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Abstract

In this paper, we document de facto, implicit, and explicit racial biases within the public employment service in Colombia. By combining administrative data about job seekers and job openings with direct surveys to job counselors, including a Race Implicit Association Test, we compute different types of racial bias. We find that while job counselors do not self-report biased attitudes against Afro-descendant individuals, the majority exhibit high levels of implicit bias, which also correlates strongly with observed lower referral rates of Afro-descendants to job openings. In addition, we randomly provide information to job counselors about their implicit bias and test if this information changes their referral behavior. While we demonstrate that the implicit bias of counselors is a major contributor to racial gaps in labor outcomes, we do not find that providing feedback on this unconscious bias changes their referral behavior.

JEL classification: J15, J21, J71

Keywords: Implicit stereotypes, labor market discrimination, developing countries.

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1 Introduction

Extensive literature exists on labor market gaps by race in high-income countries, including the profound impact of discrimination in the hiring process (Charles and Guryan, 2008, 2011; Kline et al., 2022). A global review of audit studies finds that discrimination is ubiquitous against non-majority race-ethnic groups. Across 97 field experiments, whites receive about 50% more callbacks than non-Whites (Quillian et al., 2019).

In the case of Latin America (LAC), approximately 24% of the total population identifies as Afro-descendant. While employment rates do not differ substantially across race, job quality is lower for Afro-descendants. A gap by race in formal employment of over 10 percentage points is observed for Brazil, Colombia, and Uruguay, with gaps persisting over the last 15 years (Araujo et al., 2022). However, in contrast to high-income countries, few studies exist that attempt to carefully measure labor market discrimination by race or ethnicity, mainly due to the lack of data (Ñopo et al., 2010; Ñopo, 2012).

This paper presents different estimates of racial bias in the publicly financed employment system in Colombia. To achieve this, we collected extensive data from various sources to measure de facto, implicit, and explicit racial bias of job counselors within the system.[1] We gathered administrative data of over 300,000 job applicants and 70,000 job posts from across the country over one year. This data allowed us to observe who was referred to which job, enabling us to compare referral rates by race. We combined the administrative data with detailed interviews with 349 job counselors in 81 job centers. During the interviews, we conducted a Race Implicit Association Test (IAT), following Greenwald et al. (2009). Additionally, we asked participants about their explicit preferences toward Afro-descendant workers. Finally, following Alesina et al. (2018), we randomized feedback on the IAT results across job centers to test whether information about implicit, sometimes unconscious, bias against/towards Afro-descendants could influence job referral behavior within the employment services.

We find that job counselors are 15% less likely to refer Afro-descendants for an opening than non-Afro-descendants. With the use of the IAT, we also show that two-thirds of job counselors revealed strong preferences for whites over blacks. Nevertheless, when asked about perceptions about white and black individuals, job counselors do not directly reveal preferences towards white individuals. By combining the administrative data with the survey to job counselors, we find that the difference in the forwarding rates between Afro- and non-Afro-descendants correlates with the implicit bias of job counselors. In fact, Afro-descendants are less likely to be referred to an opening only if the median job counselor of a given job center has a high level of bias against Afro-descendants. Finally, by using the random feedback of the IAT score, we find that information about their own implicit bias does not change job

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[1]De facto bias refers to preferential treatment as measured by realized behaviors. Implicit bias, as measured by the IAT is understood to be of an unconscious or unknown nature. Explicit bias is measured by preferences individuals are willing to report.

counselors' behavior.

We contribute to several strands of the literature. Firstly, we show the distribution and correlation of de facto, implicit, and explicit racial bias among job counselors of the Public Employment Services in Colombia, a middle-income country. We are not the first aiming to understand the role of race in Colombia's labor markets. Previous works, typically focus on large cities, include studies in Cali, the city with the largest number of Afro-descendants (Diosa Ramírez, 2015; Marulanda and Rodríguez, 2014; Paz Moreno and Delgado Cortez, 2017; Heredia et al., 2010), and Cartagena, the city with the highest proportion of Afro-descendants (Romero-Prieto, 2007). There are also some studies for the two biggest Colombian cities, Bogotá (Garavito et al., 2013), and Medellín (Álvarez Ossa et al., 2014; García Sánchez, 2010). Our research is the first to analyze racial differences at the national level.

Furthermore, we joined recent efforts to comprehend racial discrimination in developing countries, particularly in LAC. For instance, a recent study in Brazil found that employer preferences for white workers explain approximately 6% to 7% of the racial wage gap (Gerard et al., 2021). In another study, using data from Brazilian firms in the formal sector, (Miller and Schmutte, 2023) finds strong patterns of co-racial hiring. New firms that are disproportionately comprised of white employees will initially tend to hire white workers, although with persistent growth the hiring becomes more diverse. Additionally, in Mexico, Arceo-Gomez and Campos-Vazquez (2014) shows that indigenous-looking-women received fewer interview requests than mestizo- or caucasian-looking women.[2]

Secondly, our study adds to recent works measuring implicit bias against different minority groups and its correlation with discriminatory behavior. Glover et al. (2017) examines the dynamics between managers with high levels of unconscious bias against immigrants and immigrant workers in France. Carlana (2019) measures the implicit gender bias of teachers in Italy and shows that the gender gap in math performance increases when students are assigned to math teachers with strong gender stereotypes. Additionally, studies have also used the information on unconscious bias as a low-cost intervention to provoke behavior change. Alesina et al. (2018) found that Italian teachers informed about their implicit bias against immigrants changed their relative grades with respect to immigrant and non-immigrant students. Teachers who had reported explicit bias against immigrants did not change how they graded the students. This suggests that being informed about unconscious bias can help change behavior related to differential treatment, for example, by job counselors. Other studies include Alan et al. (2021) on teachers' ethnic prejudice in Turkey, and Corno et al. (2022) on racial stereotypes in student dorms in South Africa.

Finally, our research contributes to the literature on understanding the role of intermediation services in reducing labor market distortions and increasing welfare for minority groups.

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[2]Other studies include Salardi (2016); Cornwell et al. (2017); Hirata and Soares (2020) in Brazil, Canelas and Gisselquist (2018) in Guatemala, and Garavito et al. (2013) in Colombia, and cross-country analyses such as Chong et al. (2008); Woo-Mora (2022)

Recent literature has found positive effects of labor market intermediation services on the probability of employment of job seekers (Crépon and Van Den Berg, 2016), with job search assistance programs more successful for individuals with less access to contributory benefits (Card et al., 2018). Furthermore, the role of public employment services in combating discrimination has been underscored by the International Labor Organization (ILO). Indeed, ILO Convention C111, considered a core labor standard and ratified by all countries in Latin America and the Caribbean, addresses discrimination in employment and establishes a series of actions for Governments, to promote equality and eliminate discrimination in vocational training and placement services (International Labor Organization (ILO), 1958). Public employment services are crucial to follow these recommendations. However, the role of racial bias in labor market intermediation services has received little attention. A notable exception is a recent study in Switzerland that found that rates of contact by recruiters in the Swiss public employment service are 4-19% lower for individuals in minority ethnic groups (Hangartner et al., 2021). Another study that examined the role of ethnicity in labor market intermediation services in Peru, inferred the ethnicity of the job applicant and did not find biased treatment on the part of job counselors (Moreno et al., 2012). Despite finding null effects of IAT information on counselors' behavior, our experimental framework provides valuable information on the limits of revealing unknown biases in changing attitudes and actions.

This paper is organized as follows. After this introduction the next section describes the public employment system in Colombia, followed by of the data in Section 3. Section 4 presents our different estimates of racial bias and their correlations. Section 5 summarizes the results of our experimental intervention and Section 6 concludes.

2 Institutional background – Afro-descendants in the Colombian Labor Market and Public Employment Services (PES).

According to the latest report by the Colombian National Statistics Department (DANE), differences between whites and Afro-descendants in the labor market are more related to the quality of jobs than to participation itself (DANE, 2023).[3] Using data from a national household survey the report found that the occupation rates of whites and Afro-descendants are similar, 89% and 87%, respectively. However, 70.8% of Afro-descendant workers are in the informality, while 55% of white workers have informal jobs. Also, Afro-descendants are less prevalent among professional and directorial jobs. These differences help to explain why the average household monthly income of an Afro-descendant is only 65% of the average income of the household of a white individual (USD 220 and USD 334, for Afro-descendants and whites, respectively).

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[3]In the report whites are described as non-Ethical, which refers to non-Afro-descendant and non-Indigenous individuals.

Under this framework, the Colombia Public Employment Service (PES) was established in 2013 to reduce the high unemployment rates in the country and enhance the quality of employment.[4] The PES provides labor market intermediation services through employment agencies or job centers. The service is offered by local governments and non-profit private institutions called Cajas de Compensación Familiar (CCF), which are funded by contributions from firms.

Job counselors in employment agencies are responsible for registering and guiding job seekers and employers. They also undertake pre-selection and referral of candidates to job postings. Interactions among applicants, firms, and job counselors are mostly online, and all CVs and job postings are uploaded to a common online platform. However, job seekers and firms can also attend their local offices to access direct advice from a counselor (Núñez Méndez and Osorio, 2015).

Once job seekers and potential employers register on the platform, job counselors evaluate each profile and posting to identify strengths and weaknesses of CVs for different job listings. They then match job seekers with job listings to minimize information gaps. Nevertheless, applicants and firms can also search and apply for jobs or invite job seekers for interviews. Additionally, job counselors can link job seekers to workshops (e.g., motivation, soft skills, support for self-employment), job fairs, and other events that could enhance their employability. Employers also receive advice to facilitate and optimize their recruitment process, providing information on best practices.

3 Data

To document different estimates of bias against Afro-descendants in the context of labor market intermediation within PES we use three different data sources.[5]

3.1 PES administrative records

Our first source of data comes from each CV and job vacancy posted at PES by seekers/firms affiliated to a CCF, which are private providers of social services to firms and workers, funded by public resources collected through the payroll of workers (Ministerio de Trabajo and ILO, 2014). We use all CVs from adults 20 to 65 years old, and listings uploaded from March 1st, 2021 to February 28th, 2022. For each CV we observe demographic information such as gender, age, education, and self-identified race. From each vacancy, we observe wage offer, contract type, sector, and each CV that was referred and hired. In total, we observe 348,919

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[4]From 2001 to 2018 the average unemployment rate in Colombia was 11%, 3 pp higher than the average of LAC (Ramos and Álvarez García, 2020).

[5]Figure E.1 in Appendix E summarizes the study timeline including all data collections and interventions.

Table 1: Descriptive statistics

A. Job seekers	Mean	S.D.	B. Job posts	Mean	S.D.	C. Job counselors	Mean	S.D.
	(1)	(2)		(1)	(2)		(1)	(2)
Afro-descendant	0.019	0.135	*Wage*			Afro-descendant	0.026	0.159
Woman	0.510	0.500	Less than 1 MMLW	0.401	0.490	Woman	0.771	0.421
Age	32.525	10.495	2 to 4 MMLW	0.561	0.496	Age	34	6.355
Urban	0.797	0.402	More than 4 MMLW	0.038	0.191	*Education*		
Education			*Contract type*			Secondary or vocational	0.037	0.190
None	0.145	0.352	Undefined or temporal term	0.446	0.497	University degree	0.536	0.499
Primary	0.107	0.309	Fixed term	0.371	0.483	Postgraduate degree	0.427	0.495
Completed secondary	0.328	0.469	Long term	0.183	0.386	*Experience*		
Vocational	0.211	0.408	*Sector*			Less than 1 year	0.152	0.359
University or more	0.209	0.406	Construction	0.070	0.255	1 to 5 years	0.490	0.501
Labor market			Commerce	0.082	0.274	More than 5 years	0.358	0.480
With previous experience	0.763	0.425	Manufacture	0.102	0.303			
Unemployment spell	6.317	3.440	Agriculture or mining	0.041	0.199			
Outcomes			Transport	0.037	0.190			
Referred	0.385	0.487	Services	0.645	0.478			
Hired	0.111	0.315				Job counselors	349	.
						Job centers	80	.
Observations	348,919	.	Observations	76,557	.	CCF	26	.

Notes: Panels A and B use data from UAESPE of all job seekers 20 to 65 years old registered between 01/March/2021 and 28/February/2022. We excluded the CCF COMFAGUAJIRA as its behavior distances from all other CCFs with respect the Afro-descendant CVs registration and referrals. Panel C uses data from online interviews with job counselors in September 2021.

CVs and 76, 557 job listings.

Race is reported through the self-identification of belonging to an ethnic group, in our case, Afro-descendants. Thus, individuals have the discretion to not report their ethnic group.[6]. In this case, Afro-descendant individuals may not identify themselves as part of the Afro-descendant ethnic group, because, they do not feel being Afro-descendant is an ethnicity, or because they may feel that revealing their race may influence their chances to find a job. The mutability of racial identification is common in the region. For instance, Marteleto (2012) shows how racial classification in Brazil shifted with affirmative action policies. More-over, using administrative records of firms in Brazil, in which race is reported by an administrative assistant, Cornwell et al. (2017) find that race is not static inter-temporally as workers change jobs. This is a common issue in the literature.

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As a result, Table 1.A shows that only 1.8% of job seekers defined themselves as Afro-descendant. Around 40% have more than secondary education, while 15% of individuals have no education. In addition, only 38% of job seekers were referred to a job at least once, and only 11% were hired. It is important to point out that we only observe hires through

[6]Individuals are asked about identifications with different ethnic groups, including "Afro-descendant". Finally, they are left with the option of "I do not belong to any ethnic group."

the referral channel, but do not observe individuals that were hired because they apply by themselves or were contacted directly by the firms. Hence, we can understand this hiring rate as a lower bound. With regards to job postings (panel B.) less than 4% offer above 4 Monthly Minimum Legal Wage (MMLW), which is about Colombians median income, and 40% offer 1 MMLW or less. Furthermore, about 15% offer long-term contracts while almost 45% offer only temporary positions. Hence, one can say the majority are formal low-quality jobs. Finally, it is important to point out that the majority are jobs in the service sector.

3.2 Job counselors' interviews, IAT and experimental design

We also gathered information by interviewing 349 job counselors in 80 job centers. The questionnaire had three sections. Section one inquired about socio-demographic characteristics and daily work activities. Section two was a Race IAT to measure implicit stereotypes towards Afro-descendant individuals. Section three asked questions regarding explicit expressions of bias against Afro-descendant populations and other groups. Table 1.C shows the main characteristics of the job counselors in our study. Only 2.6% job counselors are Afro-descendants and 77% are women. They are usually highly educated, with more than 40% having a postgraduate degree. Finally, it is important to point out that only 15% have less than one year of experience at the time of the study.

The IAT measures implicit attitudes about two concepts (in this case, white versus Afro-descendant individuals) and two attributes (positive and negative). Each participant receives instructions to associate concepts and attributes to the "E" or "I" key on a computer (Coutts, 2020; Nosek et al., 2007). To measure bias against Afro-descendants, the IAT compares the response time of associating white people/Afro-descendants with positive attributes using the same key. To guarantee comparability with other studies, we use the same photographs and words from Harvard University's IAT.[7] The idea behind the test is that our brain reacts faster to associations common to us. Thus, if one has a bias against an afro-descendant, the reaction will be faster when a good adjective is followed by a picture of a white person than the reaction when a good adjective is followed by a picture of a black person. The main advantage of this test is to avoid social-desirability bias, as people tend to hide behaviors that may be socially unacceptable.

After collecting data about implicit and explicit racial biases, we randomly separated job centers into two groups. Job counselors in treated centers received feedback about their IAT score a few weeks after the test, while job counselors in the control group received feedback after the study finished. Following closely Alesina et al. (2018) we sent the IAT score by email adding a short explanation. In addition, we called each job counselor using a standardized script to communicate and clarify doubts counselors may have had about their IAT result (for

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[7]To access Harvard's race IAT go to https://implicit.harvard.edu/implicit/takeatest.html. The IAT resources are in Appendix A

details, see Appendixes B.1 and B.2).

We randomized at the job center level for two reasons. First, it reduces the probability of contamination because job counselors from the treated and control groups are less likely to talk with each other. In addition, in the UAESPE data, we can only identify job centers but not job counselors. Therefore, by randomizing at the job center level we can match this data with our treatment variable. We use this random variation in information about IAT to investigate to which extent knowing about their implicit stereotypes could change job counselors' behavior, especially towards Afro-descendant job seekers (as in Alesina et al., 2018).

4   Describing biases against Afro-descendants

We first document the results of the Race IAT among job counselors. As explained before, larger scores represent a stronger association between Afro-descendant pictures and bad adjectives and white pictures and good adjectives. Figure 1.A shows that for both, treated and control counselors, the IAT distribution is centered around a high level of bias towards white individuals, which represents a high level of unconscious race bias against Afro-descendants.[8] The mean and median IAT scores are about 0.65 which, following Greenwald et al. (2009), implies that about 50% of job counselors have a high unconscious bias against the Afro-descendants. In comparison, Colombia ranks 70th out of 146 countries, with an average score of 0.31, in a study that uses data from the Harvard IAT project (Coutts, 2020).

Furthermore, Figure 1 panels B and C show possible differences in IAT scores by observable job counselors' characteristics. Panel B shows that only the counselor's race affects the IAT. Afro-descendant counselors have a lower IAT score and a lower probability of having a high bias towards white individuals. Panel C shows that regardless of the heterogeneity in Afro-descendant population by region (see Figure E.3 in Appendix E), the average job counselor's IAT score does not vary regionally.

In addition, we asked direct questions about race biases and do not find any evidence of explicit discrimination against Afro-descendants from job counselors. For instance, we asked for their perception of Afro-descendant and white workers concerning intelligence and willingness to work. Figure E.4 in Appendix E shows that in both cases the distribution for white and Afro-descendant workers overlap. We also asked for the willingness to have specific groups of individuals as neighbors, including Afro-descendants, and no job counselor responded that they would not want an Afro-descendant as a neighbor (see Figure E.5 in Appendix E).

Finally, we use UAESPE data to estimate the relationship between self-identified Afro-descendant race and the probability of being forwarded and hired in given job opening. To do so, we estimated the following equation:

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[8]Figure E.2 in Appendix E shows the distribution by job counselors' race and gender.

Figure 1: Race IAT score distribution and variation by experimental group, job counselor characteristics, and region.
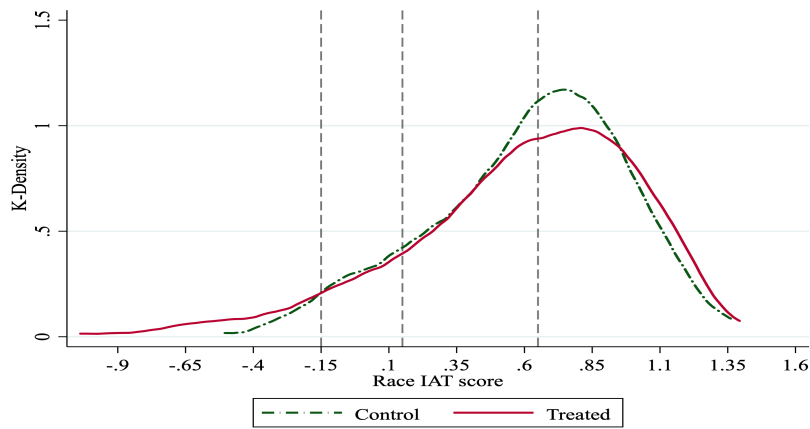
(A) Race IAT score distribution by experimental arm
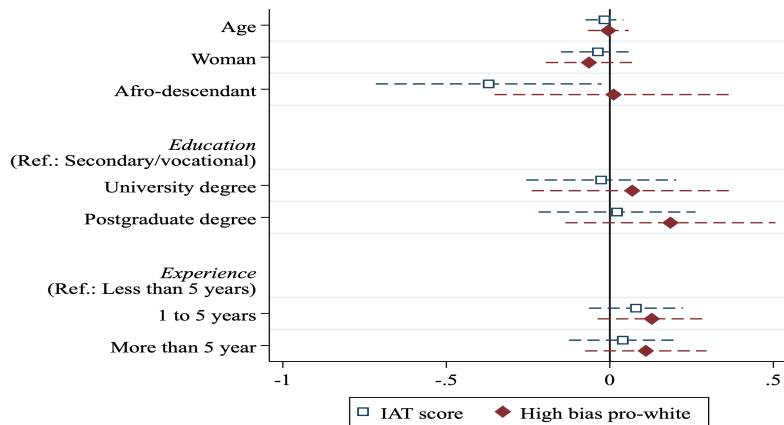
(B) Race IAT correlation with job counselor characteristics
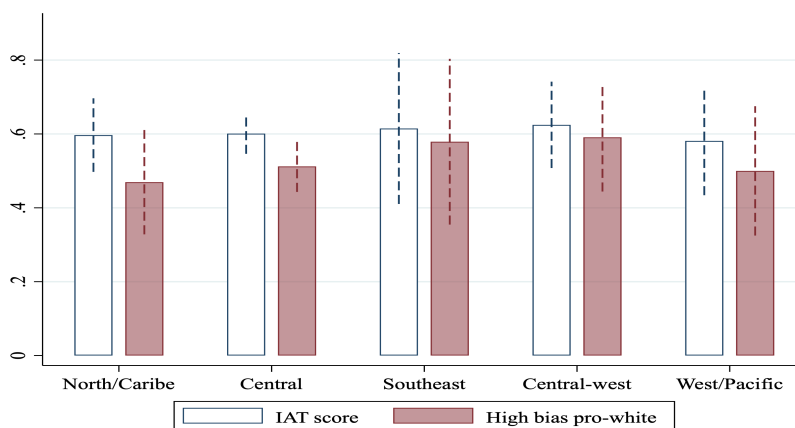
(C) Race IAT by region

Notes: Panel A shows the distribution of the resulting Race IAT scores. A positive value indicates a stronger association between "white"-"good" and "black"-"bad". The vertical dashed lines indicate the critical thresholds suggested by Greenwald et al. (2009). Panels B and C show the correlations between IAT scores and job counselors' characteristics. A high-bias pro-white refers to a dummy that takes the value of one if the IAT score is larger than 0.65.

Table 2: Effect of Afro-descendant CV on the probability of being forwarded or hired by Sector. Pre-study

| | All | By sector | | | |
| | | Services | Commerce | Manufacture | Others |
	(1)	(2)	(3)	(4)	(5)
A. Probability of being forwarded					
Afro-descendant	-0.041[+]	-0.016	-0.010**	-0.003	-0.009
	(0.021)	(0.018)	(0.004)	(0.007)	(0.011)
Mean non-afro	0.280	0.197	0.036	0.040	0.087
R^2	0.172	0.113	0.035	0.055	0.241
Observations	156,053	156,053	156,053	156,053	156,053
B. Probability of being hired | being referred					
Afro-descendant	-0.055**	-0.044*	-0.048	-0.025[+]	-0.063*
	(0.020)	(0.019)	(0.030)	(0.013)	(0.029)
Mean non-afro	0.239	0.179	0.113	0.102	0.286
R^2	0.181	0.135	0.114	0.150	0.351
Observations	59,905	43,014	7,452	8,293	16,944

Notes: Standard errors clustered at job center level in parentheses. $+p < 0.1, *p < 0.05, p < 0.01$. Only includes CVs that entered the system or were forwarded before August 5th, 2021. Does not take into account events such as forwarding and hiring after August 5th, 2021. All estimations control for age, experience, and educational level, and include region and month of registry fixed effects.

$$y_{it} = \gamma_1 Afro_i + X_i\Gamma + M_i + CCF_i \times t + \epsilon_{it} \tag{1}$$

The outcome variable y_{it} will represent the probability that CV i which entered the system in month t is referred or hired. X_i are job seekers' characteristics and M and $CCF \times t$ are municipality and CCF-month fixed effects. Table 2 summarizes the results, for all jobs and by sector of the post, using only information before we started our study (from March 1st to August 5th, 2021). Panel A shows that, conditional on job seeker characteristics, individuals who identify themselves as Afro-descendant are about 4.1 pp less likely to be referred for a job than non-Afro-descendant job seekers. This represents a 15% reduction. Regarding differences by sector, we can see that the effect is driven mainly by a reduction in the likelihood of referral to jobs in the commerce sector. According to some informal conversations with job counselors and CCF's representatives, in the commerce sector "appearance" has great importance, especially for low-quality jobs, which may explain why race is a more important factor in the probability of forwarding a CV.

Panel B shows the effect of race on hiring only for individuals who were referred by a job counselor. Column 1 shows a 5.5 pp decrease which represents a 23% reduction compared with the hiring probability of a non-Afro-descendant individual. This result suggests that even after the referral process firms still hire Afro-descendants with a lower probability. The effect in all sectors is negative, however, it is not statistically significant in the commerce sector probably due to the reduction in sample size. Finally, Table E.6 in Appendix E shows

the results by job post quality. There, one can see that the effect of race on referral rates is not different among different types of jobs, if anything, race matters more when hiring in low-quality jobs.

Although one cannot read these estimates as causal they are informative of different biases along the hiring process, from job counselors to firms. In addition, as discussed before, self-determination as an Afro-descendant has measurement error, which could lead to attenuation bias. In Appendix D we discuss an IV approach to take into account the measurement error in the fashion of Maccini and Yang (2009). The resulting IV estimates align with the estimates in Table 2 (see the results in Appendix D).

After describing the implicit, explicit, and de facto race biases in the Colombia PES, we follow Carlana (2019) to estimate the relationship between the implicit and de facto bias.

Figure 2.A shows the difference between the probability of referring Afro-descendant CVs versus the probability of referring a non-Afro-descendant CV as a function of the respective job center's IAT median. When the median IAT within a center increases (meaning a higher implicit bias against Afro-descendants within the job center), the probability of forwarding an Afro-descendant CV decreases with respect to a non-Afro-descendant CV. Our results indeed validate the IAT measure as higher the implicit bias against Afro-descendant, higher the de facto bias in referring Afro-descendant CVs.[9]

The results in Table 2 and Figure 2.A raise a question. Are job counselors introducing their own biases to the recruitment process, or, are job counselors internalizing firms' biases? Given that CCFs and job centers depend on firms' transactions, job counselors may reduce the probability of referring Afro-descendant CVs to please firms and maximize the probability of a successful match. To shed light on this we propose the following hypothesis. If the de facto race bias shown in Table 2 is driven by job counselors internalizing firms' discrimination against Afro-descendant workers. Better job counselors should do better matching and should also refer less Afro-descendant CVs.

We cannot match referring behavior at the job counselor level. Then, we create a dummy variable if a given job center has at least one high-quality job counselor. We use two proxies, first, we check if a job center has at least one job counselor with more than 5 years of experience, second, we check if the job center has at least one counselor with a postgraduate degree.[10] For comparison, we also create a dummy if the median IAT in a given job center is larger than the threshold for high bias towards non-Afro-descendants (0.65).

Figure 2.B shows the differential probability in referring Afro-descendant CVs with respect

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[9]Figure E.6 in Appendix E show a similar pattern when using the minimum, maximum, and mean IAT score by job center. In addition, Figure E.7 in Appendix E shows that the Race IAT within a job center does not correlate with the differential probability of referring a CV with respect to gender or age.

[10]Figure E.8 in Appendix E shows that in job centers with counselors with high education and more experience refer fewer CVs but do not miss on referring CVs that will be hired.

Figure 2: Differential estimated probability to refer and hire an Afro-descendant CV vs a non-Afro-descendant CV by the median job center's IAT score, and other job counselors' characteristics.
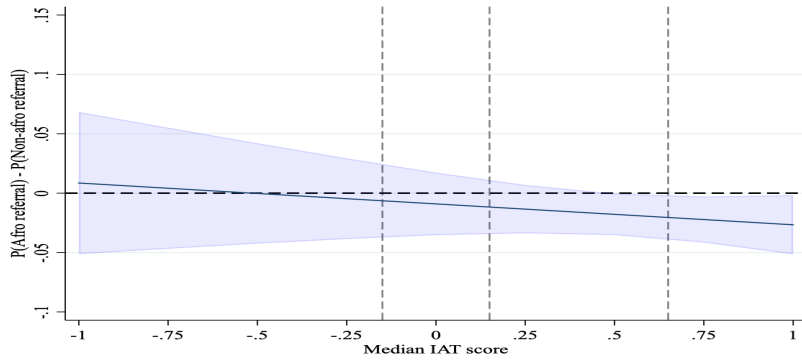
(A) By job center's Race IAT Median
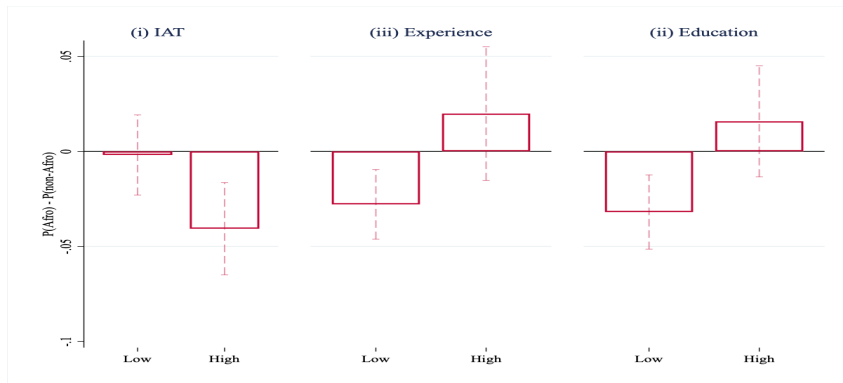
(B) Probability of referring a CV (Afro - non-Afro) by job center's counselors' IAT and quality
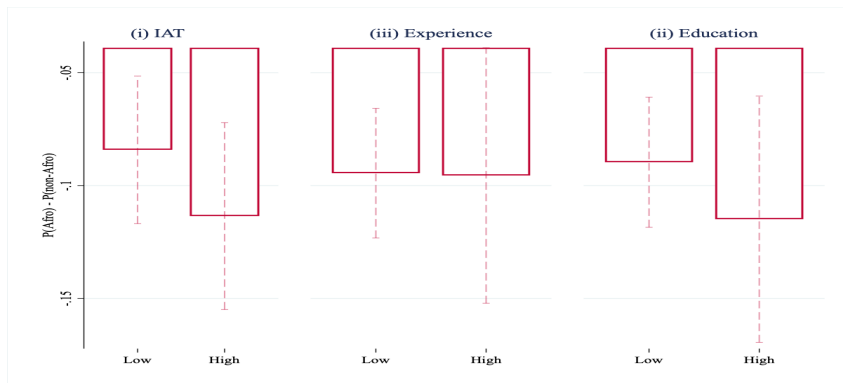
(C) Probability of hiring a referred CV (Afro - non-Afro) by job center's counselors' IAT and quality

Notes: Panel A shows the estimated differential probabilities following estimates of the equation $Ref_{iJt} = \alpha_0 + \alpha_1 Afro_i + \alpha_2 g(IAT_J) + \alpha_3 Afro_i \times g(IAT_J) + \alpha_5 Afro_i \times X_i + M_i + CCF_J + R_{Jt} + \mu_{iJt}$. Where $Ref_{iJt} = 1$ if the CV i, managed by job center J, in month t was referred to a job post. $Afro_i = 1$ if the individual i identifies himself as Afro-descendant, and $g(IAT_J)$ is a function of the IAT scores of the job counselors at job center J, for example, the median IAT of the counselors of a given job center. X_i is a vector of characteristics of the job-seeker, M_i are municipality fixed effects, CCF_i are CCF fixed effects, R_{Jt} are region-month fixed effects, and μ_{iJt} is a random unobservable error term. The area reflects a 95% confidence interval. The vertical dashed lines indicate the critical thresholds suggested by Greenwald et al. (2009). Panels B and C report the differential probabilities following estimates of the equation $Y_{iJt} = \alpha_0 + \alpha_1 Afro_i + \alpha_2 D_J + \alpha_3 Afro_i \times D_J + \alpha_5 Afro_i \times X_i + M_i + CCF_J + R_{Jt} + \mu_{iJt}$, where Y is referring (Panel B) and hiring conditional on being referred (Panel C), D has three definitions, and takes value of 1 if (i) job center's IAT is above 0.65, (ii) job center has at least one counselor with 5 years of more of experience, and (iii) job center has at least one counselor with postgraduate education. Dashed lines represent a 95% confidence interval.

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to non-Afro-descendant CVs by job counselor's IAT and quality (at the job center level). The figure shows that job centers with high bias are the ones where Afro-descendants have a lower probability to be referred. When we look at job counselor quality, job centers with less educated and less experienced counselors are the ones that show a negative bias toward Afro-descendant CVs. Additionally, Panel C shows the differential probability of hiring for CVs that were referred by job counselors. In the figure, we can see that the level of implicit bias or counselor's quality does not create variation in the hiring bias against Afro-descendants. Therefore, our evidence does not support the idea that the discrimination of job counselors against Afro-descendants comes from an effort to internalize the bias of the firms that are hiring. What is more, once a CV has been referred, job counselors' characteristics seem to play no role in affecting firms discrimination against Afro-descendant workers.

5   Effect of information about implicit bias on race bias

Finally, we use the random allocation of information about IAT results to estimate the impact of such information on Afro-descendant referral and hiring rates. We combine data from UAESPE and our vignette study. Unfortunately, all our evidence suggests that knowing about their implicit association bias (IAB), does not change the referring behavior of counselors. Before discussing our results, it is worth noting Table C.1 in Appendix C summarizes the balanced test with respect to job counselors and CV characteristics. The first piece of evidence comes from Figure 3, which shows that for both Afro- and non-Afro-descendant job seekers the referral rates did not change after the IAT feedback to the treatment group finished.

We also estimate formally the effect by using data from UAESPE we can use the timing of our intervention to estimate the effect of information on referral rates using a *difference-in-difference* strategy taking advantage of the random allocation of the IAT feedback. The details of these estimations are in Appendix C. Summarizing, in line with Figure 3, we do not find any changes in referral behavior induced by the bias information.

6   Conclusion

Labor market discrimination by race is a topic of great interest with a large knowledge gap in low- and middle-income economies, due mostly to a lack of data. In this paper we documented strong de facto and implicit biases against Afro-descendant job seekers in the Colombian public employment system. While the IAT feedback did not have a strong impact, different from the case of Alesina et al. (2018) intervention in Italy, our study highlights a key part of the labor market where racial bias plays a role in contributing to gaps in employment outcomes for Afro-descendants in Colombia. Better understanding this bias, at the level of intermediation counselors or at the level of employers, can improve the design of future in-

Figure 3: Referral rate by month, race, and experimental arm
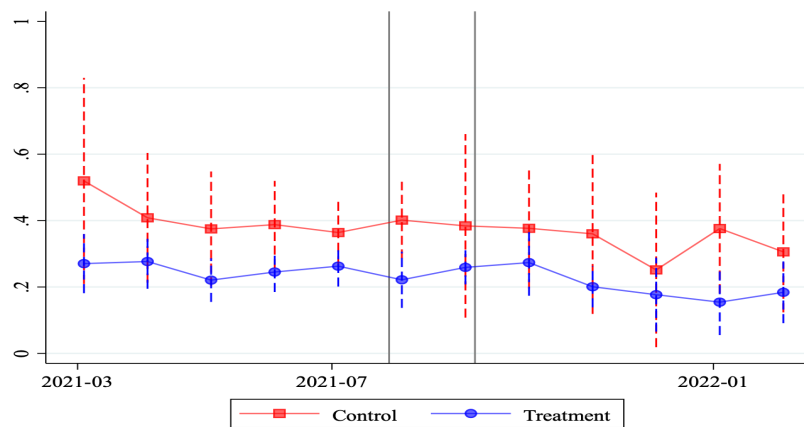
(A) Afro-descendant applicants
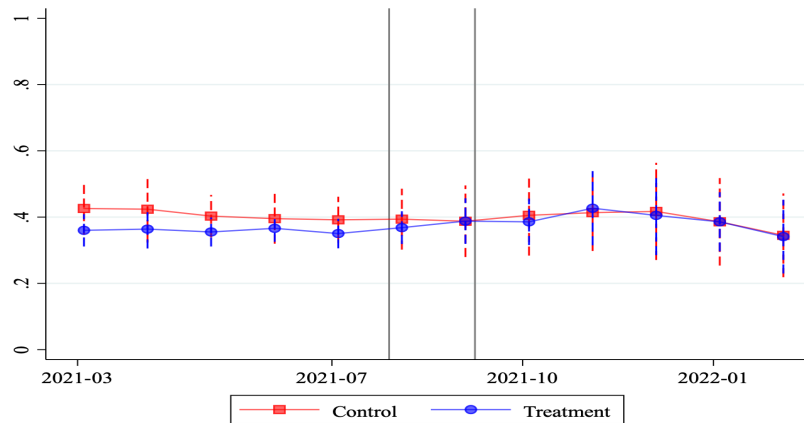
(B) non-Afro-descendant applicants

Notes: Dashed lines represent a 95% confidence interval. Standard errors clustered at the job center level. The period of study implementation between gray vertical lines (from first contact to CCFs to IAT feedback to the treatment job counselors).

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terventions that aim to prevent or reduce this bias. Moreover, there is a potential for a brief intervention to have sustainable impacts as shown by Miller (2017) who finds that short-run programs can have long-run effects on the racial composition of firms, such as interventions that induce persistent changes in recruitment policies.

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A IAT resources

- Content: Implicit Race Association Test (IAT) – International Standard Version

- Source: https://implicit.harvard.edu/implicit/Study?tid=-1

- Words:

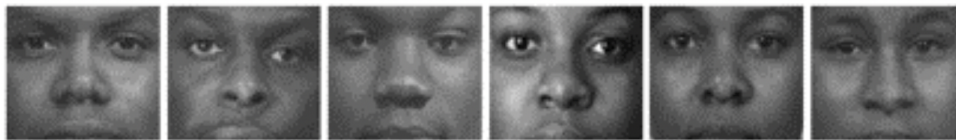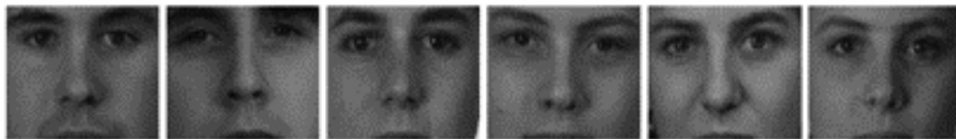| Category	items
A. In English:	
Good	Joy, Love, Peace, Wonderful, Pleasure, Glorious, Laughter, Happy
Bad	Agony, Terrible, Horrible, Nasty, Evil, Terrible, Failure, Pain
B. In Spanish	
Good	Alegría, Amor, Paz, Maravilloso, Placer, Glorioso, Risa, Feliz
Bad	Agonía, Terrible, Horrible, Desagradable, Malvado, Malísimo, Fallo, Dolor

- Pictures:

  - Black faces:

  - White faces:

B IAT results feedback

The feedback to job counselors happened in two instances. First we sent an e-mail (following Alesina et al., 2018), including the exact numerical value of the test, the category the are placed according to Greenwald et al. (2009). We complement the e-mail with a phone call in order to clarify doubts. In this section we show the e-mail template and the script followed by our call center. Given that both, e-mail and calls, were personalized, in this section you will find XXX where the score was placed. In addition, in the email, we place an **"X"** in the respective box in the scale figure, and give one of the following **PERSONALIZED MESSAGE**, depending on the job counselor's result:

- High preference towards white people: You have a high unconscious tendency to associate positive things with white people and negative things with Afro-descendant people. This could lead to a strong preference for white people over Afro-descendant people in different areas of life (for example, work, personal, among others).

- Intermediate preference towards white people: You have an intermediate and unconscious tendency to associate positive things with white people and negative things with Afro-descendant people. This could lead to a preference for white people over Afro-descendant people in different areas of life (for example, work, personal, among others).

- Low preference towards white people: You have a low unconscious tendency to associate positive things with white people and negative things with Afro-descendant people. This preference could lead to a slight preference for white people over Afro-descendant people in different areas of life (for example, work, personal, among others).

- Neutral: You are neutral or do not have unconscious tendencies to associate positive or negative things with white or Afro-descendant people. This could lead to not having preferences between Afro-descendant or white people in different areas of life (for example in work, personal, among others).

- Low preference towards Afro-descent people: You have a low unconscious tendency to associate positive things with Afro-descendant people and negative things with white people. This could lead to a slight preference for Afro-descendant people over white people in different areas of life (for example, work, personal, among others).

- Intermediate preference towards Afro-descent people: You have an intermediate and unconscious tendency to associate positive things with Afro-descendant people and negative things with white people. This could lead to a preference for Afro-descendant people over white people in different areas of life (for example, work, personal, among others).

- High preference towards Afro-descent people: You have a high unconscious tendency to associate positive things with Afro-descendant people and negative things with white

people. This could lead to a strong preference for Afro-descendant people over white people in different areas of life (for example, work, personal, among others).

B.1 E-mail

Dear (Name):

We are writing to inform you of your result on the Implicit Association Test that you completed during the first activity in the IADB and Econometría study about employment management. The test investigates the automatic unconscious associations between photographs of white and Afro-descent people, with positive and negative characteristics or actions.

> **Your test result was: XXX**

This result is framed in the following scale of results:

High preference towards white people	Intermediate preference towards white people	Low preference towards white people	Neutral	Low preference towards Afro-descent people	Intermediate preference towards Afro-descent people	High preference towards Afro-descent people
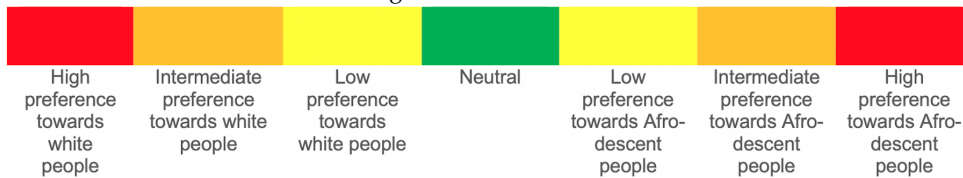
This means that **PERSONALIZED MESSAGE**:

Remember that this measures unconscious attitudes and not behaviors on purpose. Our attitudes often derive from the cultural and social context in which we live.

We reiterate that your answers to the test and survey are confidential: only the researchers involved in this study will have access to the information you provided. Your answers will not be shared with other people. The data collected will be published in an aggregated form and it will not be possible to link it to particular people. We hope that this test has been useful to you.

Once again, thank you very much for participating in our study.

Sincerely,

The research team

B.2 Call script

- **Moment 0**: Greeting and thanks for participating in the study

- **Moment 1**: Verification of reception of results. What is the IAT? What is the IAT used for?

    - In this study, an implicit preferences test was applied, and we sent you your personal results. Did you receive them?

    - Have you had a chance to review them?

    - You must be wondering more details about what kind of test is this. Well, I tell you that it is a test that is used to study the different types of unconscious preferences that we could have, based on the connections that our brain makes between certain characteristics and concepts.

    - For example, if I say Santa Marta, in Colombia, people automatically think of the sea, the beach or vacations.

- **Moment 2**: How are biases constructed?

    - We want to emphasize that the unconscious preference test reveals implicit attitudes and not behaviors. Our attitudes often derive from the cultural and social context in which we live. These preferences are built from socially normalized attitudes and expressions, such as: she is dark-haired but pretty, a tasty black man, working like a black man, etc.

    - Throughout life, people observe these attitudes, and when our family or friends laugh at them, we unconsciously or consciously accept them in our brain and in this way, we adapt to a type of preference because we want to fit in.

- **Moment 3** – How to read the result

    - Knowing your result, you can not only get to know yourself better, but review the attitudes that could be expressing your preference if you have one.

- **Moment 4** - Result and goodbye

    - Remember that your result was: **PERSONALIZED MESSAGE**

    - Thank you very much for participating in the study.

    - Do you have any questions or suggestions?

    - Thanks again and have a great day.

C Estimating the effects of IAT information on Afro-descendant job seekers.

As explained in Section 3, as part of the study we tested if information about their IAT score could change job counselors referral behavior. In Section 5 we already show that the probability of referring and non-Afro- or an Afro-descendant CV did not change after we sent the IAT feedback, for neither the treated or the control group. In this section, we give more formal evidence that the information did not have an effect of job counselors behavior.

Before showing additional results, Table C.1 presents evidence in support of the randomness of our intervention using job counselor and job seeker level data. Panel A shows that among job counselor characteristics tenure is the only one that shows differences between treated and control groups. Panel B, shows that small differences with respect to education and labor market experience of job seekers who apply to treated or control job centers before our study began. Also, in both panels, the F test shows that observable characteristics have little power to predict the allocation of the treatment.

Using data from UAESPE and the random timing of the feedback, we can estimate the effect of IAT information on referral rates using a *difference-in-difference* strategy. Then, if $T_t = 1$ if the CV entered the system after the feedback was sent and $Info_J = 1$ for the job centers in the treated group (early IAT feedback), we can estimate the following equation:

$$
\begin{aligned}
Ref_{iJt} =& \theta_1 Afro_i + \theta_2 Afro_i \times Info_J + \theta_3 Afro_i \times T_t + \theta_4 Afro_i \times T_t \times Info_J \\
& + Afro_i \times X_i + M_i + CCF_J + R_{Jt} + \mu_{iJt}
\end{aligned}
\tag{C.1}
$$

In this case, $\hat{\theta}_4$ represents the differential trend in referring Afro-descendant CVs in treated job centers after their job counselors got feedback about their implicit racial bias. It is important to point out θ_1 are biased estimators of the effect of race on referral rates. However, under the assumption that race is independent of the IAT distribution and the allocation of information about IAT scores, one can identify θ_4.[11]

---

[11]Simplifying, for a given month, to measure the effect of race ($Afro$) on employment y we estimate the following: $y_i = \beta_0 + \beta_1 Afro + X + \mu_i$. However, endogeneity arises from the fact that real race is $Afro_i = \tilde{A} + v_i$, where $\tilde{A}$ is observed, self-identified, Afro-descendant. Even if we are estimating the biased effect of race on y, $y_i = \beta_0 + \beta_1 \tilde{A} + X + \beta_1 v_i + \mu_i$, our estimate of interest is $\beta_{1,Info=1} - \beta_{1,Info=0} = \theta_4$. Where $Info$ is the randomly assigned IAT feedback. Then, taking expectations with respect to observed afro ($\tilde{A}$) and treatment ($Info$):

$$
\begin{aligned}
\hat{\theta}_4 =& (E[y_i|\tilde{A} = 1, X, Info = 1] - E[y_i|\tilde{A} = 0, X, Info = 1]) - \\
& (E[y_i|\tilde{A} = 1, X, Info = 0] - E[y_i|\tilde{A} = 0, X, Info = 0]) \\
\hat{\theta}_4 =& \beta_{1,Info=1} - \beta_{1,Info=0}
\end{aligned}
$$

Thus, $\hat{\theta}_4$ is an unbiased estimator of θ_4. By introducing time, we are also controlling by different trends before and after the treatment.

Table C.1: Balance test for IAT information random allocation.

A. Job counselors characteristics			*B. Job seeker characteristics*		
	Difference between treated and non-treated (1)			Difference between treated and non-treated (2)	
Afro-descendant	-0.018	(0.022)	Afro-descendant	0.008	(0.008)
Woman	-0.008	(0.047)	Woman	0.007	(0.015)
Age	-1.307	(0.899)	Age	0.498	(0.467)
Education			Urban	0.009	(0.031)
Secondary or vocational	0.005	(0.027)	*Education*		
University degree	-0.072	(0.054)	None	-0.024	(0.017)
Postgraduate degree	0.067	(0.061)	Primary	-0.005	(0.011)
Tenure			Completed secondary	-0.022	(0.019)
Less than 1 year	0.049	(0.044)	Vocational	0.028	(0.015)+
1 to 5 years	-0.175	(0.073)*	University or more	0.023	(0.023)
More than 5 years	0.126	(0.083)	*Labor market*		
Region			With previous experience	0.060	(0.027)*
NorthSLCaribe	-0.020	(0.104)	Unemployment spell	0.051	(0.050)
Central	-0.039	(0.179)	*Outcomes*		
Central-west	0.051	(0.040)	Referred	-0.052	(0.043)
Southeast	0.112	(0.091)	Hired	-0.041	(0.033)
WestSLPacific	-0.105	(0.071)			
IAT score			F Test	0.997	
IAT score	-0.025	(0.037)	Observations	156,182	
High IAT score	-0.008	(0.038)			
F Test	4.741				
Observations	349				

Notes: Standard errors clustered at job-center in parentheses ( ). $^{+}p < 0.1$, $^{*}p < 0.05$, and $^{**}p < 0.01$. F Test represents the joint significance test of all indicators as explaining variables of the treated status. Panel B only uses information from March 1 to August 5, 2021.

Table C.2 shows the estimate θ_4 from Equation C.1. We also investigate differences in the impact by job post type and sector, job seeker characteristics, and job center characteristics. Summarizing, we do not find any positive effect from the intervention. If anything, information about the IAT had a negative effect for Afro-descendant job seekers in rural areas.

Table C.2: Effect of IAT feedback on the probability difference by race of CV-forwarding.
Difference in difference estimates

Panel A: By job post type.

| | Any job | By wage | | By contract type | |
| | | ≤ 1 MMLW | > 1 MMLW | Short term | Long term |
	(1)	(2)	(3)	(4)	(5)
θ_4	-0.038	0.005	0.015	0.033	-0.014
	(0.032)	(0.027)	(0.023)	(0.029)	(0.027)
R^2	0.193	0.159	0.154	0.163	0.149
Observations	348,834	348,834	348,834	348,834	348,834

Panel B: By job post sector.

| | | Services | Commerce | Manufacture | Others |
	(1)	(2)	(3)	(4)	(5)
θ_4	-0.038	-0.008	0.001	0.037	0.010
	(0.032)	(0.027)	(0.010)	(0.044)	(0.024)
R^2	0.193	0.124	0.049	0.045	0.262
Observations	348,834	348,834	348,834	348,834	348,834

Panel C: By job seeker characteristics.

| | | By gender | | By zone | |
| | | Men | Women | Rural | Urban |
	(1)	(2)	(3)	(4)	(5)
θ_4	-0.036	-0.042	-0.043	-0.130*	0.000
	(0.027)	(0.045)	(0.031)	(0.053)	(0.026)
R^2	0.204	0.209	0.205	0.450	0.152
Observations	348,834	170,663	178,016	70,679	277,989

Panel D: By job center characteristics.

| | | By median IAT score | | By experience | |
| | | Low | high | Low | High |
	(1)	(2)	(3)	(4)	(5)
θ_4	-0.036	-0.037	-0.034	-0.037	0.002
	(0.027)	(0.054)	(0.032)	(0.031)	(0.077)
R^2	0.204	0.220	0.210	0.210	0.193
Observations	348,834	151,778	196,877	286,973	61,703

Notes: Following Equation C.1. Standard errors clustered at job center level in parentheses. $+p < 0.1, *p < 0.05, **p < 0.01$. All estimations control for age, zone, experience and educational level interacted with race in order to take into account how observable variables affect referral rates differently by race. The estimations also include region-month of registry and city of residence fixed effects. In Panel D, Low/High median IAT score refers to job centers where the median IAT score is below/above 0.65. Low/High experience refers to job centers without/with a counselor with 5 or more of experience.

D IV Approach

In Section 4 we discussed the problems of estimating the effect of race on referral and hiring may lead to biased estimators due to measurement error induced by the fact that the definition of Afro-descendant is self identification with a minority group. Even though we do not observe perfectly who is and who is not Afro-descendant, it is very likely that job counselors and even more likely that firms do observe race. To deal with measurement error we follow Maccini and Yang (2009). In this case we look for other measures of Afro-descendant prevalence that are not perfectly correlated with the probability that a given job seeker self identify as Afro-descendant. We use Census 2018 data to estimate the proportion of Afro-descendant by municipalities-gender-age. Then, if $Afro_{iMgat}$ is the probability of being Afro-descendant for the job seeker i who is gender g, age a, living in municipality M, we estimate the following reduced-form linear relationship:

$$Afro_{iMgat} = \phi_1 Afro_{Mga} + + X_{iMga}\Gamma + M_i + CCF_i \times t + \eta_{imgat} \tag{D.2}$$

Where $Afro_{Mga}$ is the proportion of adults identified as Afro-descendants for gender g, age a, in municipality M. As in Equation 1, we also include characteristics of the CV (X_i), and municipality and CCF-month fixed effects. Identification relies on the fact that both measures may have measurement error, however, they both only correlate by the likelihood that of real Afro-descendants in a given gender-age-municipality cell. Table D.3 shows the resulting estimates of ϕ_1, for different definitions of the reference population (all adults, economic active adults, and working adults), and age cells (every 5 and 10 years). In all cases the proportion of Afro-descendants for a given cell from the Census data is a strong predictor of the probability that a given job seeker self identify him or her self as Afro-descendant.

Afterwards, we can re-estimate equation 1 but using the predicted race from the last estimates. We use the estimates from Table D.3 column 1. The smaller age cell gives us more variation within municipality. In addition, using all adults as referenced population also helps identification, because the unobserved reasons for an adult to report belonging to a minority (Afro-descendant) while looking for a job may not be the same that the unobserved reasons when answering a Census.

Given that we are using a linear model, and that the first stage estimate is small (0.09), the coefficients are larger than one in many cases. For this reason, in order to give more sense to our estimates we use and IV-Probit estimator, using a control function approach as in Blundell and Powell (2004). Table D.5 shows the estimated difference in the average probability of being referred between afro-descendants and non-afro-descendants. One can see that in the coefficients in column 1 are larger (more negative) than those in Table 2, which aligns with the idea that measurement error was leading to attenuation bias in our case.

Table D.3: First stage estimates for different definitions of the instrument

Reference population:	Outcome: Probability of self-identify Afro-descendant					
	All adults		Economic active adults		Employed adults	
Age cell size (years):	5	10	5	10	5	10
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. All applicants						
Afro-descendant proportion by cell	0.090**	0.091**	0.091**	0.091**	0.092**	0.092**
	(0.022)	(0.027)	(0.022)	(0.027)	(0.022)	(0.027)
F-Test	16.610	11.124	17.003	11.319	16.857	11.209
N	156053	156053	156053	156053	156053	156053
Panel B. Only forwarded applicants						
Afro-descendant proportion by cell	0.104**	0.106**	0.104**	0.104**	0.108**	0.108**
	(0.036)	(0.040)	(0.035)	(0.039)	(0.036)	(0.041)
F-Test	8.585	6.947	8.649	6.915	8.853	7.067
N	59905	59905	59905	59905	59905	59905

Notes: Standard errors clustered at municipality-gender-age cell level in parentheses. $+p < 0.1, *p < 0.05, **p < 0.01$. Only includes CVs that entered the system between March 1st and August 5th, 2021. All estimations control for age, experience, and educational level, and include municipality and CCF-month of registry fixed effects. The F-Test represents the F statistic from the null hypothesis that $\phi_1 =$.

Table D.4: Effect of Afro-descendant CV on the probability of being forwarded by Sector and job-type. Pre-study

		By sector			
	All	Services	Commerce	Manufacture	Others
	(1)	(2)	(3)	(4)	(5)
Reduced form estimates	-0.220**	-0.237**	-0.017**	-0.027**	0.033**
	(0.035)	(0.034)	(0.005)	(0.005)	(0.010)
IV estimates	-2.449**	-2.637**	-0.194**	-0.297**	0.368*
	(0.756)	(0.780)	(0.071)	(0.109)	(0.152)
Mean non-afro	0.280	0.197	0.036	0.040	0.087
FS-F First Stage F-Test	16.610	16.610	16.610	16.610	16.610
R^2	-0.459	-0.697	-0.001	-0.024	-0.013
Observations	156053	156053	156053	156053	156053

		By job type			
	All	By wage		By contract type	
		≤ 1 MMLW	> 1 MMLW	Short term	Long term
	(1)	(6)	(7)	(8)	(9)
Reduced form estimates	-0.220**	-0.032$^+$	-0.215**	-0.090**	-0.158**
	(0.035)	(0.018)	(0.035)	(0.019)	(0.036)
IV estimates	-2.449**	-0.360	-2.386**	-0.996**	-1.759**
	(0.756)	(0.220)	(0.745)	(0.343)	(0.613)
Mean non-afro	0.280	0.176	0.172	0.184	0.171
FS-F First Stage F-Test	16.610	16.610	16.610	16.610	16.610
R^2	-0.459	0.032	-0.634	-0.084	-0.321
Observations	156053	156053	156053	156053	156053

Notes: Standard errors clustered at municipality-gender-age cell level in parentheses. $+p < 0.1, *p < 0.05, **p < 0.01$. Only includes CVs that entered the system between March 1st and August 5th, 2021. All estimations control for age, experience, and educational level, and include municipality and CCF-month of registry fixed effects. Afro-descendant identification instrumented with the proportion of afro-descendant population at the municipality-gender-age cell (5 years) at the 2018 census – As in Table D.3 Panel A column 1. The F-Test represents the F statistic from the null hypothesis that $\phi_1 =$.

Table D.5: IV-Probit estimated effect of Afro-descendant CV on the probability of being forwarded by Sector and job-type.

| | Estimated difference P(Afro-descendant) - P(Non-Afro) | | | |
| | Coefficient | s.e. | Non-Afro mean | Observations |
	(1)	(2)	(3)	(4)
All	-0.054	(0.008)**	0.283	154441
By Wage				
Less than 1 MMLW	-0.023	(0.007)**	0.179	153337
More than 1 MMLW	-0.000	(0.008)	0.174	153039
By Contract type				
Short term	-0.014	(0.008)[+]	0.187	153297
Long term	-0.009	(0.007)	0.174	152888
By Sector				
Services	-0.006	(0.008)	0.200	153751
Commerce	-0.022	(0.003)**	0.040	141501
Manufacture	0.016	(0.006)**	0.043	144929
Others	0.023	(0.006)**	0.090	150569

Notes: Bootstrap standard errors after 1000 repetitions in parentheses. $+p < 0.1, *p < 0.05, **p < 0.01$. Only includes CVs that entered the system between March 1st and August 5th, 2021. All estimations control for age, experience, and educational level, and include municipality and CCF-month of registry fixed effects. Afro-descendant identification instrumented with the proportion of afro-descendant population at the municipality-gender-age cell (5 years) at the 2018 census. To account for endogenous reporting we use a control function approach by introducing the error term from the first stage estimations into the Probit estimation.

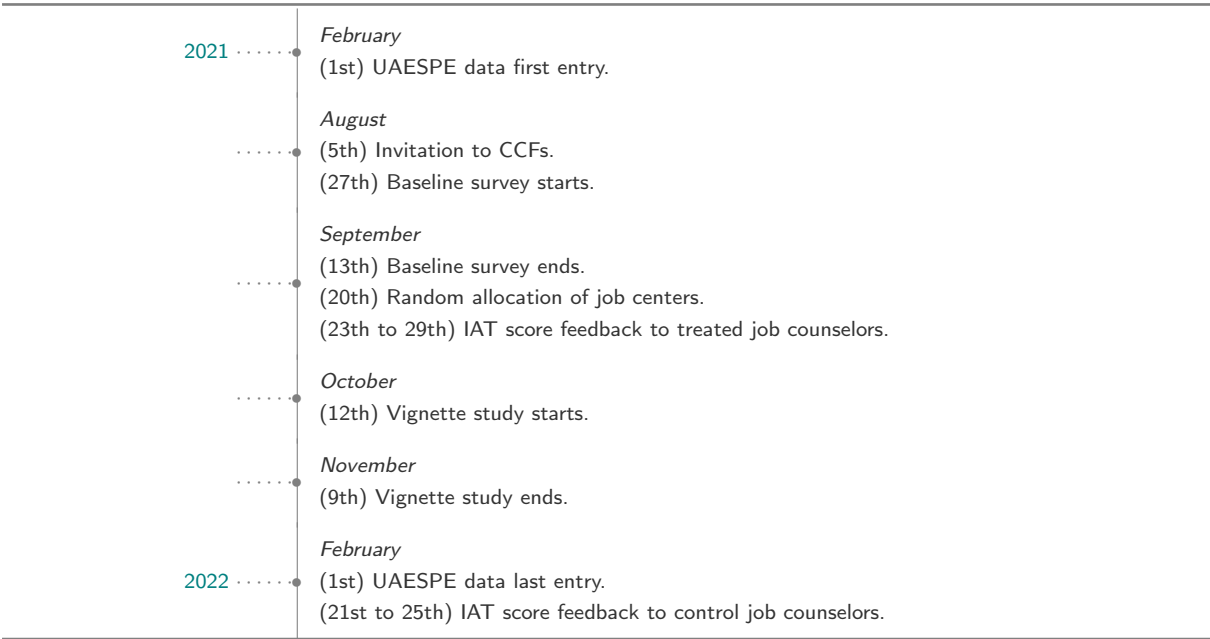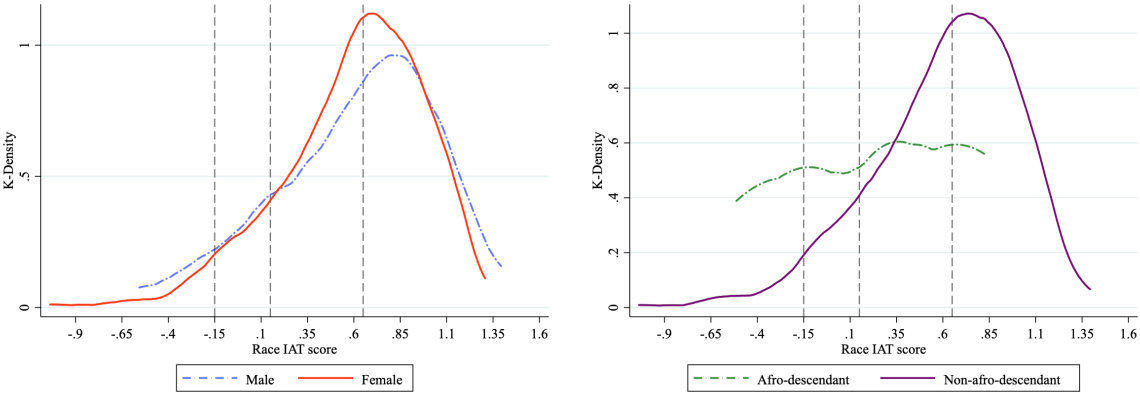# E   Additional tables and figures

Figure E.1: Study timeline

2021	February
	(1st) UAESPE data first entry.
	August
	(5th) Invitation to CCFs.
	(27th) Baseline survey starts.
	September
	(13th) Baseline survey ends.
	(20th) Random allocation of job centers.
	(23th to 29th) IAT score feedback to treated job counselors.
	October
	(12th) Vignette study starts.
	November
	(9th) Vignette study ends.
2022	February
	(1st) UAESPE data last entry.
	(21st to 25th) IAT score feedback to control job counselors.

Figure E.2: IAT score distribution by job counselors' gender and race

(A) By gender   (B) By race

Notes: Race IAT scores. A positive value indicates a stronger association between "white"-"good" and "black"-"bad". The vertical dashed-lines indicate the critical thresholds suggested by Greenwald et al. (2009).

Figure E.3: Proportion of Afro-descendant job seekers by Department
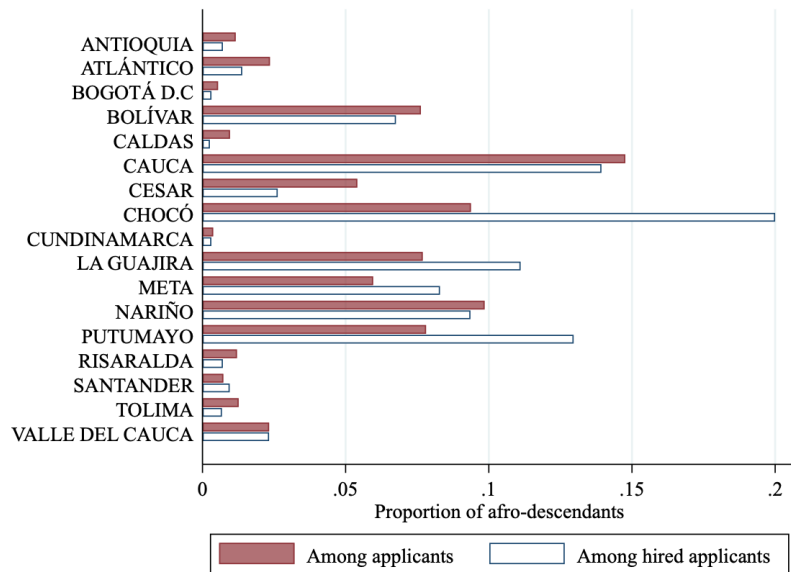

Notes: Proportion of Afro-descendants among all seekers and hired seekers by Department of residence of the job seeker. We use data from UAESPE of all job seekers 20 to 65 years old registered between 01/March/2021 and 28/February/2022. We excluded the CCF COMFAGUAJIRA as its behavior distances from all other CCFs with respect the Afro-descendant CVs registration and referrals.

Table E.6: Effect of race on the probability of CV-forwarding or hired by job-offer type. Pre-study

|	Any job	By wage		By contract type	
		≤ 1 MMLW	> 1 MMLW	Short term	Long term
	(1)	(2)	(3)	(4)	(5)
A. Probability of being forwarded					
Afro-descendant	-0.041$^+$	-0.029	-0.018	-0.016	-0.026
	(0.021)	(0.018)	(0.015)	(0.015)	(0.016)
Mean non-afro	0.280	0.176	0.172	0.184	0.171
R^2	0.172	0.163	0.127	0.155	0.112
Observations	156,053	156,053	156,053	156,053	156,053
*B. Probability of being hired	being referred*					
Afro-descendant	-0.055**	-0.074**	-0.008	-0.065**	-0.011
	(0.020)	(0.026)	(0.005)	(0.022)	(0.008)
Mean non-afro	0.239	0.260	0.040	0.214	0.047
R^2	0.181	0.248	0.045	0.230	0.067
Observations	59,905	35,915	133,456	39,215	131,624

Notes: Standard errors clustered at job center level in parentheses. $+p < 0.1, *p < 0.05, p < 0.01$. Only includes CVs that entered the system August 5th, 2021. All estimations control for age, zone, experience and educational level, and include region-month of registry and city of residence fixed effects.

Figure E.4: Explicit bias. Evaluation of whites and Afro-descendants with respect to intelligence and laziness


(A) Intelligence

(B) Laziness
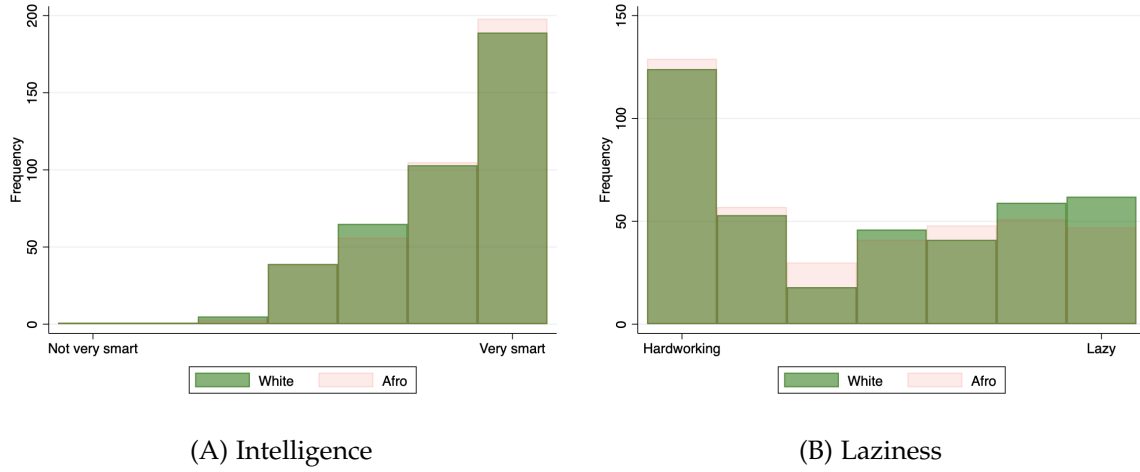
Notes: Information from direct interviews to job counselors.

Figure E.5: Proportion of job counselors that would not like to have specific populations as neighbors
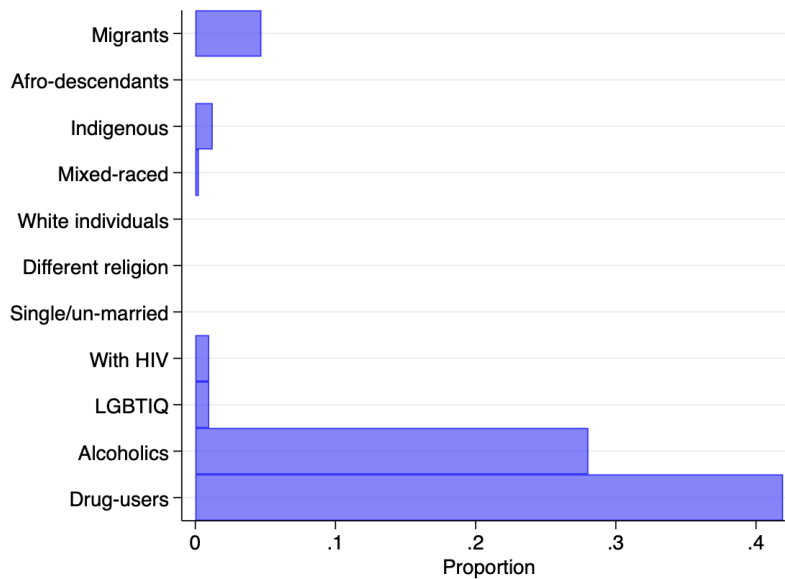
Notes: Proportion of individuals who reply yes to the question – among the following groups, who would you not like to have as neighbors?.
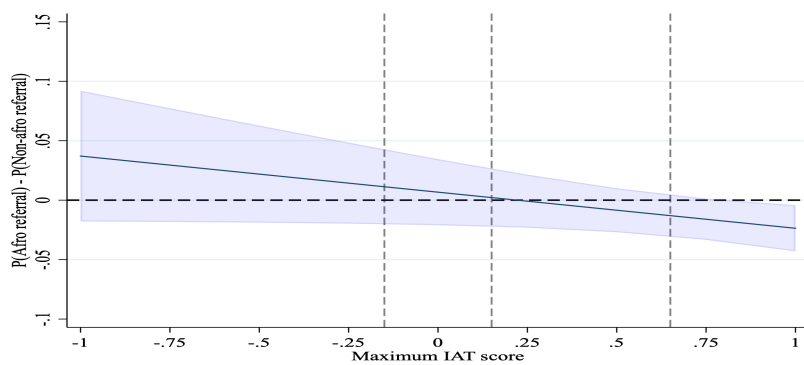
Figure E.6: Differential estimated probability to forward an Afro-descendant CV vs a non-Afro-descendant CV by the minimum, maximum, and mean IAT score in a given job center.
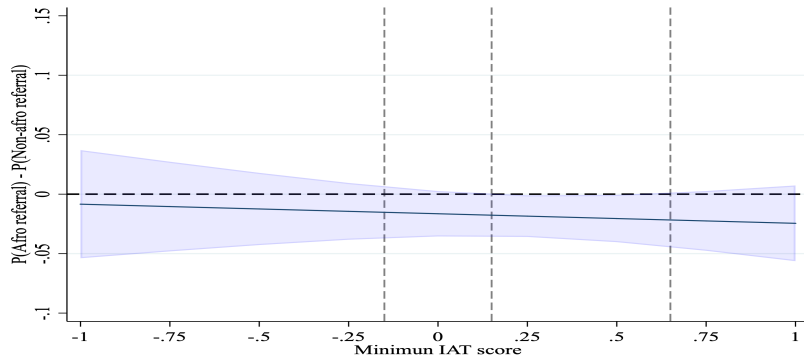

(A) Minimum
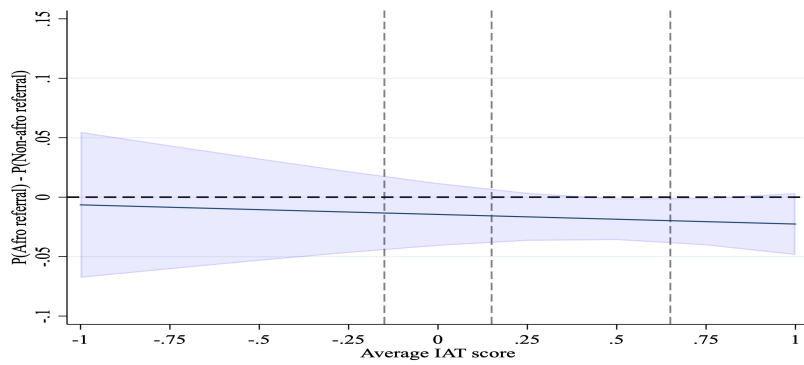
(B) Mean

(C) Maximum

Notes: Base on the estimated probabilities following estimates of the equation $Ref_{iJt} = \alpha_0 + \alpha_1 Afro_i + \alpha_2 g(IAT_J) + \alpha_3 Afro_i \times g(IAT_J) + \alpha_5 Afro_i \times X_i + M_i + CCF_J + R_{Jt} + \mu_{iJt}$, where g is the minimum, mean, and maximum respectively. Area reflects a 95% confidence interval. Only includes CVs that entered the system August 5th, 2021. All estimations control for age, zone, experience and educational level, and include region-month of registry and city of residence fixed effects. The vertical dashed-lines indicate the critical thresholds suggested by Greenwald et al. (2009).

Figure E.7: Differential estimated probability to forward a CV with respect to race, gender and age, by job center IAT score. Pre-study
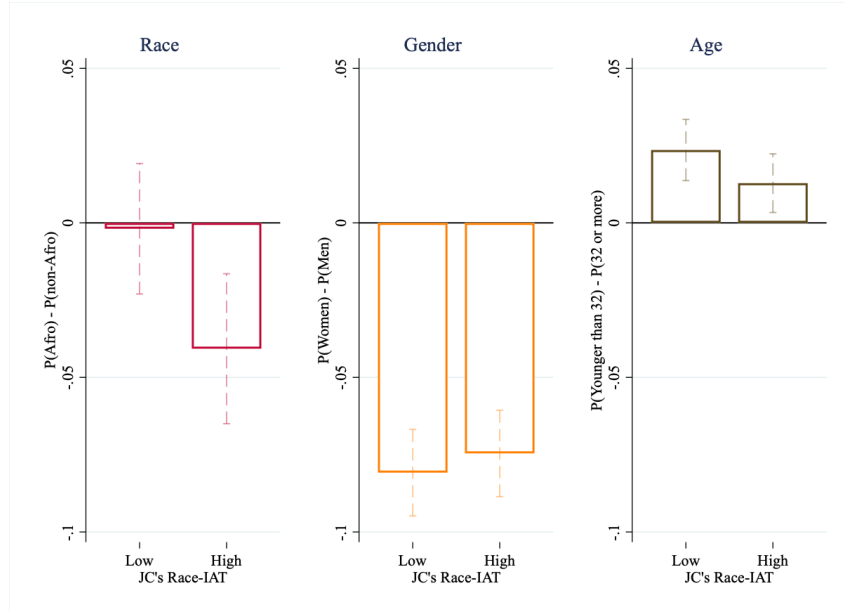
Notes: Report the differential probabilities following estimates of the equation $Y_{iJt} = \alpha_0 + \alpha_1 CAT_i + \alpha_2 D_J + \alpha_3 CAT_i \times D_J + \alpha_5 CAT_i \times X_i + M_i + CCF_J + R_{Jt} + \mu_{iJt}$, where Y is referring a CV, and CAT is $Afro_i$ for Race, $Woman_i$ for gender, and $[Age < 32]$ for Age. Dashed lines represent 95% confidence interval using the Delta method.

Figure E.8: Referring and hiring probabilities by job center characteristics
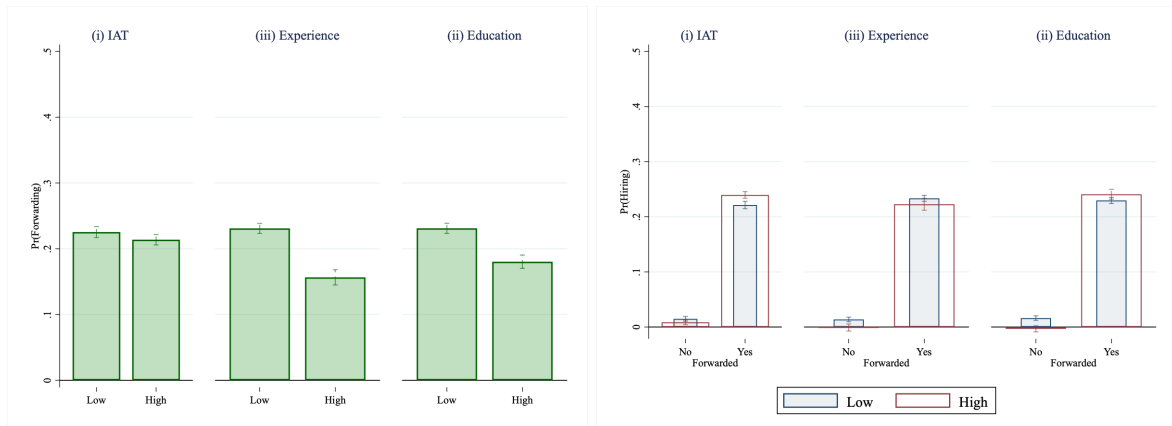
(A) Probability of referring a CV by job center characteristics

(B) Probability of being hired by job center characteristics and referring status

Notes: Dashed lines represent 95% confidence interval. Standard errors clustered at job center level in parentheses. Predicted conditional probabilities controlling by race, gender, age, zone, experience, education, and municipalities, CCF and month fixed effects.