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# Understanding Labor Market Discrimination Against Transgender People: Evidence from a Double List Experiment and a Survey

Billur Aksoy,<sup>a,\*</sup> Christopher S. Carpenter,<sup>b,c,d</sup> Dario Sansone<sup>d,e</sup>

<sup>a</sup>Rensselaer Polytechnic Institute, Troy, New York 12180; <sup>b</sup>Vanderbilt University, Nashville, Tennessee 37235; <sup>c</sup>National Bureau of Economic Research, Cambridge, Massachusetts 02138; <sup>d</sup>IZA, 53113 Bonn, Germany; <sup>e</sup>University of Exeter, Exeter, Devon EX4 4PU, United Kingdom

\*Corresponding author

Contact: aksoyb3@rpi.edu,  <https://orcid.org/0000-0003-0658-0440> (BA); christopher.s.carpenter@vanderbilt.edu,  <https://orcid.org/0000-0002-6270-5589> (CSC); d.sansone@exeter.ac.uk,  <https://orcid.org/0000-0002-5469-6715> (DS)

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**Abstract.** Using a double list experiment designed to elicit views free from social desirability bias, we find that support in the United States for transgender people in the labor market is significantly overreported by 8%–10%. After correcting for this overreporting, we still find that over two-thirds of respondents would be comfortable with a transgender manager and support employment nondiscrimination protection for transgender people. However, respondents severely underestimate this level of support. We also show that stated labor market support for transgender people is lower than support for gay, lesbian, and bisexual people. Our results advance our understanding of employment discrimination against transgender people.

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**Keywords:** labor market discrimination • transgender people • double list experiment

## 1. Introduction

Very little is known about labor market discrimination against transgender people.<sup>1</sup> This is in sharp contrast to a substantial literature on race, gender, age, and disability discrimination (Goldin 2014, Blau and Kahn 2017, Baert 2018, Neumark 2018, Goldin 2021), as well as the growing literature on the labor market experiences of sexual minority populations relative to heterosexual individuals (Klawitter 2015, Neumark 2018, Badgett et al. 2021, 2024) and on attitudes toward sexual minority individuals in the workplace and support for employment nondiscrimination protection on the basis of sexual orientation (Coffman et al. 2017). In this paper, we study views about transgender managers in the workplace, as well as support for employment nondiscrimination protection for transgender individuals using a general sample that is representative of the U.S. population across race, sex, and age.

Understanding labor market views toward transgender people is important, especially in the context of the 2020 U.S. Supreme Court decision in *Bostock v. Clayton County*, which ruled that transgender people are legally protected from discrimination in employment.<sup>2</sup> Multiple

recent studies using population data on transgender people have demonstrated that gender minority individuals have significantly worse economic outcomes than otherwise similar cisgender people, even though employment discrimination against transgender people is illegal (Carpenter et al. 2020, Badgett et al. 2021, Carpenter et al. 2022). Nevertheless, we do not have good economic data on how transgender people are viewed by employers, coworkers, or the general public with respect to labor market opportunities.

Understanding these attitudes is important, as they could affect health and socio-economic behavior, outcomes, and disparities (Glasman and Albarracín 2006, NASEM 2020). For example, Aksoy et al. (2023b) show that those who hold more biased views on LGBTQ+-related issues are more likely to discriminate against sexual minority individuals. Attitudes can also directly impact minority individuals through what is known as minority stress—that is, stress due to internalized homophobia and transphobia, anticipated rejection, constant efforts to hide one’s identity, and actual experiences of discrimination and violence (Meyer 1995).

Understanding true attitudes could also help policy-makers design more effective and targeted interventions. Studies generally show positive effects of employment nondiscrimination protections on labor market outcomes for other minority groups (Donohue and Heckman 1991, Klawitter and Flatt 1998, Neumark and Stock 2006, Klawitter 2011, Button 2018, Neumark et al. 2019, Delhommer and Vamossy 2024). However, the effectiveness of such employment protections depends on compliance and the level of support they receive. Thus, understanding true attitudes for employment protection is important for contextualizing the potential effectiveness of such policies and for improving relative outcomes for transgender people in the United States. Moreover, policy-makers discussing transgender-related policies may want to know whether voters support such policies because expressed support may impact voting behavior (Friese et al. 2012, Castanho Silva et al. 2022). Similarly, employers or managers considering hiring and promoting transgender individuals may want to know whether those individuals would be supported in the workplace. Additionally, to assess the effectiveness of policies and initiatives aimed at reducing discrimination and promoting inclusion, it is crucial to have a baseline understanding of people's true attitudes. Monitoring changes in these attitudes over time provides insight into the progress being made and where more work is needed. Our study provides this baseline for Americans' attitudes toward transgender people in the workplace.

The fact that we have a very limited understanding about attitudes toward transgender employment rights and transgender people in the workplace is also problematic because a nontrivial share of the population identifies as transgender. Recent Pew Research Center data indicated that 1.6% of adults identified as transgender in 2022; the rate among adults under age 30 was 5.1% (Brown 2022a). Moreover, 44% of adults reported knowing someone who is transgender.<sup>3</sup> Therefore, understanding views toward these populations is important, as transgender individuals represent a substantial and growing minority.

In this paper, we study views toward transgender people in the workplace and support for transgender-related employment nondiscrimination rights using an online sample that is representative of the U.S. population with respect to race, sex, and age. Eliciting views about transgender people in the workplace and about transgender employment rights may be susceptible to social desirability bias. For instance, such biases may exist because of the perception that expressing anything other than support for transgender people in the workplace could result in negative reprisals (due to, for instance, the recent rise of "cancel culture"<sup>4</sup>). This would result in an artificially high rate of stated support for transgender people in the workplace. On other hand, there may also be a tendency for some respondents to downplay their support, assuming

it is socially desirable to do so, given the prevailing negative attitudes toward transgender individuals in the public sphere, particularly in recent years.

We overcome these social desirability biases—and document their importance and magnitude—by being the first to study transgender-related labor market views using a list experiment technique. This technique has been used in psychology, sociology, political science, and, far less commonly, economics to elicit sensitive views and attitudes free from social desirability bias.<sup>5</sup> In a list experiment, individuals are presented with a list of statements and asked to report how many of the statements in the list are true for them, but they are not asked whether each specific statement is true for them. In our list experiments, one group of respondents is presented with four nonkey statements, and another group is presented with the same four statements, plus an additional key statement of interest pertaining to their views about transgender people in the workplace (specifically, whether they would be comfortable having a transgender manager or whether they support employment nondiscrimination protection for transgender people). Comparisons across lists allow us to back out an estimate of the true share of respondents who agree with each key statement of interest regarding transgender people in the workplace.

Importantly, as discussed in more detail in Section 3, we use a *double* list experiment to verify the robustness of our findings to using different nonkey statements (Chuang et al. 2021) and to increase the precision of our estimates by minimizing the variance (Droitcour et al. 1991, Glynn 2013). The use of a double list experiment is one of the contributions of our paper, as it offers methodological advances over a single list experiment, and double list experiments have not yet been as commonly utilized in the literature.

Although the list experiment technique cannot identify *which* specific individuals agree with the key statements (because individuals only report the total number of statements within each list that are true for them, as opposed to indicating whether each individual statement is true for them), it has the distinct advantage that we can credibly estimate population-level views toward transgender people in the workplace that are free from social desirability bias. Additionally, toward the end of our survey, we directly ask respondents about the key statements of interest (comfort with a transgender manager and support for employment nondiscrimination protection for transgender people), which, when compared with the true share elicited through the list experiments, provides us with estimates of the magnitude of misreporting of attitudes regarding transgender people in the workplace. We can also use group characteristics to examine heterogeneity in attitudes: whether, for example, women, on average, are more or less supportive of transgender people in the workplace than men.

Comparing our double list experiment to the direct survey responses, we find that support for transgender people in the labor market is significantly overreported (by 8%–10%), consistent with a strong role for social desirability bias. We also find that, even after correcting for social desirability bias, over two-thirds of people would be comfortable with a transgender manager at work and support nondiscrimination protection in employment for transgender people. Women, sexual minority individuals, and Democrats have significantly more positive views and show greater support than men, heterosexual individuals, and Republicans or Independents, respectively.

To complement the double list experiment, we then report the results from a descriptive survey. The survey allows us to compare views about transgender people in the workplace and about transgender employment nondiscrimination rights in relation to stated views about lesbian, gay, and bisexual (LGB) people in the workplace and about LGB employment nondiscrimination rights. In addition, our survey asked people about their general perceptions regarding the two statements of interest—that is, their beliefs about the true population share of individuals who would be comfortable with transgender managers and who support employment nondiscrimination protection for transgender people.

Looking at our survey data, we find significantly higher stated support for LGB people in the workplace and for LGB employment nondiscrimination rights relative to support for transgender people in the same domains. Our survey data also demonstrate that respondents severely underestimate the level of support for transgender people in the workplace among the general population by 28%–53%. This finding is especially notable, given that beliefs about others' views on stigmatized behaviors are shown to impact individuals' *own* views and behaviors (Bursztyjn et al. 2020). It may suggest that support for transgender people in the workplace could be increased by correcting these misperceptions.

Taken together, our results provide timely evidence on labor market sentiment toward transgender people in the United States. Although antitransgender sentiment is underreported when asked directly, a sizable majority of individuals—over two-thirds—support transgender people in the labor market, including in positions of workplace authority, and support employment nondiscrimination protection for transgender individuals.

## 2. Literature Review

Our study is related to a large economics literature on the drivers and impacts of discrimination in labor markets (Becker 1971, Phelps 1972, Arrow 1973, Bertrand and Duflo 2017, Baert 2018, Neumark 2018). There is also a vast literature on discrimination based on social

identity—such as race and gender (Altonji and Blank 1999, Goldin and Rouse 2000, Bertrand and Mullainathan 2004, Lang and Spitzer 2020). Within this large body of literature, recent research has shown that LGBTQ+ individuals are subject to discrimination in formal markets, such as labor and housing (for a review, see Badgett et al. 2021), as well as in domains outside of these formal contexts, such as with respect to prosocial behavior (Aksoy et al. 2023b).

A small economics literature on employment, earnings, and income for transgender people also has emerged, with most studies finding that transgender people have significantly worse economic outcomes than similarly situated cisgender people (Geijtenbeek and Plug 2018, Carpenter et al. 2020, Granberg et al. 2020, Badgett et al. 2021, Shannon 2022). For example, the most recent evidence from nationally representative U.S. data indicates that noncisgender individuals have significantly lower employment rates and higher poverty rates than otherwise similar cisgender individuals (Carpenter et al. 2022). We contribute to this broad, but relatively new, body of literature by studying views about transgender managers in the workplace and support for employment nondiscrimination protection for transgender individuals. The comparison of stated views toward transgender individuals relative to LGB individuals in the workplace further enhances our comprehension of the comparative position of transgender individuals.

There is a growing literature on general and political attitudes toward transgender individuals (Broockman and Kalla 2016, Taylor et al. 2018, Luhur et al. 2019, McCarthy 2021, Doan et al. 2022, Lewis et al. 2022). We contribute to this literature by examining the support for managerial or supervisory authority among transgender individuals. In addition, our paper extends the literature examining the employment barriers (e.g., “glass ceilings”) faced by women and racial and sexual minority individuals in accessing positions of leadership by focusing on support for transgender managers (Albrecht et al. 2003, Frank 2006, Giuliano et al. 2009, Matsa and Miller 2011, Aksoy et al. 2019, Cullen and Perez-Truglia 2023).<sup>6</sup>

There are several studies in psychology, sociology, and political science that have used list experiments to elicit sensitive views and attitudes, including in the context of sexual minority rights. For example, Lax et al. (2016) use a list experiment to measure public support for same-sex marriage in the United States, finding no evidence of social desirability bias regarding support for same-sex marriage or the inclusion of sexual minority status in employment nondiscrimination laws. Other research in these fields has used the list experiment approach to examine social desirability bias in the context of support for a female American President (Streb et al. 2008); support for a Jewish presidential candidate



(Kane et al. 2004); racial discrimination (Kuklinski et al. 1997a, b); the prevalence of atheists (Gervais and Najle 2018); and the prevalence of risky sexual behaviors among college students (LaBrie and Earleywine 2000).

Within economics, list experiments have been more limited, with some notable exceptions. For example, development economists have used this method to study sexual activity and reproductive behavior in Uganda (Jamison et al. 2013), as well as in Cameroon and Cote d'Ivoire (Chuang et al. 2021). List experiments have also been used in economics to examine corruption in public procurement in Russia (Detkova et al. 2021); use of loan proceeds in Peru and the Philippines (Karlan and Zinman 2012); illegal migration rates in Ethiopia, Mexico, Morocco, and the Philippines (McKenzie and Siegel 2013); hiring discrimination against women in Egypt (Osman et al. 2021); intimate partner violence in Peru (Agüero and Frisanchó 2022); and support for diversity, equity, and inclusion policies in the workplace (Boring and Delfgaauw 2024).

Our study is most closely related to Coffman et al. (2017), who conducted a list experiment in 2012 to study anti-LGB sentiment using an Amazon Mechanical Turk sample. They showed that the magnitude of anti-LGB sentiment is significantly understated. Our results build on their paper in three important ways. First, we study views about transgender people, rather than lesbian, gay, and bisexual individuals, using a sample that is representative of the U.S. population across race, sex, and age. We are the first study to use a list experiment technique to examine views about transgender people. Second, we use a double list experiment, rather than a single list experiment, that allows us to verify the robustness of our findings using different nonkey statements and to increase the statistical power of our estimates. Finally, we also study participants' perceptions about views of the general U.S. population toward transgender people and provide a comparison of stated views toward transgender individuals relative to LGB individuals.

### 3. Data and Methodology

#### 3.1. Experimental Design

In this section, we introduce our double list experiment method and survey questions, discuss key design considerations, and provide information about the data collection and our study sample. The experiment and a pre-analysis plan are preregistered on the American Economic Association's registry for randomized control trials (AEARCTR-0008820): <https://doi.org/10.1257/rct.8820>.

**3.1.1. List Experiments.** We use a list experiment technique (also called "item-count technique," "unmatched count," or "veiled approach") that was pioneered by

Miller (1984).<sup>7</sup> As mentioned in the introduction, respondents are given a list of statements and asked to report how many statements (but not which specific ones) are true for them, thus providing an extra layer of anonymity and increasing privacy (Coutts and Jann 2011). Participants are either assigned to a treatment group or a control group. In the control group ("short list"), participants are given a list of statements and asked to indicate how many of those statements are true for them. In the treatment group ("long list"), participants are given the same list of statements, plus a key statement of interest (in our context, a statement about views toward transgender individuals in the workplace).<sup>8</sup> The difference in means between the two lists gives us the estimated share of the population with the key attribute of interest. Table 1 presents one of the lists used in our study.

To formally illustrate how we use the list experiment technique to estimate the share of the population with the key attribute of interest, we follow the standard estimation technique implemented in previous studies (Tsai 2019). Suppose that we have a sample of  $n$  participants. Let  $T_i$  be the indicator variable equal to 1 if participant  $i$  sees the long list instead of the short list, and 0 otherwise. Let  $S_i$  be the potential answer to the key statement by participant  $i$ , and let  $R_{i,j}$  be the potential answer to the  $j$ th nonkey statement by participant  $i$  (where  $j = 4$  in our application). Using the list in Table 1,  $S_i = 1$  if participant  $i$  would be comfortable having a transgender manager at work, and 0 otherwise. Similarly, for example,  $R_{i,3} = 1$  if participant  $i$  can fluently speak at least three languages, and 0 otherwise. It is worth remembering that we do not observe  $S_i$  or  $R_{i,j}$ . Instead, we observe the total number of statements that are true for participant  $i$ :  $Y_i = T_i S_i + R_i$ , where  $R_i = \sum_{j=1}^4 R_{i,j}$ . Under certain assumptions,<sup>9</sup> the difference in means estimator as presented below gives us the estimated share of the population with the key attribute (i.e.,  $E(S_i)$ ).

$$E(S_i) = \frac{\sum_{i=1}^n Y_i T_i}{\sum_{i=1}^n T_i} - \frac{\sum_{i=1}^n Y_i (1 - T_i)}{\sum_{i=1}^n (1 - T_i)}. \quad (1)$$

To increase power and reduce variance, we extend this technique by using double list experiments (Droitcour et al. 1991, Glynn 2013). For each key statement, we have a set of two lists, (e.g., List A and List B) that are designed to be positively correlated. Each list contains four nonkey statements. Half of the participants (randomly selected) see List A (a short list) and then List B with the key statement (a long list). The other half see List A with the key statement (a long list) and List B (a short list). We also randomized the order at the subject level such that some participants see List A first, while others see List B first. The differences-in-means between short and long lists from both Lists A and B are

**Table 1.** List Experiment Example

Short list	Long list
<ul style="list-style-type: none"> <li>• I have a driver’s license.</li> <li>• I think COVID-19 health risks were overstated.</li> <li>• I can fluently speak at least three languages.</li> <li>• I support the Black Lives Matter movement.</li> </ul>	<ul style="list-style-type: none"> <li>• I have a driver’s license.</li> <li>• I think COVID-19 health risks were overstated.</li> <li>• I can fluently speak at least three languages.</li> <li>• I support the Black Lives Matter movement.</li> <li>• I would be comfortable having a transgender manager at work. [key statement]</li> </ul>

Notes. The order of the statements within each list was randomized at the subject level. For the full set of lists, see Online Appendix C.

averaged, providing us the true share of the population with that key attribute. Formally, let  $Y_i^A$  and  $Y_i^B$  be the total number of items in List A and B, respectively, that are true for participant  $i$ ; the estimated share of the population with the key attribute is given by  $E^{DL}(S_i)$ .

$$E^{DL}(S_i) = \left[ \left\{ \frac{\sum_{i=1}^n Y_i^A T_i}{\sum_{i=1}^n T_i} - \frac{\sum_{i=1}^n Y_i^A (1 - T_i)}{\sum_{i=1}^n (1 - T_i)} \right\} + \left\{ \frac{\sum_{i=1}^n Y_i^B (1 - T_i)}{\sum_{i=1}^n (1 - T_i)} - \frac{\sum_{i=1}^n Y_i^B T_i}{\sum_{i=1}^n T_i} \right\} \right] / 2. \quad (2)$$

Thanks to this extension, it is possible to obtain more precise estimates because all respondents provide information about the key statements, unlike the single list experiment, in which only respondents seeing the long list provide such information. The double list method also allows us to verify the robustness of our findings to using different nonkey statements (Chuang et al. 2021).

In this experiment, we test two key statements:

*Transgender manager:* “I would be comfortable having a transgender manager at work.”

*Transgender employment nondiscrimination protection:* “I think the law should prohibit employment discrimination against transgender individuals.”

We use the double list experiment technique for both statements, and, thus, we have a total of four lists: Lists 1A and 1B for the transgender manager key statement and Lists 2A and 2B for the transgender employment nondiscrimination protection key statement.<sup>10</sup>

We ask the questions regarding the key statements to all participants after they respond to demographic and socio-economic questions in a survey. The direct questions provide baseline estimates of the share of population with the key attributes, and this allows us to estimate the size of the bias due to social desirability and misreporting of stigmatized attitudes.

**3.1.2. Survey Questionnaire.** All subjects first participate in the list experiment section and then move to the survey.<sup>11</sup> Subjects are not allowed to skip any questions in the list experiments and are not allowed to go back and revise their answers at any point. However, subjects are always free to leave the study whenever they

wish. The order of the questions in the survey section is the same for all respondents. In addition to the two questions (relating to the two key statements from the list experiments) asked directly in the survey, we collect standard demographic and socio-economic variables, and we ask additional direct questions to measure participants’ stated views toward LGB individuals in the workplace.

Finally, at the very end of the survey, we also elicit participants’ beliefs about the two key statements used in the list experiment. Specifically, the participants are shown the following statements and asked to fill in the blank with their best guess:

Out of every 100 people in the general US population, I think approximately \_\_\_\_ out of 100 would be comfortable with having a transgender manager at work.

Out of every 100 people in the general US population, I think approximately \_\_\_\_ out of 100 would agree that the law should prohibit employment discrimination against transgender individuals.

The complete set of instructions and survey questions used for our study can be found in Online Appendix C.<sup>12</sup>

### 3.2. Key Design Considerations

The list experiment technique allows researchers to estimate the true share of the population with the key attribute by providing an extra layer of anonymity to their responses. As discussed in the introduction, by comparing the responses in the list experiment to direct survey questions, we can also estimate the size of the bias due to social desirability and misreporting of stigmatized attitudes. Social desirability bias might cause some respondents not to report their true sentiments honestly when asked directly. This usually happens when the respondents believe that their opinion runs counter to the perceived social norm. Ex ante, the size of the bias is not clear: online surveys may elicit truthful answers because they are self-administered, completed in private, and anonymous (Holbrook and Krosnick 2010, Robertson et al. 2018). Thus, the magnitude of misreporting we document is likely to be a lower bound to what might occur in other surveys, because most surveys are not conducted with as much privacy and

anonymity, and, thus, respondents in our study may be less prone to social desirability bias, even when answering the question directly.

Importantly, it is not the case that increased reporting under the veil of the list experiment is simply mechanical. Previous research has shown that list experiments provide increased estimates of prevalence only for stigmatized views: there is no evidence of this technique leading to an increase in reporting of innocuous behaviors (Tsuchiya et al. 2007, Coffman et al. 2017).<sup>13</sup>

While designing the list experiments and choosing the nonkey statements, we followed best practices in the literature (Glynn 2013). For example, one should carefully determine how many nonkey statements to include. The number of nonkey statements should be neither too low (to avoid a ceiling effect—i.e., participants reporting that all statements are true for them, thus removing the privacy protection provided by the list experiment) nor too high (to avoid higher variance and measurement error due to respondents' inability to remember or focus on all statements in the list). After carefully examining previous studies, we decided on four nonkey statements. In each of the lists, we included a statement that we expected to be true for most people (to avoid a floor effect—i.e., participants reporting zero items, thus also removing the privacy protection provided by the list experiment) and another statement that we expected to be false for most people (to avoid a ceiling effect), and the remaining two nonkey statements were chosen such that they are expected to be negatively correlated (i.e., one statement that is likely to be supported by more politically conservative people and another one that is likely to be supported by more politically progressive people).<sup>14</sup> This approach has the additional advantage of decreasing variance and increasing power. High variance is often an issue because the key statement is aggregated with a number of nonkey statements. To some extent, the additional variance is the cost of the higher perceived privacy protection (Glynn 2013). Therefore, list randomization often produces results that are too high in variance to be statistically significant, especially if the attribute, view, or behavior of interest has low prevalence (Karlan and Zinman 2012). Thus, a modal response of two out of four for the nonkey statements is desirable. Finally, in order to increase power further in the double list, we designed the nonkey statements in Lists A and B to be positively correlated across lists.<sup>15</sup>

Following Chuang et al. (2021), in order to draw less attention to our key statements and increase the validity of our list experiment, some of the nonkey statements in our lists are political in nature. Additionally, instead of asking the direct questions right after their corresponding lists, in line with previous studies (Lax et al. 2016, Chuang et al. 2021), we ask the direct questions after the demographic questions and together

with other questions on income, religiosity, and political affiliation. This order was chosen to limit the participant's focus on the transgender-related statements in the list experiments.<sup>16</sup> Additionally, following Berinsky (2004), we do not provide a "don't know" option in the direct question because individuals who hold socially stigmatized opinions may hide their opinions behind a "don't know" response. Finally, Coffman et al. (2017) showed that list experiments work better when the stigmatized answer in the related direct question is a "no" instead of a "yes." Thus, we designed our key questions such that the socially stigmatized answer is always a "no."

### 3.3. Data Collection and Study Sample

We coded the study using oTree (Chen et al. 2016) and conducted it on an online platform, Prolific, which has been used in many economics studies (Isler et al. 2018, Zmigrod et al. 2018, Schild et al. 2019, Orefice and Quintana-Domeque 2021). Available evidence indicates some important advantages of Prolific over Amazon Mechanical Turk for conducting research: Prolific participants are more diverse, less dishonest, pay more attention to study instructions, and produce higher-quality data (Peer et al. 2017, Palan and Schitter 2018, Gupta et al. 2021, Peer et al. 2021).

We ran our experiment in late January 2022 using Prolific's representative sample of the U.S. population with respect to race, sex, and age. A total of 1,806 participants completed the study.<sup>17</sup> Participants never disclosed any identifying information, and the survey was completely anonymous. The attrition rate was very low: a total of 36 participants started the study but did not complete it. Out of those 36, a total of 25 exited the study before seeing the first list experiment. We only use the data of participants who completed the entire study. In addition, we included three attention check questions. Less than 1% ( $n = 15$ ) of the participants failed one out of the three attention checks. No participant failed two or more attention checks. Thus, we include all participants in our analysis. The study took about seven minutes, on average, to complete, and subjects who successfully completed the study received \$1.30, on average, which corresponds to \$10.40/hour.<sup>18</sup>

In Table 2, we present summary statistics of our Prolific participants.<sup>19</sup> Comparing our sample to official population estimates from the Census and the American Community Survey (U.S. Census 2021, Ruggles et al. 2022), our sample appears representative not only based on age, race, and sex—as expected, given the sampling methodology—but also with respect to income, marital status, employment status, and urbanicity. Our sample is similarly likely to be Republican, but is more likely to be Democrat and less likely to be Independent, and our sample is also more educated than the general U.S. population (U.S. Census 2021,

**Table 2.** Summary Statistics of Participant Characteristics

Variable	Mean
Age	
Mean	44.74
Between 18 and 34	0.334
Between 35 and 49	0.254
Between 50 and 64	0.282
65 or older	0.130
Female (sex at birth)	0.514
Race	
White only	0.745
Black or African American only	0.135
Asian or Native Hawaiian or Pacific Islander only	0.065
Married	0.441
Education	
High school, GED, or less	0.107
Some college credits, no degree	0.200
Associate's degree	0.110
Bachelor's degree or higher	0.583
Employed	0.670
Household income: less than \$60,000	0.477
Political party affiliation	
Democrat	0.483
Republican	0.194
Independent	0.323
Urbanicity	
Rural area	0.126
Small city or town	0.291
Suburb near a large city	0.348
Large city	0.236
Region	
Northeast	0.211
Midwest	0.215
South	0.424
West	0.150
Total number of participants	1,806

Source. 2022 Prolific List Experiment.

Notes. Race categories are not mutually exclusive (participants could select more than one option). The variable “Employed” includes both “employed for wages” and “self-employed.”

GSS 2022). In terms of region, although we have slightly more people from the Northeast and less from the West, overall, the regional distribution is comparable to the U.S. population.

In addition to our Prolific sample, we provide supplemental descriptive evidence from the American National Election Survey (ANES). The ANES is a large nationally representative survey of U.S. adults that is widely used in political science and economics research (Morisi et al. 2019, Fouka and Tabellini 2022). We use publicly available microdata from the ANES 2020 Time Series Study.<sup>20</sup> We use ANES for two main purposes. First, these data include a “feeling thermometer” type of question, where respondents were asked to rate their feelings toward a variety of groups, including transgender individuals.<sup>21</sup> Below, when we investigate group-specific heterogeneity in views about transgender people in the workplace (e.g., whether women report more positive views than men), we use the ANES patterns as a source of comparison and confirmation.

Second, the ANES includes survey items that closely align with the questions we asked our Prolific respondents, such as support for nondiscrimination protection on the basis of sexual orientation.<sup>22</sup> As we explain below, the nationally representative ANES returns very similar patterns on questions that are common to both datasets.

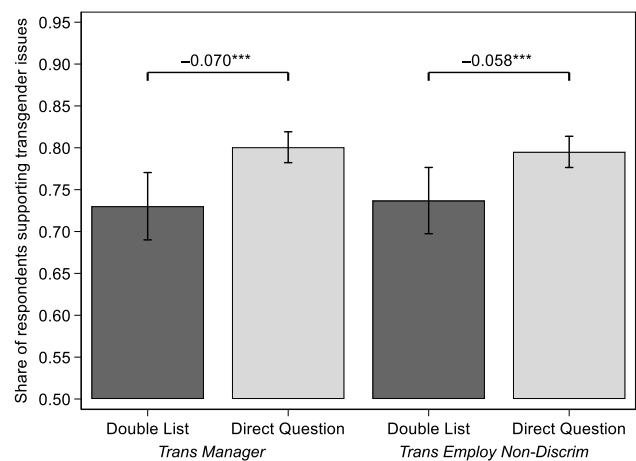
## 4. Results

In this section, we first present our findings from the list experiment. We then examine participants’ beliefs regarding Americans’ views toward transgender individuals in the workplace. Next, we report heterogeneity in workplace-related views toward transgender people based on participant characteristics. Finally, we describe results from the survey that compare views regarding lesbian, gay, and bisexual managers and support for employment nondiscrimination rights for sexual minority individuals to views regarding transgender managers and support for employment nondiscrimination rights for transgender individuals, respectively.

### 4.1. Views Toward Transgender Individuals in the Labor Market

First, we present our findings from the double list experiment and compare our data to the direct questions. The first two bars of Figure 1 present the proportion of our participants who are comfortable having a transgender manager at work (*Transgender Manager*), and the latter two bars present the proportion of

**Figure 1.** List Experiments on Attitudes Toward Transgender People



Source. 2022 Prolific List Experiment.

Notes. The 95% confidence intervals reported with vertical range plots. The numbers above the horizontal bars are the differences between the two groups at the base of each horizontal bar. Trans Manager key statement: “I would be comfortable having a transgender manager at work.” Trans Employ Non-Discrim key statement: “I think the law should prohibit employment discrimination against transgender individuals.” Number of observations: 1,806. See also Figure B.3 and Table B.3 in the Online Appendix. \* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .



participants who agree that the law should prohibit employment discrimination against transgender individuals (*Trans Employment Non-Discrim*). To estimate the true share of our sample with the key attribute using the list experiments, we first take the difference in means between the long and the short lists for each key statement separately for Lists A and B.<sup>23</sup> We then take the average of these two estimates. This average gives us the estimated proportion using the double list method, which is presented as *Double List* in the figure. The *Direct Question* bars in Figure 1 are the shares of our sample who report comfort with a transgender manager or support for employment nondiscrimination protection for transgender people, respectively, that we estimate using the answers to the direct questions in the survey.

Looking at the first two bars of Figure 1, we find that discomfort with having a transgender manager in the workplace is significantly underreported. When asked directly, 80.1% of our participants say they would be comfortable having a transgender manager at work. However, when asked indirectly (i.e., using the double list experiment method), we find that the share of participants who would be comfortable with a transgender manager at work is only 73%, significantly lower than the estimates from the direct question.

These findings are similar when we look at the views about employment nondiscrimination protection for transgender individuals, which are presented in the latter two bars of Figure 1. When we directly ask participants whether they think that the law should prohibit employment discrimination against transgender individuals, 79.5% of them say yes. However, looking at our double list experiment, the estimated true percentage of participants who agree with this statement is 73.7%, which is significantly lower.<sup>24</sup>

Overall, the percentage of participants who are comfortable having a transgender manager at work and those who agree that the law should prohibit employment discrimination against transgender individuals decreases by 7 percentage points (or 9.6%) and 5.8 percentage points (or 7.9%), respectively, when participants are provided an extra layer of privacy, thanks to our double list experiment.<sup>25</sup> This social desirability bias that we document in the context of transgender labor market attitudes is comparable in magnitude to Coffman et al. (2017), who investigate sentiments toward lesbian, gay, and bisexual individuals in various contexts using a single list experiment. Furthermore, our estimates of social desirability bias are higher than those in Lax et al. (2016), who find no evidence of such a bias in their list experiments on same-sex marriage legalization and employment nondiscrimination protection for gay and lesbian individuals. Our social desirability bias estimates are also within the range estimated by Boring and Delfgaauw (2024) when using list experiments to measure

beliefs on the effectiveness of diversity, equity, and inclusion policies and perceived sexism in the workplace.

Next, we provide estimates using a regression analysis. Because we used two lists for each key statement, we estimate the following regression model separately for each list and each key statement using ordinary least squares (OLS):

$$y_i = \beta_0 + \beta_1 T_i + \beta_2 X_i + u_i,$$

where  $T_i$  is an indicator variable that takes the value of 1 if the list was long (i.e., with the key statement) or 0 if the list was short, and  $X_i$  is the vector of control variables that includes state fixed effects, demographic controls (subject's age, sex at birth, race, sexual orientation, and sexual attraction), socio-economic controls (subject's education level, employment status, income, current political affiliation, and current religious affiliation), beliefs about general level of support for the key statements (i.e., support for transgender managers or employment nondiscrimination protection for transgender individuals), and additional controls (whether at least one child less than 18 years of age lives in the subject's household, number of people living in the subject's household, marital status, and urbanicity). Thus,  $\hat{\beta}_1$  gives us the estimated size of our sample with the key attribute, which is presented in Table 3. Panel A presents the estimated share of the participants who would be comfortable with a transgender manager at work, and Panel B presents the estimated share of the participants who agree that the law should prohibit employment discrimination against transgender individuals.

Columns (1) and (5) show the estimated share of the participants without any controls. Thus, these estimated shares are the same as those presented in Table B.3, Panel A, columns (1) and (2), in the Online Appendix. We find that our results are robust to the inclusion of control variables. As we add more controls, the estimated shares get slightly smaller for three out of four estimates. For only one of the estimates, the coefficient increases by a maximum of 1.1 percentage points.

Because we employed a double list experiment, we can take the average of the estimates from Lists A and B. Taking the average of the coefficients from our most conservative estimates (columns (4) and (8)), we find that 71.9% of the participants would be comfortable with having a transgender manager at work, and 74% of the participants agree that the law should prohibit employment discrimination against transgender individuals. These estimated proportions are significantly lower than the estimates obtained by using direct questions ( $p < 0.001$  and  $p = 0.005$ , respectively), further confirming the presence of social desirability bias.<sup>26</sup>

Taken together, although we focus on the double list method when discussing our main findings in Figure 1

**Table 3.** List Experiments on Attitudes Toward Transgender People

	List A				List B			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Transgender manager								
Subject saw list with key statement	0.719 (0.030)	0.718 (0.030)	0.718 (0.029)	0.717 (0.029)	0.741 (0.034)	0.728 (0.033)	0.724 (0.033)	0.721 (0.033)
R <sup>2</sup>	0.239	0.280	0.351	0.356	0.212	0.263	0.294	0.304
Estimated bias	8.2	8.3	8.3	8.4	6	7.3	7.7	8
Panel B: Transgender employment non-discrimination protection								
Subject saw list with key statement	0.734 (0.030)	0.724 (0.031)	0.727 (0.030)	0.729 (0.030)	0.740 (0.031)	0.748 (0.031)	0.749 (0.030)	0.751 (0.030)
R <sup>2</sup>	0.247	0.277	0.296	0.297	0.243	0.294	0.332	0.338
Estimated bias	6.1	7.1	6.8	6.6	5.5	4.7	4.6	4.4
<i>Controls for:</i>								
State fixed effects		✓	✓	✓		✓	✓	✓
Demographic controls		✓	✓	✓		✓	✓	✓
Socio-economic factors and beliefs			✓	✓			✓	✓
Additional controls				✓				✓
Observations	1,806	1,806	1,806	1,806	1,806	1,806	1,806	1,806

Source. 2022 Prolific List Experiment.

Notes. Multivariate analysis. OLS estimates. Robust standard errors are in parentheses. There are no asterisks included in this table to indicate that the estimates are statistically different from zero: all estimates are highly significant at the 1% level. “Estimated bias” reports the differences (in percentage points) between the estimated percentage of participants who agreed to the key statement in each corresponding column and the estimate obtained from the corresponding direct question. Transgender manager key statement: “I would be comfortable having a transgender manager at work.” Transgender employment nondiscrimination protection key statement: “I think the law should prohibit employment discrimination against transgender individuals.” *Demographic controls* include subject’s age, sex at birth, race (including missing indicator), sexual orientation, and sexual attraction. *Socio-economic factors and beliefs* include subject’s education level, employment status, income, current religious affiliation, political affiliation, and beliefs about general level of comfort with transgender managers (Panel A) or support for employment discrimination protection for transgender individuals (Panel B). *Additional controls* include whether at least one child less than 18 years of age lives in the subject’s household, number of people living in the subject’s household, urbanicity, and marital status.

because it gives us the highest precision, our findings using the individual lists presented in Table 3, Online Appendix Figure B.3, and Panel A of Table B.3 show that our results are robust to using either list. Indeed, for both key statements, the difference between the estimate in List A and the one in List B is statistically indistinguishable from zero. These statistics confirm that our main results are robust across lists and are not driven by the choice of the nonkey statements (Chuang et al. 2021).

Indeed, our use of a double list experiment instead of a single list experiment is, in part, based on the idea that the specific list (A versus B) should not matter in determining the true rate of social desirability bias or the true rate of support for each sensitive item. Thus, it is informative to ask: Are our estimates of social desirability bias meaningfully different than List A versus List B differences that, by construction, should be immaterial? The answer is “yes.” Our estimates of social desirability bias are 2.6–17.5 times larger than the differences between the lists.<sup>27</sup>

To summarize, we show that a sizable majority of our sample of U.S. adults support transgender people in the labor market, including in positions of workplace authority. Over two-thirds of individuals are

comfortable with transgender individuals in positions of leadership in the workplace and support laws prohibiting employment discrimination against transgender individuals. However, we also show that many participants do not truthfully report their views regarding transgender individuals in the workplace when asked directly. This could be due to social desirability bias, where some individuals may not feel comfortable expressing their actual sentiments on a socially sensitive topic. These findings imply that research conducted using only survey measures of stated views toward transgender individuals in the workplace may paint a more optimistic picture of the situation in the United States than the reality.

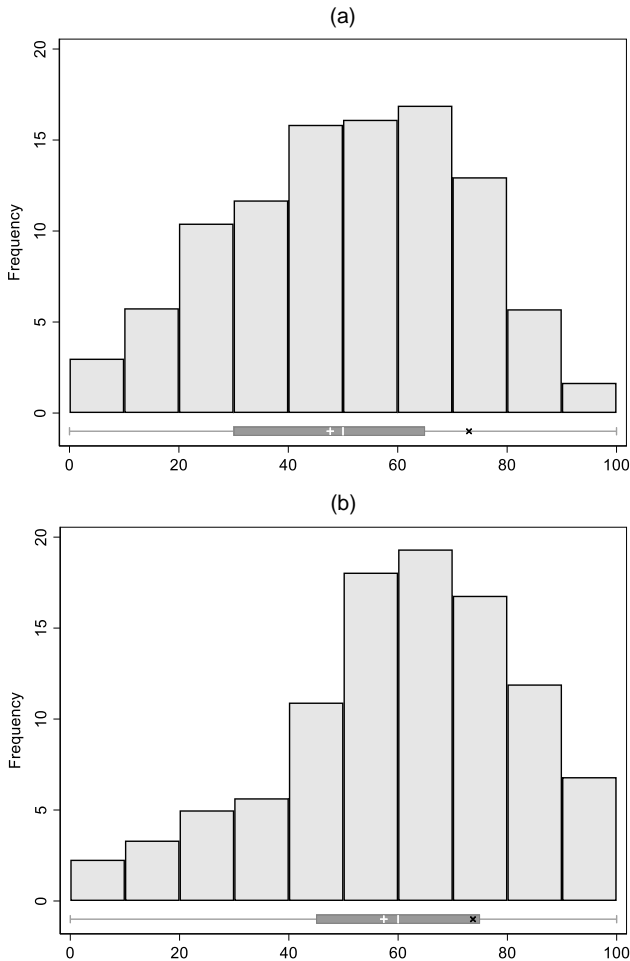
#### 4.2. Perceptions About General Views

Next, we aim to understand what our participants think about the views of the general U.S. population toward workplace issues related to transgender individuals. To do this, we elicited participants’ beliefs about the two key statements used in the list experiment. More specifically, we asked participants’ perceptions about views of the general U.S. population toward transgender managers and employment nondiscrimination protection for transgender individuals. We are not aware of

any other list experiments that collected data on perceptions. Thus, the data presented in this section provide novel findings.

Figure 2 presents these perceptions regarding comfort with having a transgender manager (panel (a)) and

**Figure 2.** Perceptions of General Views on Attitudes Toward Transgender People



Source. 2022 Prolific List Experiment.

Notes. (a) Respondent thinks  $X/100$  would be comfortable having a transgender manager at work. (b) Respondent thinks  $X/100$  would agree that the law should prohibit employment discrimination against transgender individuals. The original survey question for panel (a) is “Out of every 100 people in the general US population, I think approximately \_\_\_ out of 100 would be comfortable with having a transgender manager at work.” The original survey question for panel (b) is “Out of every 100 people in the general US population, I think approximately \_\_\_ out of 100 would agree that the law should prohibit employment discrimination against transgender individuals.” The box plot below each histogram reports minimum and maximum values and 25th and 75th percentiles, as well as mean and median. Within each box plot, the white vertical line “|” indicates the median; the white “+” symbol indicates the mean. The black “x” symbol in panel (a) indicates the actual share of the sample being comfortable with a transgender manager estimated from the double list experiment, while panel (b) indicates the actual share of the sample agreeing that the law should prohibit employment discrimination against transgender individuals estimated from the double list experiment (see Figure 1). Number of observations: 1,806.

support for employment nondiscrimination protection for transgender individuals (panel (b)).

Figure 2 presents two interesting take-away points. First, although the true proportion of our participants who are comfortable having a transgender manager at work is 73%, our participants guess, on average, that only 47.7% of the general U.S. population would be comfortable with a transgender manager. That is, respondents underestimate the level of comfort with a transgender manager, as indicated in our sample (and in other large surveys) by 25.3 percentage points (53% of the average guess). Similarly, although we estimated that 73.7% of our participants agree that the law should prohibit employment discrimination against transgender individuals, on average, they think that only 57.4% of the general U.S. population supports laws that prohibit employment discrimination—an underestimate of 16.3 percentage points (28% of the average guess). These findings contribute to the recent conversation on the presence of misperceptions on gender-related views (e.g., Bursztyl et al. 2020, Bursztyl and Yang 2022, Bursztyl et al. 2023).

Second, our participants think that the general U.S. population is more likely to support laws that prohibit employment nondiscrimination than to be comfortable with a transgender manager (57.4% versus 47.7%,  $p < 0.001$ ). This is an especially interesting finding, given that we do not see a difference when we compare the estimated proportions using the double list experiments in Figure 1 (73.7% versus 73%,  $p = 0.812$ ).

We also study these beliefs separately for those who personally agree with the key statement when asked directly versus those who do not. These findings are presented in Figures B.5 and B.6 in the Online Appendix. Both figures reveal that, perhaps not surprisingly, there is a positive correlation between individuals’ own views and their beliefs (Spearman’s Correlation coefficients are 0.34,  $p < 0.001$ , and 0.24,  $p < 0.001$  for comfort with a transgender manager and support for transgender employment nondiscrimination rights, respectively). In other words, people who *disagree* with the key statements (i.e., who state they would not be comfortable having a transgender manager or who do not support nondiscrimination protection in employment for transgender individuals) guess lower levels of support from the general population than people who agree with the key statements.

There may be several potential explanations behind these findings discussed above. First, we know from the extensive research on social norms that individuals’ own beliefs and actions tend to adhere to social norms (Bicchieri 2002). These beliefs may be indicative of individuals’ perceived social norms on these sensitive issues, and, thus, the positive correlation between individual views and the beliefs would be in line with this research. Second, this positive correlation may be due

to a false-consensus effect, which is a cognitive bias that causes people to overestimate how much others are like them. However, it is interesting to note that, even among those comfortable with a transgender manager or who support employment nondiscrimination protection for transgender individuals (panel (a) in Figures B.5 and B.6 in the Online Appendix), the average perceived levels of support among the U.S. population are significantly lower than the ones estimated from the double list experiments in Figure 1.

Finally, it is worth noting that we chose not to incentivize these questions in order to keep the study simple and relatively quick, and we acknowledge the usual drawbacks of using an unincentivized elicitation method. For example, subjects may not report their true beliefs due to lack of financial incentives, or it could be the case that, *ex post*, people simply misreport their true beliefs to justify their (dis)agreement with those statements. However, a meta-analysis by Bursztyrn and Yang (2022) shows that these misperceptions are not consistently related to whether the belief elicitation is incentivized. Overall, we think these data provide novel and valuable insights about participant behavior; future research can shed more light on how these misperceptions are formed and might interact with participants' own behavior.

### 4.3. Heterogeneity Analysis

In this section, we study our main research questions by exploring heterogeneous effects. In Table 4, we present regression results where we control for sex, race, age, sexual orientation, sexual attraction, political affiliation, household income, employment status, religious affiliation, region, and beliefs. We estimate the heterogeneous effects of these independent variables using an estimation method specifically designed for double list experiments by Tsai (2019).<sup>28</sup> This method estimates Equation (2) using a linear least-squares estimation method, while controlling for independent variables, as well as interacting them with the treatment variable. These results are presented in Table 4 separately for the key statement about having a transgender manager (column (1)) and the key statement regarding employment nondiscrimination protection (column (2)).<sup>29</sup>

First, we find that women hold more positive views than men regarding transgender individuals, although the coefficient estimates are not statistically significant for the employment nondiscrimination protection statement. We find a similar sex difference using the nationally representative ANES data, where women (relative to men) report significantly more positive feelings toward transgender individuals ( $p < 0.001$ ). Furthermore, looking at Table B.5 in the Online Appendix, we find that both men and women misreport their true views, although the difference is not significant for men for the employment nondiscrimination protection statement.

Second, we find that non-heterosexual individuals hold significantly more positive views than heterosexual individuals regarding transgender people in the workplace (although the coefficient estimates are not statistically significant for the employment nondiscrimination protection statement).<sup>30</sup> Moreover, as can be seen in Panel A of Table B.6 in the Online Appendix, we find that heterosexual individuals are significantly more likely to underreport the stigmatized view when asked about their comfort with having a transgender manager relative to non-heterosexual individuals, and this difference is substantial—more than 11 percentage points—and statistically significant at the 5% level. In fact, we do not find any significant evidence of misreporting by non-heterosexual individuals regarding their comfort with having a transgender manager: their views are similar across both elicitation methods. Looking at Panel B of Table B.6 in the Online Appendix, we find that both heterosexual and non-heterosexual individuals misreport their true views about nondiscrimination protection, and the misreporting is marginally significant for non-heterosexual individuals.

Third, we find interesting heterogeneity across political affiliations. For example, Democrats' views regarding transgender individuals in the workplace are more positive than Independents' views, which are themselves more positive than Republicans' views. This is true for attitudes toward transgender managers, as well as for employment nondiscrimination protection (also see Table B.7 in the Online Appendix). This political divide we observe in our dataset is consistent with the political divide in general acceptance of transgender individuals shown by a 2021 Pew Research Center survey (Brown 2022b). Similarly, it is consistent with the nationally representative ANES data, where we find that Democrats report significantly more positive feelings toward transgender individuals relative to Independents ( $p < 0.001$ ), who also report significantly more positive feelings compared with Republicans ( $p < 0.001$ ). Also, as can be seen in Table B.7 in the Online Appendix, we find significant misreporting about comfort with having a transgender manager for all three groups. In contrast, when it comes to support for employment nondiscrimination protection, we only see significant misreporting by Independents.

Fourth, Table 4 also reveals that participants with less than a bachelor's degree have significantly less positive views regarding transgender managers. Additionally, in line with our findings discussed in Section 4.2, there is a positive correlation between participants' own views and their beliefs.<sup>31</sup> We do not see in this multivariate analysis a significant difference in views across different age groups, races, sexual attractions, religious affiliations, income levels, employment statuses, or regions.

Finally, although not specified in our pre-analysis plan, we find evidence of heterogeneity in support for



**Table 4.** List Experiments on Attitudes Toward Transgender People

Interaction of treatment variable with:	Transgender manager (1)	Transgender employment nondiscrimination protection (2)
Sex assigned at birth: Female	0.093** (0.040)	0.052 (0.040)
Race: White only	0.020 (0.048)	−0.031 (0.047)
Age: 18–44	0.065 (0.042)	0.048 (0.042)
Sexual orientation: Heterosexual	−0.233*** (0.068)	0.029 (0.065)
Sexual attraction: Different-sex only	−0.004 (0.059)	−0.052 (0.060)
Political affiliation: Republican	−0.326*** (0.060)	−0.342*** (0.062)
Political affiliation: Independent or Other	−0.161*** (0.043)	−0.179*** (0.045)
Household income: Less than \$60,000	−0.021 (0.040)	0.012 (0.040)
Education: Less than a Bachelor's degree	−0.089** (0.041)	0.033 (0.043)
Employment status: Employed for wages	−0.063 (0.042)	−0.022 (0.044)
Current religious affiliation: Christian	−0.024 (0.078)	−0.022 (0.074)
Current religious affiliation: Not religious	0.053 (0.076)	0.045 (0.072)
Currently live in: North-East	0.029 (0.051)	0.008 (0.051)
Currently live in: Midwest	−0.008 (0.050)	0.007 (0.052)
Currently live in: West	−0.053 (0.059)	0.095 (0.059)
Respondent believes 50% or more of Americans would be comfortable with a transgender manager at work	0.182*** (0.039)	
Respondent believes 50% or more of Americans would agree that the law should prohibit employment discrimination against transgender individuals		0.096** (0.045)
Constant	0.924*** (0.108)	0.752*** (0.108)
Observations	1,806	1,806

*Notes.* Heterogeneity analysis. Multivariate analysis. Robust standard errors are in parentheses. Transgender manager key statement: “I would be comfortable having a transgender manager at work.” Transgender employment nondiscrimination protection key statement: “I think the law should prohibit employment discrimination against transgender individuals.” Coefficients obtained using the Stata command *kict ls* (Tsai 2019) performing least squares estimation for a double list experiment. The dependent variables are the reported true number of statements for the transgender manager lists (column (1)) and the employment nondiscrimination protection lists (column (2)). The treatment variable is an indicator variable equal to 1 for the first long list (List A) containing the corresponding key statement and the second short list (List B), 0 for the first short list (List A) and the second long list (List B). All estimated coefficients of the interactions of the treatment variable with the observable characteristics are reported except for the variable “missing race.”

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

transgender individuals in the workplace related to prior managerial experience (Table B.14 in the Online Appendix).<sup>32</sup> Individuals with such experience might plausibly have more information about managerial duties and responsibilities, and they are also more likely to be in positions that must comply with new nondiscrimination regulations post-*Bostock*. We find that support for transgender individuals in the workplace is higher among

individuals *without* managerial experience. Moreover, the difference between the double list estimates and the answers to the direct question on comfort with a transgender manager is larger among those with managerial experience ( $p = 0.101$ ); that is, individuals with managerial experience misreport more than individuals without managerial experience.<sup>33</sup> These patterns may indicate that targeted managerial-focused interventions may be

needed to ensure the equal treatment of transgender people in the workplace.

#### 4.4. Comparison of Workplace-Related Views Toward Transgender Individuals Relative to LGB Individuals

So far, we have focused our analysis on views regarding transgender managers and support for employment nondiscrimination protection for transgender people. It is also interesting to examine how these views compare relative to views regarding lesbian, gay, and bisexual individuals in these same contexts. As described in Section 3, in the survey, we asked questions that allow us to examine these differences directly. Results are presented in Figure 3.

We find that support for transgender managers in the workplace is significantly lower than stated support for lesbian, gay, and bisexual managers (see first two bars of Figure 3). Participants are 9.6 percentage points less likely to report being comfortable having a transgender manager relative to an openly lesbian, gay, or bisexual manager. Looking at support for employment nondiscrimination protection (the latter two bars of Figure 3), again, we see that participants are less likely to support such laws when those laws are designed to protect transgender individuals, as opposed to lesbian, gay, and bisexual individuals. This pattern is further supported by the nationally representative ANES data

indicating that feelings toward lesbian women and gay men are significantly more positive than feelings toward transgender individuals ( $p < 0.001$ ).<sup>34</sup> The pattern is also consistent with previous studies measuring attitudes toward sexual and gender minority individuals (Lewis et al. 2017, Flores et al. 2018, Lewis et al. 2022).<sup>35</sup>

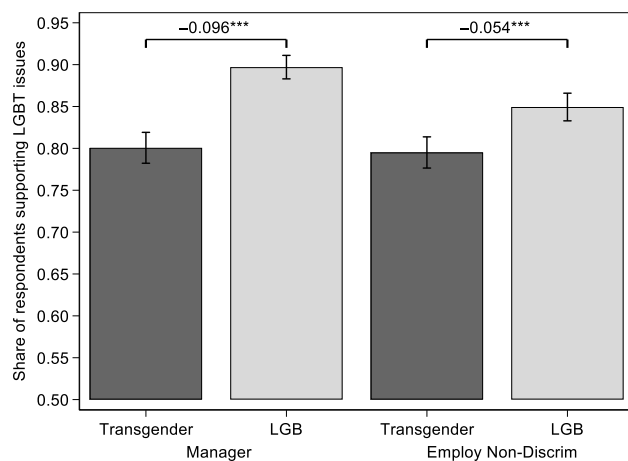
It is important to acknowledge that these findings are based solely on stated responses obtained through directly elicited views. It is plausible that the extent of social desirability bias may differ across these questions and domains. For example, the social desirability bias regarding support for LGB individuals could be greater than the social desirability bias regarding support for transgender individuals, which could plausibly affect the conclusion that support for transgender individuals is lower than support for LGB individuals.<sup>36</sup> Because we did not conduct a list experiment to elicit true views toward LGB individuals, we can only make this comparison using the direct questions. Future research can investigate whether there is, indeed, a lower level of support for transgender individuals by running a list experiment for both groups.

### 5. Conclusion

We report the results of a double list experiment and a survey designed to provide timely information on views toward transgender people in the workplace and support for transgender employment nondiscrimination rights. As sexual and gender minority individuals are newly protected by federal employment nondiscrimination protections in the United States as recently as summer 2020, we sought to gauge workplace-related sentiment toward gender minority individuals using an elicitation method that removes social desirability biases, which might artificially inflate support for transgender people in the workplace and transgender employment nondiscrimination rights.

Our double list experiment yielded three key findings. First, antitransgender labor market sentiment in our sample was significantly underreported, consistent with the presence of social desirability bias and pressure to report comfort with transgender managers and support for transgender employment nondiscrimination protections. Second, despite the presence of significant underreporting of antitransgender sentiment, overall levels of true comfort with having a transgender manager at work and support for employment nondiscrimination protection for transgender people were over two-thirds. Thus, a sizable majority of individuals support transgender people in the workplace and transgender employment nondiscrimination rights. Third, this support varied across demographic groups, with more support among women, sexual minority individuals, and Democrats.

**Figure 3.** Comparison of Views Toward Transgender Individuals Relative to LGB Individuals and Issues



Source. 2022 Prolific List Experiment.

Notes. The 95% confidence intervals are reported with horizontal range plots. The numbers above the horizontal bars are the differences between the two groups at the base of each horizontal bar. Questions used in this table are the following for “Manager”: “Would you be comfortable having a [transgender]/[openly lesbian, gay, or bisexual] manager at work?” For “Employ Non-Discrim”: “Do you think the law should prohibit employment discrimination against [transgender]/[lesbian, gay, or bisexual] individuals?” Number of observations: 1,806. \* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Our survey yielded additional insights on views toward transgender people in the labor market in the United States. We found that people severely underestimate the level of comfort with having a transgender manager at work and the level of support for employment nondiscrimination protection for transgender people. We also found that survey respondents reported more comfort with a lesbian, gay, or bisexual manager and more support for employment nondiscrimination rights for lesbian, gay, or bisexual individuals than the associated rates of reported comfort with a transgender manager and support for transgender employment nondiscrimination rights, respectively.

In this paper, one of our primary foci revolves around attitudes toward transgender managers, as we aimed to gain insight into the unique challenges and opportunities faced by transgender people in leadership roles. Studying attitudes toward transgender people in positions of power holds significance because it could have important consequences for their career trajectories. Additionally, such attitudes could also influence the role that transgender managers might play in shaping organizational policies and practices and fostering inclusive environments. Future research can examine attitudes toward transgender colleagues or coworkers because those attitudes are independently interesting and could also have consequences for the career opportunities and development of transgender individuals.

We acknowledge that the levels of interaction individuals have with their managers might be different in different occupations, industries, and workplace settings. It would be interesting for future research to examine how the level of interaction individuals have with their managers might influence their overall attitudes toward transgender managers or their support for nondiscrimination protections.

Our results are highly relevant for policy. Indeed, they show large popular support behind the 2020 Supreme Court ruling in *Bostock v. Clayton County* banning employment discrimination against transgender people. In addition, our findings on the mismatch between beliefs and actual views suggest that there may be scope for informational interventions to improve labor market outcomes for transgender individuals. Specifically, given that most respondents underestimate the overall level of support among the U.S. population for transgender managers and employment nondiscrimination laws protecting transgender individuals, informing individuals about the actual level of support for transgender individuals in the workplace could potentially shift individuals' views, in line with other studies on gender norms (Bursztyn et al. 2020). If these mismatches between beliefs and actual views are not corrected, such misperceptions could lend legitimacy to antitransgender policies that most people may not support.<sup>37</sup>

Future research should test whether behaviors are influenced by actual views, rather than stated views. For instance, one may wonder whether an individual who is not comfortable with a transgender manager—but feels the need to state otherwise when asked directly in a survey—would indeed support a transgender person for a managerial position or not. Similarly, it would also be relevant to know whether an individual who does not think that the law should prohibit employment discrimination against transgender individuals would vote in favor of or against such nondiscrimination laws. Although there is currently no research, to the best of our knowledge, on whether actual versus stated views have a larger influence on hiring and promotion behavior, there is some evidence in the literature showing that voters' decisions are driven by their actual views (likely because of the privacy and anonymity guaranteed in democratic elections). For instance, the large gap between stated and actual support for a female U.S. president documented in Streb et al. (2008) is in line with the results from the 2016 U.S. presidential election (Hillary Clinton versus Donald Trump). Similarly, Stephens-Davidowitz (2014) argues that indirect measures of local racial animosity are larger than estimates obtained from direct survey questions and are negatively correlated with President Obama's vote shares in the 2008 and 2012 U.S. presidential elections.

Finally, our results indicate that transgender-specific labor market interventions may be necessary to achieve workplace equality for gender minority individuals because individuals report significantly more positive views regarding LGB-related workplace support than transgender-related workplace support.

### Acknowledgments

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## Endnotes

<sup>1</sup> Transgender people are individuals whose sex assigned at birth (generally male or female) differs from their current gender identity or expression as a man, woman, both, or neither; cisgender people are those whose sex assigned at birth matches their current gender identity. Transgender individuals and other gender diverse populations are sometimes referred to as gender minority individuals. Gay men, lesbian women, bisexual, asexual, and queer individuals are referred to as sexual minority individuals.

<sup>2</sup> Prior to *Bostock*, 23 states covering the majority of the U.S. population had laws banning discrimination on the basis of gender identity (as well as sexual orientation), though there is little direct evidence on the effectiveness of these policies on attitudes toward or employment of transgender people (MAP 2023). There is a long history of sexual and gender minority individuals being excluded from certain types of jobs, including schoolteachers and serving in the military (Ciacci and Sansone 2023, Badgett et al. 2024).

<sup>3</sup> These shares are also increasing over time. For example, the 2017 version of the Pew Research Center survey found that only 37% of adults knew a transgender person, and this rose to 42% in 2021 and 44% in 2022. Regarding transgender identification, estimates from the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS) for a large number of U.S. states suggest that about 0.5% of adults identified as transgender in 2014–2018 (Badgett et al. 2021), and the most recent Gallup survey indicates that around 0.7% of adults do not identify as cisgender (Jones 2022). Moreover, the Gallup data—like the Pew Research Center data—reveal strong generational differences in reporting a noncisgender identity (Jones 2022).

<sup>4</sup> Cancel culture is a movement in which groups or individuals, usually through social media platforms, call for boycott or public shaming of individuals or institutions due to actions or statements that are deemed objectionable.

<sup>5</sup> We provide an overview of the literature on list experiments in Section 2. In Section 3, we discuss the assumptions of list experiments and key design considerations.

<sup>6</sup> A well-established literature in economics shows that there is a large gender gap between men and women in confidence and self-evaluations, which also could have consequences for individuals' educational and career trajectories (Niederle and Vesterlund 2007, Buser et al. 2014, Reuben et al. 2017, Exley and Kessler 2022, Aksoy and Chadd 2023). Aksoy et al. (2024) demonstrate that a similar gap exists for gender minority individuals compared to those who identify as male or female.

<sup>7</sup> We decided to use list experiments instead of the randomized response technique (where respondents use a private randomization device—e.g., flip a coin—to determine whether they answer either a sensitive or innocuous question) because the randomized response technique is more difficult to implement online, subjects trust the randomized response technique less than the list experiment (Coutts and Jann 2011), and participants may not respond to the randomization device relied upon by the randomized response technique as instructed (John et al. 2018).

<sup>8</sup> The order of the statements is randomized at the individual level in both the short and long lists. This serves two goals. First, if we do

not randomize the order of the key statements and list them as last, as done by many papers in this literature, we worry that seeing a transgender-related statement as last in all lists could draw extra attention to the key statements. Second, the order of the statements might also have an impact on subjects' answers. By randomizing the order, we eliminate any aggregate effect coming from the ordering of the statements.

<sup>9</sup> The list experiment technique relies on treatment randomization, no design effect, and a “no liar” assumption. We discuss these and provide evidence in support of them in Online Appendix A.

<sup>10</sup> Although it is common practice in the literature not to randomize the order of the lists, we chose to incorporate some randomization into our design to control for potential order effects (here, we refer to the order of the lists, not the order of the statements within the list, which is discussed in endnote 8). We provide more explanation on this in Online Appendix A and show that we do not find any significant concerns for order effects.

<sup>11</sup> At the beginning of the experiment, respondents signed a consent form and were informed that the purpose of the study was to understand the demographic composition of the respondents and their views on certain economic, political, and social issues. The description of the study did not specifically mention transgender issues, as we did not want to prime respondents or obtain a self-selected sample. This research was approved as exempt by the institutional review boards at Rensselaer Polytechnic Institute (#2017) and Vanderbilt University (#211420) and was approved by the Research Ethics Committee at the University of Exeter (#489371).

<sup>12</sup> The survey includes additional LGBT-related questions, some of which are analyzed in our companion paper, which is published in a non-peer-reviewed journal (Aksoy et al. 2023a).

<sup>13</sup> For instance, Coffman et al. (2017) did not find any significant misreporting when the additional key statement in the longer list was the following: “It has rained once where I live in the last four days.”

<sup>14</sup> We check for ceiling and floor effects and present findings in Figures B.1 and B.2 in Online Appendix B, which confirms they are negligible in our experiment. Online Appendix A provides further quality checks on our list experiment.

<sup>15</sup> For instance, in Lists A and B, we chose political statements such that they would be expected to be positively correlated across lists. As an example, the statement “I would vote for a political candidate that is pro-life” (which is politically more conservative) in Employ Non-Discrim List A is expected to be positively correlated with the statement “I think gun control laws should be relaxed” (which is also politically more conservative) in Employ Non-Discrim List B.

<sup>16</sup> Although Lax et al. (2016) also ask the direct questions after their list experiment on support for same-sex marriage, they use a single experiment method, which makes it possible for them to study the impact of seeing the key item in the list experiment on direct survey question responses. Reassuringly, they do not find any significant impact coming from the fact that half of their subjects saw the key statement twice (once in the list experiment and once as a direct question).

<sup>17</sup> We ran our study in two waves. During the first wave on January 20, 2022, a total of 301 participants successfully completed the survey. During the second wave, which was conducted exactly one week later, 1,505 participants successfully completed the survey. We implemented a minor change to the instructions for the list experiment between the first and the second wave. Instructions can be found in Online Appendix C. Panels A and B of Table B.3 in our Online Appendix report the responses in the list experiments with and without the first wave of data and show that this minor change in the instructions did not have a substantial impact on the reported views in the list experiment. Thus, we combine both datasets and report our findings using all 1,806 participants.



<sup>18</sup> We check the robustness of our findings by excluding participants who completed the study very quickly or very slowly (as measured by the top and bottom 5% of the study completion time distribution). Our main findings are robust, and the details are discussed in Online Appendix A and Panel D of Table B.3.

<sup>19</sup> Tables B.1 and B.2 in the Online Appendix report sample sizes based on sex at birth, gender identity, and sexual orientation.

<sup>20</sup> ANES 2020 data were collected in two waves: shortly before (between August 18, 2020, and November 3, 2020) and shortly after (between November 8, 2020, and January 4, 2021) the 2020 U.S. Presidential Election.

<sup>21</sup> Specifically, the 2020 ANES asked respondents, “How would you rate *transgender individuals*?” It also asked respondents, “How would you rate *gay men and lesbians*?” Respondents were asked to provide a number between 0 and 100, with higher numbers indicating more positive views.

<sup>22</sup> Specifically, the 2020 ANES asked respondents, “Do you favor or oppose laws to protect gays and lesbians against job discrimination?” The ANES did not ask about support for nondiscrimination protection for transgender people.

<sup>23</sup> Standard errors have been computed following Glynn (2013): because estimation is accomplished by taking the difference in mean responses between two independent sets of respondents, the variance of the estimator can be calculated with the standard large-sample formula for a difference in means, and confidence intervals can be computed in the usual fashion. Furthermore, our estimates and standard errors reported in Figure 1 and Table B.3 in the Online Appendix do not change when using the Stata command *kict ls* (Tsai 2019), performing least squares estimation specifically for a double list experiment. We also check the robustness of our findings by adjusting the standard errors for age, sex, and race stratification. Our main findings are robust, as shown in Panel C of Table B.3 in the Online Appendix.

<sup>24</sup> Our findings using direct questions are broadly in line with previous estimates using similar questions. A 2016 survey reported 71.2% of respondents agreeing that “Congress should pass laws to protect transgender people from employment discrimination” (Flores et al. 2018), and a 2017 U.S. representative survey reported 72.7% of the participants agreeing that transgender people should be protected from discrimination by the government (Luhur et al. 2019). Finally, our results are also in line with a 2017 U.S. representative sample vignette study that found 75% of Americans supporting employment nondiscrimination protection for transgender individuals (Doan et al. 2022). There is a 5- to 8-percentage-point difference when comparing our direct question results to these studies. This difference could be due to differences in the wording of the question, differences in samples, and/or differences in the timing of the surveys, as attitudes toward LGBT individuals have improved significantly over time (Gallup 2022).

<sup>25</sup> We calculate each of these percentages as the difference between the estimates from the direct question and the double list experiment (7 and 5.8), divided by the estimate from the double list experiment (73 and 73.7).

<sup>26</sup> We also examine our estimates using a weighted sample that adjusts our dataset using political party affiliation. In our sample, about 19.4% are Republicans, 48.3% are Democrats, and the remaining 32.3% are either Independents or have other party affiliations. Using the weighted 2022 GSS party affiliation breakdown, where 24% are Republicans, 28.3% are Democrats, and the remaining 47.7% are Independents (GSS 2022), we reweight our dataset. Using this weighted sample, we repeat our main analyses presented in this section and present them in the Online Appendix. Figure B.4 replicates Figure 1, and Table B.4 replicates Table 3. Our attitude estimates are slightly lower with this weighted sample, and the

magnitudes of the estimated biases are, in most cases, slightly larger.

<sup>27</sup> Comparing the difference in social desirability bias estimates between column (1) and column (5) of Table 3 for the transgender manager outcome, we see that there is a 2.2-percentage-point difference in the estimated social desirability bias, depending on which list is used. Relative to the social desirability bias estimate coming from the double list method (7 percentage points), the social desirability bias is 3.18 times larger than the difference between the lists ( $7/2.2 = 3.18$ ). In the fully controlled model, we find even smaller differences between the estimates of social desirability bias based on List A versus List B ( $8.4 - 8 = 0.4$ ). Again, comparing that difference to the estimated bias coming from the double list experiment indicates that the true estimate of social desirability bias is 17.5 times larger than the difference between the lists ( $7/0.4 = 17.5$ ). A similar pattern is observed if we do this same exercise for the other sensitive item, support for nondiscrimination protection on the basis of transgender status in Panel B. Comparing the estimated magnitude of social desirability bias in column (4) versus column (8) of Table 3, for example, indicates that a 2.2-percentage-point difference could arise between the lists. Despite this, the social desirability bias estimate coming from the double list method for this outcome is 5.8 percentage points, or more than two-and-a-half times the size of this difference. Thus, we conclude that the estimated social desirability bias is much larger than the difference in bias from using List A versus List B.

<sup>28</sup> We use the Stata command *kict ls* (Tsai 2019).

<sup>29</sup> We also compare differences in means in the double list experiments and the direct questions across subgroups based on sex, sexual orientation, political affiliation, race, age, sexual attraction, socio-economic status, religious affiliation, and geographical location. These univariate results can be seen in the Online Appendix Tables B.5–B.17.

<sup>30</sup> We classified those who answered yes to “Are you heterosexual/straight?” as heterosexual and those who answered no as non-heterosexual.

<sup>31</sup> These correlations are also clear from the raw differences in means by beliefs (Table B.18 in the Online Appendix). In particular, the difference between the estimated level of support for employment discrimination protection from the double list experiment and from the direct question is significantly larger among those who believed that most Americans would support this policy. That is, we find higher social desirability bias among respondents who believe that most Americans would support employment discrimination protection for transgender individuals.

<sup>32</sup> We did not ask about managerial experience in our survey, but Prolific collects that information for a majority of the sample, and we use that information here. We became aware of these data after we conducted our experiment. In addition to the analyses indicated in our pre-analysis plan (PAP), we also report these interesting and relevant findings explored during the course of the experiment. This approach aligns with the recent conversations regarding the scope and use of PAPs in economics, as discussed in Duflo et al. (2020).

<sup>33</sup> These patterns with respect to prior managerial experience are especially interesting, given that such experience is positively correlated with education, and we see the opposite pattern for education: individuals without a bachelor’s degree have significantly less comfort with a transgender manager than individuals with a bachelor’s degree or higher. Together, these patterns suggest that there is something unique about managerial experience that is related to negative views toward transgender people in the labor market. A related possibility is that these negative views, especially in regard to the employment nondiscrimination statement, might be explained by a general distaste that managers might have with nondiscrimination laws in general because such nondiscrimination laws might impose

additional burden and risks for those in managerial roles. Consistent with this line of thought, Boring and Delfgaauw (2024) also find a lower level of actual support among managers compared with nonmanagers in the context of support for diversity, equity, and inclusion policies.

<sup>34</sup> For reference, ANES data indicate that Americans have more positive feelings toward Jewish people and Black people than toward transgender individuals. Americans also have similar feelings toward Muslim people and transgender individuals, while their feelings toward transgender people are more positive than their feelings toward feminists and individuals who participate in the Black Lives Matter movement.

<sup>35</sup> Notably, the share of our Prolific respondents who support employment nondiscrimination for sexual minority individuals (84.9%) is very similar to the share of nationally representative ANES respondents who favor laws to protect gay men and lesbian women against job discrimination (86.6%). Moreover, the shares of our respondents who support LGB managers (89.7%) and LGB nondiscrimination (84.9%) are comparable to Coffman et al. (2017), where 83.8% of their Amazon Mechanical Turk participants indicated that they would be happy to have a lesbian, gay, or bisexual manager at work, and 85.6% said that they believe it should be illegal to discriminate in hiring based on someone's sexual orientation. Thus, our data on support for LGB people in the workplace are in line with previous well-designed surveys, including the nationally representative ANES that was fielded less than 24 months prior to our experiment.

<sup>36</sup> In this context, it is worth noting that Lax et al. (2016) do not find evidence of significant misreporting using key statements that are similar to our employment nondiscrimination statement in the context of LGB people.

<sup>37</sup> Indeed, there has been a significant increase in antitransgender legislation in the United States in recent years. For example, the Trans Legislation Tracker ([translegislation.com](https://translegislation.com)) lists, as of October 26, 2023, a total of 583 bills that were proposed in 49 states since the start of the year, compared with 66 bills in 2020.

## References

- Agüero JM, Frisano V (2022) Measuring violence against women with experimental methods. *Econom. Dev. Cultural Change* 70(4):1565–1590.
- Aksoy B, Chadd I (2023) Competitiveness at the intersection of gender and sexual orientation. Preprint, submitted February 17, <https://dx.doi.org/10.2139/ssrn.4362469>.
- Aksoy B, Carpenter CS, Sansone D (2023a) Knowledge about federal employment nondiscrimination protections on the basis of sexual orientation. *AEA Pap. Proc.* 113(May):541–545.
- Aksoy B, Chadd I, Koh BH (2023b) Sexual identity, gender, and anticipated discrimination in prosocial behavior. *Eur. Econom. Rev.* 154:104427.
- Aksoy B, Exley CL, Kessler JB (2024) The gender minority gaps in confidence and self-evaluation. NBER Working Paper No. 32061, National Bureau of Economic Research, Cambridge, MA.
- Aksoy CG, Carpenter CS, Frank J, Huffman ML (2019) Gay glass ceilings: Sexual orientation and workplace authority in the UK. *J. Econom. Behav. Organ.* 159(March):167–180.
- Albrecht J, Björklund A, Vroman S (2003) Is there a glass ceiling in Sweden? *J. Labor Econom.* 21(1):145–177.
- Altonji JG, Blank RM (1999) Race and gender in the labor market. Ashenfelter O, Card D, eds. *Handbook of Labor Economics*, vol. 3 (Elsevier Science, Amsterdam), 3143–3259.
- Arrow K (1973) The theory of discrimination. *Discrimination in Labor Markets* (Princeton University Press, Princeton, NJ), 3–33.
- Badgett MVL, Carpenter CS, Sansone D (2021) LGBTQ economics. *J. Econom. Perspect.* 35(2):141–170.
- Badgett MVL, Carpenter CS, Lee MJ, Sansone D (2024) A review of the economics of sexual orientation and gender identity. *J. Econom. Lit.* Forthcoming.
- Baert S (2018) Hiring discrimination: An overview of (almost) all correspondence experiments since 2005. Gaddis S, ed. *Audit Studies: Behind the Scenes with Theory, Method, and Nuance* (Springer, Cham, Switzerland), 63–77.
- Becker GS (1971) *The Economics of Discrimination*, 2nd ed. (University of Chicago Press, Chicago).
- Berinsky AJ (2004) *Silent Voices: Opinion Pools and Political Participation in America* (Princeton University Press, Princeton, NJ).
- Bertrand M, Duflo E (2017) Field experiments on discrimination. Banerjee AV, Duflo E, eds. *Handbook of Economic Field Experiments*, vol. 1 (North-Holland, Amsterdam), 309–393.
- Bertrand M, Mullainathan S (2004) Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *Amer. Econom. Rev.* 94(4):991–1013.
- Bicchieri C (2002) *The Grammar of Society: The Nature and Dynamics of Social Norms* (Cambridge University Press, Cambridge, UK).
- Blau FD, Kahn LM (2017) The gender wage gap: Extent, trends, and explanations. *J. Econom. Lit.* 55(3):789–865.
- Boring A, Delfgaauw J (2024) Social desirability bias in attitudes towards sexism and DEI policies in the workplace. Tinbergen Institute Discussion Paper No. TI 2024-002/VII, Tinbergen Institute, Amsterdam.
- Broockman D, Kalla J (2016) Durably reducing transphobia: A field experiment on door-to-door canvassing. *Science* 352(6282):220–224.
- Brown A (2022a) About 5% of young adults in the U.S. say their gender is different from their sex assigned at birth. Report, Pew Research Center, Washington, DC.
- Brown A (2022b) Deep partisan divide on whether greater acceptance of transgender people is good for society. Report, Pew Research Center, Washington, DC.
- Bursztyjn L, Yang DY (2022) Misperceptions about others. *Annu. Rev. Econom.* 14:425–452.
- Bursztyjn L, González AL, Yanagizawa-Drott D (2020) Misperceived social norms: Women working outside the home in Saudi Arabia. *Amer. Econom. Rev.* 110(10):2997–3029.
- Bursztyjn L, Cappelen AW, Tungodden B, Voena A, Yanagizawa-Drott DH (2023) How are gender norms perceived? NBER Working Paper No. 31049, National Bureau of Economic Research, Cambridge, MA.
- Buser T, Niederle M, Oosterbeek H (2014) Gender, competitiveness, and career choices. *Quart. J. Econom.* 129(3):1409–1447.
- Button P (2018) Expanding employment discrimination protections for individuals with disabilities: Evidence from California. *ILR Rev.* 71(2):365–393.
- Carpenter CS, Eppink ST, Gonzales G (2020) Transgender status, gender identity, and socioeconomic outcomes in the United States. *ILR Rev.* 73(3):573–599.
- Carpenter CS, Lee MJ, Nettuno L (2022) Economic outcomes for transgender people and Other gender minorities in the United States: First estimates from a nationally representative sample. *Southern Econom. J.* 89(2):280–304.
- Castanho Silva C, Fuks M, Tamaki ER (2022) So thin it's almost invisible: Populist attitudes and voting behavior in Brazil. *Electoral Stud.* 75(February):102434.
- Chen DL, Schonger M, Wickens C (2016) oTree—An open-source platform for laboratory, online, and field experiments. *J. Behav. Experiment. Finance* 9:88–97.
- Chuang E, Dupas P, Huillery E, Seban J (2021) Sex, lies, and measurement: Consistency tests for indirect response survey methods. *J. Dev. Econom.* 148(January):102582.
- Ciacchi R, Sansone D (2023) The impact of sodomy law repeals on crime. *J. Population Econom.* 36(4):2519–2548.
- Coffman KB, Coffman LC, Marzilli Ericson KM (2017) The size of the LGBT population and the magnitude of antigay sentiment are substantially underestimated. *Management Sci.* 63(10):3168–3186.
- Coutts E, Jann B (2011) Sensitive questions in online surveys: Experimental results for the randomized response technique (RRT)

- and the unmatched count technique (UCT). *Sociol. Methods Res.* 40(1):169–193.
- Cullen ZB, Perez-Truglia R (2023) The old boys' club: Schmoozing and the gender gap. *Amer. Econom. Rev.* 113(7):1703–1740.
- Delhommer S, Vamossy DF (2024) Effect of state and local sexual orientation anti-discrimination laws on labor market differentials. Preprint, submitted April 1, <http://dx.doi.org/10.2139/ssrn.3625193>.
- Detkova P, Tkachenko A, Yakovlev A (2021) Gender heterogeneity of bureaucrats in attitude to corruption: Evidence from list experiment. *J. Econom. Behav. Organ.* 189(September):217–233.
- Doan L, Quadlin N, Powell B (2022) Attitudes toward formal rights and informal privileges for transgender people: Evidence from a national survey experiment. Baumle AK, Nordmarken S, eds. *Demography of Transgender, Nonbinary and Gender Minority Populations* (Springer Cham, Cham, Switzerland), 47–72.
- Donohue JJ III, Heckman JJ (1991) Continuous versus episodic change: The impact of civil rights policy on the economic status of black. *J. Econom. Lit.* 29(4):1603–1643.
- Droitcour J, Caspar RA, Hubbard ML, Parsley TL, Visscher W, Ezzati TM (1991) The item count technique as a method of indirect questioning: A review of its development and a case study application. Biemer PP, Groves RM, Lyberg LE, Mathiowetz NA, Sudman S, eds. *Measurement Errors in Surveys* (John Wiley & Sons, Ltd., New York), 185–210.
- Duflo E, Banerjee A, Finkelstein A, Katz LF, Olken BA, Sautmann A (2020) In praise of moderation: Suggestions for the scope and use of pre-analysis plan for RCTs in economics. NBER Working Paper Series 26993, National Bureau of Economic Research, Cambridge, MA.
- Exley C, Kessler J (2022) The gender gap in self-promotion. *Quart. J. Econom.* 137(3):1345–1381.
- Flores AR, Miller P, Tadlock B (2018) Public opinion about transgender people and policies. Taylor JK, Lewis DC, Haider-Markel DP, eds. *The Remarkable Rise of Transgender Rights* (University of Michigan Press, Ann Arbor, MI), 61–86.
- Fouka V, Tabellini M (2022) Changing in-group boundaries: The effect of immigration on race relations in the United States. *Amer. Polit. Sci. Rev.* 116(3):968–984.
- Frank J (2006) Gay glass ceilings. *Economica* 73(291):485–508.
- Friese M, Smith CT, Plishcke T, Bluemke M, Nosek BA (2012) Do implicit attitudes predict actual voting behavior particularly for undecided voters? *PLoS One* 7(8):e44130.
- Gallup (2022) In depth: LGBT rights. Accessed November 20, 2023, <https://news.gallup.com/poll/1651/gay-lesbian-rights.aspx>.
- Geijtenbeek L, Plug E (2018) Is there a penalty for registered women? Is there a premium for registered men? Evidence from a sample of transsexual workers. *Eur. Econom. Rev.* 109(October): 334–347.
- Gervais WM, Najle MB (2018) How many atheists are there? *Soc. Psych. Personality Sci.* 9(1):3–10.
- Giuliano L, Levine DI, Leonard J (2009) Manager race and the race of new hires. *J. Labor Econom.* 27(4):589–631.
- Glasman LR, Albarracín D (2006) Forming attitudes that predict future behavior: A meta-analysis of the attitude-behavior relation. *Psych. Bull.* 132(5):778–822.
- Glynn AN (2013) What can we learn with statistical truth serum? Design and analysis of the list experiment. *Public Opin. Quart.* 77(S1):159–172.
- Goldin C (2014) A grand gender convergence: Its last chapter. *Amer. Econom. Rev.* 104(4):1091–1119.
- Goldin C (2021) *Career and Family* (Princeton University Press, Princeton, NJ).
- Goldin C, Rouse C (2000) Orchestrating impartiality: The impact of 'blind' auditions on female musicians. *Amer. Econom. Rev.* 90(4): 715–741.
- Granberg M, Andersson PA, Ahmed A (2020) Hiring discrimination against transgender people: Evidence from a field experiment. *Labour Econom.* 65(August):101860.
- GSS (2022) Political party affiliation. GSS Data Explorer. Accessed November 20, 2023, <https://gssdataexplorer.norc.org/variables/141/vshow>.
- Gupta N, Rigotti L, Wilson A (2021) The experimenters' dilemma: Inferential preferences over populations. Preprint, submitted July 11, <https://arxiv.org/abs/2107.05064>.
- Holbrook AL, Krosnick JA (2010) Social desirability bias in voter turnout reports: Tests using the item count technique. *Public Opin. Quart.* 74(1):37–67.
- Isler O, Maule J, Starmer C (2018) Is intuition really cooperative? Improved tests support the social heuristics hypothesis. *PLoS One* 13(1):e0190560.
- Jamison J, Karlan DS, Raffler P (2013) Mixed method evaluation of a passive health sexual information texting service in Uganda. *Inform. Tech. Internat. Dev.* 9(3):1–28.
- John LK, Loewenstein G, Acquisti A, Vosgerau J (2018) When and why randomized response techniques (fail to) elicit the truth. *Organ. Behav. Human Decision Processes* 148(September):101–123.
- Jones JM (2022) LGBT identification in U.S. ticks up to 7.1%. Accessed November 20, 2023, <https://news.gallup.com/poll/389792/lgbt-identification-ticks-up.aspx>.
- Kane JG, Craig SC, Wald KD (2004) Religion and presidential politics in Florida: A list experiment. *Soc. Sci. Quart.* 85(2):281–293.
- Karlan DS, Zinman J (2012) List randomization for sensitive behavior: An application for measuring use of loan proceeds. *J. Dev. Econom.* 98(1):71–75.
- Klawitter M (2011) Multilevel analysis of the effects of antidiscrimination policies on earnings by sexual orientation. *J. Policy Anal. Management* 30(2):334–358.
- Klawitter M (2015) Meta-analysis of the effects of sexual orientation on earnings. *Indust. Relations* 54(1):4–32.
- Klawitter M, Flatt V (1998) The effects of state and local antidiscrimination policies on earnings for gays and lesbians. *J. Policy Anal. Management* 17(4):658–686.
- Kuklinski JH, Cobb MD, Gilens M (1997a) Racial attitudes and the 'New South'. *J. Polit.* 59(2):323–349.
- Kuklinski JH, Sniderman PM, Knight K, Piazza T, Tetlock PE, Lawrence GR, Mellers B (1997b) Racial prejudice and attitudes toward affirmative action. *Amer. J. Polit. Sci.* 41(2):402.
- LaBrie JW, Earleywine M (2000) Sexual risk behaviors and alcohol: Higher base rates revealed using the unmatched-count technique. *J. Sex Res.* 37(4):321–326.
- Lang K, Spitzer AK-L (2020) Race discrimination: An economic perspective. *J. Econom. Perspect.* 34(2):68–89.
- Lax JR, Phillips JH, Stollwerk AF (2016) Are survey respondents lying about their support for same-sex marriage? Lessons from a list experiment. *Public Opin. Quart.* 80(2):510–533.
- Lewis DC, Flores AR, Haider-Markel DP, Miller PR, Taylor JK (2022) Transitioning opinion? Assessing the dynamics of public attitudes toward transgender rights. *Public Opin. Quart.* 86(2):343–368.
- Lewis DC, Flores AR, Haider-Markel DP, Miller PR, Tadlock BL, Taylor JK (2017) Degrees of acceptance: Variation in public attitudes toward segments of the LGBT community. *Polit. Res. Quart.* 70(4):861–875.
- Luhur W, Brown TNT, Flores AR (2019) Public opinion of transgender rights in the United States. Report, Williams Institute, University of California, Los Angeles.
- MAP (2023) Equality maps: State employment nondiscrimination laws. Accessed November 20, 2023, [https://www.lgbtmap.org/equality-maps/non\\_discrimination\\_laws](https://www.lgbtmap.org/equality-maps/non_discrimination_laws).
- Matsa DA, Miller AR (2011) Chipping away at the glass ceiling: Gender spillovers in corporate leadership. *Amer. Econom. Rev.* 101(3):635–639.



- McCarthy J (2021) Mixed views among Americans on transgender issues. Accessed November 20, 2023, <https://news.gallup.com/poll/350174/mixed-views-among-americans-transgender-issues.aspx>.
- McKenzie D, Siegel M (2013) Eliciting illegal migration rates through list randomization. *Migration Stud.* 1(3):276–291.
- Meyer IH (1995) Minority stress and mental health in gay men. *J. Health Social Behav.* 36(1):38–56.
- Miller JD (1984) A new survey technique for studying deviant behavior. Dissertation, The George Washington University, Washington, DC.
- Morisi D, Jost JT, Singh V (2019) An asymmetrical ‘president-in-power’ effect. *Amer. Polit. Sci. Rev.* 113(2):614–620.
- NASEM (2020) *Understanding the Well-Being of LGBTQI+ Populations* (National Academies Press, Washington, DC).
- Neumark D (2018) Experimental research on labor market discrimination. *J. Econom. Lit.* 56(3):799–866.
- Neumark D, Stock WA (2006) The labor market effects of sex and race discrimination laws. *Econom. Inquiry* 44(3):385–419.
- Neumark D, Burn I, Button P, Chehras N (2019) Do state laws protecting older workers from discrimination reduce age discrimination in hiring? Evidence from a field experiment. *J. Law Econom.* 62(2):373–402.
- Niederle M, Vesterlund L (2007) Do women shy away from competition? Do men compete too much? *Quart. J. Econom.* 122(3):1067–1101.
- Oreffice S, Quintana-Domeque C (2021) Gender inequality in COVID-19 times: Evidence from UK Prolific participants. *J. Demographic Econom.* 87(2):261–287.
- Osman A, Speer JD, Weaver A (2021) Discrimination against women in hiring. IZA Discussion Paper No. 16598, University of Illinois, Urbana, IL.
- Palan S, Schitter C (2018) *Prolific.ac*—A subject pool for online experiments. *J. Behav. Experiment. Finance* 17(March):22–27.
- Peer E, Brandimarte L, Samat S, Acquisti A (2017) Beyond the Turk: Alternative platforms for crowdsourcing behavioral research. *J. Experiment. Soc. Psych.* 70(May):153–163.
- Peer E, David R, Gordon A, Evernden Z, Damer E (2021) Data quality of platforms and panels for online behavioral research. *Behav. Res. Methods* 54:1643–1662.
- Phelps ES (1972) The statistical theory of racism and sexism. *Amer. Econom. Rev.* 62(4):659–661.
- Reuben E, Wiswall M, Zafar B (2017) Preferences and biases in educational choices and labour market expectations: Shrinking the black box of gender. *Econom. J.* 127(604):2153–2186.
- Robertson RE, Tran FW, Lewark LN, Epstein R (2018) Estimates of non-heterosexual prevalence: The roles of anonymity and privacy in survey methodology. *Arch. Sex. Behav.* 47(4):1069–1084.
- Ruggles S, Flood S, Goeken R, Schouweiler M, Sobek M (2022) IPUMS USA: Version 12.0 [Dataset]. IPUMS. Accessed November 30, 2023, <https://www.ipums.org/projects/ipums-usa/d010.v12.0>.
- Schild C, Heck DW, Ścigala KA, Zettler I (2019) Revisiting REVISE: (Re)Testing unique and combined effects of REMinding, VISibility, and SELf-engagement manipulations on cheating behavior. *J. Econom. Psych.* 75(A):102161.
- Shannon M (2022) The labour market outcomes of transgender individuals. *Labour Econom.* 77:102006.
- Stephens-Davidowitz S (2014) The cost of racial animus on a Black candidate: Evidence using Google search data. *J. Public Econom.* 118:26–40.
- Streb MJ, Burrell B, Frederick B, Genovese MA (2008) Social desirability effects and support for a female American president. *Public Opin. Quart.* 72(1):76–89.
- Taylor JK, Lewis DC, Haider-Markel DP (2018) *The Remarkable Rise of Transgender Rights* (University of Michigan Press, Ann Arbor, MI).
- Tsai CL (2019) Statistical analysis of the item-count technique using Stata. *Stata J.* 19(2):390–434.
- Tsuchiya T, Hirai Y, Ono S (2007) A study of the properties of the item count technique. *Public Opin. Quart.* 71(2):253–272.
- U.S. Census (2021) Quick facts. Accessed November 30, 2023, <https://www.census.gov/quickfacts/fact/table/US/PST045221>.
- Zmigrod L, Rentfrow PJ, Robbins TW (2018) Cognitive underpinnings of nationalistic ideology in the context of Brexit. *Proc. Natl. Acad. Sci. USA* 115(19):E4532–E4540.