

Discrimination in Access to Employment: The Combined Effects of Gender, Origin and Address

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Abstract – This article measures discrimination in the recruitment of management assistants within the Métropole européenne de Lille (Lille European Metropolis) by combining the effects of gender, ethnic origin and address. A sample of 3,000 recruiters was drawn at random from within the companies belonging to the Métropole, to whom we sent information requests in October 2021. The fictitious applicant of North African origin received 27% fewer positive responses than the applicant of French origin. In this regard, men are only discriminated against based on their ethnic origin if they live in a priority neighbourhood for urban policy (*Quartier prioritaire de la politique de la ville*, QPV). The fact of living in a priority neighbourhood is advantageous for applicants of French origin, probably as a result of the recruitment bonus associated with the *Emplois francs* scheme, which was fully rolled out and enhanced in 2021; however, this does not benefit applicants of North African origin. These findings call for improved targeting of anti-discrimination measures to capture the populations discriminated against in disadvantaged areas.

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Keywords: discrimination, employment, correspondence test

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Academic studies focusing on measuring discrimination in access to employment largely favour correspondence tests, which consist of comparing the chances of success of two fictitious job applicants who are similar in all respects except for one characteristic: the one that the tests are aiming to quantify the effect of (Riach & Rich, 2002; Bertrand & Duflo, 2017; Neumark, 2018). Each test generally focuses on just one of the discrimination criteria prohibited by law. In his systematic review of 90 studies published in English using the correspondence test method and performed between 2005 and 2016, Baert (2017) lists only nine studies that look at more than one criteria. The majority of these rare multi-criteria studies look at two discriminating factors: gender and ethnic origin (Agerström *et al.*, 2012; Berson, 2012; Petit *et al.*, 2013; Edo & Jacquemet, 2014); ethnic origin and place of residence (Duguet *et al.*, 2010); gender and age (Albert *et al.*, 2011); ethnic origin and marital status (Arceo-Gomez & Campos-Vazques, 2014); religion and origin (Pierné, 2013); wealth and religion (Banerjee *et al.*, 2009); origin and employment status (Pierné, 2018); sexual orientation and physical appearance (Patacchini *et al.*, 2015); physical appearance and disability (Stone & Wright, 2013). Studies looking at more than two criteria are even rarer. One example is the study by Capéau *et al.* (2012), which measures discrimination according to age, gender, disability and origin; however, it does not combine these criteria.¹ Finally, we would like to mention the study by L'Horty *et al.* (2011), which combines the three criteria of ethnic origin, gender and place of residence. It assessed the effect of a person's place of residence (at the municipality level) for three localities in the Val-d'Oise department (Sarcelles, Villiers-le-Bel and Enghien-les-Bains), focusing specifically on young computer developers.

We therefore observe that the number of studies that combine multiple discrimination criteria is very small. While intersectionality is a hot topic in the public debate, since the seminal article by Crenshaw (1989), which centred around the situation of black and marginalised women in the United States, it has been all but absent in the empirical literature focusing on the experimental measurement of discrimination on the labour market. However, its quantitative translation refers to clear empirical content. For example, if α is the penalty suffered by a woman in a given field and β is the penalty suffered by a person of foreign origin, it is a question of determining whether women of foreign origin suffer

a penalty that differs from $\alpha + \beta$. The empirical literature also speaks of the interaction (or joint) effect and distinguishes between cases of strict additivity (the penalty suffered is exactly $\alpha + \beta$), over-additivity (the penalty exceeds $\alpha + \beta$) and sub-additivity (the penalty is less than $\alpha + \beta$). This is an essential challenge from the point of view of the targeting of public policies, since it is a question of precisely determining the characteristics of the populations who fall victim to discrimination and the scale of the prejudice they suffer.

In France, the only national public policy that explicitly incorporates the issue of combating discrimination is urban policy. Law No 2014-173 of 21 February 2014 on programming for the city and urban cohesion states that “urban policy forms part of a strategy that aims to restore equality between areas and ensure that residents have access to their rights”. It “contributes to gender equality, integration policy and the fight against discrimination faced by people living in disadvantaged neighbourhoods, particularly on the grounds of place of residence and actual or presumed origin”. The administration responsible for its implementation, the Agence nationale de la cohésion des territoires (National Agency for Territorial Cohesion, ANCT), focuses in particular on the actual or presumed origin of individuals and their address (due to the prevalence of those factors in the discrimination reported by the inhabitants of the neighbourhoods) and age and gender criteria (gender equality and youth are also cross-cutting issues in the urban contract).²

Regional anti-discrimination measures require the involvement of local stakeholders in one or more of the areas covered by the law (employment, housing, etc.) and covering one or more criteria (gender, origin, etc.). For the areas covered by urban policy, this commitment has taken the form of the signing of a *plan territorial*

1. In a correspondence test with two criteria, for example gender and place of residence (neutral neighbourhood vs priority neighbourhood), it is possible to measure discrimination using three fictitious applicants (reference/man living in a neutral neighbourhood, woman living in a neutral neighbourhood, man living in a priority neighbourhood); however, four applicants are required if the combined effects are to be measured (by adding a woman living in a priority neighbourhood). This type of experiment where all possible cases are tested is referred to as a “saturated protocol”.

2. One of the specific features of the urban contract is the way in which it coordinates a wide range of national and local stakeholders around common local development objectives. This takes the form of contracts entered into between the Government and local stakeholders under names that have evolved over the years and covering content that has become broader over time. Initially limited to the living environment and social cohesion, the scope of the contracts has been expanded to include local economic development and, since the reform in 2014, neighbourhood associations, centred on a territory project, led by the inter-municipal authority and formalised in the “urban contract”. Initially signed to cover the period from 2015 to 2022, these urban contracts are now being renewed.

de lutte contre les discriminations (regional anti-discrimination plan, PTLCD). The *Emplois francs* scheme has been added to the actions set out in these plans: it involves the payment of a subsidy to any employer that recruits a job seeker living in a priority neighbourhood for urban policy (*Quartier prioritaire de la politique de la ville*, QPV). Piloted from April 2018 and fully rolled out in January 2020, the grant amounts to EUR 15,000 over a period of three years for a permanent contract and EUR 5,000 over two years for a fixed-term contract.³ This scheme is described by the ANCT as “a robust and innovative response to recruitment discrimination in priority neighbourhoods”.

Our study is original on three counts. First, it is based on a multi-criteria discrimination test that makes it possible to combine the effects of the gender, ethnic origin and place of residence of job applicants. The place of residence is defined at the neighbourhood level, so at more granular level than that chosen by L’Horty *et al.* (2011). The test is then performed on a defined geographical area: the 95 municipalities making up the Métropole européenne de Lille (MEL), which is home to more than a million people. We have therefore positioned ourselves within a public establishment for intermunicipal cooperation, the MEL, which has experience in the area of urban policy and anti-discrimination measures. This space is located within the *Nord* department, a pilot area for the *Emplois francs* scheme since April 2018, which was, at the time at which the data were collected in late 2021, the French department with the largest number of contracts under the *Emplois francs* scheme.⁴ Finally, unlike the conventional tests, which are carried out in response to job advertisements and therefore involve an element of selection of job advertisements and recruiters, thereby inviting potential bias, the test is based on speculative requests for information sent to a representative sample of local recruiters. The sample is made up of 3,000 legal units drawn at random from across all entities (companies, government establishments, associations, etc.) present within the test area. In late October 2021, we sent 6,000 requests for information to these employers, which allowed us to measure discrimination on the basis of presumed North African origin and being resident in a priority neighbourhood, for both men and women.

The findings confirm and supplement those of the pilot study that we conducted with a similar protocol on the Communauté d’agglomération Maubeuge-Val de Sambre (Anne *et al.*, 2022). We highlight a number of patterns of conditional

discrimination. Without taking account of the combined effects, the data indicate that women are favoured when it comes to accessing management and secretarial assistant jobs, which are already dominated by women. The discrimination experienced by those of North African origin is substantial and on a scale that is comparable with findings previously obtained in France. When all genders are taken into account, the applicant of North African origin received around 27% fewer positive responses than the applicant of French origin. If we take account of combined effects, discrimination based on origin exists for men who live in priority neighbourhoods, but not for those living in other neighbourhoods. The fact of living in a priority neighbourhood provides an advantage for applicants of French origin, probably due to the recruitment bonus associated with *Emplois francs*. However, this bonus for recruiting residents of priority neighbourhoods does not offer any benefit for applicants of North African origin, who are the only group to be penalised for living in a priority neighbourhood.

The first section describes the experimental data protection protocol. The findings are presented in the following section, before then being discussed in Section 3, before our conclusion.

1. Data Collection Protocol

We use the same protocol that we tested during our pilot study (Anne *et al.*, 2022) with a small number of changes, indicated below. The correspondence test was not performed in response to job advertisements published by companies, but in the form of a request for information prior to the submission of application. The correspondence sent by fictitious applicants took the form of simple contact emails sent to an employer to request information regarding the selection procedure for applications or asking whether there are any positions available within the company. This variant does not require us to draw up CVs and therefore offers the advantage that we are able to test a far wider range of jobs without introducing selection bias in the choice of professions. This allows us to offer findings based on representative data. It goes without saying that, when we take such an approach, response rates are, on average, lower

3. Within the scope of the emergency measures and the “1 jeune, 1 solution” (1 young person, 1 solution) plan, between 15 October 2020 and 31 December 2021, these amounts were increased to EUR 17,000 and EUR 8,000, respectively, where the applicant being recruited was under the age of 26 (“emploi franc +” scheme).

4. At that time, there were 41,301 *emplois francs* contracts in metropolitan France as a whole, 4,984 of which were in the Nord department, 12.1% of the total (sources: DARES, POEM database).

than the responses that would be received when responding to job advertisements; however, by basing our study on larger samples, it is still possible to detect differences in treatment, which are indicative of discrimination. Challe *et al.* (2020) use both speculative applications and responses to job advertisements. Their findings were the same for both approaches: discrimination against people whose surname indicates that they are of North African origin across a sample of 103 very large companies (a significant difference of nearly 30%). In addition, the recruitment of employees *via* speculative applications is not uncommon in France. Applicants often use this method (in 2017, 41% of companies employing more than 50 people received more than 100 speculative applications) and companies generally consider their applications (in 2017, 64% of employers declared that they had recruited staff *via* speculative applications).⁵ In addition, 68% of such applications are submitted by email. Conversely, the request for information provides a partial picture of access to employment. A recruiter can respond to a request for information without discrimination, but may then discriminate at the CV selection stage or during the job interview. However, any difference in response between two requests for information that only differ on the basis of a prohibited criterion is considered discrimination. In law, discrimination is defined as unfavourable treatment that must generally meet two cumulative conditions: it must be based on a criterion defined by law (gender, age, disability, etc.) and a situation covered by law (access to employment, a service, housing, etc.).

1.1. Selection of a Cross-Cutting and In-Demand Field of Activity

We chose to study an in-demand field of activity: support functions in the administrative field. This field includes numerous professions with differing levels of qualification. Three of these are among the twenty most in-demand professions in France: administrative employee, secretary and accounting employee (according to data from the 2016 *enquête Emploi* – the French Labour Force survey). These are professions for which there are large numbers of both unemployed people and jobs available. Our decision to use a field of activity with a large number of job seekers allows us to limit the probability of detection when sending multiple speculative job applications simultaneously. Choosing an in-demand profession reduces the non-response rate among employers, independently of any discrimination. This methodological precaution is especially useful in the context of a sharp

slowdown in economic growth. Nevertheless, the greater opportunities enjoyed by applicants seeking employment in an in-demand profession come with a trade-off from the point of view of discrimination: access to employment is less selective and it is therefore more difficult to observe discrimination in the recruitment process for this type of profession. We are therefore deliberately placing ourselves in a context that is expected to minimise discrimination in the recruitment process.

We selected this professional area because administrative support functions are present in the majority of companies. This is a cross-cutting field that will allow us to test all companies within a single region with the same requests for information, which avoids us having to select companies from particular sectors of activity. Furthermore, the professional field of management assistants is heavily female-dominated. This characteristic must be borne in mind, as it is likely to skew the test results. As indicated by the meta-analysis by Adamovic & Leibbrandt (2023), men have lower response rates in the most female-dominated professions.

1.2. Eight Fictitious Applicant Profiles

We created a total of eight fictitious applicant profiles, four men and four women (compared with just three in our pilot study). To avoid a source of detection associated with a possible search of the applicant's identity on social networks, the identities were constructed using the most common first names and surnames listed in the files of names and surnames published by INSEE on the basis of civil registry declarations.⁶ The first applicant has a French-sounding first name and surname and does not provide any indication of their place of residence (reference applicant). The second applicant is distinguished from the first by their North African-sounding first name and surname. This second applicant of North African origin therefore also does not indicate their place of residence. The third applicant differs from the reference applicant in that they indicate that they live in a priority neighbourhood under urban policy. This third applicant living in a priority neighbourhood therefore still indicates that they are of French origin. A fourth applicant is distinguished from the reference candidate by both their North African origin and the fact

5. See *Pôle emploi* (2017).

6. Examples of surnames indicating the origin of applicants: Petit, Roussel, Dumont, Morel, Saadi, Hassani, Slimani, Saidi. Examples of first names indicating the gender of applicants: Thomas, Alexandre, Stéphanie, Audrey, Rachid, Kassim, Khadija, Rachida.

that they live in a priority neighbourhood. When compared side-by-side, these profiles allow us to measure, for women on the one hand and for men on the other, the degree of discrimination on the basis of their origin that is conditional on their place of residence (depending on whether the applicant lives in a priority neighbourhood or not) and the degree of discrimination on the basis of their neighbourhood of residence that is conditional on their origin (French or North African) (Diagram 1).

When choosing the priority neighbourhood, we selected a large neighbourhood that is very well known within the MEL. An address within that neighbourhood unambiguously indicates that the applicant lives in a priority neighbourhood.

1.3. Two Requests for Information Sent to Each Employer

To avoid the risk of detection by the employers receiving requests for information, we chose to only send two requests to each potential recruiter. One request from the reference applicant, who does not mention their place of residence and whose first name and surname indicate that they are of French origin. The nature of the other applicant (North African origin, priority neighbourhood resident or both) is determined by the drawing of lots. The pair of applicants is either two men or two women. In addition, we spaced the two requests several days apart. The first request was sent on 19 October 2021 and the second on 26 October 2021. Finally, we made sure that there would not be any bias linked to the employer detecting that they are being tested: the order in which the two requests were

sent was determined by drawing lots, which guarantees that the reference applicant and the applicant that may be discriminated against are the first to contact the recruiter a comparable number of times.

In total, four lots are drawn for each email address tested. The first lot is drawn to determine the gender to be indicated by the first name of the two applicants. The second selects which of the applicants that may be discriminated against will contact the recruiter (North African origin, priority neighbourhood resident or both) alongside the reference applicant, who contacts the recruiter in every case. The third lot is drawn to determine which of the two messages will be sent by each of the fictitious applicants. Finally, the fourth lot is drawn to determine the order in which the two applicants will send their message to the recruiter.

1.4. Similar and Interchangeable Requests for Information Between the Fictional Applicants

Below are the two messages sent by the two applicants, whether male or female. No curriculum vitae is attached to the request.

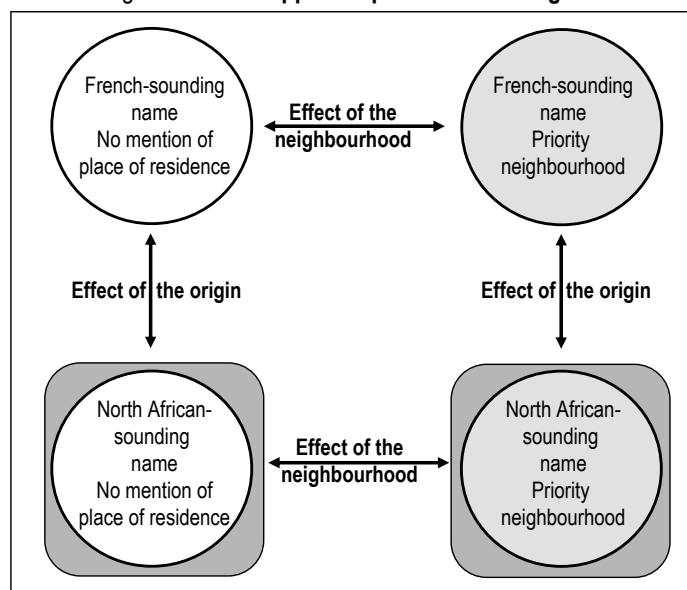
Message 1

Hello,

I would like to apply for a secretarial job within your company. Could you provide me with information regarding available opportunities and the person I need to contact? Many thanks in advance for any information you are able to provide.

Kind regards.

Diagram 1 – Four applicant profiles for each gender



Message 2

Hello,

I am looking for a job as a management assistant. I would like to know if there are any available opportunities within your company and, if so, who I can send my application to.

Many thanks in advance for your response.

Kind regards.

Each message is signed with the first name and surname of the fictitious candidate, indicating their ethnic origin. The applicant living in a priority neighbourhood includes their address under their signature, thereby indicating that they live in a priority neighbourhood.⁷

1.5. Selection of Employers Tested and Sending of Messages

We selected a random sample of 3,000 legal units with an address in one of the 95 municipalities within the Métropole européenne de Lille, drawing them at random from the SIRENE file published by INSEE. This is a simple random draw. The sample is therefore representative of the local productive fabric. The email addresses used are generic company addresses that they publish themselves as contact addresses on the Internet. We collected some of these manually and others in a semi-automated manner based on their SIRENE identifier and their company names. Information regarding the gender of the contact person is gathered using the first name indicated in the email address to which the message is sent. In some cases, the position and status of the contact person within the company were determined based on their responses. These employers were randomly separated into six groups of 500 companies to which the pairs of requests for information were sent. A sample of this type gives us a more than 80% chance of detecting discrimination in the event of a response rate of 10%, an absolute difference in response rate of two percentage points and a risk threshold of 10%.⁸ It therefore offers an adequate probability of detecting discrimination against the candidate of North African origin in view of the results obtained in previous studies.

We consider the employer's response to be positive when they ask the applicant for their CV, when they ask for more information about their profile or even when they provide information regarding the procedure to follow in order to submit a formal application to the company. Conversely, the response is considered to be negative if the employer indicates that there is no suitable position available at the company.

A non-response is recorded if the employer had still not responded to the request for information by the time we ceased collecting data (5 November 2021).

By comparing the likelihood of receiving a positive response, we are able to test the existence of discrimination based on ethnic origin or the reputation of the place of residence at the time of requesting information regarding the existence of job opportunities within a company.

2. Test Results

2.1. Characteristics of the Companies Tested

Column 1 of Table 1 presents the characteristics of the 3,000 companies that were tested. As two requests for information are sent to each company, the number of observations is 6,000.

The sample is primarily composed of private-sector companies – *sociétés par actions simplifiée* – simplified joint-stock companies – and *sociétés à responsabilité limitée* – limited liability partnership. 18% of the companies employ between two and ten people. 16% employ one or zero people and 5% of the companies employ more than 50 people. The vast majority of contact persons are men. The second (or third) column of the table shows the differences in the response rates (or positive responses). The independence tests show that the response rates and positive responses correlate strongly with the type ($p\text{-value} < 0.001$) and size of the company ($p\text{-value} < 0.001$). As regards the positive responses, the differences are particularly marked between small and large companies: the positive response rate is 3% among companies with one or zero employees and 17% in companies with more than 50 employees. As a result, even though only 5% of the tests involved companies with more than 50 employees, these companies contribute 20% of the total positive responses obtained. However, due to their large number, small companies also make a significant contribution to the total number of responses

7. We chose not to mention the applicant's address in all of the emails sent, as this is not usual practice for a simple request for information and would have brought too great a risk of the test being detected. The applicants living in priority neighbourhoods were therefore the only ones to mention their address in their requests for information. Strictly speaking, we are therefore evaluating the effect of an address in a priority neighbourhood relative to the fact of not mentioning an address upon their initial contact with a potential recruiter.

8. The 10% response rate corresponds to the approximate response rate obtained in the most recent study that uses a similar protocol involving speculative applications (Challe et al., 2020). The relative difference of 20% corresponds to the difference in the rate of positive responses received by the candidate of French origin and the candidate of North African origin identified by this study.

received: 36% of all responses came from companies employing ten or fewer people.

The last three columns in Table 1 reveal the breakdown of applicant profiles applying to the companies based on their characteristics. The random drawing of the characteristics of the second applicant (North African origin and/or place of residence), together with the gender of the two applicants contacting a company, must ensure balanced representation of these characteristics across the various types of company. The average standardised differences⁹ between the frequencies observed for each type of company and the theoretical probabilities are lower, in absolute terms, than the generally accepted threshold of 10, which confirms that the random drawing of the applicants' gender, ethnic origin and place of residence was carried out successfully.

2.2. Gross Positive Response Rates by Gender, Origin and Place of Residence

The 6,000 emails sent by the eight applicants received a total of 1,012 non-automated responses, giving a response rate of 17% (see Table 1). Of these responses, 256 were positive (invitation to submit a CV, encouragement to continue). When compared with the response rate, this gives a positive response rate of

25.3%. When compared with the number of emails sent, the positive response rate is 4.3%: on average, one positive response is received for every 23 messages sent (hereinafter, we will also use the term “success rate” to refer to this positive response rate in relation to the emails sent). These orders of magnitude are comparable to those of our pilot study, which was conducted in the Communauté d'agglomération Maubeuge-Val de Sambre (Anne *et al.*, 2022). Success rates are half of those obtained by Challe *et al.* (2020) in their test involving speculative applications sent to large companies. The difference is linked to small companies that are represented in this study and that are less likely to respond to requests.

Figure I shows the positive response rates obtained by the gender, origin and place of residence of the applicants. The highest positive response rate is obtained by the female applicant

9. The standardised difference is calculated as follows:

$$d = 100 \times \frac{(p_o - p_p)}{\sqrt{\frac{p_o(1-p_o) + p_p(1-p_p)}{2}}}$$

where, for each modality of a variable, p_o is its prevalence within the sample and p_p is its theoretical prevalence. The average standardised difference is the average of the standardised differences for each modality. The advantage of the average standardised difference is that it is not influenced by the size of the sample, unlike equality of proportions tests (Austin, 2009). This approach has been used by several authors, for example in the clinical literature following on from the studies by Rosenbaum & Rubin (1985).

Table 1 – Characteristics of the companies tested

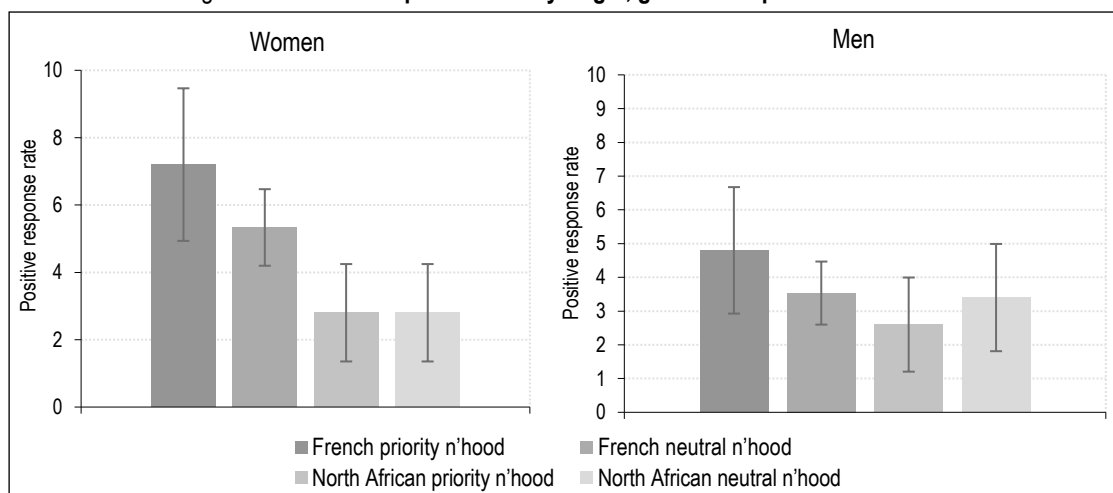
	Average/%	% Responses	% Positives responses	% Female	% North African	% Priority n'hood
Response to email	17					
Female contact person	26					
Turnover (in thousands of euro)	6,022 [64,123]					
Legal form:						
Association	3	23	8	55	30	39
SARL [limited liability companies]	35	19	4	50	33	33
SAS [simplified joint-stock companies]	30	18	5	52	33	34
Other	32	12	3	48	34	32
Average standardised difference				4.5	2.1	4.2
Number of employees:						
0 or 1 employee	16	17	3	53	35	32
2 to 10 employees	18	18	6	50	33	34
11 to 50 employees	13	18	5	50	32	34
More than 50 employees	5	23	17	46	31	36
Not specified	48	15	2	49	34	33
Average standardised difference				3.2	2.5	2.5
Observations				6,000		

Notes: Standard deviation shown in square brackets. The last three columns of the table show the proportions observed for each type of application. The average standardised difference is an indicator of the difference between these observed proportions and the theoretical proportions. In view of the controlled experiment protocol, the theoretical proportion of a request for information being sent by a female applicant for each type of company is 50%. The theoretical proportions of the applicant being either of North African origin or living in a neighbourhood covered by urban policy is 33% for each type of company.

Reading note: The positive response rate within SARLs is 4%.

Source: MELODI-MEL test, TEPP-CNRS.

Figure I – Positive response rates by origin, gender and place of residence



Note: Confidence intervals are set at the 95% risk threshold.
Source: MELODI-MEL test, TEPP-CNRS.

of French origin living in a priority neighbourhood, followed by the female applicant of French origin living in a neutral neighbourhood. It is important to remember that the test concerns the professional field of management assistants, which is very female-dominated. The differences in the response rates for the various profiles seem to be greater for women than for men and, in particular, the differences between the applicants of French origin and those of North African origin are more marked for women than for men. Similarly, applicants living in a priority neighbourhood had a higher response rate than applicants living in neutral neighbourhoods, with the exception of male applicants of North African origin.

Table 2 shows the gross success rates of the various applicants, separating them by gender. For men (Table 2-A), success rates are always higher for the applicants of French origin; but the overall difference is not statistically significant. However, there is a significant difference of 10% within the priority neighbourhood group depending on origin: applicants of French origin are twice as likely to receive a positive response to their request than applicants of North African origin. Their address does not have any significant effect.

For women (Table 2-B), success rates are higher than for men for applicants of French origin and around the same for applicants of North African origin (for secretarial positions, which are largely occupied by women). Women of French origin therefore present higher response rates than women of North African origin. The difference is significant. In relative terms, North African women only have half the

opportunities of women of French origin. The difference exceeds 60% in priority neighbourhoods. Depending on the type of neighbourhood, we observe that success rates are higher in priority neighbourhoods when compared with a neutral neighbourhood, but only for women of French origin. However, this difference in success rates for women of French origin living in priority neighbourhoods as opposed to a neutral neighbourhood is at the limit of significance (12%).

2.3. Econometric Confirmation

The gross success rates come from an experiment in which the characteristics of the applicants are perfectly controlled for, which makes it possible to neutralise all sources of heterogeneity among the applicants; however, we do not control for company characteristics. As the effects are measured across samples made up of different companies, it is important to check whether at least some of the findings can be explained by differences in the characteristics of the companies. In addition, it is important to check whether the differences in positive response rates can be explained by the permutations of the messages and the order in which they are sent by the applicants.

More specifically, since the origin and place of residence of the second applicant varies at random for each application, it is possible to rule out the “company” effect and therefore control for the effects of the non-observed characteristics of the company on positive response rates. Conversely, as the gender of the applicants was assigned to pairs of applicants contacting the same company, it is only possible to control for

Table 2 – Gross success rates

A – For men

Type of test	Positive response rate		Difference between the two applicants	
	Male applicant of French origin	Male applicant of North African origin	Difference (%)	P-value
Male	3.85%	3.00%	0.85	0.237
Neutral neighbourhood	3.53%	3.40%	0.13	0.888
Priority n'hood	4.80%	2.60%	2.20	0.065*
Difference (%)	-1.27	0.80		
P-value	0.202	0.459		

B – For women

Type of test	Positive response rate		Difference between the two applicants	
	Female applicant of French origin	Female applicant of North African origin	Difference (%)	P-value
Women	5.80%	2.80%	3.00	<0.001***
Neutral neighbourhood	5.33%	2.80%	2.53	0.020**
Priority n'hood	7.20%	2.80%	4.40	0.001*
Difference (%)	-1.87	0.00		
P-value	0.122	1.000		

Notes: *** p<0.01, ** p<0.05, * p<0.1. The final column and the bottom row of the table show the p-values of the equality of proportions tests. Reading notes: The positive response rate for women is 3 percentage points higher than for women of North African origin. Source: MELODI-MEL test, TEPP-CNRS.

the effect of observed company characteristics, such as its size and its legal status, in order to identify any possible gender-based discrimination. The different effects are therefore estimated in an unbiased manner if the characteristics are assigned randomly or if the selection is based on observable company characteristics (and on non-observable characteristics with regard to origin and place of residence). Conversely, where selection takes place based on non-observable characteristics, the estimated gender effect could be biased.

We estimate linear probability models using the ordinary least squares method based on the following specification:

$$REP_{ie} = \alpha + \beta Magh_i + \gamma QPV_i + \varphi Fem_e + \tau E_{ie} + \delta O_e + \phi_e + \varepsilon_{ie} \quad (1)$$

where REP_{ie} is a dichotomous variable indicating whether the company e responds positively to applicant i . $Magh_i$ and QPV_i are the variables of interest indicating, respectively, whether the applicant is of North African origin and whether they live in a neighbourhood covered by urban policy. Fem_e is an indicator that equals 1 if the applicant to company e is a woman. E_{ie} is a set of control variables for sending characteristics (message used and sending group). O_e is a set of variables controlling for company characteristics (number of employees, legal form and gender of the contact person). Finally, ϕ_e are company fixed effects: these are introduced in just one

of the specifications and replace the company characteristics.

Table 3 shows the results of the estimate for equation (1), according to different specifications.¹⁰

We observe that the introduction of the sending characteristics into the estimate slightly changes the estimated coefficient for North African origin and has a slightly greater effect on the estimated coefficient for gender.¹¹ Conversely, the introduction of company characteristics does not have any notable influence on the findings. Where company fixed effects are introduced, the gender effect can no longer be estimated as it is the same for both applicants to each individual company. The effects of being of North African origin and of the applicant's place of residence, which are then estimated using only intra-company variations, remain unchanged.

10. The results obtained from linear probability or probit models are similar, though they are slightly less significant with the probit model (see Table A2 in Appendix 2). In the estimates presented, all of the applications tested were retained. However, for a significant proportion of the applications, none of the applicants received a response. It could be considered that these tests do not provide any information on whether or not the behaviour by the company is discriminatory and that they should not be taken into account in the estimate. Estimates were made excluding these applications and provide similar results: the absolute differences are obviously larger, but the relative differences and significance remain the same (see Table A1 in the Appendix).

11. The message sending group is the control variable that has the greatest effect on the results. The sending group is allocated randomly, but there is a possibility that the positive response rate could vary between groups, which may affect the estimates, even though it is unlikely that there is any systematic bias.

We observe significant discrimination towards the applicant of North African origin. The initial difference of 2.1 percentage points between the applicant of French origin and the applicant of North African origin is reduced slightly when the control variables are added, but the difference remains significant at the threshold of 5%. Where the sending and company characteristics are controlled for, the difference between the two applicants is 1.3 percentage points, which corresponds to a difference of 27% in relative terms, in so far as the positive response rate for applicants of French origin is 4.8%.

The difference between male and female applicants is also significant; however, the difference between applicants living in neutral neighbourhoods and those living in priority neighbourhoods is not significant. Having controlled for the sending and company characteristics, gender appears to have a strong influence on the success rate, since being female more than doubles the positive response rate.

2.4. Identification of Combined Effects

We will now look at the combined effects of three discrimination criteria: gender (male/female), origin (French/North African) and place of residence (neutral/priority neighbourhood). More specifically, we analyse the effect of origin and place of residence and their combined effect separately for men and women.

Table 4 shows, separately for men and women, the results of the estimated equation (1) (columns 1 and 2) and the results of an estimate that includes the *North African origin* × *Priority Neighbourhood* combination (columns 3 and 4). This combination makes it possible to test whether the place of residence has a different influence on discrimination depending on an applicant's origin.

First of all, we observe that, in the case of men, the slightly significant average penalty for applicants of North African origin (obtained without taking account of combined effects, column 2) actually varies greatly depending on their place of residence. Applicants of North African origin living in a neutral neighbourhood are not or are only slightly discriminated against, while those living in a priority neighbourhood appear to be heavily discriminated against. The place of residence therefore has an inverted effect depending on the origin of the applicant: the applicant of French origin saw their probability of receiving a positive response increase if they were living in a priority neighbourhood, whereas it decreases for an applicant of North African origin.

For women, the high penalty suffered as a result of being of North African origin, which seems to appear graphically and in the estimates made without controls (column 1), disappears when it is based purely on intra-company variations (column 2). The *North African origin* × *Priority neighbourhood* interaction does not become any more significant once the company fixed effects and sending characteristics have been included, which is at odds with what is observed for men. However, it is not possible to state that women of North African origin are not discriminated against when compared with women of French origin, even though the estimated coefficient is not significant at the threshold of 10%. Indeed, the estimated effect of 1.1 percentage points for the *North African origin* variable (column 2) is similar to that for men (1.5) and corresponds to a Student's test p-value of 19%, which is not far from the threshold of 10%. In addition, the power of this test is relatively low: the probability of detecting a difference of 1 (or 1.5) percentage points between the two female applicants at a risk threshold of 5% if the female applicant of

Table 3 – Effect of origin, gender and place of residence on the positive response rate

	(1)	(2)	(3)	(4)
North African origin	-0.021*** (0.005)	-0.013** (0.006)	-0.014** (0.006)	-0.013** (0.006)
Priority n'hood	0.008 (0.005)	0.004 (0.006)	0.005 (0.007)	0.004 (0.006)
Female	0.012** (0.006)	0.045** (0.021)	0.043** (0.022)	
Sending characteristics		X	X	X
Company characteristics			X	
Company fixed effects				X
Observations	6,000	6,000	5,722	6,000
R ²	0.003	0.012	0.039	0.008

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at the application level in parentheses.

The sending characteristics are: the sending group and the message used. The company characteristics are: the number of employees, the legal form and the gender of the contact person.

Reading note: By controlling for the sending characteristics and introducing company fixed effects, the probability that the applicant of North African origin will receive a positive response is 1.3 percentage points lower than for the applicant of French origin.

Source: MELODI-MEL test, TEPP-CNRS.

Table 4 – Combined effect of origin and place of residence on the positive response rate, by gender

	(1)	(2)	(3)	(4)
	Men			
North African origin	-0.010 (0.007)	-0.015* (0.008)	-0.001 (0.009)	-0.004 (0.010)
Priority n'hood	0.004 (0.007)	0.011 (0.008)	0.013 (0.010)	0.022** (0.011)
North African origin × Priority n'hood			-0.021 (0.015)	-0.034** (0.017)
	Women			
North African origin	-0.033*** (0.008)	-0.011 (0.009)	-0.025*** (0.009)	-0.014 (0.011)
Priority n'hood	0.011 (0.008)	-0.003 (0.009)	0.019* (0.011)	-0.006 (0.012)
North African origin × Priority n'hood		-0.019 (0.016)	0.008 (0.019)	0.008 (0.019)
Sending characteristics		X		X
Company fixed effects		X		X

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at the application level in parentheses. The sending characteristics are: the sending group and the message used. The company characteristics are: the number of employees, the legal form and the gender of the contact person. Reading note: The fact of living in a priority neighbourhood increases the probability of a positive response by 2.2 percentage points for applicants of French origin (column 4).

Source: MELODI-MEL test, TEPP-CNRS.

French origin has a positive response rate of 6% is 22% (or 45%).¹²

3. Discussion

The results that we obtain with regard to the level of discrimination against male applicants of North African origin, namely a difference of around 27% when compared with male applicants of French origin, are similar to those obtained by studies carried out previously in France, which revealed penalties in excess of 20% (Chareyron *et al.*, 2022 ; Acolin *et al.*, 2016).

Conversely, while several correspondence tests previously highlighted a negative effect associated with having an address in a priority neighbourhood in France in the early 2010s (Bunel *et al.*, 2016), our study reveals a zero or inverse effect. Men of French origin living in priority neighbourhoods benefit from a recruitment bonus that is not awarded for men of French origin living in neutral neighbourhoods. This finding must be compared with the development of the *Emplois francs* scheme, which was piloted in the Métropole européenne de Lille from April 2018 before being rolled out to all priority neighbourhoods in 2020, and for which the amount of assistance was increased under the “*I jeune, I solution*” plan for job seekers under the age of 26. The pilot phase of this scheme had therefore already brought about a reduction in residential discrimination, albeit temporarily (Chareyron *et al.*, 2022). It is therefore likely that the positive effect of living in a priority neighbourhood, which is observed for applicants with certain profiles, is due to the subsidies that the companies receive for recruiting these applicants. Indeed, this test was performed within the Nord department, a pilot area for the *Emplois francs* scheme since April 2018, which was, at

the time at which the data were collected in late 2021, the French department with the largest number of contracts under the *Emplois francs* scheme. However, this positive effect brought about by *Emplois francs* does not seem to benefit all applicant profiles: the North African applicant living in a priority neighbourhood did not benefit from this favourable effect associated with their place of residence. Women of French origin also seem to benefit less than men of French origin.

* *
*

In this study, we relied on a correspondence test performed in late 2021 in the Métropole européenne de Lille, which comprises 95 communes and 1 million inhabitants, to analyse the combined effects of gender, origin and having an address in a priority neighbourhood for urban policy when it comes to discrimination in access to employment. The test is based on 6,000 requests for information sent to a representative sample of 3,000 companies in the area by eight fictitious applicants looking for work as management assistants.

The results show that living in a priority neighbourhood provides an advantage for applicants of French origin, probably due to the full roll-out and enhancement of *Emplois francs* in 2021. However, persons of North African origin do not gain any benefit from this bonus for access to employment for residents of priority neighbourhoods. Discrimination on the basis of origin exists for male applicants, but only for those living in a priority neighbourhood. The

12. This probability increases to 33% (or 58%) for a risk threshold of 10%.

bonus for recruiting persons living in priority neighbourhoods, which is associated with the *Emplois francs* scheme, one of the main public policies introduced to combat discrimination, therefore does not benefit applicants of North African origin. These findings call for improved targeting of anti-discrimination measures to capture the populations discriminated against in disadvantaged areas.

To conclude, the limitations of this study are worth noting. The correspondence tests applied

to the labour market measure discrimination by the answers given by recruiters to speculative requests for information; they do not measure discrimination that may affect subsequent stages of recruitment. The measurement is performed at a moment in time, in this case October 2021, across a partial set of professions, in this case assistance and secretarial roles, and in a given area, in this case the Métropole européenne de Lille. It would be worth extending all of these dimensions of the analysis. □

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ROBUSTNESS CHECKS WITH DIFFERENT ESTIMATION METHODS

Table A1 – Effect of origin, gender and place of residence on positive response rates (among the applications that received at least one response)

	(1)	(2)	(3)	(4)
North African origin	-0.074*** (0.020)	-0.057** (0.025)	-0.057** (0.025)	-0.057** (0.025)
Priority n'hood	0.021 (0.020)	0.017 (0.025)	0.022 (0.025)	0.017 (0.025)
Female	0.048** (0.022)	0.149** (0.075)	0.204*** (0.077)	
Sending characteristics		X	X	X
Company characteristics			X	
Company fixed effects				X
Observations	1,466	1,466	1,408	1,466
R ²	0.012	0.043	0.119	0.035

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at the application level in parentheses.

The sending characteristics are: the sending group and the message used. The company characteristics are: the number of employees, the legal form and the gender of the contact person.

Reading note: By controlling for the sending characteristics and introducing company fixed effects, the probability that the applicant of North African origin will receive a positive response is 5.7 percentage points lower than for the applicant of French origin.

Source: MELODI-MEL test, TEPP-CNRS.

Table A2 – Effect of origin, gender and place of residence on positive response rates (probit model)

	(1)	(2)	(3)
North African origin	-0.022*** (0.006)	-0.012* (0.006)	-0.012* (0.007)
Priority n'hood	0.007 (0.005)	0.003 (0.006)	0.004 (0.006)
Female	0.012** (0.006)	0.058** (0.028)	0.061** (0.027)
Sending characteristics		X	X
Company characteristics			X
AIC	2072.412	2071.909	1894.491
Observations	6,000	6,000	5,722

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors clustered at the application level in parentheses. The average marginal effects of the probit models are shown. The sending characteristics are: the sending group and the message used.

The company characteristics are: the number of employees, the legal form and the gender of the contact person.

Reading note: After controlling for sending characteristics and company characteristics, the probability that the applicant of North African origin will receive a positive response is 1.2 percentage points lower than for the applicant of French origin.

Source: MELODI-MEL test, TEPP-CNRS.