

DISCUSSION PAPER SERIES

IZA DP No. 16217

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## ABSTRACT

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# Disability, Gender and Hiring Discrimination: A Field Experiment\*

This article examines disability discrimination in the hiring process and explores variation in how the intersection of disability and gender shapes employers' hiring behavior by occupational context and gender segregation. We use data from a field experiment in which approximately 2,000 job applications with randomly assigned information about disability were sent to Swedish employers with vacancies. We find that nondisabled applicants receive 33 percent more callbacks than similarly qualified wheelchair users despite applying for jobs where the impairment should not interfere with performance. The results indicate no heterogeneity in levels of disability discrimination against men and women on average across occupations or by occupational gender segregation. However, levels of discrimination differ considerably among occupations, varying from no evidence of disability discrimination to discrimination against both disabled men and disabled women as well as cases where disability discrimination is found only against women or only against men. The results thus indicate that disability and gender interact and shape discrimination in distinct ways within particular contexts, which we relate to intersectional stereotyping and norms of gender equality influencing hiring practices but not to declared ambitions for diversity or gender equality legislation.

**JEL Classification:** I14, J14, J23, J64, J71

**Keywords:** disability, hiring discrimination, gender, field experiment, correspondence study

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## **1. Introduction**

Recent research on the labor market inequalities of people with disabilities extends the sociological literature on social stratification by emphasizing that disability status—similar to ethnicity and gender—is an axis of inequality (Brown and Moloney 2019, Maroto, Pettinicchio, and Patterson 2019, Brooks 2021). An emerging literature provides field experimental evidence that discrimination constitutes a substantial obstacle to the employment opportunities of people with disabilities (e.g., Ameri et al. 2018, Baert 2016, Bjørnshagen and Ugreninov 2021), which likely contributes to the persistent socioeconomic disadvantage associated with disability (Chatzitheochari, Velthuis, and Connelly 2022, Jenkins 1991). Field experiments have increasingly addressed how membership in multiple social categories interacts and shapes labor market outcomes, leading to distinct patterns of discrimination (Di Stasio and Larsen 2020, Pedulla 2018, Dahl and Krog 2018, Bursell 2014).

In this study, we extend previous analyses by addressing the intersection of gender and disability, which has received little attention in prior field experiment studies, implicitly assuming that men and women with disabilities are subject to equivalent levels of discrimination across the labor market. Field experiments of disability discrimination have consistently found discrimination based on various types of impairments (Baert 2018). However, these studies have been restricted to male job applicants (e.g., Ameri et al. 2018 [US], Baert 2016 [Belgium]), or, in the few studies where employers have been sent both male and female applicants, gender differences have been examined solely at an overall level (e.g., Bellemare et al. 2018 [Canada], Krogh and Bredgaard 2022 [Denmark], Bjørnshagen and Ugreninov 2021 [Norway]). These studies tend to find equal rates of discrimination against men and women with disabilities. However, given gender segregation in the labor market and the gender-typing of jobs, male and female applicants with disabilities may have unequal hiring chances depending on the gender composition within the occupation in which

they apply for jobs. The results from field experiments on gender discrimination are mixed and indicate no discrimination, female advantage, or male advantage but also suggest that gender discrimination is reliant on factors such as parental status, occupational gender composition, and the type of jobs applied to (see Birkelund et al. 2021 for an overview). Hence, focusing solely on overall gender differences might obscure underlying patterns of disability discrimination by gender across gendered labor market contexts. Greater insight into how gender intersects with disability in employers' perception and treatment of job applicants during the hiring process can contribute to an increased understanding of the forces that shape disability-related labor market inequality (OECD 2022).

This multimethod study contributes to the literature on the persistent inequalities associated with disability by studying the extent of discrimination against wheelchair users in the Swedish labor market as well as whether and, if so, how the effect of disability on employers' hiring decisions differs for male and female job applicants. We use data from the first field experiment on hiring discrimination against wheelchair users conducted in Sweden. More than 2000 job applications were submitted in response to over 1000 publicly announced vacancies sampled in the three largest cities in Sweden, Stockholm, Gothenburg and Malmö, randomly varying the fictitious applicants' disability and gender. We investigate how gender and disability jointly influence employers' hiring decisions depending on occupational gender composition as well as across occupations separately. Furthermore, we explore whether declarations of being an inclusive employer that emphasizes and values diversity and gender equality in addition to gender equality legislation or having an HR department, as proxied by firm size, are related to patterns of discrimination by gender and disability. Finally, we supplement the experimental estimates of disability discrimination with qualitative data from follow-up interviews with a subset of employers in the field experiment to better understand the factors by which discrimination against male and female wheelchair users occurs.

## **2. Disability and gender in the Swedish labor market**

People with disabilities constitute a large minority group in Sweden, estimated to be approximately 16–18 percent of people aged 16–64, which corresponds to 1 014 000–1 144 000 persons (Statistics Sweden 2021, 2022). Labor market disparities between people with and without disabilities in Sweden have decreased over the last decade but remain large. Compared to other countries in the OECD, however, the disability employment rate in Sweden is high, also in comparison to neighboring Scandinavian countries (OECD 2022). Estimates based on the Labor Force Survey show that 67 percent of people with disabilities in Sweden were employed in the fourth quarter of 2020, compared with 78 percent of people without disabilities (aged 16–64 years). Sweden is characterized by progressive attitudes toward gender equality (Brandt 2011) and dual-earner family policy models that are among the most ambitious in the world. A primary objective of these policies has been to relieve the conflict between family responsibilities and labor force participation, particularly for women. The female employment rate in Sweden is among the world’s highest. The share of women without disabilities in employment (76 percent) was only 5 percentage points lower than that of nondisabled men (81 percent). Among disabled people, moreover, the employment rates of men and women (68 percent vs. 67 percent) converge. Whereas the disability penalty is relatively larger among men due to the higher employment rates of nondisabled men, disabled women experience greater employment disadvantages in terms of being more likely to be employed part time and to report that their disability reduces their ability to work (Statistics Sweden 2021, 2022).

## **3. Intersectional stereotyping and discrimination**

Multiple theories offer explanations for discriminatory behavior. In this article, we focus on the role of employers’ stereotypes in generating unequal employment outcomes, drawing on

theories on stereotyping and intersectionality. Social psychological theory suggests that discrimination follows from employers' classification of applicants into social categories, which unconsciously activates stereotypes and leads these widely shared beliefs about the typical attributes of category members to shape judgments and hiring decisions (see Fiske 1998 for an overview). Consistent with research on disability stereotypes (Nario-Redmond 2010, Rohmer and Louvet 2012), qualitative studies have found that employers hold stereotypes of disabled people as being passive, dependent, incompetent and unproductive (Østerud 2022, Lengnick-Hall, Gaunt, and Kulkarni 2008). To the extent that employers value and emphasize characteristics that disabled people are perceived to lack, employers are likely to engage in discrimination against disabled applicants.

Intersectional theory and research on inequality and discrimination emphasize that social categories are interrelated and that they interact in distinct ways that shape how people are perceived and treated (Collins 2000, Crenshaw 1989, Ridgeway and Kricheli-Katz 2013). Accordingly, a number of studies have shown that stereotyping unfolds intersectionally (Petsko, Rosette, and Bodenhausen 2022, Hall et al. 2019). The dominant focus of this tradition has been on gender, race, and class, whereas disability as an intersecting category has been largely overlooked (Barnartt 2013). In the literature on disability inequality that has applied a gender or intersectional perspective, however, there are two main notions about the joint influence of gender and disability on labor market outcomes, with diverging empirical implications regarding the gendered nature of disability discrimination.

First, disabled women are conceived of as 'twice penalized' or 'doubly disadvantaged' (O'Hara 2004, Fine and Asch 1981). Consistent with the concept of double jeopardy (Beale 1970), suggesting that people in multiple subordinate categories experience discrimination directed at each category in a cumulative manner (see Purdie-Vaughns and Eibach 2008 for a review), it is argued that disabled women experience the largest disadvantages due to both

their disability and their gender. Another argument is that the intersection of gender and disability amplifies the impact of disability for women due to the overlap between stereotypes of passivity and dependency that are associated with both disability and traditional femininity (Stone and Colella 1996, Fine and Asch 1981, Vernon 1999, Coleman, Brunell, and Haugen 2015, Shakespeare 1999).

Conversely, the ‘dilemma of disabled masculinity’ suggests that male job applicants with disabilities might be worse off when competing for jobs (e.g., Stone and Colella 1996, Ren, Paetzold, and Colella 2008). Disability is argued to erode ‘masculine privilege’ because some impairments limit the ability to inhabit masculine roles in the labor market that, for instance, require physical strength but also because the content of disability stereotypes is inconsistent with traits associated with masculinity, such as autonomy, assertiveness, competence, and power (Shuttleworth, Wedgwood, and Wilson 2012, Gerschick 2000, Shakespeare 1999). Given the ways disability may position disabled men in contradiction with dominant notions of masculinity, disability might have stronger negative effects on employment among men (Pettinicchio and Maroto 2017).

The above perspectives on disability and gender are general in scope and implicitly assume that employers’ evaluations and behavior are constant across social contexts. In contrast, theories of gender discrimination (Heilman 2012, Reskin 1993, Eagly and Karau 2002) and gendered racial discrimination (Ridgeway and Kricheli-Katz 2013, Hall et al. 2019) emphasize that the salience of gender and race stereotypes depends on whether individuals are considered prototypical of their social categories and on contextual factors. In contexts that are culturally linked to a certain gender (e.g., female- and male-typed occupations) or where people differ numerically by gender (e.g., female- and male-dominated workplaces), cultural beliefs about gender become salient and affect behavior. In brief, theories of gender discrimination predict that male and female applicants will be at a disadvantage when they



compete for jobs stereotypically associated with, or numerically dominated by, the opposite gender (Eagly and Karau 2002, Reskin 1993, Heilman 2012), whereas gendered race theory posits that the combination of race and gender influences perceptions of an individual's femininity or masculinity, which in turn affect their perceived fit and hiring chances for occupational roles perceived as feminine or masculine (Hall et al. 2019, Ridgeway and Kricheli-Katz 2013).

There is a lack of context-sensitive theorization on the interplay of gender and disability discrimination. Drawing on the above perspectives about the conditions under which beliefs associated with particular groups are made salient, we explore whether and how the intersection of gender and disability may influence employers' hiring decisions differently depending on occupational gender segregation. If the gender-congruence premium does not vary with disability, we may expect a double penalty of disability and incongruent gender in gender-segregated occupations due to a lack of fit between the stereotypical characteristics of an ideal worker in the occupation and the traits stereotypically associated with a gender as well as disability stereotypes. Hence, employers in male-dominated occupations might be more likely to discriminate against women with disabilities than men with disabilities and vice versa. However, just as stereotypical beliefs about men and women implicitly refer to *white* men and *white* women (Ridgeway and Kricheli-Katz 2013), they also implicitly refer to *nondisabled* men and *nondisabled* women and differ from stereotypes attributed to disabled men (e.g., disabled men are viewed as dependent and passive) and, somewhat, to disabled women. Since this is likely to shape employers' perceptions of their fit for gender-typed occupations, we refrain from formulating clear hypotheses and leave open the possibility for intersectional results.

#### 4. Data and research design

The data for this article come from a field experiment designed to investigate discrimination against wheelchair users in the Swedish labor market that relied on written job applications (i.e., a correspondence study). Between March 2020 and June 2021, we conducted a field experiment in the three largest cities in Sweden—Stockholm, Göteborg and Malmö.<sup>1</sup> Two job applications were sent in pairs to each job vacancy that randomly varied the disability status and gender of the applicant. The main hypothesis, power calculations and analysis plan were preregistered at AsPredicted.org ([URL]) before we started the data collection. The study was reviewed and approved by the Swedish Ethical Review Authority (no. 2019-01291).

We applied for jobs in seven occupations: administrative assistants (business and other), ICT operations and user support technicians, software developers, accountants, business sales representatives, customer service representatives and shop sales assistants (Table 1). The occupations were selected with the purpose of providing a comprehensive picture of potential discrimination while applying only for jobs for which being a wheelchair user should not interfere with performance. The occupations had different educational requirements and gender composition and involve different levels of customer contact. Of the occupations, three were male-dominated (i.e., ICT operations and user support technicians, software, business sales representatives), three were female-dominated (i.e., administrative

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<sup>1</sup> The experiment was conducted during the COVID-19 pandemic. Previous field experimental research provides mixed evidence on the impact of COVID-19 on discrimination in hiring (Bjørnshagen 2021, Chavez, Weisshaar, and Cabello-Hutt 2022). However, Sweden decided not to shut down the labor market as many other countries did, and in most occupations, presence at the workplace was required throughout the pandemic. A recent government report stated that production returned to prepandemic levels in the third quarter of 2020, and there was even a shortage of workers in 2021 (SOU 2022: 33). We do not find any evidence of the pandemic affecting the callback rate during the experiment, which was at a rather stable and constant level. When dividing the time period of the experiment into six three-month periods, the average callback rate is 17 percent with max=20 and min=14. Start and end periods have a callback rate of 18 and 17 percent, respectively.

assistants, accountants and customer service representatives), and one was gender-balanced (i.e., shop sales assistants).

For each occupation, we created pairs of application templates, each consisting of a cover letter and a CV. To ensure that the applications listed qualifications on demand in the chosen occupations and that they would be perceived as realistic to employers, we reviewed authentic job postings and applications. The application material was also designed to ensure that the applications in each pair were equally qualified in terms of education, work experience and personal characteristics but differed in factors such as the current employer, wording and layout and specific work experience to avoid suspicion among employers. Depending on the occupation, the age of the applicants ranged from 22 to 28 years due to variation in the years of education required to obtain occupationally relevant qualifications.

To minimize suspicion among employers, the applications were sent with a time interval of one to three days. We recorded the responses from employers and politely declined invitations to job interviews as promptly as possible to limit the inconvenience to employers. The final sample consists of 2,048 applications that were sent to 1,024 jobs. As specified in the preregistration of this study, a priori power analyses determined that a sample of at least 1,428 applications (714 jobs) was required to test our main hypothesis about discrimination based on disability. We continued the data collection after reaching this number of observations to obtain more statistical power for the exploratory analyses of the interaction of gender and disability in determining patterns of discrimination.

#### *4.1 Treatment variables*

We randomized the assignment of two treatments to the applications: disability and gender. In line with prior field experiments (Bjørnshagen and Ugreninov 2021, Ameri et al. 2018, Bellemare et al. 2018), disability was indicated by including the following passages in the

cover letter: ‘I want to be open about having a congenital spinal cord injury, and I therefore use a wheelchair. This is not limiting with respect to carrying out the job, and I have a high work capacity.’ This experimental manipulation is strong while ensuring realism because people with visible impairments might want to be upfront with employers to avoid uncomfortable situations after being invited for or when attending a potential job interview. To further strengthen the disability signal, the CV also listed volunteer work for a disability organization, including relevant work tasks, and the following statement: ‘As I use a wheelchair myself, I think it is important to promote activities targeting kids and youth with disabilities. I therefore volunteered at the National Federation of Mobility Impaired Children and Youth’s summer camp over the course of two summers ([years]).’ For the control applicants, volunteer work for a sports event not associated with disability was included in the CV. Gender was proxied by common male and female Swedish-sounding names. To avoid the possibility that effects might be caused by the unique characteristics of any particular name, we used multiple names in the experiment (eight in total). The information about disability was randomly assigned to the applications according to a within-subject design (i.e., within jobs/employers), whereas gender was manipulated according to a between-subject design (i.e., across jobs/employers). Hence, the applicants for any given job opening were either two females or two males. Before submitting the applications, we randomized the order in which the applications in each pair were sent.

#### *4.2 Dependent variable*

The outcome variable in the analyses is an invitation to a job interview. The employers’ response to each job application was coded as an interview invitation ( $y = 1$ ) if the candidate

received an explicit invitation; otherwise, it was coded as zero.<sup>2</sup> Discrimination was measured as the average differences in interview invitations to applications with and without information about disability.

#### *4.3 Follow-up interviews*

To address the general limitation of field experiments in identifying the processes underlying discrimination, we conducted structured telephone interviews with a subset of employers subject to the field experiment. Based on information in the job openings, we obtained the phone number of the employers, of whom 159 were interviewed. Among these, 14 contacted both applicants for an interview, whereas 15 contacted only the nondisabled applicant and 13 employers contacted only the wheelchair user. The employers were not informed that they had been subject to the experiment. However, they were informed about a recent study showing that wheelchair users are less likely to be invited to job interviews and asked their opinion on why they thought *other* employers might reject such applicants. Furthermore, the structured interview included open-ended questions about themes such as diversity recruitment practices, whether it was difficult to fill the position and workplace adjustments for wheelchair users. The interview data were restricted to providing insights into only a subsample of the hiring processes subject to the field experiment. Despite this caveat, we draw on the qualitative evidence to interpret estimates of discrimination detected in the field experiment and thus to elucidate the reasons behind employers' discrimination against wheelchair users.

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<sup>2</sup> Overall, we obtain substantively similar results when using a broader definition of callbacks as the outcome (see Online Appendix B).

## 5. Findings

Table 2 provides a descriptive overview of the results, with callback rates reported by disability for male (N = 1,030) and female (N = 1,108) job applicants and per occupation. In total, the nondisabled applicants received an invitation to a job interview for 19.9 percent of their applications, which was approximately 5 percentage points higher than the disabled applicants, who received an invitation to a job interview in 15.0 percent of the cases. The difference corresponds to a callback ratio of 1.33, indicating that disabled applicants must send 33 percent more applications to receive the same number of invitations for job interviews as nondisabled applicants. Furthermore, the overall disability disadvantage is somewhat larger among men than women. Among male applicants, the ratio of interview invitations is 1.36, which is marginally higher than the ratio of 1.29 among female applicants. The final rows show that there is a preference for the nondisabled applicant over the disabled applicant in all occupations except for customer service representatives, while callback rates and relative differences in interview invitations vary substantially across occupations. In the female-dominated occupations, the callback rates are quite low while the callback ratios are high, except for customer service representatives. In male-dominated occupations, by contrast, average callback rates are high, which likely reflects a tight labor market. The callback ratios in the two IT occupations indicate a very small and not statistically significant disability penalty, while the callback ratio for business sales representatives (1.50) is relatively high. The number of jobs applied for in each occupation ranges from 80 for ICT operations and user support technician positions to 212 for software developer positions, reflecting variation in the number of vacancies available during the data collection period. Overall, the results suggest large variation among occupations, which we will explore further along the intersection of disability and gender in Section 5.1 below.

In Table 3, we report the results from linear probability models merging all occupations together. Column 1 shows that disability reduces the probability of receiving an interview invitation by 4.9 percentage points. Columns 2 and 3 present estimates from the same model run separately for men and women. The estimates show that disability reduces the probability of being invited to a job interview by 5.0 and 4.7 percentage points for male and female applicants, respectively. Accordingly, the coefficient of the interaction term between disability and female gender is statistically indistinguishable from zero (Column 4).

Hitherto, we find evidence of disability discrimination, but the disability penalty is much lower than in other countries, where previous similar studies find callback ratios between 1.93 and 2.21 (Bjørnshagen and Ugreninov 2021, Krogh and Bredgaard 2022, Bellemare et al. 2018). Moreover, we find no indication of greater levels of disability discrimination against either male or female applicants on average, which corresponds to previous research findings. However, no prior studies of disability discrimination address the gender segregation of the labor market and whether gender and disability influence employers' hiring decisions differently depending on the gender composition of the occupation within which applicants apply for jobs. Thus, we continue with a more in-depth analysis of the intersection between disability and gender within gender-segregated occupational contexts exploiting our experimental design, in which both disability and gender are randomized, within and between employers, respectively.

### *5.1 Occupational gender segregation and gendered disability discrimination*

In the following regression models, we present results from exploratory data analyses of how the intersection of disability and gender influences employers' hiring decisions depending on occupational gender segregation. To examine whether the full sample might hide heterogeneous patterns in disability discrimination by gender and occupational gender

segregation, we first estimate separate linear probability models for occupations categorized as female- and male-dominated, respectively, as described above.<sup>3,4</sup> We then explore the results for each occupation separately.

### *5.1.1 Female-dominated and male-dominated occupations*

As expected for female-dominated occupations, women without disabilities receive a higher level of interview invitations (0.156) compared to nondisabled men (0.114) (see Panel A in Table 4). Information about disability decreases the probability of being invited for a job interview by 4.2 percentage points for men and by 4.9 percentage points for women. In absolute terms, then, we find no evidence that disabled men are at a particular disadvantage in female-dominated occupations. However, in relative terms, as indicated by the callback ratio, we find that disabled men are subject to a greater disadvantage than disabled women. Thus, in relative terms, the findings indicate that there is a double penalty for men in female-dominated occupations due to disability and incongruent gender, but the effect is rather small and not statistically significant.

Next, Panel B in Table 4 shows the same analysis for male-dominated occupations, and there is a negligible preference for nondisabled men over nondisabled women (31.1 percent versus 29.7 percent). The reduction in the callback rate is larger for disabled men than disabled women in both absolute and relative terms. Disclosing disability decreases the probability of an interview invitation by 6.8 percentage points for men. The corresponding estimate for disabled women is 4.8 percentage points, but it is not statistically significant. The

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<sup>3</sup> These heterogeneity analyses use the same observations as the main analyses presented in Table 2, but analyzing the grouped data implies using fewer observations for each of the statistical analyses, which inevitably renders the estimates less precise.

<sup>4</sup> Table A1 in the appendix presents results for the only gender-balanced occupation included in the field experiment (i.e., shop sales assistants).



relative difference in interview invitations by disability is also larger among men than women (1.28 versus 1.19). Opposite to what might be expected, then, the disability penalty is larger for men in both absolute and relative terms within male-dominated occupations. That being said, these gender differences are, as for the female-dominated occupations, small and statistically insignificant.

To summarize this far, despite some observed gender differences, these are small and statistically insignificant, and the overall picture is that disabled men and disabled women are equally discriminated across the labor market. In the following, we continue with an exploration of the potential interplay between gender and disability at the occupation level.

#### *5.1.2 Occupation by occupation*

Table 2 indicated that there is heterogeneity in the disability penalty across occupations, even within female- and male-dominated occupations. In this section, we break down the analysis even further and explore patterns of discrimination at the intersection of disability and gender at the occupational level. Table 5a reports the results for each female-dominated occupation. Since the two categories of administrative assistants ('business' and 'other') are similar, we merge them into a single category to increase precision in the estimates. In all of the female-dominated occupations considered separately, there is a preference for nondisabled women over nondisabled men, particularly for accountant positions. In absolute terms, the disability penalty is somewhat larger for women than men for accountant positions (-0.064 and -0.081 percentage points, respectively), while for administrative assistants, the disability penalty is roughly the same. However, relative to the callback rate for nondisabled applicants of the same gender, the disability penalty is larger for men than for women in both occupations (1.56 versus 1.46, and 3.04 versus 2.00). Again, these differences are small, and discrimination is roughly the same for male and female applicants. In the final female-dominated occupation of

customer service jobs, by contrast, employers do not discriminate based on disability; if anything, applicants with disabilities receive *more* callbacks than nondisabled applicants.

Next, we turn to each of the male-dominated occupations (see Table 5b). Interestingly, analyzing these occupations as an aggregated male-dominated group concealed quite diverging patterns by disability and gender. Contrary to the findings for female-dominated occupations, we find strong disability penalties that vary by gender in “opposing ways” in the male-dominated occupations. For business sales representatives, female applicants are subject to a very high level of disability discrimination; the callback rate is reduced by half, from 28.2 percentage points for nondisabled women to 14.1 percentage points for disabled women, which equals a callback ratio of 2.00. In contrast, the level of discrimination against disabled men is low, with a callback ratio of 1.19. Hence, the stark gender difference in the disability penalty is evident in both absolute and relative terms.

The final columns of Table 5b report the results for system developers and ICT operations and user support technicians, which have been merged due to their similarity and to achieve more precision in the estimates. Interestingly, the findings show that only male applicants experience disability discrimination when applying for these jobs, with the callback rate decreasing by 7.8 percentage points and a callback ratio of 1.32 relative to nondisabled men.

### *5.1.3 Special case: Gender equality and discrimination in the IT sector*

Since we noticed the unexpected result of a lack of discrimination against disabled women for IT jobs halfway into the data collection, we decided to expand the field experiment for these occupations by constructing and submitting a job application for an additional applicant with an ethnic minority background. Although IT occupations are heavily dominated by men, recent field experiments have found that nondisabled majority women are not discriminated

against for these jobs (Birkelund et al. 2021), suggesting a more gender-egalitarian culture in IT firms as one possible explanation.

If there are stronger norms of gender equality in the IT sector, this could imply that employers evaluate all applications from women more carefully, which might potentially include scrutinizing the applications of minority women in more detail. Hence, our reason for including the third application of an ethnic minority applicant was to investigate whether a level playing field is also found when hiring other types of female minorities. We hypothesized that norms of gender equality in these male-dominated occupations might also eliminate discrimination based on ethnicity for female applicants. To this end, we sent employers with job openings for positions as software developers and ICT operations and user support technicians a third applicant as of March 2021 (N = 96). The third applicant signaled ethnic minority background by a Middle Eastern-sounding name, following the between-employer randomization of applicant gender as described above.<sup>5</sup> By including a third applicant in the experiment, we increased the risk of detection by employers. To avoid undermining the main objective of the field experiment, the ethnic minority applicant was always sent last and was always of the opposite gender so that three female applicants were never sent to a single employer.

Table 5c simply adds these 96 (44 male and 52 female) observations for the ethnic minority to the analysis in Table 5b for IT jobs. Hence, by construction (and no covariates), the estimates in Table 5c for disability and the control are exactly as in Table 5b, whereas the coefficients of signaling an ethnic minority background are new. While the ethnic penalty is large for men, almost twice as large as for disabled males (-14.3 and -7.8 percentage points,

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<sup>5</sup> The names used to signal ethnic minority status were Yasmin Haddad and Mustafa Hosseini for female and male applicants, respectively.

respectively), it is nonexistent for both women with an ethnic minority background and disabled women. Ethnic minority women even received somewhat more callbacks than majority nondisabled women. The results are consistent with gender equality norms in the IT sector influencing these employers' hiring behavior. In practice, this appears to involve employers considering all female applicants more carefully, which in turn has the effect of cancelling out the otherwise negative impact of other minority categories for women, thus eliminating discrimination against disabled women and women with an ethnic minority background.

Although our findings suggest that norms of gender equality limit the extent of discrimination against female applicants for IT jobs, it is unclear whether it reflects an explicit intention to compensate for an overrepresentation of men. In the next section, we will address intentions more directly by examining how declarations of striving for a workplace culture of diversity and gender equality are related to the level and pattern of discrimination.

#### *5.1.4 The impact of diversity statements, gender equality legislation and HR departments*

In this section, we return to the full dataset and explore heterogeneity in discrimination by (a) whether the firm has an equality or diversity plan, (b) whether the firm is subject to legislation obliging it to report and document wage-setting practices for each gender, and (c) whether the firm is likely to have an HR department, proxied by company size, that plays a key role in the implementation of equal opportunity and diversity programs. To further explore the relationship between norms of equality and diversity and discrimination, as implied by the findings for IT jobs, we searched the text of the vacancy announcements for pro-equality or diversity statements. Only 8.7 percent (N=89) of the job postings included such passages, with a relatively even distribution across occupations. The statements typically emphasized that diversity and gender equality were an integral part of the workplace culture and an

important value. To illustrate, an employer stated the following: ‘We believe that a union of different experiences, backgrounds and perspectives is the best foundation for building a workplace free from discrimination [...] Because that is how we best represent our society.’ Another employer wrote that they ‘strive for an equal gender distribution and view diversity as a strength, and thus welcome candidates of different backgrounds.’ Most of the job ads with declarations highlighted diversity (N=80), and many also referred to gender equality (N=52), whereas only a few explicitly mentioned disability (N=14).

Table 6a includes an interaction term between the disability indicator and a variable indicating that there was a diversity statement in the job posting with separate analyses for each gender. The coefficients of the interaction terms are indistinguishable from zero (0.005 for disabled men and 0.009 for disabled women) and the gender differences are small, suggesting that declared intentions to ensure diversity do not benefit disabled job seekers of either gender on average. Thus, only a minority of employers state a commitment to diversity, and the few ostensibly diversity-supportive ones are just as likely to discriminate against disabled men and disabled women as employers who do not make such declarations.

Next, we explore whether gender equality legislation and having an HR department matter for disability discrimination by gender by examining variation in discrimination by company size. In Sweden, firms with 10 employees or more must report and document their work with wage setting from a gender perspective, whereas firms with fewer than 10 employees do not. In addition to these differences in legal obligations and factors such as more formalized hiring procedures, large employers may be less likely to discriminate than smaller ones due to having HR departments that are educated in and oversee workplace diversity and equality management and policies (Bjørnshagen 2022, Ameri et al. 2018, Banerjee, Reitz, and Oreopoulos 2018). However, as evident from Table 6b, when firms are separated according to the thresholds of 0–9 employees, 10–199 employees, and 200

employees or more, employers of all sizes discriminate; generally, the results indicate that gender equality legislation and HR departments do not limit the extent of discrimination based on disability and gender.

However, gender equality legislation may primarily affect employers' hiring behavior toward applicants of the gender that is underrepresented in an occupation and may not benefit either gender regardless of the labor market segment. To explore whether the legislative duties to document and report work toward gender equality in wages influence employers' hiring behavior toward female applicants in male-dominated occupations, we ran the analysis of firm size variation for each of these occupations separately for the margin of 0–9 employees versus 10–199 employees. Again, the findings provide no indication that gender equality legislation improves hiring chances for women regardless of disability or for disabled men (results available upon request).

To summarize, we find that IT firms have eradicated discrimination based on disability and ethnic background for women, which is potentially indicative of the influence of gender egalitarian norms, whereas declarations of being a diversity-friendly employer, legislation obliging employers to report their work on wage equality or having an HR department do not increase the hiring chances of disabled men and women. To better understand the experimental results and gain insight into why so few employers declare an ambition to be a diversity-friendly workplace and why the IT sector is succeeding in eliminating disability discrimination for one gender, we interviewed a few of the employers who were included in the experiment.

### *5.2.1 Explaining patterns of gendered disability discrimination in the IT sector*

The findings from the interviews with a subsample of the employers in the field experiment provide insight into the potential drivers of the gender differences we observe on the

occupational level, particularly for IT jobs. Overall, few of the interviewed employers reported that they actively work to increase workplace diversity or gender balance, reflecting the finding that few employers declare such intentions in job advertisements. A total of 72 percent of the employers replied that they did not strive to increase diversity or gender equality. Employers who have difficulties finding qualified candidates do not want to limit the number of job applicants and therefore avoid encouraging particular groups to apply. This was the case for several IT employers that noted that they would prefer to hire women but that they could not select candidates based on gender due to a scarce supply of qualified labor. According to one such employer who invited only the female applicant with a disability to a job interview, “[Women] are so difficult to get [for software developer jobs] ... it does not matter whether one has a disability or does not speak Swedish....” Another argued that “[a]ny client would be happy if a girl applied, but it’s not a requirement [for the position]; it is the workers’ market, and there are not enough applicants for us to select candidates that way.” In sum, this qualitative evidence further supports the interpretation that gender equality norms in the IT sector translate into gender-compensating hiring practices whereby employers consider all female applicants more carefully, thus overriding the negative effect of disability for women.

### *5.2.2 General considerations of reasons behind disability discrimination*

In the interviews, the employers were informed about the result that wheelchair users are less likely to be invited to job interviews. When asked to consider why other employers might reject such candidates, their responses were usually not occupation specific or attentive to gender but were overwhelmingly general in scope. Some employers suggested that perceptions of wheelchair users as less productive might explain the results, whereas others expressed concerns about whether wheelchair users would ‘fit in’ socially, largely due to

anticipations of challenges related to participating in activities outside the workplace. However, the most prevalent category of assumptions was that the lower levels of callbacks for wheelchair users were likely due to difficulties in providing accommodations. Whereas these potential mechanisms of disability discrimination have been documented in previous research (e.g., Østerud 2022, Burke et al. 2013, Lengnick-Hall, Gaunt, and Kulkarni 2008), we also found that when asked whether their *own* workplace was wheelchair accessible, most of the employers answered in the affirmative, including 13 of the 15 employers who invited only the *nondisabled* applicant to an interview. In sum, the inconsistency between the employers' beliefs about other employers' reasons for rejecting wheelchair users and their own hiring decisions points to factors other than actual difficulties related to providing accommodations as drivers of the discrimination observed in the present study.

## **Discussion**

In the Swedish labor market, employers are less likely to contact candidates who state that they use a wheelchair compared to otherwise identical applicants without disabilities, which is consistent with the existence of disability discrimination. However, the level of discrimination against wheelchair users is much lower than in previous studies in other countries. Whereas wheelchair users in Sweden must apply for 33 percent more jobs compared to identical job applicants without disabilities, this number is approximately three times higher in Norway (Bjørnshagen and Ugreninov 2021), Canada (Bellemare et al. 2018), and Denmark (Krogh and Bredgaard 2022), where wheelchair users must apply to twice as many jobs as nondisabled applicants. To be clear, the comparison of findings across field experiments is complicated, but the design of the current study is largely equivalent to that of the Norwegian study, including the choice of occupations. This reduces problems associated with comparison that pertain to differences in design, although challenges remain due to differences in the



conditions under which the field experiments were conducted. Despite such uncertainties and given the similar designs, there are reasons to believe that the observed difference between Norway and Sweden reflects substantial differences in disability discrimination. For many years, Sweden has had a larger share of disabled people in employment than Norway, a difference that seems to be explained to a small degree by differences in survey design (Næsheim and Sundt 2016). Our findings point to lower levels of disability discrimination in Sweden than in Norway as part of the substantive explanation.

On the aggregate level, we find no gender differences in disability discrimination, thus confirming previous field experimental findings (Bjørnshagen and Ugreninov 2021; Bellemare et al. 2018). These results contradict general theoretical notions implying that disability discrimination should, in general, be more severe for either men or women. Moreover, we find no evidence of a clear relationship between gendered disability discrimination and occupational gender segregation. On the one hand, it is possible that disability and gender intersect in employers' perceptions of applicants without resulting in different rates of discrimination against disabled men and disabled women (cf. Browne and Misra 2003). On the other hand, disability might act as a 'master status' and be more salient than gender when employers consider applicants, even in contexts where gender is otherwise made salient.

However, there are pronounced gender differences within particular occupations. Before proceeding, we emphasize that there is a substantially smaller number of observations for specific occupations and that the results should therefore be interpreted with caution. Nevertheless, it is interesting to focus on the diverging hiring patterns by gender and disability in the male-dominated occupations. For business sales positions, we find that female applicants are subject to high levels of disability discrimination, while nondisabled women are preferred at equal rates as nondisabled men. In this case, the effect of the intersection of

disability and gender cannot be easily disentangled into separate contributions of each category, as expressed by the concept of “multiple jeopardy” (King 1988). Rather, the results suggest that in this occupation, the intersection of gender and disability influences employers’ perceptions in distinct ways. It might be that in an occupation where traits such as being assertive and extroverted are considered important to succeed, female gender amplifies the stereotyping of disabled people as introverted, passive and weak (Stone and Colella 1996), making employers perceive disabled women as less suited for these jobs.

Finally, we find no discrimination against women regardless of disability and ethnicity for IT jobs. Despite the scarce supply and high demand for labor, as evident from IT jobs being the largest occupational category in the field experiment (N = 292) and the high level of callbacks for these jobs (29.1 percent),<sup>6</sup> male applicants still face disability discrimination and ethnic discrimination in these occupations. We interpret these findings as being linked to progressive gender norms, as expressed in a hiring practice in which all applicants of the underrepresented gender (i.e., women) are considered more carefully regardless of intersecting social categories.

At the same time, our results do not indicate lower levels of discrimination among employers (i) that explicitly declare a commitment to diversity, (ii) that are charged with more extensive duties under gender equality law, or (iii) that are likely to have an HR department. This is in line with research showing that pro-diversity statements are not associated with less racial discrimination (Kang et al. 2016), the low status of disability as a diversity category (Østerud and Vedeler 2022), and the limited success of many organizational strategies to increase workplace diversity (Dobbin, Schrage, and Kalev 2015). Additionally, considering

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<sup>6</sup> The percentage share represents the overall rate of invitations for IT jobs regardless of disability and ethnic background.

the finding that employers tend to turn to a lack of accommodations to explain disability discrimination while reporting that wheelchair accessibility at their own workplace is not an issue, a simple solution to combat disability discrimination is not revealed, and this remains a question for further research. In summary, the present results call for more in-depth studies of hiring in IT firms to investigate the particular conditions under which strategies to improve diversity and equality might actually be effective in reducing discrimination.

The present study contributes to the literature on disability discrimination, particularly by investigating the intersection of gender and disability in greater depth than previous studies. However, some limitations must be acknowledged. First, field experiments measure discrimination in the initial stages of the hiring process and reveal little about final job and wage offers. Second, while mobility impairments constitute the most common type of impairment in Sweden (Statistics Sweden 2020), disability is a complex construct encompassing a broad range of impairments that may elicit different levels of discrimination. Thus, the findings cannot be generalized to people with other types of impairments, who may experience both higher and lower rates of discrimination.

Notwithstanding these caveats, our study highlights the importance of considering the occupational context to understand discrimination based on the intersection of disability and gender by showing that the social categories of disability and gender combine to generate contextually contingent patterns of discrimination. However, much theoretical and empirical work remains. Despite theoretical accounts of how beliefs about gender and disability function together, evidence on the interplay of these categories on stereotypical perceptions is still limited. We also emphasize a need for theoretical advancement addressing the intersection of gender and disability across different social contexts. Future field experimental research on disability discrimination would also benefit from larger samples to further examine patterns of gendered disability discrimination. In this regard, a deeper investigation

of hiring practices within particular occupations or industries based on a sufficiently large sample in combination with qualitative in-depth interviews might generate knowledge on whether and how diversity strategies focusing on one social category, such as gender, may reduce discrimination based on intersecting categories.

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## Tables:

**Table 1. Occupations used in the field experiment: SSYK 2012 and gender composition**

Occupation	SSYK 2012 codes used	Share of males
<i>Male-dominated</i>		
ICT support and user support technicians	351	81
Software developers	251	77
Business sales representatives	1242, 1252, 2431, 3322	68
<i>Gender-balanced</i>		
Shop sales assistant	5223	39
<i>Female-dominated</i>		
Customer service representatives	421, 422	32
Administrative assistants (other)	334	24
Accountants	3313	21
Administrative assistants (business)	411	17

*Note: The Swedish Standard Classification of Occupations 2012 (SSYK) is based on the International Classification of occupations 2008 (ISCO-08). For translation key, see <https://www.scb.se/dokumentation/klassifikationer-och-standarder/standard-for-svensk-yrkesklassificering-ssyk/>. Labour statistics based on administrative data available from Statistics Sweden were used to calculate the share of males in the occupations. Occupations are considered male-dominated if the share of men is greater than or equal to 65 per cent of the workforce, female-dominated when the share of men is less than or equal to 35 per cent, and gender-balanced when falling between these thresholds.*

**Table 2. Callback rates and ratios (interview invitation) by disability, gender, and occupation**

	Number of jobs (1)	Callback for none (2)	Callback for both (3)	Callback only for non- disabled (4)	Callback only for disabled (5)	Callback rate, non- disabled (3)+(4)/(1) (6)	Callback rate, disabled (3)+(5)/(1) (7)	Callback ratio (6)/(7) (8)
All	1.024	779	113	91	41	19.9	15.0	1.33**
<b>Gender</b>								
Male	515	400	55	43	17	19.0	14.0	1.36*
Female	509	379	58	48	24	20.8	16.1	1.29^
<b>Occupation</b>								
<i>Male-dominated</i>								
ICT operations/user support technicians	80	51	12	10	7	27.5	23.8	1.16
Software developers	212	129	48	22	13	33.0	28.8	1.15
Business sales representatives	139	90	16	23	10	28.1	18.7	1.50^
<i>Female-dominated</i>								
Administrative assistants (business)	119	103	4	10	2	11.8	5.0	2.36^
Administrative assistants (other)	106	96	3	6	1	8.5	3.8	2.24
Customer service representatives	103	91	8	1	3	8.7	10.7	0.81
Accountants	152	116	19	14	3	21.7	14.5	1.50
<i>Gender balanced</i>								
Shop sales assistants	113	103	3	5	2	7.1	4.4	1.61

^ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001.

**Table 3. The probability of callback (interview invitation) by disability and gender**

	(1)	(2)	(3)	(4)
Disability	-0.049*** (0.011)	-0.050** (0.015)	-0.047** (0.017)	-0.050** (0.015)
Female x Disability				0.003 (0.022)
Female				0.018 (0.025)
Constant	0.199*** (0.012)	0.190*** (0.017)	0.208*** (0.018)	0.190*** (0.017)
Total sample	x			x
Male		x		
Female			x	
Observations	2,048	1,030	1,018	2,048

Note: ^ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. Robust standard errors clustered by vacancy in parentheses

**Table 4. The probability of callback (interview invitation) by occupational gender composition**

	<i>Panel A: Female-dominated occupations</i>				<i>Panel B: Male-dominated occupations</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Disability	-0.046*** (0.013)	-0.042* (0.017)	-0.049* (0.020)	-0.042* (0.017)	-0.058** (0.021)	-0.068* (0.029)	-0.048 (0.032)	-0.068* (0.029)
Female x Disability				-0.007 (0.026)				0.020 (0.043)
Female				0.041 (0.031)				-0.014 (0.044)
Constant	0.135*** (0.016)	0.114*** (0.021)	0.156*** (0.023)	0.114*** (0.021)	0.304*** (0.022)	0.311*** (0.031)	0.297*** (0.032)	0.311*** (0.031)
Total sample	x			x	x			x
Male		x				x		
Female			x				x	
Callback ratio	1.52	1.58	1.46	-	1.24	1.28	1.19	-
Observations	960	472	488	960	862	444	418	862

Note: The callback ratio is calculated by the following equation: (callback rate, non-disabled applicant) / (callback rate, wheelchair user).

^ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. Robust standard errors clustered by vacancy in parentheses

**Table 5a. The probability of callback (interview invitation) by gender and occupation in female-dominated occupations**

	<i>Female-dominated occupations</i>					
	<i>Accountants</i>		<i>Administrative assistants</i>		<i>Customer service representatives</i>	
	Male	Female	Male	Female	Male	Female
Disability	-0.064 <sup>^</sup>	-0.081 <sup>*</sup>	-0.057 <sup>*</sup>	-0.059 <sup>^</sup>	0.019	0.020
	(0.038)	(0.374)	(0.023)	(0.030)	(0.019)	(0.034)
Constant	0.179 <sup>***</sup>	0.257 <sup>***</sup>	0.085 <sup>**</sup>	0.118 <sup>***</sup>	0.077 <sup>*</sup>	0.098 <sup>*</sup>
	(0.044)	(0.051)	(0.027)	(0.030)	(0.037)	(0.042)
Callback ratio	1.56	1.46	3.04	2.00	0.80	0.83
Observations	156	148	212	238	104	102

Note: The callback ratio is calculated by the following equation: (callback rate, non-disabled applicant) / (callback rate, wheelchair user).

<sup>^</sup> p<0.10, <sup>\*</sup> p<0.05, <sup>\*\*</sup> p<0.01, <sup>\*\*\*</sup> p<0.001. Robust standard errors clustered by vacancy in parentheses

**Table 5b. The probability of callback (interview invitation) by gender and occupation in male-dominated occupations**

	<i>Male-dominated occupations</i>			
	<i>Business sales representatives</i>		<i>IT</i>	
	Male	Female	Male	Female
Disability	-0.044 (0.065)	-0.141** (0.051)	-0.078* (0.030)	0.000 (0.040)
Constant	0.279*** (0.055)	0.282*** (0.054)	0.325*** (0.038)	0.304*** (0.039)
Callback ratio	1.19	2.00	1.32	1.00
Observations	136	142	308	276

Note: The callback ratio is calculated by the following equation:  
(callback rate, non-disabled applicant) / (callback rate, wheelchair user).

^ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. Robust standard errors clustered by vacancy in parentheses

**Table 5c. The probability of callback (interview invitation) by disability, ethnicity, and gender for positions as software developers and ICT and user support technicians**

	Male	Female
Disability	-0.078* (0.030)	0.000 (0.040)
Ethnic minority	-0.143* (0.070)	0.042 (0.077)
Constant	0.325*** (0.038)	0.304*** (0.039)
Observations	352	328
N (Ethnic minority)	44	52
N (Other)	308	276

Note: ^ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. Robust standard errors clustered by vacancy in parentheses

**Table 6a. The probability of callback (interview invitation) by disability and diversity plan**

	Male	Female
Disability	-0.051** (0.016)	-0.049** (0.018)
Disability X Diversity plan	0.005 (0.053)	0.009 (0.044)
Diversity plan	-0.044 (0.059)	-0.101* (0.050)
Constant	0.196*** (0.018)	0.221*** (0.019)
Observations	1,020	1,006

Note: ^ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. Robust standard errors clustered by vacancy in parentheses



**Table 6b. The probability of callback (interview invitation) by disability and company size**

	<i>Company size (number of employees)</i>					
	Male			Female		
	0–9	10–199	200+	0–9	10–199	200+
Disability	-0.036 (0.032)	-0.066** (0.019)	-0.066* (0.028)	-0.063^ (0.037)	-0.034^ (0.020)	-0.046 (0.036)
Constant	0.145 (0.033)	0.223*** (0.023)	0.198*** (0.039)	0.261*** (0.042)	0.176*** (0.021)	0.156*** (0.035)
Callback ratio	1.33	1.42	1.50	1.32	1.24	1.42
Observations	220	664	212	222	648	218

Note: The callback ratio is calculated by the following equation: (callback rate, non-disabled applicant) / (callback rate, wheelchair user).

^ p<0.10, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. Robust standard errors clustered by vacancy in parentheses