"Reducing Racial Gaps in Referrals and Hiring: Two Experiments with the Colombian Public Employment Services"

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Deliverable 4: Pre-Analysis Plan (PAP)

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Pre-Analysis Plan (PAP)

Study sample

This project has two interventions. Intervention 1 will be with the human resources personnel of firms that use the SPE. Intervention 2 will be with job counselors in the job centers that are part of the SPE.

To invite firms and job counselors we organized an online event with the SPE providers (Cajas de Compensación Familiar - CCF -, and departmental and municipality-level job agencies). The SPE also sent an invitation to participate to all their providers. After this process, 42 providers declared their willingness to participate and were contacted by the data collection team to get in touch with their job centers and firms.

Intervention 1 - with firms' human resources personnel:

Our sample includes 867 individuals from 788 firms.[1] We selected firms given priority to those that posted at least one job post in the period between March 2023 and March 2024. To invite firms to participate we use two different strategies. First, we send each firm a personalized email including a link for the entry survey. Using personalized firm surveys we recruited 455 firms. In addition, we gave each provider a unique link with the entry survey to distribute among its firms. With this strategy, we recruited 342 firms.

Our main outcome - the probability that a given firm hires an Afro-descendant - comes from the SPE data. Hence, we can lose firms that do not post any job vacant between the treatment and the moment of requesting the data from the SPE (Between November 2024 and February 2025). Among the 788 firms, 741 posted at least one job opportunity on the SPE between February 2023 and February 2024. What is more, between November 2023 and February 2024, which is an equivalent timestamp to the one we will use for our analysis, 702 firms posted at least one job offer.

[1] Our initial proposal was 1500 firms. However, the providers contact information about firms was not fully updated limiting our capacity reach firms.

Taking this into account, we will randomize the 788 firms stratifying by size (less than 50 workers, more than 50 workers), sector (commerce, manufacturing-agriculture, and services), region, age (less than 3 years, 3 years or more), and the IAT score (with one respondent with a score lower than 0.35, with no respondent with an IAT score below 0.35).

HR personnel in treated firms will receive information about their IAT score a few weeks after completing the entry survey. Control firms will receive the information 4 months after the treated firms.

Intervention 2 - with job counselors:

Our original goal was to contact 350 job counselors from at least 80 job centers. We were able to enlist 460 job counselors from 122 job centers. Our main outcome for this analysis - the probability that an Afro-descendant is referred to a job - comes from the SPE data. However, in this data, we can only identify the job center but we cannot identify the job counselor. For this reason, our randomization will be done at the job center level.

We stratify job centers by region, size in terms of how many job counselors work in the job center, size with respect to how many CVs they manage in a given month, and their IAT score (at least one counselor with an IAT lower than 0.35, no counselor with IAT score lower than 0.35).

Job counselors in treated job centers will receive information about the referral and hiring gaps by race a few weeks after completing the entry survey. The control group will receive the information 4 months after the treatment group.

We will not mix the randomization process of both interventions, as we do not want to restrict the analysis to firms that post CVs managed by job centers that are participating in the study.

Hypotheses

Intervention 1 - with firms' human resources personnel:

First, after collecting information about the implicit bias of firms' human resource personnel we will provide feedback on their own implicit bias (following Duryea et al. 2024, and Alesina et al. 2024). The hypothesis is that the individual usually does not know her/his own implicit bias. Hence, if a human resource manager gets an IAT score showing that she/he has an unconscious preference for white workers, and she/he was

not expecting this result, she/he may react by acting directly against his unconscious bias increasing the probability of hiring an afro-descendant job seeker.

Intervention 2 - with job counselors:

The second intervention uses information about firms' behavior to change job counselors' referral of Afro-descendants. The hypothesis is that job counselors may underestimate how impactful they can be in reducing the racial gap in employment. This behavior may come from two sources. First, counselors may underestimate the probability that a referred Afro-descendant because they overestimate firms' biases. Second, they may underestimate their importance in the job search process. We call the first channel the mismatch channel, and the second the task significance channel. Hence, we will provide information about how important job counselors are in increasing the chances of Afro-descendant employability. Our message has 3 parts.

1. Afro-descendants get less referrals than non-Afro-descendants.
2. Afro-descendants are more likely to find a job if they are referred than when they apply for a job by themselves.
3. Firms declare that they are more likely to interview an Afro-descendant than job counselors believe.

We use information from the SPE and the entry surveys (both to counselors and firms) to support the three statements.

Variables

Intervention 1 - with firms' human resources personnel:

The main outcome variable is the probability that an Afro-descendant is hired for a given job. This information will come from the SPE as we observe who was hired for each job post.

Intervention 2 - with job counselors:

The main outcome variable is the probability that an Afro-descendant is referred for a given job. This information will come from the SPE as we observe who applied and who was referred to each job post

Treatment effect equation

Intervention 1 - with firms' human resources personnel:

We propose the following ways to estimate the impact.

1. Use of the data at the job seeker to job post level: This is our central estimation strategy. We define H_ijt = 1 if the person *i* registered in month *t* was hired to a job from firm *j*. Then, we can estimate the following equation:

$$H\_ijt = B\_1(Afro\_i \times T\_t \times I\_j) + B\_2(Afro\_i \times T\_t) + B\_3(Afro\_i \times I\_j) + B\_4\ Afro\_i + X\_i\ A\_1 + X\_j\ A\_2 + R\_jt + eta\_ijt$$

where, Afro_i = 1 if the person *i* identifies her/himself as Afro-descendant, T_t = 1 for the months after the treated firms received the information about their own IAT score, and I_j = 1 if the firm *j* was randomly assigned to the treatment group. X_i and X_j are job seeker and firm/post characteristics respectively, R_jt are region-month fixed effects to take into account different labor market dynamics at the region level, and eta is an idiosyncratic error.

In this case, B_1 represents the change in the probability of hiring an Afro-descendant after the treated firms received their own IAT score.

2. Aggregate at firm-period level. We define A_jk as the proportion of Afro-descendant hires in period k, where T_k is = 1 for the months after the treatment.

$$A\_jk = B\_1(T\_k \times I\_j) + B\_2\ I\_j + B\_3\ T\_k + X\_j\ A\_2 + eta\_ijk$$

In this case, B_1 represents the increase in the proportion of Afro-descendant hirings after the firm's human personnel receive information about their implicit bias.

For both estimations, we will work only with those firms who participated in the study and posted at least one offer after the intervention. Using the survey data and the SPE data we will be able to assess the characteristics associated with the probability of being part of the final sample for the analysis.

Intervention 2 - with job counselors:

We propose the following ways to estimate the impact.

1. Use of the data at the job seeker to job post level: This is our central estimation strategy. We define R_icjt = 1 if the person *i* registered in month *t* by the job center *c* was referred to a job from firm *j*. Then, we can estimate the following equation:

$$R\_ijct = B\_1(Afro\_i \times T\_t \times I\_c) + B\_2(Afro\_i \times T\_t) + B\_3(Afro\_i \times I\_c) + B\_4\ Afro\_i + X\_i\ A\_1 + X\_j\ A\_2 + X\_c\ A\_3 + R\_it + eta\_ijct$$

where, Afro_i = 1 if the person *i* identifies her/himself as Afro-descendant, T_t = 1 if the person *i* registered after the treated job centers were treated, and I_c = 1 if the job center *c* that manages CV *i* was randomly assigned to the treatment group. X_i, X_j, and X_c are job seeker, firm/post characteristics respectively, and job center characteristics, R_it are month-region fixed effects to take into account different labor market dynamics at the region level, and eta is an idiosyncratic error.

In this case, B_1 represents the change in the probability of referring an Afro-descendant after the treated job centers received an email with the treatment information.

2. Aggregate at the job seeker level. We define R_ikc = 1 if the job seeker *i* who registered in month *t* was referred at least to one job post by the job center *c*. Then, we estimate:

$$R\_itc = B\_1 (Afro\_i \times T\_t \times I\_c) + B\_2 (Afro\_i \times T\_t) + B\_3(Afro\_i \times I\_c) + B\_4\, Afro\_i + X\_i\, A\_1 + X\_j\, A\_2 + X\_c\, A\_3 + R\_it + eta\_ijct$$

where

In this case, B_1 represents the increase in the probability of getting at least one referral for an Afro-descendant job seeker due to the treatment received by her/his job center c.

Strategies and procedures to mitigate potential data loss

Given that we estimate the effect using administrative data we do not have standard attrition problems. However, for the analysis of ***Intervention 1***, the main risk for our estimations is that the participant firms do not post any job offers between November 2024 and February 2025. We already targeted firms that are very likely to be posting on the SPE. Out of the 449 targeted firms, 434 of them posted a job offer at least once in the period between November 2023 and February 2024. From the 339 firms that responded to the providers, 268 posted at least one job offer in the period between November 2023 and February 2024. According to this, we are expecting to get information from the SPE data of 89% of our participants with a median of 8 to 9 job posts in 4 months.