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The making of ethnic segregation in the labor market: Evidence from a field experiment

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The making of ethnic segregation in the labor market

–Evidence from a field experiment

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The making of ethnic segregation in the labor market

–Evidence from a field experiment^a

by

Moa Bursell^b and Magnus Bygren^c

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Abstract

Western labor markets are typically segregated by country of birth, with immigrants often working in immigrant-typed jobs, e.g., cleaners, taxi drivers, fast-food chefs, and similar. The aim of this paper is to investigate whether employer variation in discriminatory hiring choices contributes to the maintenance of such immigrant niches by channeling immigrants and their descendants into these types of jobs. We use correspondence audit data derived from 7,051 job applications sent to job openings in 15 different occupations in the Swedish labor market between 2013 and 2019, in which names signaling the ‘foreignness’ of job applicants were randomly assigned to job applications with otherwise identical qualifications. Our results suggest that employers do contribute to this type of segregation. While ethnic discrimination is pervasive in the ‘native’ occupations in our data, it declines as the share of foreign-born individuals working in a given occupation increases, and is low or even absent in the most immigrant-dense niches. However, the pattern is gendered: it is only ‘foreign’-named men who are disproportionately channeled into such niches. We conclude that variation in discriminatory employer hiring choices appears to be partly responsible for reproducing (male-dominated) immigrant niches in the labor market.

Keywords: discrimination, ethnicity, segregation, correspondence audit, field experiments, labor market, hiring

JEL-codes: J71

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1 Introduction

Immigrants in OECD countries tend to be situated in the less privileged segments of the labor market. Compared to native-born populations, immigrants usually have a higher probability of holding low-qualified jobs (Heath and Cheung 2006; 2007; OECD/European Union 2015). Typical ‘immigrant niches’ (Waldinger 1994), i.e., industries or sectors with a higher-than-average proportion of immigrants, include manufacturing, construction, transportation, hotels, restaurants, and domestic services (Christopher and Leslie 2015; OECD 2018).

Immigrant-typed occupations pay less (e.g., Waldinger and Lichter 2003), and the differential allocation of immigrant workers to occupations statistically explains a substantial part of the wage differences found between natives and immigrants in Western countries (Spain: Simón, Sanromá and Ramos 2008; Sweden: le Grand and Szulkin 2002; the UK: Elliott and Lindley 2008).

The causes of this unequal distribution of immigrants and natives across occupations may broadly be found on either the demand side or the supply side of the labor market. On the supply side, the systematic selection of migrants from one country to another may result in immigrants having productivity-relevant skills that increase their likelihood of finding employment in certain occupations. In other words, systematic differences in human capital between ethnic/racial groups (Moss and Tilly 2001; Thomaskovic-Devey, Thomas and Johnson 2005) or between natives and immigrants (Kahn 2004; Shoeni 1998), as well as differences emanating from the transferability of human capital (Chiswick and Miller 2009; Lancee and Bolt 2017; Tibajev 2022) may contribute to ethnic occupational segregation. On the demand side, employers may prefer to hire immigrants for certain kinds of jobs irrespective of their actual qualifications, i.e., they may channel immigrants into ‘migrant’ jobs, and natives into ‘native’ jobs in a discriminatory manner (cf. Pager, Western and Bonikowski 2009). This may occur as a result of status-based stereotypes (Ridgeway 2019), the devaluation of foreign credentials (Tibajev 2022), or as a result of more pronounced employer discrimination in segments of the labor market with slack resources or that are protected from competition (Reskin and Roos 1990; Kaufman 1986).

It is well known that employer discrimination contributes to the *exclusion* of individuals of foreign background *from* the labor market (see reviews by Zschirnt and Ruedin 2016; Baert 2018). Much less is known about the role played by employers in the reproduction of ethnic *separation* *in* the labor market. In this study, we address this knowledge gap by evaluating whether there is empirical evidence for the demand-side mechanism alluded to above, i.e., that varying employer hiring discrimination contributes to the labor-market separation of immigrants and their

descendants (these two categories are hereafter jointly referred to as individuals of “foreign background”) from natives with native born parents (hereafter simply referred to as “natives”).

We use an experimental correspondence audit design to isolate the effect of employer channeling on segregation, i.e., to identify whether employer discrimination contributes to ethnic occupational segregation, holding the qualifications of the job applicants constant. We have sent job applications from non-authentic job applicants to employers to investigate whether they treat applications written by natives and persons of foreign background differently, and whether this differential treatment is moderated by the native/immigrant composition of the occupation in which the job is located.

In the following, we first discuss theories and research related to ethnic segregation, and the ways in which discrimination and selective inclusion might constitute a generative mechanism in this context. Thereafter, we describe the Swedish case and our methodological approach. Finally, we present our empirical analysis together with a discussion of the findings.

2 Selective inclusion as a driver of occupational segregation?

Several factors contribute to ethnic inequality in labor market outcomes: supply side differences in productive assets, social capital, mismatches between skills and demand, and also systematic differences in the bargaining power of natives and immigrants respectively. Thus, discrimination is only one of several causes of unequal labor market outcomes between natives and individuals of foreign background. However, ethnic discrimination has convincingly been shown to occur in labor markets across the globe (Zschirnt and Ruedin 2016; Baert 2018; Neumark 2018; Quillian and Midtboen 2021) and there is now widespread agreement that this is one of the more important drivers of ethnic labor market exclusion.

Discrimination may also contribute to ethnic labor market segregation via immigrants and their descendants being barred from employment in native-dense occupations but included in certain immigrant-dense occupations, or immigrant niches (e.g., Bonacich 1972; Waldinger 1994; Ruhs and Anderson 2010), insofar as this discrimination occurs over and above the baseline segregation to be expected on the basis of human capital and other productivity-related differences across groups.

The literature on ethnic and immigrant niches has shown that these niches first emerge when natives (*as a group*, not necessarily as *individuals*) seize opportunities to move upwards in the labor market hierarchy by disproportionately avoiding or leaving certain low-pay and low-status jobs, such as seasonal work, (see e.g., Wadensjö 1973, chapter 7; Waldinger 1994), or because new jobs emerge as a result of immigrants’ low bargaining power, such as the low-qualified jobs that are emerging in the gig economy. In line with queuing theory (Reskin and Roos

1990), these positions are disproportionally filled by immigrants with less human capital and bargaining power. Thus, it is often the movements and choices of the native population that set in motion the processes that lead to the formation of immigrant niches. In the initial phase of such processes, employers may be reluctant to hire immigrant workers as a result of xenophobia or in-group preferences, but eventually, as predicted by the contact hypothesis (Allport 1954), an increased frequency of positive and meaningful social interactions between groups at the workplace will decrease employers' reluctance to hire immigrant workers within these occupations. Relatedly, with the increased representation of immigrants within a given occupation, immigrants will also come to occupy decision-making positions and thereby come to influence hiring and other important decisions directly (cf. Giuliano, Levine and Leonard 2009; Åslund, Hensvik and Skans 2014), as well as providing other immigrants in their social networks with information about job opportunities (Portes and Jensen 1989; Tilly 1998).

While workplace interethnic social interaction is likely to take the edge off xenophobia and in-group preferences, it does not necessarily reduce ethnic stereotyping. Instead, stereotyping tends to become differentiated, and to target specific ethnic groups rather than 'immigrants' more broadly. For example, employers in immigrant niches tend to express a preference for specific immigrant ethnic groups in relation to certain repetitive and physically demanding jobs because these groups are perceived as having a stronger work ethic and as being 'non-demanding', whereas natives are perceived as being too lazy or spoilt for these jobs (Friberg and Midtboen 2019). In some contexts, natives are viewed with suspicion due to a presumed negative selection associated with their deciding to apply for such 'demeaning' jobs (Zamudio and Lichter 2008). However, for jobs that require higher skills, social skills and discretion, natives and culturally similar immigrants are preferred (see Friberg and Midtboen 2018; cf. Ndobu et al. 2018). In this sense, one might also suggest the existence of *native* niches.

The content of productivity-related ethnic stereotypes is shaped by systematic differences in the aggregate opportunities of natives and immigrants. Examples include stereotypes emerging from differences between refugees and labor migrants, with the above mentioned stereotype about immigrants and a strong work ethic primarily pertaining to labor migrants (cf. Friberg and Midtboen 2018). Ethnic stereotypes might also be class-based stereotypes in disguise, with certain immigrant groups coming from particular socioeconomic strata in their country of origin, resulting in ethnic stereotypes related to their manners and cognitive capacities in the destination country. In a broader perspective, differentiated ethnic stereotyping about the suitability of immigrant groups for different types of work, as well as the selective inclusion that occurs in line with these stereotypes, may be viewed as an integral part of the way ethnic status hierarchies are produced in society (cf. Wimmer 2013; Ridgeway 2019).

3 Intersectional patterns of selective inclusion?

The use of an intersectional perspective has often resulted in predictions of minority women being subject to multiple burdens or disadvantage due to the ‘double burden’ of being labelled as occupying two disadvantaged social positions (e.g., Crenshaw 1989). However, the key claim of intersectional theory is that ethnic, gender, and other social categorizations cannot be understood in isolation – not that the disadvantage associated with these positions is necessarily additive or multiplicative (e.g., Hancock 2007). When it comes to labor market discrimination, evidence points to the existence of a somewhat heavier burden among minority men. In a systematic review of field experiments from different national contexts, Sidanius and Pratto (2001) found the mean discrimination rate to be about 30 percent higher for minority men compared to minority women. In Scandinavia, a correspondence audit of the Danish labor market found that immigrant men are subject to higher levels of discrimination than immigrant women (Dahl and Krogh 2018). Similar results have been identified in Sweden (Erlandsson 2022), and certain gendered patterns of ethnic discrimination have also been reported. Bursell (2014) found ethnic discrimination to be more pronounced for male applicants in male-dense occupations, indicating that occupational demographic composition moderates employer discrimination. Further, Arai, Bursell and Nekby (2016) found that only foreign-named women could compensate for employer priors by submitting a stronger CV than their native-named counterparts, and employers were therefore argued to have stronger, less malleable priors in relation to foreign-named men. However, in a large-scale comparative study of Germany, the Netherlands, Norway, Spain, the UK, and the US, Di Stasio and Larsen (2020) found male minority applicants to be subject to no more discrimination than minority women.

There are several competing explanations for a possible male disadvantage in gendered ethnic discrimination (for a discussion see Di Stasio and Larsen 2020), most of them revolving around the notion that ethnic, racial, or nationality-based stereotypes seem to be more strongly focused on the attributes of men from the countries in question, rather than those of women (Eagly and Kite 1987; Ridgeway and Kricheli-Katz 2013). If certain nationalities or ethnic groups are disliked for some reason, women may more easily escape being associated with these negative characterizations than men.

The above-mentioned studies have not addressed gendered ethnic discrimination in relation to the immigrant composition of different occupations, but the literature on immigrant niches, also discussed above, complements a substantial body of literature on gender segregation and occupational status attainment. This literature has shown that male-dominated occupations tend to be associated with higher status and higher rewards (e.g., Charles and Grusky 2005), and that there are deeply ingrained status-based cultural stereotypes about the types of work to which men

and women are suited (e.g., Ridgeway 2011). In a similar way, native-dense occupations tend to be associated with higher status and higher labor market rewards than immigrant-dense occupations.

To the extent that employers in immigrant niches develop negative stereotypes about natives (high-status workers), we might also observe decreased interest in especially Swedish-named men in immigrant niches. In gender egalitarian Sweden, it is also possible that native women are considered ‘too high-status’ for work in immigrant niches, and that those who seek employment in such niches may thus also run the risk of being perceived as a negatively selected group. However, as has been argued by Hakim (1998), women in Western democracies have had a genuine choice to work or opt out, resulting in a greater heterogeneity among women than men in relation to labor market participation and career paths. This heterogeneity corresponds to the existence of more differentiated stereotypes about women; both the career-oriented woman and the family-oriented woman are viewed as reasonable role-models (cf. Cuddy, Fiske and Glick 2004). For men, the script is more constrained. Men are assumed to be either career-oriented or simply ‘failures’ (cf. Faludi 2011).

In conclusion, although the literatures on intersectionality, gender, and immigrant niches suggest that immigrant stereotypes are gendered, we still know little to nothing about the role played by the intersection of gender and ethnic discrimination in employers’ contributions to ethnic segregation on the labor market. For this reason, this study conducts separate analyses of ethnic discrimination by gender, thus facilitating a focus on this issue.

4 The Swedish case

The Swedish population is diverse – one in four is of foreign background, with 20 percent of the population having been born abroad, and almost 6 percent of those born in Sweden have two foreign-born parents. The immigrant category is very diverse, and its composition has changed dramatically over the last few years as a result of violent conflicts in the Greater Middle East, which have forced large groups of migrants from the region to seek refuge. Many of these found shelter in Sweden. Today, the most common country of origin for foreign-born migrants in Sweden is Syria, followed by Finland, Iraq, the former Yugoslavia, and Poland.¹

There are significant labor market inequalities between individuals of Swedish and foreign background. Immigrants are typically at higher risk of being unemployed, and when employed,

¹ Statistics retrieved from Statistics Sweden:
<https://www.scb.se/hitta-statistik/sverige-i-siffror/manniskorna-i-sverige/utrikes-fodda/>
https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START_BE_BE0101_BE0101Q/UtlSvBakgFin/

they are more often overqualified for their jobs and have lower earnings than native-born individuals (e.g., Andersson Joona, Datta Gupta and Wadensjö 2014; Karlsson and Tibajev 2014). Similar patterns are found in all OECD countries, but the Swedish immigrant-native unemployment gap is among the largest in Europe, as is the level of immigrant over-qualification (Szulkin et al. 2013; OECD 2018). Supply-side differences, i.e., systematic productivity-related differences in the characteristics of the above-mentioned groups, have been found to be insufficient to explain these persistent labor market gaps (Luik, Emilsson and Bevelander 2016). The children of immigrants are generally more successful on the labor market than their parents, but they are significantly less successful than their peers with native-born parents (Heath, Gorodzeisky and Semyonov 2017). In this sense, they tend to be located in an intermediary position in relation to labor market outcomes, between immigrants and their native-born peers. To the extent that the second generation has foreign-sounding names, they are susceptible to the same discrimination risks as their parents (Carlsson 2010).

There are significant differences in labor market integration across different regions of origin. Immigrants from European countries have a much easier time finding a job, and also finding a job that matches their qualifications, than individuals from the Middle East, Africa and Latin America (Gustafsson and Zheng 2006; Petersson 2013). A larger proportion of European immigrants are labor migrants, whereas non-European immigrants are more often refugees. Previous research suggests that there is an economic penalty attached to having a Middle Eastern sounding name (Arai and Skogman Thoursie 2009) and that name change is an anti-discrimination strategy used by immigrants from the Middle Eastern region (Bursell 2012).

The Swedish labor market is also markedly segregated by country of birth (e.g., Bygren 2013). At the occupational level, there are occupations in which immigrants are heavily overrepresented, such as pizza bakers (88 percent) and cleaners (57 percent), and occupations where they are grossly underrepresented, such as fire fighters (3 percent) and police officers (4 percent) (Yrkesregistret 2017). Thus, the Swedish labor market, like all Western labor markets, has both immigrant and native occupational niches.

5 The study's correspondence audit design

The correspondence audit technique was first used in England, by Jowell and Prescott-Clarke (1970), and is widely recognized as the most valid method for identifying the presence and extent of hiring discrimination in the labor market (Gaddis 2018). Using this design, scholars have documented ethnic discrimination across a range of groups and contexts (for reviews, see Zschirnt and Ruedin 2016; Baert 2018; Neumark 2018; Quillian and Midtboen 2021). Job applications for non-authentic individuals are used to apply for real jobs in the labor market, and the job

applications are manipulated in such a way that everything except the name of the job applicant is held constant. Thereafter, employer responses to these non-authentic job applications are recorded. Thus, the effect of any social categorization that can be efficiently signaled in a job application is completely isolated by design. Since the method constitutes a field experiment - i.e., an experiment conducted in a real-world context with participants 'blinded' to treatments - external validity is generally high.

The correspondence audit in the present study is based on employer responses to applications for 7,051 jobs, which were obtained from two data collections employing the same experimental design; the first was conducted in 2013-2015, the second in 2017-2019. The primary purpose of the first data collection was to study the effect of gender-based discrimination, but ethnicity was also signaled in the job applications, which allows us to draw on these data for the purpose of the present study (see Bygren, Erlandsson and Gähler 2017; Erlandsson 2019; Bygren and Gähler 2021). The second data collection was conducted with the explicit purpose of studying different aspects of occupational differences in discrimination.

Correspondence audits are based on one of two basic research designs: paired and unpaired. In the paired design, two job applications of equal quality are sent to each employer, measuring discrimination at the level of the employer. The main advantages of this design are that i) the design is more efficient – more cases can be collected using a smaller number of employers, and ii) that it estimates treatment effects more precisely (i.e., less heterogeneity among employers). The current study has employed the unpaired design, i.e., we have sent one application to each vacancy. This design comes with several advantages compared with the traditional paired design. Firstly, it minimizes the costs for the employers of handling non-authentic job applications. Secondly, it avoids potential spillover effects between job applications sent to the same job, where employer responses to the composition of the applicant pool may confound discrimination effects (Phillips 2018; Larsen 2020). Thirdly, the unpaired design more closely resembles the real-world situation for job applicants, as it is rare to find job applicants who are exactly matched on qualifications and other characteristics competing for the same job (Vuolo, Uggen and Lageson 2018).

Unlike the paired design, the unpaired design cannot identify individual employers who are engaging in discrimination, but it does yield unbiased estimates of discrimination at the aggregate level via the randomization of applicant characteristics, i.e., applicant characteristics become statistically independent of employer characteristics as the number of job applications sent to employers becomes large.

It should be noted that this design does not allow us to estimate a causal effect of the proportion of immigrants in a given occupation on employer discrimination, since this factor is

not manipulated, and such an effect may be spuriously driven by unobserved factors that produce the share of immigrants in occupations. We will however be able to state whether there is evidence of a demand side net contribution to ethnic occupational segregation, holding the qualifications of the job applicants constant, and to theorize about possible mechanisms.

The applications comprised a short CV and a personal letter (see Appendix 1 for an example). The CV included the non-authentic applicant's personal information, including contact information (name, postal address, e-mail address and telephone number), date of birth, educational background and previous work experience. The personal letter took the form of a short biography, introducing the applicant by name and age (set to 31 for all applicants), and providing a brief account of the applicant's educational background and current and previous jobs. We signaled applicant ethnic background by means of Swedish-sounding names and names typical for individuals with origins in the former Yugoslavia and the Greater Middle East, i.e., Slavic and Arabic names. These ethnic backgrounds do not necessarily signal belonging to a specific ethnic group, but in the Swedish context they do signal an ancestry in two geographical regions from which many immigrants in Sweden have migrated. Since the former Yugoslavia and Middle Eastern countries account for two of the largest immigrant categories in Sweden, Slavic and Arabic names are both well-known and unlikely to be misinterpreted by employers. They also represent two immigrant categories that vary in terms of both their cultural distance from Sweden (e.g., Inglehart and Baker 2000) and how well their members have been incorporated into the Swedish labor market (Gustafsson and Zheng 2006; Peterson 2013). In order to identify common first and last names for the different ethnic categories, we consulted Statistics Sweden's name statistics. We signaled gender by using well-known, unambiguous female and male names (see the names used in the applications in Table 1). In addition to ethnicity and gender, other characteristics were signalled (e.g., parenthood, personality) but since these were randomized across job applications, they are uncorrelated with the treatments. The proportion of foreign-sounding names employed varied between the two data collections. In the 2013-2015 data collection, 80 percent had Swedish-sounding names, since the primary focus was directed at gender discrimination. In the 2017-2019 data collection, where the primary focus was directed at ethnic discrimination, 40-50 percent had Swedish-sounding names.

Table 1 Applicant names by ethnicity and gender

Male	Female
Swedish	Swedish
Gustaf Andersson	Malin Andersson
Daniel Eriksson	Sara Eriksson
Erik Johansson	Elin Nilsson
Johan Karlsson	Anna Karlsson
Slavic	
Aleksandar Jovanovic	Jelena Jovanovic
Alexandar Nikolic	Jelena Nikolic
Bojan Petrovic	Jovana Petrovic
Dragan Popovic	Milena Popovic
Arabic	
Mohammed Abdullah	Amina Abdullah
Omar Ali	Zahra Ali
Hassan Ahmed	Fatima Ahmed
Hassan Said	Samira Said

We made it clear that the applicants, regardless of the application's ethnic signals, had acquired secondary/tertiary level human capital in Sweden by including a Swedish high school diploma in the applicants' CVs, and a relevant Swedish university degree when applying for high-skill jobs. These are signals to the employers that these foreign-named applicants are either second generation Swedes or that they moved to Sweden during childhood. The study's results are therefore valid for this category of foreign-named applicants, but not for more recently arrived immigrants with foreign qualifications.²

We created e-mail addresses and registered telephone numbers connected to a voicemail for the non-authentic job applicants. When the phone number was called, a message was automatically played, informing the callers of the name of the person reached and requesting them to leave a message. All interview offers from employers were promptly and politely declined via e-mail.

We applied for vacant jobs at the Swedish Employment Agency's (Arbetsförmedlingen) website (Platsbanken), the primary site for job search/job announcements in Sweden. We applied primarily for jobs for which it was possible to send the job application by e-mail, but in cases where it was possible to upload the personal letter and CV to the organization's job application sites without providing a Swedish personal identification number, we did so. Because identification numbers are often required for public sector jobs, public employers are underrepresented in the data. This does not, however, mean that typical public sector occupations

² Carlsson (2010) found no difference in levels of discrimination against first- and second-generation Swedes. Testing discrimination against equally qualified immigrants with foreign qualifications would however pose other types of challenges to external validity, since such job applicants with Slavic and Arabic names differ from natives with regard to qualification levels and language skills.

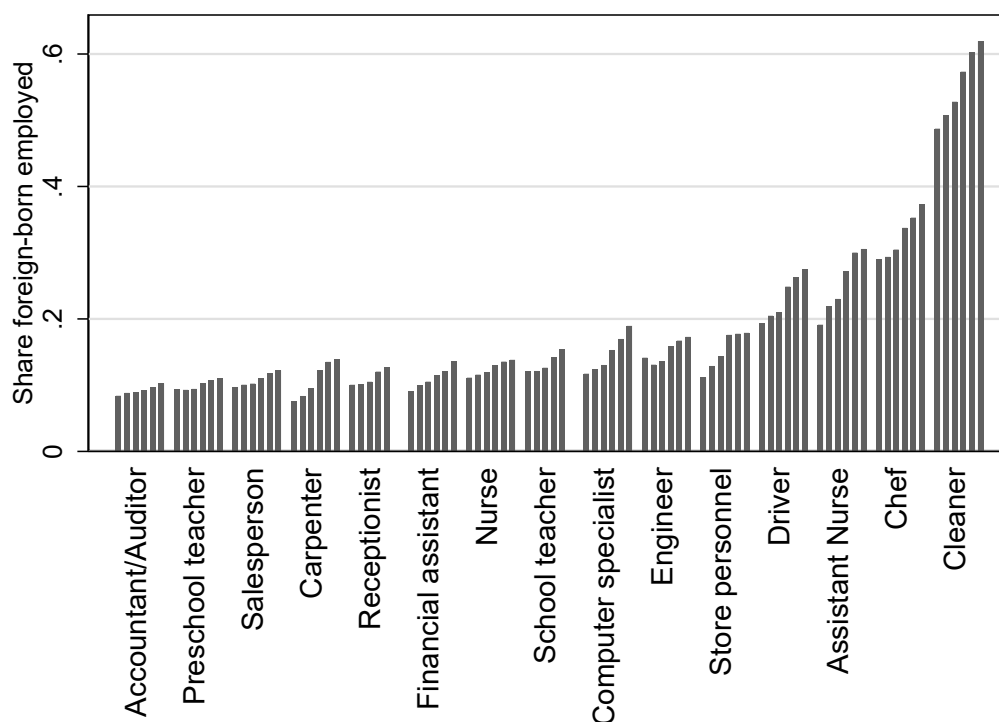
such as health care or education are underrepresented, since a large number of contracted private employers service the public sector in Sweden.

We tested for the presence of discrimination in 15 occupations. Our choice of occupations was determined by an ambition to achieve a sample of occupations that vary in terms of skill level (see Table 2 for a list of the occupations) and with regard to both gender and immigrant composition. They are also reasonably common occupations; seven of them are counted among the 10 largest occupational categories in the Swedish labor market. Three of the targeted occupations, cleaner, chef, and assistant nurse, qualify as immigrant niches on the basis of Model's (1993) definition (of ethnic niches), since immigrants are represented in these occupations at a level that is least 50 percent higher than the immigrant share of the labor force.

Dependent variable

We defined discrimination as any significant mean difference in callbacks between Swedish-named and foreign-named applicants, where a callback is a non-automatic and non-negative response by the employer (via e-mail, text, or telephone). The callbacks include invitations to job interviews/meetings (52 percent), invitations to get in touch (26 percent), requests for more information (14 percent), and calls without any message being recorded (8 percent). All remaining alternatives, i.e., explicitly negative callbacks and nonresponses, were treated as 'no callbacks'.

Figure 1 Year-on-year share of foreign-born employed in the occupations in which jobs were applied for in 2013, 2014, 2015, 2017, 2018, and 2019 (source: Statistics Sweden)



Moderating variable: Share of immigrants in the occupation

To measure occupational immigrant composition, we made use of annual data from Statistics Sweden's occupation register, which covers the entire Swedish labor market during the period under study. We defined the share of immigrants in an occupation as the proportion of individuals employed in the occupation who had not been born in Sweden.³ In Figure 1 we report the share of foreign-born employees in the target occupations for each year of data collection.

Job qualifications

The level of qualifications required for a job could moderate the effect of any potential discrimination in several ways, and there is a correlation between qualification level and the share of immigrants at the level of occupations. As has been mentioned, studies have found that over-education – i.e., the degree to which workers have an education that exceeds that required for the job – is more prevalent among foreign-born than among Swedish-born individuals (e.g., Andersson Joona, Datta Gupta and Wadensjö 2014; Karlsson and Tibajev 2014). One possible mechanism underlying this finding is that the disadvantage experienced by foreign-born individuals may be more pronounced when they apply for skilled jobs (cf. Bursell, Bygren & Gähler 2021), which would by extension increase the level of ethnic segregation by channeling immigrants into low-skilled and more immigrant-dense occupations. For this reason, we conduct a sensitivity analysis, estimating our models separately by qualification level. Jobs that require post-secondary education (i.e., accountant/auditor, nurse, schoolteacher, preschool teacher, computer specialist, and engineer) were classified as 'high-qualified' whereas jobs that do not as a rule require post-secondary education (financial assistant, carpenter, chef, assistant nurse, receptionist, salesperson, driver, and cleaner) were classified as 'low-qualified'.

Table 2 presents descriptive statistics by Swedish/foreign background and the gender of the job applicant. As expected, the callback rate for foreign-named job applicants is markedly lower than for Swedish-named applicants, 25.5 percent for foreign-named females and 21.2 percent for foreign-named males versus approximately 35 percent for Swedish-named male and female applicants. Foreign-sounding and native names may be considered to be balanced across occupations, with no statistically significant differences between groups at the 5-percent level and two statistically significant differences at the 10-percent level. There is imbalance across years because the relative size of the applicant groups was changed between data collections, but this is the only factor that correlates significantly with the 'foreignness' signal in the applications,

³ We used the following ssyk-96 codes: 2321, 2330, 2411, 3310, 3433, 4211, 4222, 5122, 5132, 5222, 8323, 9122, 5221, 2131, 3121, 3239, 7123, 8321, 2144, 2145, 2149 (Statistics Sweden 2012: pp. 129 ff.)

suggesting that our randomization was successful (see balance test reported in Table 2:1 in Appendix 2).

Table 2 Descriptives, by type of job applicant

	Female foreign applicant name	Male foreign applicant name	Female Swedish applicant name	Male Swedish applicant name
Number of job applications sent	1476	1496	2050	2029
Mean positive callback	.255	.212	.353	.349
Mean share of immigrants in occupation	.205	.204	.197	.196
Occupations, column shares				
Store personnel	.075	.079	.073	.079
Engineer	.027	.037	.042	.027
Computer specialist	.060	.074	.071	.069
Financial assistant	.062	.060	.067	.075
Driver	.117	.100	.069	.073
Preschool teacher	.070	.061	.071	.079
School teacher	.043	.045	.051	.053
Chef	.121	.112	.125	.120
Cleaner	.052	.059	.066	.067
Receptionist	.023	.027	.040	.034
Accountant/Auditor	.070	.069	.065	.072
Salesperson	.131	.140	.121	.128
Nurse	.054	.057	.047	.041
Assistant Nurse	.058	.048	.065	.062
Carpenter	.035	.031	.025	.021
Year of application, column shares				
2013	.024	.013	.060	.062
2014	.096	.092	.269	.258
2015	.028	.036	.092	.100
2017	.167	.151	.117	.122
2018	.488	.517	.361	.354
2019	.197	.190	.100	.105

For transparency, we report estimated effects from clean models without any covariates other than ‘foreignness’, occupational immigrant composition, and a multiplicative interaction term between the two. However, in the section reporting our robustness analyses, we also present extensions and variants of this simple model, thus providing an indication of the scope conditions of the reported effects.

6 Findings

In Table 3, we report the estimates from linear probability models regressing callbacks on our independent variables. Given our research question, the most interesting parameters in this model are the main effects of foreign name and the share of immigrants, and most importantly the interaction effect between these two. Our expectation is to find a positive interaction effect, which would imply that foreign job applicants are preferred – relatively speaking – for jobs in which many immigrants are already employed. This is indeed what we find. In model 1, we see a positive and statistically significant interaction effect. This effect should be interpreted together with the main effects, and in Figure 2, the left panel presents the estimated probabilities and 95-percent confidence intervals for receiving a callback for foreign-named and Swedish-named applicants, by the share of immigrants in the occupation in question, while the right panel presents the estimated between-group probability differences (foreign-name penalty) and 95 percent confidence intervals, again by the share of immigrants in the occupation.

Table 3 Estimates from linear probability models regressing receipt of a callback on independent variables (robust standard errors)

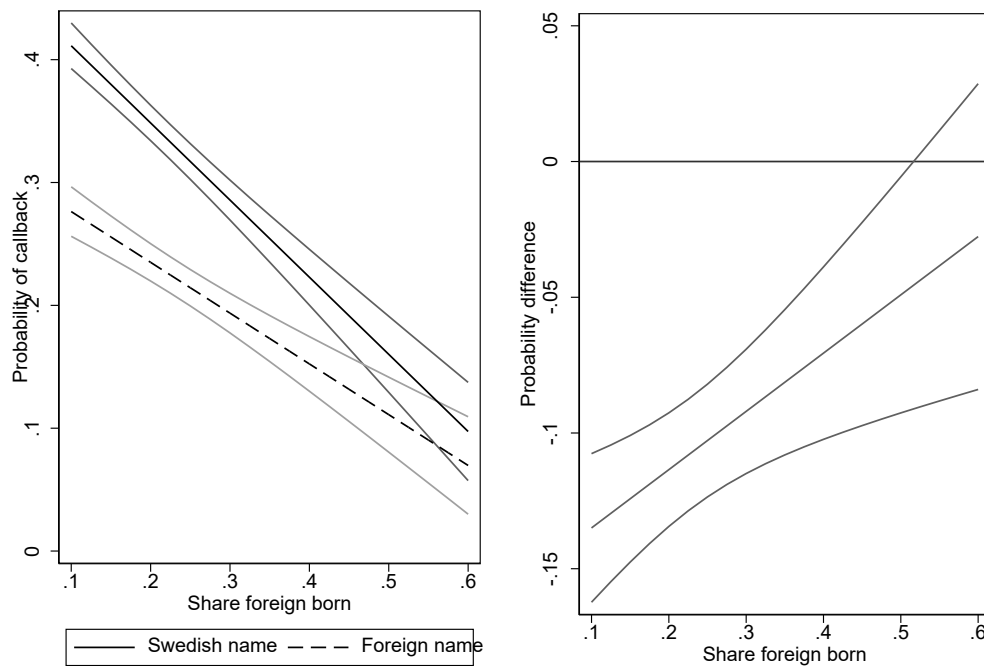
	All (1)	Men (2)	Women (3)
Foreign name	-.156** (.019)	-.200** (.026)	-.111** (.029)
Share immigrants	-.628** (.050)	-.722** (.063)	-.533** (.078)
Foreign name by share immigrants	.215** (.072)	.340** (.092)	.085 (.110)
Constant	.474** (.013)	.490** (.018)	.458** (.019)
Observations	7,051	3,525	3,526
Adjusted R-squared	.038	.050	.028

** p<0.01, * p<0.05, † p<0.1 that coefficient is equal to zero (t-test, two-tailed).

As the share of immigrants increases, the foreign-name penalty approaches zero, and becomes insignificant if the share of immigrants in the occupation is in excess of 50 percent.

The analyses by gender reported in columns 2-3 in Table 3 indicate different patterns for male and female job applicants. The converging patterns reported in Model 1 in large part appear to be generated by employer responses to male applicants. In Figure 3 and Figure 4, we report the estimated effects for men and women separately. In the right panel of Figure 3, we illustrate the ethnic penalty for foreign-named men compared with Swedish-named male applicants. The penalty decreases sharply as the share of immigrants in the occupation increases, and is close to zero in the most immigrant-dense occupations. In the left panel, we see that this pattern is driven by two movements; a dramatic drop in callbacks for Swedish-named men and a more modest drop in callbacks for foreign-named men as the share of immigrants in the occupation increases.

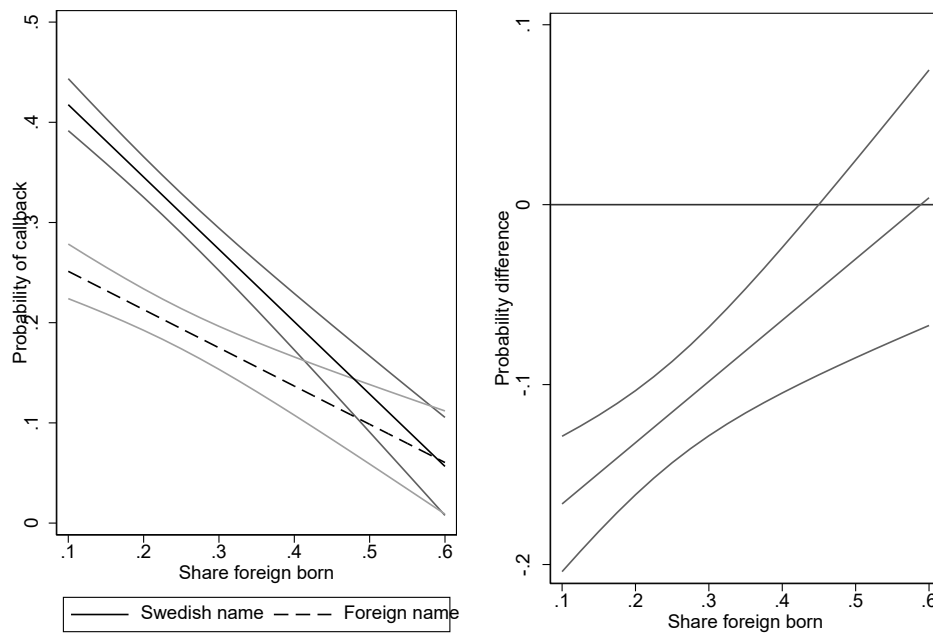
Figure 2 Estimated probabilities and 95 percent confidence intervals for receiving a callback, by ‘foreignness’ of the job applicant and the share of immigrants in the occupation. Estimates and confidence intervals are based on Model 1, Table 3.



For female applicants, the pattern in Figure 4 is not at all as clearly structured by the share of immigrants, and we do not observe any major decrease in the foreign-name penalty as we move to immigrant-dense occupations, as illustrated in the right panel. In the left panel, we see a weak tendency towards a relative increase in call-backs for foreign-named women as the share of immigrants in the occupation increases, although this increase is not as dramatic and has a higher starting point compared to that found for foreign-named men. The reason for the absence of an

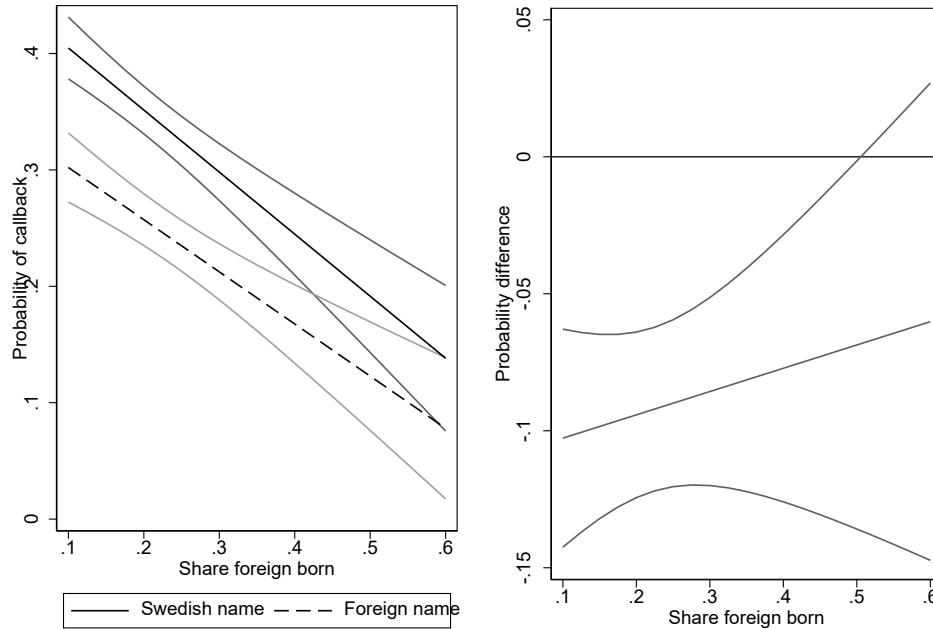
interaction effect for women is simply that for women, callbacks decrease as the share of immigrants in the occupation increases, regardless of whether an applicant is ‘native’ or ‘foreign’.⁴

Figure 3 Estimated probabilities and 95 percent confidence intervals for receiving a callback, by ‘foreignness’ of the job applicant and the share of immigrants in the occupation. Only job applicants with male names. Estimates and confidence intervals are based on Model 2, Table 3.



⁴ See Figure 2:1, Figure 2:2 and Figure 2:3 in Appendix 2 for the underlying foreign-name-penalties across occupations, sorted by the share of immigrants.

Figure 4 Estimated probabilities and 95 percent confidence intervals for receiving a callback, by ‘foreignness’ of the job applicant and the share of immigrants in the occupation. Only job applicants with female names. Estimates and confidence intervals are based on Model 3, Table 3.



Robustness checks

We have conducted a number of robustness checks to test the stability of our results. First, since there is a correlation in the data between the share of ‘foreign’ job applicants and time (see Table A2:1), we re-estimated the models with time dummies included. The estimated effects were close to identical when we included this control in the models.

Second, our definition of a callback includes all kinds of nonnegative employer responses, including both calls where no message was recorded and requests for more information, as well as direct job offers. As a robustness check, we redefined callbacks to include only ‘higher quality’ invitations to interviews or meetings, or direct job offers. The results from this analysis were very similar to those from our analyses based on the more inclusive callback definition.

Third, to explore whether the observed patterns could be explained by the ‘ethnicity’ of the people directly involved in responding to job applicants, we made use of the names of the contact persons in the job advertisements for a subset ($n = 2,454$) of the jobs we applied for, and coded these to obtain an estimated probability that the name had a ‘native’ origin (names common for people originating in Western Europe including the Nordic countries), and we subsequently controlled for this factor in the estimation of effects.⁵ This factor was nonsignificantly associated

⁵ A neural network model was trained to classify names into 9 cultural categories, with a uniform frequency for the classes within the training data. A prior distribution for the cultural categories was then used to re-balance the predicted probabilities for each class according to Bayes' theorem.

with callbacks, irrespective of the name of the job applicant, and did not change main results reported above, implying that both ‘native’-sounding and ‘foreign’-sounding contact persons discriminate in a similar way.

Fourth, we tested whether Arabic named job applicants were subject to more discrimination than Slavic named job applicants, i.e., whether the results are driven by one of these two foreign backgrounds. Overall, the disadvantage associated with having an Arabic name is 1.5 percentage points greater than that associated with a Slavic name, but this difference is statistically nonsignificant, and patterns of discrimination across occupations with different proportions of immigrant employees were very similar for the two groups.

Fifth, we re-estimated the models reported in Table 3 using a nonlinear probability regression model. The pattern of signs, size and statistical significance of the estimated coefficients were very similar to those reported in the main analysis.

Sixth, since the data are clustered at the occupational level, an argument can be made for clustering standard errors at this level (Abadie et al. 2017). Effects estimated using clustered standard errors are close to identical with those reported above, estimated with lower precision but still statistically significant.

Seventh, we estimated the regressions separately by qualification level. In low-qualified occupations, we saw the same pattern as that reported above, i.e., that ‘foreign’ men were (relatively) more welcome in immigrant-dense occupations. In high-qualified occupations, it was rather the ‘foreign’ women that were more welcome in the immigrant-dense occupations. It should however be noted here that the range of the share of immigrants is rather limited in the high-qualified occupations; it ranges from a minimum of 8 percent (accountants, 2013) to 19 percent (computer specialists, 2019) and none of these occupations may be considered immigrant dense. This analysis nonetheless indicates that selective employment of ‘foreign’ men in immigrant-dense jobs is a low-qualified sector phenomenon.

7 Conclusion

Our results broadly suggest that employers contribute to the reproduction of ethnic segregation by excluding foreign-named applicants from native occupational niches, and including them in immigrant occupational niches. In line with the literature indicating that discrimination is primarily targeted at minority men, we find that the results were driven by ‘foreign’ men being selectively included in immigrant-dense occupations, and selectively excluded from native-dense occupations. We did not find a similar pattern for women, primarily because for Swedish-named

women, callbacks did not decrease with the size of the share of immigrants in the occupation to the same extent as they did for Swedish-named men.

We interpret the observed pattern as one where employers in immigrant niches tend to be less discriminatory towards foreign-named male job applicants in certain repetitive, physically demanding, and poorly rewarded jobs. A speculation which has some bearing in the literature is that this is the case because job seekers of foreign background are perceived as on average having a traditional work ethic and as being ‘non-demanding’, whereas natives are dismissed as being too spoilt for these jobs (cf. Friberg and Midtboen 2019; Zamudio and Lichter 2008). Recall that the occupations that manifested the lowest levels of ethnic discrimination were cleaners and drivers. For jobs that require social/communication skills - e.g., teachers, salespersons – the majority group, or perhaps culturally similar immigrants, are instead preferred (see Friberg and Midtboen 2018; cf. Ndobu et al. 2018; Pager, Bonikowski, and Western 2009). Employers may also - explicitly or implicitly - perceive immigrants as being less ‘deserving’ of the relatively attractive positions on the labor market (cf. Wimmer 2013:33), while at the same time perceiving them as sufficiently ‘deserving’ to be employed in unattractive positions.

As has been mentioned, we did not see the same selective inclusion pattern for foreign-named female job applicants. We may explain this by drawing on research that has identified a greater heterogeneity in female labor force participation and career paths (e.g., Hakim 1998), resulting in differentiated stereotypes of female workers, which vary by labor market status (cf. Cuddy, Fiske and Glick 2004). Thus, native men, unlike native women, may run a higher risk of being dismissed as negatively selected group when applying for low-status jobs such as those in immigrant niches. Natives have been found to be viewed with a certain suspicion due to a presumed negative selection associated with their deciding to apply for such ‘demeaning’ jobs (Zamudio and Lichter 2008), but our results would suggest that this only applies to native men.

A competing explanation for our results is that they are mediated by employer/recruiter ethnic background. Previous research has shown that employers of all backgrounds contribute to *workplace* segregation by recruiting employees with a similar national background to themselves (Giuliano et al. 2009; Åslund et al. 2014). To the extent that the share of immigrants is a good proxy for employer/recruiter background, our results could thus be driven by simple ethnic homophily, although a robustness check on a subset of our job applications did not suggest this to be the case insofar as both ‘native’-sounding and ‘foreign’-sounding contact persons contribute to the selective inclusion pattern reported.

As emphasized by Carbonaro and Schwarz (2018), almost all research design choices made in correspondence audits could potentially impact external validity. We have made efforts to achieve a sample that is representative of the Swedish labor market by including 15 large

occupations that vary on important dimensions such as skill level and demographic composition, but it is possible that a different selection of occupations would generate different results. Furthermore, this is an observational study in the sense that the share of immigrants in the occupation is not manipulated or even remotely exogenous, we can thus not rule out the possibility that the estimated effects have their source in unobserved heterogeneity at the occupational level. Only additional studies, with a different and preferably extended selection of occupations characterized by varying job characteristics and a varying demand for labor, can shed light on this question.

Another threat to external validity concerns the question of representativeness: to what extent do the fictitious job applicants in our study resemble real job applicants with Swedish, Slavic, and Arabic names? Carlsson (2010) has reported that Swedish employers do not appear to prefer second-generation over first-generation immigrants when qualifications are equal. However, if there are systematic differences in qualifications between real Swedish-named and foreign-named job applicants, the results identified here, where qualifications are equal, may be limited in scope. While immigrants in Sweden do not have lower average levels of education, the variance is greater within the foreign-born population (Tibajev 2022). Thus, our results should be seen as emanating from a measure of discrimination for equally qualified applicants, not as an actual measure of the employment chances of Swedish-named and foreign-named job applicants.

To conclude, we find that employer discrimination tends to contribute to the maintenance of ethnic segregation by selectively barring foreign-named applicants from native-dense occupations, but including foreign-named male applicants in immigrant-dense occupations. We view these results as important not only for the academic discussion on labor market integration and intersectionality. The literature has generated conflicting results with regard to gendered ethnic discrimination, albeit leaning somewhat toward the presence of a greater ethnic penalty for men (Arai et al. 2016; Bursell 2014; Dahl and Krogh 2018; Erlandsson 2022). Our study contextualizes this tendency, in that the labor market exclusion of immigrant men seems particularly strong in the native niches of the labor market, but is much lower or even absent in the low-qualified, immigrant-dense niches of the labor market. In other words, employers' discriminatory hiring choices appear to be partly responsible for reproducing (male-dominated) immigrant niches in the labor market.

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Appendix

Appendix 1 Example of a non-authentic job application (nurse)

Name: [First name, Last name]
Birthdate: [YYYY-MM-DD]
Address: [Street name and postal code]
Phone: [Phone number]
E-mail: [E-mail address]

Work Experience

YYYY-to present	Nurse, Stockholm South General Hospital, Emergency Department
YYYY-YYYY	School nurse, Hässelby High School
YYYY-YYYY	Nurse, Danderyd Hospital, Rheumatology
YYYY-YYYY	Cashier, ICA

Education

YYYY-YYYY	Bachelor of Nursing, Karolinska Institutet
YYYY-YYYY	Health Care Programme, St. Göran Upper Secondary School

Language

Swedish (mother tongue) and English

Computer Skills

Office suite, Melior, Take Care

Name: [First name, Last name]
Birthdate: [YYYY-MM-DD]
Address: [Street name and postal code]
Phone: [Phone number]
E-mail: [E-mail address]

Application

My name is [First name, Last name] and I am 31 years old. I am very interested in the announced vacancy.

I am a registered nurse and have worked in healthcare since [YYYY]. I am really happy with my current job but I am now looking for new challenges and am therefore applying for the position.

As a person, I am flexible, responsible and find it easy to collaborate with others. After all these years as a nurse in emergency care, I am used to working at a fast pace and I am good at coping with multiple tasks simultaneously. I always perform my duties in a way that ensures patient safety. In my previous work, I have developed a strong ability to see and respect the patients' different, individual needs.

I live in Stockholm. As a person I am sociable, and in my leisure time I spend time with my friends. I like to exercise and enjoy cooking.

I look forward to meeting you in person. References are available upon request.

Sincerely,
[First name, Last name]

Appendix 2

Table 2:1 Test of randomization of ‘foreignness’ to job applications (linear probability regression model)

Woman	-0.004 (0.011)
Share immigrants	-0.682 (0.449)
Occupation (ref. store personnel)	
Engineer	0.036 (0.036)
Computer specialist	0.044 (0.030)
Financial assistant	-0.066† (0.036)
Driver	0.077 (0.049)
Preschool teacher	-0.020 (0.038)
School teacher	0.057† (0.033)
Chef	0.100 (0.081)
Cleaner	0.263 (0.182)
Receptionist	-0.028 (0.040)
Accountant/ Auditor	-0.000 (0.041)
Salesperson	-0.056 (0.036)
Nurse	0.036 (0.035)
Assistant Nurse	0.027 (0.058)
Carpenter	-0.019 (0.046)
Year (ref. 2013)	
year 2014	0.030 (0.025)
year 2015	0.028 (0.029)
year 2017	0.343** (0.032)
year 2018	0.365** (0.032)
year 2019	0.453** (0.037)
Constant	0.257** (0.066)
Observations	7,051
Adjusted R-squared	0.092

Robust standard errors in parentheses. ** p<0.01, * p<0.05, † p<0.1

Figure 2:1 Ethnic penalties by occupation, with occupations sorted by share of immigrants in the occupation (ascending order).

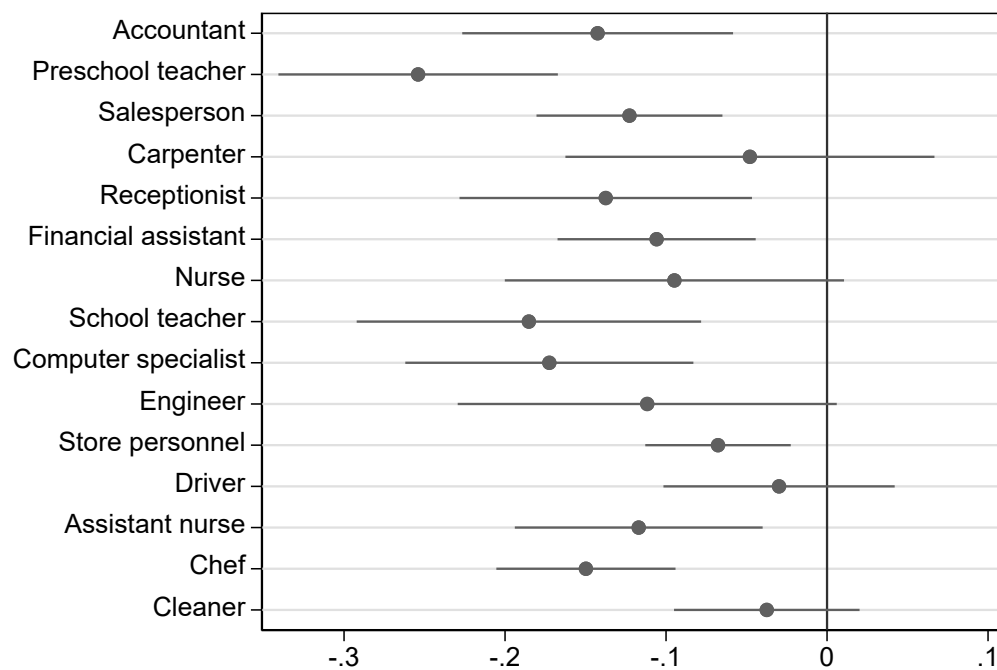


Figure 2:2 Ethnic penalties by occupation, with occupations sorted by share of immigrants in the occupation (ascending order). Men.

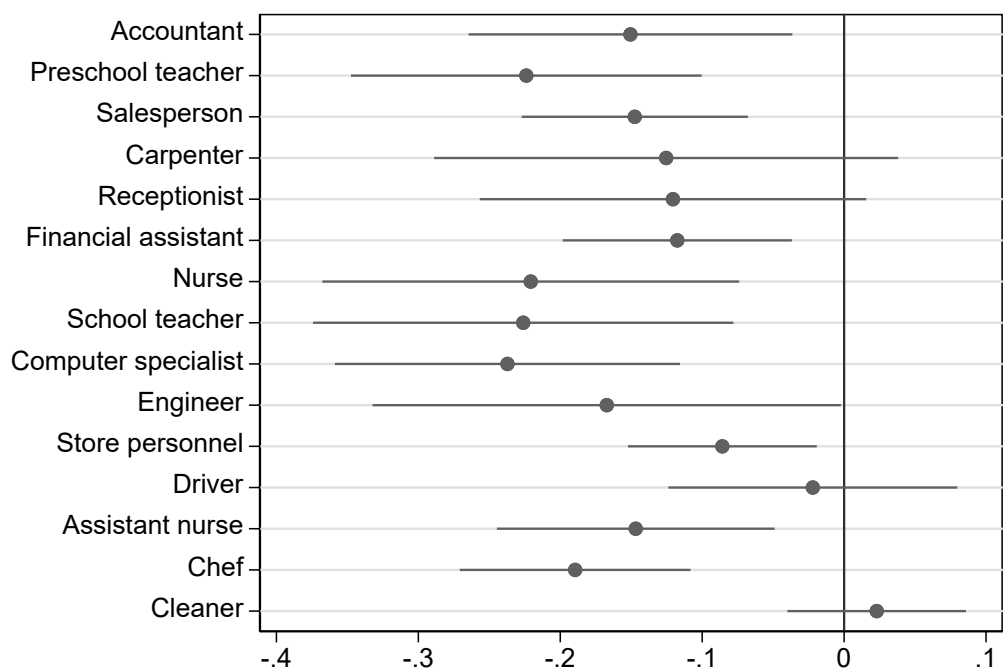


Figure 2:3 Ethnic penalties by occupation, with occupations sorted by share of immigrants in the occupation (ascending order). Women.

