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**IMPACTS OF QUOTA POLICY AND
EMPLOYER OBLIGATION TO ADAPT
WORKSTATIONS ON DISCRIMINATION
AGAINST PEOPLE WITH DISABILITIES:
LESSONS FROM AN EXPERIMENT**

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Impacts of quota policy and employer obligation to adapt workstations on discrimination against people with disabilities:

Lessons from an experiment

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Abstract

We measure discrimination encountered in access to employment by people with severe visual impairment and study how it is influenced by two public policies designed to facilitate the integration of disabled people into the workforce: the obligation on the employer to suitably adapt the workstation, and a quota policy intended to incentivize the hiring of people with disabilities. We use the correspondence test method in combination with a difference-in-differences strategy, to identify the effects of these different policies. We show that the visually impaired are subject to strong discrimination. The obligation on the employer to adapt the workstation of a disabled employee tends to reduce the chances of being invited to a job interview for disabled applicants. However, the quota policy that fines employers whose workforce does not comprise at least 6% of people with a recognized disability reduces discrimination and acts to promote the employment of people with disabilities.

JEL codes: C81, C93, J71

Keywords: discrimination, access to employment, disability, visual impairment, correspondence testing

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INTRODUCTION

The integration of people with disabilities into the labor market involves two dimensions: access to employment and the ability, once employed, to evolve adequately in their work environment. A usual way of facilitating access to employment is through quota policies. These policies consist of imposing a legally binding percentage of disabled employees on companies. However, people with disabilities have special needs that must be provided for to support their integration into employment. This is why, in most countries, companies are encouraged by the State to adapt their workstations to the needs of their disabled employees. In some countries, such as France, there is even an obligation on companies to adapt the workstation of employees recognized as disabled. Appropriate adaptations should allow people with disabilities to have a level of productivity similar to that of non-disabled employees. However, despite the potential increase in productivity, this type of policy can have the effect of limiting access to employment for people with disabilities, by increasing the cost to an employer of hiring a disabled person. Therefore, the two dimensions of labor market integration may, in some cases, operate in opposition to each other.

In France, any employee with a recognized disability is entitled to have his or her workstation suitably adapted. Accommodations may involve adapting the lighting in the workplace, installing special equipment, such as software for enlargement or screen reading, backlit keyboards with enlarged keys, Braille pads, boosterseats or articulated arms for screens. In parallel, a quota system applies: all companies with more than 20 employees are legally bound to employ a certain proportion of disabled workers (OETH) with an administratively recognized disability (RQTH). The “Obligation of Employment of Disabled Workers” (OETH), which was introduced by the French Disabled Workers Act of 10th July 1987, is designed to incentivize employers to hire more disabled workers. The law imposes financial penalties on firms that employ fewer than 6% of disabled workers. For firms that fall below this 6% threshold, hiring an employee with a recognized disability reduces their penalty by between €4,100 and €6,150, depending on the size

of the company.

The purpose of this study is to answer two questions: to what extent does the constraint of having to adapt the workstation act as a penalty limiting access to employment for people with disabilities? If a penalty of this type exists, can it be compensated for by an incentive to hire a disabled person in the form of a quota policy?

We use the correspondence test method in combination with a difference-in-differences strategy, to identify the effects of these different policies. The correspondence test method allows us to measure the difference in the probability of being invited for a job interview between a disabled and a non-disabled applicant that are otherwise similar. To this purpose, we sent 1,647 applications in response to 549 job openings in separate companies. The difference-in-differences strategy involves assessing the variation in discrimination experienced by the disabled applicant depending on the policies for which they are eligible. The analysis exploits both the exogenous variation of the disability criteria and the random inclusion of an administratively recognized disability (RQTH) and explores how these vary by the size of the company. The RQTH status means that the company, whatever its size, must adapt the workstation if it hires the candidate. For companies with more than 20 employees that do not respect the 6% quota, the hiring of this person will reduce the penalty by between €4,100 and €6,150. Therefore, in a first step, we estimate how the RQTH status affects the likelihood of being asked to interview in firms with less than 20 employees, where this disability status only requires the employer to adapt the workstation. Finally, we conduct a triple-differences analysis that eliminates unobserved differences between firms of different sizes as well as the RQTH status effects that are not related to the quota policy. This allows us to identify the effect of the quota policy on the employment of people with disabilities.

The disability criterion that we consider in this paper is a visual disability corresponding to a

severe impairment⁵, a signal of less intensity than that of absolute blindness. Severe impairment is the modal situation among people affected by visual impairment. In France, almost 1.7 million people suffer from a visual impairment, including 207,000 blind or profoundly visually impaired (a lack of vision or a limited ability to distinguish a figure); 932,000 severely to moderately visually impaired, with a relatively important visual disability (in distance vision, they cannot distinguish a face at 4 meters and in near vision, reading is impossible); and just over 560,000 mildly visually impaired, with no severe visual disability declared for distance or near vision (Pagès 2017).⁶

The main originality of this paper is to provide evidence of the effects of quota systems and policies requiring employers to adapt the workstations of disabled employees on employment rates by combining a controlled experiment in the form of a correspondence test and a differences-in-differences method. The few studies that have sought to assess the effects of such policies have used variations in institutional design over time. As Jolls and Prescott (2004) point out, one issue with evaluations examining the change in outcomes after a new policy is implemented in a country is that concurrent unmeasured evolutions other than the passage of the new law — including shifts in the economic, social, and technological environment—may be the actual causes of the observed changes in outcomes. This is especially true given the difficulty of obtaining a control group that can mimic the outcomes of people with disabilities. These difficulties are illustrated by the relatively mixed results obtained by various studies on anti-discrimination law in the US (Stapleton and Burkhauser 2003). The pattern is similar with respect to the effect of quota policies.

⁵ The World Health Organization distinguishes five stages of visual impairment: absolute blindness corresponds to the absence of perception of light; near-total impairment, or severe blindness, is defined as visual acuity of less than 1/50 (or counting fingers at one meter or less) with retained perception of light, or a visual field of less than 5 degrees; profound visual impairment corresponds to a visual acuity of less than 1/20 (or counting fingers at less than 3 meters) and greater than 1/50 or a visual field of less than 10 degrees but greater than 5 degrees; severe visual impairment, which is the one used in this study, corresponds to a visual acuity of less than 1/10 and greater than or equal to 1/20; "moderate" visual impairment corresponds to a visual acuity of less than 3/10 and greater than or equal to 1/10 with a visual field of at least 20 degrees.

⁶ These figures correspond to survey declarations and do not necessarily correspond to the number of disabled people recognized as such by the administration.

Although some studies have found policies aimed at increasing access to employment for workers with disabilities through the implementation of quotas to have a small positive effect on employment rates (Agovino, Garofalo, and Marchesano 2018; Lalive, Wuellrich, and Zweimüller 2013), these policies have generally been found to have little effect (Wagner, Schnabel, and Kölling 2001) or even have a negative effect on employment (Barnay et al. 2019).

We also contribute to the relatively scarce literature on discrimination by measuring the level of discrimination experienced by an applicant with a visual impairment and we provide some insights into the mechanisms behind this phenomenon.

In the next section, we present the results obtained by previous studies in the field. In Section 3, we provide some background on discrimination mechanisms and on the French institutional system designed to facilitate the integration of people with disabilities into the labor market. We present, in Section 4, the experimental and data collection protocol. In section 5, results of the effects of disability on employer responses are presented. Results from the difference-in-differences estimates are presented in Section 6 and mechanisms of discrimination are explored in Section 7. Finally, the last section contains our conclusions.

2. LITERATURE REVIEW

The particular difficulties that people with disabilities face in entering the labor market are relatively well documented. A large number of studies have provided non-experimental evidence of a lower probability of employment due to the presence of a disability (Dano 2005; Barnay et al. 2015; Lechner and Vazquez-Alvarez 2011; Jones 2011). There is also a growing number of studies that have shown experimentally that discrimination is an important element of the explanation for this lack of access to employment. The experimental method most frequently used is the correspondence test method, which has gradually been accepted as the reference technique for the analysis of discrimination, as evidenced by the literature reviews and meta-analyses published in the 2010s (Rooth 2014; Zschirnt and Ruedin 2016; Bertrand and Duflo 2016; Quillian et al. 2017; Baert 2018;

Neumark 2018). This method was applied in the United States by Ameri et al. (2018), who showed that candidates with a motor or mental disability had a 26% lower chance of obtaining a job than candidates without a disability. Bellemare et al. (2018) showed that candidates with physical disabilities had a 48% lower chance of being hired in the private sector in Quebec City and Montreal. In Belgium, Baert (2016) showed that the mention of an extreme visual disability, corresponding to complete blindness, reduces the chance of obtaining a positive response to an application by 10.2 percentage points. One of the first times that the correspondence testing method was used to measure employment discrimination against people with disabilities was in France, in relation to motor disability (Ravaud, Madiot, and Ville 1992). Also in France, three recent studies have confirmed the existence of hiring penalties for people with disabilities such as motor disability and hearing impairment (Mbaye 2018; Mahmoudi 2021; L'Horty et al. 2022).

Experimental studies have the advantage of credibly identifying a particular discrimination penalty linked to the disability. However, contrary to non-experimental methods, this measure corresponds to one or a small number of disability criteria in a relatively localized field. It is therefore necessary to obtain a variety of measures in order to get a more general picture of the situation. In this respect, our study examines a particular disability criterion, one of visual impairment. It is one of the most frequently occurring disabilities, affecting nearly 3% of the French population.⁷ Like all people with disabilities, the visually impaired have great difficulty accessing employment, and their unemployment rate is twice as high as the national average. With regard to visual impairment, discrimination tests carried out so far have mainly focused on access to housing (Heylen and Van den Broeck 2016; Verhaeghe, Van der Bracht, and Van de Putte 2016; Fumarco 2017; Flage 2019). In the area of access to employment, the only study on visual impairment is that of Baert (2016) which compares the effects of blindness, deafness and

⁷ Figures taken from DREES Etudes et Résultats, n°416 - 2005 (<https://drees.solidarites-sante.gouv.fr/publications/etudes-et-resultats/les-personnes-ayant-un-handicap-visuel-les-apports-de-lenquete>)

autism in the Belgian labor market. We also explore the different mechanisms that can explain the phenomenon of discrimination toward disabled individuals. Finally, by adding a third applicant, a person without disability who is of North African origin, we are able to evaluate the relative importance of discrimination against the disabled applicant versus ethnic discrimination.⁸ This also allows us to verify whether the level of ethnic discrimination has changed due to the Covid crisis, and therefore, if our estimates are likely to be affected by the particular labor market situation by comparing this measure to previous measures.

However, our contribution mainly relates to the literature evaluating public policies designed to facilitate the integration of people with disabilities into the labor market. In addition to quota policies for which results are mixed (Agovino, Garofalo, and Marchesano 2018; Lalive, Wuellrich, and Zweimüller 2013; Wagner, Schnabel, and Kölling 2001; Barnay et al. 2019) other types of policies such as anti-discrimination law in the US in the form of non-discrimination in hiring, equal pay legislation and an obligation to adapt the employee's workstation to his or her needs have also been assessed. These non-experimental (Acemoglu and Angrist 2001; DeLeire 2000) and quasi-experimental (Beegle and Stock 2003) evaluations have generally found that these employment laws tend to have a rather negative effect on employment due to the increased costs to employers of hiring a person with a disability. Kruse and Schur (2003) find that these laws have varying effects depending on how disability is defined. However, these anti-discrimination laws tend to have different components and it is therefore difficult to identify which particular policy is causing the effects. Jolls and Prescott (2004), who attempted to disentangle the different mechanisms, provide evidence that the negative effect on employment is attributable to the requirement for workstation accommodation. Policies that incentivize employers to hire a person with a disability in the form of a tax deduction have been found to be effective (Vall Castello 2012). With respect to this literature, we dissociate the effect of a quota policy from that of a requirement for workstation accommodation

⁸ The comparison with an applicant of foreign origin is also done by L'Horty et al. (2022).

by combining experimental and differences-in-differences methods.

This article also contributes more generally to the literature on policies designed to reduce employment discrimination for different discrimination criteria such as ethnic discrimination and residential discrimination (Chareyron et al. 2021; Behaghel, Crépon, and Le Barbanchon 2015; Agan and Starr 2017).

3. BACKGROUND

Disability discrimination

Traditionally, two economic explanations have been given for discrimination. The first one, called taste-based discrimination and formalized by Becker (1957), is the presence of a distaste for employing disabled individuals in the utility function of the employer. In this case, the employer may agree to hire a less productive employer and consequently accept a reduction in profit to avoid employing a disabled person. The second explanation pertains to the concept of statistical discrimination formulated by Arrow (1971). In this case, facing imperfect information about the candidates, employers assume that the unobservable characteristics of disabled applicants are on average less advantageous than those of the reference applicant. To maximize profit, the recruiter will, among applicants with the same observable characteristics, favor the one without a handicap. More recently, another stream of explanation coming from neuroscientific studies has emerged. These studies have shown that different regions of the brain are activated in conscious versus unconscious processing, suggesting that unconscious processes are distinct mental activities. In consequence, recruiters may have unconscious biases even though they may eventually try to correct their biases consciously. Although not orthogonal to Becker's point, this explanation highlights the importance of the consideration applied to the selection process and the fact that, for example, discrimination may be higher in the case of heavy cognitive loads or inattentiveness to the task (Bertrand and Duflo 2016).

Institutional context

Two main programs in France aim to facilitate the integration of disabled people into the labor market: the obligation on the employer to adapt the workstation of a person with a disability, and the financial incentive for employers to hire disabled workers in the form of quotas.

The obligation of reasonable accommodation requires employers to take appropriate measures to enable disabled workers to have access to facilities in their job that allow them to perform it and to progress in it, or to receive relevant training, unless such measures impose a disproportionate burden on the employer.⁹ The definition of the disproportionate burden that exempts employers from the obligation appears somewhat discretionary but it takes into account the financial and other costs involved, the size and financial resources of the organization, and the possibility of obtaining public funding or other assistance. Accommodation may involve work equipment but also to the workplace or work tasks and schedule. Although workers with disabilities overall more often request work schedule modifications, workers with visual impairments most often request equipment modifications, such as the computer equipment of information technology (Schur et al. 2014). Apart from particular exemptions, this obligation applies to all companies regardless of their size. On the employee side, any worker administratively recognized as disabled is eligible for workstation adaptation. There are various ways a person may be administratively recognized as being disabled, one of which is recognition of the condition of disabled worker (RQTH) by the Commission for the Rights and Autonomy of Disabled Persons (CDAPH).¹⁰ An employer may be eligible for a punctual allowance, of between €5,637.50 and €11,223.75, to finance the adaptation of the workstation when a disabled worker is hired. This allowance is not automatic and must be

⁹ Directive of November 27, 2000 of the European Council. (European Council Directive 2000/78)

¹⁰ Other administrative recognitions are for: victims of accidents at work or occupational diseases with a permanent disability of at least 10% and who receive a pension; holders of a disability pension whose disability reduces their capacity to work by at least two-thirds; beneficiaries of military disability pensions and victims of war; volunteer firemen receiving a disability allowance or pension; holders of a disability card and holders of the disabled adults' allowance (AAH). Article L323-3 of the Labor Code.

requested from the Association for the Management of Funds for the Professional Insertion of Disabled People (Agefiph). The application must demonstrate the relevance of the incurred costs. In addition, the employer must have already fulfilled the obligation to adapt the workstation before claiming the allowance. If the accommodations are not made, without the employer being able to provide any justification, the employee may refer the matter to the Labor inspection and the Labor Courts.

The quota incentive to employ a disabled person, on the other hand, only concerns companies with more than 20 employees. The companies under the obligation to employ disabled workers must justify annually that they have fulfilled their employment obligation by declaring the number of jobs occupied by a disabled worker through a specific declaration: the DOETH. For those who employ fewer than 6% of administratively recognized disabled people, the penalty is between €4,100 and €6,150 per missing employee per year, depending on the size of the organization. Administrative recognition is of the same nature as the one that applies to the obligation to adapt the workstation and can be obtained in different ways such as through the RQTH recognition. Companies that have not complied with their OETH for a period of more than 3 years are subject to an additional fine of €15,225, regardless of the size of their workforce.

As indicated by Beegle and Stock (2003) the obligation to adapt the workstation makes it more costly to employ disabled workers. The disabled worker must not only be paid his wage, but the firm incurs a potentially high cost of accommodation that would not have to be done in the absence of legislation, resulting in a decrease in the relative demand for disabled workers.¹¹ This is particularly true for visual impairment, which may require a relatively onerous adaptation of the workstation compared to, for example, adaptation for a hearing impairment. In general, a positive supply-side effect could offset some of this decrease in demand if workstation accommodations

¹¹ Part of the costs may be covered by the allowance for hiring disabled workers, but the allowance cannot exceed the costs.

induce an increase in the labor supply of disabled workers. However, our identification, because it is based on fictitious applicants, isolates the demand-side effects on employment which are expected to be negative. On the other hand, the quota policy (OETH) is expected to increase employment. This is because it provides a subsidy for hiring disabled workers, since not hiring enough disabled workers will result in a financial penalty. However, the incentive effect may be limited for companies that have already met the 6% quota since there is no penalty to reduce when they hire a person recognized as disabled. Nevertheless, on average in 2018, the 6% quota was far from being reached since the proportion of disabled workers in the workforce was on average 3.5% in the 99,700 establishments subject to the OETH.¹²

4. EXPERIMENTAL PROTOCOL

Our experiment consisted of submitting a large number of similar applications that varied only in the feature whose effect on access to employment we wanted to examine. These applications were constructed from scratch and sent in response to a sample of job vacancies available between June and October 2020 in two occupations. The experiment consisted of submitting three types of fictitious applications in response to the same job openings: the first was by a reference candidate, the second was a candidate with a North African surname to indicate his or her ethnic origin, and the third was a candidate indicating a severe visual impairment.

Organization of the job interview access test

In a correspondence test, candidates are not asked to attend physical interviews. There are two reasons for this approach. First, interviews introduce biases linked to a subjective assessment by recruiters of the physical appearance, behavior or personality of the candidate. This inevitable bias is unobservable by researchers and, therefore cannot be controlled for, producing a biased

¹² Figures from DARES Résultats n°38 - 2020 (<https://dares.travail-emploi.gouv.fr/publications/l-obligation-d-emploi-des-travailleurs-handicapes-en-2018>).

measurement of hiring discrimination. Given that organizing interviews represents a cost for the recruiter, we consider that the recruiter will only invite candidates who actually have a chance of getting the job. Thus, we assume that any discriminatory behavior on the part of the employer may be detected early in the process of selection for interview among the written applications. Written applications have no photographs. Secondly, the data collection procedure is streamlined, so that in a given period, around five months in this case, we are able to build up a larger sample size (more than 550 job openings tested).

The absence of discrimination at the stage of access to an interview is not proof of an absence of discrimination in the rest of the hiring process. It is possible that the candidate may be discriminated against later in the process and our protocol does not allow us to account for this. However, finding discrimination in access to the interview highlights certain discriminatory practices in the recruitment process that we are able to identify.

Choice of two occupations with a high demand for labor and low supply in three labor pools

The correspondence test methodology, which is cumbersome to implement, does not allow for an exhaustive examination of all occupations. We selected occupations for which labor demand is high and supply is low, despite the economic context that has deteriorated due to the health crisis. We deliberately chose occupations where the number of job openings are important. Occupations with a large number of jobseekers reduces the probability of being detected, as large numbers of CVs are being received at the same time. Choosing an occupation where labor demand is high relative to supply also limits the number of rejections by employers, regardless of discrimination. This methodological precaution is particularly useful in a context of economic crisis. Nevertheless, the high success rates of job applicants in an occupation with a high demand for labor and low supply have a disadvantage from the point of view of detection of discrimination: as access to employment is less selective, it is more difficult to observe discrimination in hiring for this type of occupation. We are therefore deliberately placing ourselves in a context where

discrimination in hiring should be reduced.

On this basis, we chose to test the occupations of secretary and IT developer, in three employment areas in and around the three largest cities in France (Paris, Lyon, Marseille): the Ile-de-France region, the Rhône *département*¹³ and the Bouches du Rhône *département*.

CVs that are perfectly similar, credible and expertly appraised

For each of the two occupations tested, the applications sent in response to the same job openings were perfectly similar in terms of professional and individual characteristics, other than those being tested for their effect on access to employment (ethnic origin or mention of a disability). In particular, these applications were comparable in terms of qualifications, career paths and previous experience. They were also credible for the targeted occupations, having been assessed and validated by a professional in the industry to ensure that they were similar, realistic and relevant – i.e, a different professional certified, for each profession (secretary and developer), that the different CVs used are conform to the standards of the profession and are similar enough to each other to indicate the same level of productivity.¹⁴

Since these applications were sent in response to the same job openings, they had to include elements of differentiation. These differences were in the presentation of CVs – type of font, font size, layout, etc. – which nevertheless remained standard. Candidates showed experience gained in real organizations that were different but comparable (in terms of activity, size). They had studied and started their career outside the Paris area, and they worked and lived in the same employment area as the job opening for which they were applying. Candidates' hobbies were also different, without being overly original or personal (sports, movies, reading, music, etc.). Brief

¹³ In France, a *département* is a geographical and administrative unit more or less equivalent to a county. There are 101 of them with an average population of about 660,000 inhabitants in each.

¹⁴ Another advantage of limiting our scope to two occupations is that it was easier to adapt the CVs to occupational standards. There may, indeed, be differences in CV standards between occupations.

covering letters accompanying the CV were also worded differently, but without singularity. A postal address in Paris, Lyon and Marseille, a mobile phone number and an e-mail address were mentioned for each candidate.

Distinctive individual characteristics of the three fictitious candidates

For each of the two occupations tested (secretary and IT developer), three applications (CV and covering letter) for perfectly similar job applicants were constructed from scratch. The candidates differed only in respect of their reference to origin or a severe visual disability. These three candidates had the following distinguishing characteristics. The first fictitious candidate was of the modal sex in the occupation tested, and had a French-sounding first name and surname (reference candidate). The second candidate was distinguished from the reference candidate by the North African consonance of his or her first name and surname¹⁵, and the third fictitious candidate was differentiated by mention of a severe visual handicap in his or her cover letter.

The modal sex is female for the position of secretary and male for the position of IT developer. Since, in the experiment, all of our applicants for secretarial positions are female and male for computer developer positions are male, it will not be possible to distinguish the effect of the occupation from the effect of the gender on the potential presence of discrimination.

Table 1 shows the individual characteristics of the three candidates according to the occupation tested.

Table 1. Characteristics of the three fictitious candidates in each occupation

	Secretary	IT developer
Modal sex in the profession	Woman	Man
Age and family situation	29 or 30 years old, single, no children	26 or 27 years old, single, no children

¹⁵ First names and surnames were chosen among the most common names from the list of the National Institute of Statistics and Economic Studies, INSEE.

Qualifications	Bachelor's degree in Management Sciences and Technologies (accounting and management)	University Master's Degree in Computer Science
Current employment (permanent contract in the jobpool of the ad tested)	Secretary / bookkeeper	Project manager / IT developer

With the exception of the mention of severe visual impairments or the sound of their first and last names, the three fictitious candidates were similar. They were French nationals, of comparable ages and have the same family situation. They held the same qualifications and had similar career paths. In their applications, they described their linguistic, computer and professional skills, as well as the missions they had been entrusted with during their previous jobs. None of the three candidates stated that they had a driving license or had their own vehicle.

Candidates with a disability had to indicate their visual impairment in their cover letter. Visual impairment being a visible disability during a job interview, it is not unrealistic for job applicants to point this out in advance, which facilitates the practical implementation of the correspondence test. Finally, visual disability is of variable intensity and the candidates are likely to inform the recruiter of their level of disability. Prior to this study, we consulted experts from several associations for the blind and visually impaired (grouped within the UNADEV) who confirmed that there is a wide variety of practices on the part of visually impaired people and that explicitly stating one's disability from the outset is realistic. One out of two times, the candidate also mentioned that their status of disabled worker was administratively recognized (RQTH). Below, we present the relevant paragraph in the covering letter, depending on whether or not the applicant stated their RQTH status. Where applicable, RQTH status was also explicitly mentioned in their CV, in the identity section.

Candidate with a disability presenting his/her situation and mentioning the RQTH:

As you can see from my CV, I am recognized as a disabled worker (RQTH). As I have a severe visual impairment, I have to work at an adapted workstation so that my disability does not affect my work. However, my employment may allow a company to benefit from financial aid.

Applicants with a disability presenting their situation but not mentioning the RQTH:

Finally, I would like to bring to your attention the fact that, as I have a severe visual impairment, I must work at an adapted workstation so that my disability does not affect my work.

To prevent the style or content of a particular application from systematically influencing companies in their choice of a particular candidate (despite the precautions taken when constructing the applications), we randomly swapped CV style and cover letters between the identities of the fictitious candidates. CV and cover letter layouts were thus alternated between candidates throughout the data collection process.

The three applications to the same vacancy were sent by e-mail from each applicant's mailbox on the same day, a few hours apart, as soon as the vacancy was posted on a job website. The order in which the applications for the same vacancy were sent was established by drawing lots, so that, overall, the applications were sent in each order the same number of times.

Collection of job openings and scope of the experiment

Several websites were canvassed daily to collect job openings. The most frequently used was that of the French National Employment Agency (*Pôle Emploi*). For both occupations, the three fictitious candidates responded to job openings for fixed-term and permanent contracts in the

private sector and some contract jobs in the public service.

All job openings for secretary and IT developer, located in the Ile-de-France region or in the Rhône or Bouches du Rhône *départements*, fell within the scope of the study. We tested all those brought to our attention between June and October 2020 (before the second Covid-19-related lockdown in France).

A response was considered positive when the recruiter invited the candidate for an interview or when they contacted the applicant by e-mail or telephone to obtain more information about his/her current situation or qualifications. It was considered negative if the recruiter formally rejected the application or did not respond before the end of the testing campaign. We also listed various characteristics about the job opening (e.g. skills required, wage offer, etc.) and the company (e.g. company size, location, etc.).

5. SUMMARY STATISTICS AND EFFECTS OF DISABILITY ON EMPLOYER RESPONSES

Sample size and composition

A total of 549 job openings in different establishments were tested, including 306 for secretary and 243 for IT developers. This corresponds to 1,647 applications submitted (3x549). The composition of the sample of vacancies tested is presented in Table 2.

Table 2. Number of ads tested by occupation and location of the firm

	All		Secretary		IT developer	
	N	Proportion	N	Proportion	N	Proportion
Paris	274	0.50	138	0.45	136	0.56
Lyon	148	0.27	89	0.29	59	0.24
Marseille	127	0.23	79	0.26	48	0.20
Total	549	1	306	1	243	1

Table 3 presents the characteristics of the vacancies tested. The sample of 1,647 observations is made up almost equally of openings for secretary and computer developer. These are mainly open-ended offers by companies from the private sector offering an average monthly salary of just under €2,400 and with 356 employees on average. In addition, 50% of the vacancies are located in the Paris area. Applications were sent between June (one month after the first lockdown due to the Covid pandemic) and October (before the second lockdown) and mainly in July and August, when hiring had resumed.

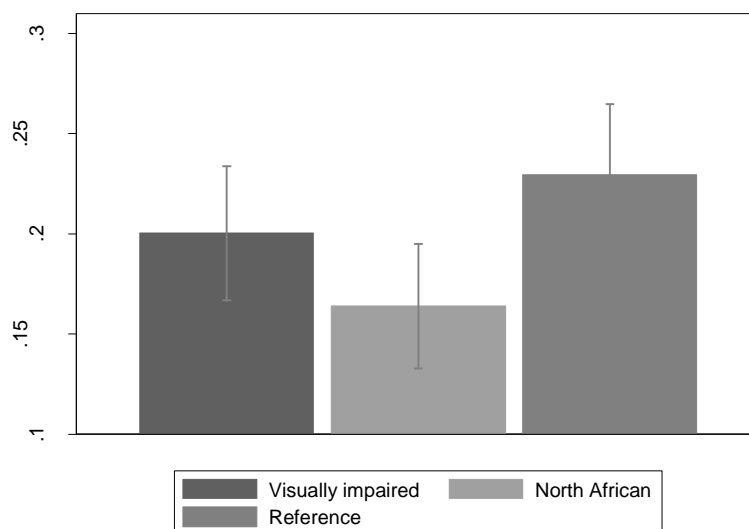
Table 3: Descriptive statistics

	Mean	S.D.
Vacancy characteristics:		
Type of occupation:		
Secretary	0.56	
IT Developer	0.44	
Type of contract:		
Fixed term contract	0.21	
Open-ended contract	0.79	
Requires autonomy skills	0.59	
Requires interpersonal skills	0.74	
Opening advertised by a labor market intermediary	0.19	
Monthly wage	2,387.74	798.93
Firm characteristics:		
Public sector	0.06	
Number of employees	356.70	1,891.95
Location:		
Marseille	0.23	
Lyon	0.27	
Paris	0.50	
Application characteristics		
Date of application:		
June	0.09	
July	0.39	
August	0.25	
September	0.15	
October	0.12	
Observations		1,647

Graphical results

Since the three candidates applied to each recruiter and the order of sending of the applications was changed randomly each time, a good overall impression of the results can be obtained by simply comparing the positive response rate of the different applicants. Figure 1 shows the rate of positive responses received by the different candidates. The reference candidate of French origin with no visual impairment has the highest response rate, with 23% of positive responses. The candidate indicating a visual disability received 20% of positive responses, and the candidate of North African origin with no disability received a little more than 16% of positive responses. It therefore appears that a visual disability penalizes individuals in their access to employment, but that being of North African origin is even more penalizing.

Figure 1. Positive response rate by profile



Notes: Bars indicate confidence intervals at the 95% threshold.

Econometric confirmation

These initial results are then verified using a model that estimates the effect of origin and disability on the probability of obtaining a positive response to a job application. Our main specification is:

$$REP_{io} = \alpha + \beta NAfr_i + \gamma DIS_i + \tau T_{io} + \delta X_o + \phi_o + \varepsilon_{io} \quad (1)$$

Where REP_{io} is a dummy variable indicating whether or not applicant i receives a positive response from opening o . $NAfr_i$ and DIS_i are the variables of interest which are, respectively, whether the applicant is of North African origin or has a disability. T_{io} is the order of sending of the message of applicant i to opening o . X_o is a set of characteristics that vary by opening. Finally, ϕ_o are job

opening fixed effects, which replace the characteristics of the opening in the final specification.

Table 4 presents the OLS estimates of the linear probability models. The controls are introduced progressively in columns (1) to (4). Results vary little with the introduction of the control variables. As can be seen in Table A1 of Appendix, the results from probit and random effects probit models are also very similar.

The results of the estimation confirm the graphical results. The rate of positive responses from the visually impaired candidate is 3.2 percentage points lower than that of the non-disabled candidate, and the difference is statistically significant. This corresponds to a penalty of approximately 14% in relative terms. Although it is not possible to directly compare the results of different experiments since contexts may vary in different ways, we can note that our results are slightly lower than those obtained in other countries and for other criteria of disability. For example, Ameri et al. (2018) find a 26% penalty for motor and mental disability in the United States. It is also lower than the penalty for motor disability found in France 30 years ago (Ravaud, Madiot, and Ville 1992). We can also note that the difference in response obtained here is close to the 15% difference between the reference candidate and the visually impaired candidate obtained for the French housing market (Challe et al. 2022).

It also appears that discrimination against applicants of North African origin is significantly higher, at the 5% threshold, than discrimination against applicants with visual impairment.¹⁶ The response rate to the candidate of North African origin is 6.6 percentage points lower than that of the candidate of French origin. Since the positive response rate of the applicant of French origin without disability is 23%, this corresponds to a difference of about 30% in relative terms. This result is consistent with previous studies in the field. For example, in the US, Bertrand and Mullainathan (2004) found a black applicant experienced a penalty of 33% relative to a white applicant. In France, Chareyron et

¹⁶ The p-value of the Wald test of equality of coefficient is 3.2%.

al. (2021) measured a penalty of about 40% for the applicant of North African origin compared to the applicant of French origin.

These results indicate that the economic situation linked to the Covid crisis does not substantially influence the success rate of the applicants of French and North African origin. While it is not possible to definitively exclude the possibility that people with disabilities were more affected by the Covid crisis than persons without disabilities, the results support the fact that discrimination levels, and therefore our findings, are not particularly affected by the Covid crisis.¹⁷ This is not very surprising since, in addition to finding a difference with the reference applicant, our results capture demand-side effects and not changes that might affect the labor supply of disabled persons. Even on the demand side, since we are looking at the difference in response to applicants for the same job opening, the correspondence test methodology eliminates the possible effect of a decrease in the number of positions available in the categories of jobs particularly occupied by applicants with disabilities. To affect the level of discrimination against the disabled applicant, the Covid crisis would have to change the value of the disability to employers but we see no particular reason for the Covid crisis to affect this value.

Table 4. Effect of origin and disability on the rate of positive responses

	(1)	(2)	(3)	(4)
North African	-0.066*** (0.016)	-0.066*** (0.016)	-0.066*** (0.016)	-0.066*** (0.016)
Visually impaired	-0.029** (0.014)	-0.029** (0.014)	-0.032** (0.014)	-0.032** (0.014)
Controls	NO	YES	YES	NO
Order of sending	NO	NO	YES	YES
Opening F.E.	NO	NO	NO	YES
Observations	1,647	1,647	1,647	1,647
R2	0.005	0.044	0.046	0.738

*Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are clustered at the level of the job opening in brackets. The controls are the month and day of the application, the type of contract, public or private sector employer, the location of the company and the type of position (secretary or IT developer).*

¹⁷ It can also be noted that the positive response rate to the reference applicant is in the same range as that obtained in Chareyron et al. (2021).

6. OBLIGATION TO ADAPT THE WORKSTATION AND INCENTIVE TO HIRE A DISABLED PERSON

The quota policy (OETH), which imposes a financial penalty if the 6% quota of jobs held by workers with disabilities is not reached, only applies to enterprises with 20 or more employees. Hiring a disabled worker therefore only reduces this financial penalty for companies with 20 or more employees. However, the obligation on the employer to adapt the workstation of an employee recognized as disabled is the same for all companies, regardless of their size. Smaller companies bear the cost of the adaptation (which may be partially funded by public authorities) but do not benefit from a financial bonus in the form of a reduction in their Agefiph contribution.¹⁸ In consequence, in small companies the cost of hiring a person with RQTH is zero or positive, whereas it can be negative in firms with 20 or more employees.

We randomly added a reference to RQTH status to 50% of the applications sent by the visually impaired candidates. It is therefore possible to test the effect of this status on discrimination. On the one hand, this status can be perceived as an indication of the seriousness¹⁹ of the person's situation and the need to adapt their workplace, which implies additional costs for the employer but can be partly compensated for by the Agefiph and Fiphfp grants. On the other hand, it leads to a reduction in the contribution payable by companies subject to the quota policy (i.e. those with 20 employees or more). To examine the interaction between these two elements, we cross-reference the two variables, RQTH status and company size, to determine exposure to the quota policy. We estimate equation (1) based on the four subsamples. The estimated coefficients of the difference in positive response rates between the individual with and without visual impairment are presented in Table 5. We also present in Table 5, the difference-in-difference results using

¹⁸ Agefiph (for the private sector) and Fiphfp (for the public sector) support and finance the adaptation of workstations for workers with disabilities (all statuses combined).

¹⁹ The RQTH is a disability severity index for situations of intermediate intensity of disability, such as severe visual impairment. If the disability is so severe that it makes it impossible for the individual to access work, or makes him/her unable to work, the RQTH is not granted by the CDAPH.

the presence of RQTH status or not of the applicants and the size of the firm.²⁰

The effect of RQTH status on firms that are not subject to the quota policy

According to Table 5, discrimination against the visually impaired only occurs in cases where the company has fewer than 20 employees (not subject to the quota policy) and where the job applicant has RQTH status (subject to workstation adaptation). The success rate of the visually impaired candidate in this configuration is 7.6 percentage points lower than that of the reference candidate. This means that the discrimination is significant only when the company has to adapt the workstation without having an incentive to hire a disabled person.

Since the administrative recognition status is randomly assigned, the difference in discrimination between the RQTH and non-RQTH applicants is exogenous. Therefore, by looking at the difference in discrimination toward the disabled applicant between the case where the disabled applicant has the RQTH status and the case where it has not, we are able to observe the penalty linked to the RQTH. Column (1), Row (c) shows that the RQTH status increases the disabled applicant's discrimination by 8.5 percentage points in firms which are only eligible to the obligation to adapt the workstation (i.e. firms of less than 20 employees). However, the RQTH has no significant effect on firms that are also eligible for the quota policy (Column (2), Row (c)). This supports the notion that the obligation on the employer to adapt the workstation has a negative effect on the likelihood of disabled people getting a positive response to their application.

However, even if the status of recognition is random, we cannot entirely exclude the possibility that the negative effect of the RQTH on firms with fewer than 20 employees is due to another aspect of the status not directly linked to the obligation of workstation adaptation. For example, the RQTH status may possibly be perceived by the employer as indicating a higher level of disability and may reduce the positive response rate for this reason. It is not possible to directly

²⁰ The raw statistics by applicant and firm size are presented in Table A2 in Appendix.

eliminate this possibility since all firms are subject to the obligation of workstation adaptation. However, we think this is unlikely since all other information about the fictitious applicants' disability is similar in the messages.

Variation in discrimination depending on the size of the firm

It can be seen in Column (3) that discrimination against the disabled person with an administrative recognition status decreases significantly when the firm has more than 20 employees and it can therefore be inferred that this is due to the quota policy: discrimination decreases by 8.3 percentage points and is not statistically significant in these firms. This suggests that when there is an incentive to hire a disabled person, there is no penalty associated with RQTH. In this case, however, the variation is not exogenous and, therefore, the level of discrimination against people with disabilities may vary according to the size of the firm for reasons unrelated to the quota policy. This phenomenon is not clearly established in the literature (Bertrand and Mullainathan 2004), but it may be that large companies are better able to train their recruiters or to standardize the selection process than small ones. In this case, the decrease in discrimination for the disabled applicant with an RQTH status in firms of 20 or more employees would not be due to the quota policy.²¹

Triple differences estimates

The difference-in-difference-in-differences estimate presented in Column (4) eliminates unobservable differences that may affect the level of observed discrimination between firms above and below the 20-employee threshold and identifies the effect of the obligation to employ people with disabilities on employment. We observe that the quota policy has a significant effect of 14 percentage points on the probability of obtaining a positive response. This result confirms that the

²¹ However, we can notice that the level of discrimination does not significantly decrease in firms with 20 or more employees compared to firms with fewer than 20 employees for people with disabilities who do not have RQTH.

quota policy has a substantial and positive effect on the employment of people with disabilities. These results also indicate that the obligation to adapt the workstation can have a detrimental effect on employment when it is not accompanied by incentives to hire disabled persons.

The identification is based on the assumption that there is no variation in the RQTH penalty other than those related to the quota policy in firms with 20 or more employees compared to firms with fewer than 20 employees. It is possible that firms with 20 or more employees are better able to adapt workstations and therefore have lower costs of adaptation, which may explain the lower RQTH penalty. This cannot be entirely ruled out, even if some mechanisms such as the allowance for adapting the workstation are in place to reduce this financial burden on small firms. In any case, these results provide strong evidence of the effect of institutional settings on the likelihood that disabled applicants will receive a positive response. It should also be noted that this result concerns only one disability criterion, visual impairment, which entails relatively high adaptation costs. The obligation to adapt the workstation may have a less negative effect for disability criteria that involve lower adaptation costs, such as hearing impairment.

Table 5. Discrimination against the visually impaired by disability status and company size

		(1)	(2)	(3)	(4)
		<20 employees	≥20 employees	(2) - (1)	Diff-in-diff
(a)	No RQTH	0.009 (0.036)	-0.050 (0.033)	-0.059 (0.049)	0.142** (0.069)
(b)	RQTH	-0.076*** (0.027)	0.007 (0.032)	0.083** (0.042)	
(c)	RQTH- No RQTH	-0.085* (0.048)	0.057 (0.049)		

*Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are clustered at the level of the job opening in brackets. Results in Columns (1) and (2) correspond to estimates made on the sub-samples, corresponding to the crossing of the condition indicated at the beginning of the row and column. The controls are the month, day and order of sending of the application, the type of contract, the fact of the job being in the public or private sector, the location of the company and the type of position (secretary or IT developer). P-values for tests of difference in discrimination between groups are obtained from Wald tests of equality of coefficients (Row (c) and Columns (3) and (4)).*

7. HETEROGENEITY ANALYSIS

The costs and incentive related to the institutional design to facilitate the integration of people with disabilities into the labor market appears to provide a fundamental explanation for discrimination. From the results presented in Table 5, discrimination is detected at the usual risk level only when the obligation to adapt the workstation applies without a quota policy – i.e. when there are direct costs in hiring a disabled person and they are not compensated by incentives. In the case where discrimination occurs only in the presence of direct costs, the relevance of using the traditional explanations of taste-based and statistical discrimination in this setting is questionable. However, the lack of significant discrimination could be false negatives caused by a lack of power in the estimates. The probability of detecting a 5-percentage points difference between the disabled applicant without RQTH and the non-disabled applicant at the 5% risk level is 41%. Thus, it cannot be concluded that discrimination exists only in the case of direct costs not compensated by incentives. In consequence, we now explore if we can find some variations in the level of discrimination that could be indicative of one of these forms of discrimination.

The focus is now on the heterogeneity of discrimination according to supply-side characteristics. To this purpose, we determine the situation of discrimination for each job opening. We then consider the model:

$$Discr_o = \alpha + \beta X_o + \delta_t + \varepsilon_o \quad (2)$$

Where $Discr_o$ is a dummy variable indicating whether or not the reference applicant is advantaged over the disabled applicant in applying to opening o . δ_t are time-fixed (month) effects. X_o is a set of vacancy-specific characteristics that may affect the level of discrimination.

We examine possible differences in the extent of discrimination by occupation, i.e., whether the occupation is that of developer or secretary. We also include the type of contract (i.e. open-ended or fixed term) in the set of vacancy-specific characteristics. Supposedly, the open-ended contract will last longer so any potential costs (due to preference or expected lower productivity) of hiring

someone will be borne for a longer period by the employer. Therefore, we can expect to observe more discrimination with this type of contract. We also include two variables related to the skills required for the opening, namely the requirement for interpersonal skills and autonomy (i.e. being able to work independently). In the case of statistical discrimination, we expect to find a relationship between the requirement of these skills and the level of discrimination because the employer may associate disability with a lower average level of these skills. Finally, we also include the presence of an intermediary between the employer and the applicants. We distinguish here between openings advertised directly by the employer and those advertised by a labor market intermediary, whether private (recruitment agency, temporary employment agency, etc.) or public (*Pôle Emploi*). As is the case for rental agencies in the housing market (Bosch, Carnero, and Farré 2010), the presence of an intermediary may reduce the level of discrimination, at least at the stage of first contact with applicants. One reason is that employers may not convey their preferences or beliefs to the intermediary. We also include firm-related characteristics such as the type of firm (i.e. private or public), the size of the firm, and the location of the firm.

The results are presented in Table 6. The main estimates are presented in Column (1). The estimates are then disaggregated by type of occupation in Columns (2) and (3). Only the type of occupation is related to the level of discrimination in the main estimates. The probability of a firm discriminating against the visually impaired applicant appears to be 7 percentage points higher for secretarial occupations than for IT developer occupations. The two types of occupations differ in several ways, such as the qualifications required, the average salary offered, but the difference also overlaps with a difference in the gender of the applicant since the gender of the applicants corresponds to the modal gender of the occupation. In consequence, we cannot determine if the higher level of discrimination found for secretarial positions comes from specific characteristics of the occupation or a higher level of discrimination for women than men.

However, we can observe that discrimination is significantly higher for open-ended contracts for IT development positions. This is to be expected since open-ended contracts are supposed to last longer.

Finally, third party intermediation between employers and applicants reduces the level of discrimination against visually impaired applicants in the developer profession. This may indicate that employers do not always convey their preferences to the intermediary. A variable related to statistical discrimination such as requiring autonomy is positively, though not significantly, related to discrimination.

Table 6: Determinants of discrimination

VARIABLES	Visually impaired		
	(1) All	(2) Developer	(3) Secretary
Vacancy characteristics			
Type of occupation (Ref: Developer)			
Secretary	0.074*** (0.025)		
Type of contract (Ref: Fixed-term contract)			
Open-ended	0.024 (0.031)	0.024* (0.014)	0.022 (0.038)
Required skills (Ref: No autonomy)			
Autonomy	0.038 (0.027)	0.019 (0.032)	0.044 (0.039)
Required skills (Ref: No interpersonal skills)			
Interpersonal Skills	-0.018 (0.031)	0.024 (0.023)	-0.028 (0.046)
Advertisement of the opening (Ref: Directly from the firm)			
With Intermediary	-0.005 (0.028)	-0.042** (0.017)	0.015 (0.045)
Firm characteristics			
Type of firm (Ref: private sector)			
Public sector	0.000 (0.047)	-0.011 (0.022)	0.015 (0.076)
Size of the firm (Ref: <20 employees)			
≥20 employees	0.009 (0.022)	0.007 (0.027)	0.014 (0.036)
Location (Ref: Marseille)			
Lyon	-0.003 (0.033)	-0.032 (0.045)	0.014 (0.049)
Paris	-0.018 (0.027)	-0.042 (0.039)	0.003 (0.038)
Constant	0.004 (0.050)	0.016 (0.032)	0.056 (0.071)
Observations	532	232	300
R2	0.025	0.035	0.010

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in brackets. The controls are the month of sending of the application. "With intermediary" means that the job opening is advertised through a labor market intermediary.

CONCLUSION

In this study, we measured discrimination against people with severe visual impairment in access to employment and assessed the effect of the institutional policies aimed at integrating disabled people into the labor market on this phenomenon. Using the correspondence test method in combination with a difference-in-differences strategy, we provide evidence on the effects on employment of quota systems and policies requiring employers to adapt the workstation of disabled employees.

Despite a repressive legal framework and an arsenal of public incentives, the visually impaired are subject to strong discrimination in access to employment. All situations taken together, the average gross difference in success rates is just over three percentage points, which corresponds to a relative difference of about 14% in the chances of being invited to a job interview. This finding is consistent with the results from previous work on discrimination on the grounds of disability, and is about half that of ethnic discrimination.

Public policies to promote the employment of people with disabilities produce ambivalent effects. On the one hand, they mitigate against the negative effect of disability on access to employment in those companies subject to the quota policy. On the other hand, however, they complicate access to employment in small enterprises that are not subject to the quota policy and therefore do not benefit from the penalty reductions when hiring disabled workers. These companies are faced with uncertainty about the cost of adapting the workplace when hiring an employee, and about the amount of the possible funding from the Agefiph or the Fiphfp, whereas larger companies have a certain and therefore foreseeable drop in the amount of their contribution.

These results indicate that the two public policies are complementary and, when combined, facilitate the ability of people with disabilities, once employed, to evolve appropriately in their work environment without substantially reducing their access to employment. However, the

results call for a reform of the incentive systems for the employment of people with disabilities. The non-eligibility to the quota policy of companies with fewer than 20 employees is worth calling into question. Indeed, one possible solution to the substantial level of discrimination observed in small companies which are not subject to the quota policy would be to supplement existing schemes with incentives targeting the smallest companies. Another solution would be to increase the aids for adapting the workstations of disabled employers and to reduce the uncertainty about the financial supports available.

Finally, the limitations inherent in research based on correspondence tests deserve to be highlighted. We are only assessing discrimination in the first stage of access to employment: the job interview. It is possible that discrimination might occur at later stages of the recruitment process. In addition, the situation of severe visual impairment is not representative of all cases of visual impairment, let alone all disabilities. Because we ensure that the different characteristics of applicants for the same job opening are similar except for the criterion to be tested, and we do not introduce variations in these characteristics between job openings, we cannot test whether certain people with other disabilities suffer from more discrimination than others. Finally, although this does not appear to substantially affect the level of discrimination, the data collection took place between the two Covid-19-related lockdowns in France, a particular context in terms of the evolution of the labor market.

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Appendix:

Table A1. Effect of origin and disability on the rate of positive responses (probit models)

	(1)	(2)	(3)	(4)
North African	-0.066*** (0.016)	-0.065*** (0.016)	-0.064*** (0.016)	-0.062*** (0.015)
Visually impaired	-0.028** (0.013)	-0.026** (0.013)	-0.029** (0.013)	-0.028** (0.014)
Controls	NO	YES	YES	NO
Order of sending	NO	NO	YES	YES
Opening R.E.	NO	NO	NO	YES
AIC	1637.326	1588.321	1590.337	1228.337
Observations	1,647	1,647	1,647	1,647

*Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors clustered at the level of the job opening in brackets. The average marginal effects of probit models are presented. The controls are the month and day of the application, the type of contract, the fact of the job being in the public or private sector, the location of the company and the type of position (secretary or IT developer).*

Table A2: Positive response rate by applicant and firm size

	(1) <20 employees	(2) ≥20 employees
Positive response rates	17.74%	22.39%
Positive response rates by characteristics		
French origin:		
Without disability	22.26%	23.99%
Visually impaired without RQTH	22.86%	19.33%
Visually impaired with RQTH	15.63%	24.34%

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