knows 63€ price	0.049***	210.473***
	(0.005)	(21.260)
Does not know 63€ price	0.017***	74.081***
	(0.003)	(13.980)
Observations	29,966	29,966
P-value of knows = does not	0.000	0.000

Notes: This table presents the willingness to pay (WTP) estimates for the Deutschlandticket from the stated choice experiment by whether respondents correctly state the market price of the Deutschlandticket is €63 The estimation sample is restricted to respondents who were not shown the price of the Deutschlandticket in the job ads. Standard errors are clustered by individual. Significance levels: * 10%, ** 5%, *** 1%.

Table 3: Predictive Power of Free-Text Responses for Treatment Status

Metric	Ticket	Flex	Training	Lunch	WFH (part.)	WFH (full)	Wage[a]	Vacation[b]
Average Δ	0.010	0.035	0.025	−0.003	0.022	0.042	0.079	0.085
SD of Δ	0.014	0.014	0.013	0.018	0.033	0.038	0.012	0.012
Share of $\Delta < 0$	0.20	0.00	0.02	0.50	0.20	0.12	0.00	0.00
Mean p-value	0.167	0.006	0.030	0.182	0.165	0.061	0.000	0.000
Mean trivial accuracy	0.506	0.506	0.505	0.523	0.522	0.528	0.342	0.361
N	3,016	3,016	3,016	2,242	507	510	3,016	3,016

Notes: Each column reports the accuracy improvement (Δ) of an LLM classifier (GPT 5.4-mini) over majority-rule prediction, averaged over 50 independent sample splits. The LLM is given a training set of labeled examples and predicts treatment status from the free-text response in a held-out sample. Statistical significance is assessed via permutation tests with 10,000 permutations. For binary treatments (ticket, flex, training, lunch, WFH partial, WFH full), the treatment indicator is a dummy variable.

Wage is residualized within income decile and grouped into terciles.

Vacation takes three values (25, 30, or 35 days).

Table 4: Unified Themes for Scoring Free-Text Responses

Dimension	Variant	Description
Pay	Focus	How strongly the text discusses pay or salary
Pay	Valence	How positively the text evaluates pay
Vacation	Focus	How strongly the text discusses vacation or time off
Vacation	Valence	How positively the text evaluates vacation
Other benefits	Focus	How strongly the text discusses non-pay benefits
Other benefits	Valence	How positively the text evaluates non-pay benefits
Flexibility	Focus	How strongly the text discusses flexibility or WFH
Flexibility	Valence	How positively the text evaluates flexibility
Workplace climate	Focus	How strongly the text discusses workplace culture or atmosphere
Workplace climate	Valence	How positively the text evaluates workplace culture
Stress/workload	Focus	How strongly the text discusses stress or workload
Stress/workload	Valence	How positively the text evaluates stress levels[a]
Career development	Focus	How strongly the text discusses growth or development
Career development	Valence	How positively the text evaluates development opportunities
General stance	—	Overall positive or negative stance toward the offer
Specificity	—	How specific or concrete the response is
Skepticism	—	Degree of criticism or lack of trust toward the ad

Notes: Themes were manually consolidated from LLM-generated themes across all treatment variables to enable cross-amenity comparison. Each of seven job quality dimensions is scored in both a focus variant (how strongly the text discusses the topic) and a valence variant (how positively it is evaluated). Three additional general dimensions capture overall stance, specificity, and skepticism. All themes are scored by the LLM on a standardized scale, blind to treatment status.

Higher values indicate a more positive (i.e., less stressful) evaluation.

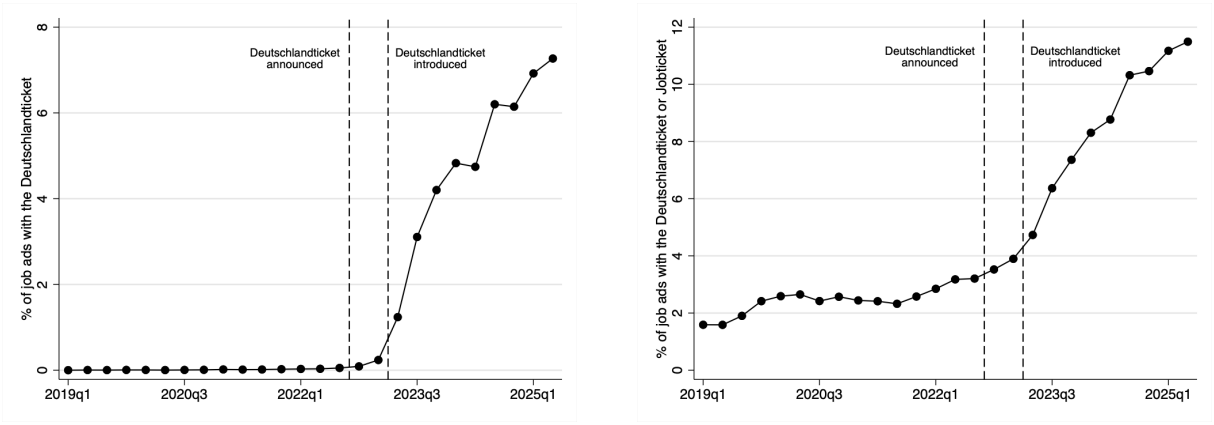
Online Appendix of:

Job Ads as Signals: Evidence from a Priced Amenity and Worker Beliefs

Pawel Adrjan, Mária Balgová, Simon Jäger, Jonas Jessen, and Jason Sockin

I Appendix Figures

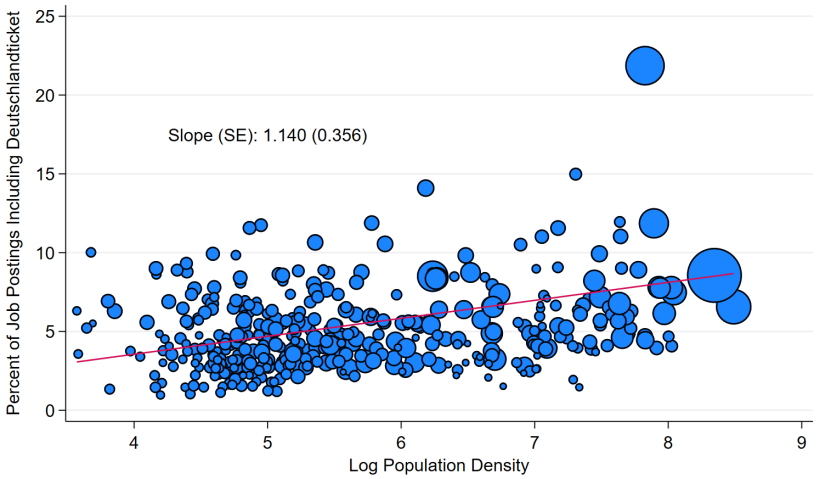
Figure A1: Share of Job Ads that Offer a Deutschlandticket or Jobticket



(a) Deutschlandticket (b) Deutschlandticket or Jobticket

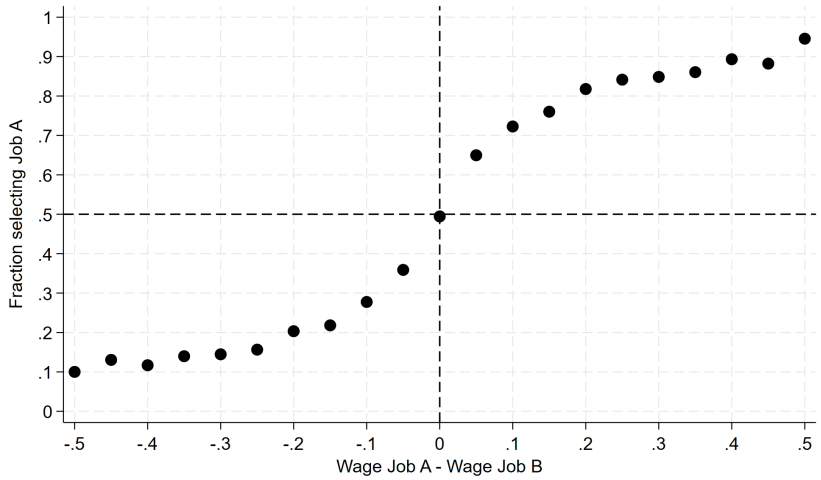
Notes: This figure shows the trend in the share of job ads on Indeed in Germany that mentioned a Deutschlandticket or Jobticket. Panel (a) shows ads that only mention the Deutschlandticket. Panel (b) shows ads that mention either the Deutschlandticket or Jobticket. These words are sometimes used interchangeably in job descriptions, but the Jobticket can also refer to a less valuable regional or local transport ticket.

Figure A2: Population Density and Share of Job Postings with Deutschlandticket



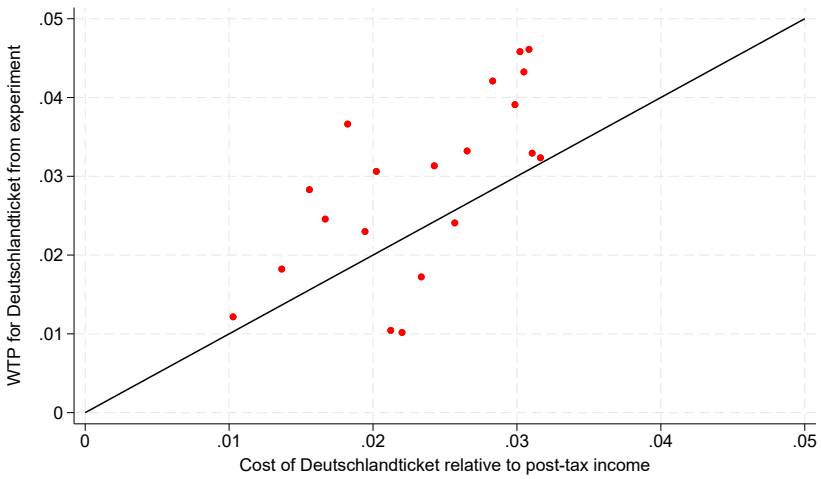
Notes: This figure shows the correlation between county population density and the share of job ads on Indeed that offer a Deutschlandticket.

Figure A3: Fraction who Choose Job A and Wage Premium Offered by Job A



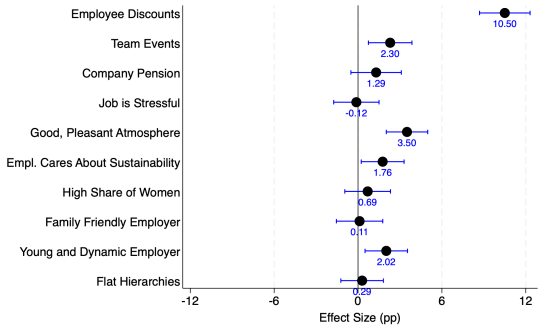
Notes: This figure displays the fraction of respondents who select job A against the log wage difference between job A and job B across pairwise comparisons, binned by decile of the wage difference. The dashed vertical line indicates equal wages; the dashed horizontal line indicates a 50 percent choice share. The upward slope confirms that respondents respond to wage variation in the expected direction, validating the experimental design.

Figure A4: WTP by Naive Post-Tax Wage-Equivalent of Deutschlandticket

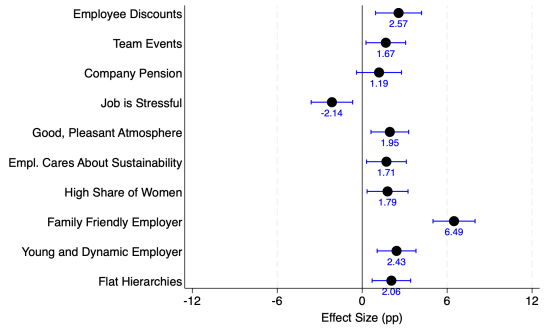


Notes: This figure depicts the willingness to pay (WTP) estimates for the Deutschlandticket from the stated choice experiment for workers of varying wage levels against the actual dollar cost of purchasing a Deutschlandticket as a fraction of the wage after adjusting for taxes. Each dot indicates a 5-percentile bin of the wage distribution. Solid diagonal line represents the 45 degree line. Correlation is 0.671 (p-value = 0.001) and linear slope through scatter dots is 1.19.

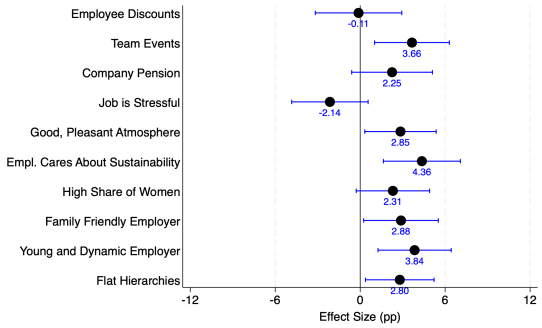
Figure A5: Structured Beliefs Over Unlisted Amenities by Which Amenities Listed, Cont.



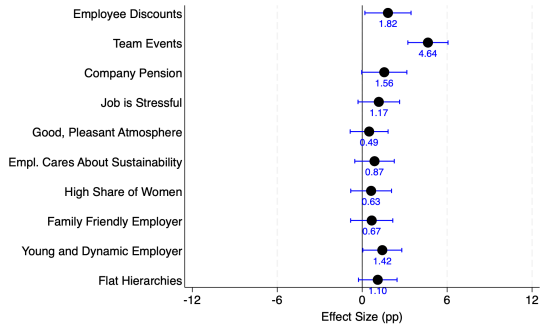
(a) Free lunch listed



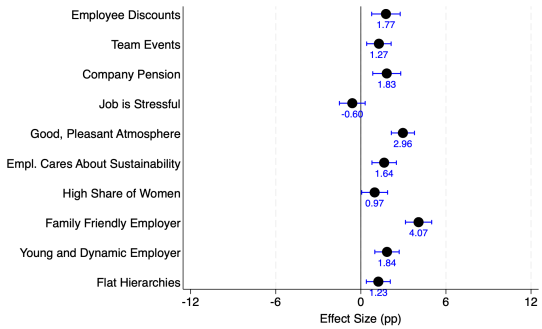
(b) Flexible schedule listed



(c) Hybrid work from home listed

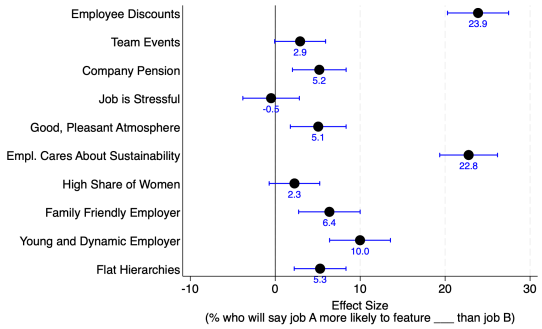


(d) Training opportunities listed

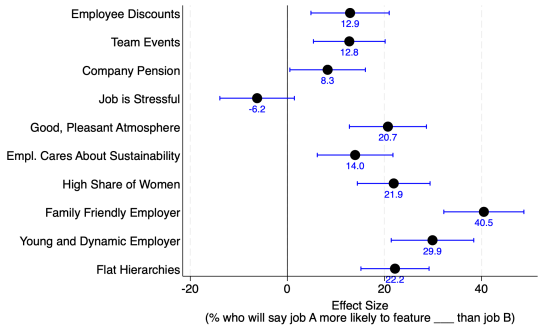


(e) Days vacation listed

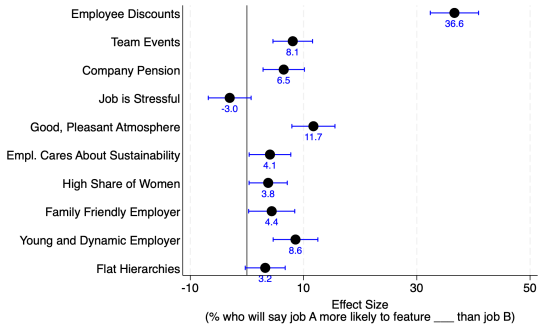
Figure A6: Structured Beliefs Over Unlisted Amenities by Which Amenities Listed, Pairwise Comparison of Job Ads



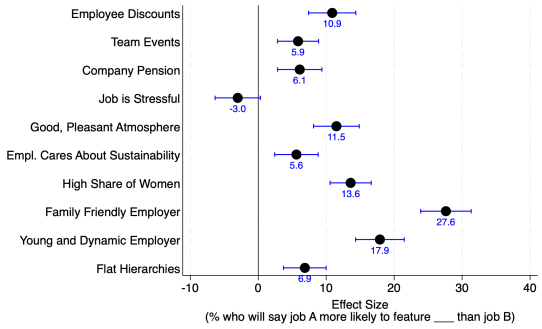
(a) Deutschlandticket



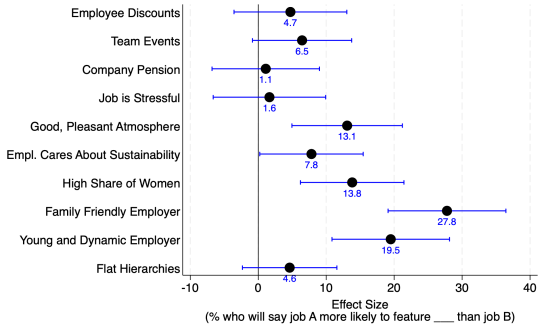
(b) Work from home



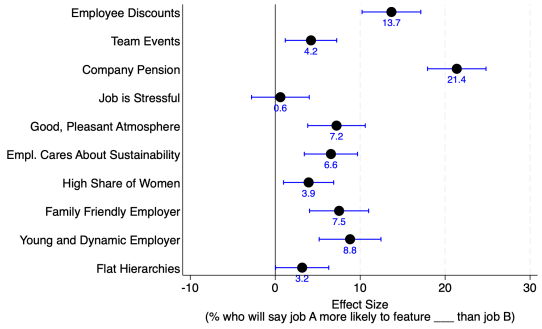
(c) Free lunch listed



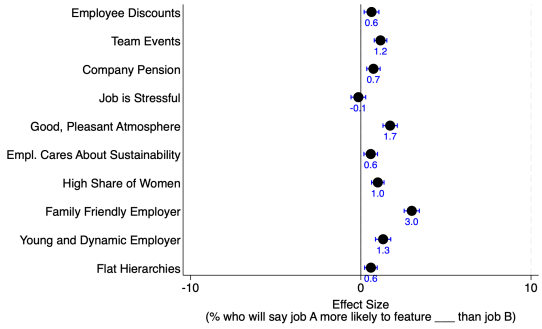
(d) Flexible schedule listed



(e) Hybrid work from home listed

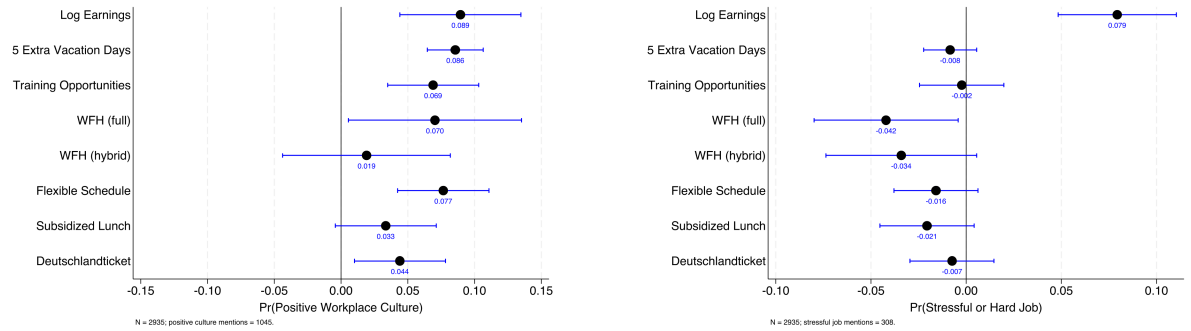


(f) Training opportunities listed



(g) Days vacation listed

Figure A7: Unstructured Beliefs Over Unlisted Amenities Derived from BERTopic by Which Amenities Listed



(a) Positive workplace culture (b) Stressful or hard job

Notes: This figure presents the estimated effect of listing each amenity in a job ad on the probability that a worker spontaneously mentions a given theme in their open-ended free-text response. The dependent variable is an indicator for whether the worker mentions positive workplace culture (panel a) or stress/a hard job (panel b) in their response, as identified via BERTopic analysis. Coefficients are reported in percentage-point changes relative to the baseline probability of mentioning each theme (36 percent for positive workplace culture; 10 percent for stress). The logged wage is also included as a regressor; its coefficient is displayed as 'Log Earnings'. Horizontal lines denote 95% confidence intervals.

II Appendix Tables

Table A1: Summary Statistics for Representative Sample of Workers

Variable	Obs	Mean	Std. Dev.	P25	P75
Female	6000	.448	.497	0	1
Age in years	6000	45.529	12.272	36	56
Monthly income (euro)	6000	3987.881	3668.941	2400	4600
Higher schooling degree (Abitur)	6000	.393	.488	0	1
Living with partner	6000	.629	.483	0	1
East Germany (incl. Berlin)	6000	.312	.463	0	1
Living in larger city	6000	.356	.479	0	1
Living in smaller town	6000	.386	.487	0	1
Living in rural area	6000	.254	.435	0	1
Possible to work from home in job	6000	.526	.499	0	1
Using public transport for work/ privately	6000	.378	.485	0	1
Know price of Deutschlandticket (+/- 10 Euro)	6000	.785	.411	1	1

Notes: This table presents summary statistics for our sample of 6,000 workers.

Table A2: WTP for Job Amenities in Conservative Approach to Post-Tax Monthly Euros

	Subsidized lunch	Additional vacation day	Training opportunities	Flexible schedule	WFH hybrid	WFH full	Free Deutschlandticket
WTP	67.8***	55.0***	86.8***	184.7***	238.8***	366.1***	77.2***
	(5.7)	(1.0)	(5.3)	(6.0)	(15.1)	(16.4)	(5.2)
Observations	59,864	59,864	59,864	59,864	59,864	59,864	59,864

Notes: This table presents the willingness to pay (WTP) estimates for each of the seven non-wage amenities that are randomly varied across hypothetical jobs in euros accounting for taxes. Estimation sample includes all respondents. Standard errors are clustered by individual. Significance levels: * 10%, ** 5%, *** 1%.

Table A3: Differences in the Attributes of Job Postings with the Deutschlandticket

	Wage posted	Log wage	Sponsored ad	Remote or hybrid	Employee discounts	Company events	Flexible schedule	Company pension	Professional development
1(Deutschlandticket or Jobticket)	0.012	0.098**	-0.011	0.056***	-0.046	0.009	0.026*	0.081***	0.051**
	(0.061)	(0.041)	(0.010)	(0.013)	(0.030)	(0.020)	(0.014)	(0.030)	(0.025)
Mean of dependent variable	0.231	7.811	0.101	0.168	0.167	0.200	0.248	0.276	0.504
County-quarter FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Job title FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adjusted R^2	0.18	0.39	0.06	0.29	0.15	0.08	0.12	0.10	0.14
N	3,591,838	829,933	3,591,838	3,591,838	3,591,838	3,591,838	3,591,838	3,591,838	3,591,838

Notes: Table displays the regression coefficients from a regression of an indicator for whether the Deutschlandticket or Jobticket is offered in a job posting and eight common attributes of job postings. The attributes are: whether a wage is posted, whether the employer sponsors the ad, whether a remote or hybrid work arrangement is offered, and whether the following benefits are listed: employee discounts, company events, flexible schedule, company pension, and professional development opportunities. Each specification includes county-quarter and job title fixed effects. Standard errors are clustered by firm. Data is for 2024. Significance levels: * < 10% ** < 5% *** < 1%.

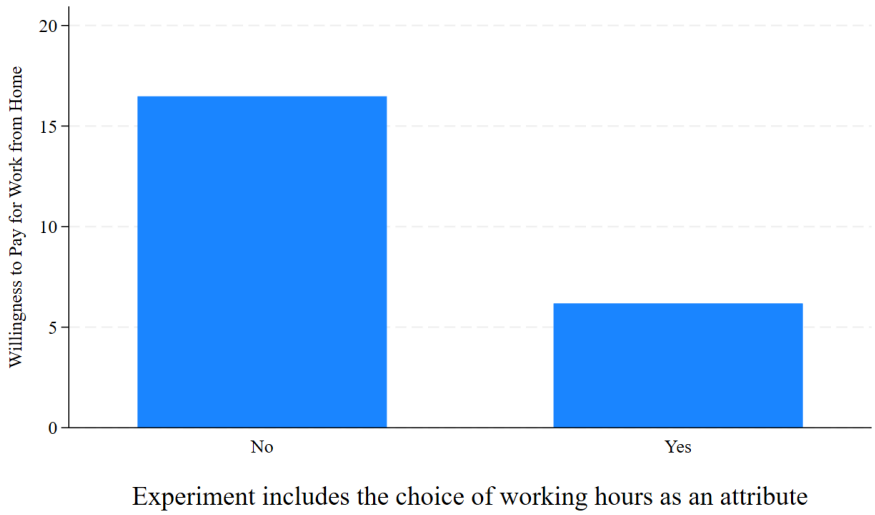
Table A4: Differences in the Language of Job Postings with the Deutschlandticket

	Female management	Free expression	International workforce	Less profit-oriented	Tolerant politics	Young and dynamic	Gender star
1(Deutschlandticket or Jobticket)	0.174**	-0.015	0.007***	0.009*	0.040	-0.022	0.024***
	(0.068)	(0.011)	(0.002)	(0.005)	(0.025)	(0.014)	(0.009)
Mean of dependent variable	0.149	0.116	0.007	0.035	0.079	0.170	0.041
County-quarter FE	✓	✓	✓	✓	✓	✓	✓
Job title FE	✓	✓	✓	✓	✓	✓	✓
Adjusted R^2	0.12	0.07	0.03	0.04	0.06	0.07	0.09
N	3,591,838	3,591,838	3,591,838	3,591,838	3,591,838	3,591,838	3,591,838

Notes: Table displays the regression coefficients from a regression of an indicator for whether the Deutschlandticket or Jobticket is offered in a job posting and seven features of the language used in the posting that signal certain qualities or values, identified based on sets of keywords and phrases. These features are: female management (gender equality, diversity or female leadership), free expression (culture of openness, transparent feedback, flat hierarchy), international workforce (multinational or multilingual teams), less profit-oriented (mission-driven, socially responsible, non-profit or sustainable focus), tolerance of political beliefs (inclusion, respect for differences, and openness to diverse viewpoints), young and dynamic (modern, fast-paced, youthful culture), and whether the job title contains the gender-inclusive star. Each specification includes county-quarter and job title fixed effects. Standard errors are clustered by firm. Data is for 2024. Significance levels: $^{*} < 10\%$ $^{**} < 5\%$ $^{***} < 1\%$.

IV WTP Estimates from the Literature

Figure A8: WTP for Work From Home in Discrete Choice Experiments from the Literature, Split by Whether Number of Working Hours is an Included Attribute



Notes: This figure displays the average willingness-to-pay for being able to work from home based on estimates in the discrete choice literature, partitioned by whether or not one of the other attributes randomized between the job alternatives. Included in the 'No' category is Curull-Sentís et al. (2025); Datta (2019); Maestas et al. (2023); Van Landeghem et al. (2024), and included in the 'Yes' category is Lewandowski et al. (2025); Mas and Pallais (2017); Nagler et al. (2024); Schouwer and Kesternich (2024).

Table A5: Existing Willingness to Pay Estimates for Amenities as a Percent of Wages

Amenity	WTP	Paper
Autonomy	22.2	Non et al. (2022)
Autonomy	11.5	Non et al. (2022)
Autonomy	11.2	Datta (2019)
Autonomy	10.7	Datta (2019)
Autonomy	3.7	Maestas et al. (2023)
Flexibility	19.2	Van Landeghem et al. (2024)
Flexibility	14.9	Datta (2019)
Flexibility	14.2	Datta (2019)
Flexibility	10.0	Folke and Rickne (2022)
Flexibility	8.8	Maestas et al. (2023)
Flexibility	8.0	Curull-Sentís et al. (2025)
Flexibility	7.1	Schouwer and Kesternich (2024)
Flexibility	6.3	Eriksson and Kristensen (2014)
Flexibility	5.4	Nagler et al. (2025)
Flexibility	3.2	Mas and Pallais (2017)

Continued on next page

Amenity	WTP	Paper
Flexibility	2.0	Folke and Rickne (2022)
Flexible hours worked	10.6	Schouwer and Kesternich (2024)
Flexible hours worked	5.1	Wiswall and Zafar (2017)
Flexible hours worked	1.1	Wiswall and Zafar (2017)
Free daycare	1.5	Feld et al. (2022)
Free meals	3.7	Feld et al. (2022)
Future career prospect	9.2	Aum et al. (2025)
Gender parity	1.6	Högn et al. (2025)
Gender parity	1.4	Högn et al. (2025)
Gender parity	0.8	Schuh (2024)
Gender parity	0.3	Schuh (2024)
Good atmosphere	17.0	Curull-Sentís et al. (2025)
Good atmosphere	14.3	Collis and Effenterre (2025)
Good atmosphere	11.2	Ward (2022)
Good atmosphere	10.0	Ward (2022)
Good atmosphere	9.3	Ward (2022)
Good atmosphere	8.0	Folke and Rickne (2022)
Health insurance	32.1	Franco and Rodríguez-Valencia (2023)
Health insurance	3.0	Eriksson and Kristensen (2014)
Health insurance	2.6	Feld et al. (2022)
Holiday & sick pay	35.2	Datta (2019)
Holiday & sick pay	27.3	Datta (2019)
Horizontal corporate culture	12.8	Aum et al. (2025)
Meaningful work	19.9	Van Landeghem et al. (2024)
Meaningful work	17.5	Van Landeghem et al. (2024)
Meaningful work	12.2	Non et al. (2022)
Meaningful work	9.6	Non et al. (2022)
Meaningful work	6.9	Schouwer and Kesternich (2024)
Meaningful work	4.5	Non et al. (2022)
Meaningful work	2.8	Maestas et al. (2023)
Moderate physical activity	14.5	Maestas et al. (2023)
Permanent contract	55.4	Datta (2019)
Permanent contract	44.1	Datta (2019)
Permanent contract	14.1	Non et al. (2022)
Retirement plan	47.3	Franco and Rodríguez-Valencia (2023)
Retirement plan	35.3	Franco and Rodríguez-Valencia (2023)
Share of male employees	0.1	Wiswall and Zafar (2017)
Sitting	11.2	Maestas et al. (2023)
Skill development	24.0	Folke and Rickne (2022)

Continued on next page

Amenity	WTP	Paper
Skill development	15.0	Collis and Effenterre (2025)
Skill development	5.0	Maestas et al. (2023)
Skill development	3.0	Folke and Rickne (2022)
Skill development	1.7	Eriksson and Kristensen (2014)
Teamwork	15.8	Non et al. (2022)
Teamwork	12.8	Aum et al. (2025)
Teamwork	8.6	Maestas et al. (2023)
Teamwork	8.6	Non et al. (2022)
Teamwork	6.3	Maestas et al. (2023)
Teamwork	0.6	Collis and Effenterre (2025)
Vacation day	2.5	Nagler et al. (2025)
Vacation day	1.7	Maestas et al. (2023)
Vacation day	1.7	Nagler et al. (2025)
Vacation day	1.2	Maestas et al. (2023)
WFH (full)	25.6	Datta (2019)
WFH (full)	22.6	Datta (2019)
WFH (full)	19.7	Van Landeghem et al. (2024)
WFH (full)	18.0	Curull-Sentís et al. (2025)
WFH (full)	8.9	Mas and Pallais (2017)
WFH (full)	7.7	Nagler et al. (2024)
WFH (full)	6.2	Schouwer and Kesternich (2024)
WFH (full)	4.1	Maestas et al. (2023)
WFH (full)	1.9	Lewandowski et al. (2025)
WFH (hybrid)	17.6	Van Landeghem et al. (2024)
WFH (hybrid)	15.0	Van Landeghem et al. (2024)
WFH (hybrid)	14.3	Datta (2019)
WFH (hybrid)	14.0	Datta (2019)
WFH (hybrid)	8.1	Vij et al. (2023)
WFH (hybrid)	6.6	Collis and Effenterre (2025)
WFH (hybrid)	6.1	Lewandowski et al. (2025)
WFH (hybrid)	5.4	Nagler et al. (2024)
WFH (hybrid)	4.4	Vij et al. (2023)

Table A6: Existing Willingness to Pay Estimates for Disamenities as a Percent of Wages

Disamenity	WTP (to Avoid)	Paper
10% chance of losing job	28.3	Wiswall and Zafar (2017)
10% chance of losing job	15.7	Van Landeghem et al. (2024)
10% chance of losing job	9.7	Van Landeghem et al. (2024)
Commuting	8.0	Poudel and Singleton (2024)
Commuting	7.7	Van Landeghem et al. (2024)
Commuting	6.0	Van Landeghem et al. (2024)
Commuting	5.8	Curull-Sentís et al. (2025)
Commuting	5.1	Curull-Sentís et al. (2025)
Commuting	4.9	Nagler et al. (2024)
Commuting	4.4	Nagler et al. (2024)
Commuting	3.4	Nagler et al. (2024)
Commuting	3.3	Curull-Sentís et al. (2025)
Commuting	1.5	Feld et al. (2022)
Commuting	1.4	Feld et al. (2022)
Commuting	1.3	Curull-Sentís et al. (2025)
Commuting	1.3	Feld et al. (2022)
Deadlines	9.6	Nagler et al. (2025)
Manager conflict	33.0	Curull-Sentís et al. (2025)
Manager conflict	10.0	Folke and Rickne (2022)
Multitasking	7.0	Nagler et al. (2025)
Performance pay	1.3	Non et al. (2022)
Performance pay	0.8	Non et al. (2022)
Sexual harrasment	43.0	Curull-Sentís et al. (2025)
Sexual harrasment	30.9	Collis and Effenterre (2025)
Sexual harrasment	10.3	Adams and Walia (2025)
Sexual harrasment	9.0	Folke and Rickne (2022)
Shift work	38.1	Desiere and Walter (2025)
Shift work	36.2	Desiere and Walter (2025)
Shift work	23.7	Desiere and Walter (2025)
Shift work	22.4	Desiere and Walter (2025)
Shift work	3.8	Desiere and Walter (2025)
Working on weekends	6.1	Feld et al. (2022)
Working overtime	18.2	Non et al. (2022)
Working overtime	9.4	Aum et al. (2025)

V Sensitivity Checks

Table A7: WTP for Deutschlandticket by Whether Worker is Shown the Price in Job Ads

	Monthly wage in logs	Monthly wage in pre-tax euros	Monthly wage in post-tax euros
	(1)	(2)	(3)
Price shown in ads	0.032***	144.090***	85.486***
	(0.003)	(13.286)	(7.755)
Price not shown in ads	0.027***	114.959***	69.338***
	(0.003)	(11.719)	(6.906)
Observations	59,864	59,864	59,864
P-value of shown = not shown	0.189	0.100	0.120

Notes: This table presents the willingness to pay (WTP) estimates for the Deutschlandticket from the stated choice experiment by whether participants are presented with the price of the Deutschlandticket explicitly in the job ads in columns (1) and (2), and by whether the respondent knows the correct price among those who are not shown the price in job ads. Standard errors are clustered by individual. Significance levels: * 10%, ** 5%, *** 1%.

Table A8: Difference in WTP Between WFH-arm and Lunch-arm

	Monthly wage in logs	Monthly wage in pre-tax euros	Monthly wage in post-tax euros
$WTP^{WFH_{arm}}_{vacation} - WTP^{Lunch_{arm}}_{vacation}$	0.001	15.184***	7.128**
	(0.001)	(5.520)	(3.061)
$WTP^{WFH_{arm}}_{training} - WTP^{Lunch_{arm}}_{training}$	-0.007	-49.571*	-25.857
	(0.005)	(27.333)	(15.799)
$WTP^{WFH_{arm}}_{flex} - WTP^{Lunch_{arm}}_{flex}$	-0.006	-9.352	-9.563
	(0.006)	(32.860)	(18.661)
$WTP^{WFH_{arm}}_{ticket} - WTP^{Lunch_{arm}}_{ticket}$	-0.001	-6.118	-4.708
	(0.005)	(27.772)	(16.030)
Observations	31,414	31,414	31,414
P-value of estimates are equal	0.307	0.006	0.025

Notes: This table presents the willingness to pay (WTP) estimates for each of the four non-wage amenities that are randomly varied across hypothetical jobs. Estimation sample includes all respondents. Standard errors are clustered by individual. Significance levels: * 10%, ** 5%, *** 1%.

Incorrect Beliefs about Price of Deutschlandticket

Table A9: Difference in WTP by Whether or Not Respondents are Prompted to Assume "All Else Same"

	Monthly wage in logs	Monthly wage in pre-tax euros	Monthly wage in post-tax euros
$WTP^{Prompted}_{vacation} - WTP^{Not}_{vacation}$	-0.000	-1.591	-0.763
	(0.001)	(3.527)	(1.979)
$WTP^{Prompted}_{training} - WTP^{Not}_{training}$	-0.003	-6.438	-4.711
	(0.004)	(18.167)	(10.619)
$WTP^{Prompted}_{flex} - WTP^{Not}_{flex}$	-0.001	-6.441	-4.175
	(0.004)	(20.991)	(12.076)
$WTP^{Prompted}_{lunch} - WTP^{Not}_{lunch}$	-0.003	-6.414	-4.780
	(0.004)	(19.322)	(11.379)
$WTP^{Prompted}_{WFHhybrid} - WTP^{Not}_{WFHhybrid}$	0.007	44.359	26.580
	(0.010)	(51.722)	(30.152)
$WTP^{Prompted}_{WFHfull} - WTP^{Not}_{WFHfull}$	-0.002	1.087	0.082
	(0.010)	(56.449)	(32.826)
$WTP^{Prompted}_{ticket} - WTP^{Not}_{ticket}$	0.001	7.069	4.138
	(0.004)	(17.672)	(10.363)
Observations	59,864	59,864	59,864
P-value of estimates are equal	0.912	0.968	0.960

Notes: This table presents the willingness to pay (WTP) estimates for each of the four non-wage amenities that are randomly varied across hypothetical jobs. Estimation sample includes all respondents. Standard errors are clustered by individual. Significance levels: * 10%, ** 5%, *** 1%.